

# **Monthly Report**

A Report by the  
New York Independent System Operator

**December 2020**

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# ***Operations Performance Metrics Monthly Report***



## ***December 2020 Report***

### **Operations & Reliability Department New York Independent System Operator**

Prepared by NYISO Operations Analysis and Services, based on settlements initial invoice data collected on or before January 9, 2021.

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## December 2020 Operations Performance Highlights

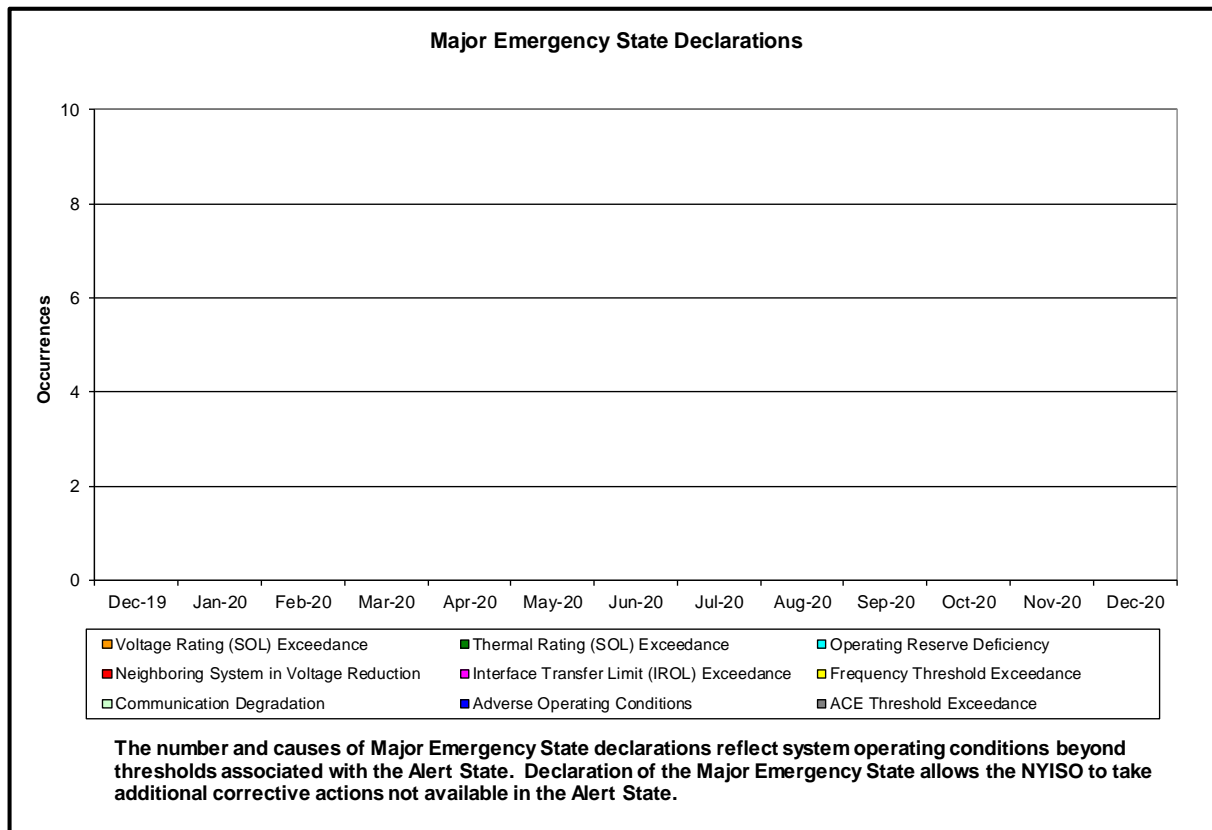
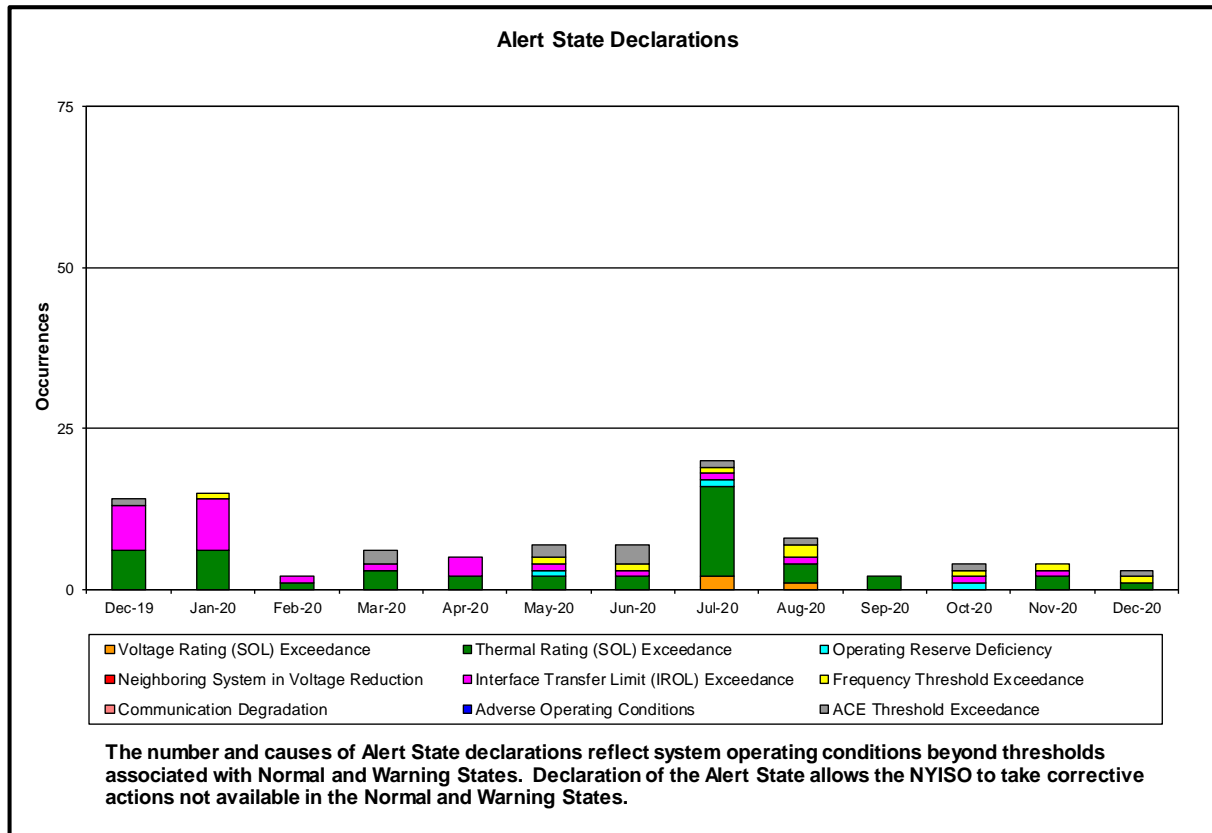
- Peak load of 22,541 MW occurred on 12/16/2020 HB 17
- All-time winter capability period peak load of 25,738 MW occurred on 1/7/2014 HB 18
- 0 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- To reduce risks from COVID-19, the NYISO continues to take several actions to maintain critical business operations and protect the health and well-being of our employees and stakeholders.
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

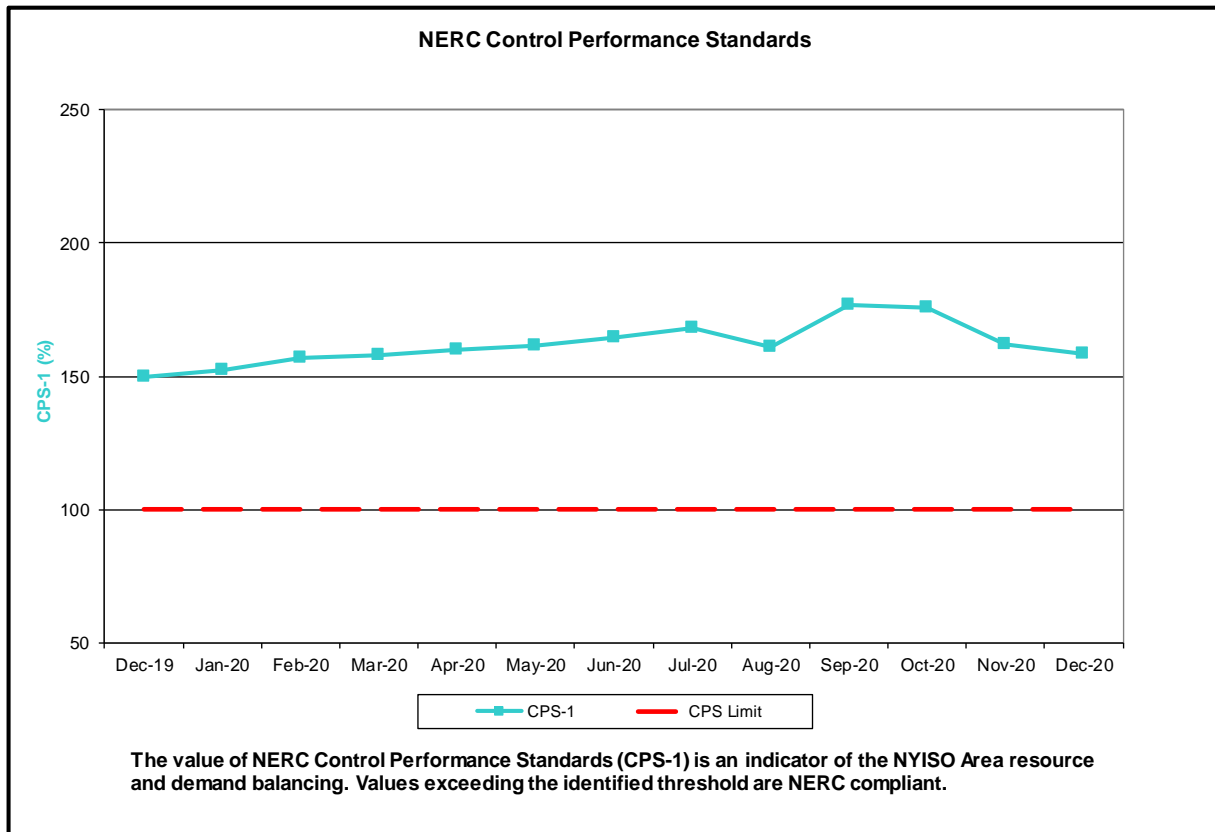
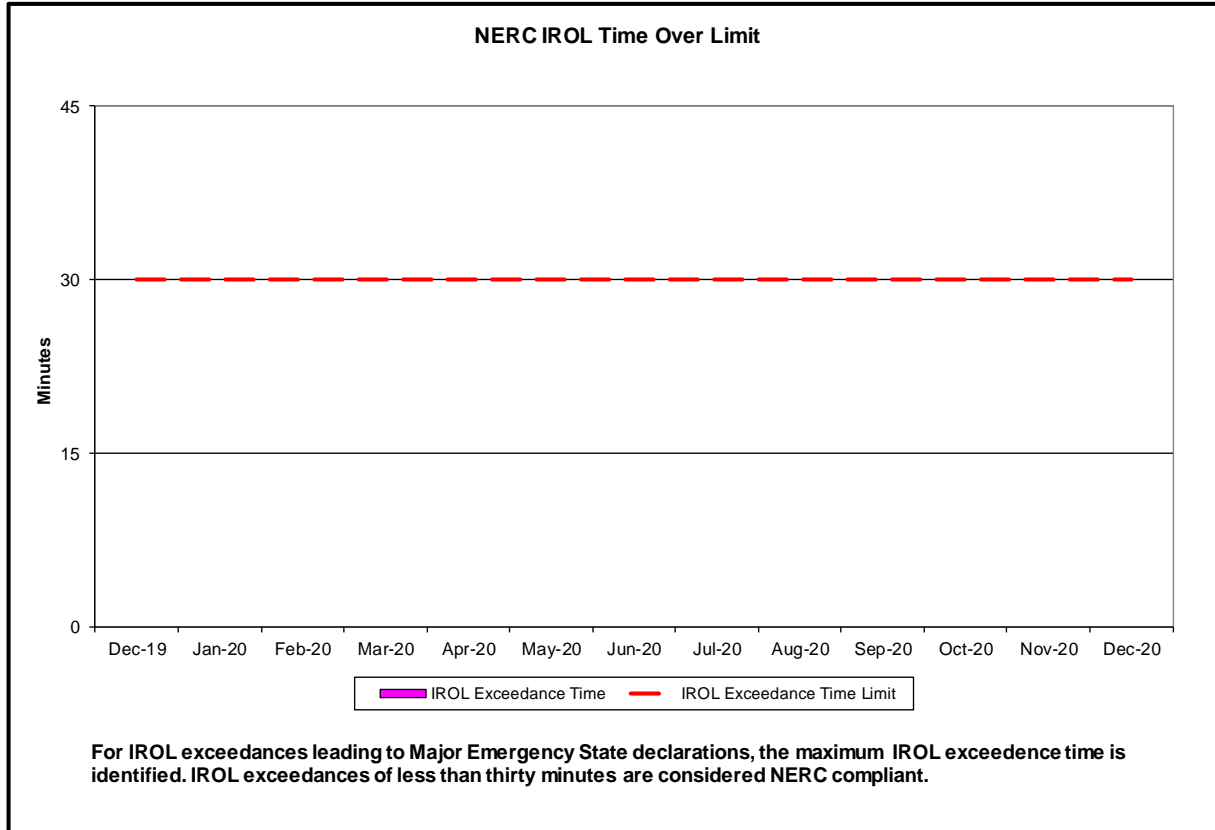
	Current Month Value (\$M)	Year-to-Date Value (\$M)
<b>NY Savings from PJM-NY Congestion Coordination</b>	\$1.23	\$4.34
<b>NY Savings from PJM-NY Coordinated Transaction Scheduling</b>	(\$0.44)	(\$1.44)
<b>NY Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.32	\$1.99
<b>Total NY Savings</b>	<b>\$1.11</b>	<b>\$4.89</b>
<b>Regional Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.41	\$2.59
<b>Regional Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.08	\$0.30
<b>Total Regional Savings</b>	<b>\$0.49</b>	<b>\$2.89</b>

- Statewide uplift cost monthly average was (\$0.38)/MWh.
- The following table identifies the Monthly ICAP spot market prices and the price delta.

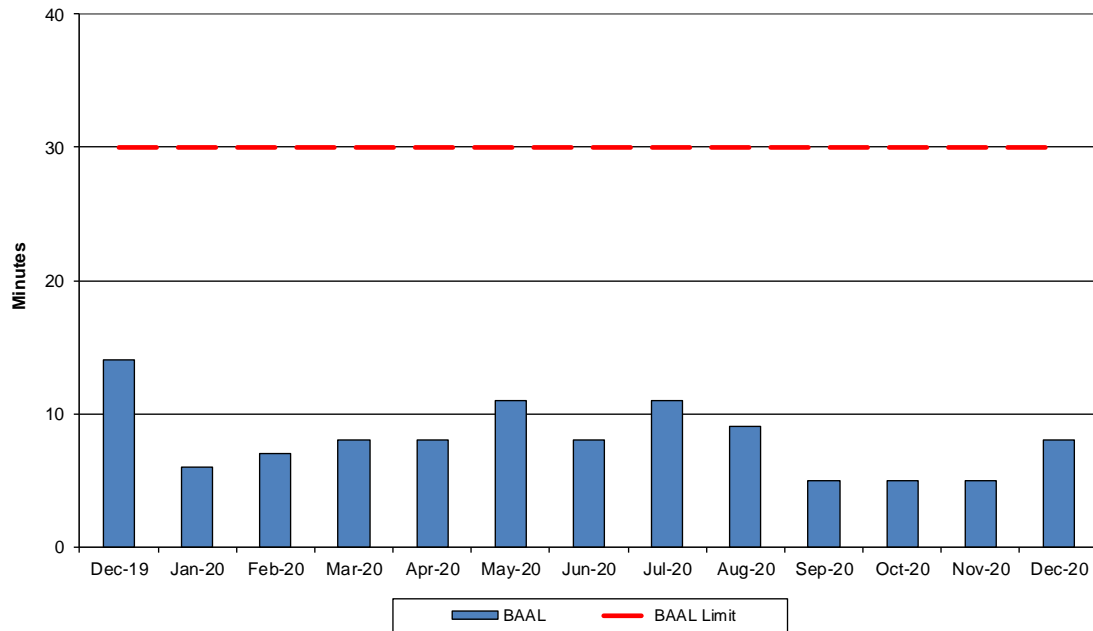
Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
January 2021 Spot Price	\$0.06	\$0.06	\$8.56	\$0.06
December 2020 Spot Price	\$0.10	\$0.10	\$8.57	\$0.10
Delta	(\$0.04)	(\$0.04)	(\$0.01)	(\$0.04)

## Reliability Performance Metrics



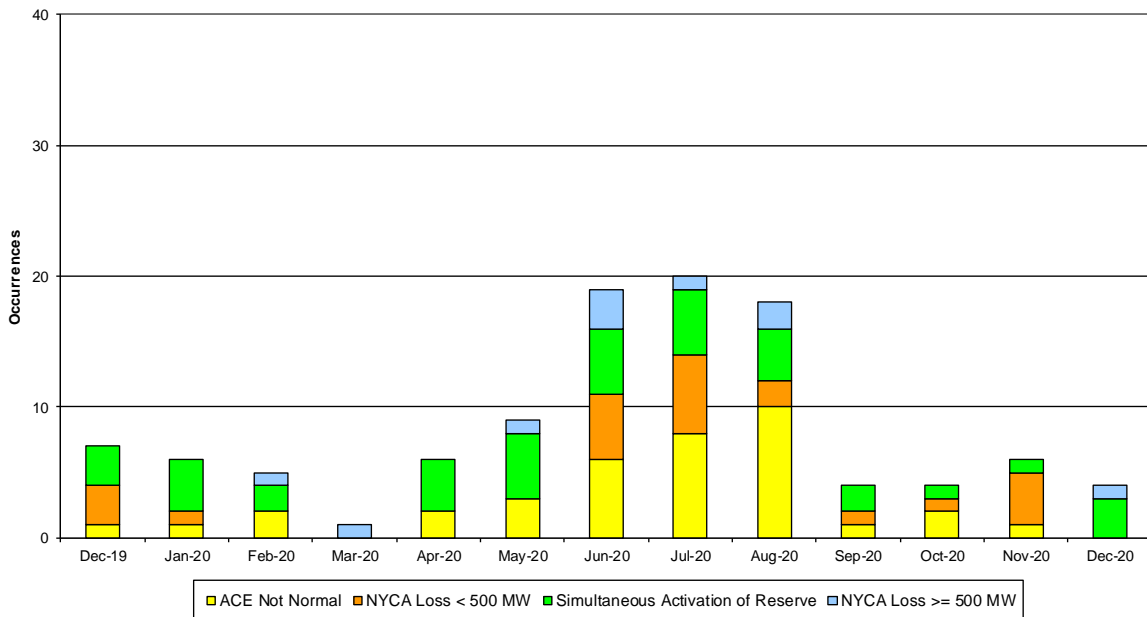


### NERC Balancing Authority ACE Limit Standard



The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

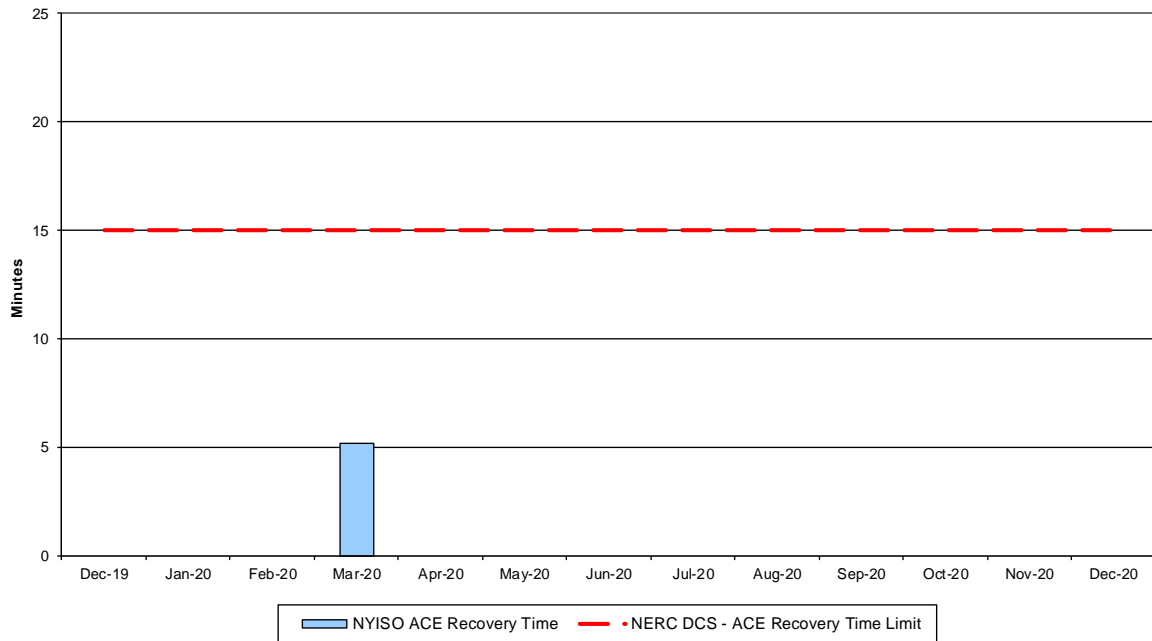
### Reserve Activations



NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

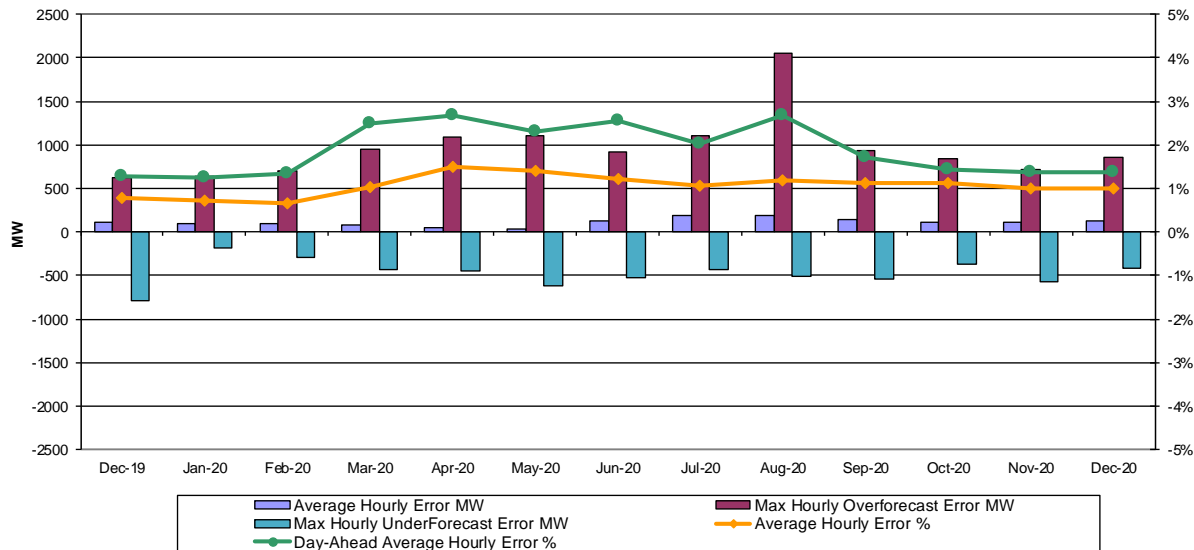


### DCS Event Time to ACE Recovery



For NYISO initiated NERC Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

### Load Forecast Performance

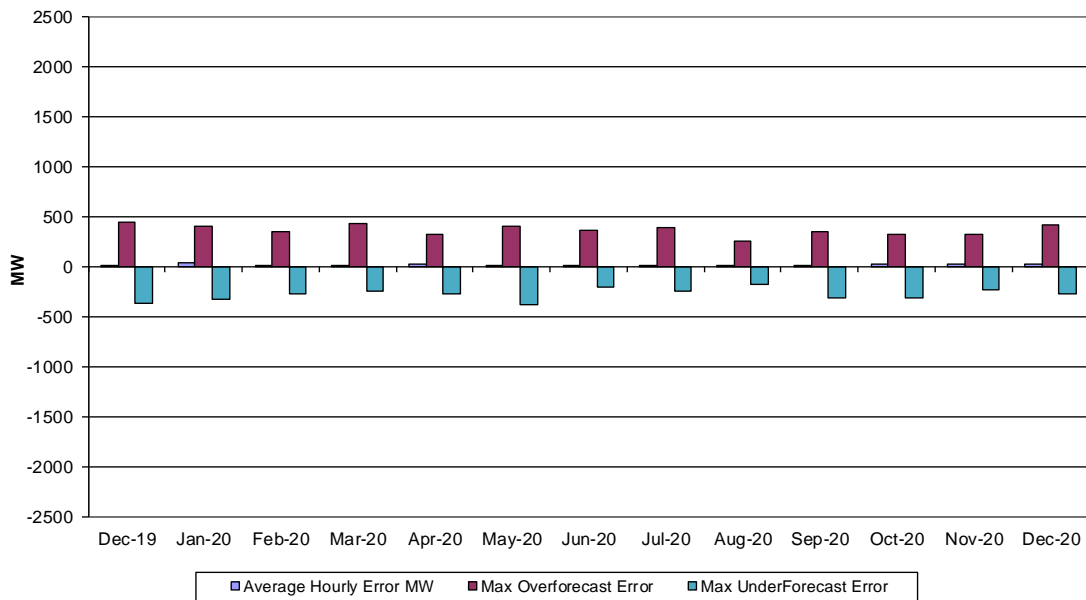


**Hourly Error MW** - Value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.

**Average Hourly Error %** - Average value of the ratio of hourly average error magnitude to hourly average actual load demand.

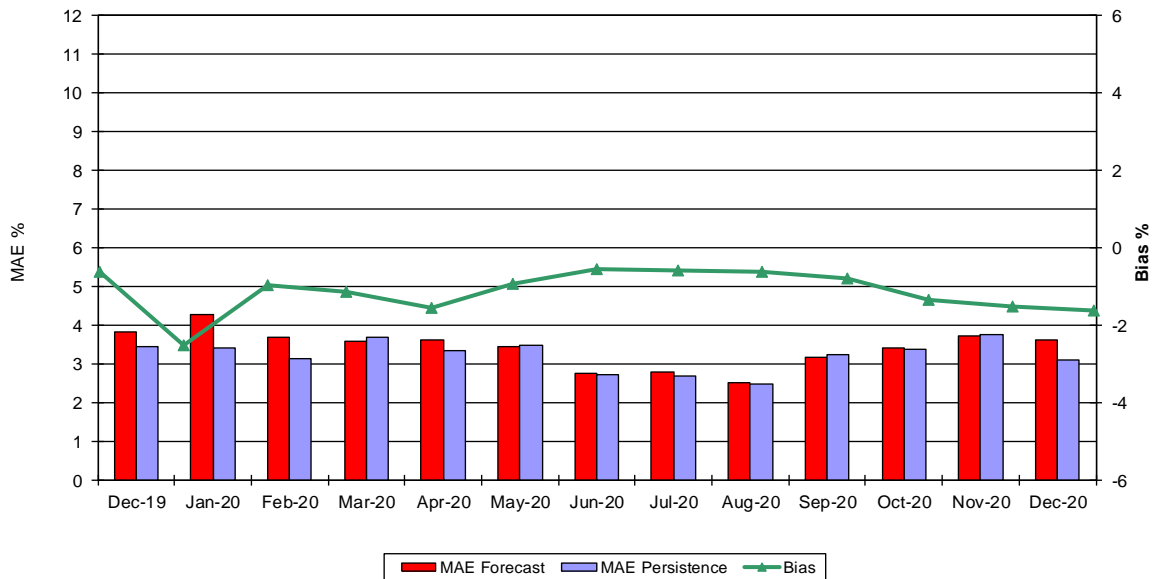
**Day-Ahead Average Hourly Error %** - Average across all hours of the month of the absolute value of the difference between actual load demand and the Day-Ahead forecast load demand, divided by the actual load demand.

### Wind Forecast Performance Hour Ahead MW Error



**Hourly Error MW** - Value of the difference between the hourly average actual wind generation and the average hour ahead forecast wind generation.

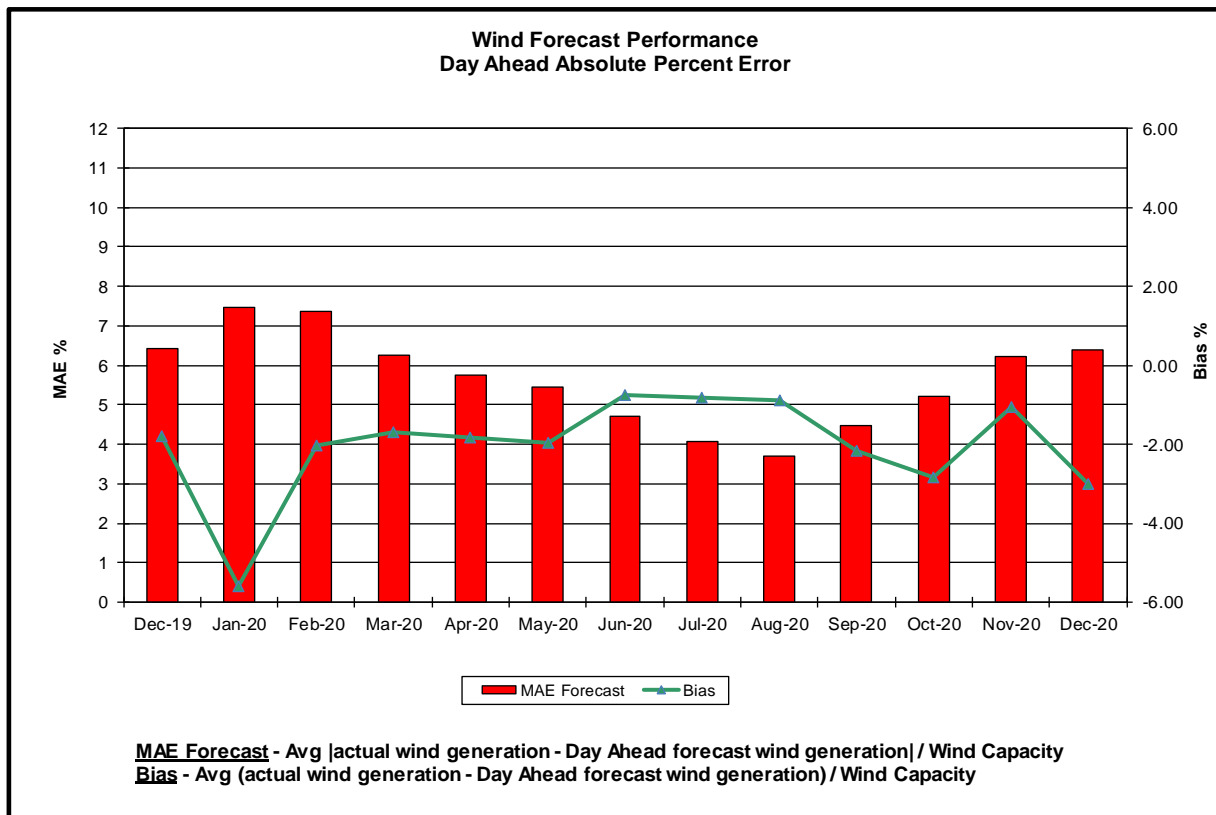
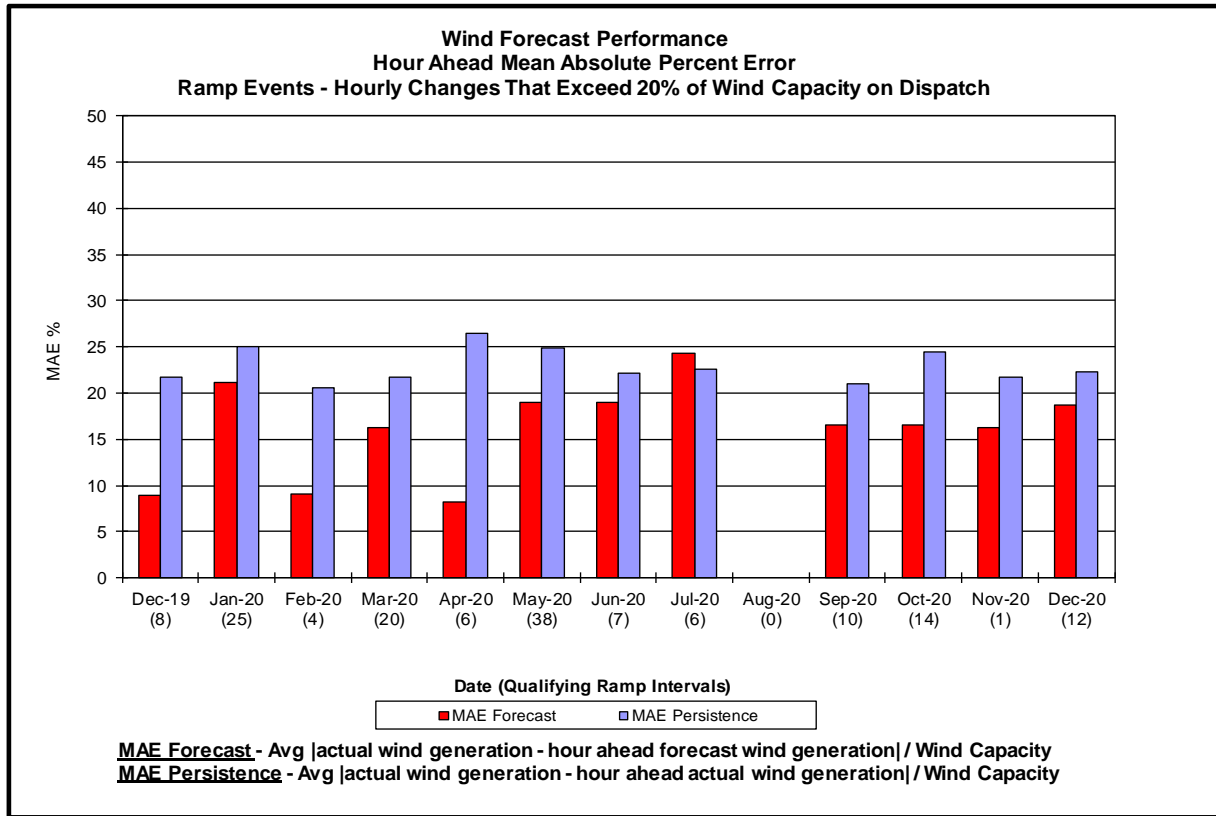
### Wind Forecast Performance Hour Ahead Percent Error

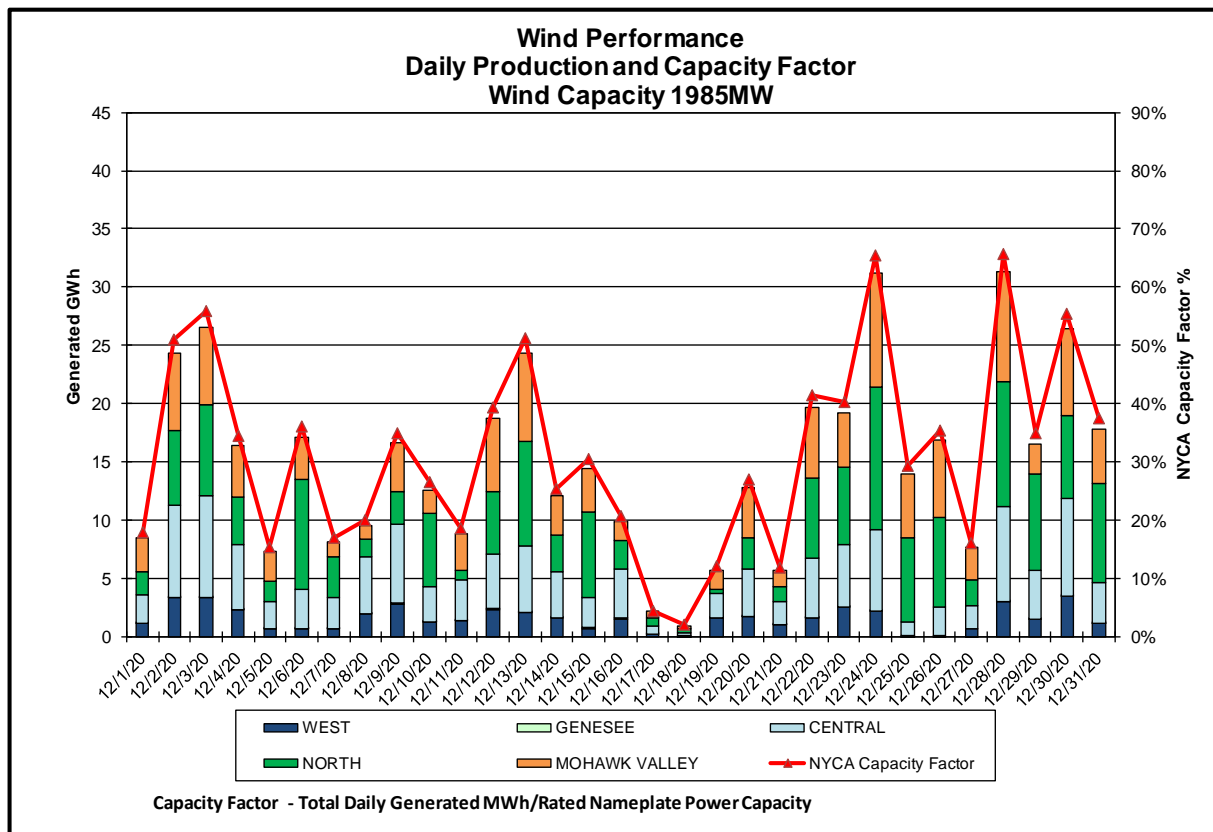
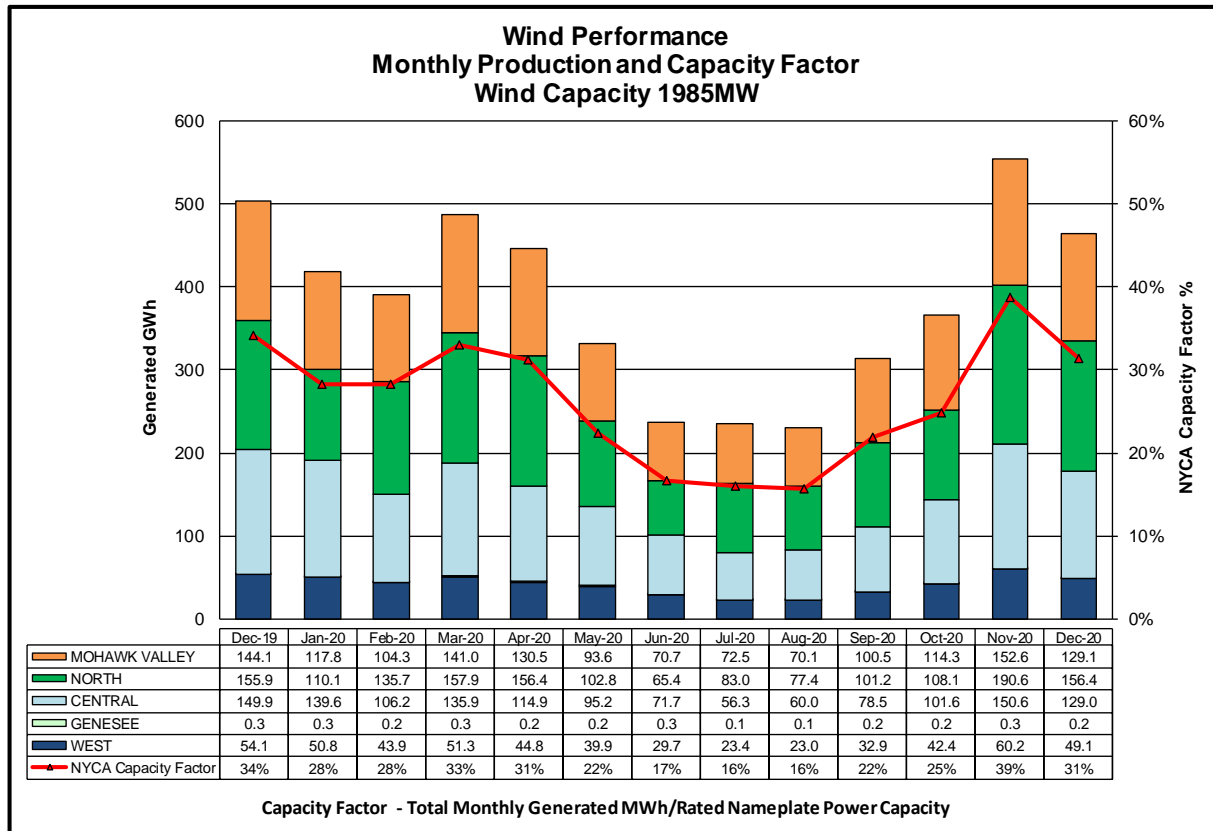


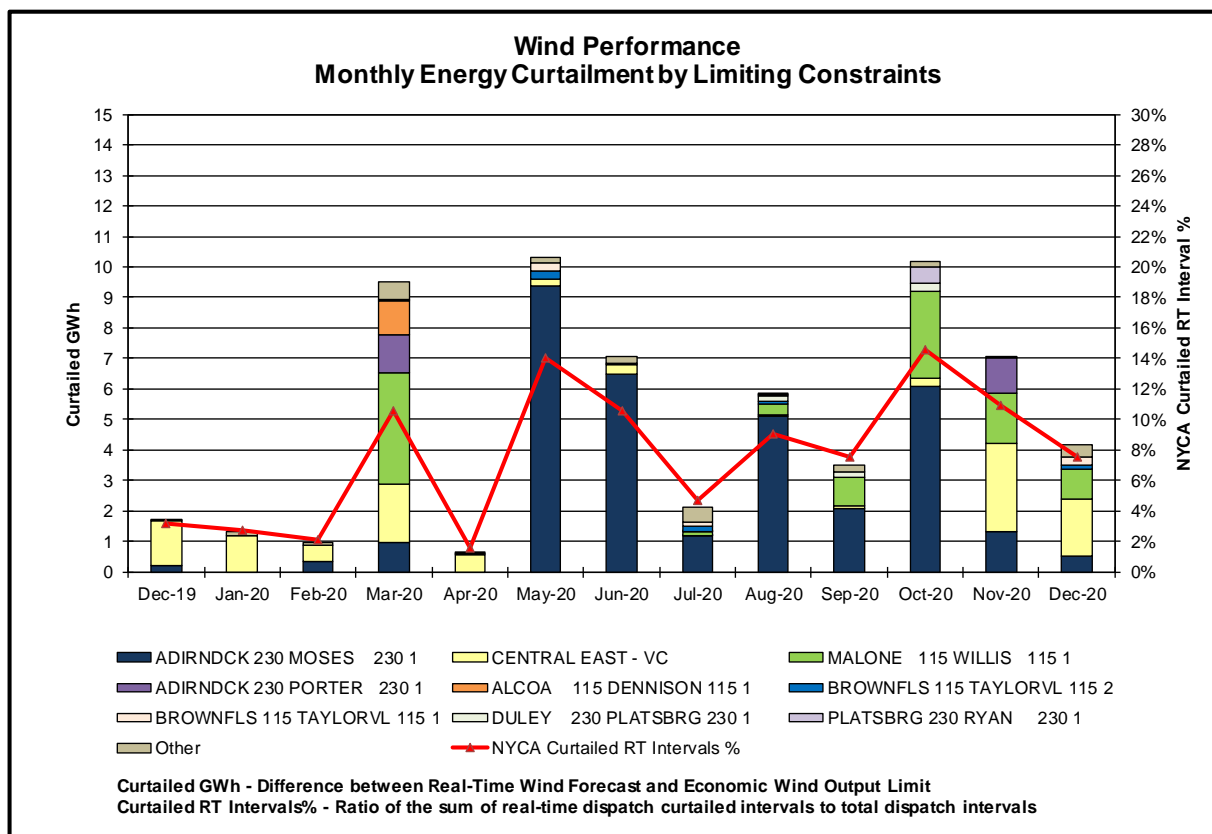
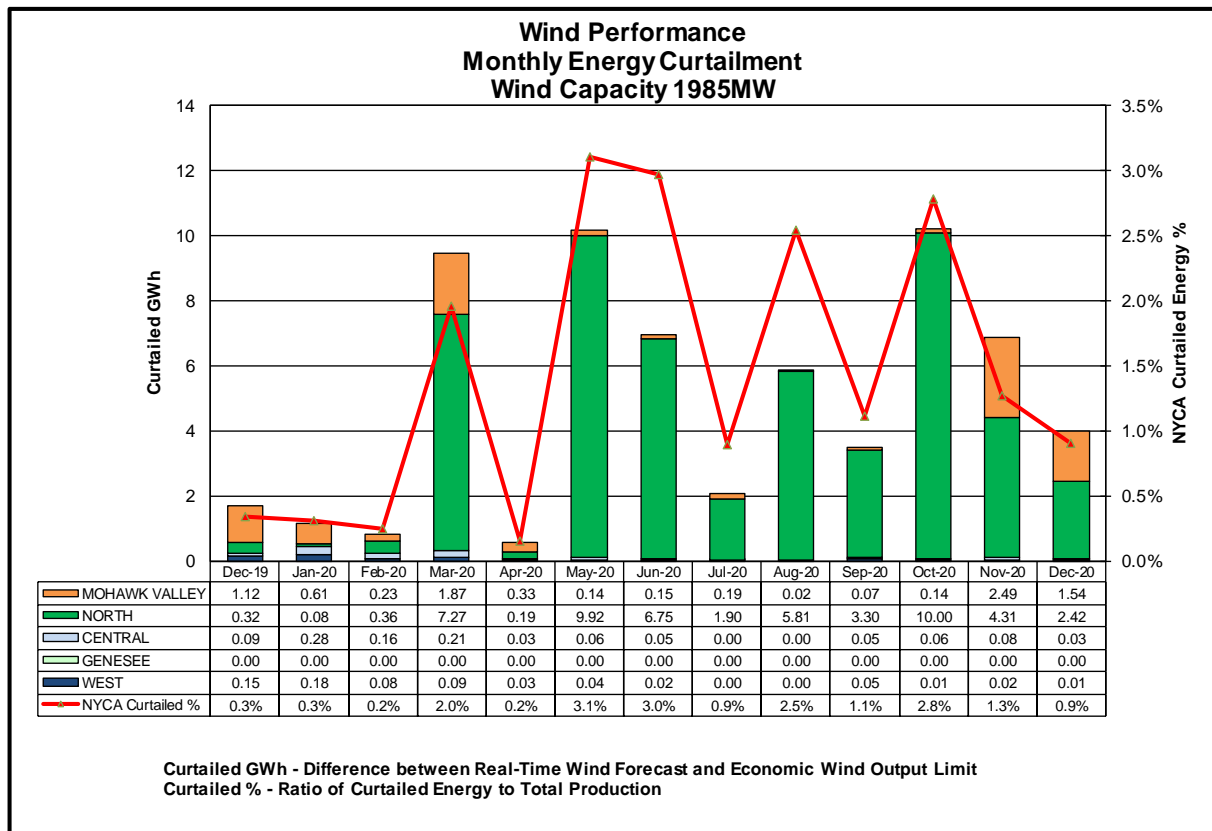
**MAE Forecast** - Avg |actual wind generation - hour ahead forecast wind generation| / Wind Capacity

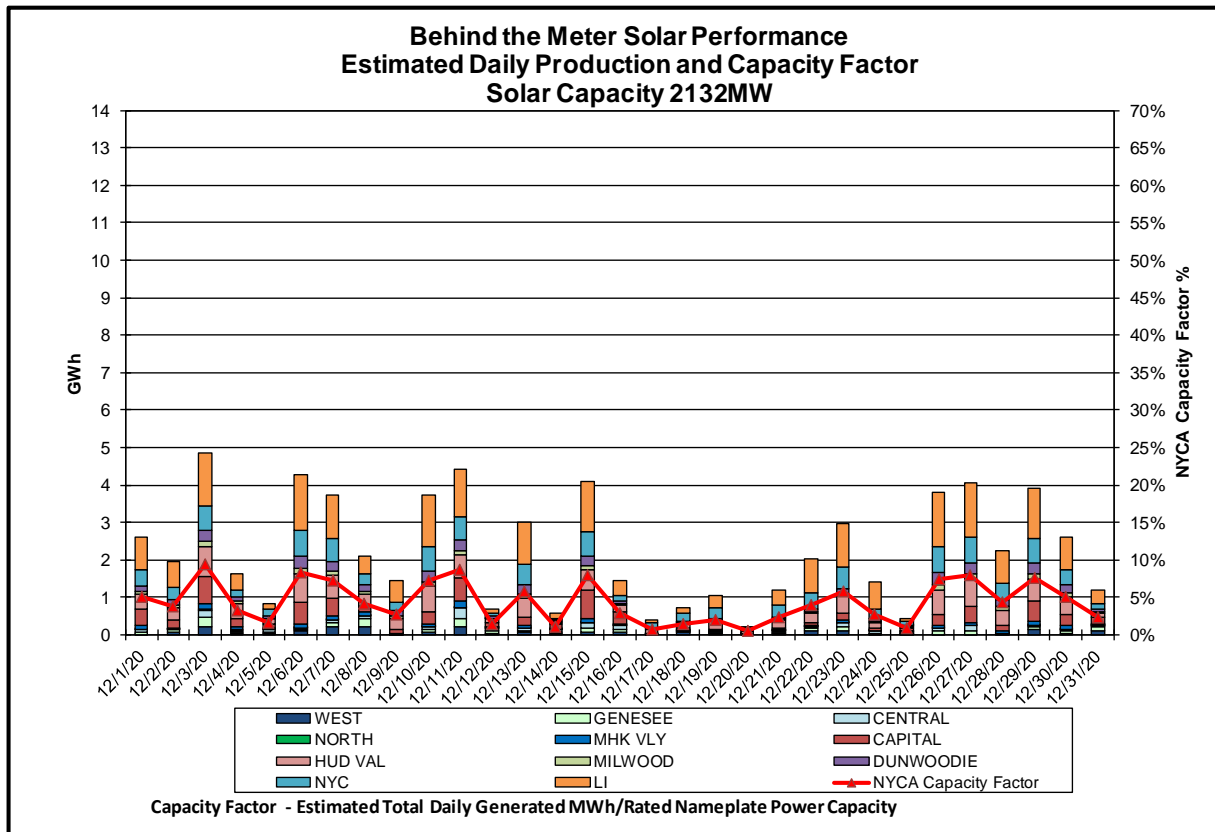
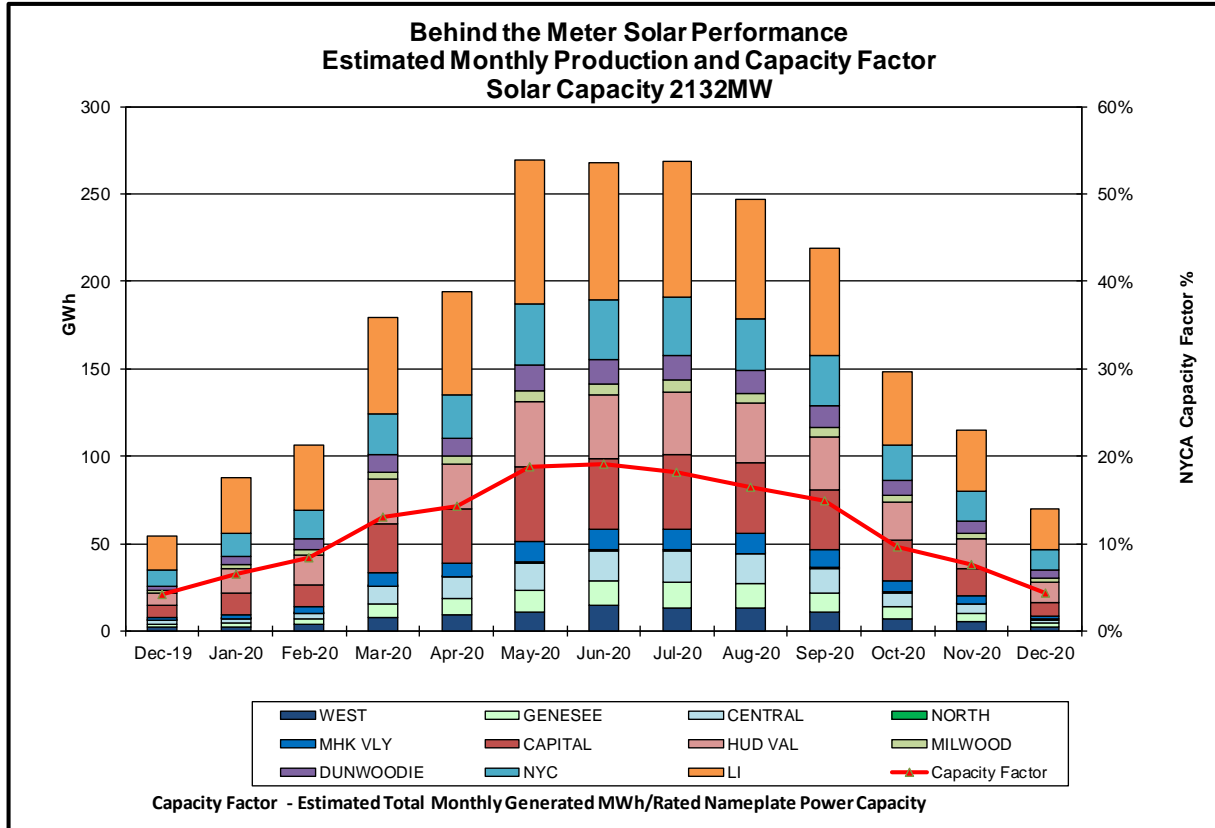
**MAE Persistence** - Avg |actual wind generation - hour ahead actual wind generation| / Wind Capacity

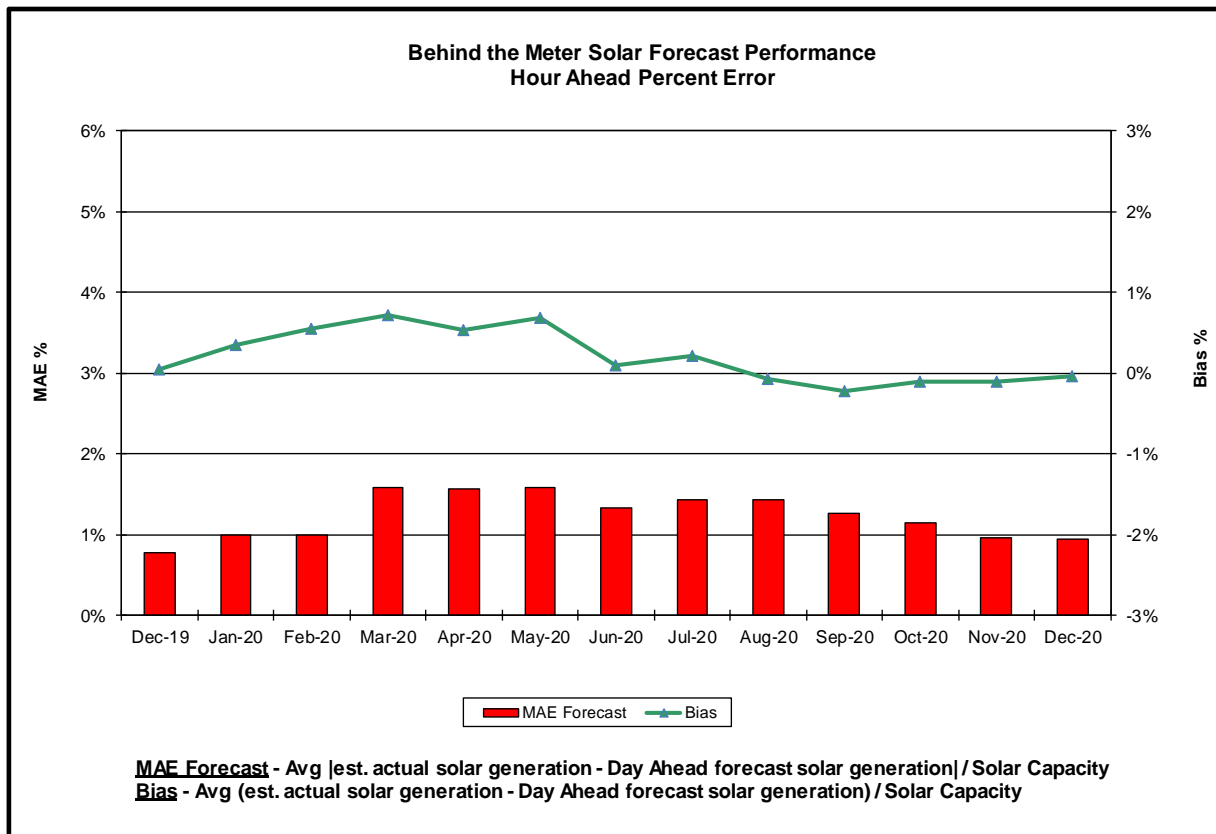
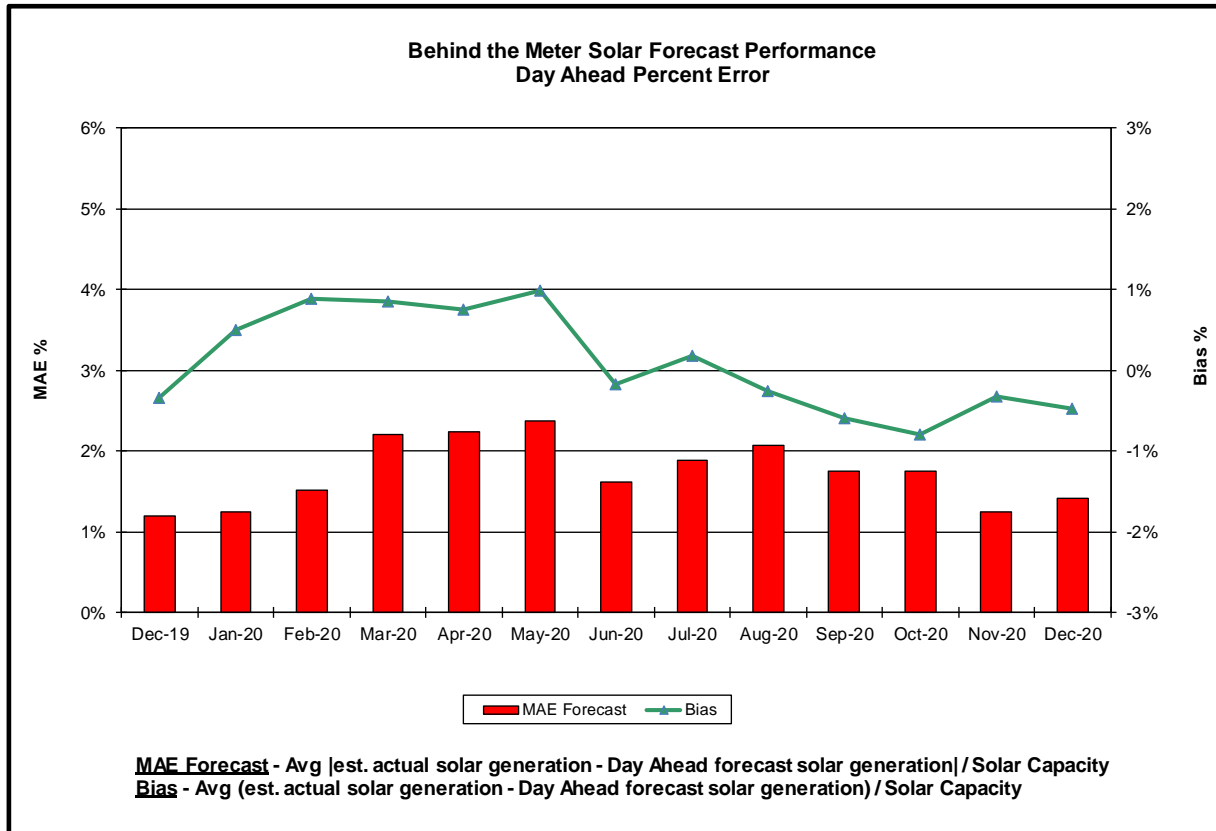
**Bias** - Avg (actual wind generation - hour ahead forecast wind generation) / Wind Capacity

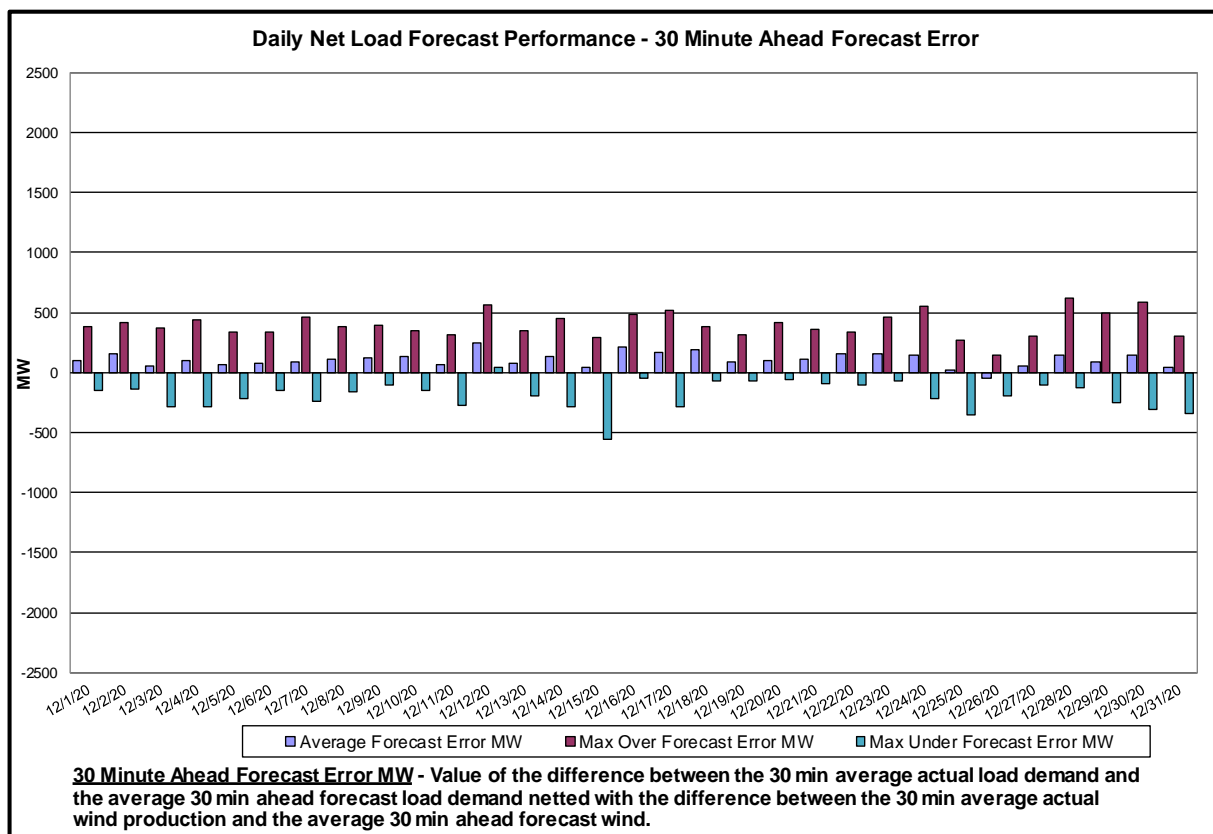
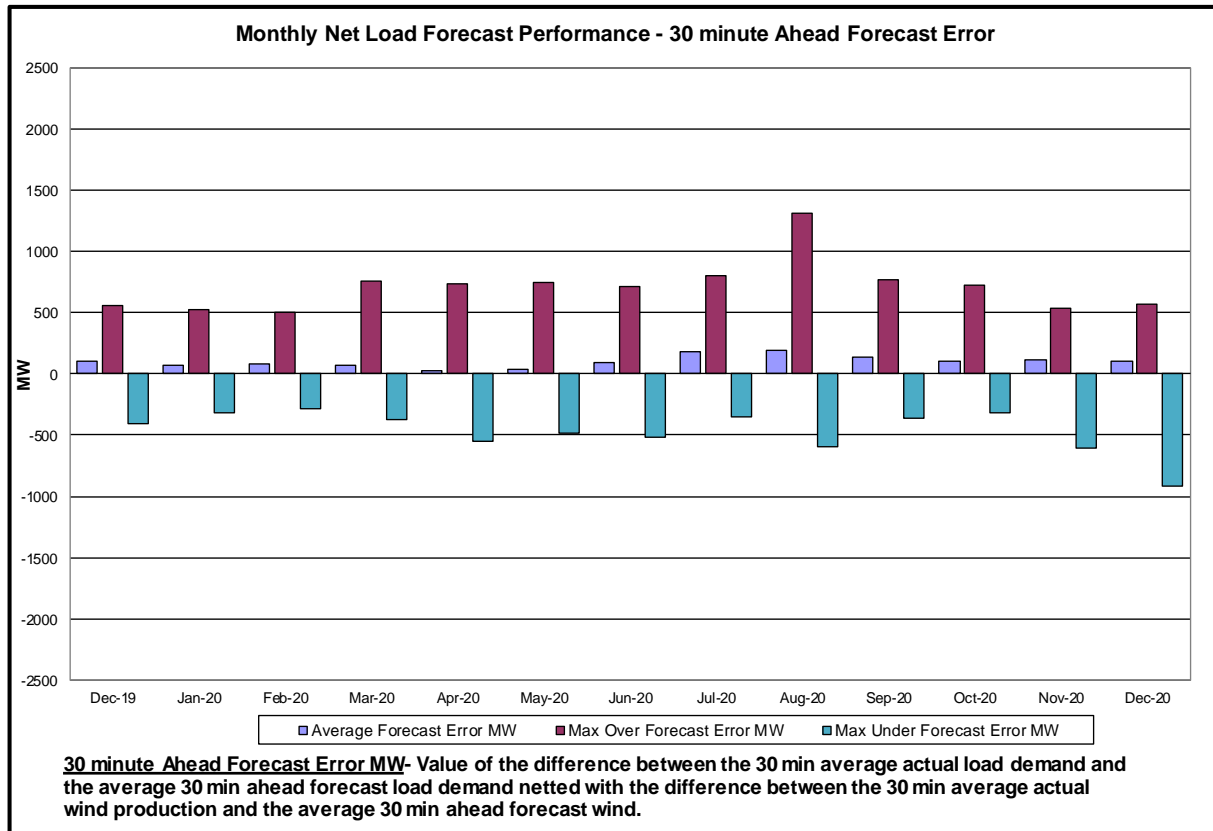




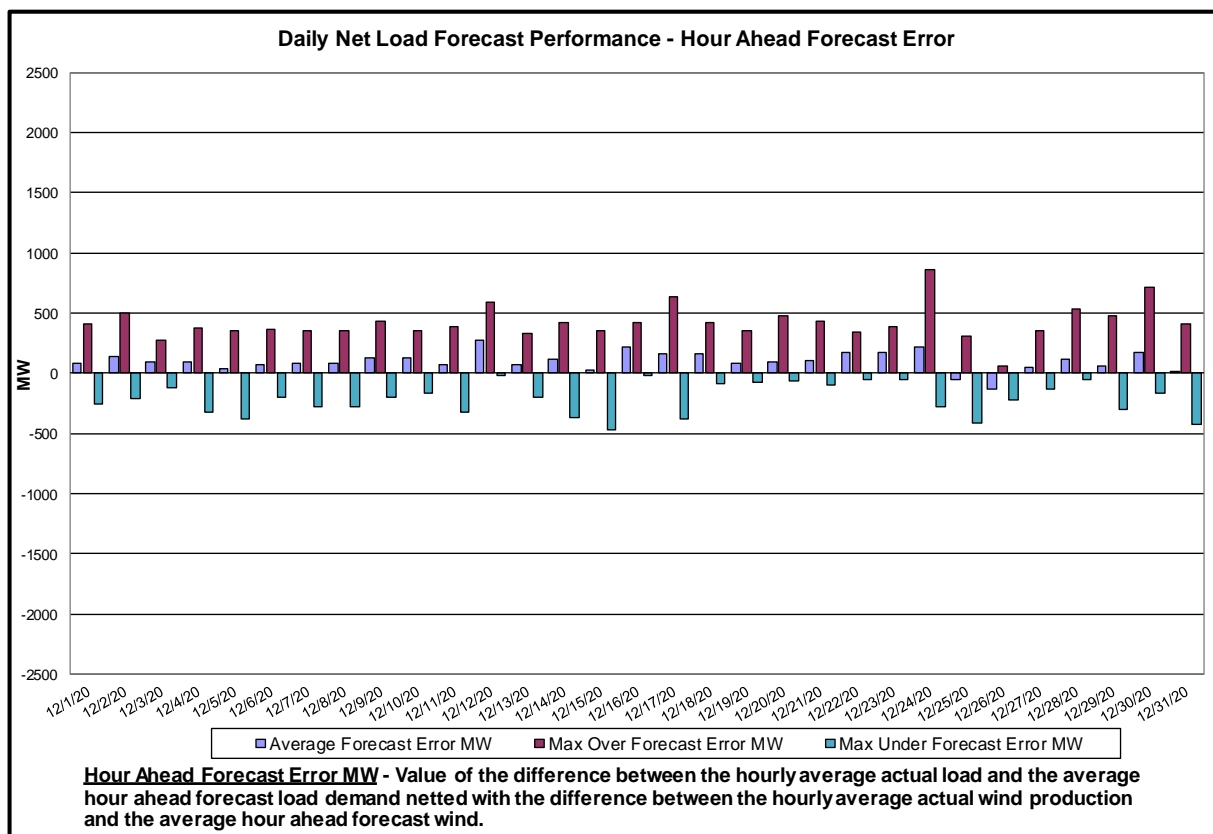
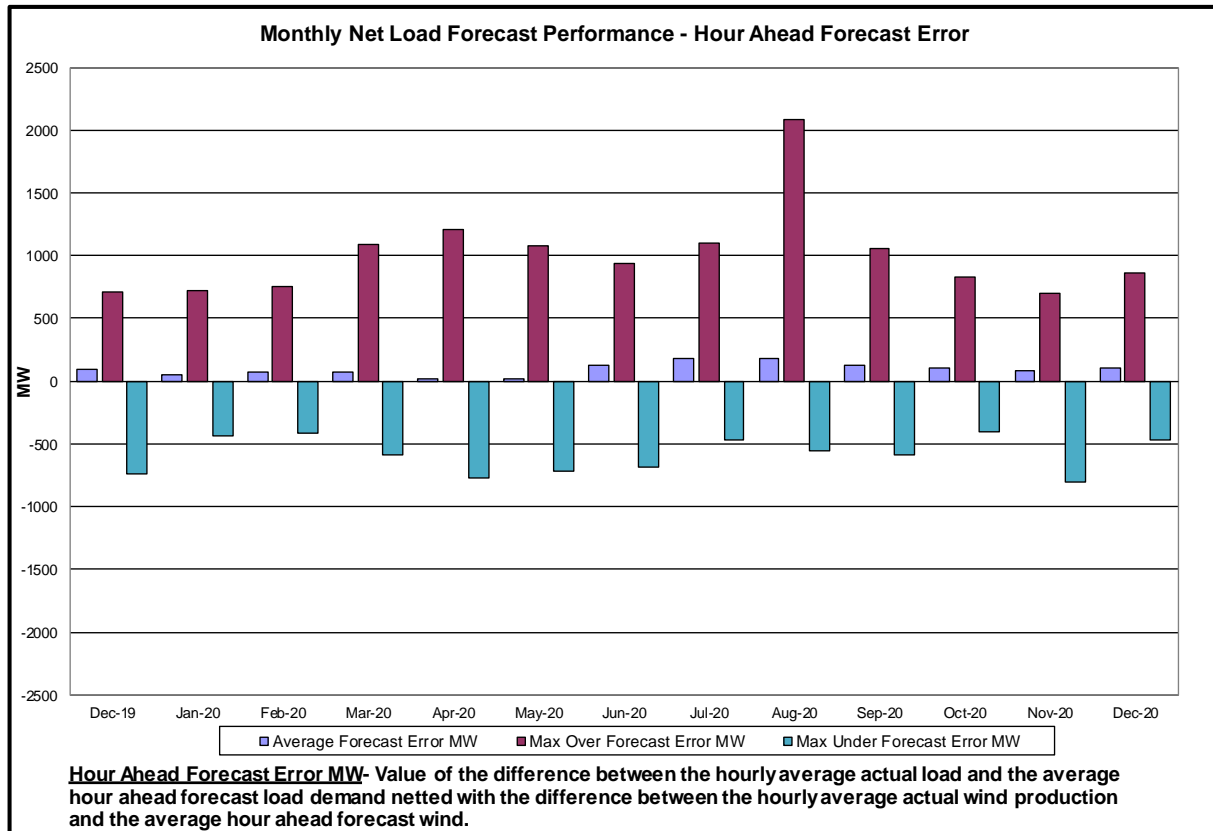


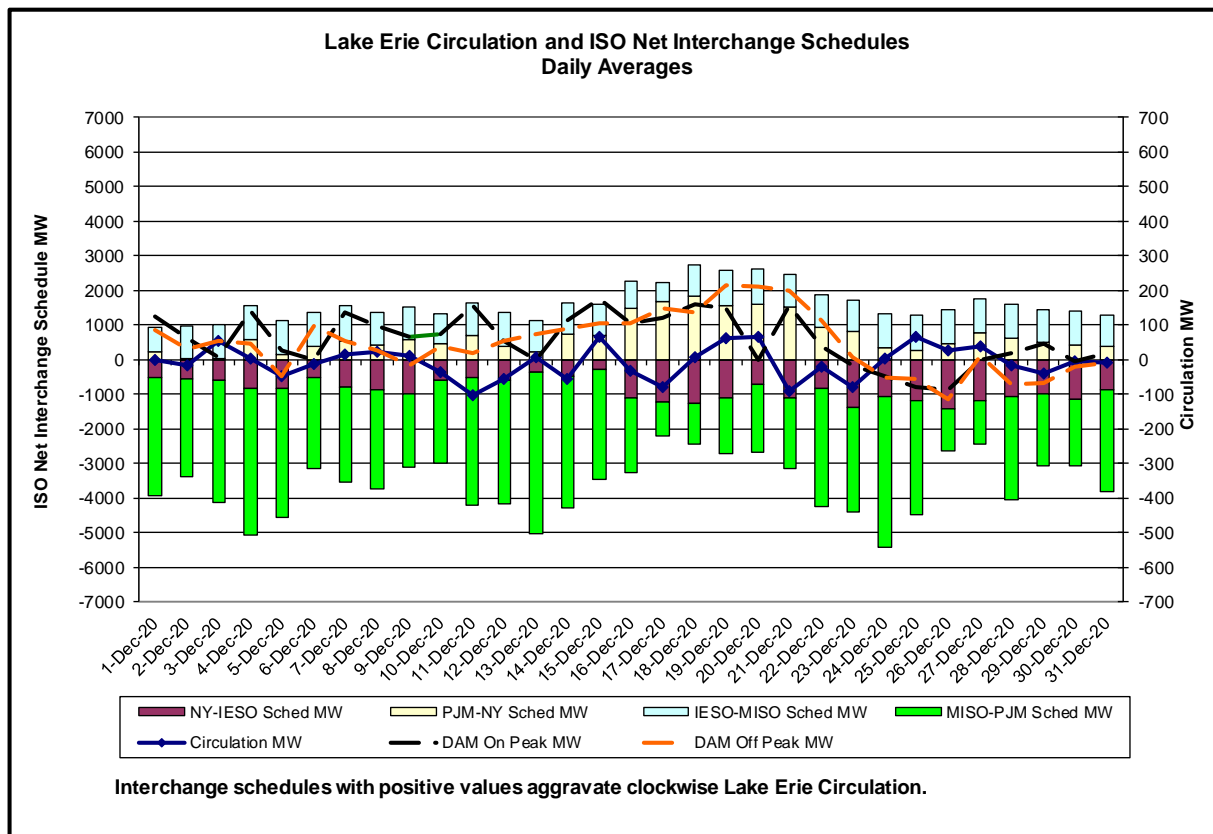
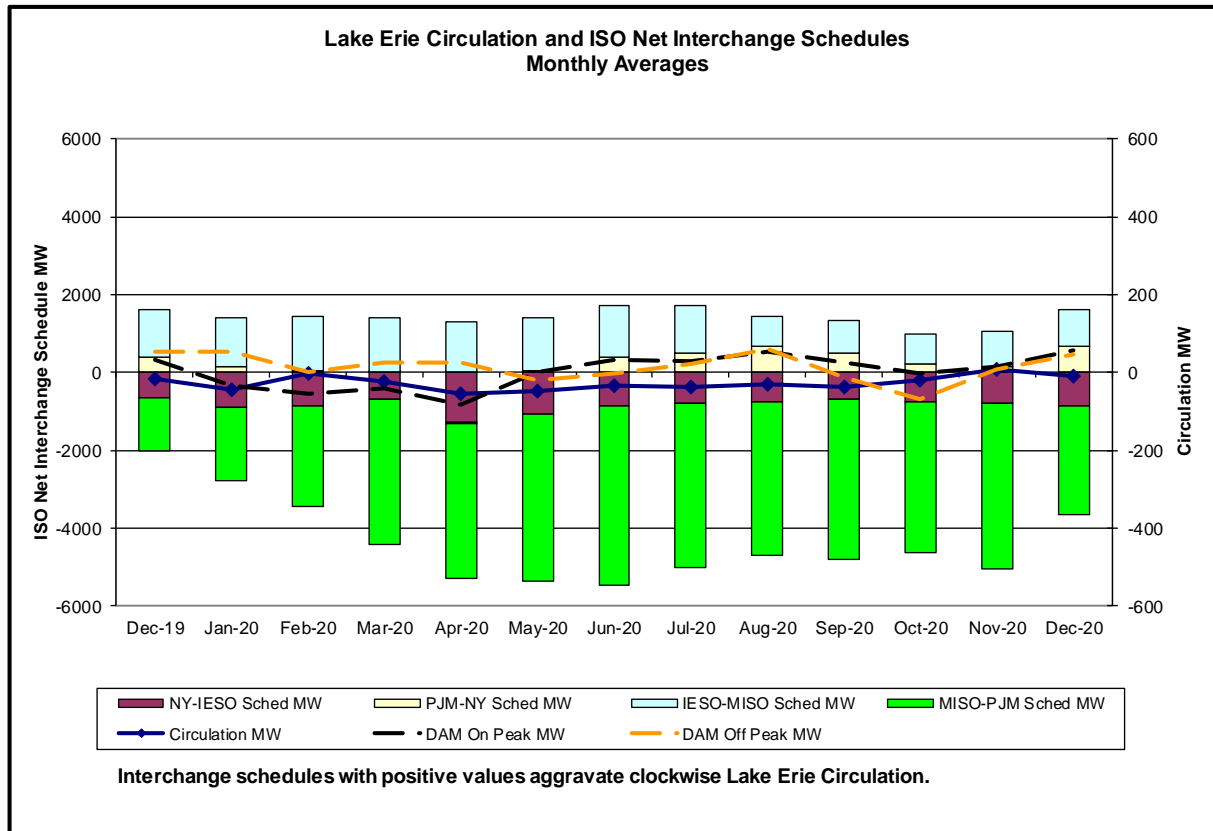




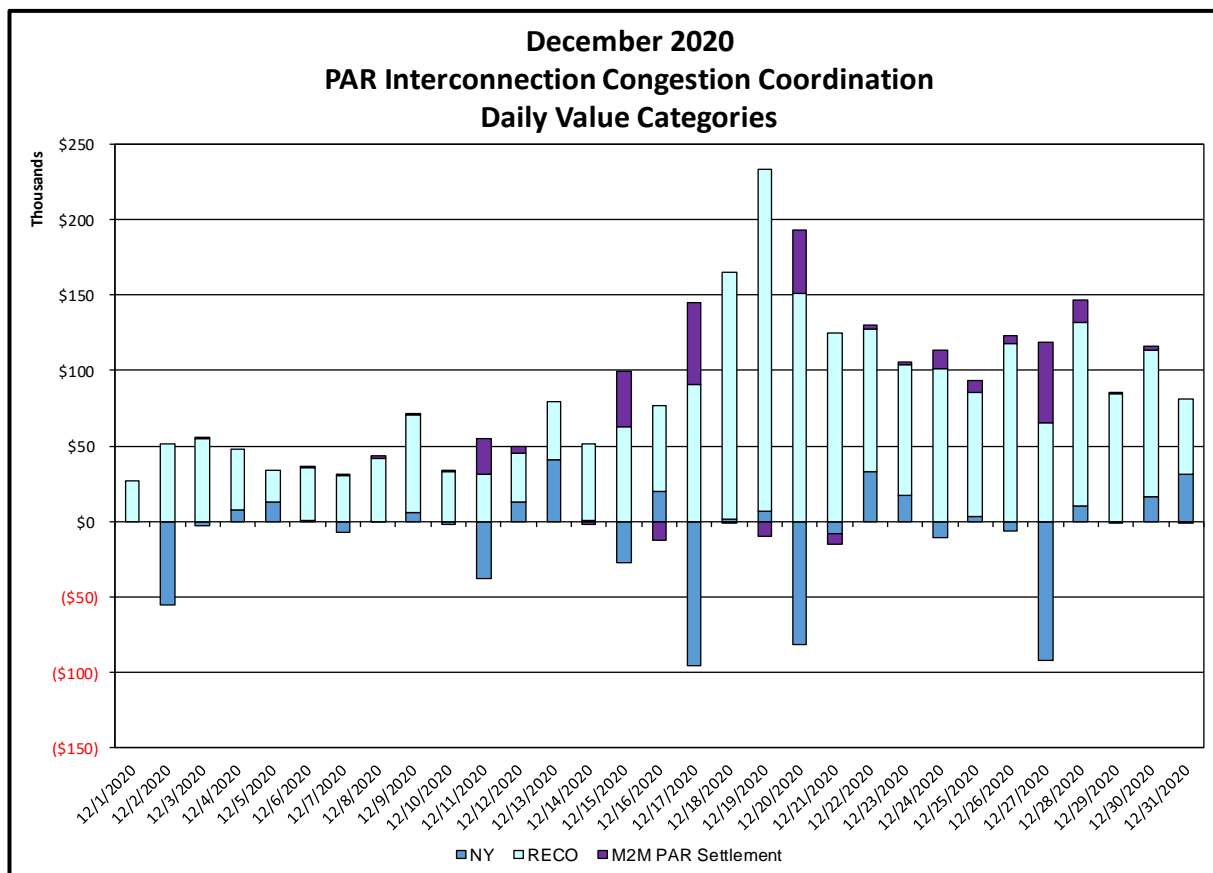
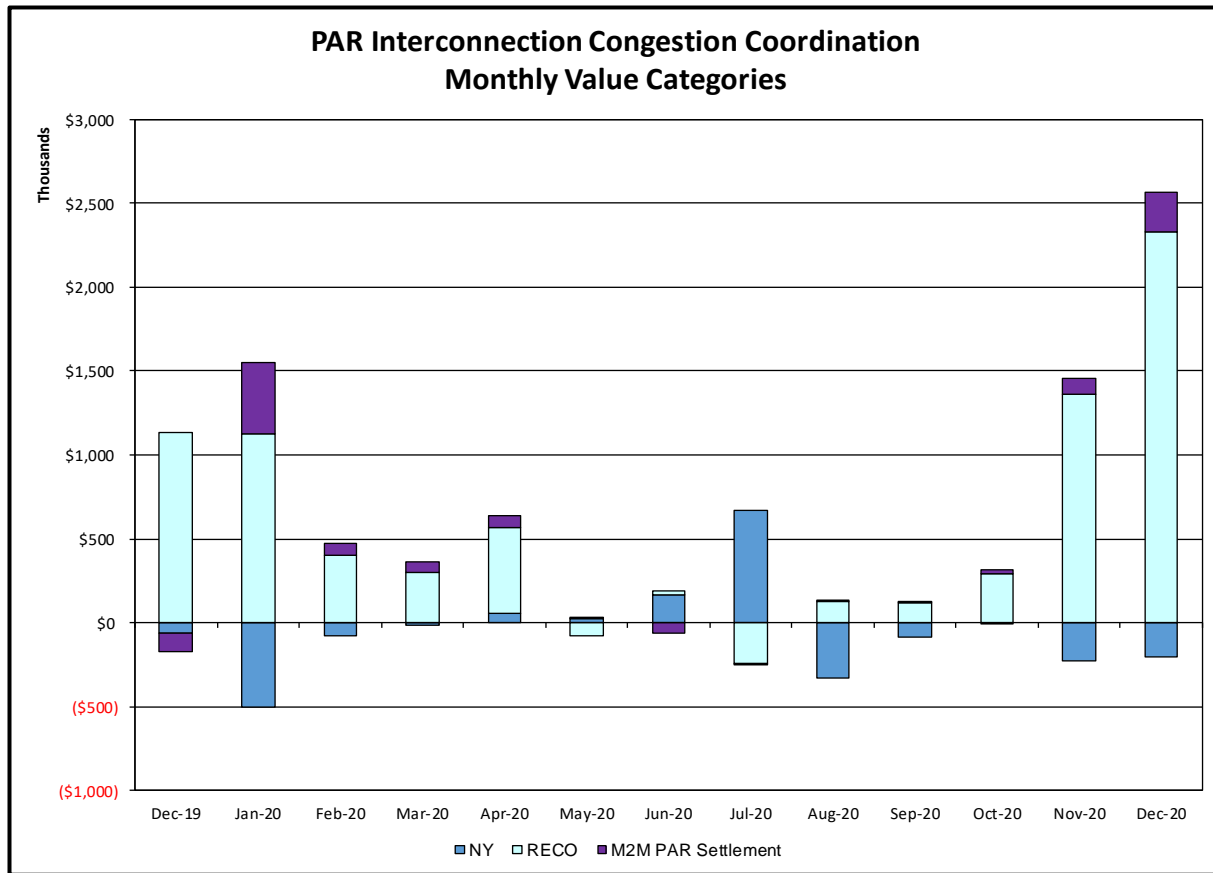






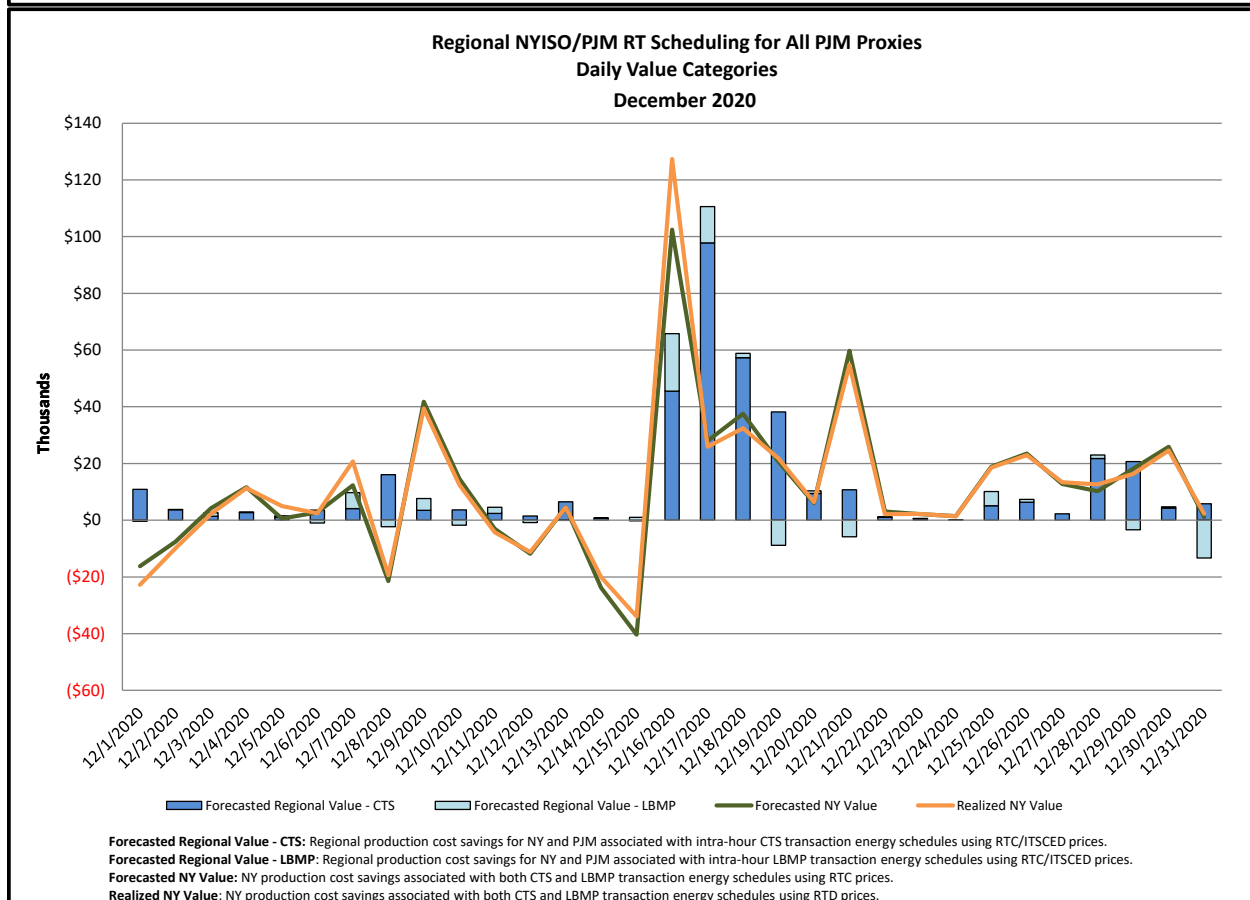
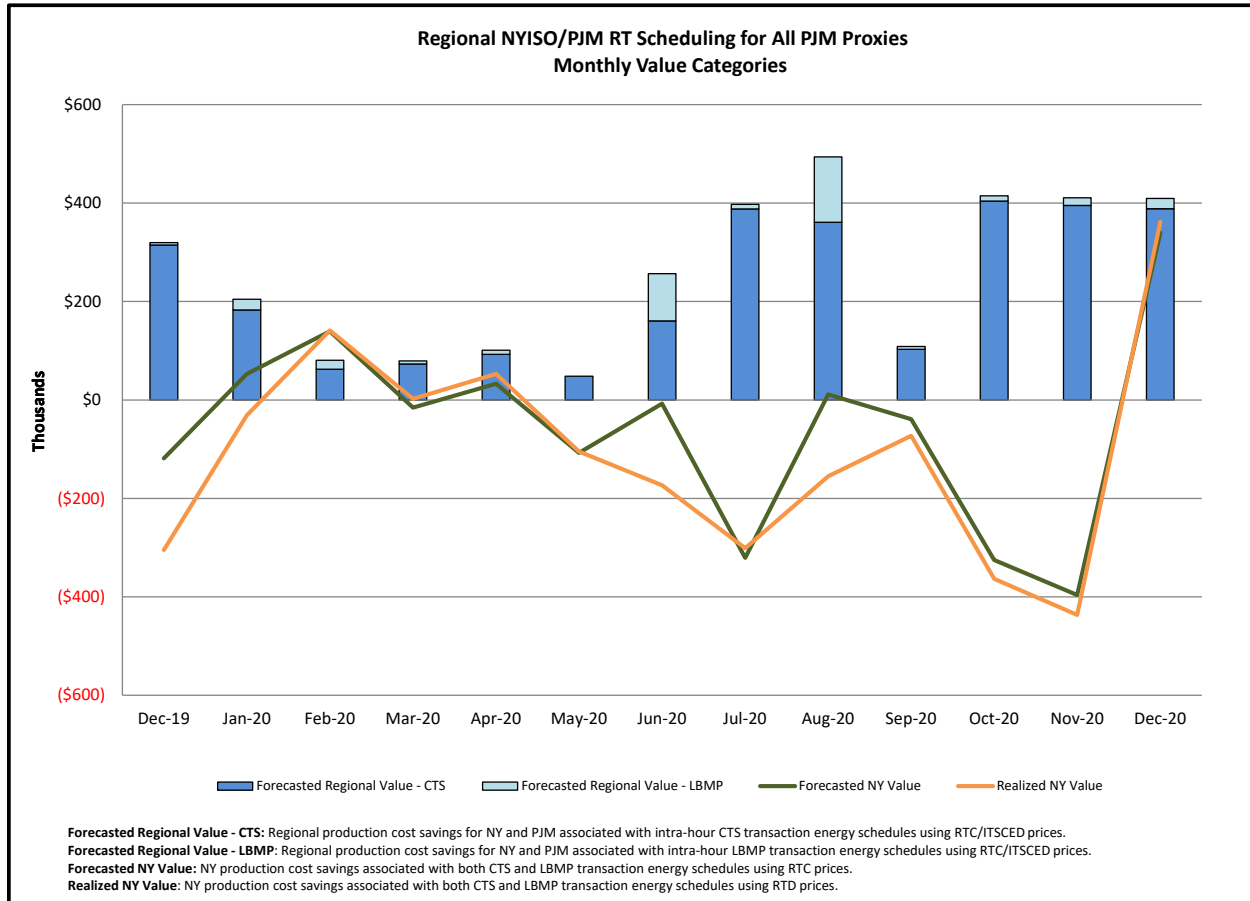


## Broader Regional Market Performance Metrics

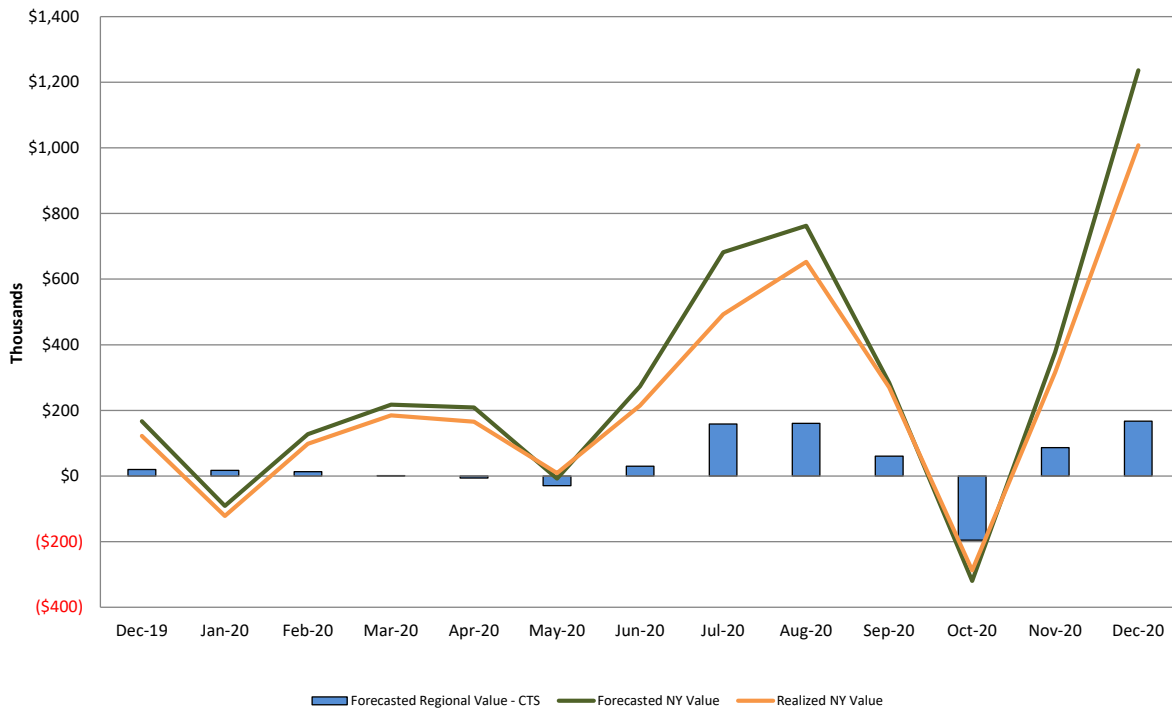


### PAR Interconnection Congestion Coordination

<u>Category</u>	<u>Description</u>
NY	Represents the value NY realizes from Market-to-Market PAR Coordination when experiencing congestion. This is the estimated savings to NY for additional deliveries into NY
RECO	Represents the value of PJM's obligation to deliver 80% of service to RECO load over Ramapo 5018. This is the estimated reduction in NYCA congestion due to the PJM delivery of RECO over Ramapo 5018.
M2M PAR Settlement	Market-to-Market PAR Coordination settlement on coordinated flowgates. Through April 2017 this value was included in the NY and RECO categories. The positive sign convention indicates settlement to NY while the negative indicates settlement to PJM.

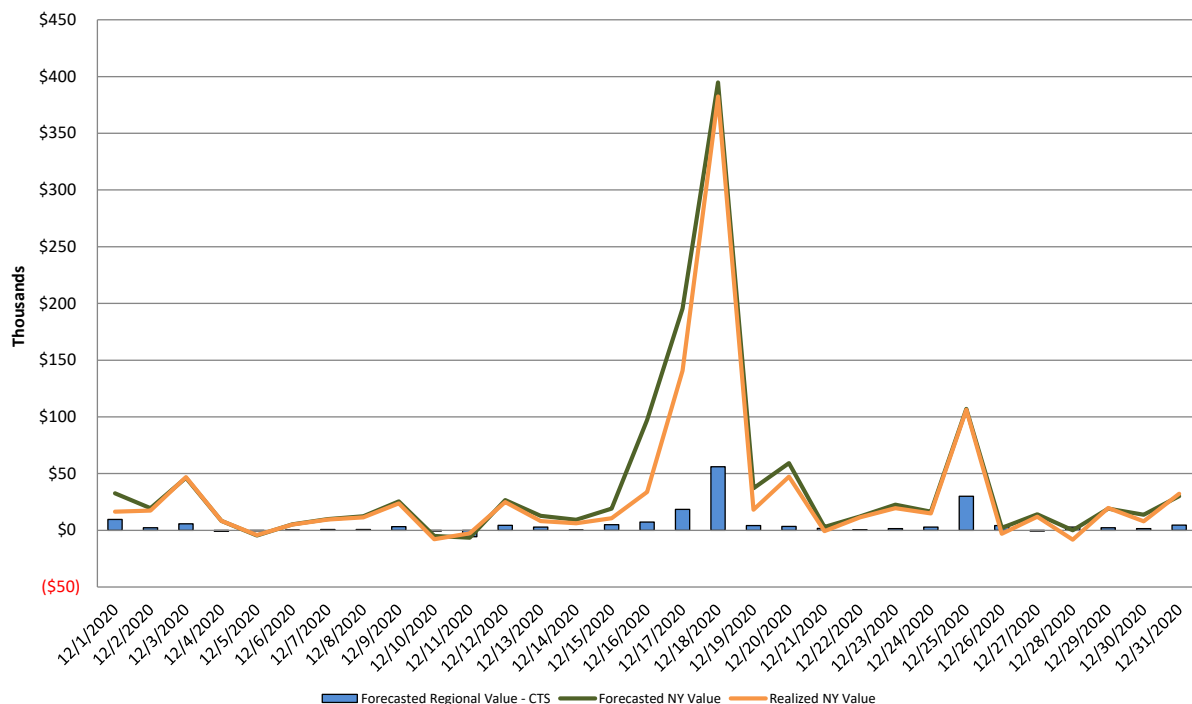


### Regional NYISO/NE RT Scheduling for ISO-NE AC Monthly Value Categories



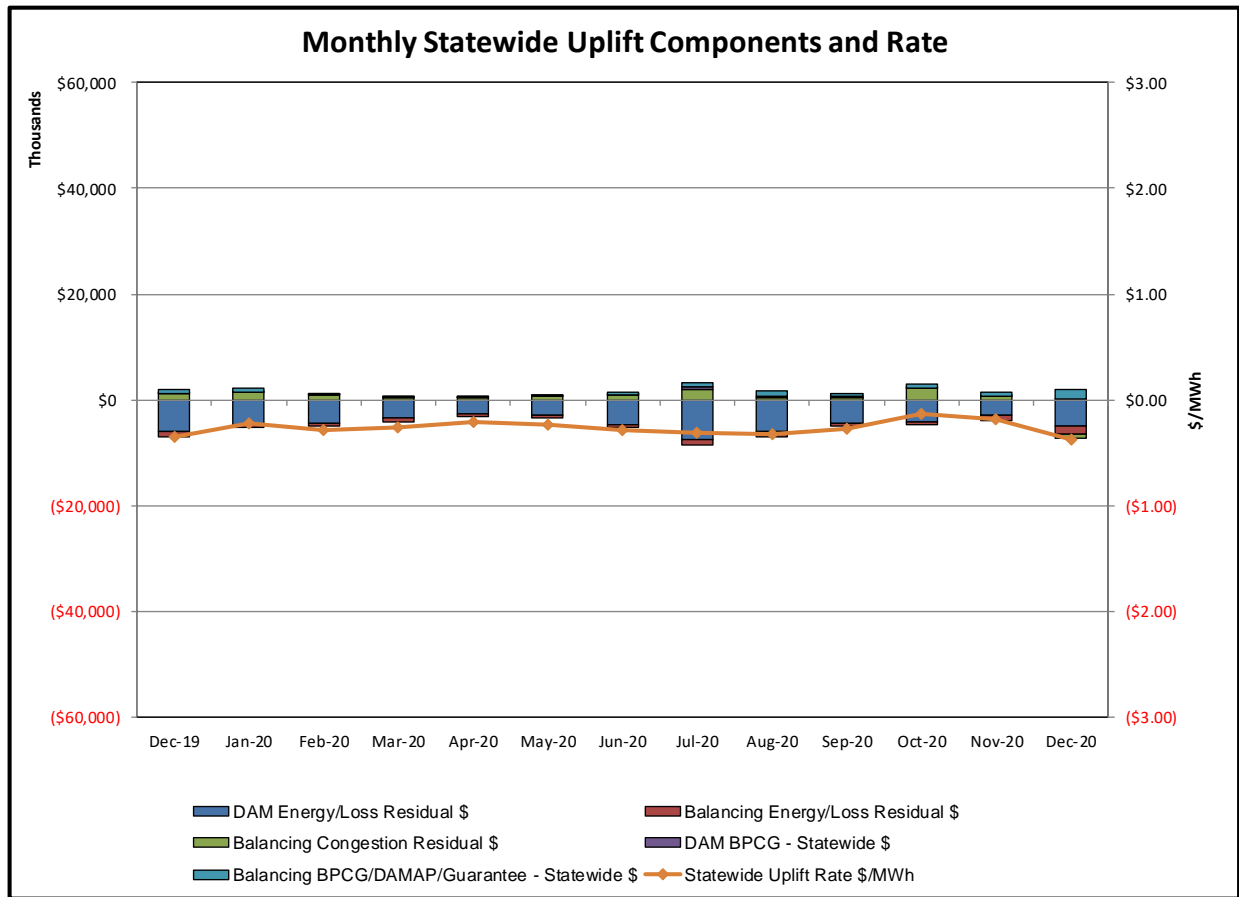
**Forecasted Regional Value - CTS:** Regional production cost savings for NY and NE associated with intra-hour CTS transaction energy schedules using RTC prices and NE forecasted prices.  
**Forecasted NY Value:** NY production cost savings associated with CTS transaction energy schedules using RTC prices.  
**Realized NY Value:** NY production cost savings associated with CTS transaction energy schedules using RTD prices.

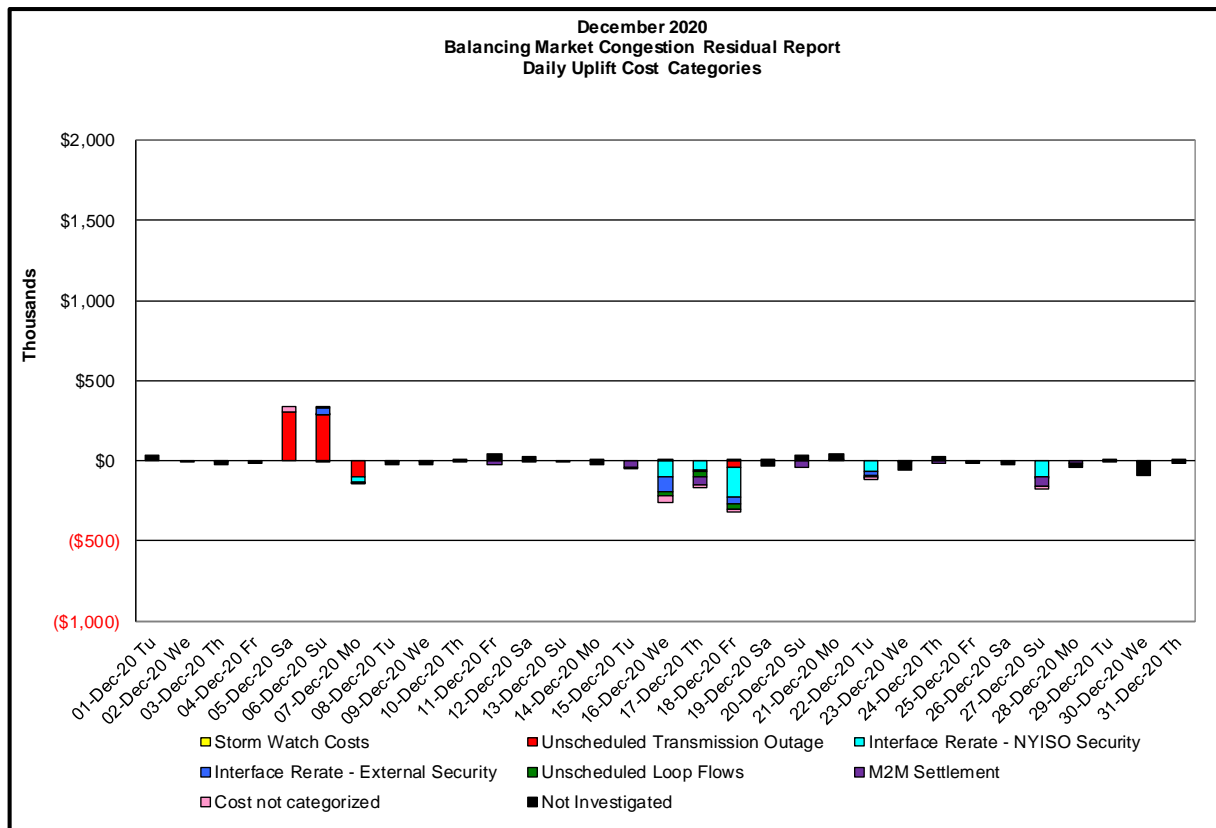
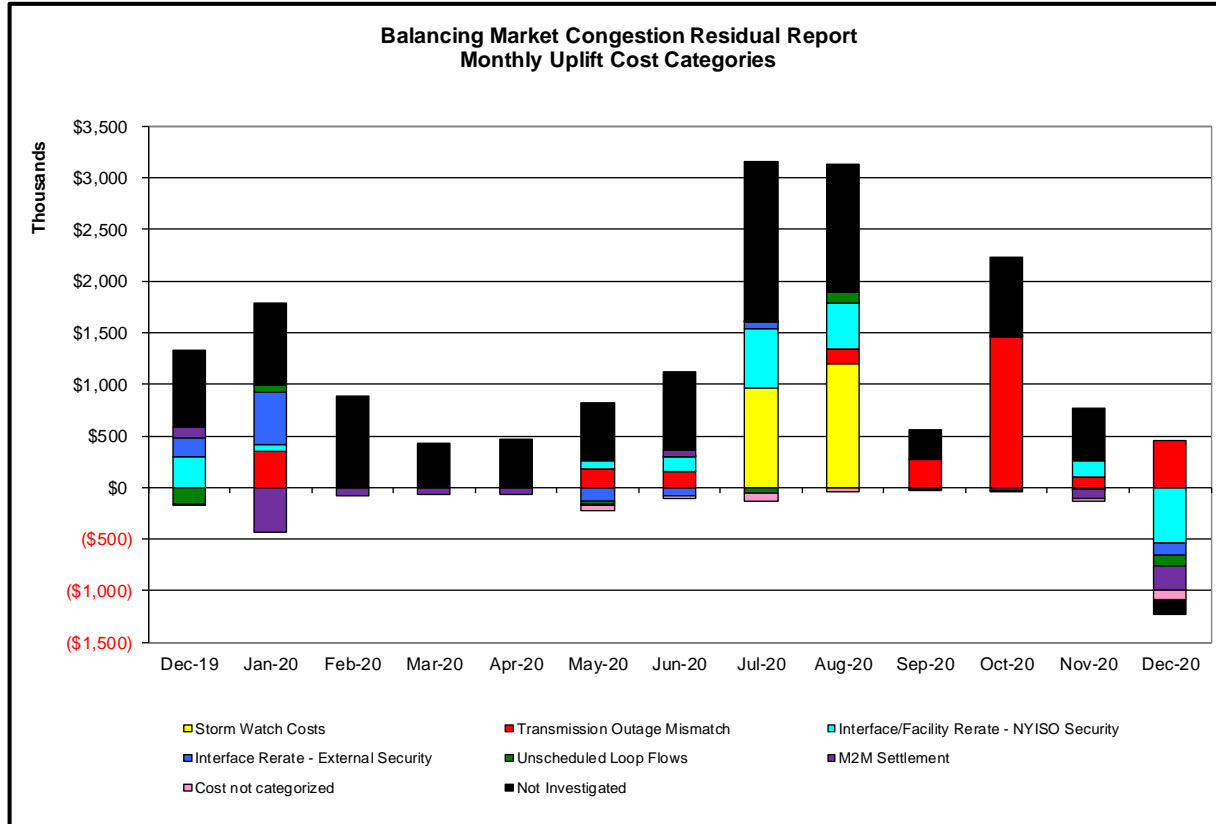
### Regional NYISO/NE RT Scheduling for ISO-NE AC Daily Value Categories December 2020



**Forecasted Regional Value - CTS:** Regional production cost savings for NY and NE associated with intra-hour CTS transaction energy schedules using RTC prices and NE forecasted prices.  
**Forecasted NY Value:** NY production cost savings associated with CTS transaction energy schedules using RTC prices.  
**Realized NY Value:** NY production cost savings associated with CTS transaction energy schedules using RTD prices.

## Market Performance Metrics







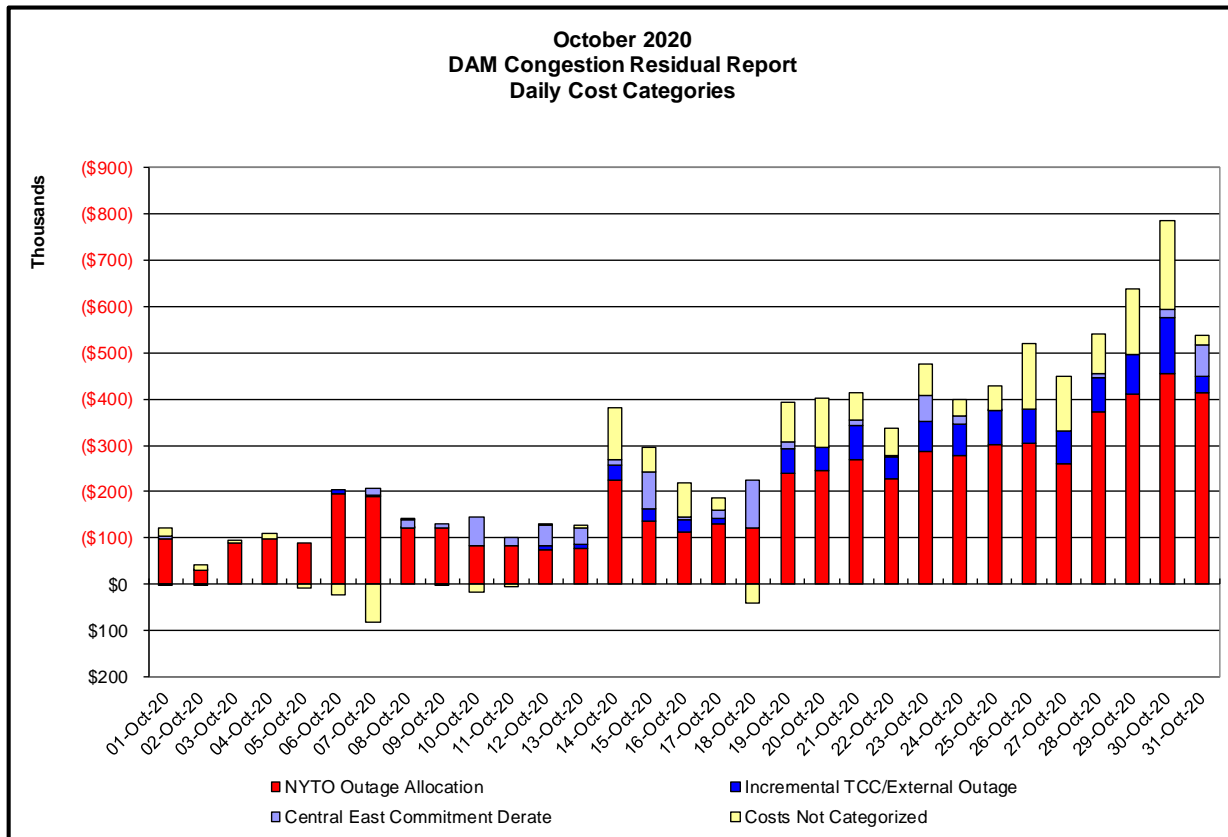
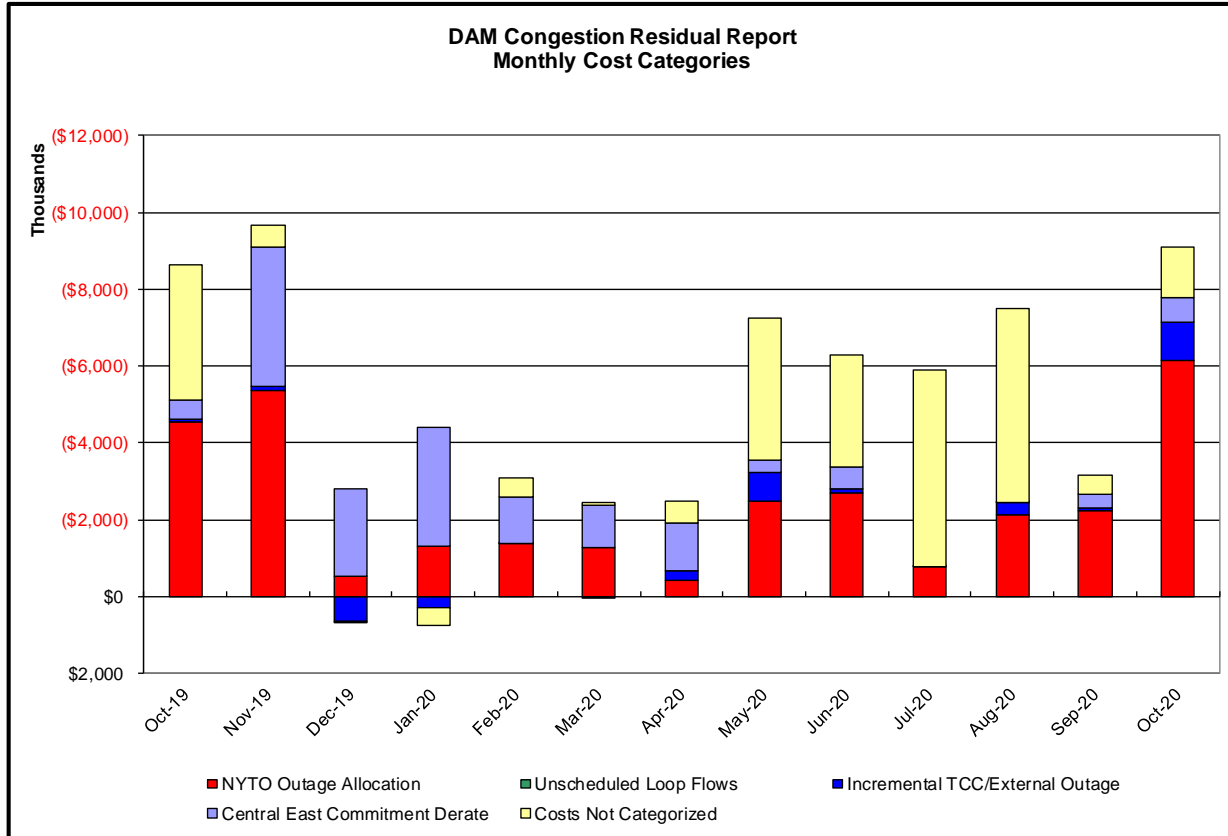
Day's investigated in December: 5,6,7,16,17,18,22,27			
Event	Date (yyyymmdd)	Hours	Description
	12/5/2020	7-23	Forced outage Sprainbrook-East Garden City 345kV (#Y49)
	12/6/2020	10-13,15-21	Forced outage Sprainbrook-East Garden City 345kV (#Y49)
	12/6/2020	12	NYCA ACTIVE DNI Ramp Limit
	12/6/2020	9-11,16	HQ_CHAT - NY (NET) Scheduling Limit
	12/7/2020	8	Early return to service Freshkills-Willowbrook 138kV (#29211)
	12/7/2020	7	Uprate of Niagara Blvd-Packard 115 kV (#181-922) for I/o TWR:PACKARD 77 & 78
	12/16/2020	6	NYCA ACTIVE DNI Ramp Limit
	12/16/2020	1-3,9,23	Uprate Central East
	12/16/2020	6,9,17	NE_AC ACTIVE DNI Ramp Limit
	12/16/2020	3	IESO_AC ACTIVE DNI Ramp Limit
	12/16/2020	1-3,9,23	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	12/17/2020	19,20	NYCA ACTIVE DNI Ramp Limit
	12/17/2020	0,13,14,19-21,23	Uprate Central East
	12/17/2020	20	IESO_AC Scheduling Limit
	12/17/2020	1,4	NE_AC - NY Scheduling Limit
	12/17/2020	8,17	NE_AC ACTIVE DNI Ramp Limit
	12/17/2020	8,16	PJM_AC-NY Scheduling Limit
	12/17/2020	16,19	PJM_AC ACTIVE DNI Ramp Limit
	12/17/2020	13,14,19,20	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	12/18/2020	0,9-15	Early return to service Plattsburgh - Sand Bar 115kV (#PV20)
	12/18/2020	0,9-16,18-23	Uprate Central East
	12/18/2020	14-16	IESO_AC Scheduling Limit
	12/18/2020	18	NE_AC - NY Scheduling Limit
	12/18/2020	3,9,11-14,18	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	12/18/2020	9	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West
	12/22/2020	18	Derate C.Islip - Hauppauge138kV (#889) for TWR:HOLTSVILLE 881& 882& 880
	12/22/2020	6,11-17,19,21	Uprate Central East
	12/22/2020	21	HQ_CHAT - NY Scheduling Limit
	12/22/2020	12-14,19	NE_AC - NY Scheduling Limit
	12/22/2020	6,11,12	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	12/27/2020	7	NYCA ACTIVE DNI Ramp Limit
	12/27/2020	0-4,6,7,16,19,20,22,23	Uprate Central East
	12/27/2020	22	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East

#### Real-Time Balancing Market Congestion Residual (Uplift Cost) Categories

Category	Cost Assignment	Events Types	Event Examples
Storm Watch	Zone J	Thunderstorm Alert (TSA)	TSA Activations
Transmission Outage Mismatch	Market-wide	Changes in DAM to RTM transfers related to transmission outage mismatch	Forced Line Outage, Unit AVR Outages, Early Line Return from Outage
Interface/Facility Rerate - NYISO Security	Market-wide	Changes in DAM to RTM transfers not related to transmission outage	Interface/Facility Rerates due to RTM voltages
Interface Rerate - External Security	Market-wide	Changes in DAM to RTM transfers related to External Control Area Security Events	TLR Events, External Transaction Curtailments
Unscheduled Loop Flows	Market-wide	Changes in DAM to RTM unscheduled loop flows impacting NYISO Interface transmission constraints	DAM to RTM Lake Erie Loop Flows exceeding +/- 125 MW
M2M Settlement	Market-wide	Settlement result inclusive of coordinated redispatch and Ramapo flowgates	

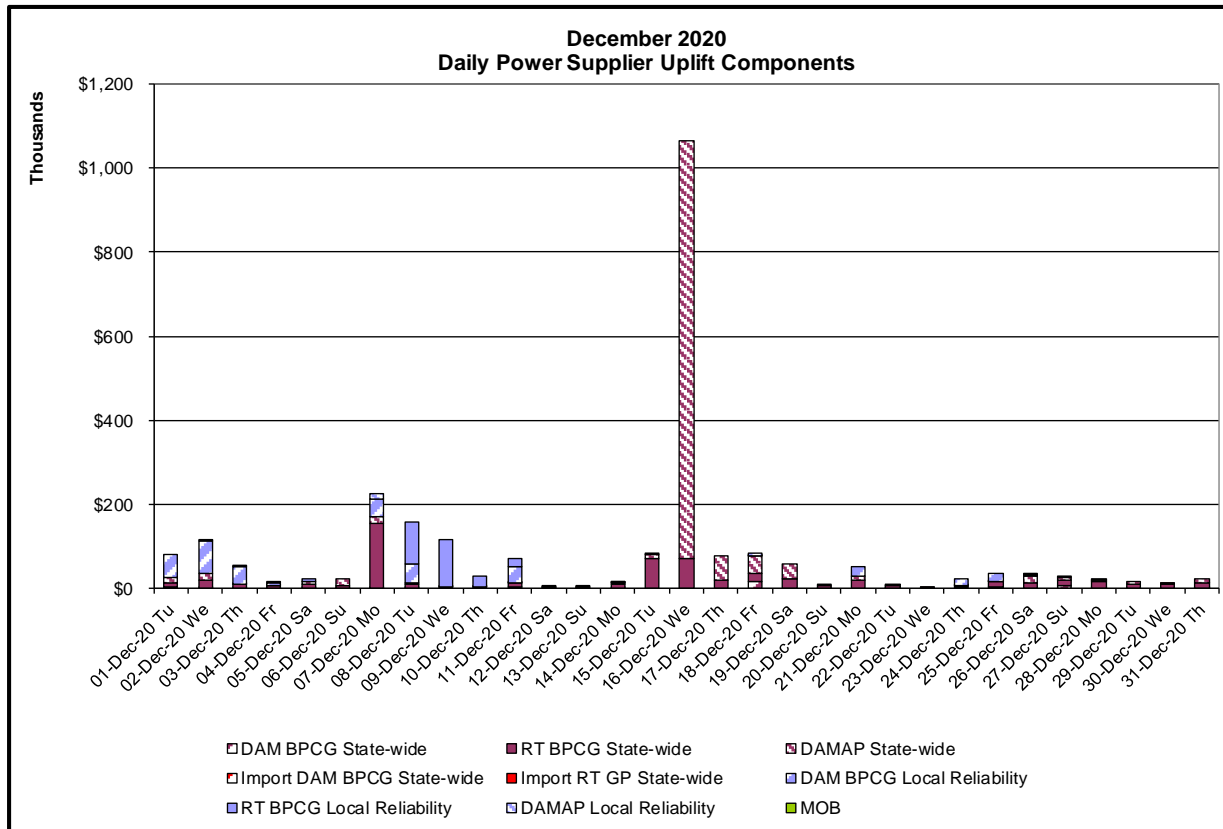
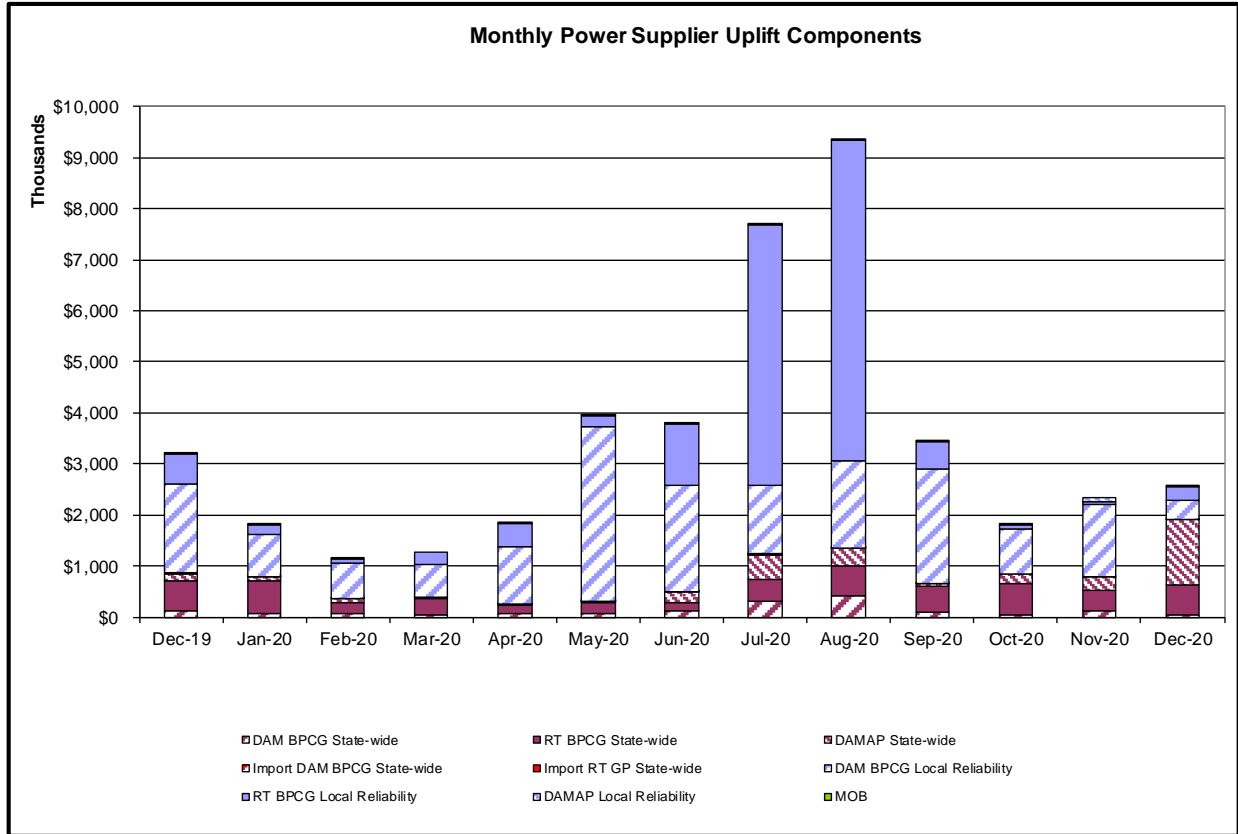
#### Monthly Balancing Market Congestion Report Assumptions/Notes

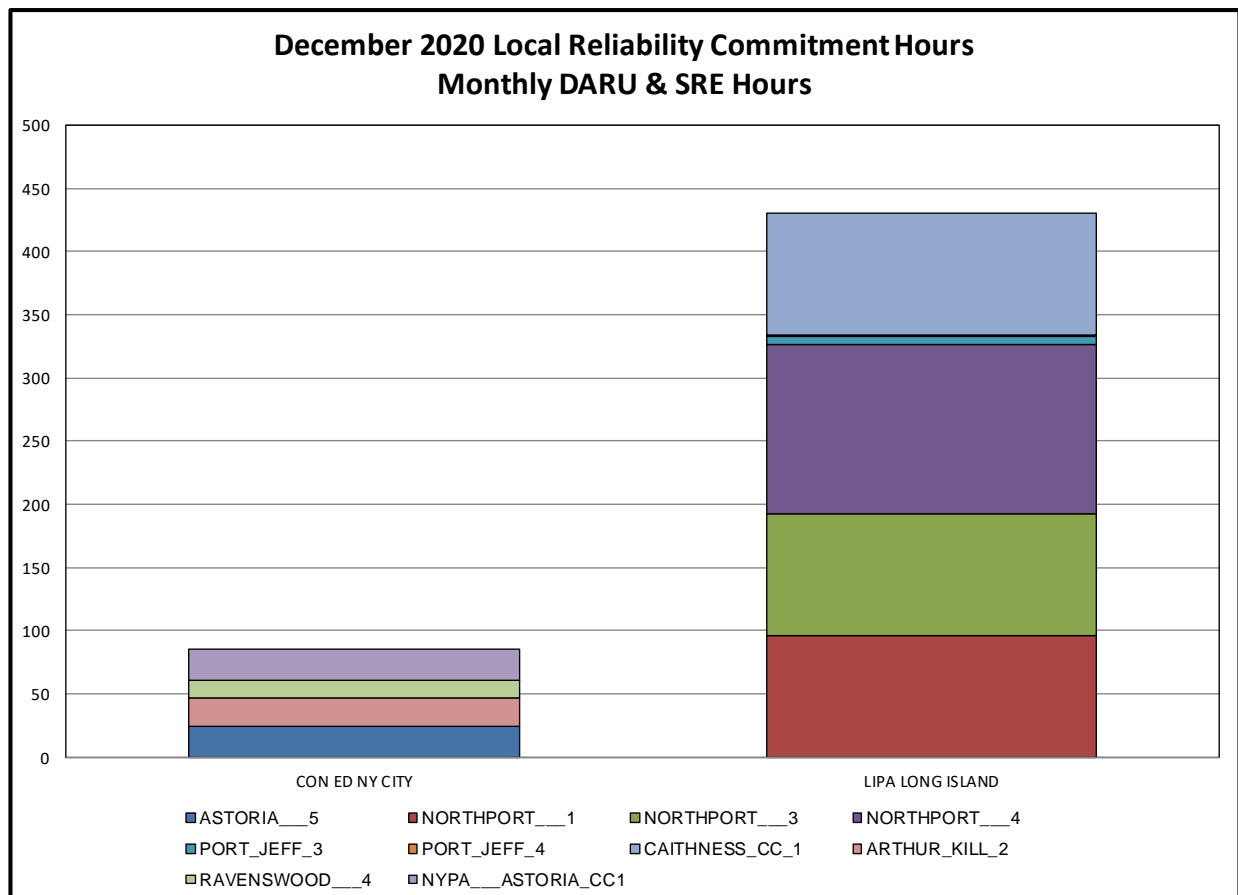
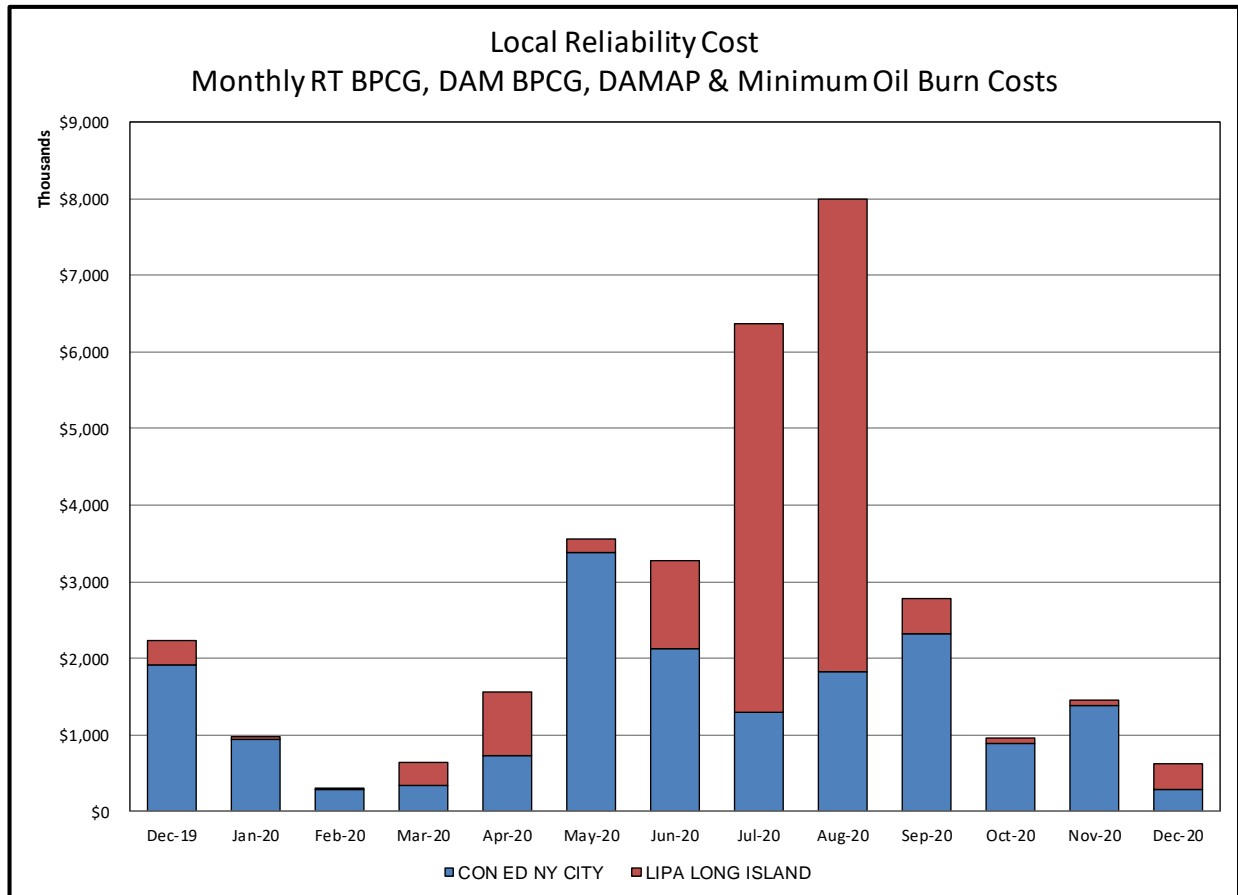
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

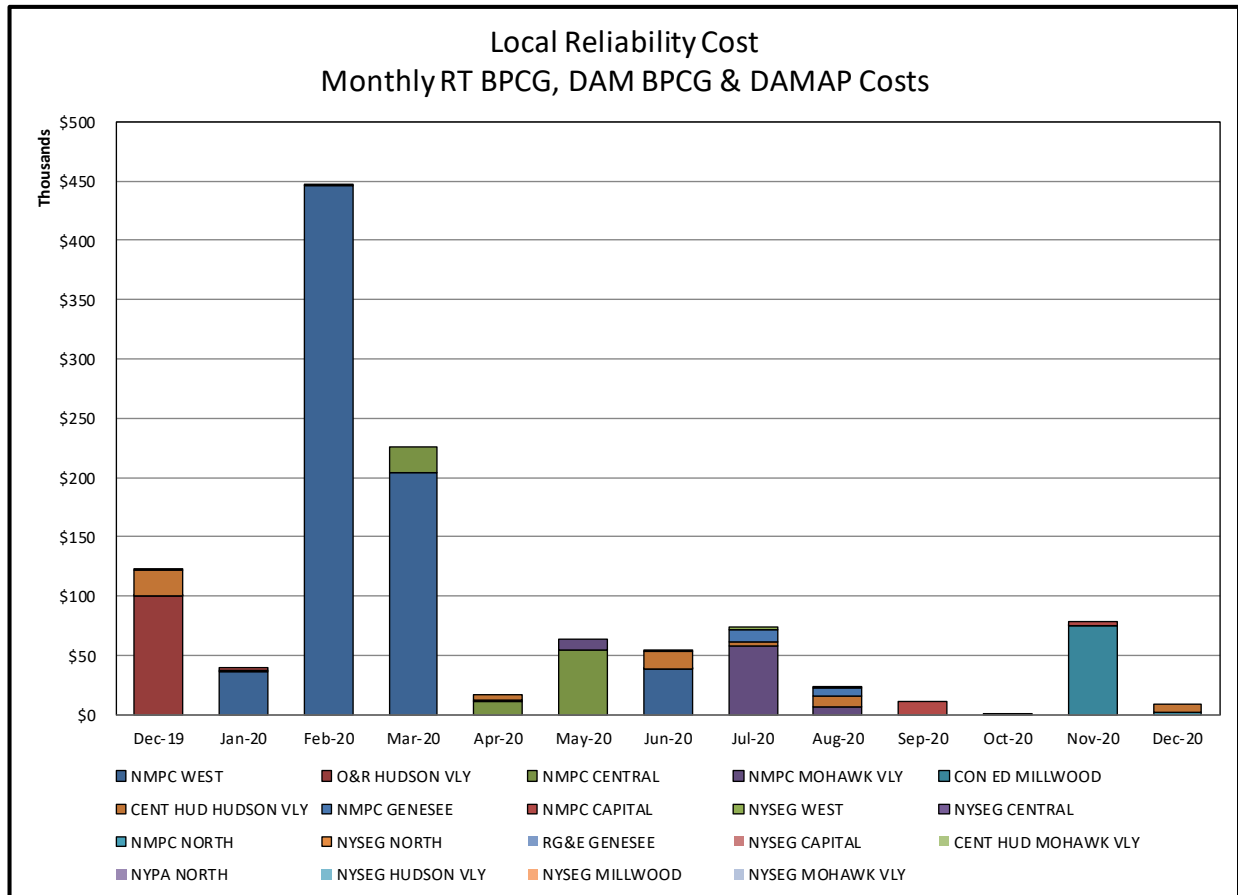


### Day-Ahead Market Congestion Residual Categories

<u>Category</u>	<u>Cost Assignment</u>	<u>Events Types</u>	<u>Event Examples</u>
NYTO Outage Allocation	Responsible TO	Direct allocation to NYTO's responsible for transmission equipment status change.	DAM scheduled outage for equipment modeled in-service for the TCC Auction.
Incremental TCC/External Outage Impacts	All TO by Monthly Allocation Factor	Allocation associated with transmission equipment status change caused by change in status of external equipment or change in status of equipment associated with Incremental TCC.	Tie line required out-of-service by TO of neighboring control area.
Central East Commitment Derate	All TO by Monthly Allocation Factor	Reductions in the DAM Central East_VC limit as compared to the TCC Auction limit, which are not associated with transmission line outages.	

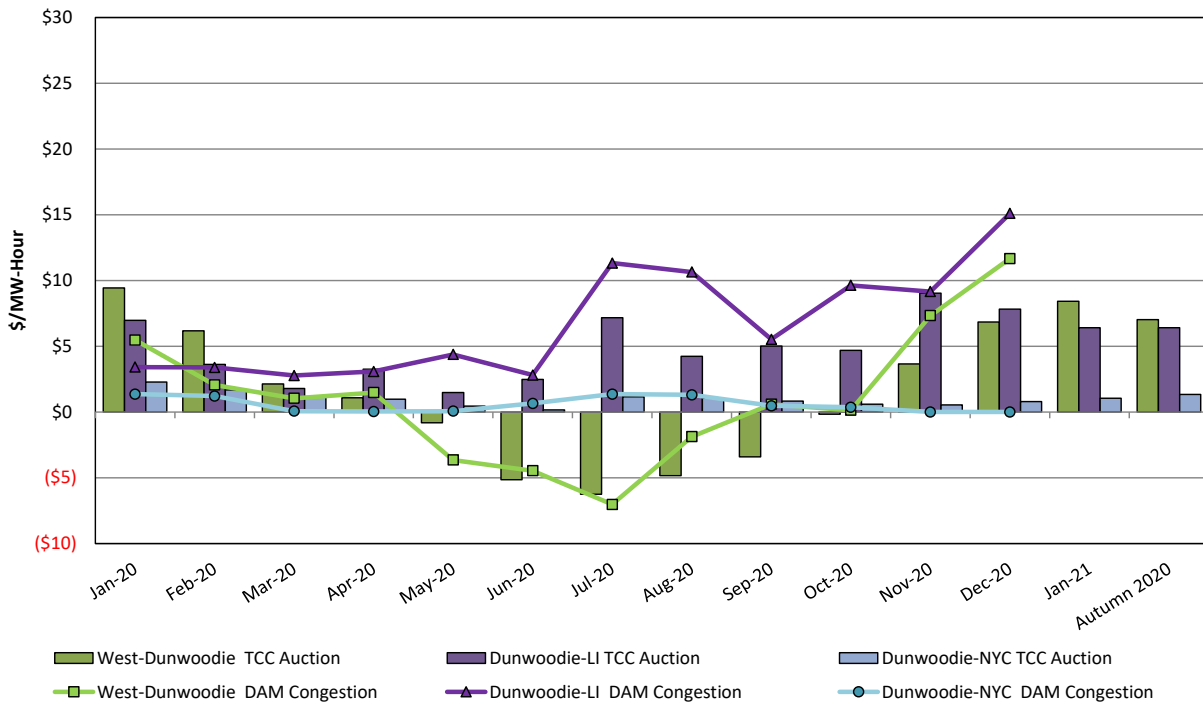






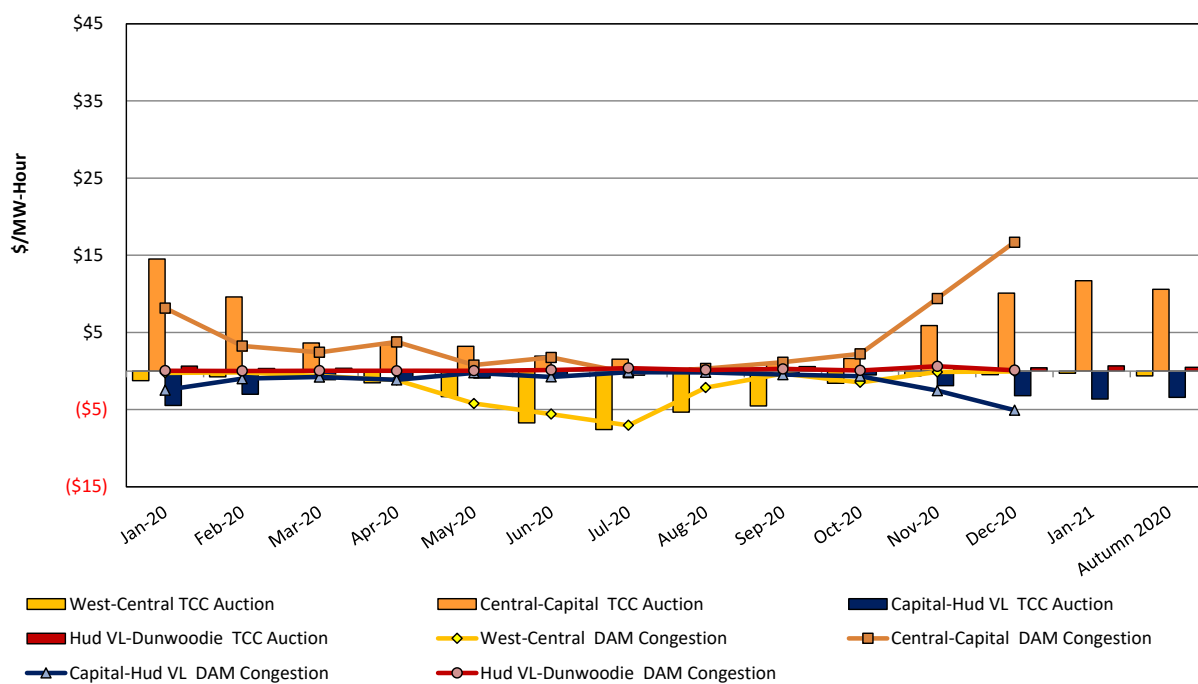
## TCC & Day Ahead Market Selected Internal Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Autumn 2020 Centralized TCC Auction Six-Month Average



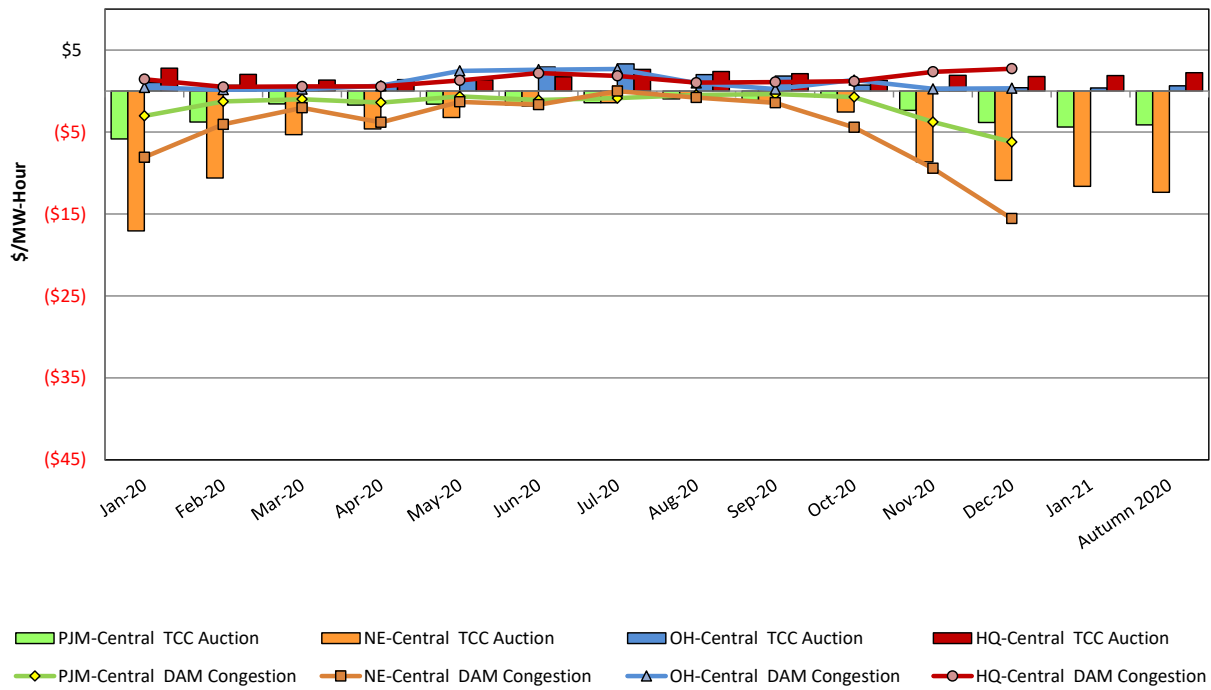
## TCC & Day Ahead Market West to Dunwoodie Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Autumn 2020 Centralized TCC Auction Six-Month Average

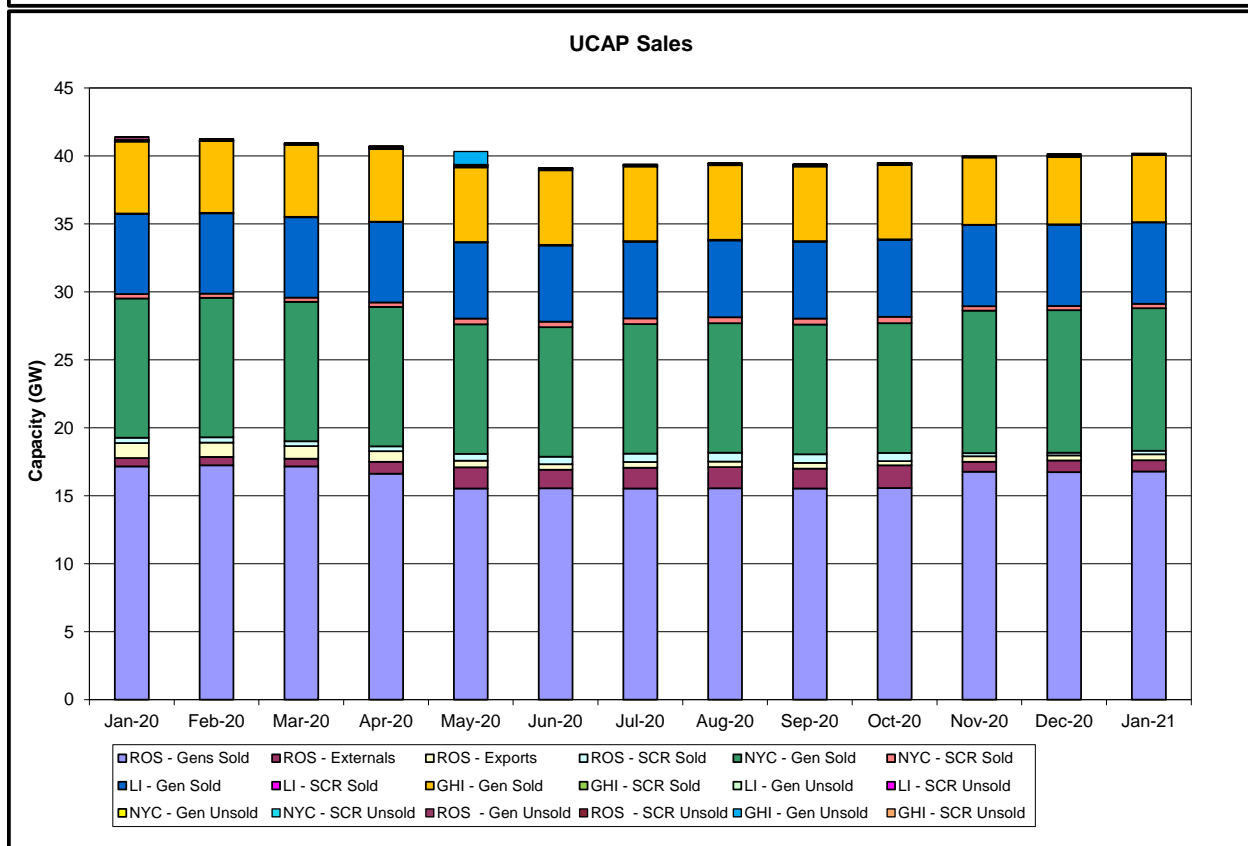
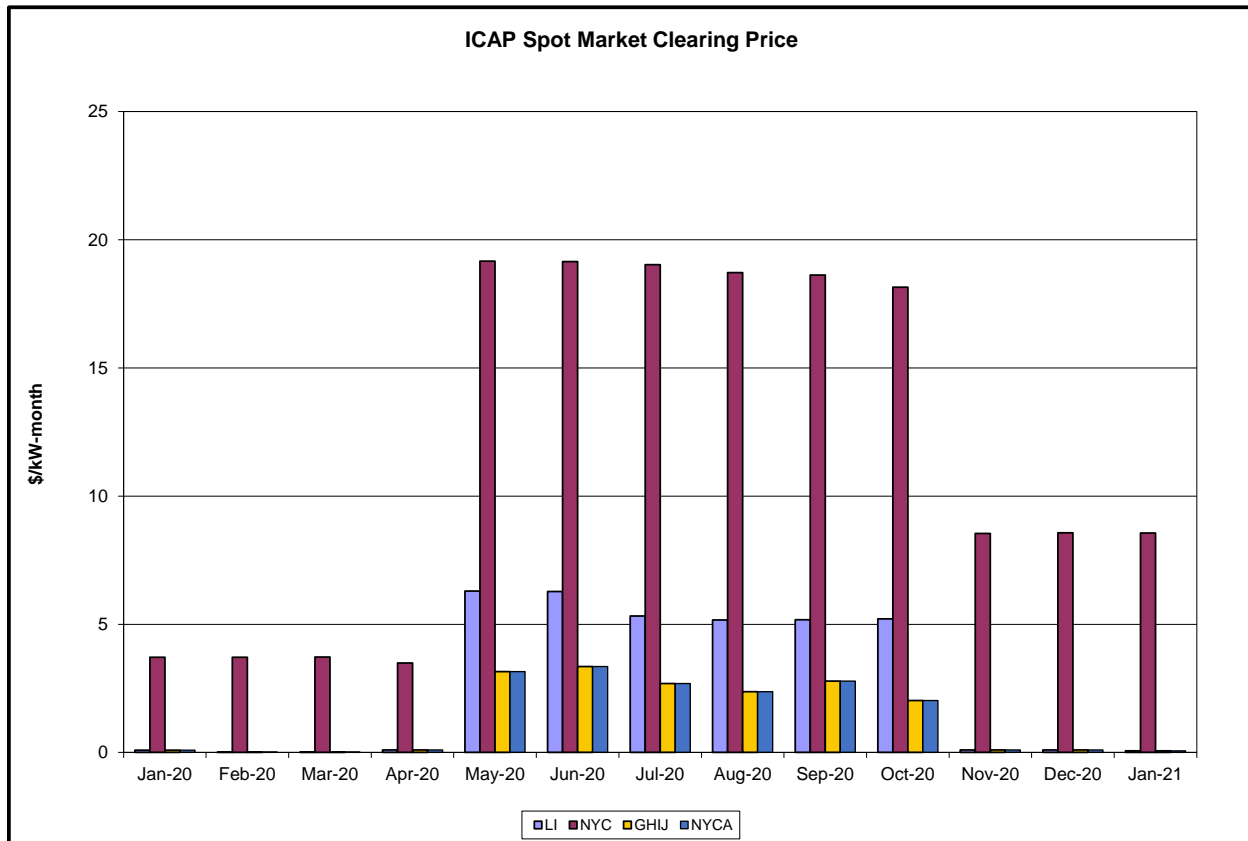


## TCC & Day Ahead Market Selected External Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Autumn 2020 Centralized TCC Auction Six-Month Average





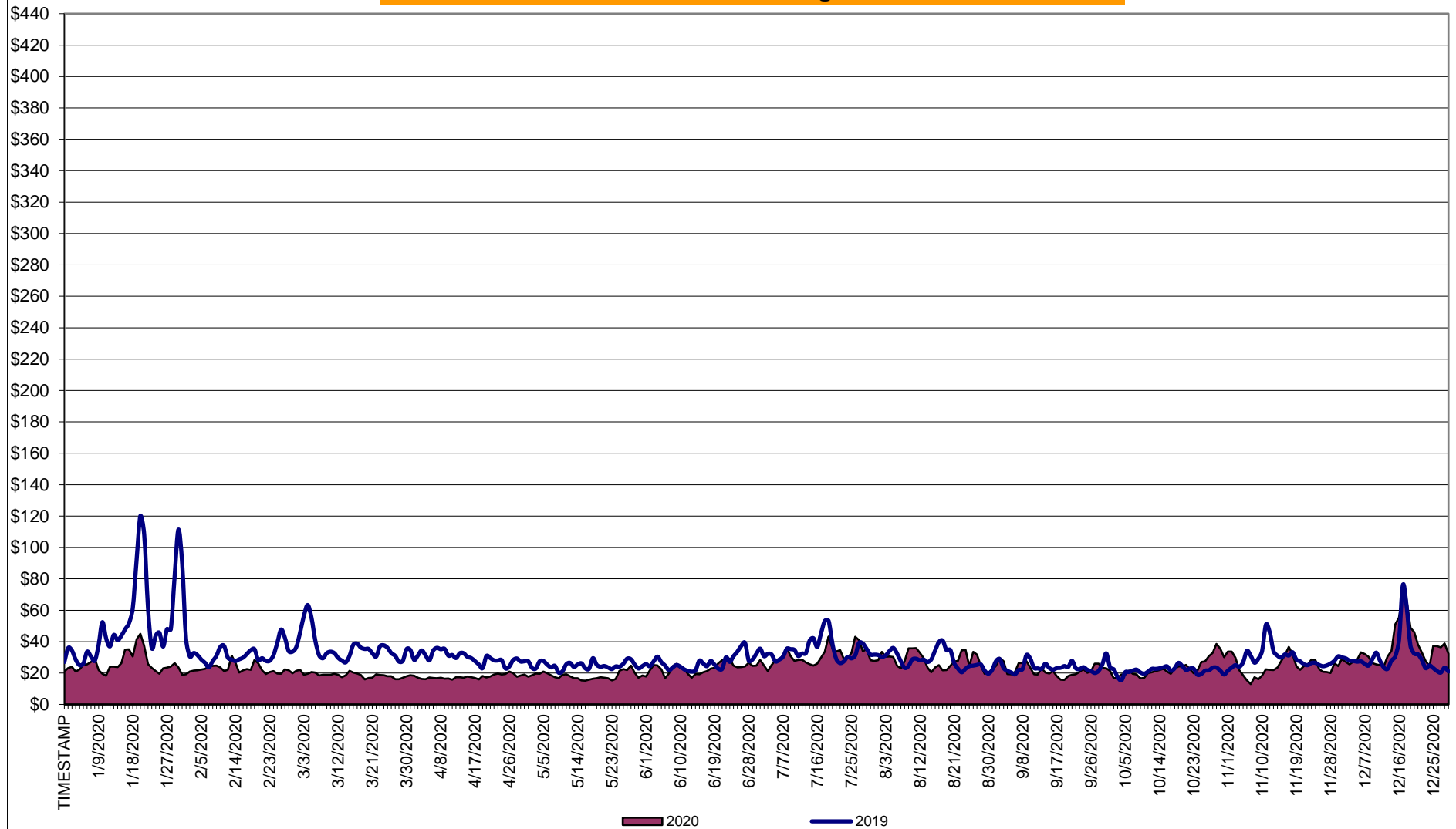


# Market Performance Highlights

## December 2020

- LBMP for December is \$33.70/MWh; higher than \$22.57/MWh in November 2020 and \$29.52/MWh in December 2019.
  - Day Ahead Load Weighted LBMPs and Real Time Load Weighted LBMPs are higher compared to November.
- December 2020 average year-to-date monthly cost of \$25.70/MWh is a 21% decrease from \$32.59/MWh in December 2019.
- Average daily sendout is 417 GWh/day in December; higher than 377 GWh/day in November 2020 and lower than 427 GWh/day in December 2019.
- Natural gas prices and distillate prices are higher compared to the previous month.
  - Natural Gas (Transco Z6 NY) was \$2.78/MMBtu, up from \$1.47/MMBtu in November.
  - Natural gas prices are up 8.9% year-over-year.
  - Jet Kerosene Gulf Coast was \$9.81/MMBtu, up from \$8.39/MMBtu in November.
  - Ultra Low Sulfur No.2 Diesel NY Harbor was \$10.33/MMBtu, up from \$8.87/MMBtu in November.
  - Distillate prices are down 28.7% year-over-year.
- Uplift per MWh is lower compared to the previous month.
  - Uplift (not including NYISO cost of operations) is (\$0.33)/MWh; lower than (\$0.07)/MWh in November.
    - Local Reliability Share is \$0.05/MWh, lower than \$0.12/MWh in November.
    - Statewide Share is (\$0.38)/MWh, lower than (\$0.19)/MWh in November.
  - TSA \$ per NYC MWh is \$0.00/MWh.
  - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are lower than November.

**Daily NYISO Average Cost/MWh (Energy & Ancillary Services)\***  
**2019 Annual Average \$32.59/MWh**  
**December 2019 YTD Average \$32.59/MWh**  
**December 2020 YTD Average \$25.62/MWh**



\* Excludes ICAP payments.

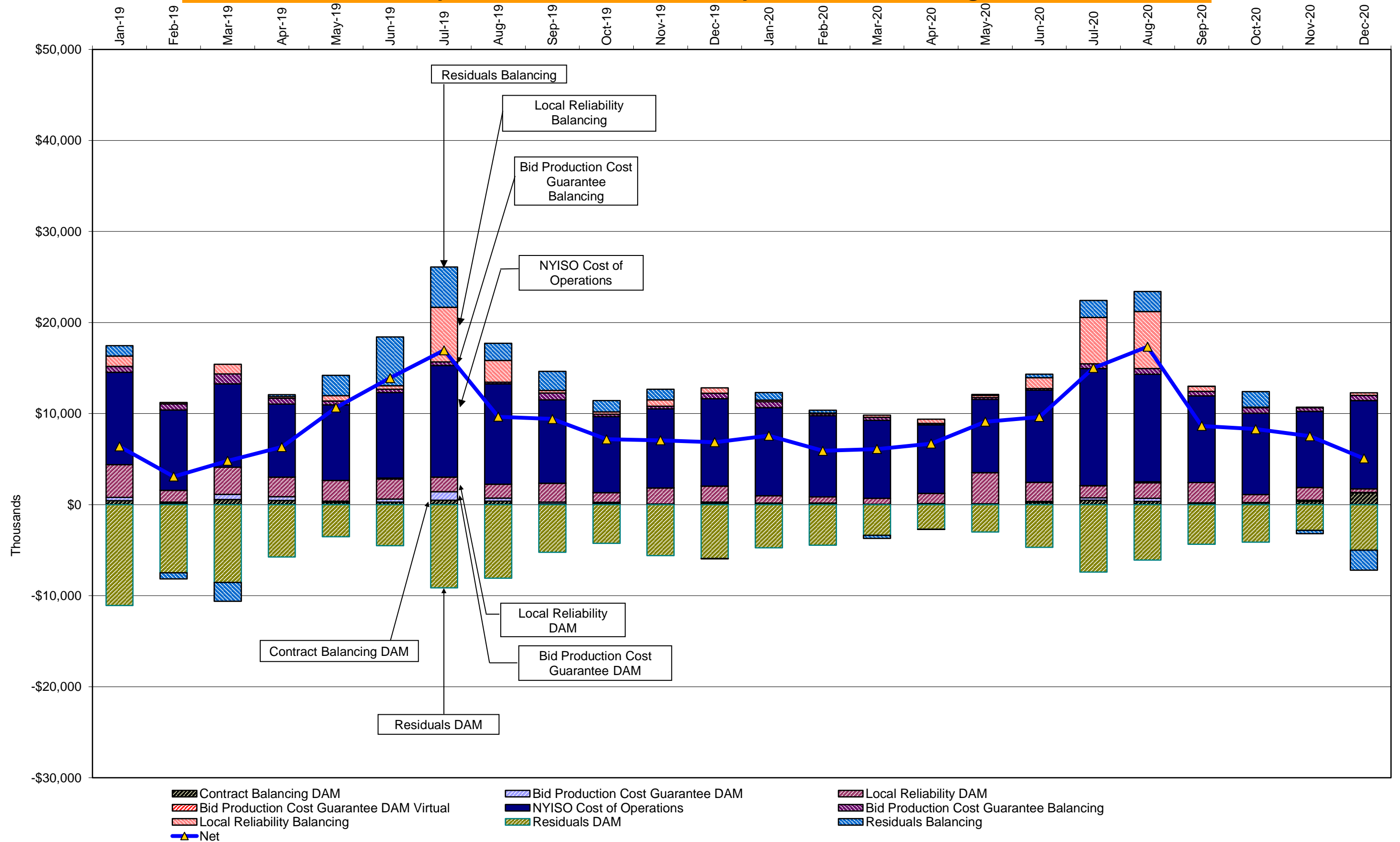
**NYISO Average Cost/MWh (Energy and Ancillary Services) \***  
**from the LBMP Customer point of view**

<b>2020</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	24.77	21.11	17.11	15.77	16.14	21.36	28.86	26.13	20.52	20.90	22.57	33.70
NTAC	0.91	0.70	0.86	0.91	1.05	0.95	1.24	1.03	0.78	0.84	1.05	1.35
Reserve	0.46	0.43	0.47	0.50	0.53	0.45	0.39	0.39	0.42	0.61	0.51	0.49
Regulation	0.09	0.08	0.09	0.08	0.10	0.08	0.06	0.07	0.09	0.11	0.09	0.08
NYISO Cost of Operations	0.68	0.69	0.68	0.66	0.71	0.74	0.76	0.75	0.74	0.73	0.69	0.70
FERC Fee Recovery	0.08	0.09	0.09	0.10	0.11	0.09	0.06	0.07	0.09	0.10	0.10	0.08
Uplift	(0.15)	(0.23)	(0.19)	(0.08)	0.09	(0.05)	0.07	0.17	(0.07)	(0.05)	(0.07)	(0.33)
Uplift: Local Reliability Share	0.07	0.06	0.07	0.14	0.32	0.24	0.38	0.50	0.22	0.08	0.12	0.05
Uplift: Statewide Share	(0.22)	(0.29)	(0.26)	(0.21)	(0.23)	(0.29)	(0.31)	(0.33)	(0.28)	(0.13)	(0.19)	(0.38)
Voltage Support and Black Start	0.44	0.44	0.44	0.43	0.45	0.45	0.46	0.46	0.45	0.45	0.44	0.45
<b>Avg Monthly Cost</b>	27.29	23.32	19.55	18.38	19.16	24.09	31.91	29.07	23.03	23.70	25.40	36.52
 Avg YTD Cost	27.29	25.40	23.48	22.38	21.82	22.21	24.11	24.88	24.69	24.62	24.68	25.70
 TSA \$ per NYC MWh	0.00	0.00	0.00	0.00	0.00	0.04	0.18	0.54	0.00	0.00	0.00	0.00
 <b>2019</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	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
<b>Avg Monthly Cost</b>	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  
Prepared: 1/11/2021 10:56 AM

As of Jan. 2016, the annual FERC fee is recovered separately from Cost of Ops.

## NYISO Dollar Flows - Uplift - OATT Schedule 1 components - Data through December 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

<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>
<b><u>Day Ahead Market MWh</u></b>	14,194,609	13,172,669	12,495,999	11,372,390	11,462,320	13,825,178	16,629,337	15,671,629	13,122,542	12,338,638	12,157,281	13,748,181
DAM LSE Internal LBMP Energy Sales	56%	56%	59%	54%	55%	58%	65%	63%	60%	56%	57%	59%
DAM External TC LBMP Energy Sales	6%	5%	5%	7%	4%	3%	2%	4%	4%	5%	5%	5%
DAM Bilateral - Internal Bilaterals	30%	30%	27%	30%	31%	29%	26%	27%	30%	32%	33%	31%
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	6%	6%	6%	5%	3%	3%	2%	3%	3%	2%
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%
DAM Bilateral - Wheel Through Bilaterals	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	0%	2%
<b><u>Balancing Energy Market MWh</u></b>	-26,753	-142,168	144,076	22,599	-137,565	-180,149	403,914	212,307	-173,115	-89,451	-54,598	156,891
Balancing Energy LSE Internal LBMP Energy Sales	-1080%	-221%	-85%	-884%	-187%	-134%	85%	99%	-95%	-220%	-459%	-12%
Balancing Energy External TC LBMP Energy Sales	1156%	181%	240%	1233%	137%	99%	35%	43%	104%	187%	382%	107%
Balancing Energy Bilateral - Internal Bilaterals	62%	5%	12%	55%	12%	7%	2%	1%	0%	4%	3%	7%
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	9%	6%
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	127%	16%	18%	92%	12%	5%	2%	4%	7%	17%	33%	11%
Balancing Energy Bilateral - Wheel Through Bilaterals	-365%	-81%	-85%	-396%	-74%	-77%	-24%	-46%	-116%	-107%	-69%	-19%
<b><u>Transactions Summary</u></b>												
LBMP	62%	62%	65%	61%	59%	62%	68%	67%	64%	61%	62%	64%
Internal Bilaterals	31%	31%	27%	30%	32%	30%	26%	27%	31%	32%	33%	31%
Import Bilaterals	5%	5%	6%	6%	6%	5%	3%	3%	2%	3%	3%	2%
Export Bilaterals	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%
Wheels Through	0%	1%	0%	0%	0%	1%	1%	1%	1%	2%	0%	2%
<b><u>Market Share of Total Load</u></b>												
Day Ahead Market	100.2%	101.1%	98.9%	99.8%	101.2%	101.3%	97.6%	98.7%	101.3%	100.7%	100.5%	98.9%
Balancing Energy +	-0.2%	-1.1%	1.1%	0.2%	-1.2%	-1.3%	2.4%	1.3%	-1.3%	-0.7%	-0.5%	1.1%
Total MWH	14,167,856	13,030,501	12,640,075	11,394,989	11,324,755	13,645,029	17,033,251	15,883,935	12,949,426	12,249,187	12,102,682	13,905,071
Average Daily Energy Sendout/Month GWh	423	417	375	344	345	430	530	489	408	367	377	417

<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>
<b><u>Day Ahead Market MWh</u></b>	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%
<b><u>Balancing Energy Market MWh</u></b>	-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%
<b><u>Transactions Summary</u></b>												
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%
<b><u>Market Share of Total Load</u></b>												
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>
<b><u>DAY AHEAD LBMP</u></b>												
Price *	\$22.11	\$19.48	\$16.07	\$14.67	\$14.97	\$19.15	\$26.30	\$23.61	\$18.88	\$19.40	\$20.07	\$30.45
Standard Deviation	\$7.43	\$4.45	\$3.21	\$2.71	\$3.55	\$6.40	\$10.45	\$8.56	\$5.41	\$6.36	\$7.15	\$12.35
Load Weighted Price **	\$22.77	\$19.84	\$16.36	\$14.86	\$15.37	\$20.28	\$27.94	\$25.01	\$19.72	\$19.91	\$20.75	\$31.36
<b><u>RTC LBMP</u></b>												
Price *	\$22.86	\$21.48	\$16.48	\$16.23	\$17.46	\$20.84	\$30.70	\$26.86	\$19.90	\$23.35	\$20.39	\$34.01
Standard Deviation	\$9.33	\$53.30	\$4.84	\$5.17	\$8.61	\$11.26	\$17.92	\$17.17	\$11.37	\$14.44	\$14.19	\$25.41
Load Weighted Price **	\$23.50	\$21.94	\$16.74	\$16.44	\$17.89	\$22.01	\$32.92	\$29.01	\$20.99	\$24.25	\$21.23	\$35.28
<b><u>REAL TIME LBMP</u></b>												
Price *	\$22.53	\$19.29	\$16.24	\$14.14	\$14.90	\$18.35	\$26.56	\$24.68	\$18.63	\$20.44	\$18.96	\$32.72
Standard Deviation	\$11.90	\$8.68	\$7.48	\$6.98	\$8.35	\$9.33	\$16.45	\$13.95	\$7.15	\$12.01	\$12.66	\$24.29
Load Weighted Price **	\$23.20	\$19.68	\$16.58	\$14.35	\$15.42	\$19.46	\$28.27	\$26.53	\$19.54	\$21.15	\$19.84	\$34.04
Average Daily Energy Sendout/Month GWh	423	417	375	344	345	430	530	489	408	367	377	417

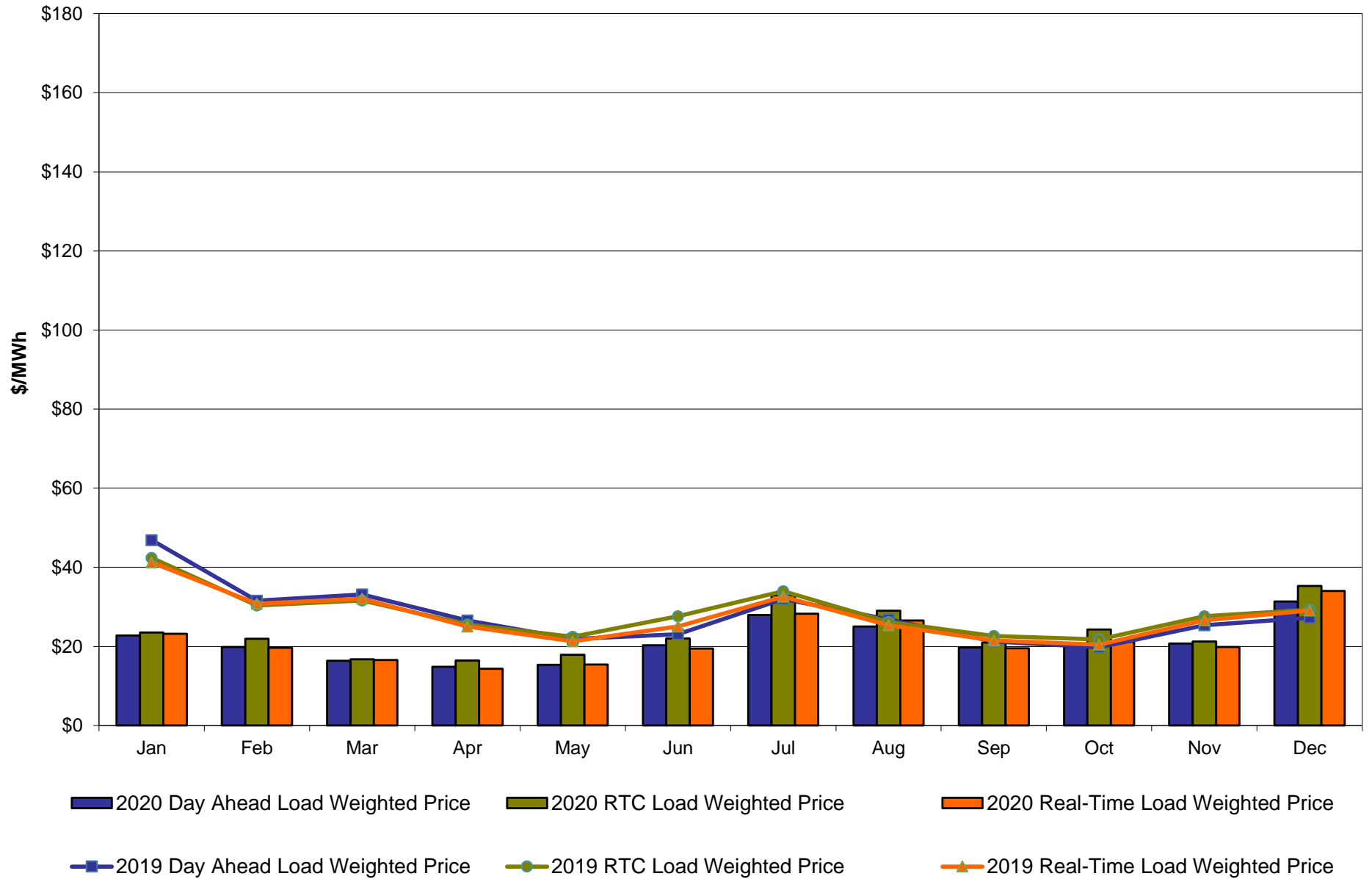
### **NYISO Markets 2019 Energy Statistics**

	<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>
<b><u>DAY AHEAD LBMP</u></b>												
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
<b><u>RTC LBMP</u></b>												
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
<b><u>REAL TIME LBMP</u></b>												
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**



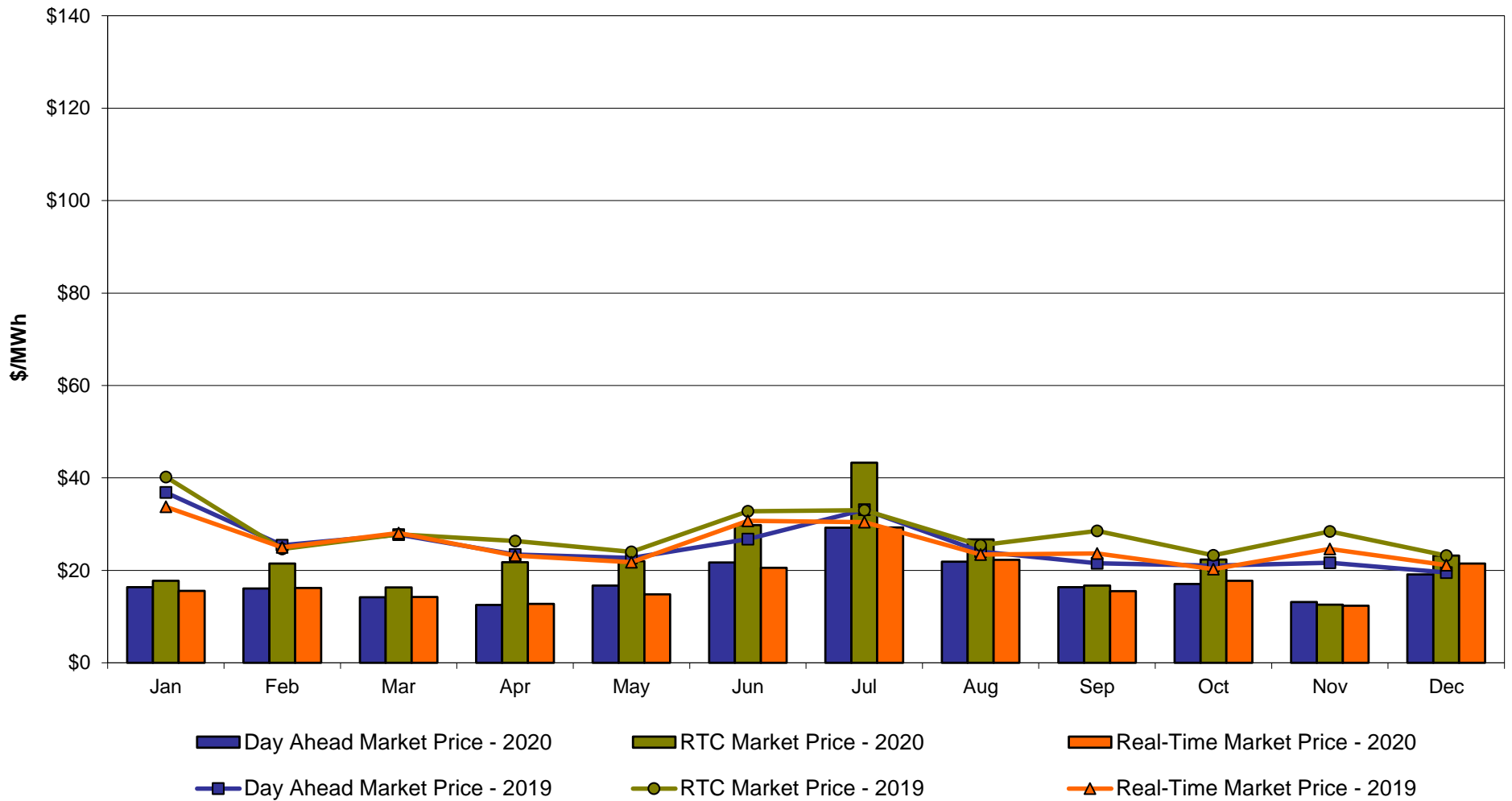


**December 2020 Zonal LBMP Statistics for NYISO (\$/MWh)**

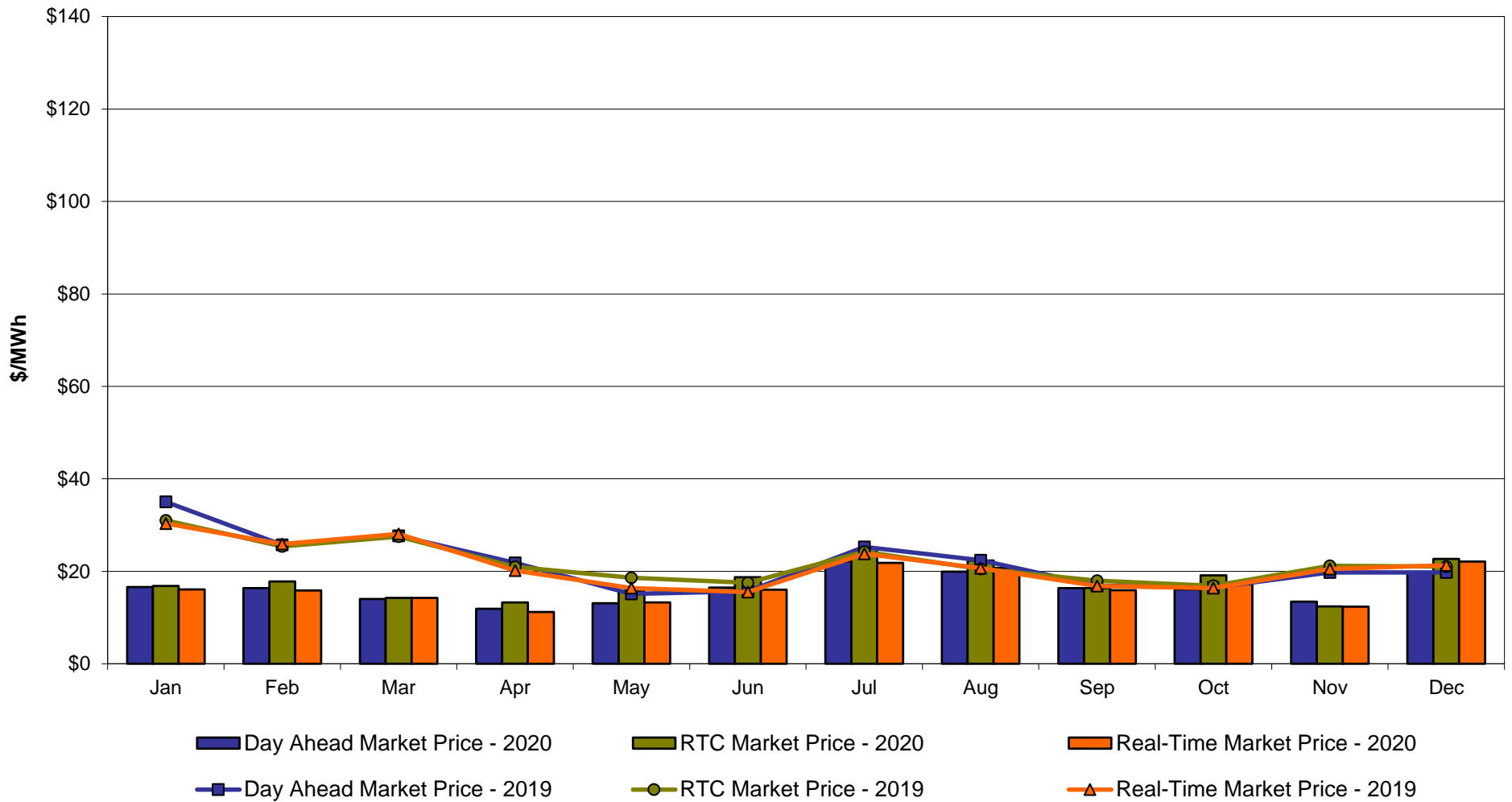
	<b><u>WEST</u></b> <b><u>Zone A</u></b>	<b><u>GENESEE</u></b> <b><u>Zone B</u></b>	<b><u>NORTH</u></b> <b><u>Zone D</u></b>	<b><u>CENTRAL</u></b> <b><u>Zone C</u></b>	<b><u>MOHAWK</u></b> <b><u>VALLEY</u></b> <b><u>Zone E</u></b>	<b><u>CAPITAL</u></b> <b><u>Zone F</u></b>	<b><u>HUDSON</u></b> <b><u>VALLEY</u></b> <b><u>Zone G</u></b>	<b><u>MILLWOOD</u></b> <b><u>Zone H</u></b>	<b><u>DUNWOODIE</u></b> <b><u>Zone I</u></b>	<b><u>NEW YORK</u></b> <b><u>CITY</u></b> <b><u>Zone J</u></b>	<b><u>LONG</u></b> <b><u>ISLAND</u></b> <b><u>Zone K</u></b>
<b><u>DAY AHEAD LBMP</u></b>											
Unweighted Price *	19.15	18.75	15.39	19.69	20.13	37.51	32.70	33.08	33.01	33.09	48.55
Standard Deviation	8.21	8.32	9.04	8.61	8.98	16.14	13.17	13.32	13.23	13.26	21.79
<b><u>RTC LBMP</u></b>											
Unweighted Price *	23.17	21.48	19.27	22.66	23.56	40.12	35.47	35.84	35.74	35.78	55.69
Standard Deviation	26.89	21.27	22.92	22.03	22.97	28.06	24.72	24.93	24.86	25.01	64.61
<b><u>REAL TIME LBMP</u></b>											
Unweighted Price *	21.49	21.10	18.49	22.11	23.02	40.25	35.43	35.80	35.70	35.69	49.70
Standard Deviation	20.74	21.35	24.21	21.73	22.97	30.71	26.21	26.47	26.36	26.56	38.11
	<b><u>ONTARIO</u></b> <b><u>IESO</u></b>	<b><u>HYDRO</u></b> <b><u>QUEBEC</u></b> <b><u>(Wheel)</u></b>	<b><u>HYDRO</u></b> <b><u>QUEBEC</u></b> <b><u>(Import/Export)</u></b>	<b><u>PJM</u></b>	<b><u>NEW</u></b> <b><u>ENGLAND</u></b>	<b><u>CROSS</u></b> <b><u>SOUND</u></b> <b><u>CABLE</u></b> <b><u>Controllable</u></b> <b><u>Line</u></b>	<b><u>NORTHPORT-</u></b> <b><u>NORWALK</u></b> <b><u>Controllable</u></b> <b><u>Line</u></b>	<b><u>NEPTUNE</u></b> <b><u>Controllable</u></b> <b><u>Line</u></b>	<b><u>LINDEN VFT</u></b> <b><u>Controllable</u></b> <b><u>Line</u></b>	<b><u>HUDSON</u></b> <b><u>Controllable</u></b> <b><u>Line</u></b>	<b><u>Dennison</u></b> <b><u>Controllable</u></b> <b><u>Line</u></b>
	<b><u>Zone O</u></b>	<b><u>Zone M</u></b>	<b><u>Zone M</u></b>	<b><u>Zone P</u></b>	<b><u>Zone N</u></b>						
<b><u>DAY AHEAD LBMP</u></b>											
Unweighted Price *	18.19	16.29	16.29	18.19	36.41	26.29	48.77	42.34	15.09	32.94	47.88
Standard Deviation	7.89	8.37	8.37	7.89	15.27	10.34	22.02	18.39	8.83	13.15	21.73
<b><u>RTC LBMP</u></b>											
Unweighted Price *	18.95	18.48	18.48	18.95	40.65	28.66	56.63	49.04	20.12	35.10	52.86
Standard Deviation	14.77	18.57	18.57	14.77	23.86	18.19	65.66	51.65	29.01	21.87	59.72
<b><u>REAL TIME LBMP</u></b>											
Unweighted Price *	19.88	17.72	17.72	19.88	38.96	28.29	50.73	44.54	19.10	34.05	47.56
Standard Deviation	19.88	21.31	21.31	19.88	25.99	19.67	40.08	32.61	30.33	30.40	35.14

\* Straight LBMP averages

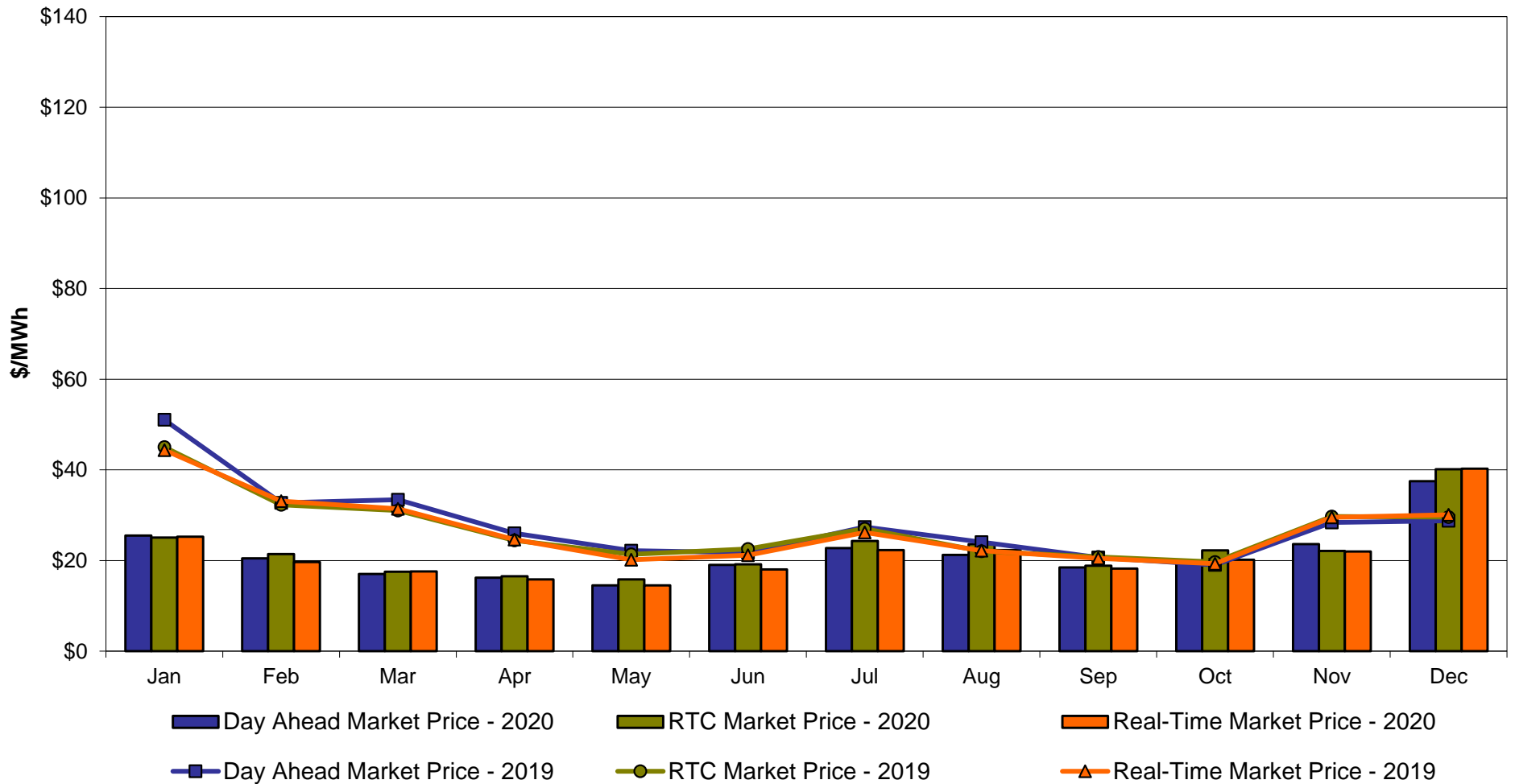
# **West Zone A** **Monthly Average LBMP Prices 2019 - 2020**



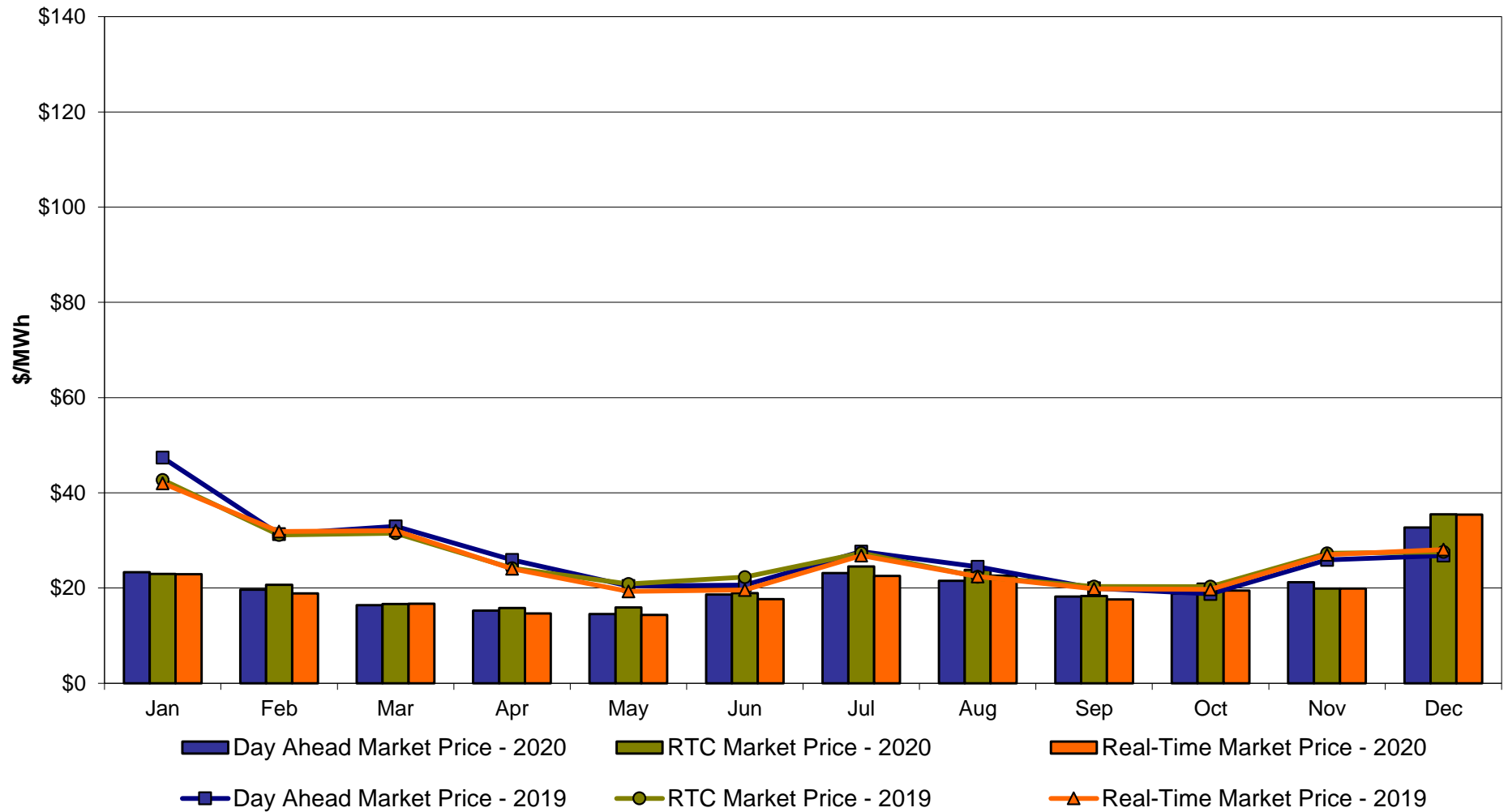
**Central Zone C**  
**Monthly Average LBMP Prices 2019 - 2020**



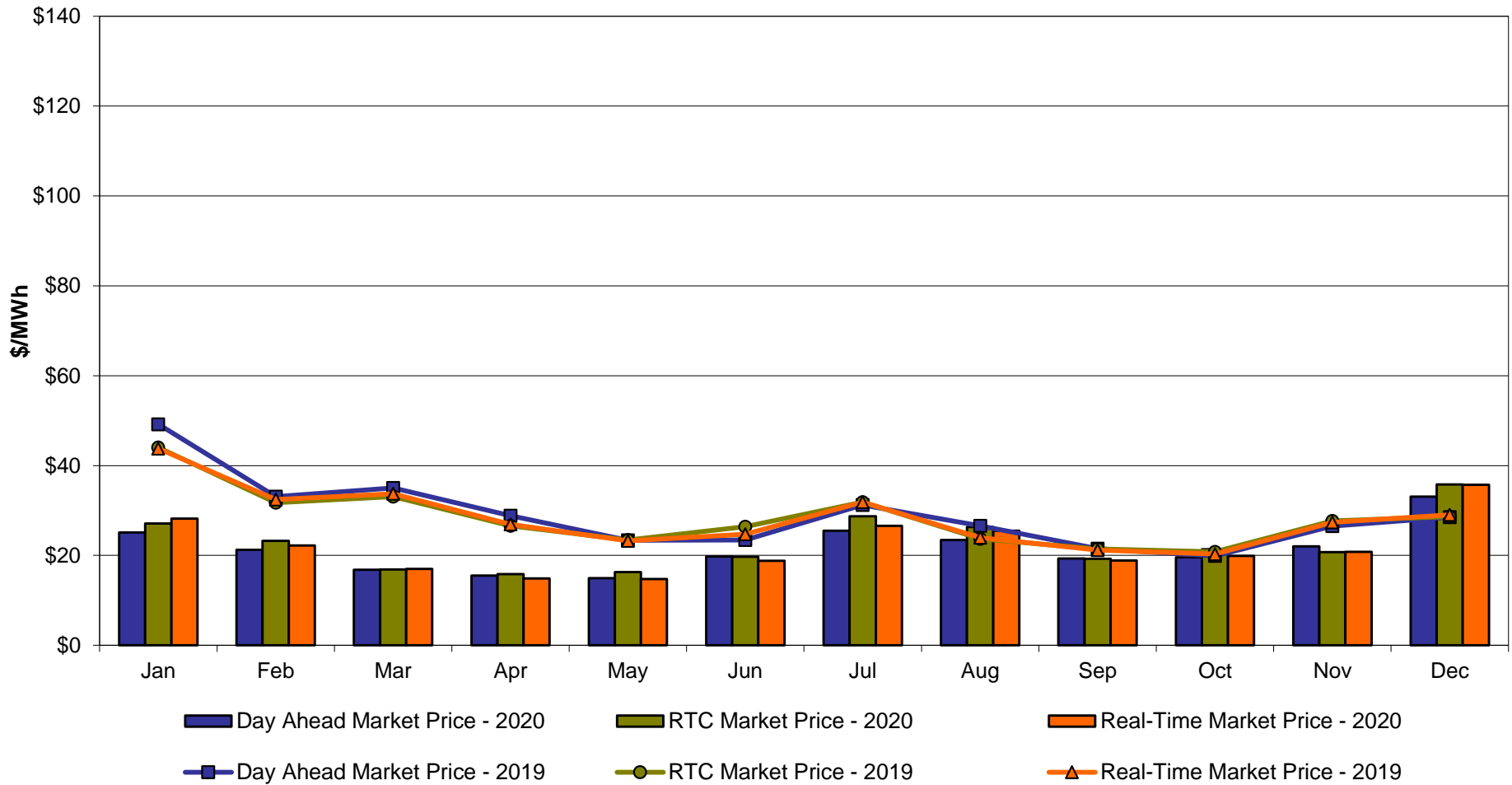
# **Capital Zone F** **Monthly Average LBMP Prices 2019 - 2020**



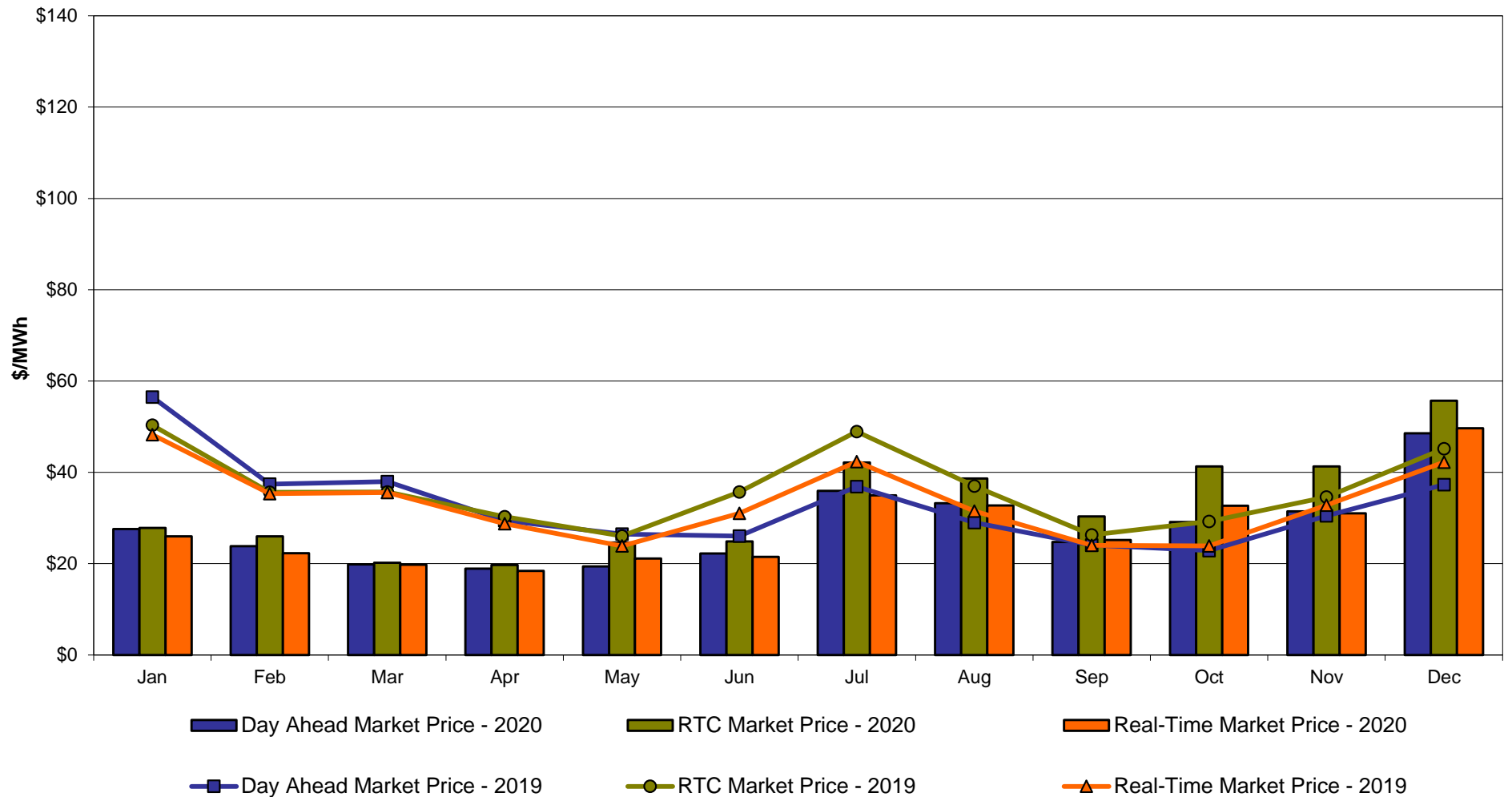
# Hudson Valley Zone G Monthly Average LBMP Prices 2019 - 2020



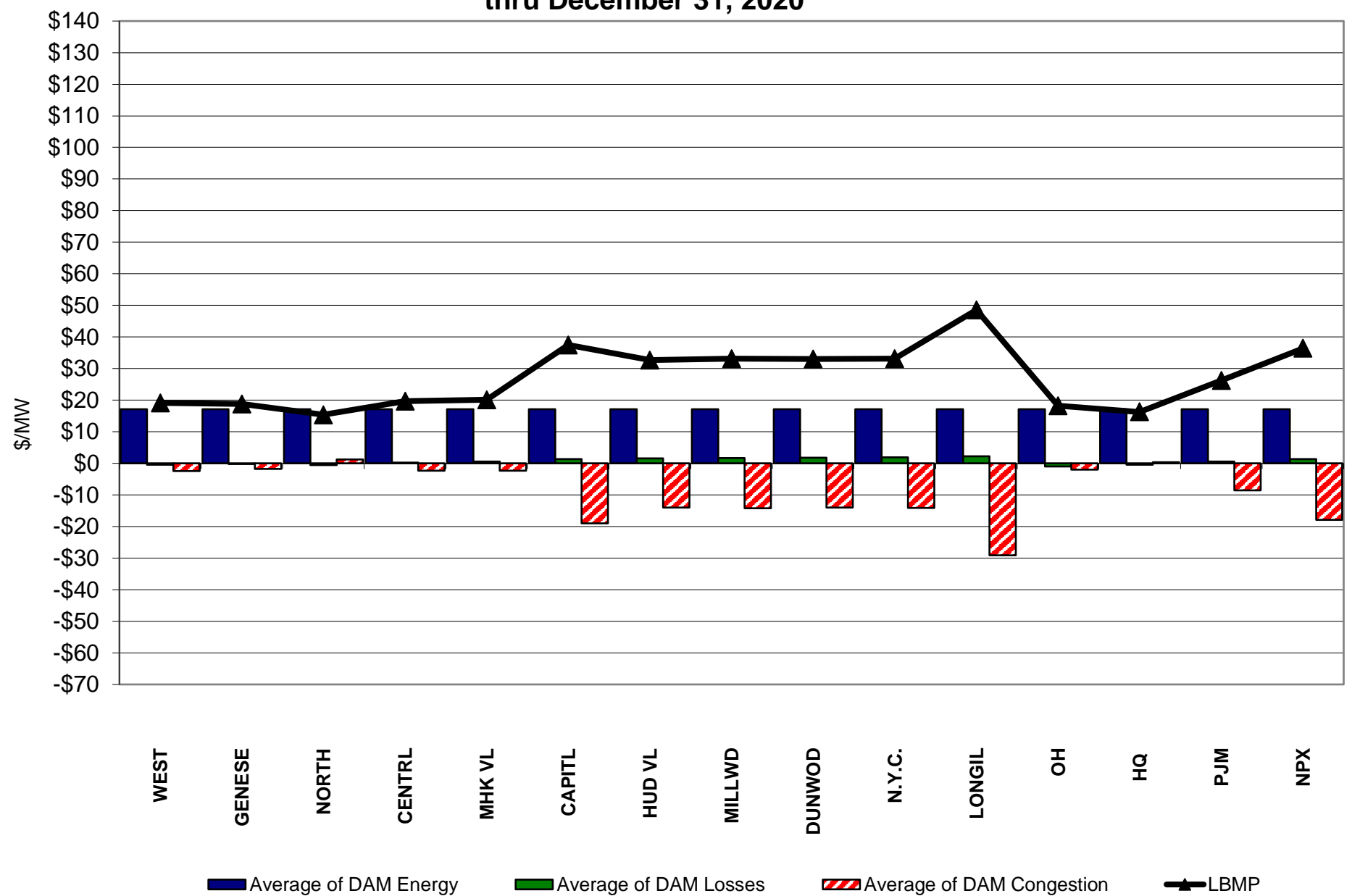
# **NYC Zone J** **Monthly Average LBMP Prices 2019 - 2020**



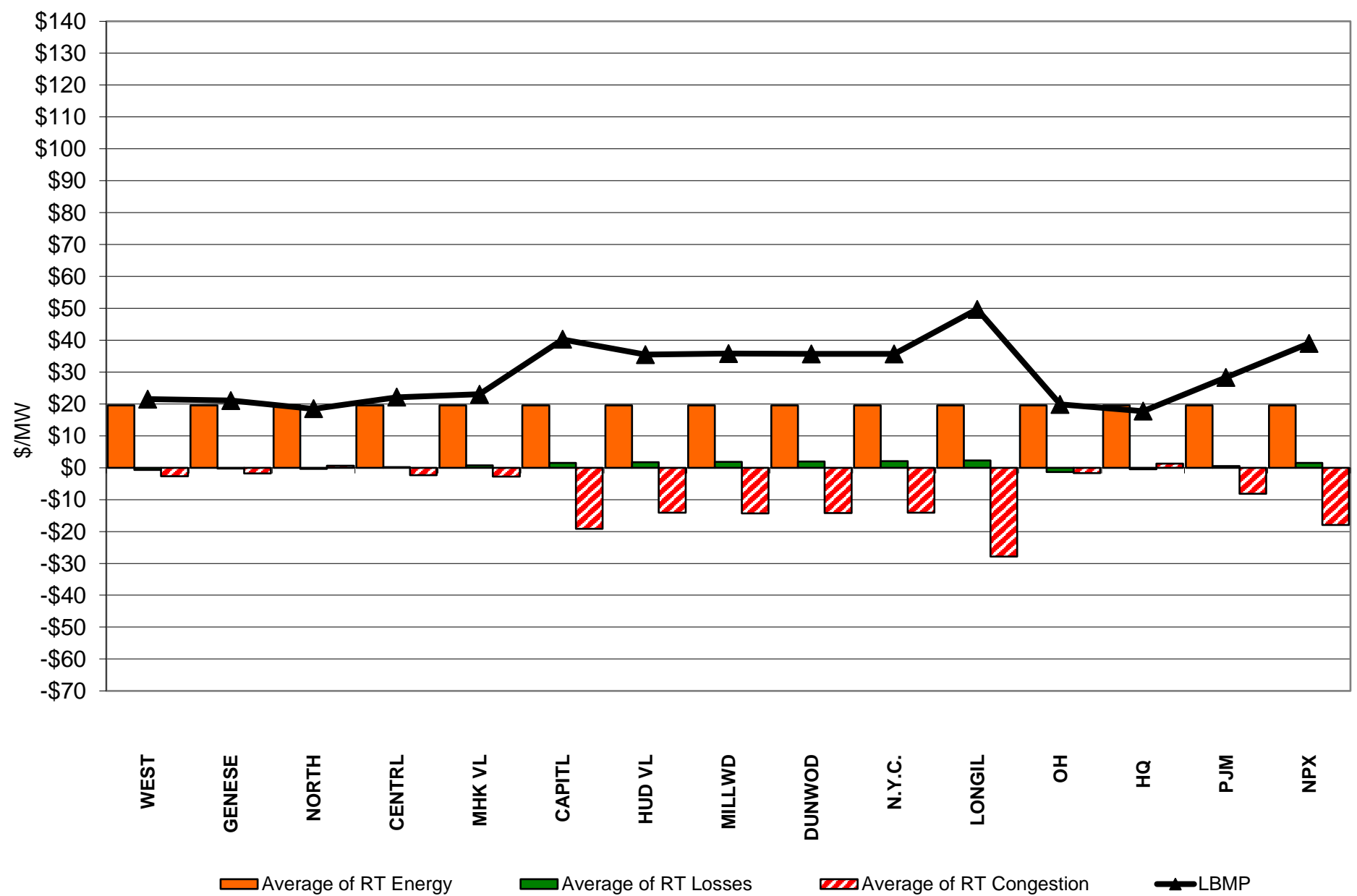
# Long Island Zone K Monthly Average LBMP Prices 2019 - 2020



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

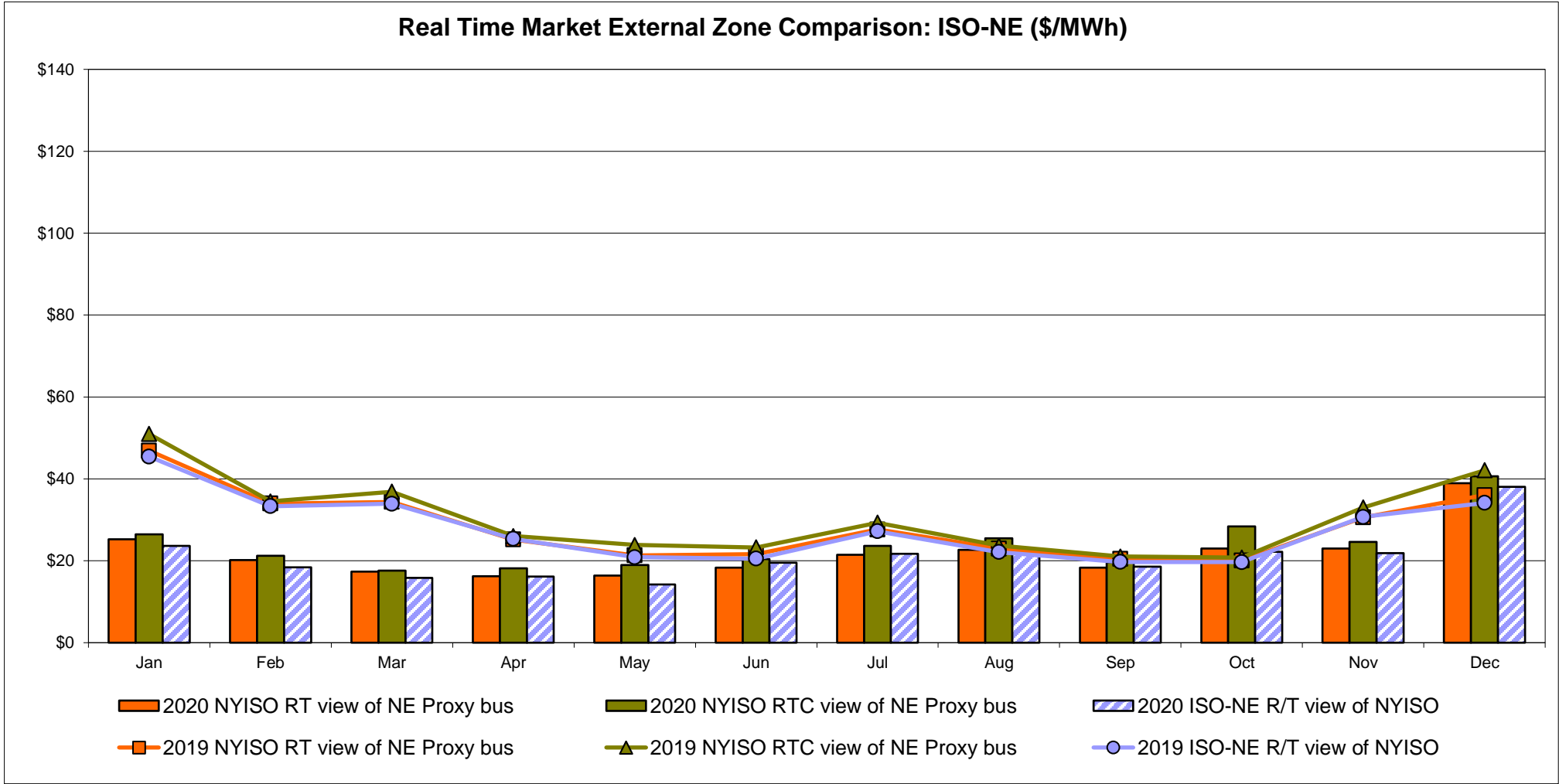
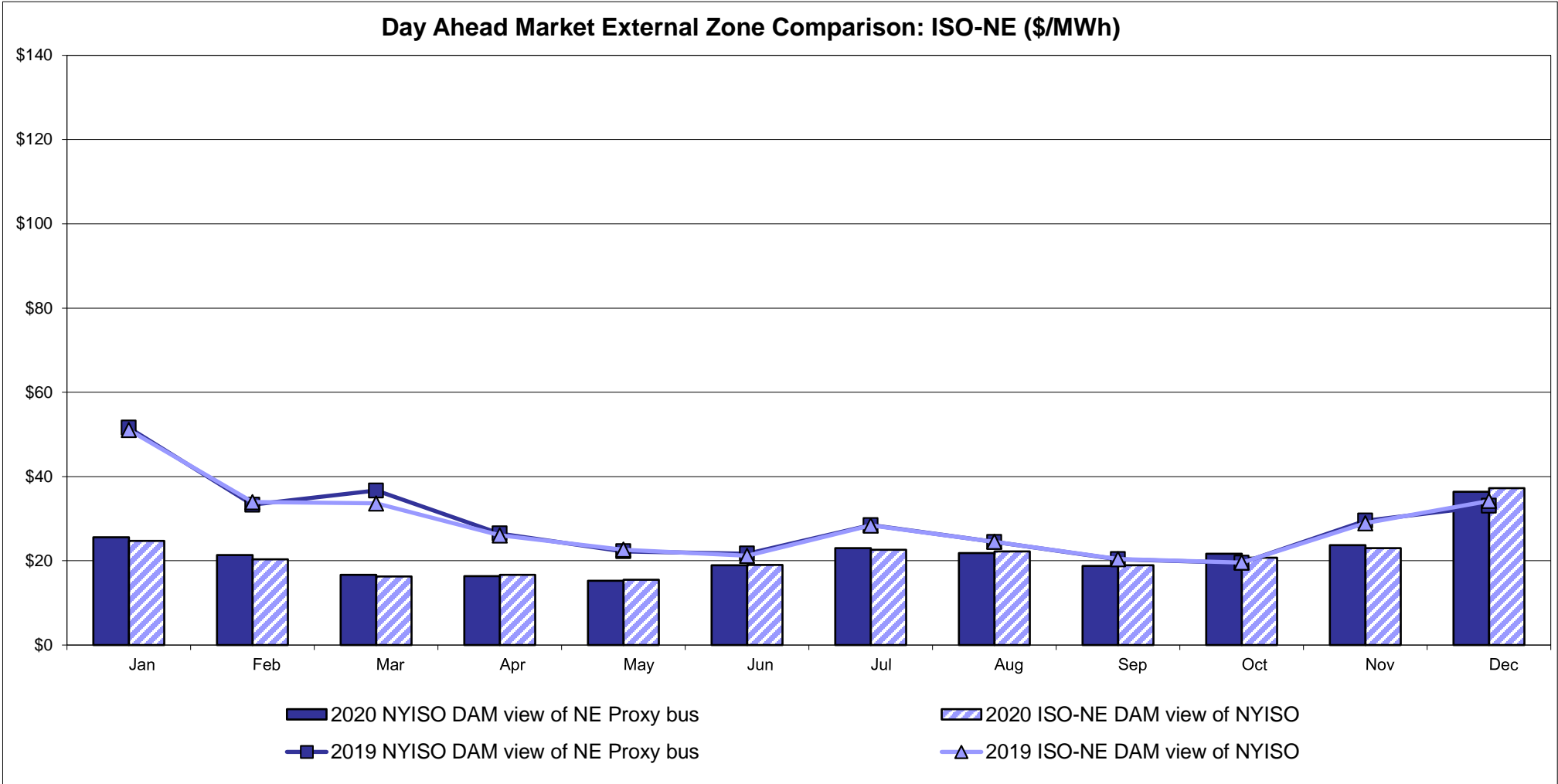


**RT Zonal Unweighted Monthly Average LBMP Components  
thru December 31, 2020**



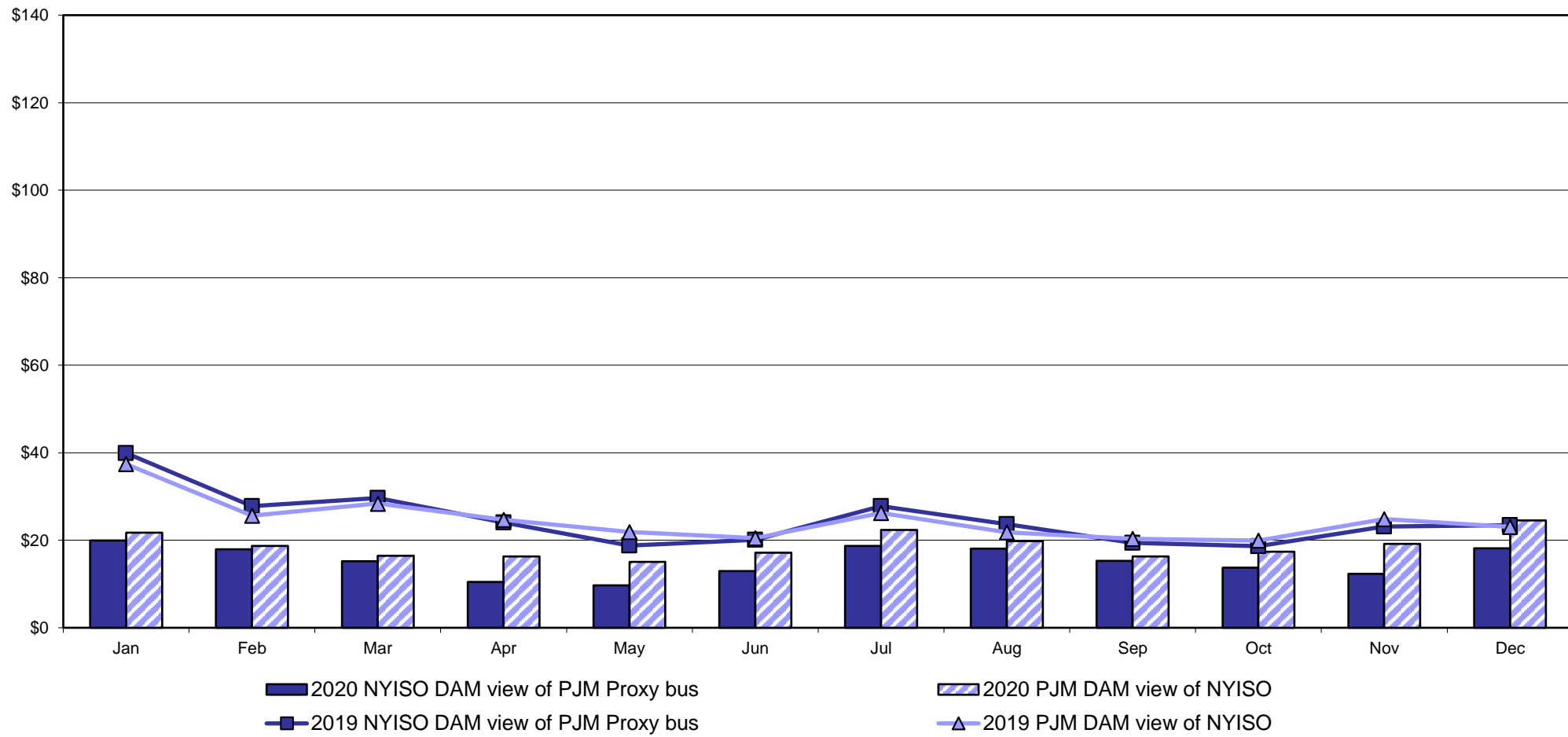


External Comparison ISO-New England

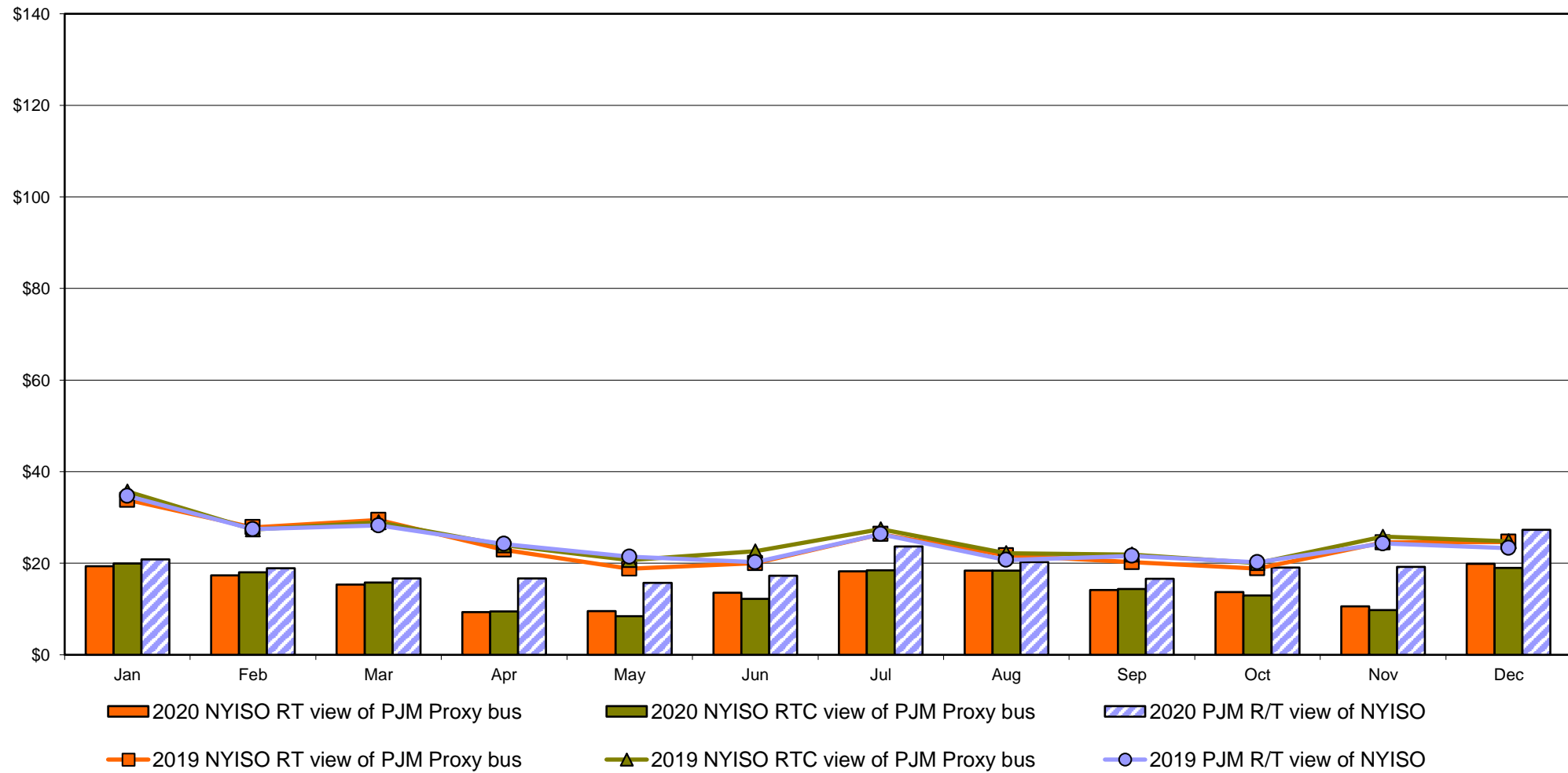


# External Comparison PJM

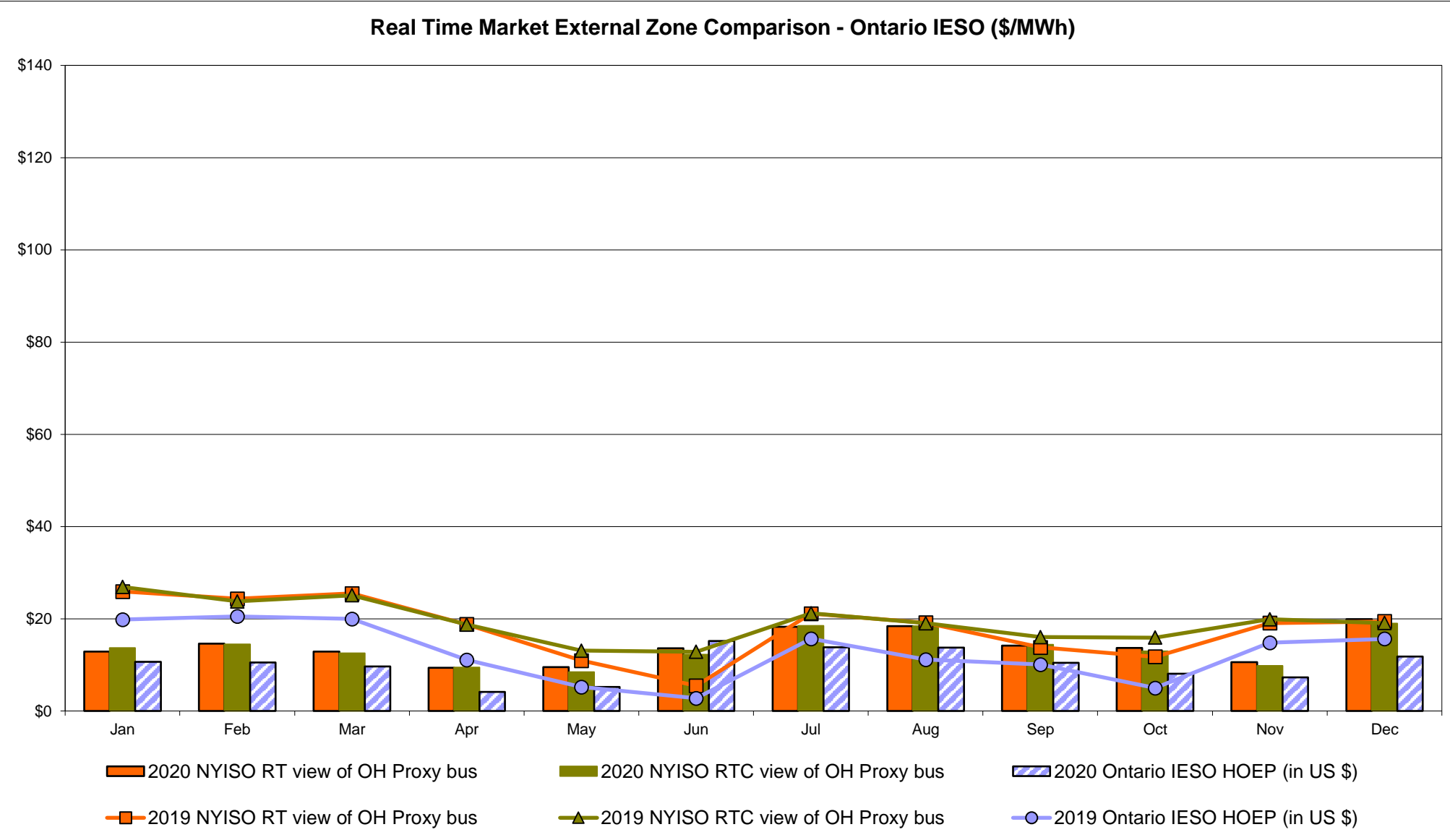
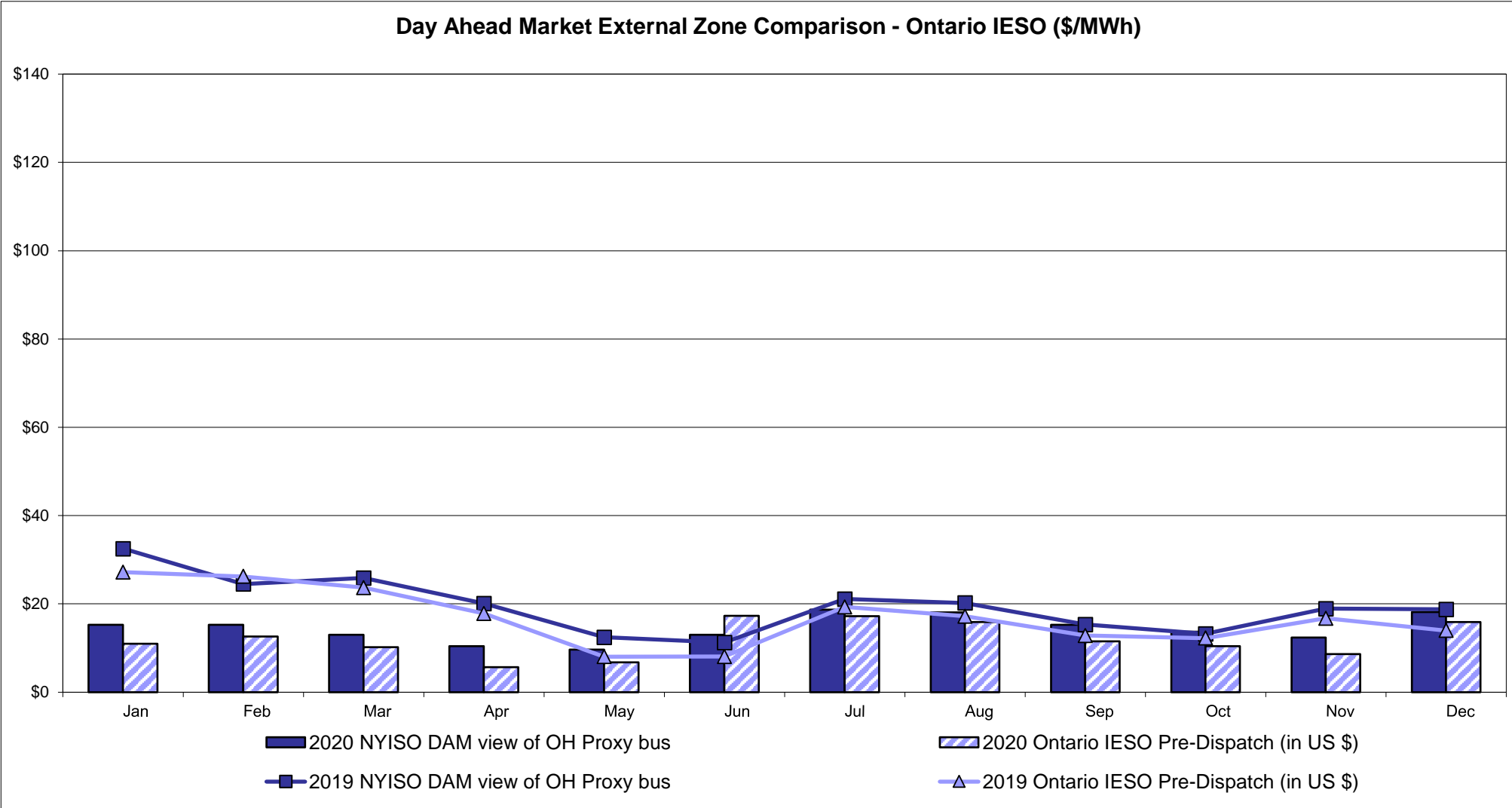
Day Ahead Market External Zone Comparison - PJM (\$/MWh)



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

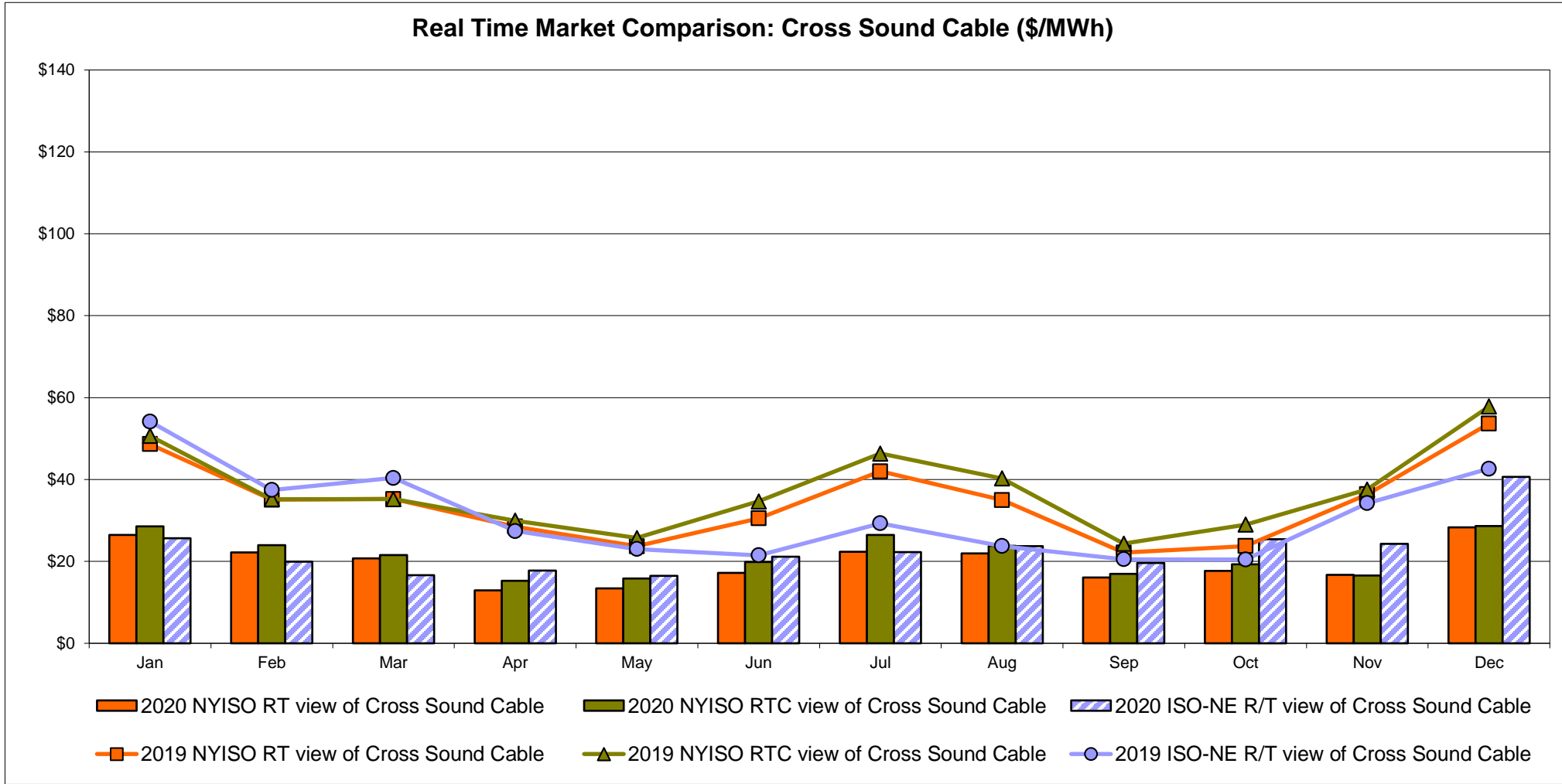
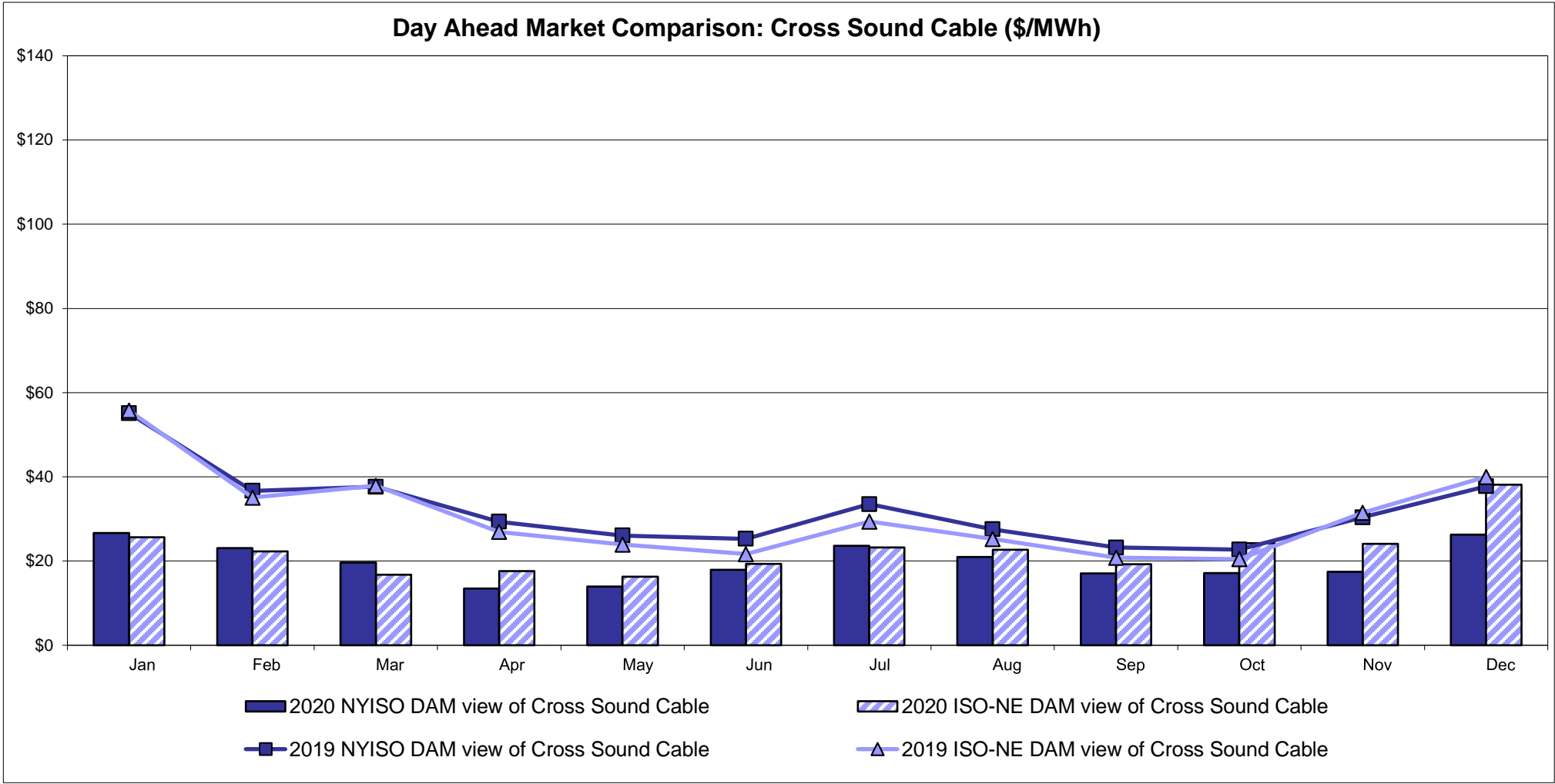


External Comparison Ontario IESO



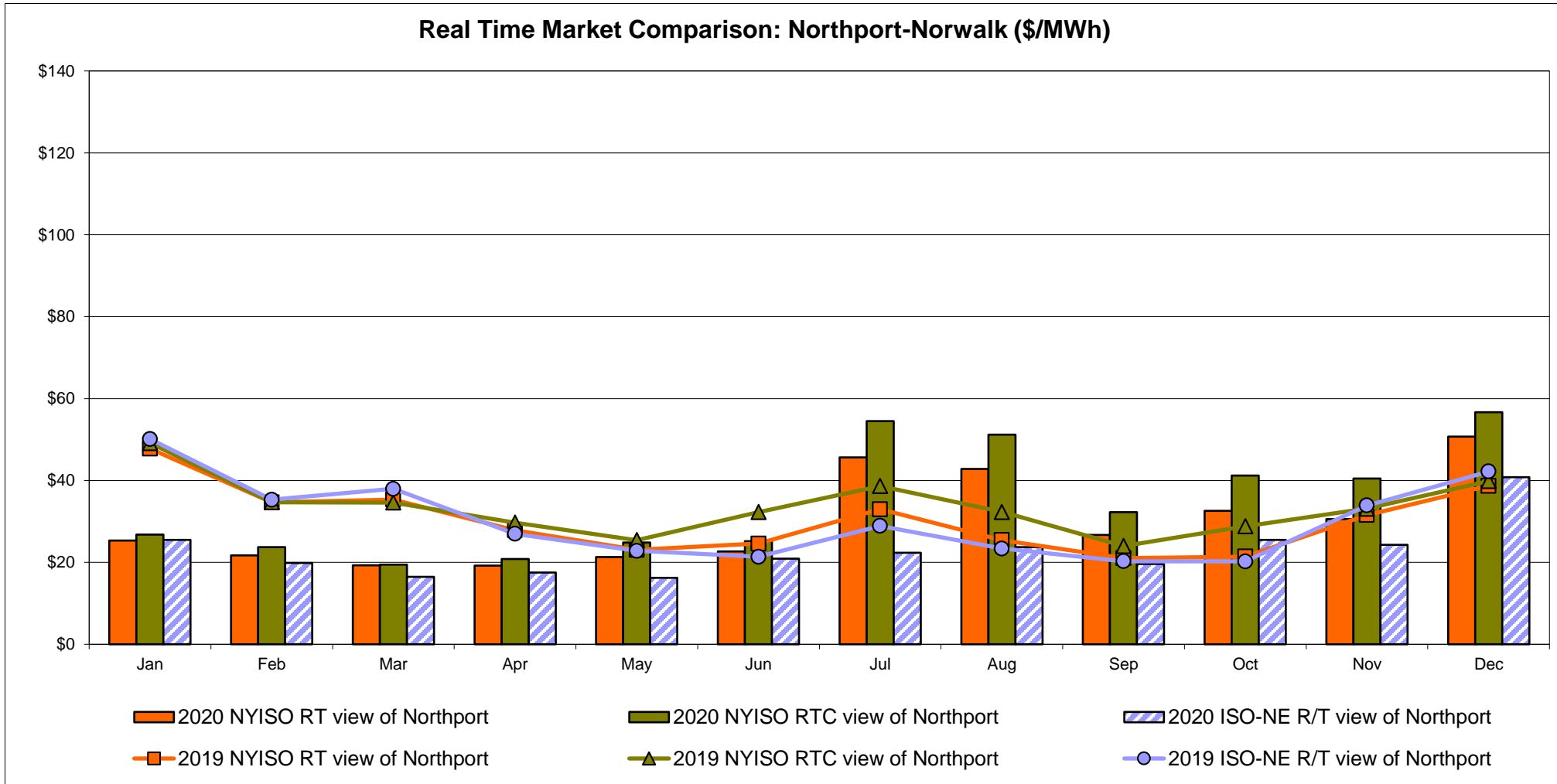
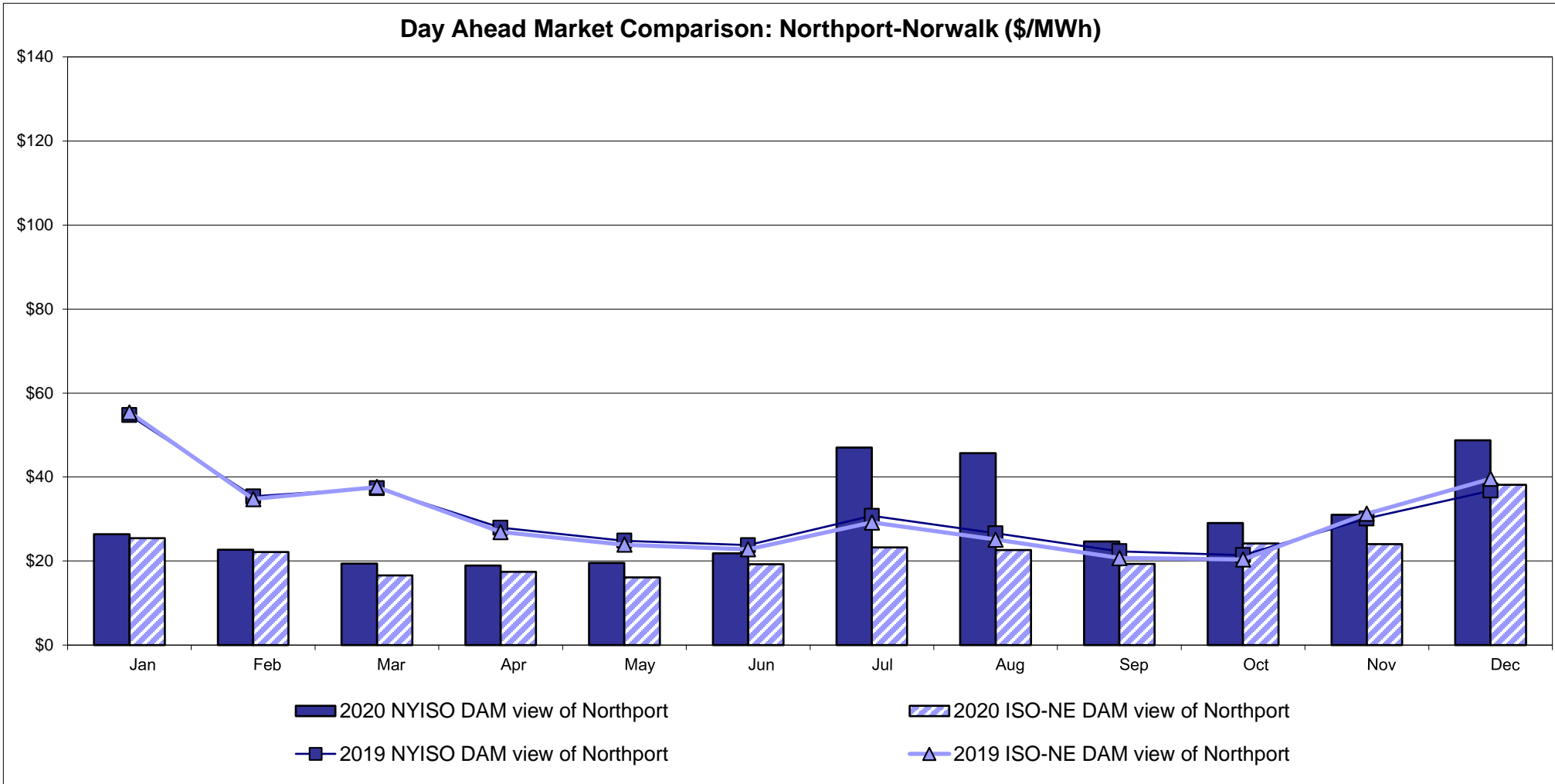
Notes: Exchange factor used for December 2020 was 0.780701069560465 to US  
HOEP: Hourly Ontario Energy Price  
Pre-Dispatch: Projected Energy Price

# External Controllable Line: Cross Sound Cable (New England)



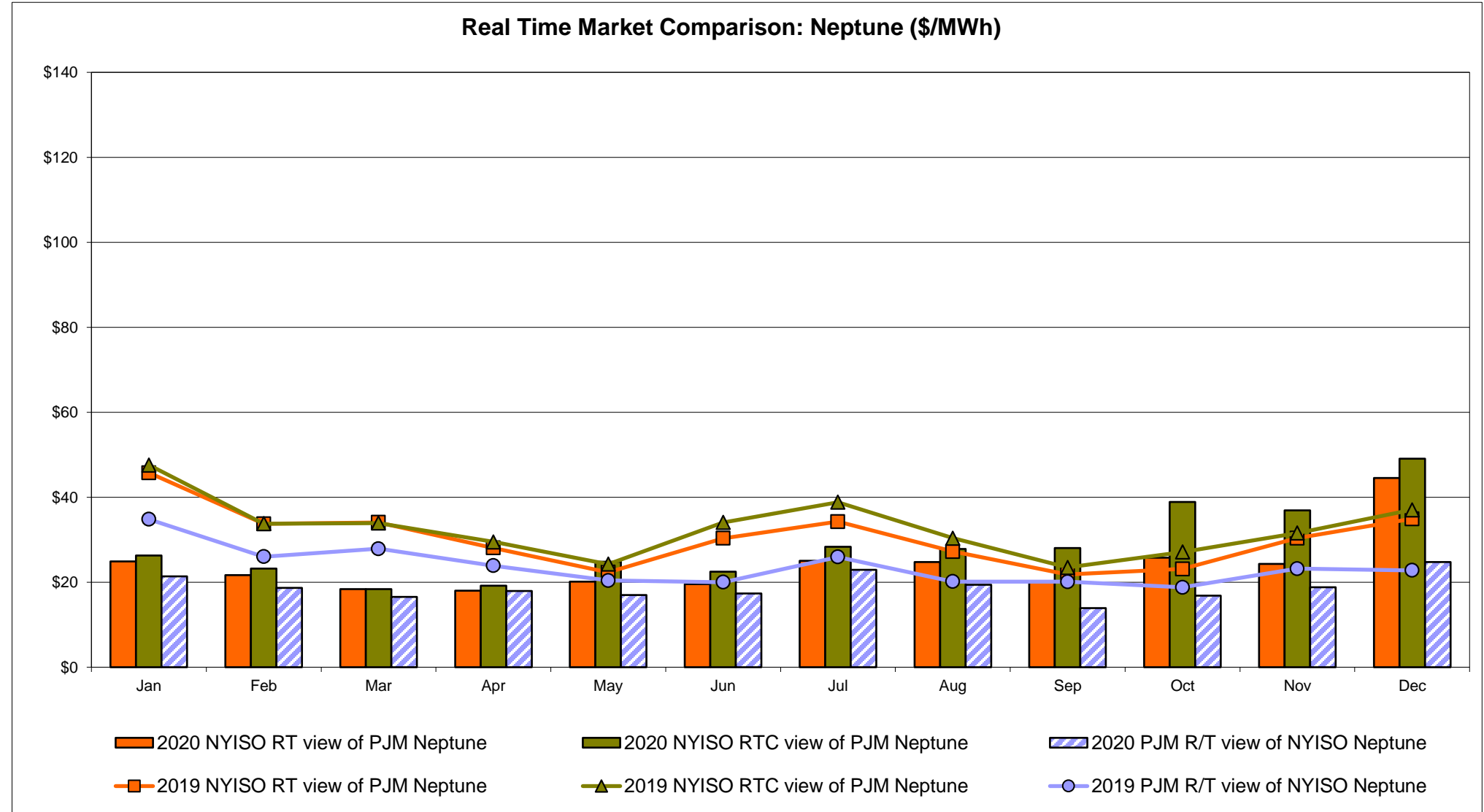
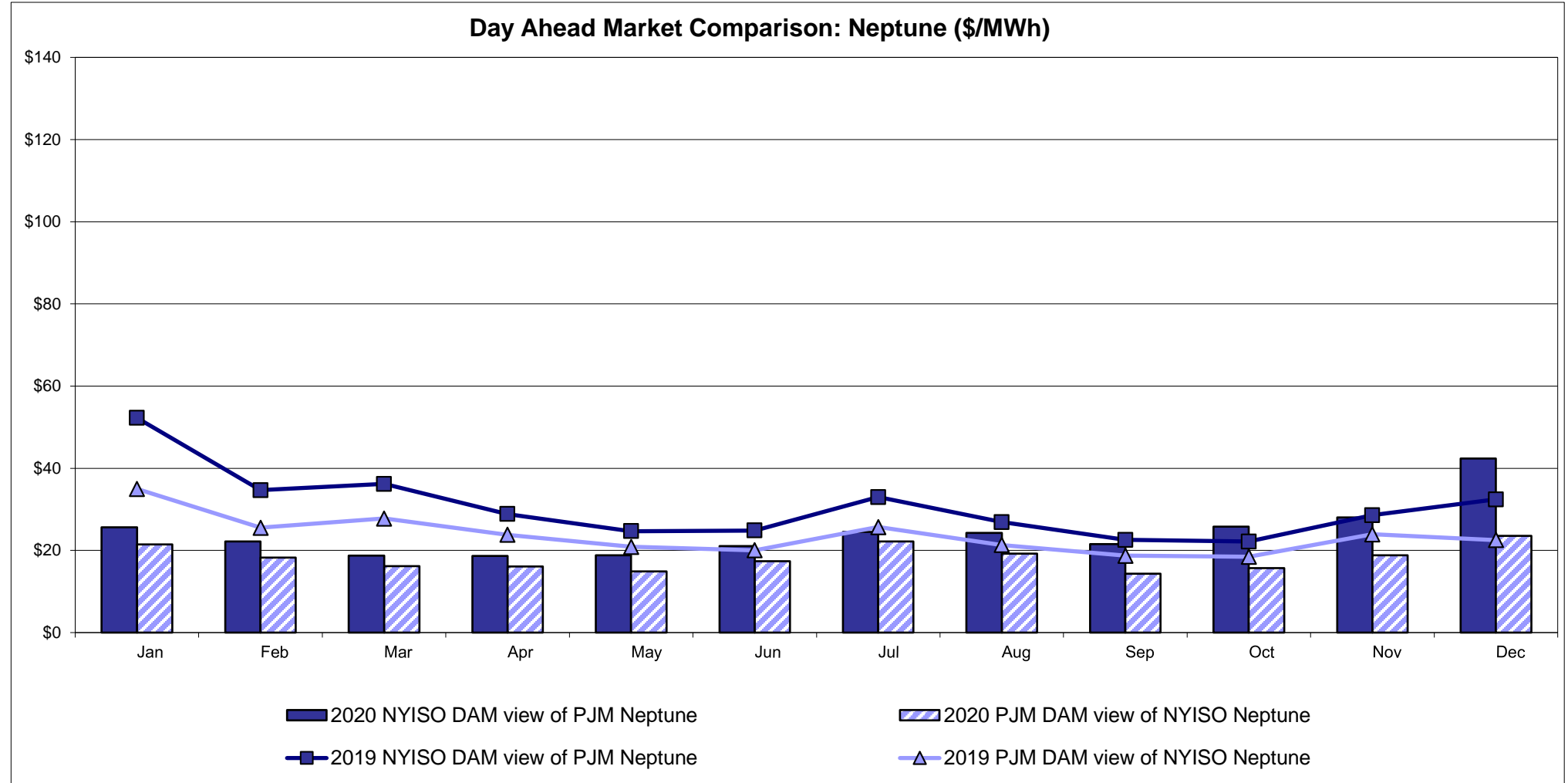
Note:  
ISO-NE Forecast is an advisory posting @ 18:00 day before.  
The DAM and R/T prices at the Shorham 13899 interface are used for ISO-NE.  
The DAM and R/T prices at the CSC interface are used for NYISO.

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

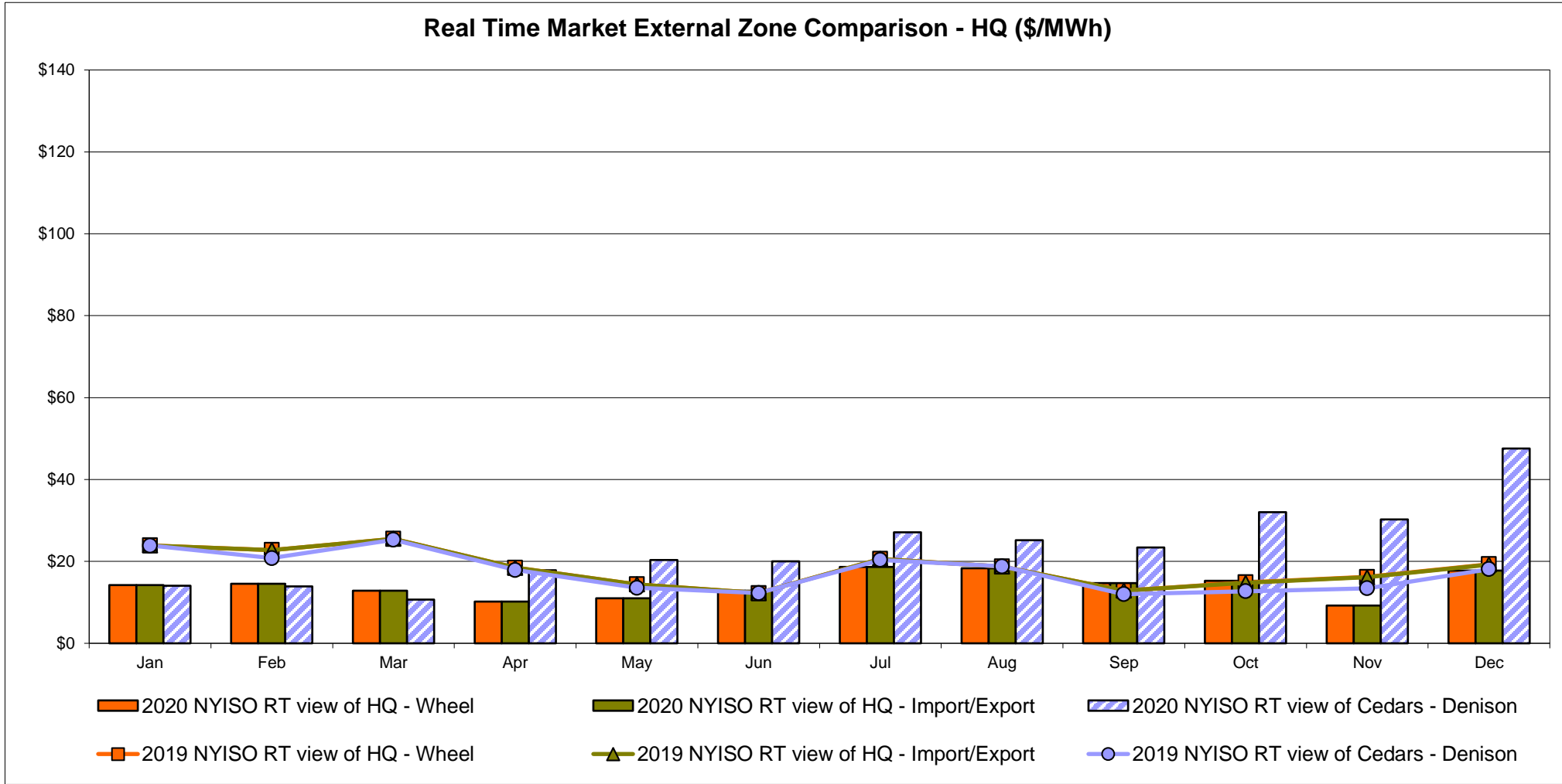
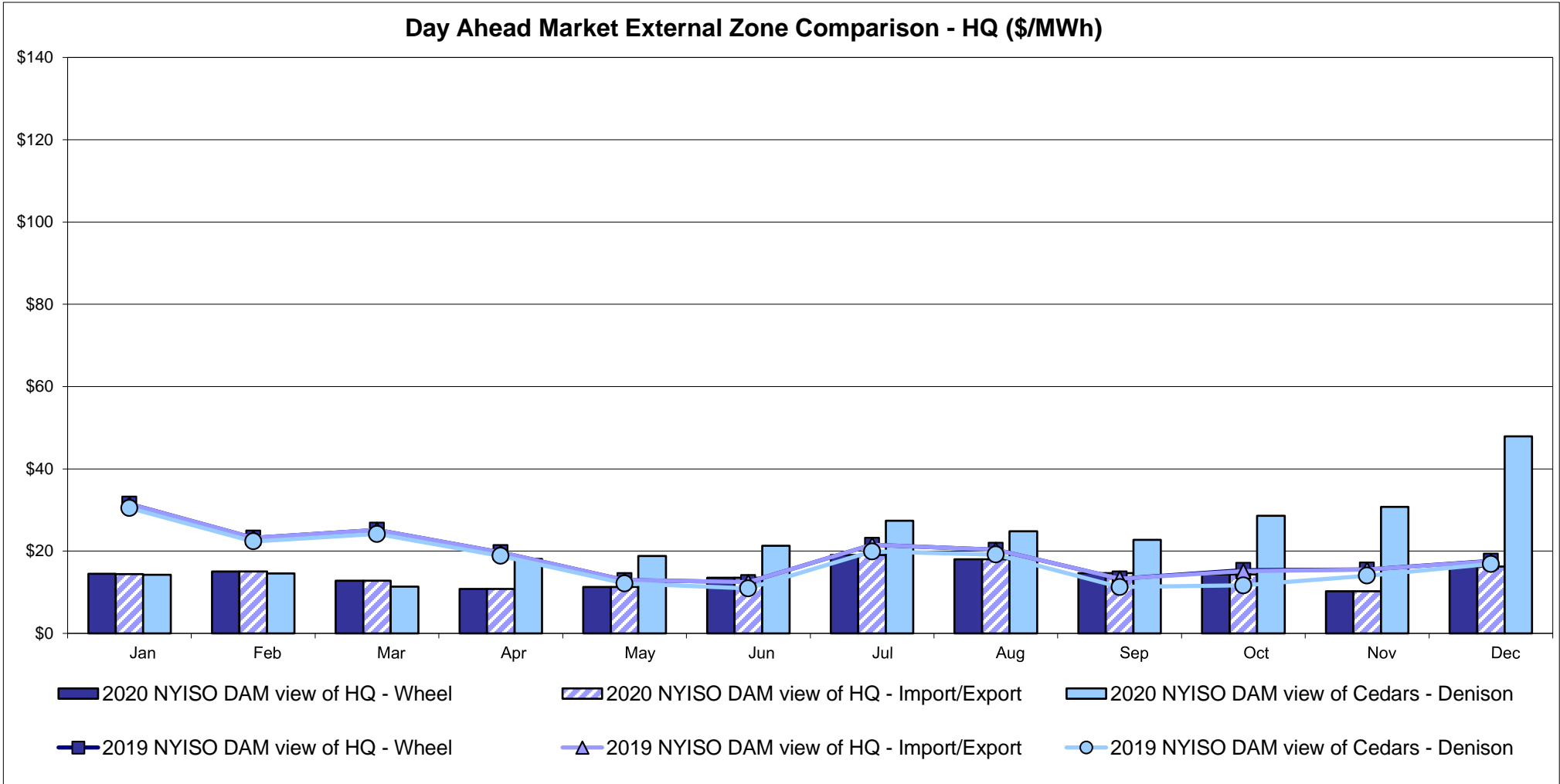


Note:  
ISO-NE Forecast is an advisory posting @ 18:00 day before.  
The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.  
The DAM and R/T prices at the 1385 interface are used for NYISO.

External Controllable Line: Neptune (PJM)

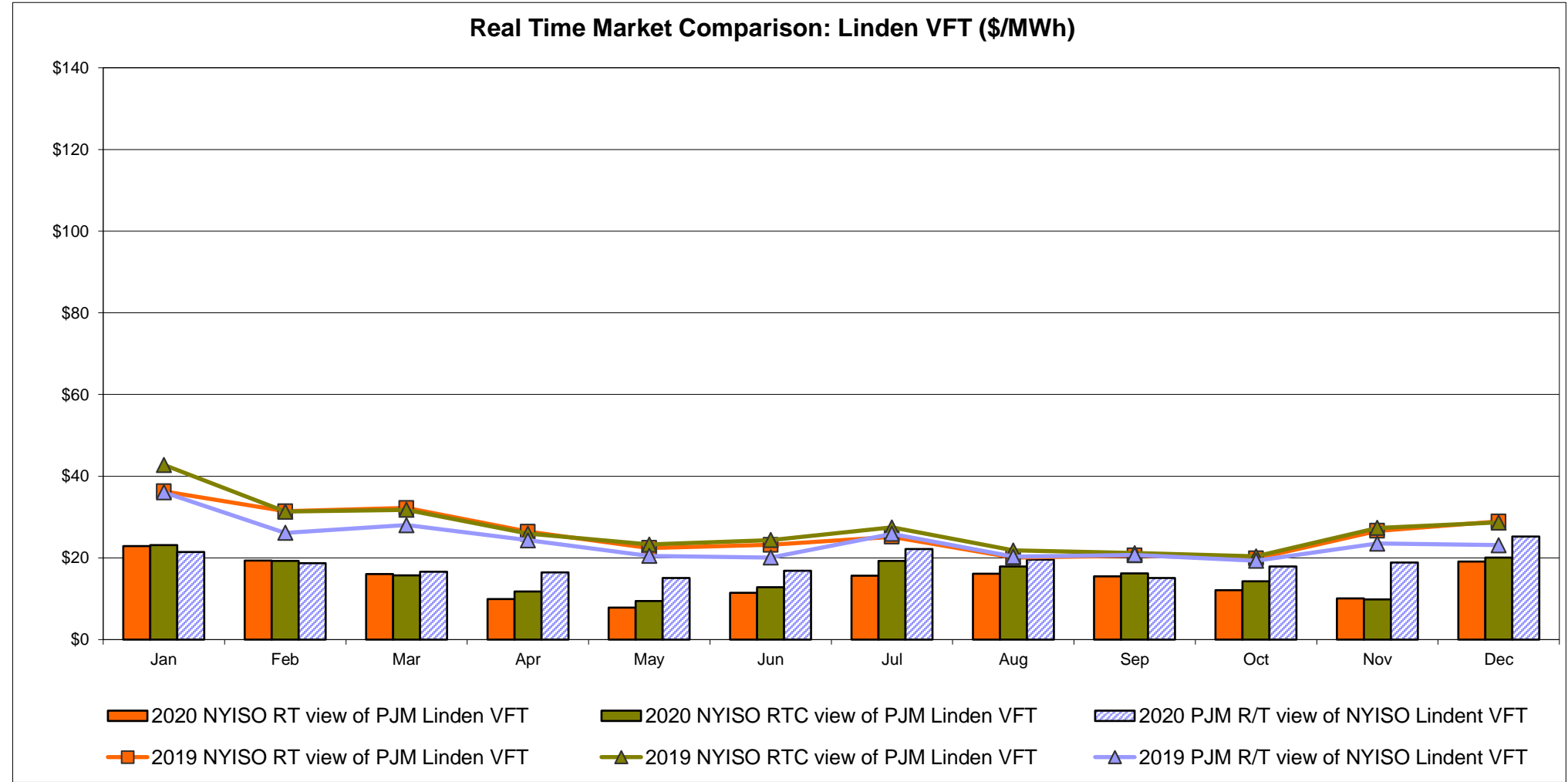
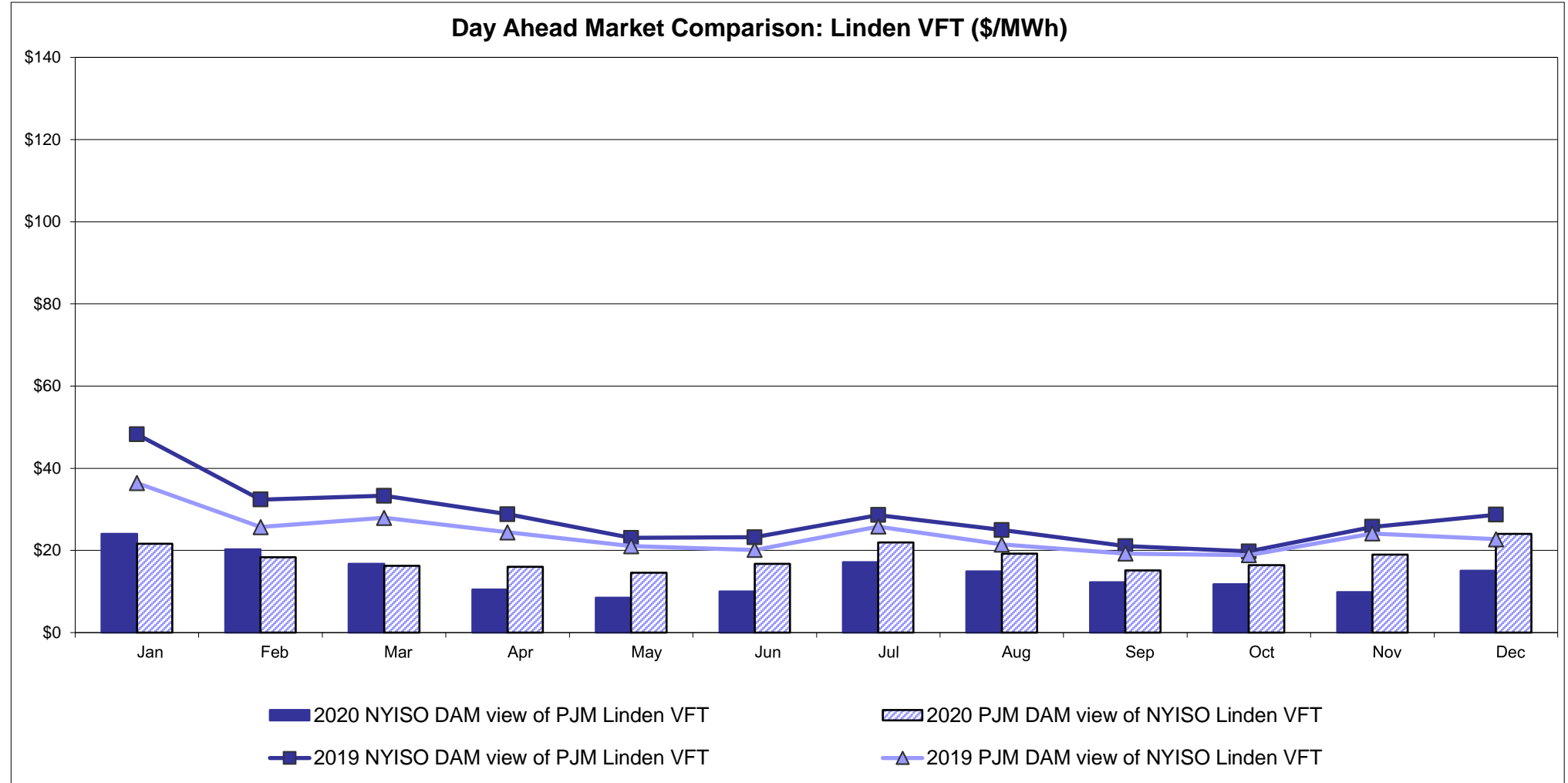


External Comparison Hydro-Quebec



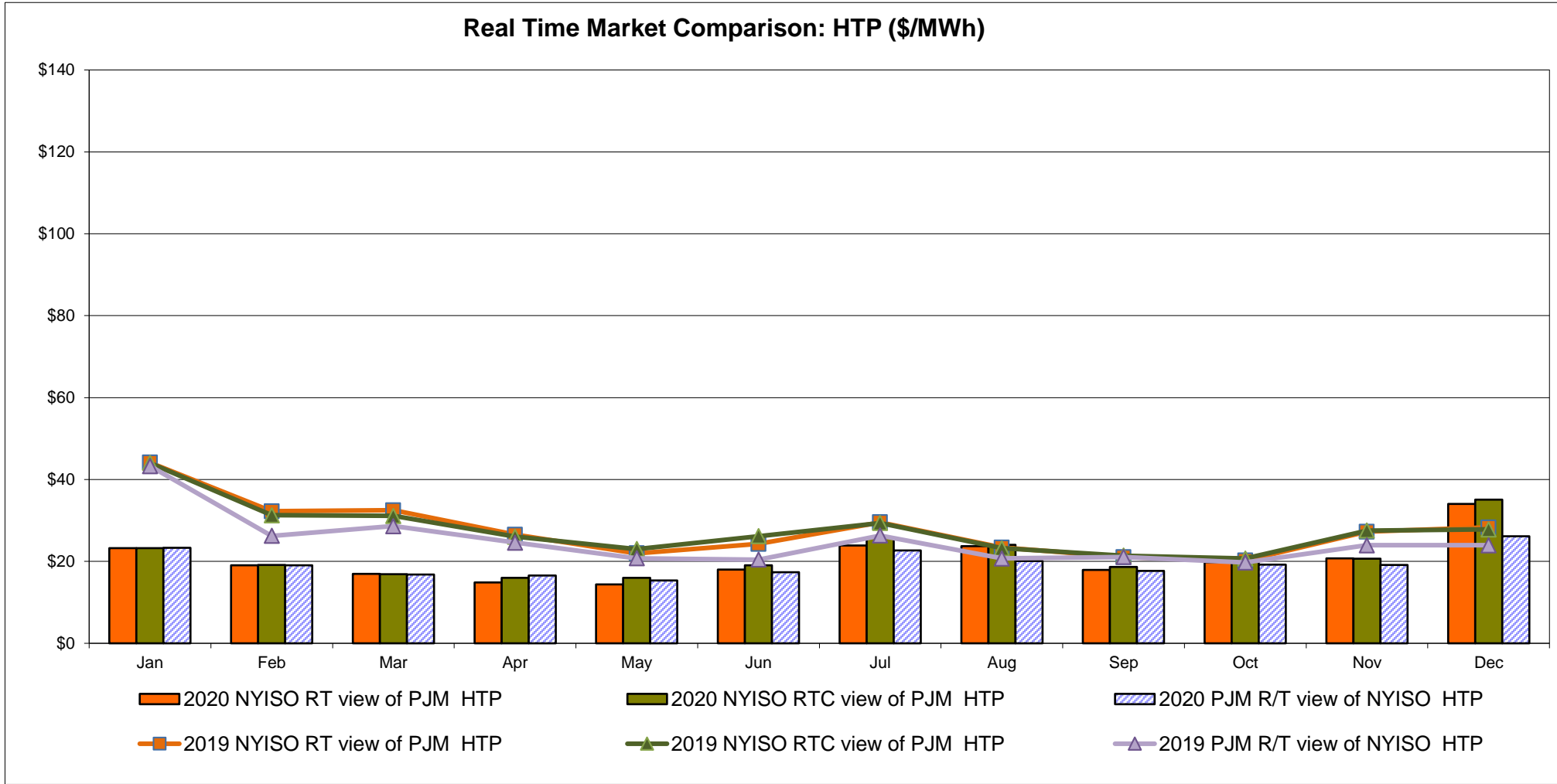
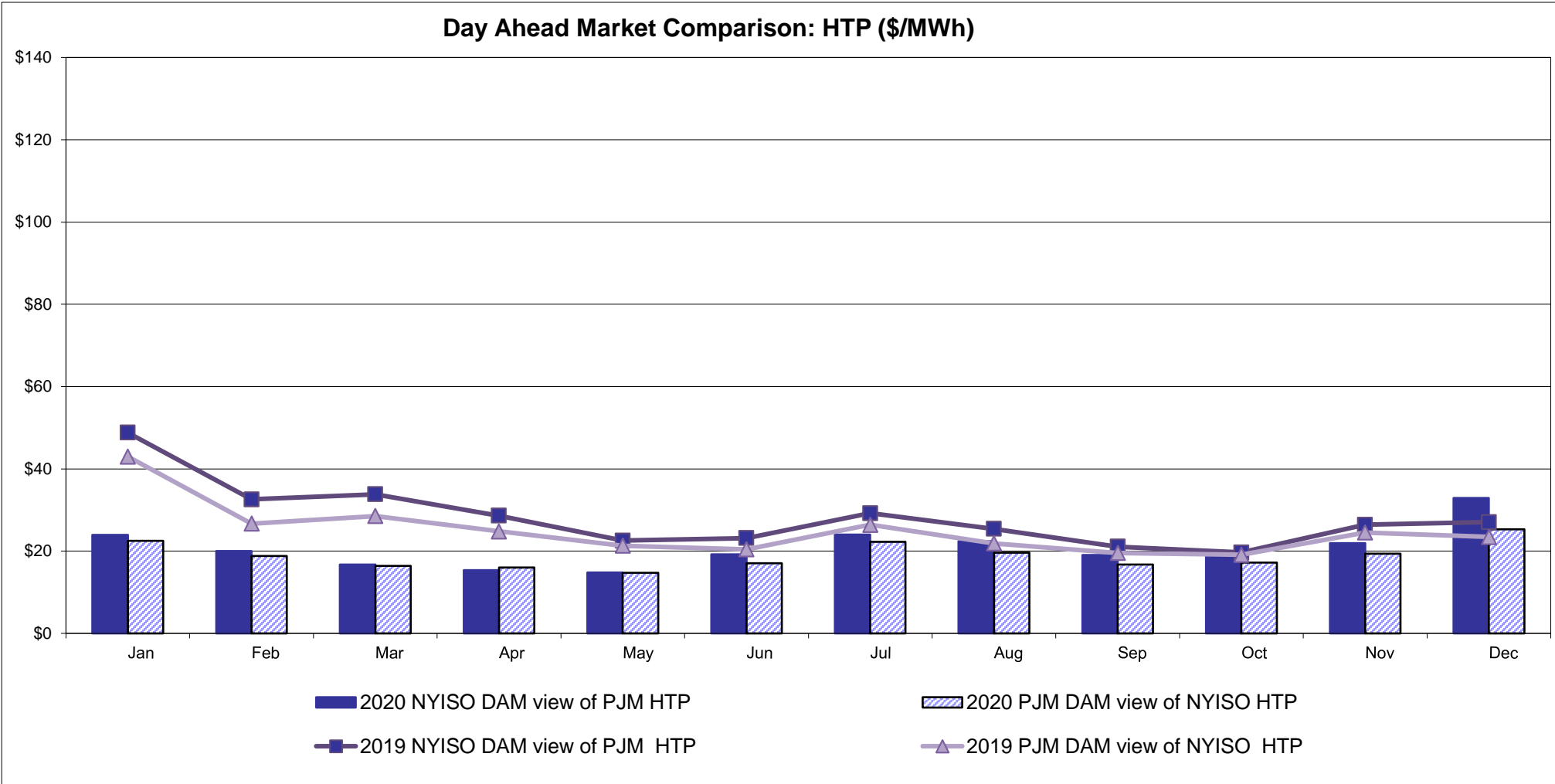
Note:  
Hydro-Quebec Prices are unavailable.

External Controllable Line: Linden VFT (PJM)





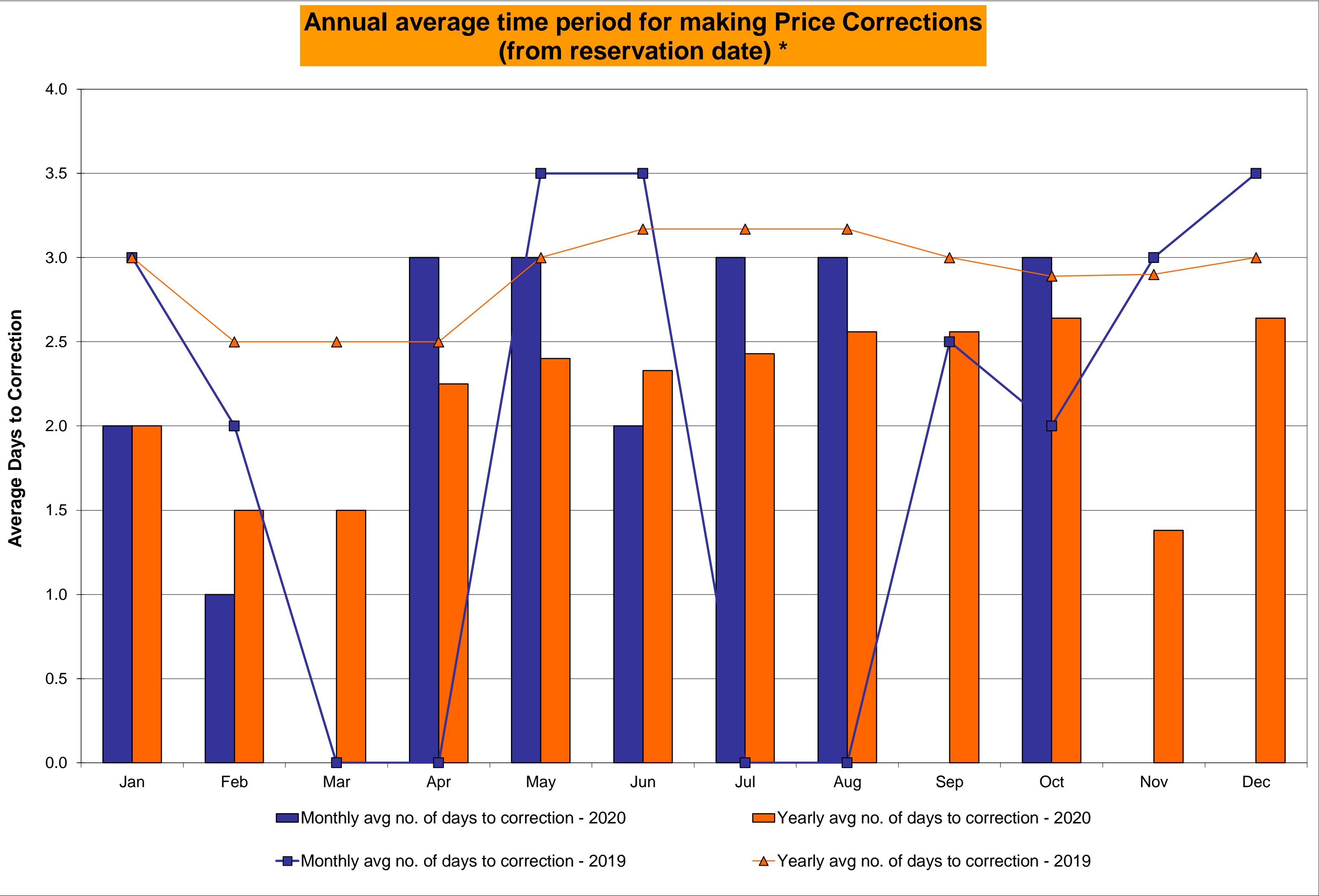
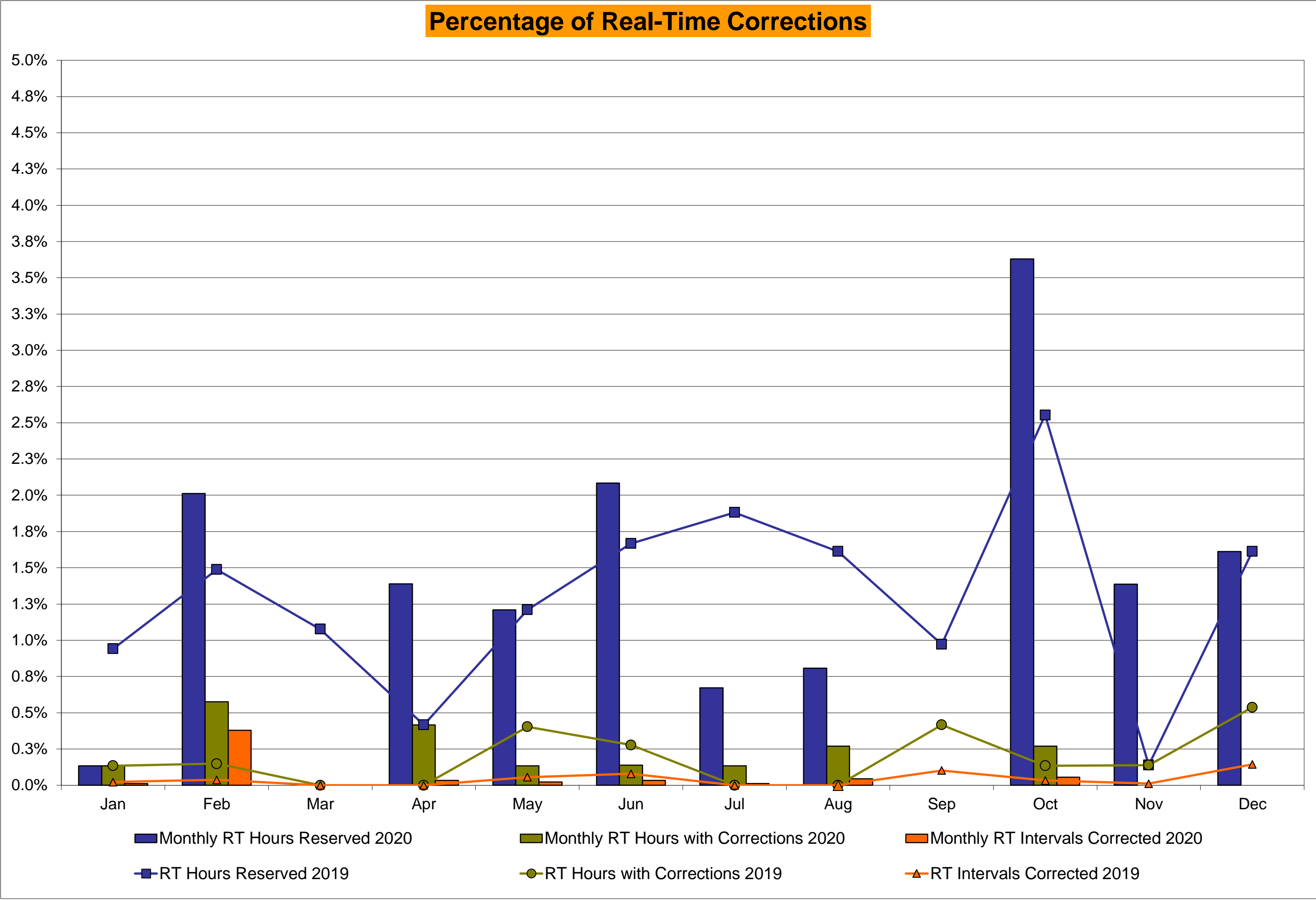
External Controllable Line: Hudson (PJM)



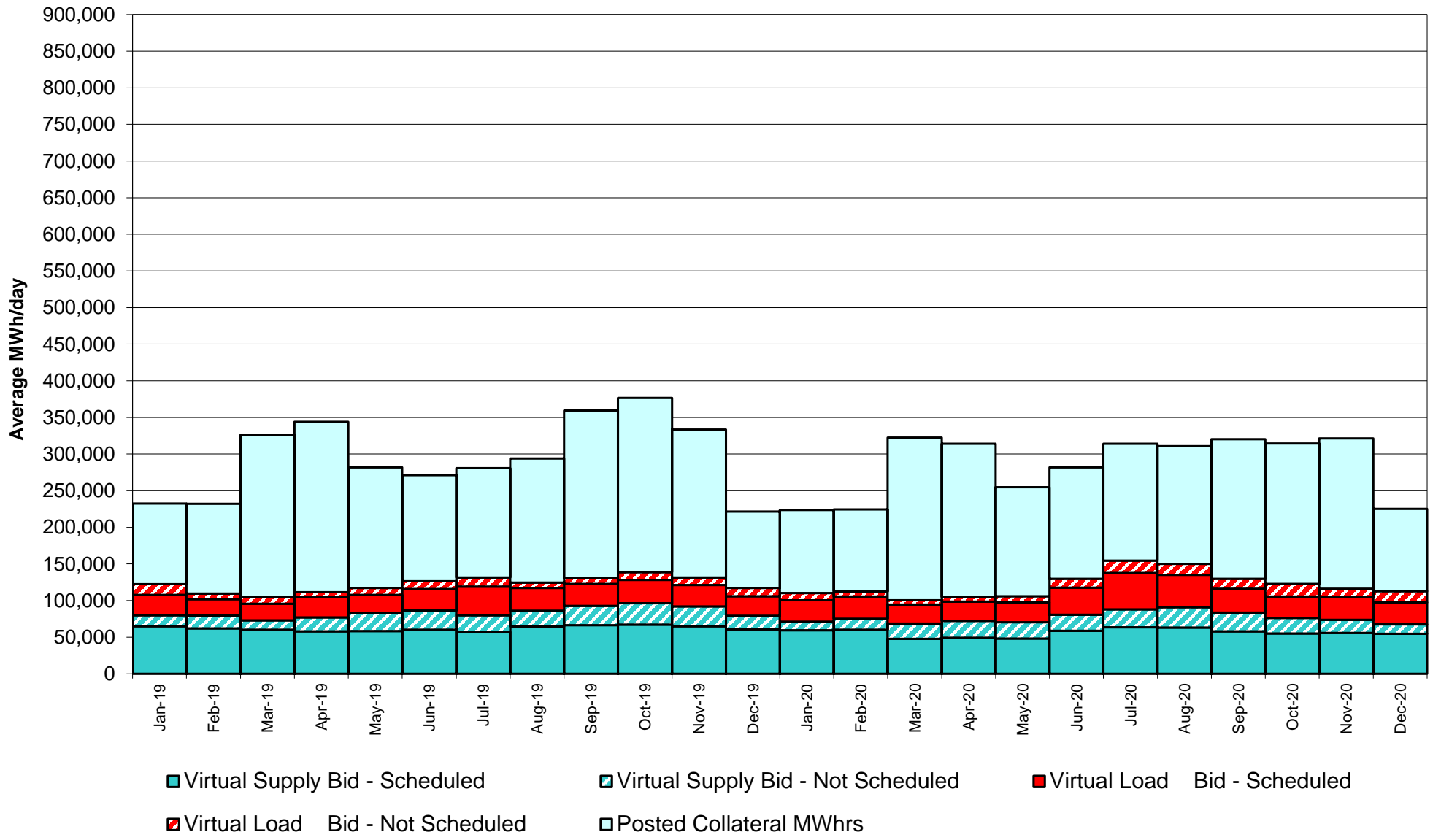
## NYISO Real Time Price Correction Statistics

<b>2020</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>Hour Corrections</u></b>													
Number of hours with corrections	in the month	1	4	0	3	1	1	1	2	0	2	0	0
Number of hours	in the month	744	696	743	720	744	720	744	744	720	744	721	744
% of hours with corrections	in the month	0.13%	0.57%	0.00%	0.42%	0.13%	0.14%	0.13%	0.27%	0.00%	0.27%	0.00%	0.00%
% of hours with corrections	year-to-date	0.13%	0.35%	0.23%	0.28%	0.25%	0.23%	0.22%	0.22%	0.20%	0.20%	0.19%	0.17%
<b><u>Interval Corrections</u></b>													
Number of intervals corrected	in the month	1	32	0	3	2	3	1	4	0	5	0	0
Number of intervals	in the month	9,088	8,460	9,011	8,776	9,030	8,826	9,128	9,156	8,810	9,048	8,790	9,083
% of intervals corrected	in the month	0.01%	0.38%	0.00%	0.03%	0.02%	0.03%	0.01%	0.04%	0.00%	0.06%	0.00%	0.00%
% of intervals corrected	year-to-date	0.01%	0.19%	0.12%	0.10%	0.09%	0.08%	0.07%	0.06%	0.06%	0.06%	0.05%	0.05%
<b><u>Hours Reserved</u></b>													
Number of hours reserved	in the month	1	14	0	10	9	15	5	6	0	27	10	12
Number of hours	in the month	744	696	743	720	744	720	744	744	720	744	721	744
% of hours reserved	in the month	0.13%	2.01%	0.00%	1.39%	1.21%	2.08%	0.67%	0.81%	0.00%	3.63%	1.39%	1.61%
% of hours reserved	year-to-date	0.13%	1.04%	0.69%	0.86%	0.93%	1.12%	1.06%	1.02%	0.91%	1.19%	1.21%	1.24%
<b><u>Days to Correction</u> *</b>													
Avg. number of days to correction	in the month	2.00	1.00	0.00	3.00	3.00	2.00	3.00	3.00	0.00	3.00	0.00	0.00
Avg. number of days to correction	year-to-date	2.00	1.50	1.50	2.25	2.40	2.33	2.43	2.56	2.56	2.64	1.38	2.64
<b><u>Days Without Corrections</u></b>													
Days without corrections	in the month	30	28	31	28	30	29	30	29	30	29	30	31
Days without corrections	year-to-date	30	58	89	117	147	176	206	235	265	294	324	355
<b>2019</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>Hour Corrections</u></b>													
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%
<b><u>Interval Corrections</u></b>													
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%
<b><u>Hours Reserved</u></b>													
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%
<b><u>Days to Correction</u> *</b>													
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
<b><u>Days Without Corrections</u></b>													
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

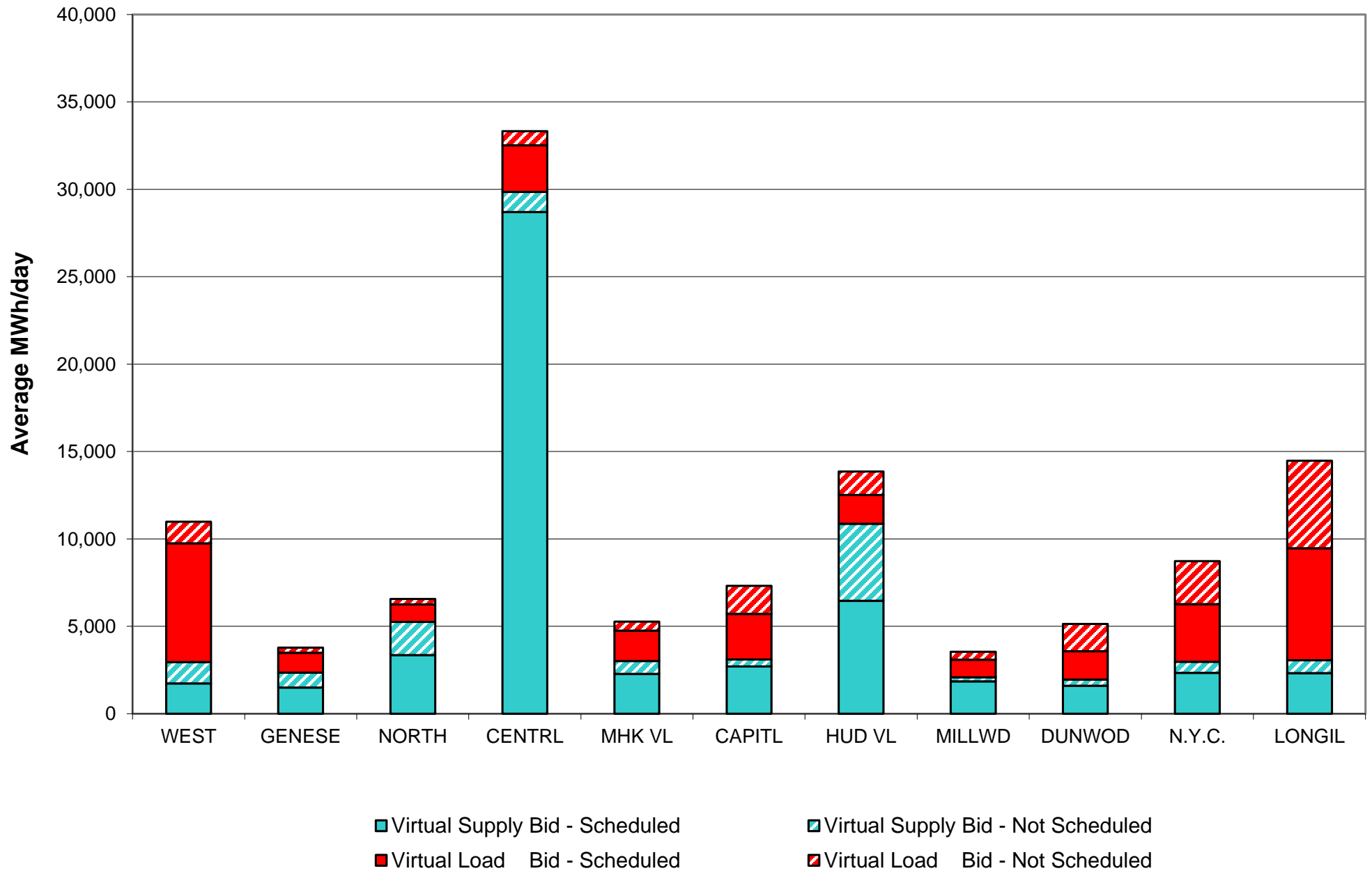
\*Calendar days from reservation date; for June 2018 forward, business days from market date



# NYISO Virtual Trading Average MWh per day



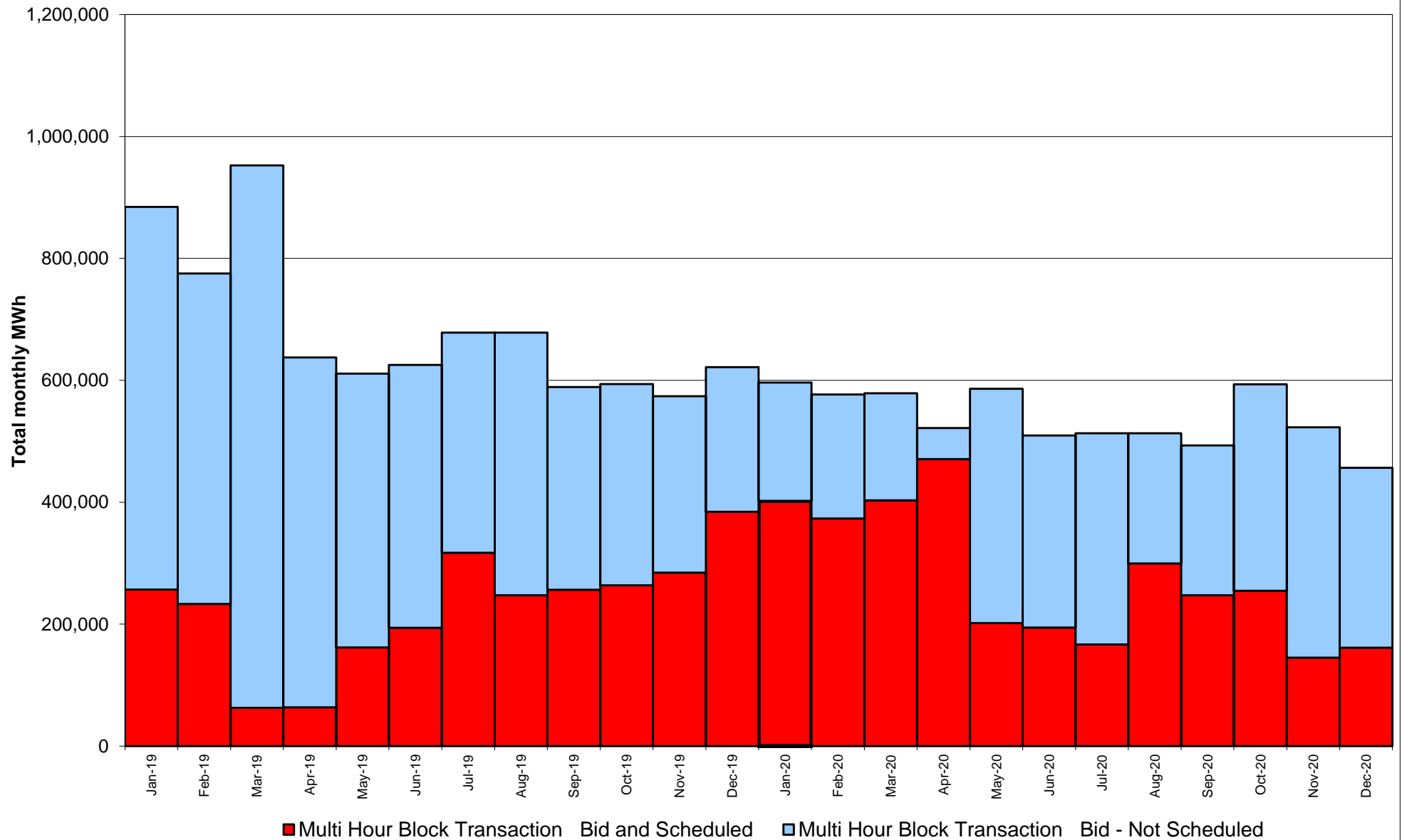
# Virtual Load and Supply Zonal Statistics through December 31, 2020



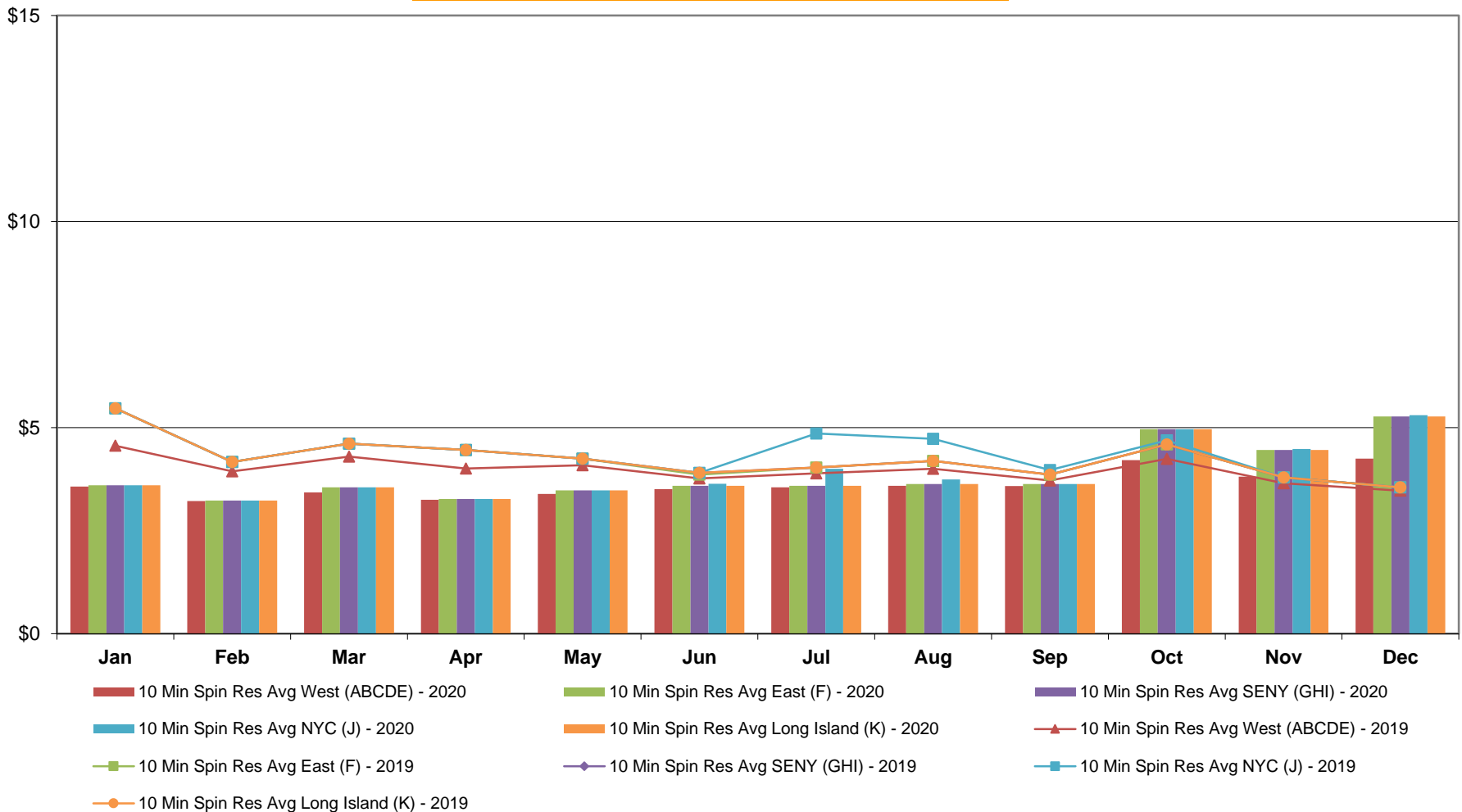
## Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2020

		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
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
	Feb-20	8,213	1,248	2,597	947			Feb-20	724	88	2,339	504			Feb-20	536	298
	Mar-20	9,155	1,778	1,637	1,236			Mar-20	481	97	2,455	542			Mar-20	766	109
	Apr-20	10,056	2,032	1,542	1,018			Apr-20	577	86	2,599	888			Apr-20	1,185	423
	May-20	7,943	3,322	2,105	3,397			May-20	586	70	1,878	287			May-20	1,114	196
	Jun-20	8,014	3,448	1,729	1,706			Jun-20	746	100	2,597	770			Jun-20	1,893	1,124
	Jul-20	8,616	4,286	2,582	1,469			Jul-20	1,144	250	3,965	951			Jul-20	2,944	1,069
	Aug-20	8,911	2,132	2,255	1,956			Aug-20	1,278	296	2,801	1,273			Aug-20	2,985	837
	Sep-20	8,119	2,224	2,136	1,707			Sep-20	1,174	676	2,791	738			Sep-20	1,566	990
	Oct-20	6,778	2,589	1,884	1,655			Oct-20	1,225	535	1,990	901			Oct-20	1,087	1,727
	Nov-20	7,232	1,067	1,449	1,697			Nov-20	1,274	270	3,476	856			Nov-20	1,899	1,539
	Dec-20	6,786	1,230	1,731	1,233			Dec-20	1,740	516	2,272	740			Dec-20	1,619	1,567
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
	Feb-20	534	79	2,082	640			Feb-20	2,046	418	3,149	673			Feb-20	9,452	1,841
	Mar-20	397	46	2,294	550			Mar-20	1,446	443	3,181	837			Mar-20	4,317	1,126
	Apr-20	422	42	2,940	622			Apr-20	2,367	825	3,335	928			Apr-20	2,089	546
	May-20	356	47	2,051	618			May-20	1,982	151	2,597	541			May-20	2,759	548
	Jun-20	949	163	2,238	939			Jun-20	1,622	328	2,994	472			Jun-20	6,448	1,621
	Jul-20	1,633	590	1,508	1,123			Jul-20	1,547	392	6,489	1,247			Jul-20	14,514	2,512
	Aug-20	1,435	486	3,028	1,745			Aug-20	1,551	783	4,741	1,525			Aug-20	12,432	2,728
	Sep-20	866	700	2,911	1,108			Sep-20	2,428	896	2,400	1,556			Sep-20	6,194	1,598
	Oct-20	801	539	2,440	1,234			Oct-20	2,962	1,288	2,358	1,124			Oct-20	3,396	1,549
	Nov-20	917	258	2,268	1,095			Nov-20	2,598	1,077	2,092	668			Nov-20	4,180	1,423
	Dec-20	1,123	299	1,506	851			Dec-20	2,607	1,612	2,703	399			Dec-20	3,295	2,450
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
	Feb-20	402	276	5,144	2,014			Feb-20	886	722	8,517	5,838			Feb-20	4,795	1,683
	Mar-20	335	293	5,075	2,315			Mar-20	944	634	6,811	10,029			Mar-20	5,402	1,429
	Apr-20	321	210	5,153	2,057			Apr-20	1,001	813	5,955	12,414			Apr-20	5,033	1,036
	May-20	2,305	381	3,547	1,757			May-20	1,088	806	5,998	12,839			May-20	5,948	2,125
	Jun-20	1,277	696	3,692	2,128			Jun-20	1,877	745	9,825	12,284			Jun-20	8,361	2,434
	Jul-20	1,031	612	3,848	2,745			Jul-20	2,011	1,091	9,899	12,718			Jul-20	8,727	4,710
	Aug-20	1,084	532	3,349	2,392			Aug-20	2,047	805	10,449	12,462			Aug-20	6,498	4,527
	Sep-20	950	644	3,846	1,998			Sep-20	1,415	800	8,027	12,119			Sep-20	6,834	2,901
	Oct-20	924	536	3,085	2,055			Oct-20	1,607	1,321	7,328	8,194			Oct-20	7,578	5,397
	Nov-20	904	308	3,354	2,191			Nov-20	2,987	1,140	6,345	7,060			Nov-20	6,125	3,551
	Dec-20	996	314	3,351	1,905			Dec-20	1,657	1,347	6,467	4,392			Dec-20	6,409	4,999
CENTRL	Jan-20	3,050	214	28,503	541		MILLWD	Jan-20	270	68	1,646	213		NYISO	Jan-20	29,361	9,580
	Feb-20	2,567	118	27,919	487			Feb-20	281	68	1,811	229			Feb-20	30,434	6,838
	Mar-20	2,340	113	17,986	481			Mar-20	494	19	1,844	174			Mar-20	26,077	6,087
	Apr-20	2,568	131	20,490	491			Apr-20	563	55	1,510	90			Apr-20	26,181	6,200
	May-20	2,736	296	22,414	414			May-20	502	198	1,442	76			May-20	27,319	8,140
	Jun-20	4,053	770	28,114	903			Jun-20	1,756	558	1,789	312			Jun-20	36,995	11,988
	Jul-20	3,622	620	28,085	1,455			Jul-20	4,003	800	1,054	553			Jul-20	49,792	16,933
	Aug-20	2,244	727	28,045	1,949			Aug-20	3,960	992	989	537			Aug-20	44,424	14,846
	Sep-20	1,735	1,451	28,835	1,369			Sep-20	1,501	501	1,467	375			Sep-20	32,781	13,381
	Oct-20	2,231	1,196	29,075	1,769			Oct-20	730	361	1,349	443			Oct-20	29,321	17,037
	Nov-20	1,942	632	28,951	1,158			Nov-20	916	281	1,678	297			Nov-20	30,975	11,545
	Dec-20	2,671	799	28,698	1,153			Dec-20	1,009	451	1,852	234			Dec-20	29,913	15,584

# NYISO Multi Hour Block Transactions Monthly Total MWh

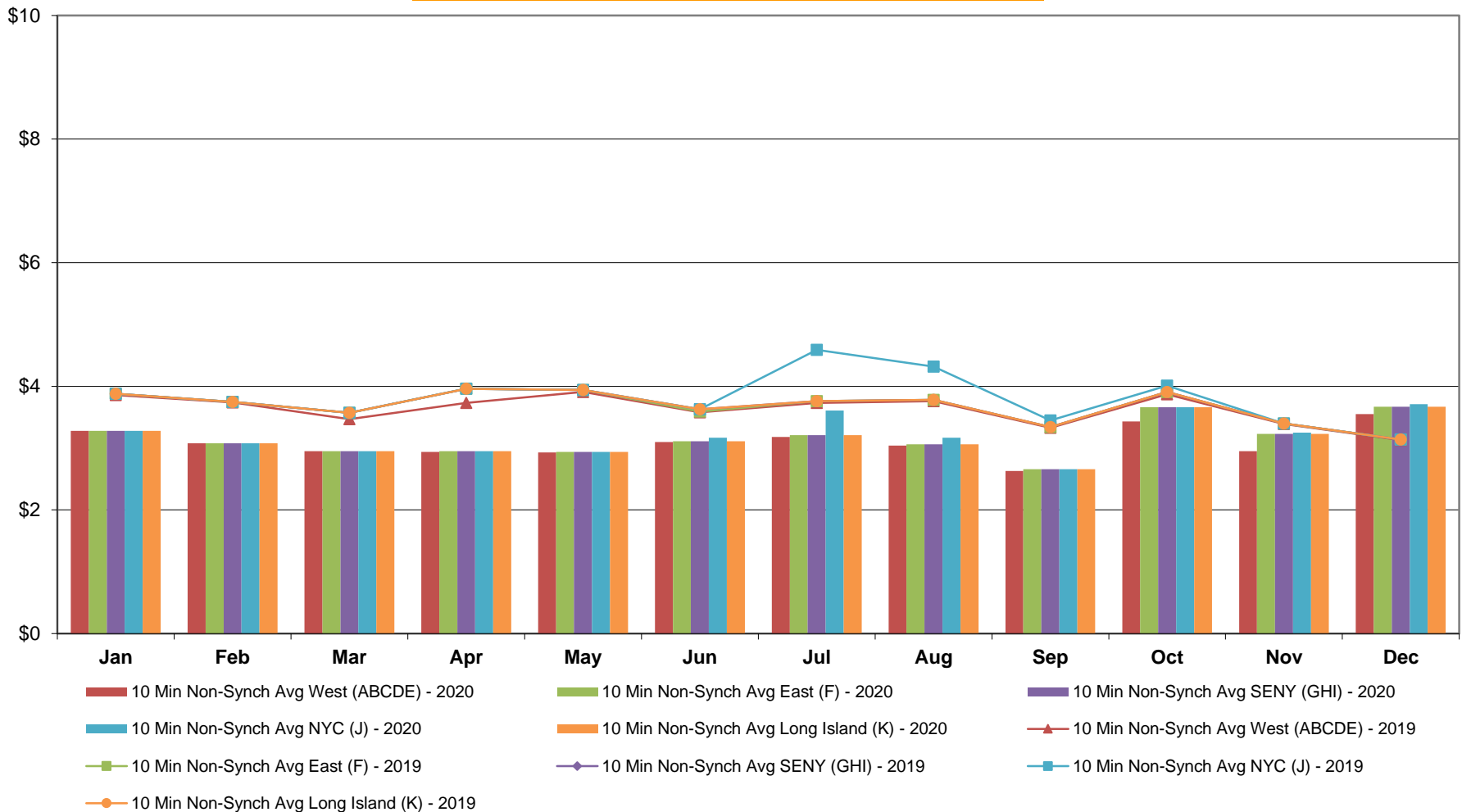


**NYISO Monthly Average Ancillary Service Prices  
Day Ahead Market - 10 Min Spin 2019 - 2020**

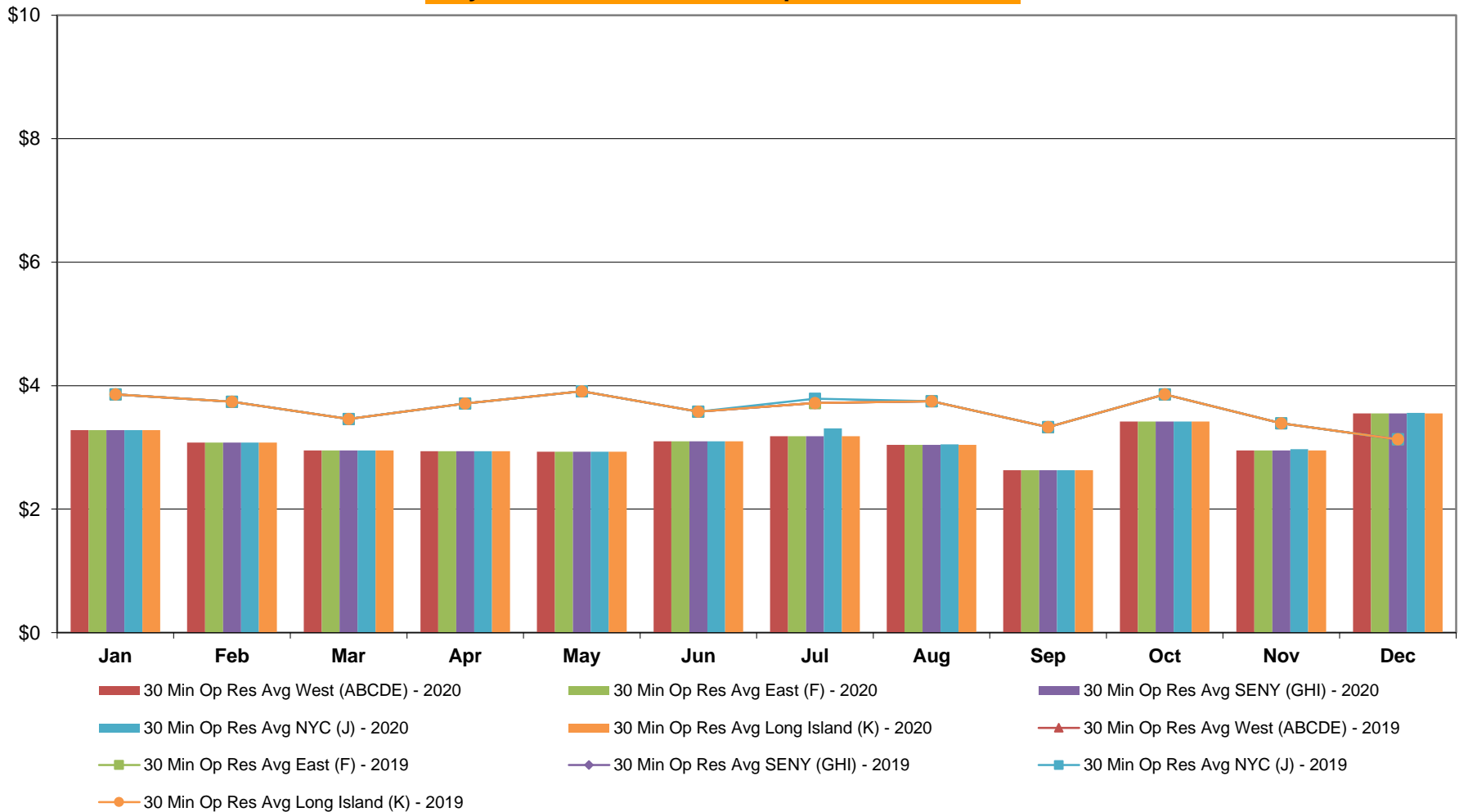




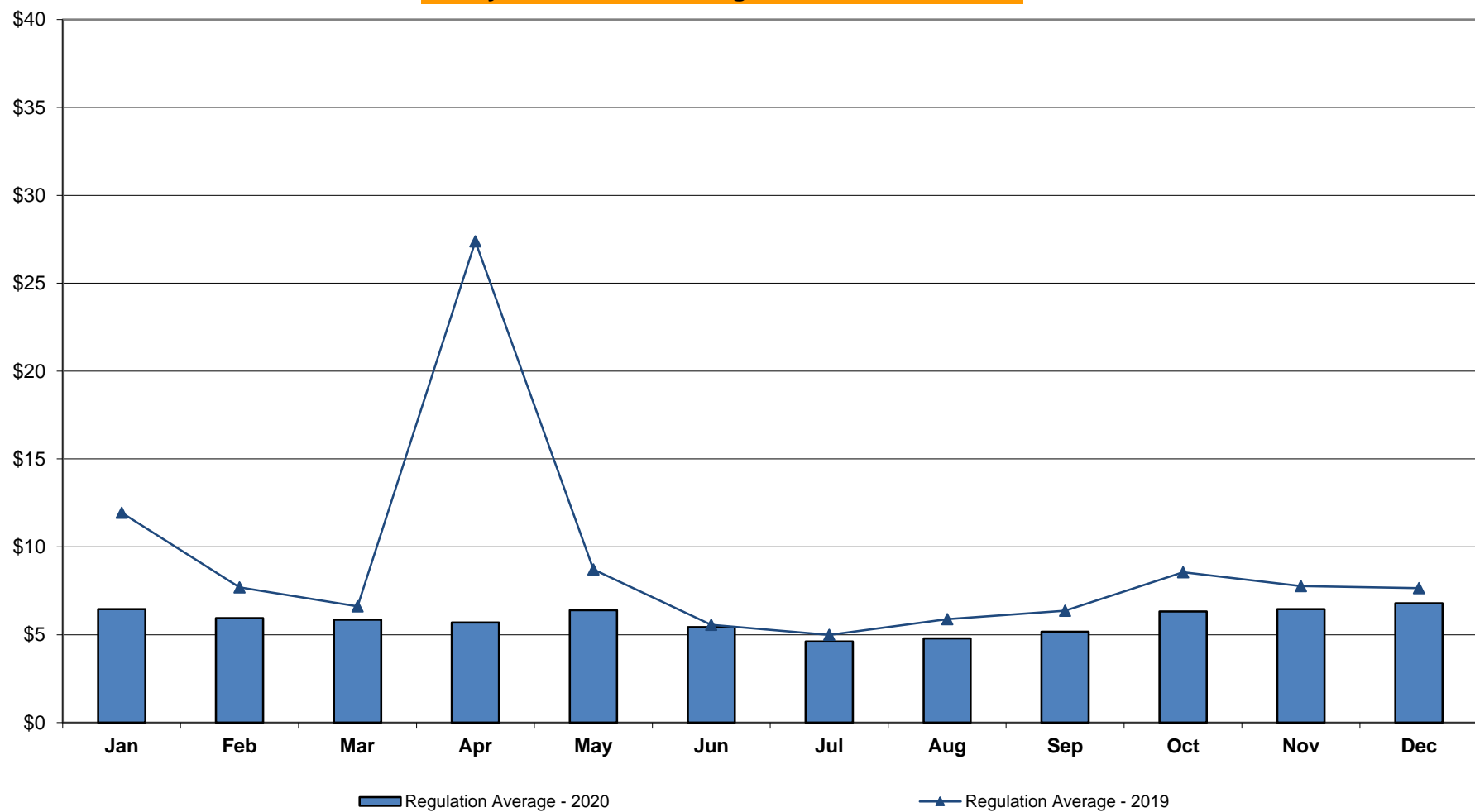
**NYISO Monthly Average Ancillary Service Prices  
Day Ahead Market - 10 Min Non-Synch 2019 - 2020**



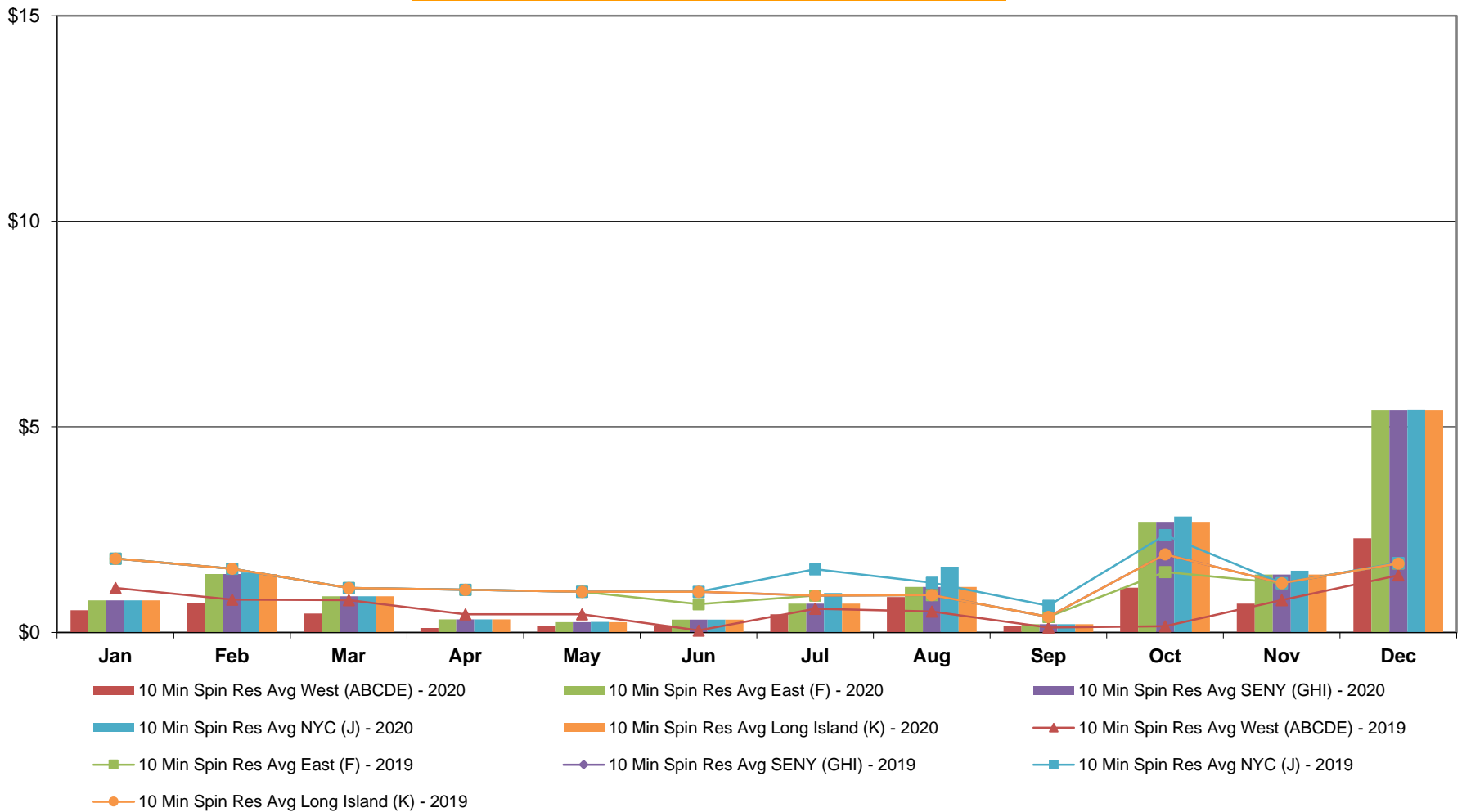
**NYISO Monthly Average Ancillary Service Prices  
Day Ahead Market - 30 Min Op Res 2019 - 2020**



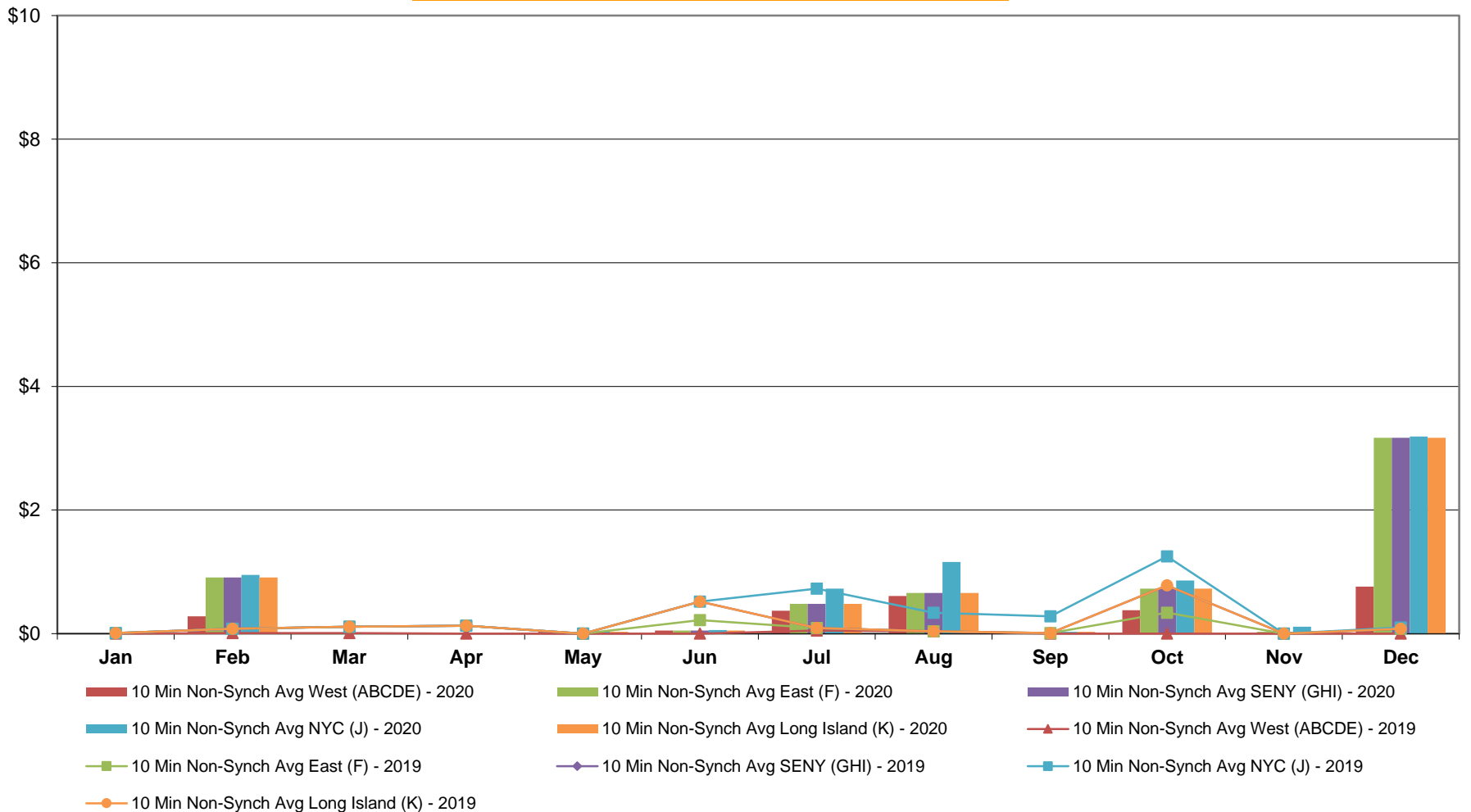
**NYISO Monthly Average Ancillary Service Prices  
Day Ahead Market - Regulation 2019 - 2020**



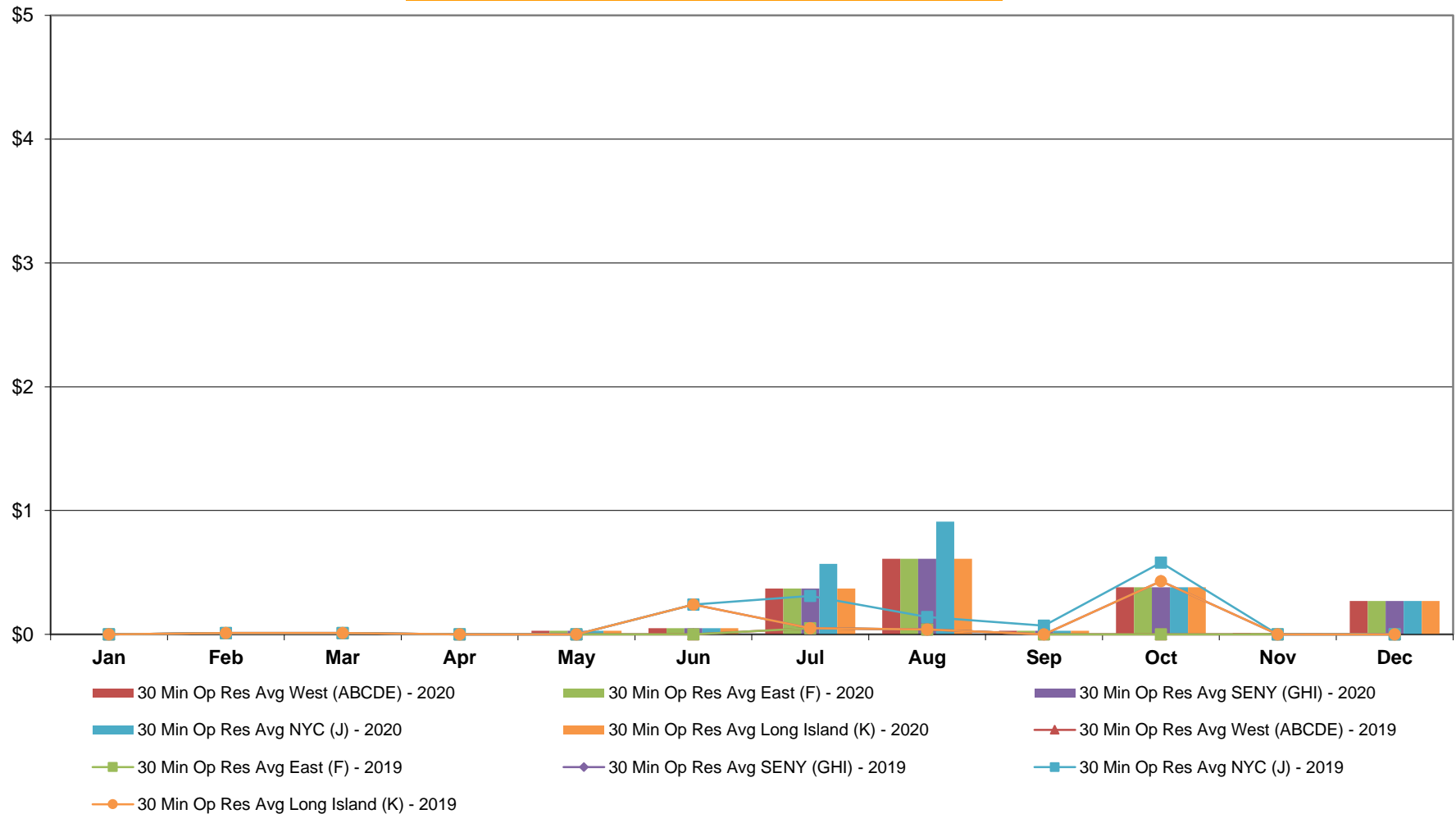
# **NYISO Monthly Average Ancillary Service Prices RTC Market - 10 Min Spin 2019 - 2020**



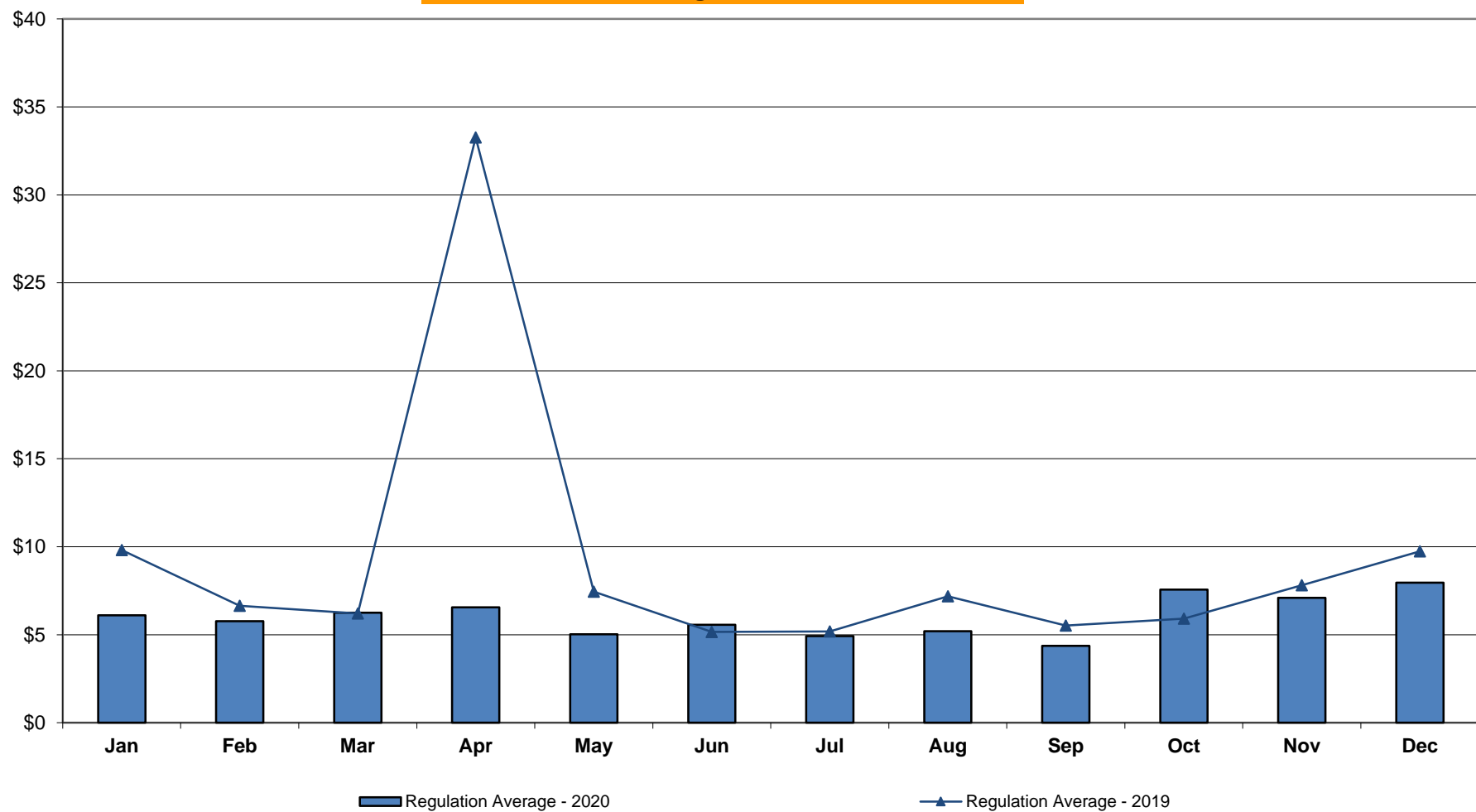
**NYISO Monthly Average Ancillary Service Prices  
RTC Market - 10 Min Non-Synch 2019 - 2020**



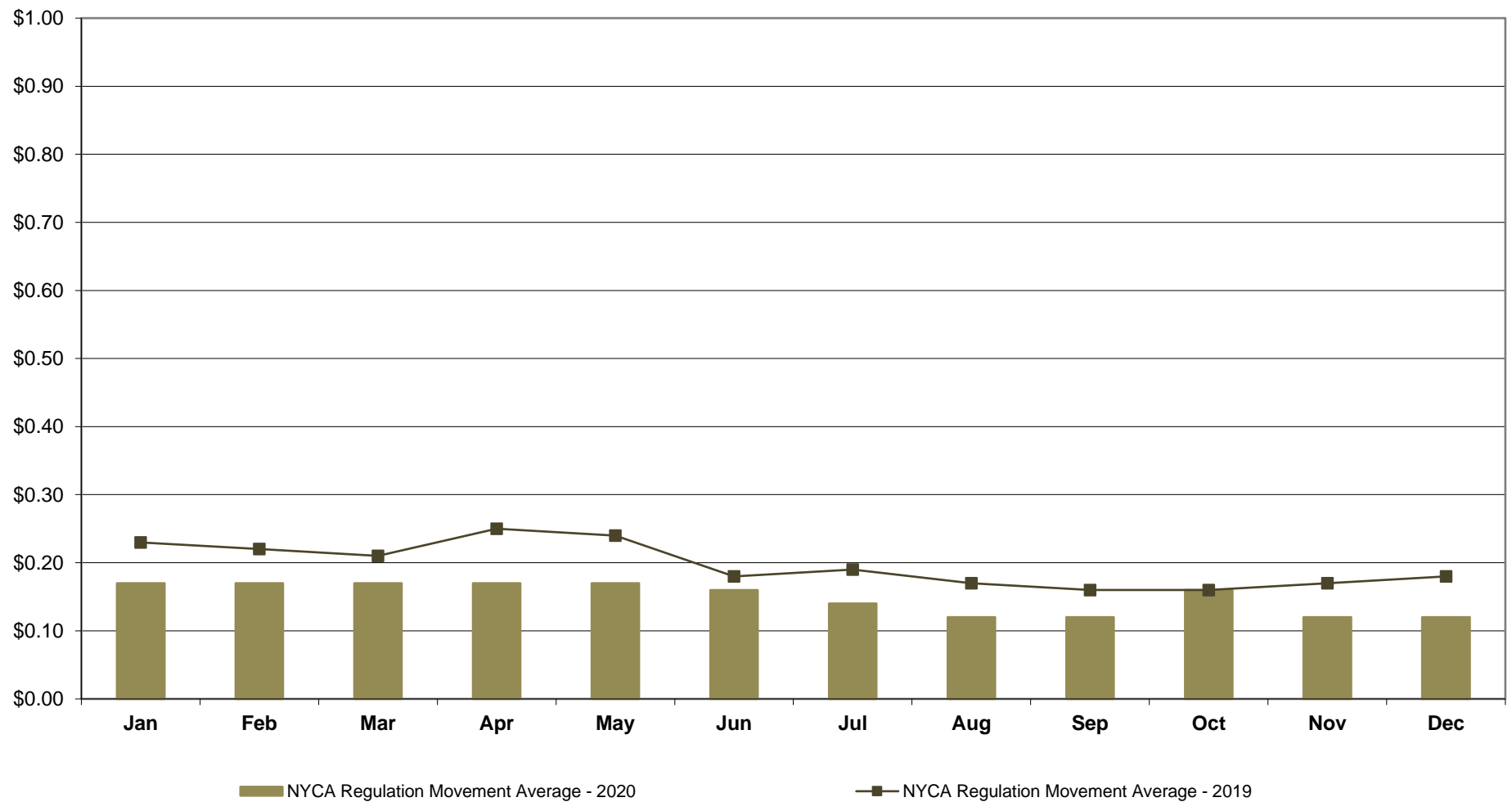
# **NYISO Monthly Average Ancillary Service Prices RTC Market - 30 Min Op Res 2019 - 2020**



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

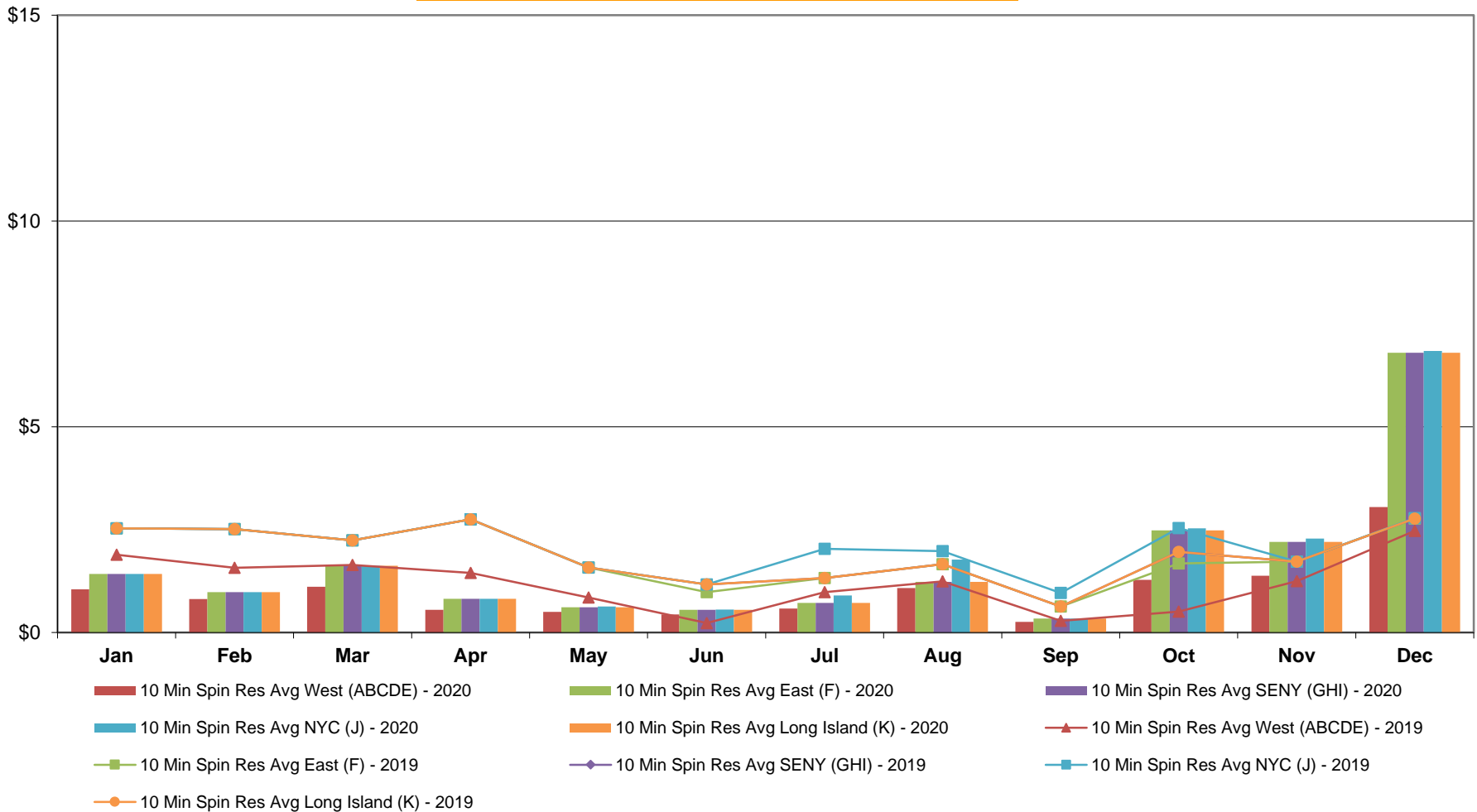


# **NYISO Monthly Average Ancillary Service Prices RTC Market - Regulation Movement 2019 - 2020**

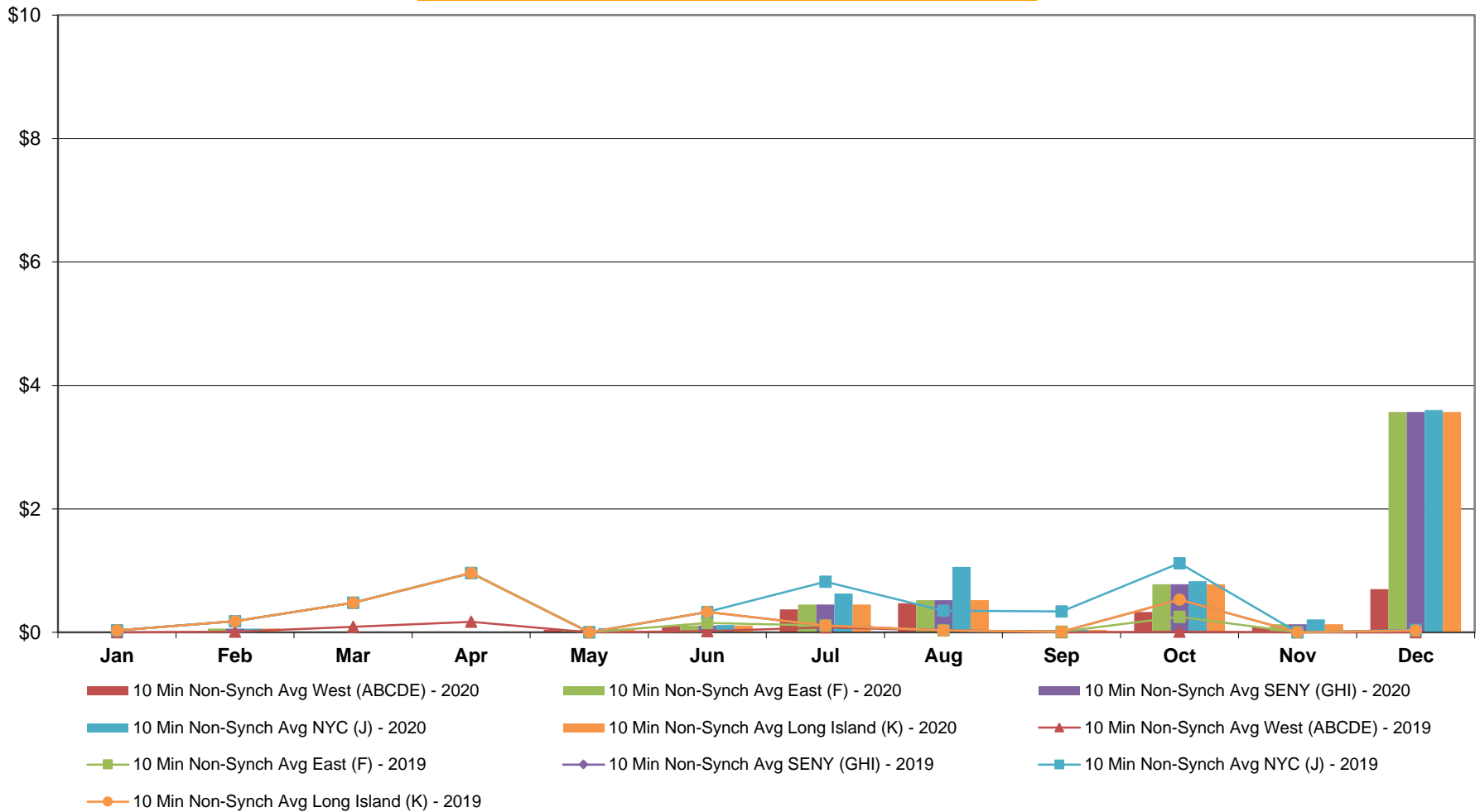




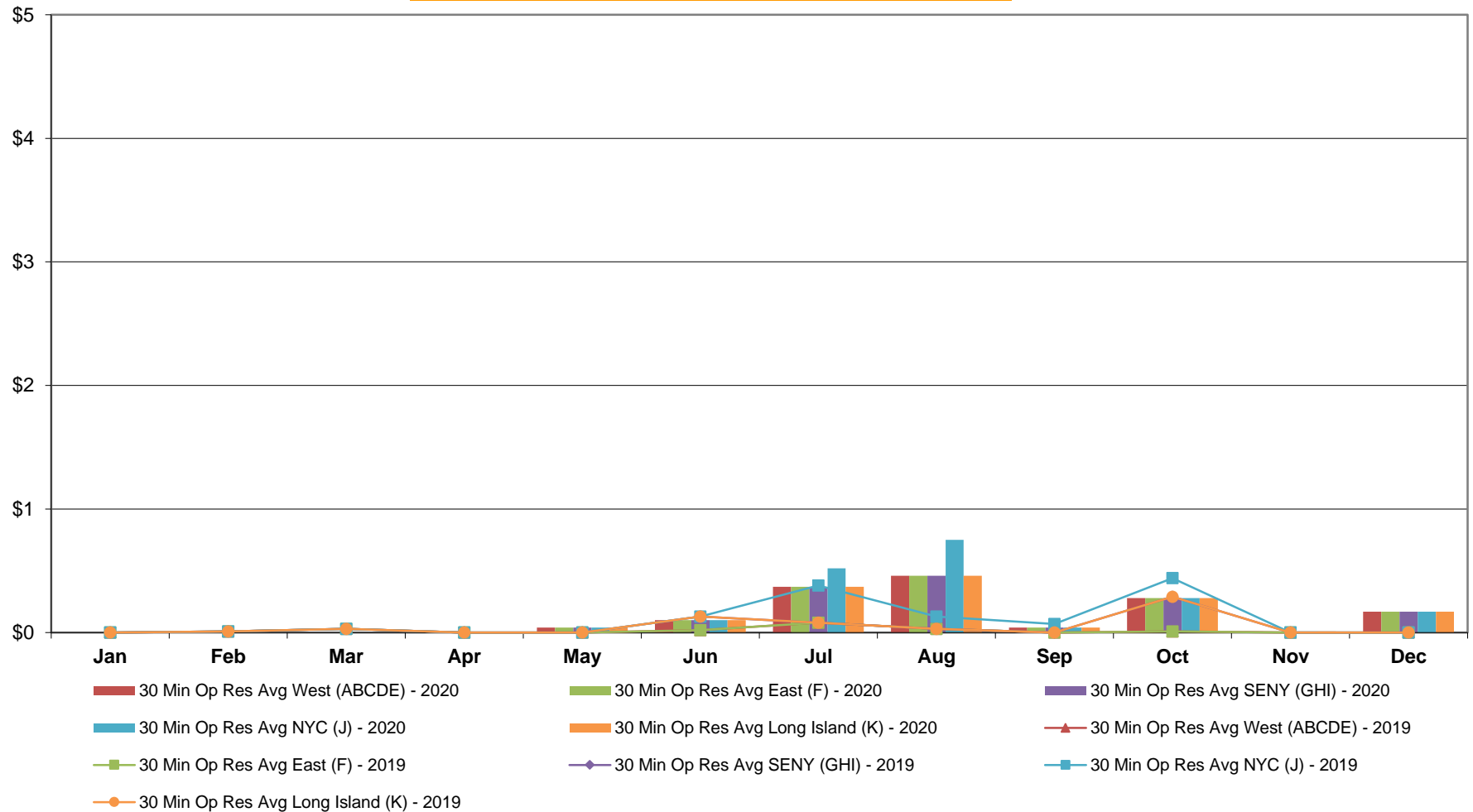
**NYISO Monthly Average Ancillary Service Prices  
Real Time Market - 10 Min Spin 2019 - 2020**



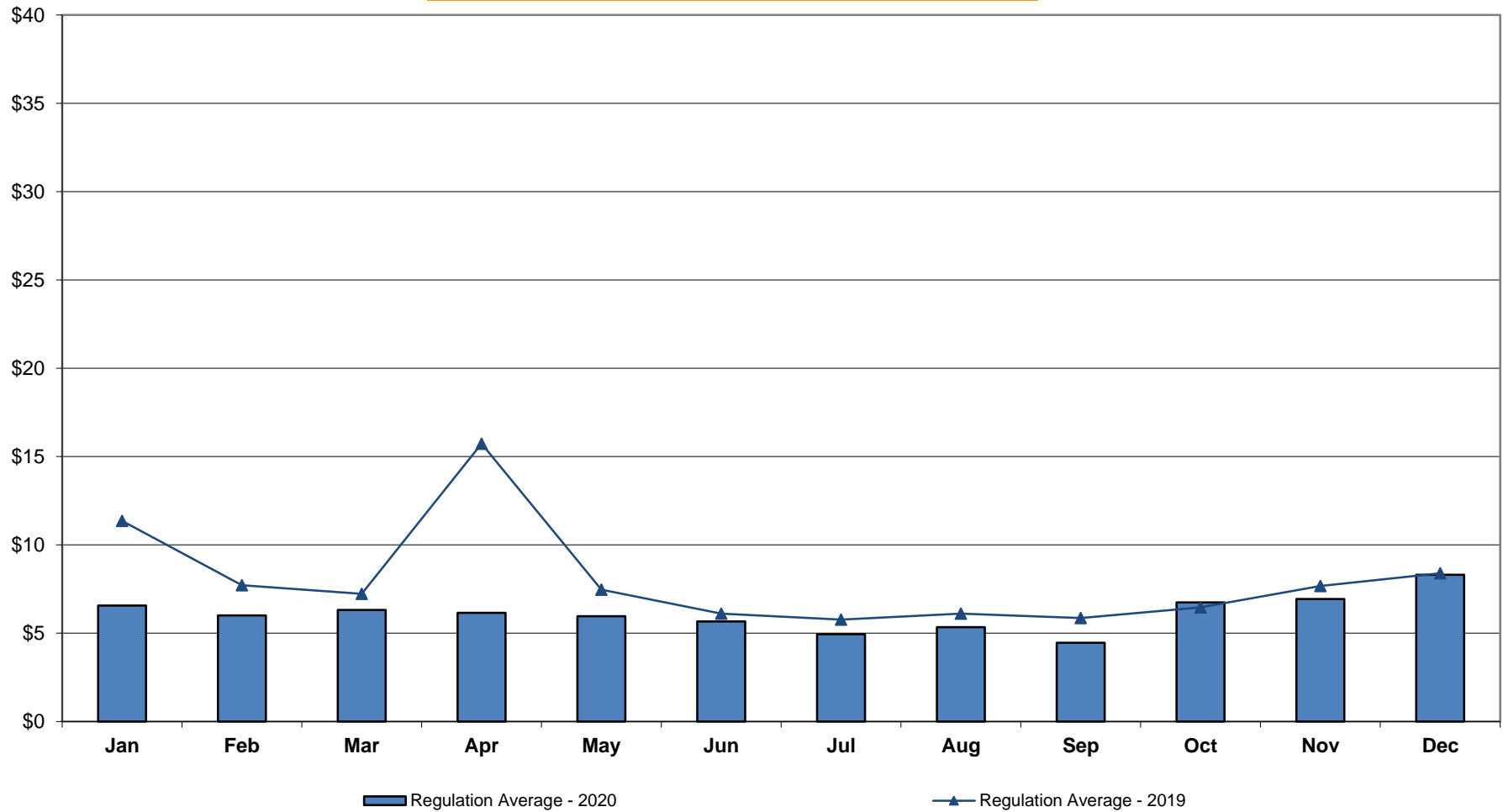
# **NYISO Monthly Average Ancillary Service Prices Real Time Market - 10 Min Non-Synch 2019 - 2020**



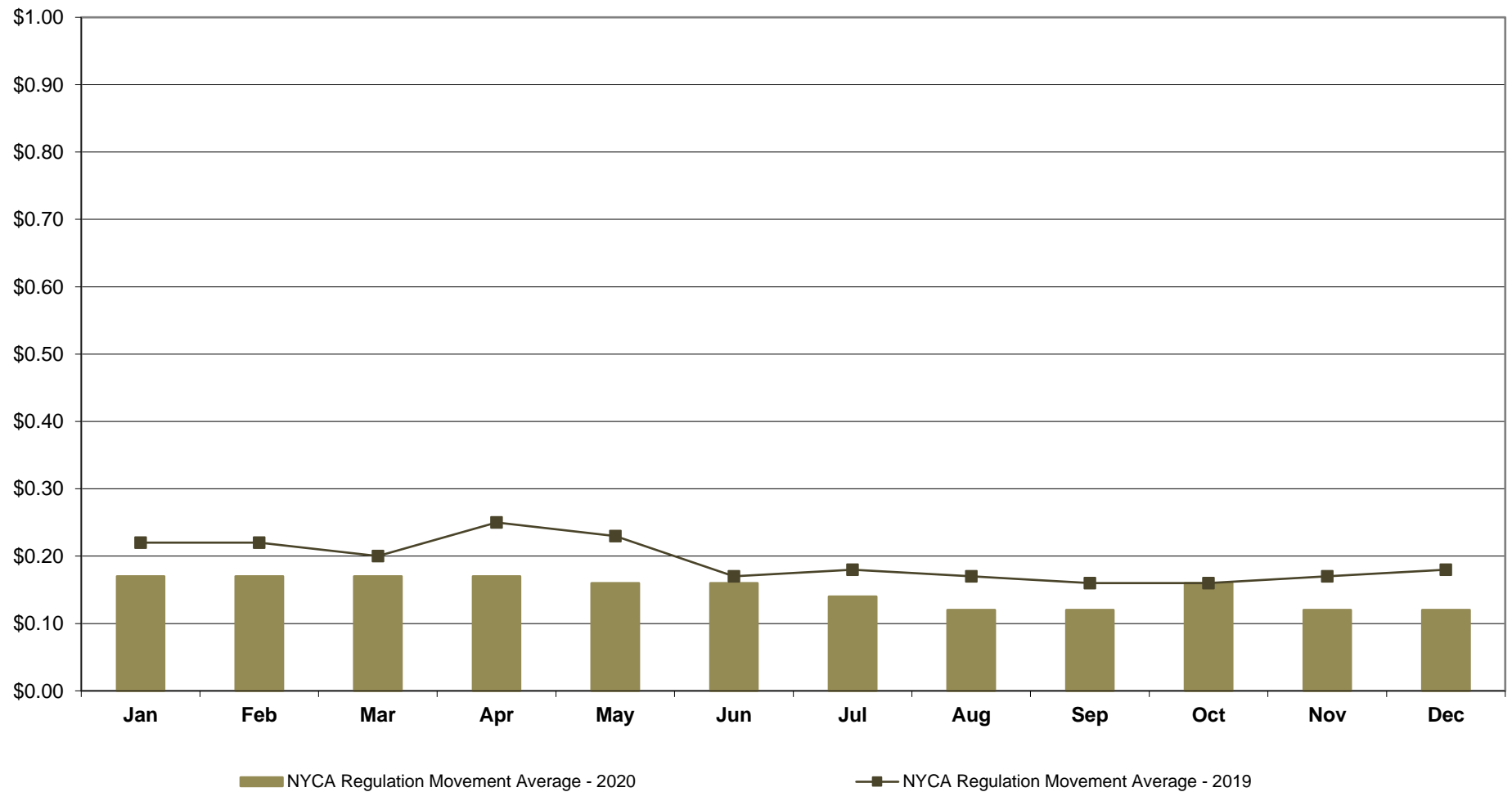
**NYISO Monthly Average Ancillary Service Prices  
Real Time Market - 30 Min Op Res 2019 - 2020**



**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**

<b><u>2020</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)	3.60	3.23	3.55	3.27	3.48	3.59	3.59	3.63	3.63	4.96	4.46	5.27
10 Min Spin NYC (J)	3.60	3.23	3.55	3.27	3.48	3.64	4.00	3.74	3.63	4.96	4.48	5.30
10 Min Spin SENY (GHI)	3.60	3.23	3.55	3.27	3.48	3.59	3.59	3.63	3.63	4.96	4.46	5.27
10 Min Spin East (F)	3.60	3.23	3.55	3.27	3.48	3.59	3.59	3.63	3.63	4.96	4.46	5.27
10 Min Spin West (ABCDE)	3.57	3.22	3.43	3.25	3.39	3.51	3.55	3.59	3.58	4.21	3.81	4.25
10 Min Non Synch Long Island (K)	3.28	3.08	2.95	2.95	2.94	3.11	3.21	3.06	2.66	3.66	3.23	3.67
10 Min Non Synch NYC (J)	3.28	3.08	2.95	2.95	2.94	3.17	3.61	3.17	2.66	3.66	3.25	3.71
10 Min Non Synch SENY (GHI)	3.28	3.08	2.95	2.95	2.94	3.11	3.21	3.06	2.66	3.66	3.23	3.67
10 Min Non Synch East (F)	3.28	3.08	2.95	2.95	2.94	3.11	3.21	3.06	2.66	3.66	3.23	3.67
10 Min Non Synch West (ABCDE)	3.28	3.08	2.95	2.94	2.93	3.10	3.18	3.04	2.63	3.43	2.95	3.55
30 Min Long Island (K)	3.28	3.08	2.95	2.94	2.93	3.10	3.18	3.04	2.63	3.42	2.95	3.55
30 Min NYC (J)	3.28	3.08	2.95	2.94	2.93	3.10	3.31	3.05	2.63	3.42	2.97	3.56
30 Min SENY (GHI)	3.28	3.08	2.95	2.94	2.93	3.10	3.18	3.04	2.63	3.42	2.95	3.55
30 Min East (F)	3.28	3.08	2.95	2.94	2.93	3.10	3.18	3.04	2.63	3.42	2.95	3.55
30 Min West (ABCDE)	3.28	3.08	2.95	2.94	2.93	3.10	3.18	3.04	2.63	3.42	2.95	3.55
Regulation	6.46	5.94	5.86	5.70	6.40	5.44	4.61	4.79	5.17	6.32	6.45	6.79
<b><u>2019</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)	5.47	5.47	4.61	4.46	4.25	4.25	4.25	4.25	4.25	4.59	3.79	3.55
10 Min Spin NYC (J)	5.47	5.47	4.61	4.46	4.25	4.25	4.25	4.25	4.25	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	3.94	3.94	3.94	3.94	3.91	3.40	3.14
10 Min Non Synch NYC (J)	3.88	3.88	3.57	3.96	3.94	3.94	3.94	3.94	3.94	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	3.91	3.91	3.91	3.91	3.86	3.39	3.13
30 Min NYC (J)	3.86	3.86	3.46	3.71	3.91	3.91	3.91	3.91	3.91	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**

<b><u>2020</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)	0.78	1.42	0.88	0.32	0.25	0.31	0.70	1.11	0.20	2.69	1.41	5.40
10 Min Spin NYC (J)	0.78	1.46	0.88	0.32	0.26	0.31	0.96	1.60	0.20	2.82	1.50	5.42
10 Min Spin SENY (GHI)	0.78	1.42	0.88	0.32	0.25	0.31	0.70	1.11	0.20	2.69	1.41	5.40
10 Min Spin East (F)	0.78	1.42	0.88	0.32	0.25	0.31	0.70	1.11	0.20	2.69	1.41	5.40
10 Min Spin West (ABCDE)	0.54	0.72	0.46	0.11	0.15	0.17	0.44	0.86	0.16	1.09	0.70	2.29
10 Min Non Synch Long Island (K)	0.00	0.91	0.00	0.00	0.03	0.05	0.48	0.66	0.03	0.73	0.03	3.17
10 Min Non Synch NYC (J)	0.00	0.95	0.00	0.00	0.04	0.06	0.73	1.16	0.03	0.86	0.11	3.19
10 Min Non Synch SENY (GHI)	0.00	0.91	0.00	0.00	0.03	0.05	0.48	0.66	0.03	0.73	0.03	3.17
10 Min Non Synch East (F)	0.00	0.91	0.00	0.00	0.03	0.05	0.48	0.66	0.03	0.73	0.03	3.17
10 Min Non Synch West (ABCDE)	0.00	0.28	0.00	0.00	0.03	0.05	0.37	0.61	0.03	0.38	0.01	0.76
30 Min Long Island (K)	0.00	0.01	0.00	0.00	0.03	0.05	0.37	0.61	0.03	0.38	0.01	0.27
30 Min NYC (J)	0.00	0.01	0.00	0.00	0.03	0.05	0.57	0.91	0.03	0.38	0.01	0.27
30 Min SENY (GHI)	0.00	0.01	0.00	0.00	0.03	0.05	0.37	0.61	0.03	0.38	0.01	0.27
30 Min East (F)	0.00	0.01	0.00	0.00	0.03	0.05	0.37	0.61	0.03	0.38	0.01	0.27
30 Min West (ABCDE)	0.00	0.01	0.00	0.00	0.03	0.05	0.37	0.61	0.03	0.38	0.01	0.27
Regulation	6.11	5.77	6.25	6.56	5.02	5.56	4.92	5.20	4.37	7.57	7.09	7.96
NYCA Regulation Movement	0.17	0.17	0.17	0.17	0.17	0.16	0.14	0.12	0.12	0.16	0.12	0.12
<b><u>2019</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)	1.80	1.80	1.08	1.04	0.99	0.99	0.99	0.99	0.99	1.90	1.20	1.68
10 Min Spin NYC (J)	1.80	1.80	1.08	1.04	0.99	0.99	0.99	0.99	0.99	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	0.00	0.00	0.00	0.00	0.78	0.00	0.08
10 Min Non Synch NYC (J)	0.01	0.01	0.11	0.13	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.43	0.00	0.00
30 Min NYC (J)	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	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

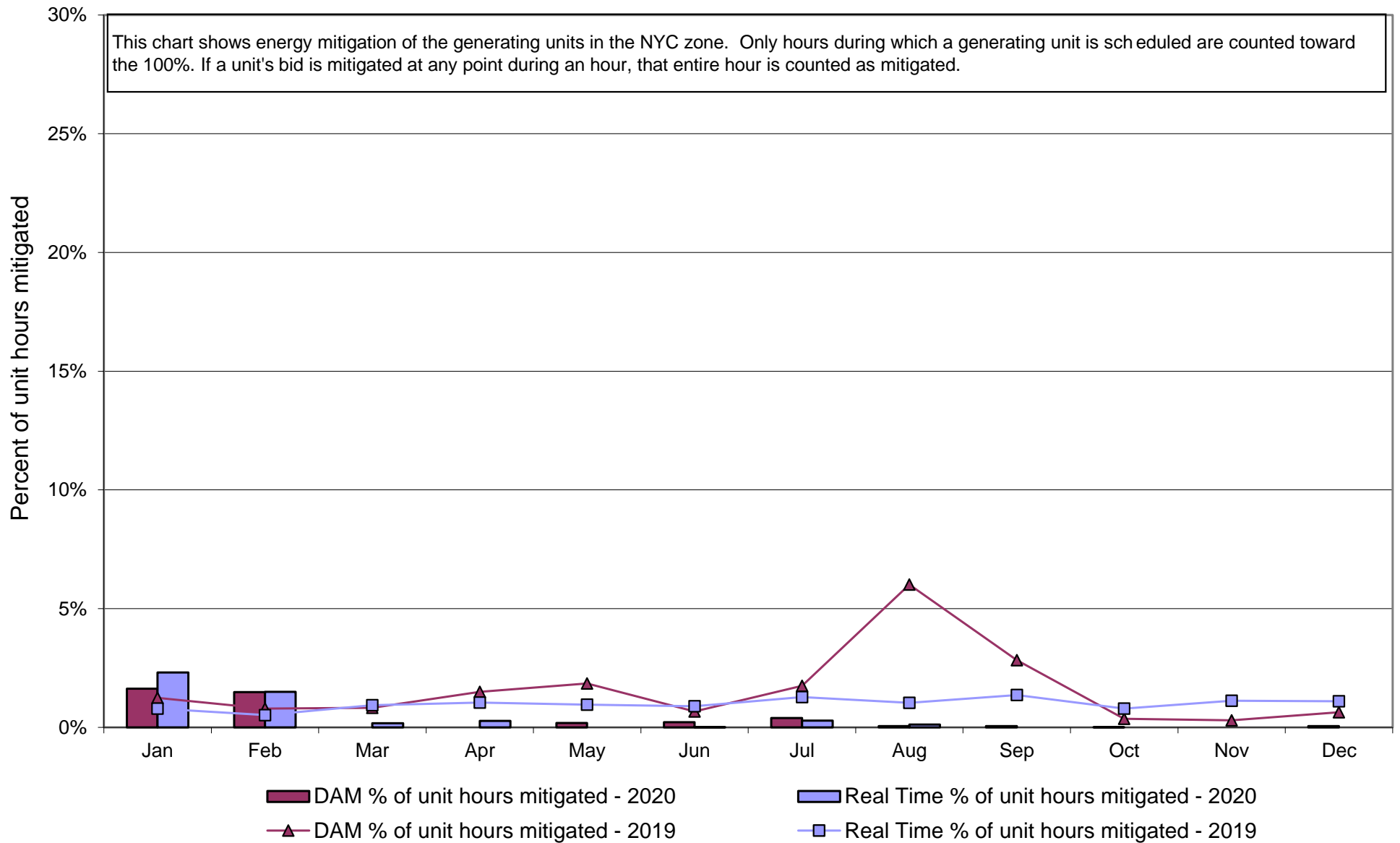
## **NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH) - RT**

<b><u>2020</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)	1.42	0.98	1.62	0.82	0.61	0.55	0.72	1.23	0.34	2.48	2.20	6.80
10 Min Spin NYC (J)	1.42	0.98	1.62	0.82	0.63	0.56	0.90	1.77	0.34	2.53	2.28	6.84
10 Min Spin SENY (GHI)	1.42	0.98	1.62	0.82	0.61	0.55	0.72	1.23	0.34	2.48	2.20	6.80
10 Min Spin East (F)	1.42	0.98	1.62	0.82	0.61	0.55	0.72	1.23	0.34	2.48	2.20	6.80
10 Min Spin West (ABCDE)	1.05	0.81	1.11	0.55	0.50	0.44	0.58	1.08	0.26	1.28	1.38	3.05
10 Min Non Synch Long Island (K)	0.00	0.06	0.00	0.00	0.04	0.11	0.45	0.52	0.04	0.78	0.13	3.57
10 Min Non Synch NYC (J)	0.00	0.06	0.00	0.00	0.07	0.12	0.63	1.06	0.04	0.83	0.21	3.60
10 Min Non Synch SENY (GHI)	0.00	0.06	0.00	0.00	0.04	0.11	0.45	0.52	0.04	0.78	0.13	3.57
10 Min Non Synch East (F)	0.00	0.06	0.00	0.00	0.04	0.11	0.45	0.52	0.04	0.78	0.13	3.57
10 Min Non Synch West (ABCDE)	0.00	0.00	0.00	0.00	0.04	0.10	0.37	0.47	0.04	0.33	0.08	0.70
30 Min Long Island (K)	0.00	0.00	0.00	0.00	0.04	0.10	0.37	0.46	0.04	0.28	0.01	0.17
30 Min NYC (J)	0.00	0.00	0.00	0.00	0.04	0.10	0.52	0.75	0.04	0.28	0.01	0.17
30 Min SENY (GHI)	0.00	0.00	0.00	0.00	0.04	0.10	0.37	0.46	0.04	0.28	0.01	0.17
30 Min East (F)	0.00	0.00	0.00	0.00	0.04	0.10	0.37	0.46	0.04	0.28	0.01	0.17
30 Min West (ABCDE)	0.00	0.00	0.00	0.00	0.04	0.10	0.37	0.46	0.04	0.28	0.01	0.17
Regulation	6.57	6.00	6.32	6.16	5.96	5.67	4.94	5.34	4.46	6.75	6.93	8.31
NYCA Regulation Movement	0.17	0.17	0.17	0.17	0.16	0.16	0.14	0.12	0.12	0.16	0.12	0.12
<b><u>2019</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)	2.53	2.53	2.24	2.75	1.58	1.58	1.58	1.58	1.58	1.96	1.72	2.77
10 Min Spin NYC (J)	2.53	2.53	2.24	2.75	1.58	1.58	1.58	1.58	1.58	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	0.00	0.00	0.00	0.00	0.53	0.00	0.03
10 Min Non Synch NYC (J)	0.03	0.03	0.48	0.96	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.29	0.00	0.00
30 Min NYC (J)	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	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

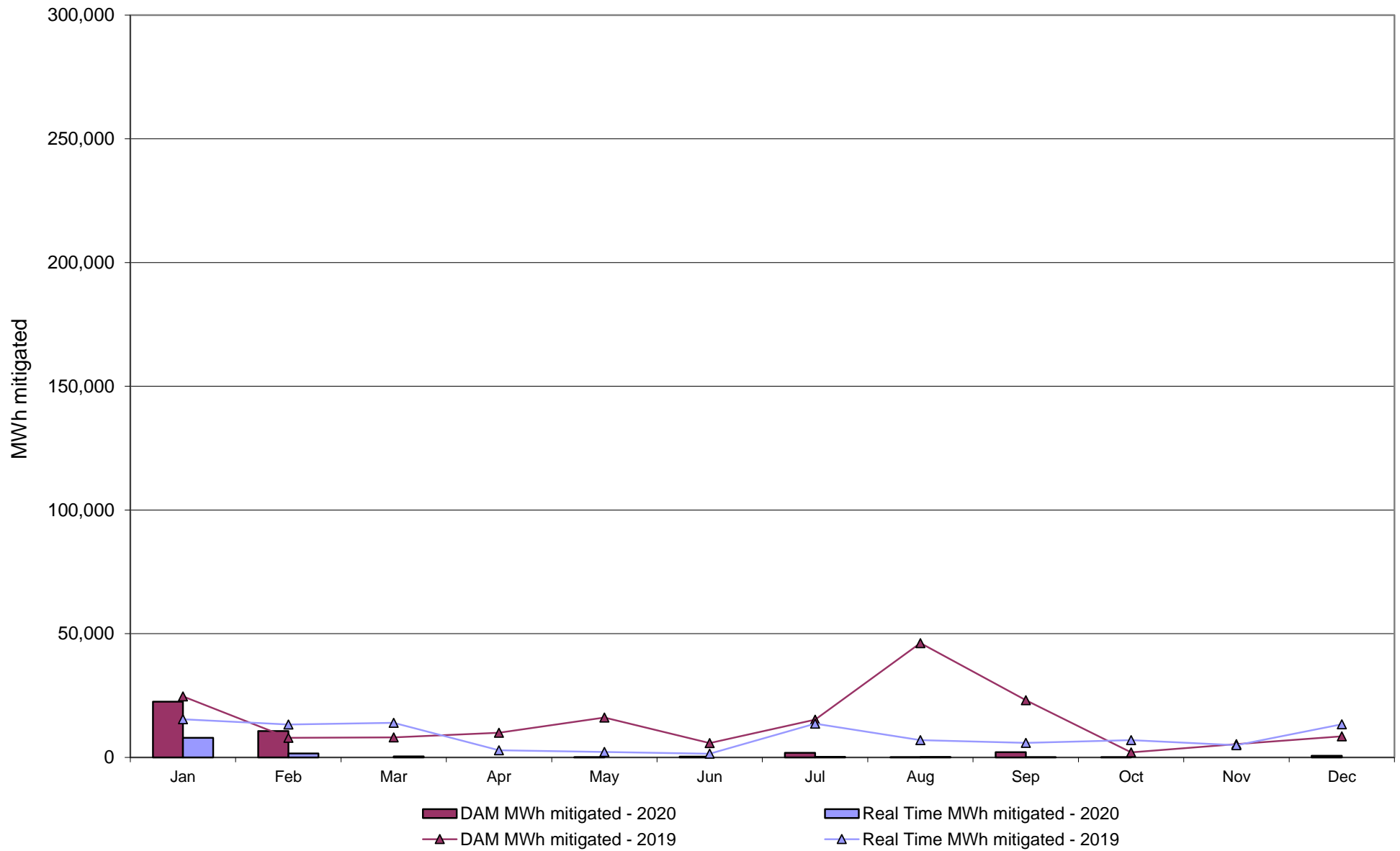


## NYISO In City Energy Mitigation - AMP (NYC Zone) 2019 - 2020

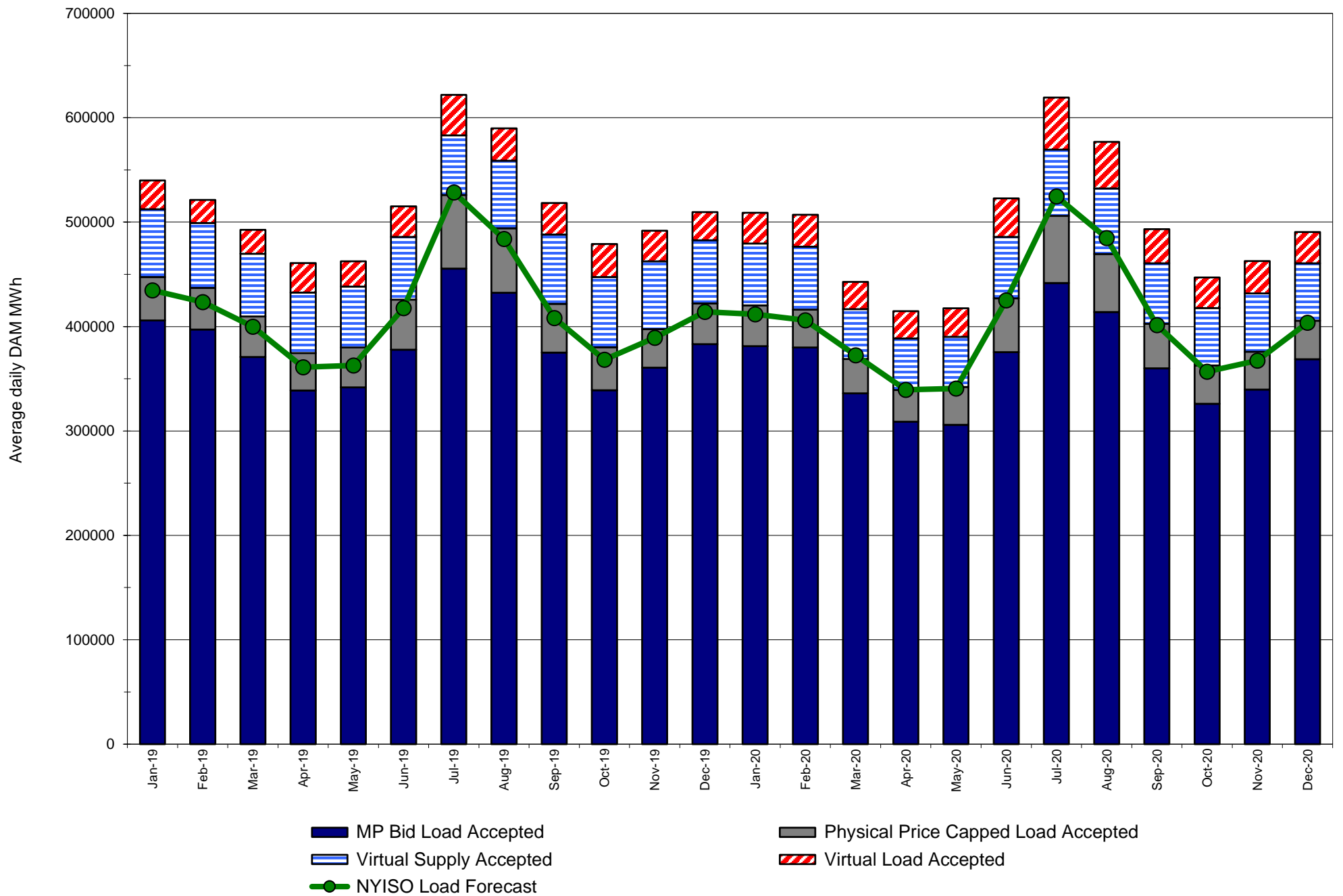
### Percentage of committed unit-hours mitigated



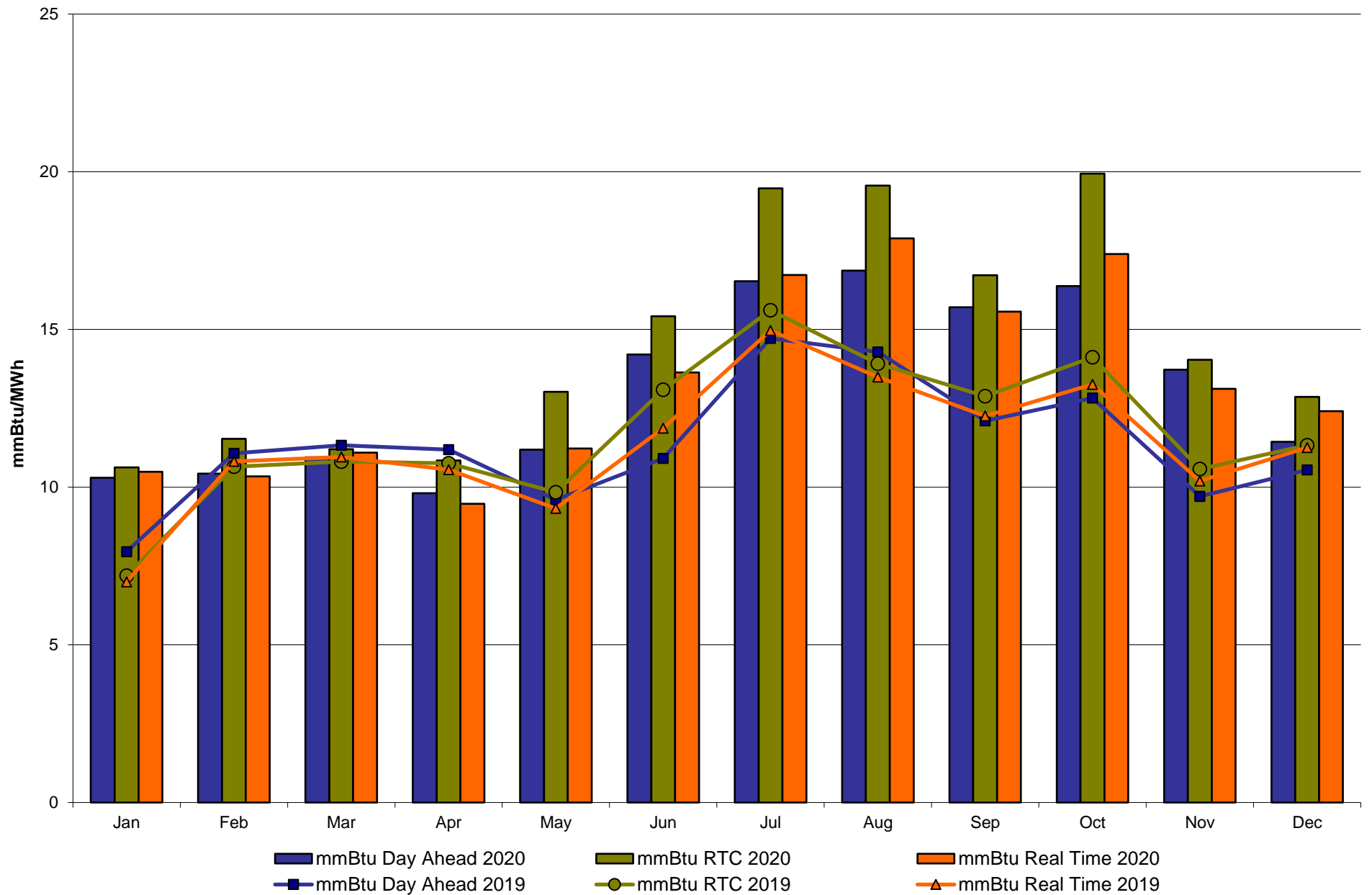
# **NYISO In City Energy Mitigation (NYC Zone) 2019 - 2020** **Monthly megawatt hours mitigated**



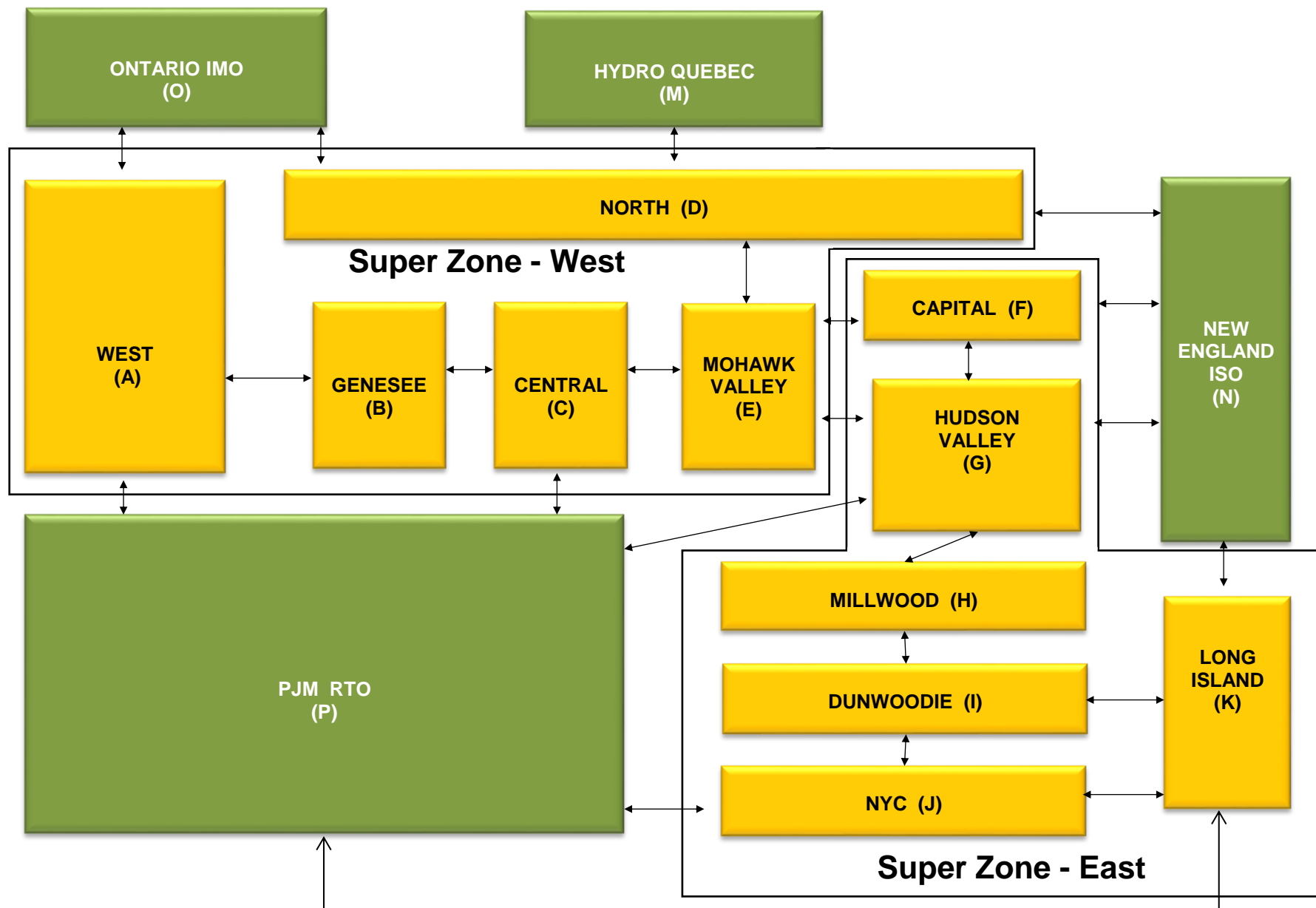
# NYISO Average Daily DAM Load Bid Summary



## Monthly Implied Heat Rate 2019-2020



# NYISO LBMP ZONES



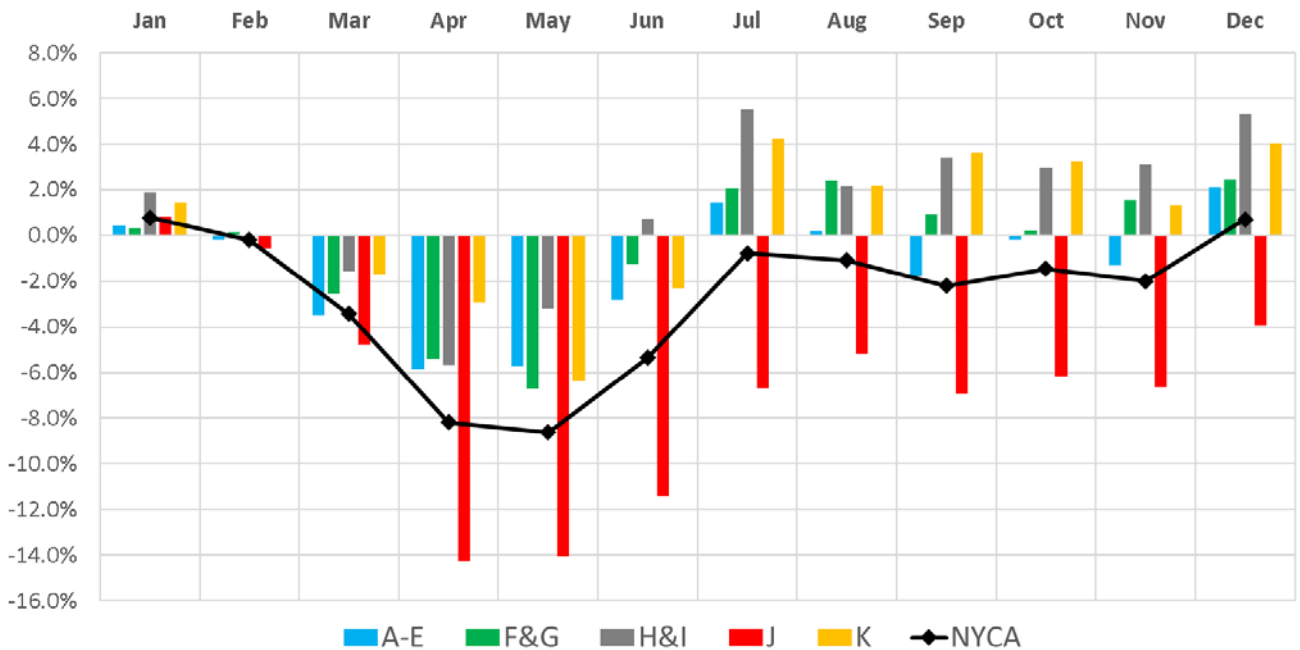
### Billing Codes for Chart C

<u>Chart - C Category Name</u>	<u>Billing Code</u>	<u>Billing Category Name</u>
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

# COVID-19: Estimated Load Impacts

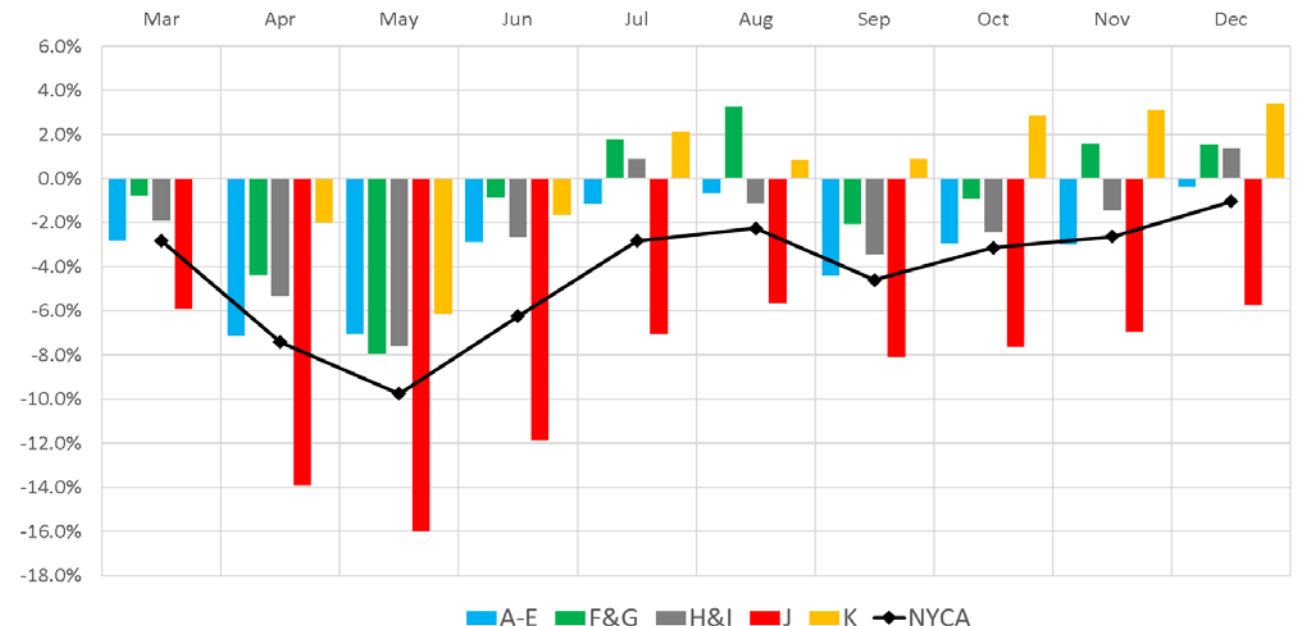
## Regional Energy Impacts

2020 Weather Normalized Monthly Energy Use - % Versus Expected (Areas)



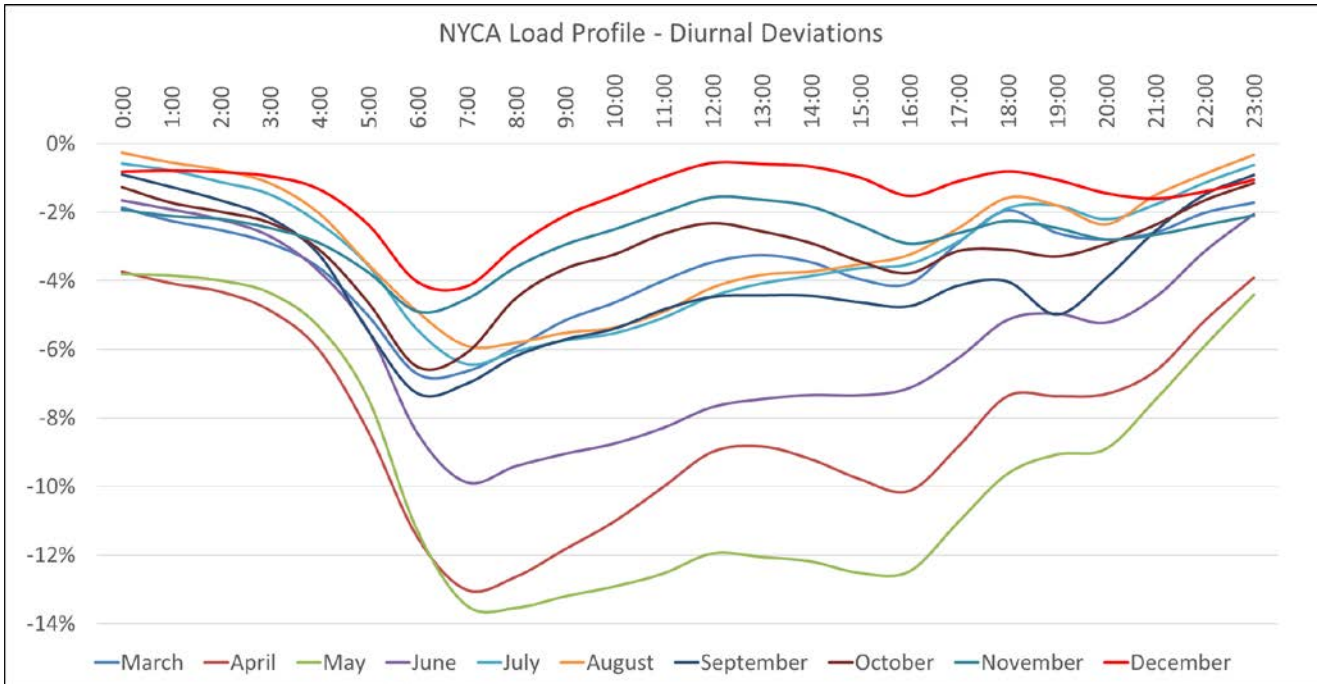
## Regional Peak Impacts

2020 Monthly Peak Demand - % Versus Expected (Areas)



# COVID-19: Estimated Load Impacts

## NYCA Hourly Impacts versus Expected\*



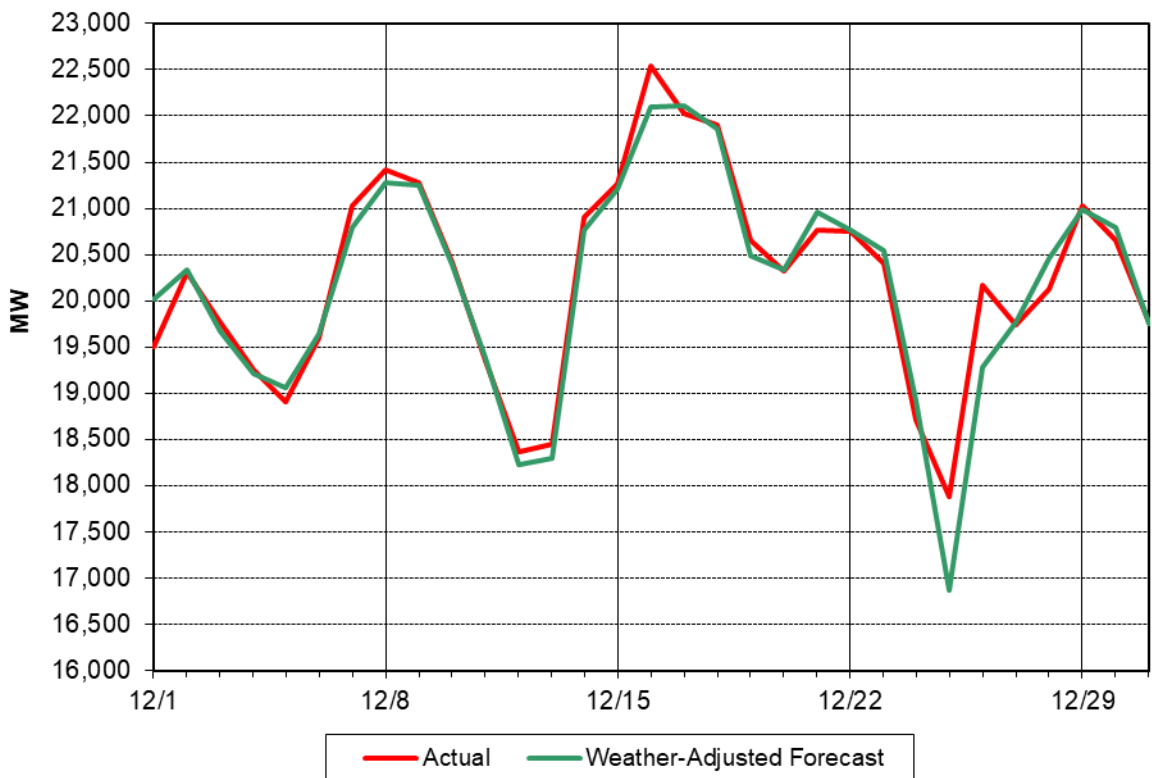
## Percent Deviations

Hour	March	April	May	June	July	August	September	October	November	December
0:00	-2%	-4%	-4%	-2%	-1%	0%	-1%	-1%	-2%	-1%
1:00	-2%	-4%	-4%	-2%	-1%	-1%	-1%	-2%	-2%	-1%
2:00	-3%	-4%	-4%	-2%	-1%	-1%	-2%	-2%	-2%	-1%
3:00	-3%	-5%	-4%	-3%	-1%	-1%	-2%	-2%	-2%	-1%
4:00	-4%	-6%	-5%	-4%	-2%	-2%	-3%	-3%	-3%	-1%
5:00	-5%	-8%	-7%	-5%	-4%	-4%	-5%	-5%	-4%	-2%
6:00	-7%	-11%	-11%	-8%	-5%	-5%	-7%	-6%	-5%	-4%
7:00	-7%	-13%	-13%	-10%	-6%	-6%	-7%	-6%	-5%	-4%
8:00	-6%	-13%	-14%	-9%	-6%	-6%	-6%	-5%	-4%	-3%
9:00	-5%	-12%	-13%	-9%	-6%	-6%	-6%	-4%	-3%	-2%
10:00	-5%	-11%	-13%	-9%	-6%	-5%	-5%	-3%	-2%	-2%
11:00	-4%	-10%	-13%	-8%	-5%	-5%	-5%	-3%	-2%	-1%
12:00	-3%	-9%	-12%	-8%	-4%	-4%	-4%	-2%	-2%	-1%
13:00	-3%	-9%	-12%	-7%	-4%	-4%	-4%	-3%	-2%	-1%
14:00	-3%	-9%	-12%	-7%	-4%	-4%	-4%	-3%	-2%	-1%
15:00	-4%	-10%	-13%	-7%	-4%	-4%	-5%	-3%	-2%	-1%
16:00	-4%	-10%	-12%	-7%	-4%	-3%	-5%	-4%	-3%	-2%
17:00	-3%	-9%	-11%	-6%	-3%	-2%	-4%	-3%	-3%	-1%
18:00	-2%	-7%	-10%	-5%	-2%	-2%	-4%	-3%	-2%	-1%
19:00	-3%	-7%	-9%	-5%	-2%	-2%	-5%	-3%	-2%	-1%
20:00	-3%	-7%	-9%	-5%	-2%	-2%	-4%	-3%	-3%	-1%
21:00	-3%	-7%	-7%	-4%	-2%	-2%	-3%	-2%	-3%	-2%
22:00	-2%	-5%	-6%	-3%	-1%	-1%	-1%	-2%	-2%	-1%
23:00	-2%	-4%	-4%	-2%	-1%	0%	-1%	-1%	-2%	-1%

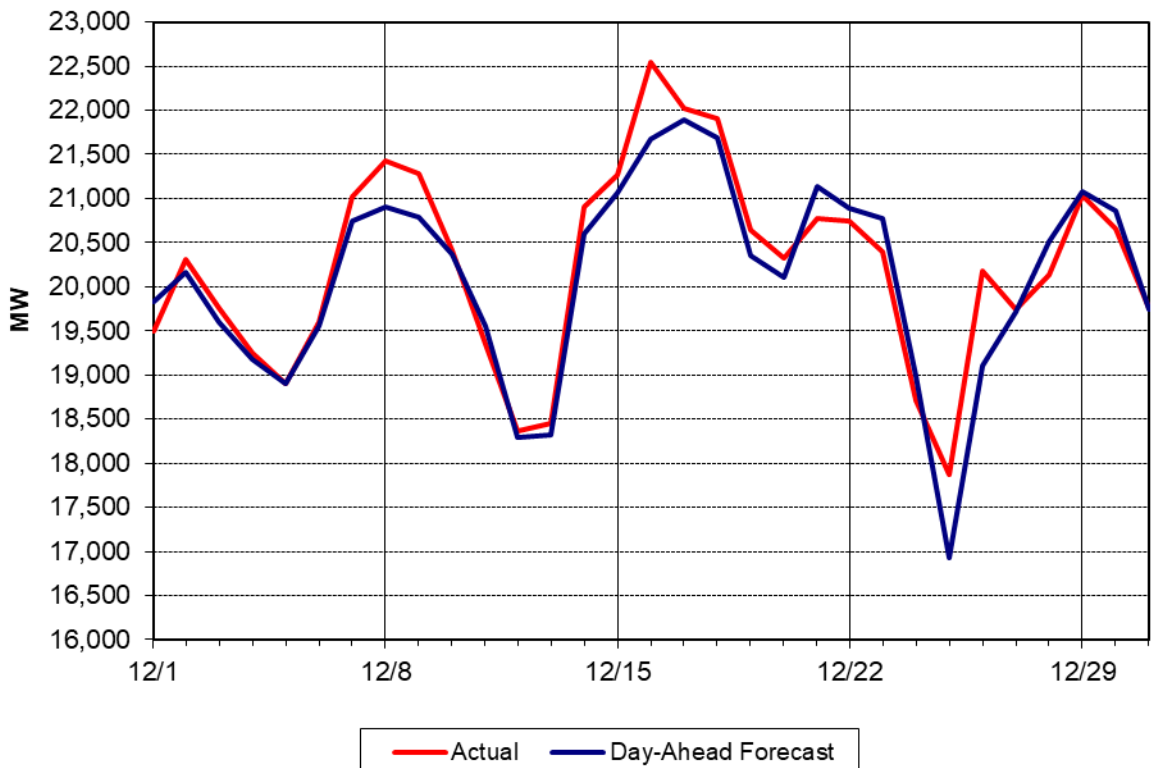
Peak Hour



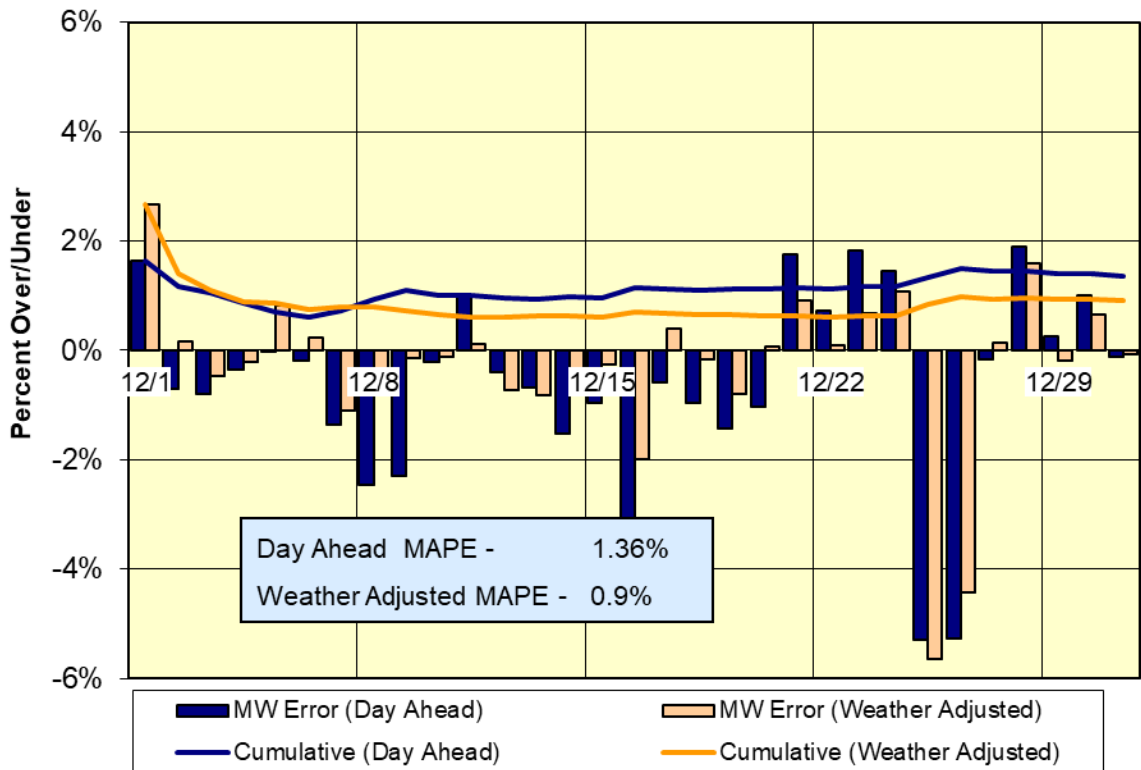
**NYISO Daily Peak Load - December 2020**  
**Actual vs. Weather-Adjusted Forecast**



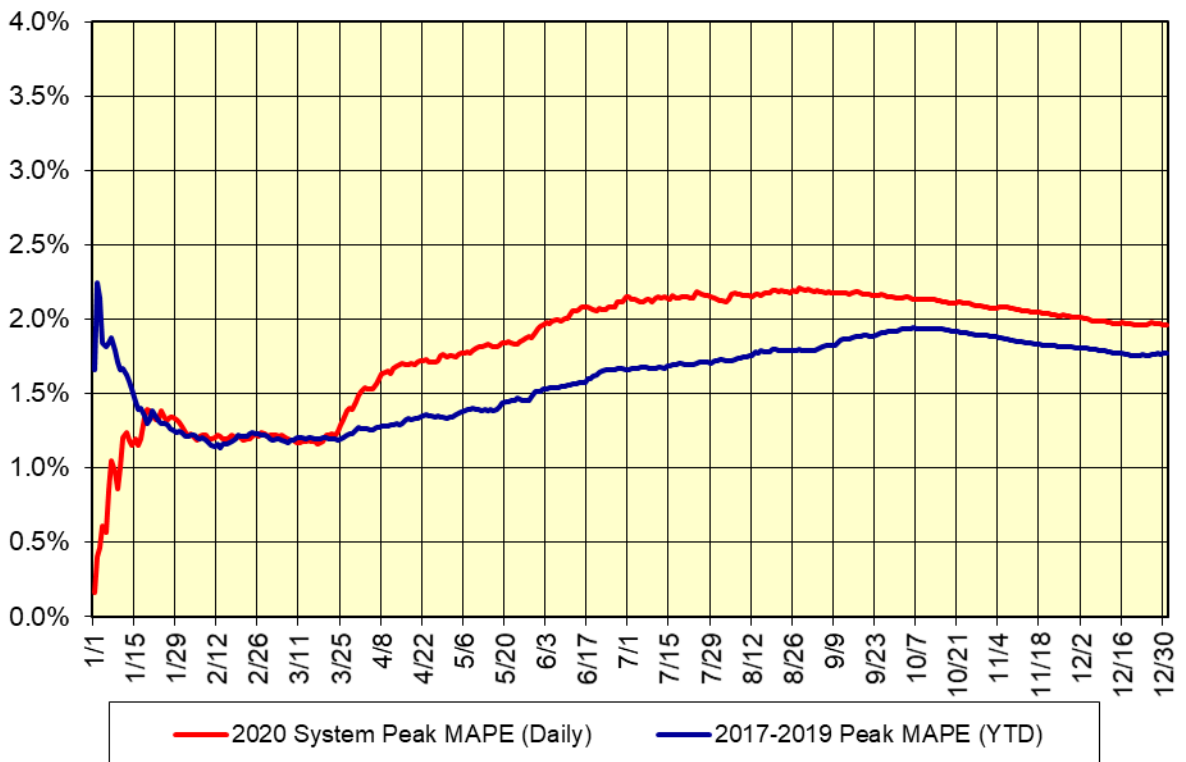
**NYISO Daily Peak Load - December 2020**  
**Actual vs. Forecast**



# Day Ahead Peak Forecast - December 2020 Percent Error - Actual & Weather-Adjusted



## Day-Ahead Forecast Accuracy - Cumulative Performance 2020 Year-to-Date



**Summary Description of Regulatory Filings, Investigations,  
Rulemakings and Related Orders in NYISO Matters – December 2020**

<b>Filing Date</b>	<b>Filing Summary</b>	<b>Docket</b>	<b>Order Date</b>	<b>Order Summary</b>
10/16/2020	NYISO 205 filing on behalf of Niagara Mohawk Power Corporation (“Niagara Mohawk”) re: an amended engineering and procurement agreement (SA 2531) between Niagara Mohawk and New York Transco, LLC	ER21-120-000	12/14/2020	Order accepted agreement effective 09/17/2020, as requested
10/20/2020	NYISO 205 filing on behalf of Niagara Mohawk Power Corporation (“Niagara Mohawk”) re: an engineering and procurement agreement (SA 2568) between Niagara Mohawk and LS Power Grid New York Corporation I	ER21-151-000	12/04/2020	Order accepted agreement effective 09/21/2020, as requested
10/20/2020	NYISO and New York State Electric & Gas Corporation (“NYSEG”) joint 205 filing re: small generator interconnection agreement (SA 2562) between NYISO, NYSEG, and Orangeville Energy Storage LLC	ER21-154-000	12/17/2020	Order accepted agreement effective 10/06/2020, as requested
10/23/2020	NYISO 205 filing re: unsecured credit requirements for Public Power Entities and Government Entities	ER21-193-000	12/11/2020	Order accepted revised unsecured credit requirements effective 12/23/2020, as requested
11/02/2020	NYISO 205 filing re: Implementation Agreement (SA 2575) between NYISO and Helix Ravenswood, LLC (“Helix”) regarding recovery of the costs Helix incurred to construct a new fuel oil storage tank	ER21-302-000	12/18/2020	Order accepted agreement effective 11/05/2020, as requested
11/12/2020	NYISO 205 filing re: Special market rules for generators serving the NYC steam distribution system	ER21-381-000	12/28/2020	Order accepted revisions effective 01/12/2021, as requested
12/01/2020	NYISO compliance filing re: effective date for tariff revisions concerning the pricing of fast start resources	ER20-659-001		
12/07/2020	NYISO 205 filing re: revisions to specify how Fast-Start Resources’ start-up costs will be incorporated into enhanced Fast-Start Resource pricing	ER21-594-000		
12/07/2020	NYISO 205 filing re: revisions to modify Market Participant eligibility to utilize Meter Services Entities	ER21-595-000		
12/09/2020	NYISO 205 filing on behalf of Niagara Mohawk Power Corporation (“Niagara Mohawk”) re: an engineering and procurement agreement (SA 2585) between Niagara Mohawk and KCE NY 6, LLC	ER21-613-000		

12/09/2020	NYISO filing re: answer to the Cricket Valley Energy Center and Empire Generating Company answer to pleadings filed in response to their complaint v. NYISO regarding capacity offer floor measures	EL21-7-000		
12/11/2020	NYISO 205 filing re: implementation of Southeastern New York Reserve enhancements	ER21-625-000		
12/11/2020	NYISO confidential filing to the NYPSC re five-year capital plan for 2021-2025	PSC Case. No. 12-E-0168		
12/22/2020	NYISO second compliance filing re: to modify the NYISO's Self Supply Exemption under the NYISO's buyer-side capacity market power mitigation rules in accordance with the directives of the 02/20/2020 Order	ER16-1404-005		
12/22/2020	NYISO errata filing re: Second Compliance Filing to modify the Self Supply Exemption under the BSM Rules	ER16-1404-006		
12/31/2020	NYISO 205 filing on behalf of Niagara Mohawk Power Corporation ("Niagara Mohawk") re: a Reimbursement Agreement (SA 2590) between Niagara Mohawk and New York Transco, LLC	ER21-778-000		