



Monthly Report

June 2019

Table of Contents

- **Operations Performance Metrics Report**
- **Market Operation's Report**
- **Daily Loads**
- **Regulatory Filings**

Operations Performance Metrics Monthly Report



June 2019 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 July 9, 2019.

Table of Contents

- ◆ **Highlights**
 - *Operations Performance*

- ◆ **Reliability Performance Metrics**
 - *Alert State Declarations*
 - *Major Emergency State Declarations*
 - *IROL Exceedance Times*
 - *Balancing Area Control Performance*
 - *Reserve Activations*
 - *Disturbance Recovery Times*
 - *Load Forecasting Performance*
 - *Wind Forecasting Performance*
 - *Wind Performance and Curtailments*
 - *Lake Erie Circulation and ISO Schedules*

- ◆ **Broader Regional Market Performance Metrics**
 - *PAR Interconnection Congestion Coordination Monthly Value*
 - *PAR Interconnection Congestion Coordination Daily Value*
 - *Regional Generation Congestion Coordination Monthly Value*
 - *Regional Generation Congestion Coordination Daily Value*
 - *Regional RT Scheduling - PJM Monthly Value*
 - *Regional RT Scheduling - PJM Daily Value*

- ◆ **Market Performance Metrics**
 - *Monthly Statewide Uplift Components and Rate*
 - *RTM Congestion Residuals Monthly Trend*
 - *RTM Congestion Residuals Daily Costs*
 - *RTM Congestion Residuals Event Summary*
 - *RTM Congestion Residuals Cost Categories*
 - *DAM Congestion Residuals Monthly Trend*
 - *DAM Congestion Residuals Daily Costs*
 - *DAM Congestion Residuals Cost Categories*
 - *NYCA Unit Uplift Components Monthly Trend*
 - *NYCA Unit Uplift Components Daily Costs*
 - *Local Reliability Costs Monthly Trend & Commitment Hours*
 - *TCC Monthly Clearing Price with DAM Congestion*
 - *ICAP Spot Market Clearing Price*
 - *UCAP Awards*

June 2019 Operations Performance Highlights

- Peak load of 27,190 MW occurred on 06/28/2019 HB 16
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 11.48 hours of Thunder Storm Alerts were declared
- 3 hours of NERC TLR level 3 curtailment
- The high BMCR settlements in June were due to unscheduled 345kV transmission outages that are detailed in this report.
- In response to Alert state declarations in May and June, NYISO increased the CRM values for the Niagara 230kV transmission facilities (#61, #62 & #64) on 06/17/2019.
- On 06/26/2019, the NYISO began securing a new 10-minute and 30-minute reserve requirement for the NYC zone in its Day-Ahead and Real-Time energy markets.
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

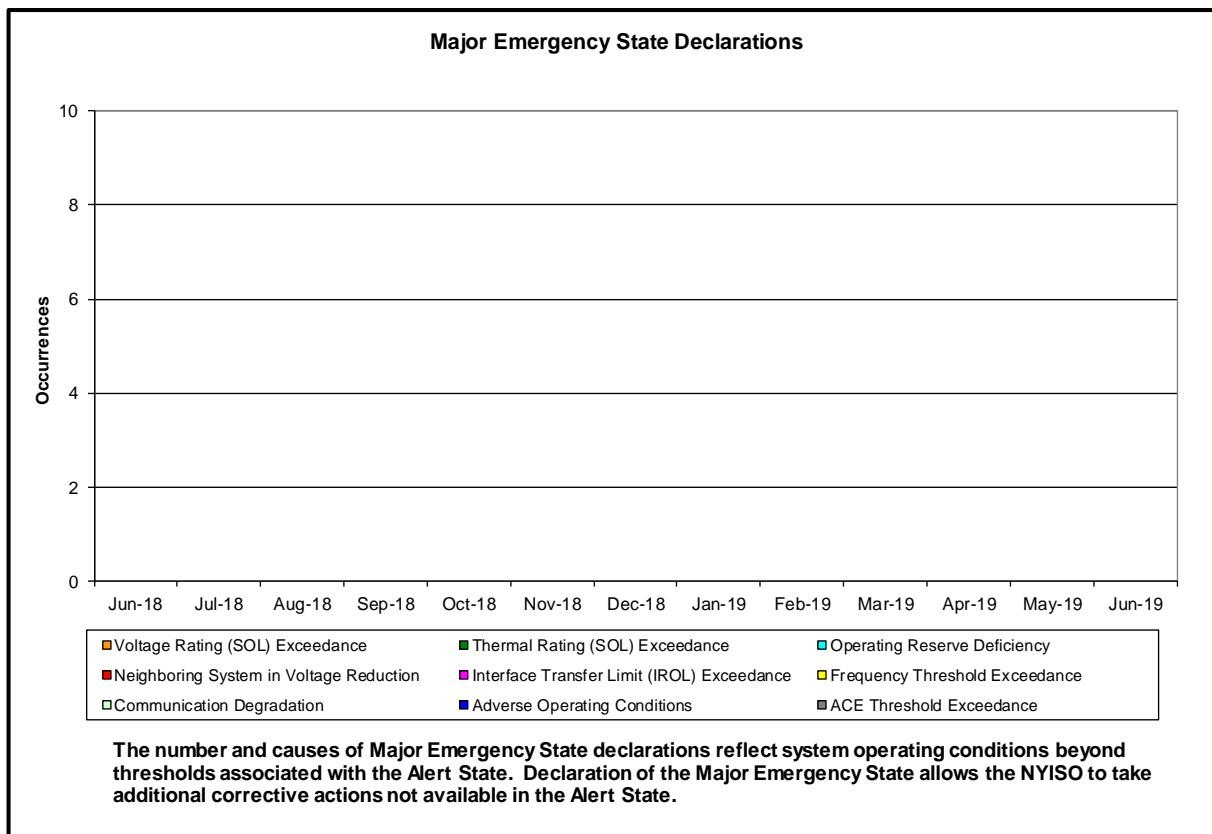
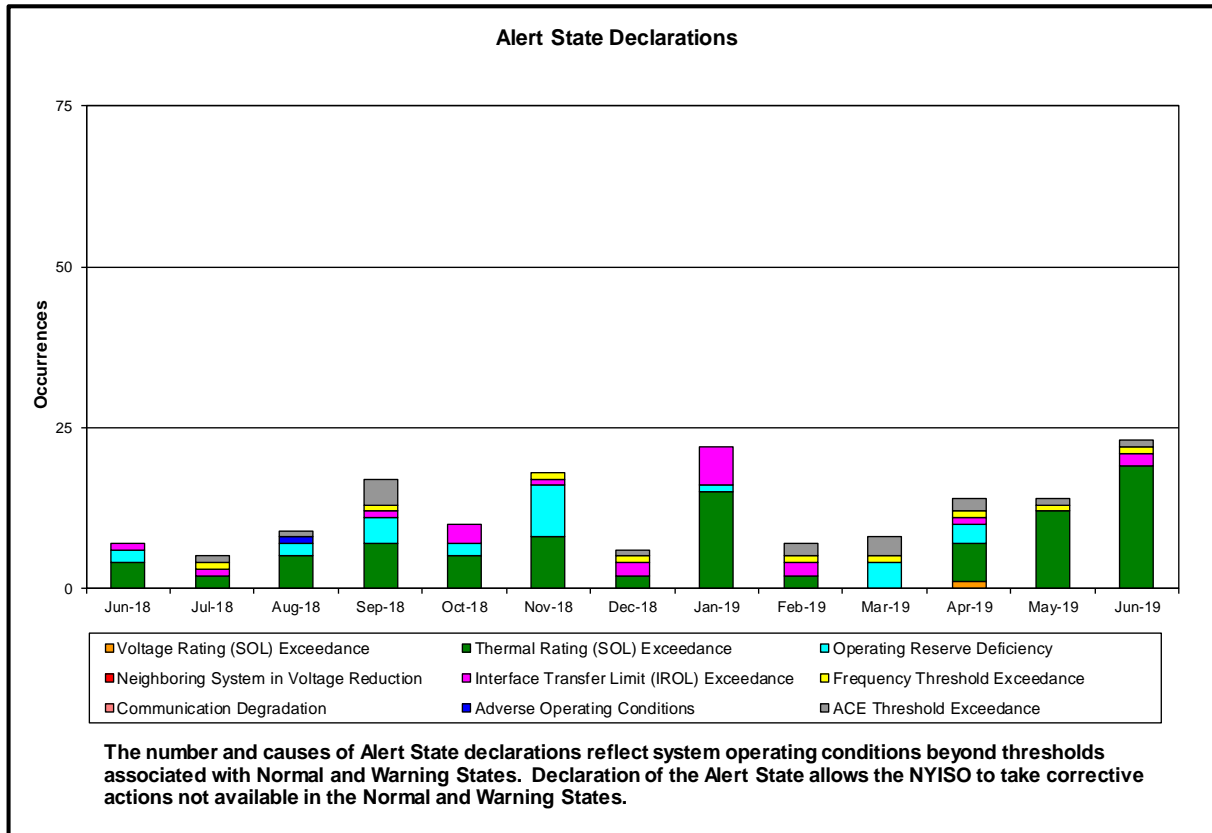
	Current Month Value (\$M)	Year-to-Date Value (\$M)
NY Savings from PJM-NY Congestion Coordination	\$0.46	\$6.06
NY Savings from PJM-NY Coordinated Transaction Scheduling	(\$0.54)	(\$0.71)
NY Savings from NE-NY Coordinated Transaction Scheduling	(\$0.17)	(\$0.56)
Total NY Savings	(\$0.25)	\$4.79
Regional Savings from PJM-NY Coordinated Transaction Scheduling	\$0.45	\$2.64
Regional Savings from NE-NY Coordinated Transaction Scheduling	\$0.06	\$0.29
Total Regional Savings	\$0.51	\$2.93

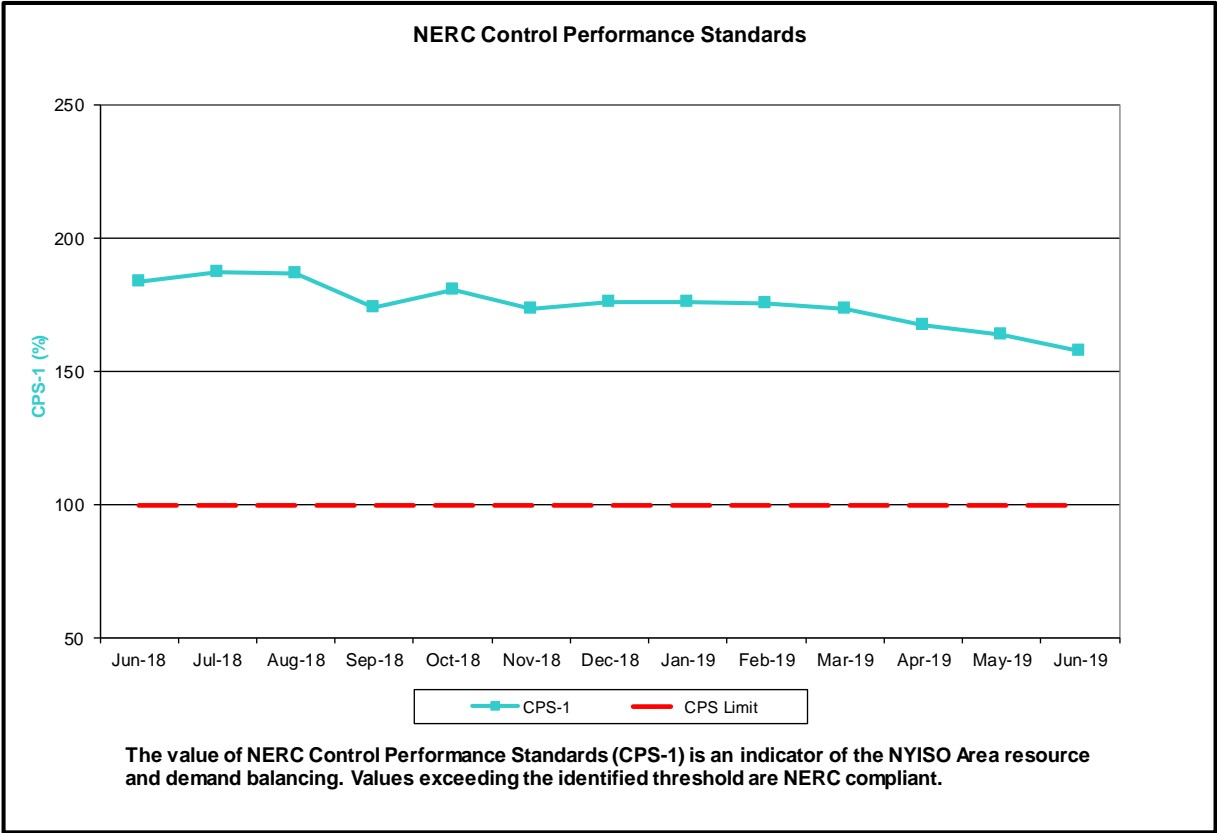
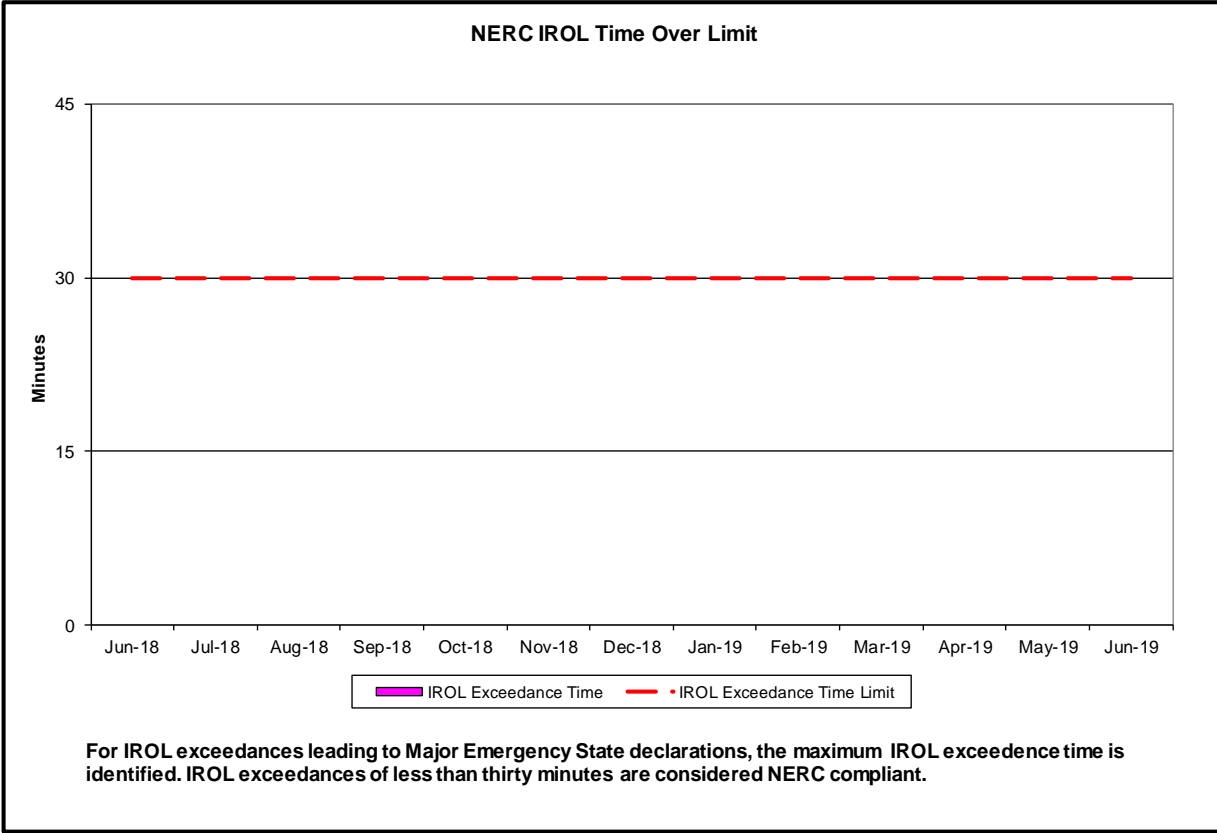
- Statewide uplift cost monthly average was (\$0.12)/MWh
- The following table identifies the Monthly ICAP spot market prices and the price delta.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
July 2019 Spot Price	\$1.39	\$4.83	\$13.46	\$5.94
June 2019 Spot Price	\$1.80	\$5.21	\$13.79	\$5.94
Delta	(\$0.41)	(\$0.38)	(\$0.33)	\$0.00

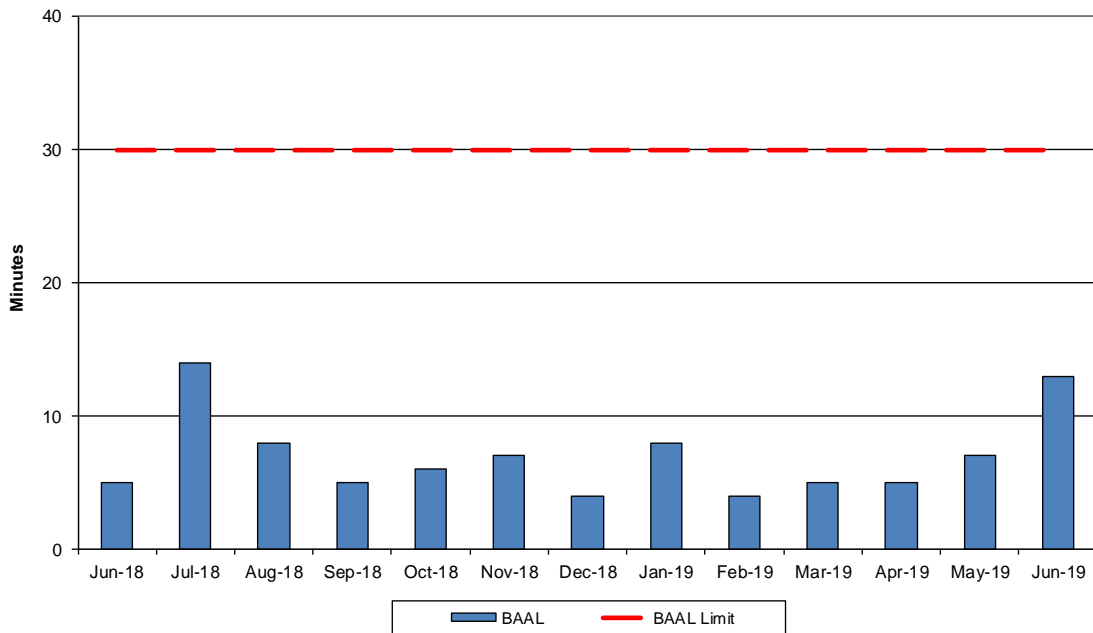
- NYC - Price is decreased by \$0.33 due primarily to a decrease in Unoffered.
- GHJ - Price is decreased by \$0.38 due primarily to an increase in Generation/SCR UCAP Available.
- NYCA - Price is decreased by \$0.41 due to an increase in Generation/SCR UCAP Available, an increase in net Imports offset, and partially by an increase in Unsold.

Reliability Performance Metrics



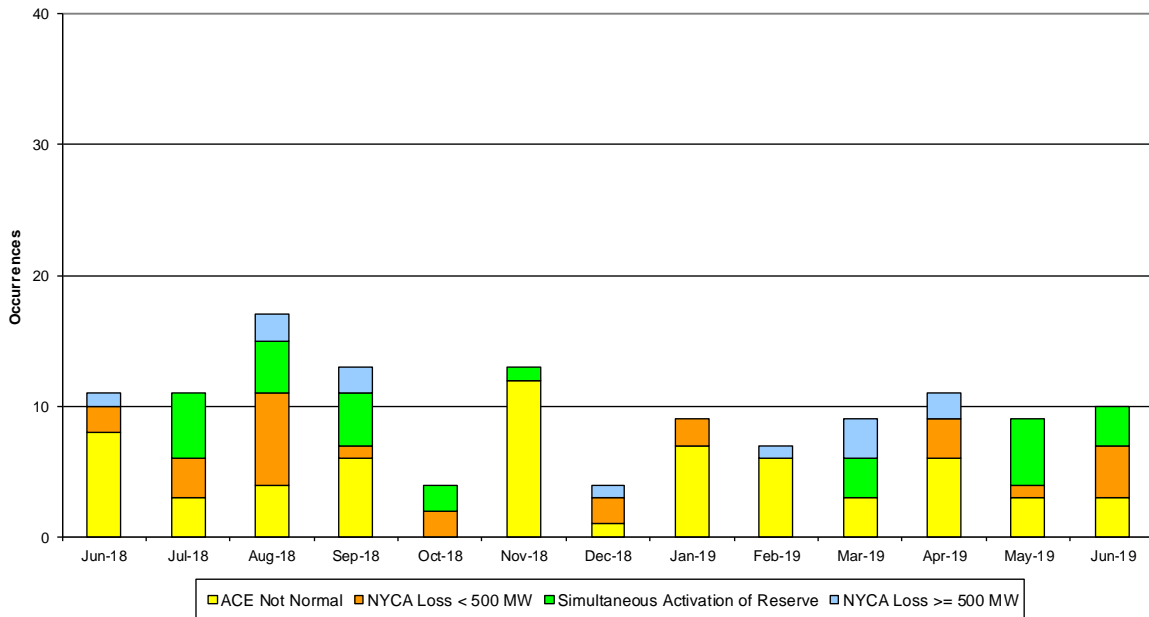


NERC Balancing Authority ACE Limit Standard



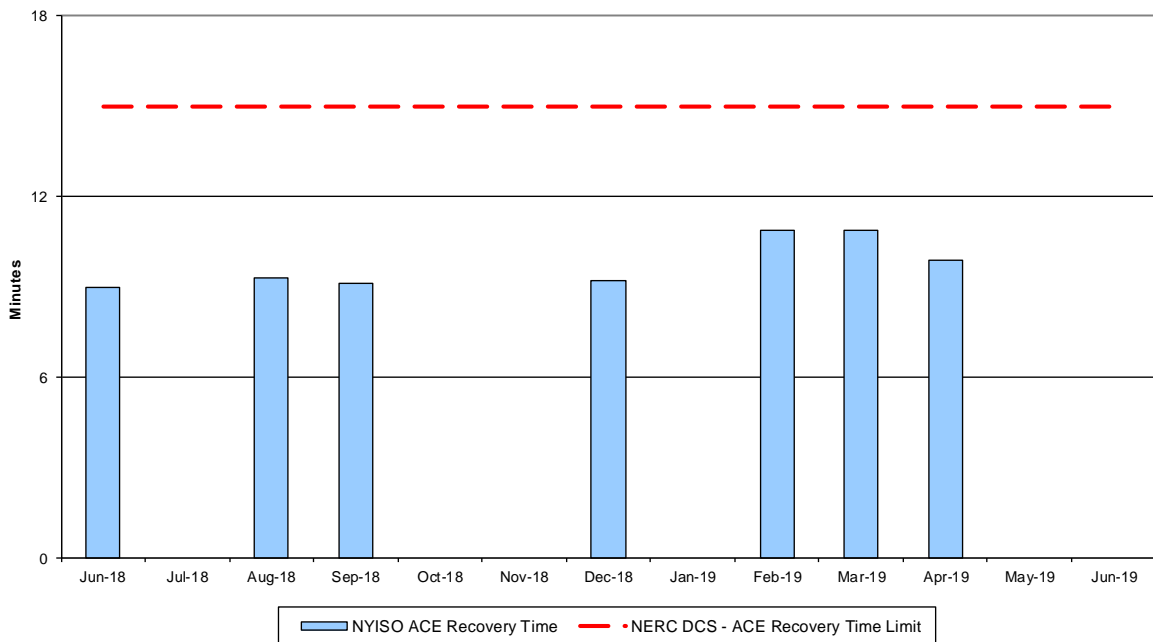
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

Reserve Activations



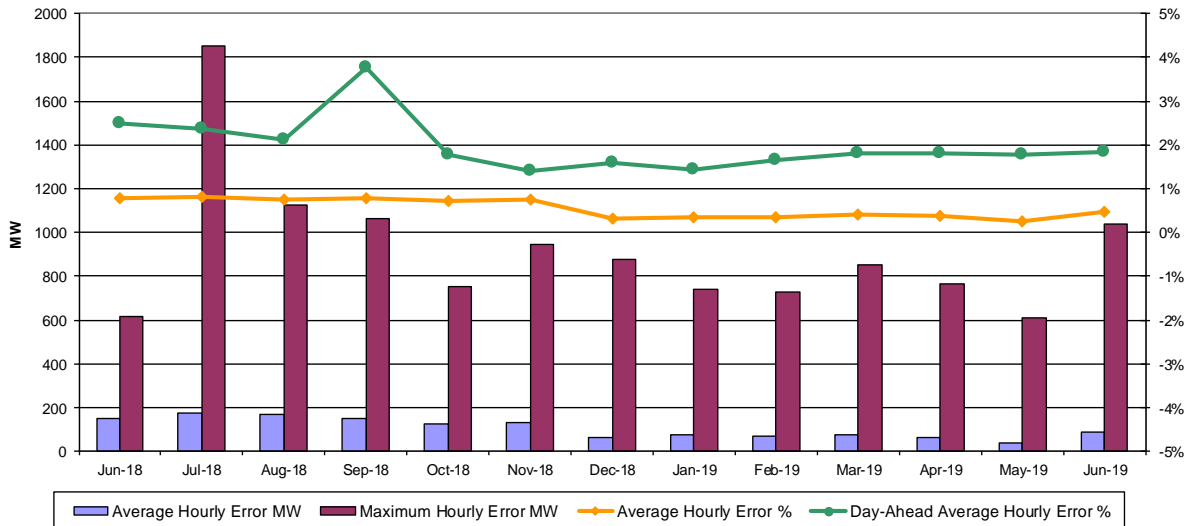
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

DCS Event Time to ACE Recovery

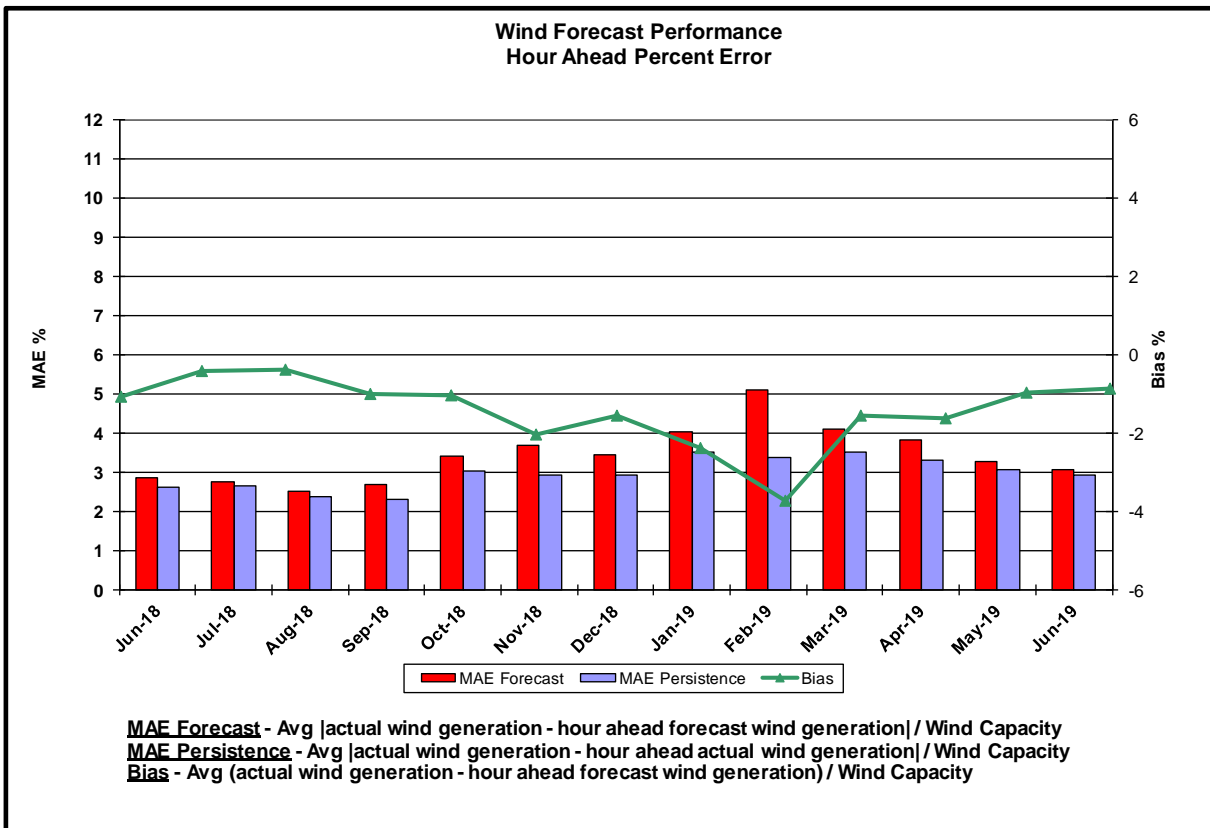
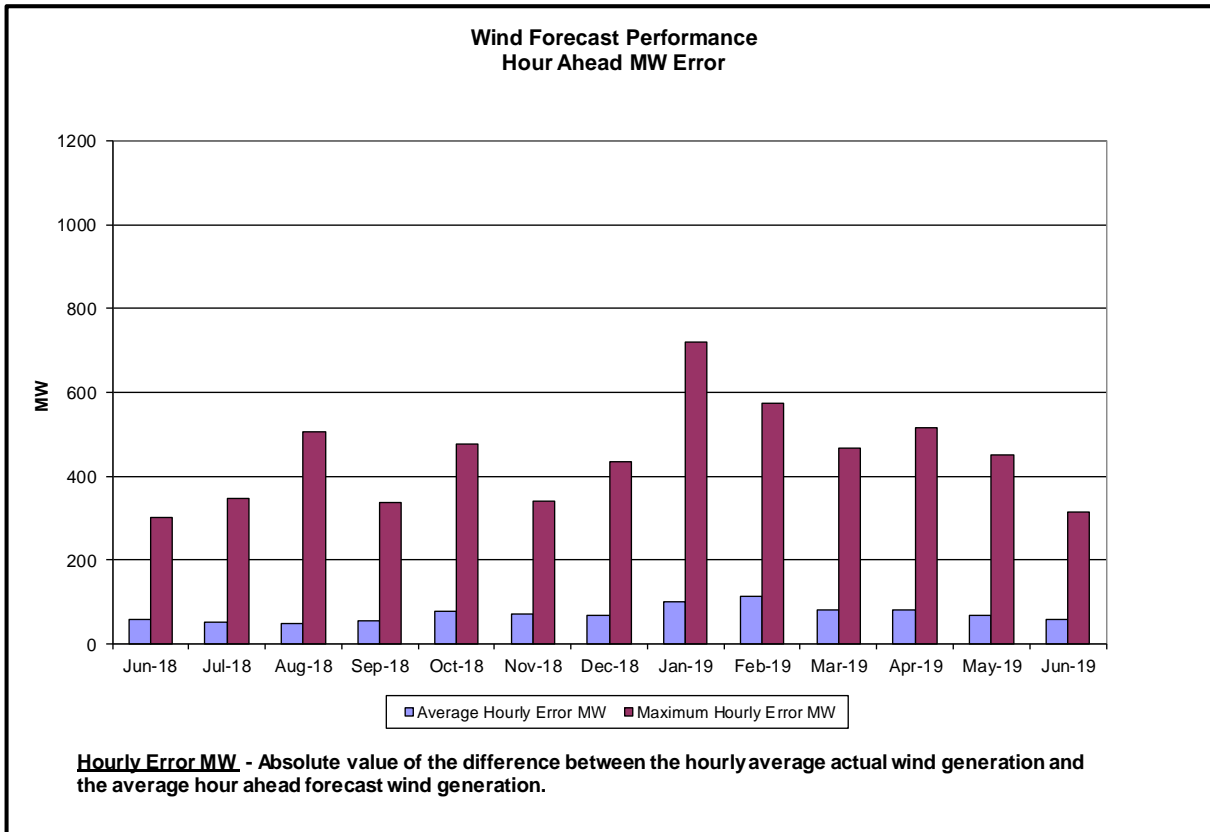


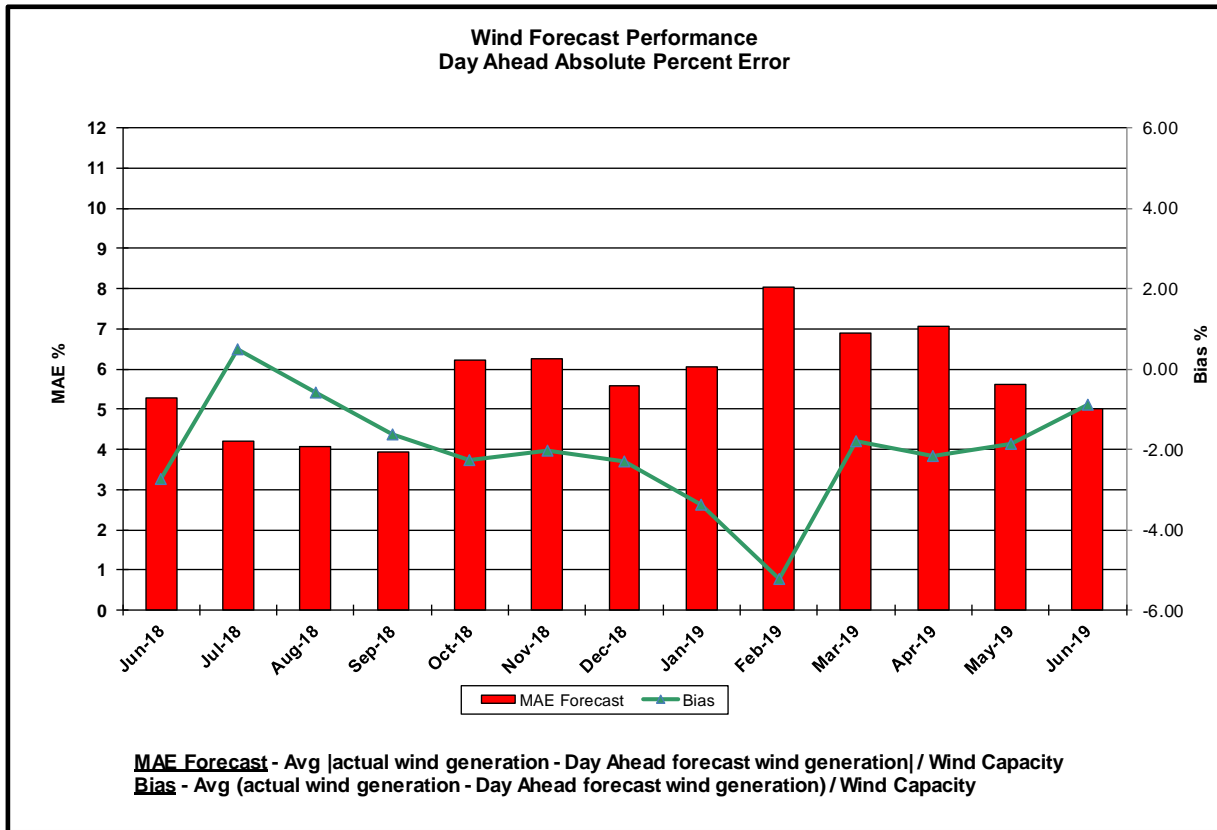
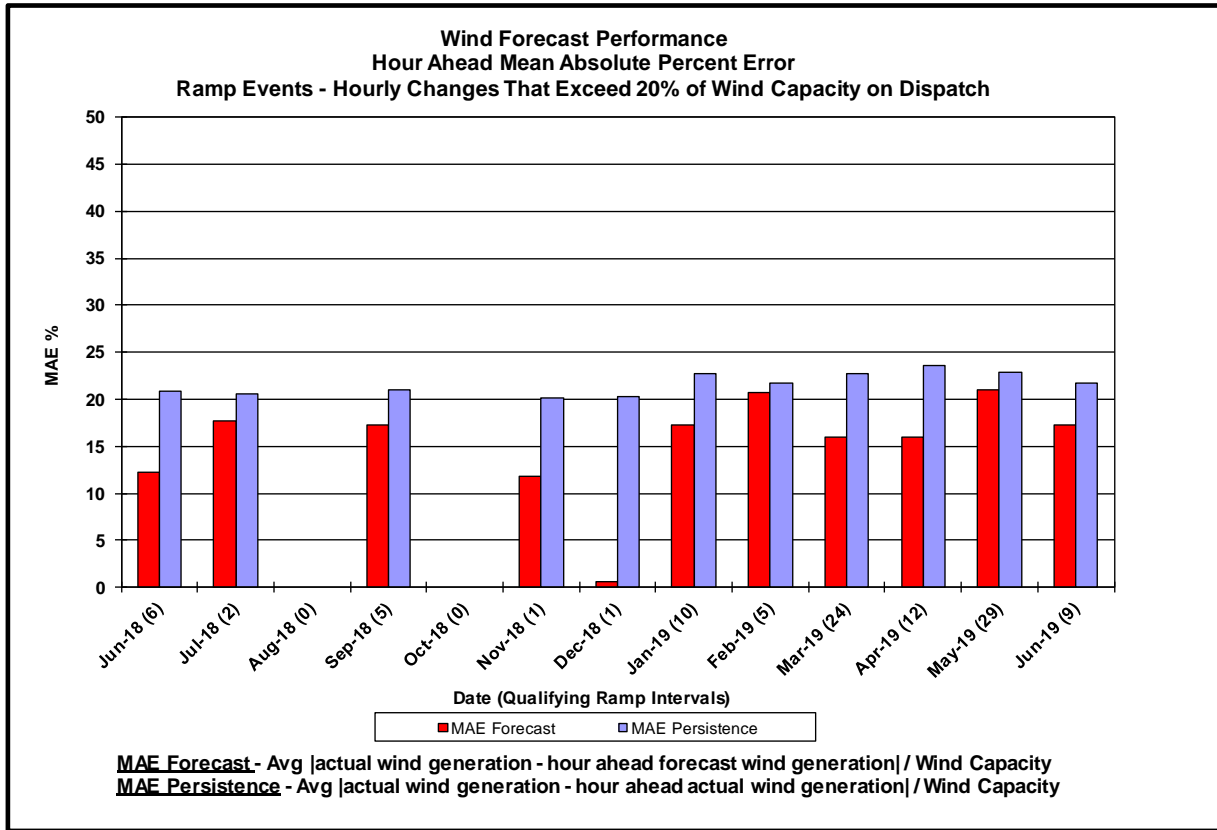
For NYISO initiated Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

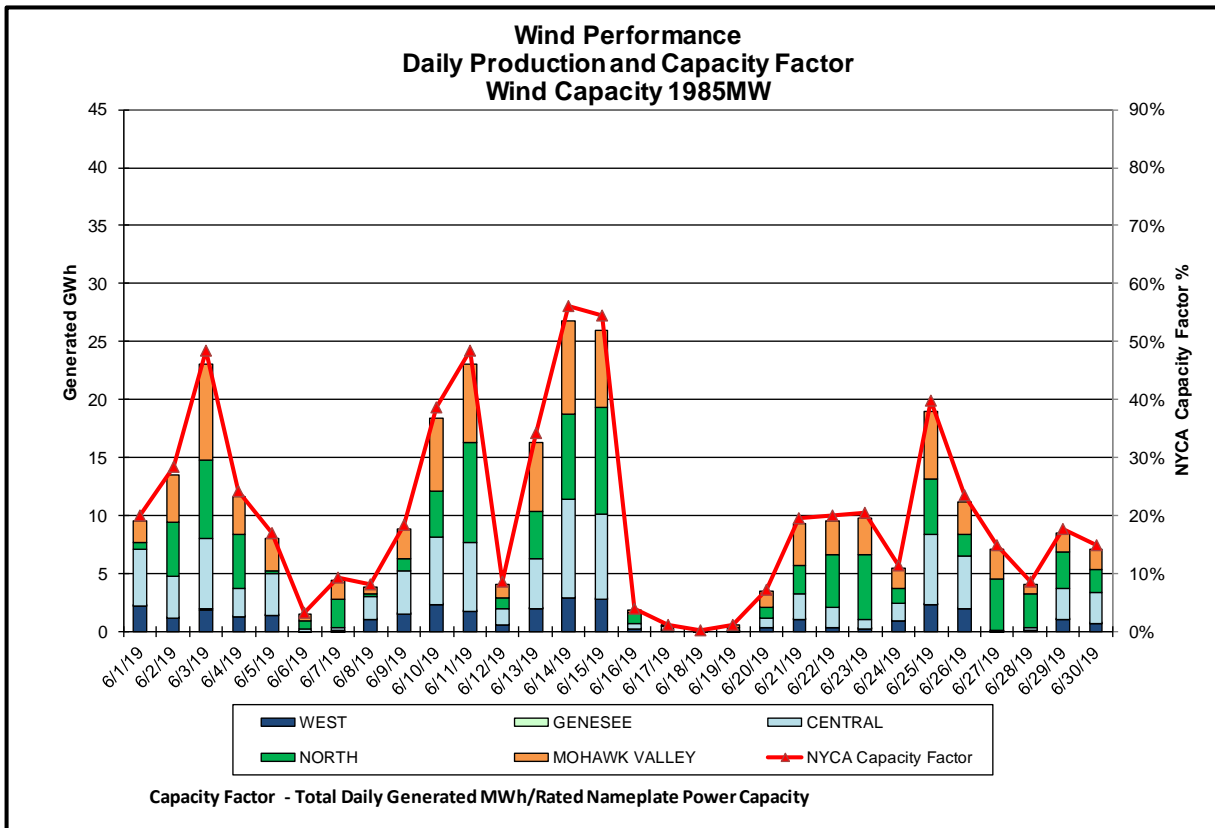
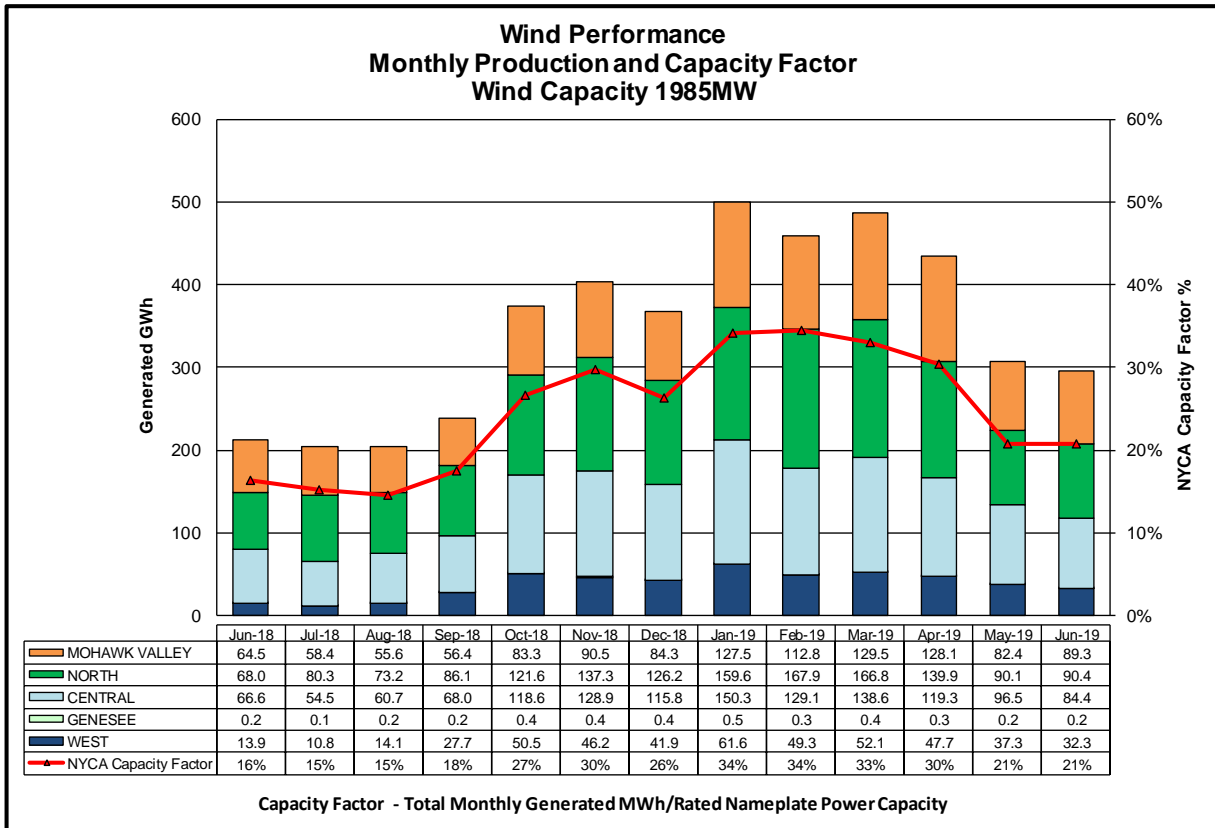
Load Forecast Performance

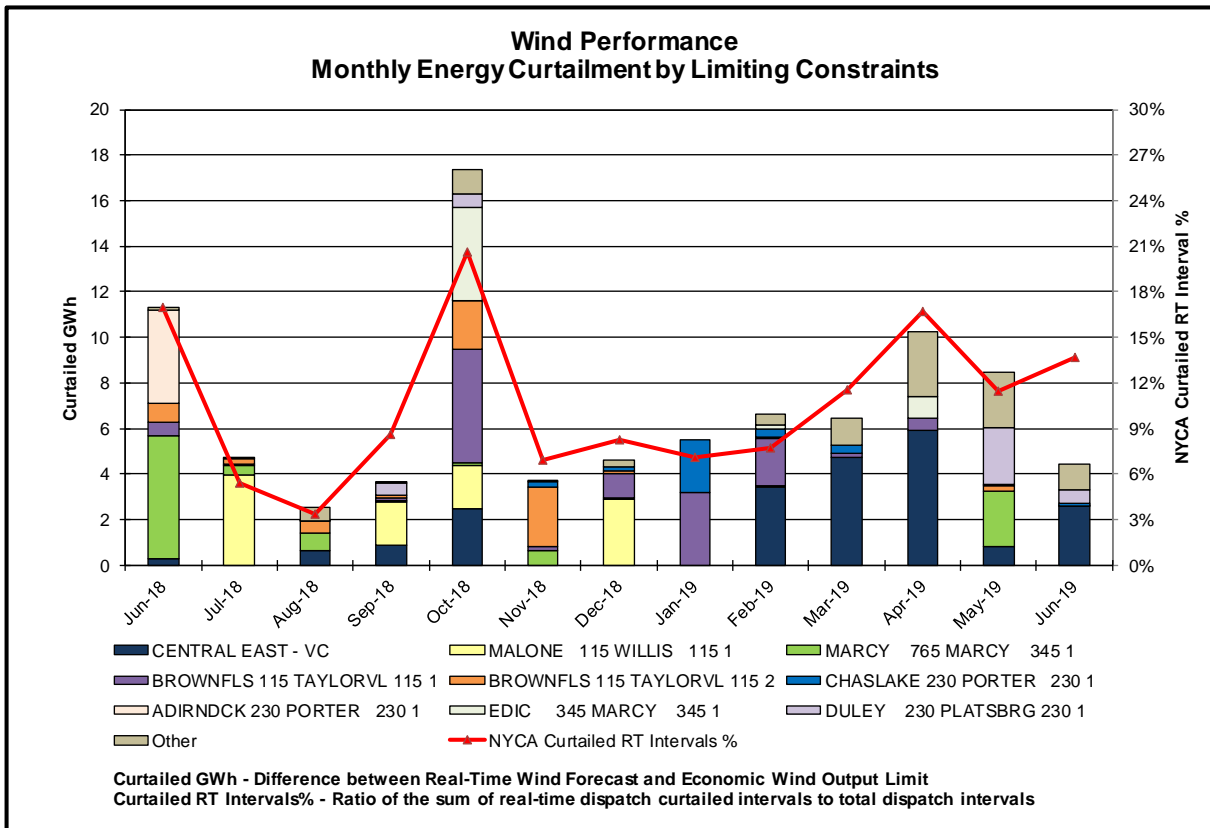
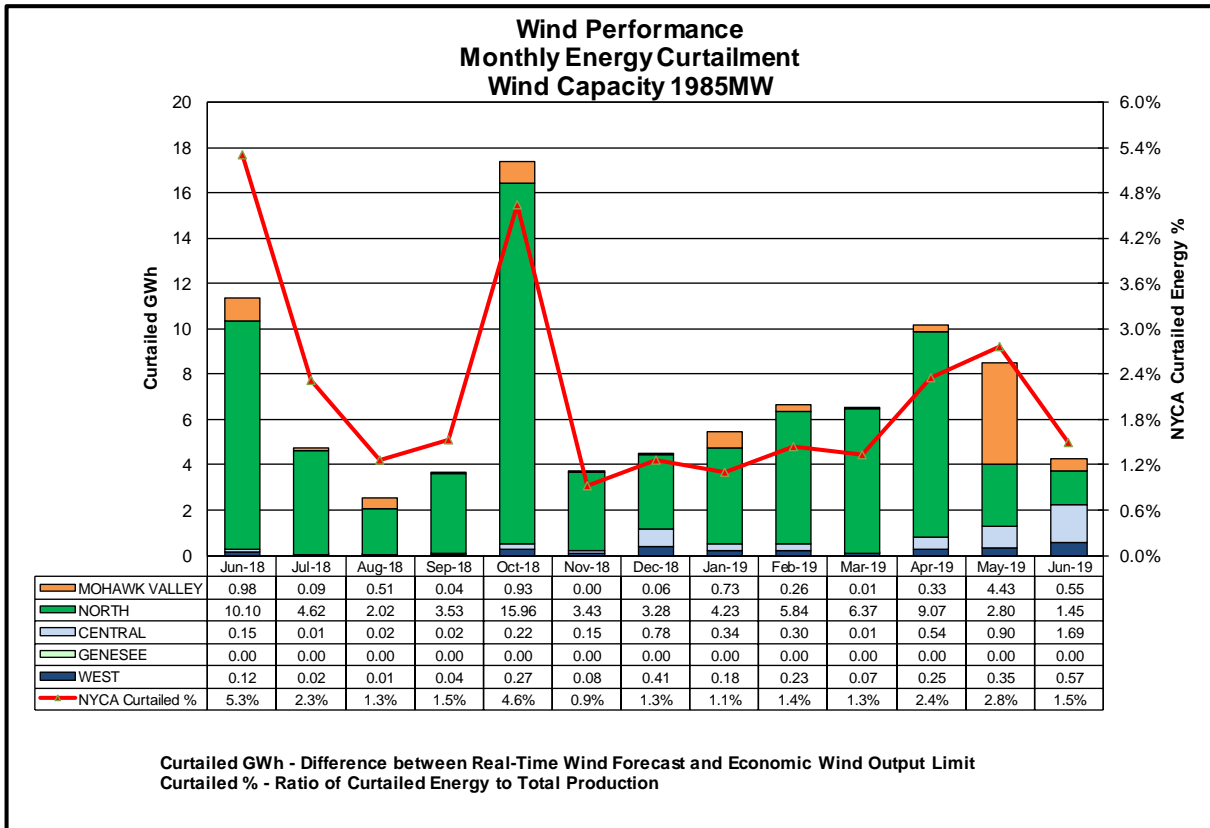


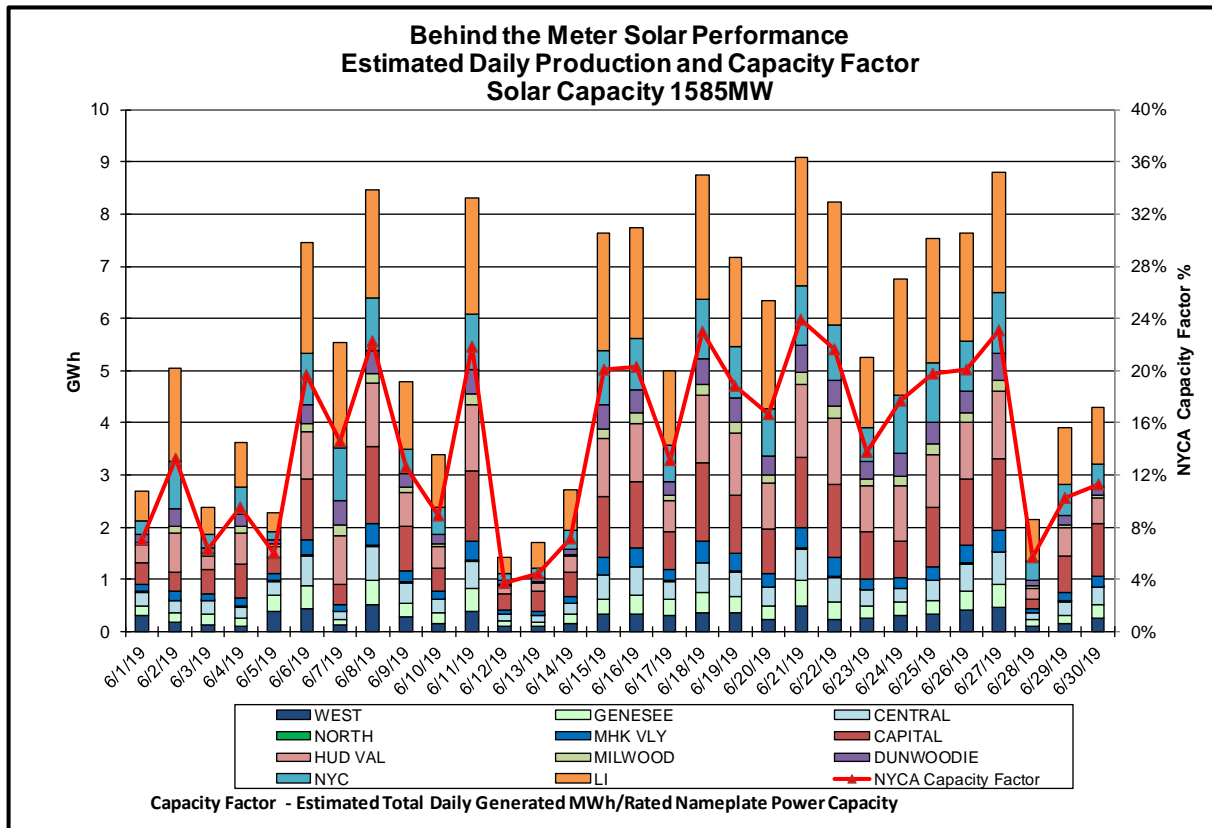
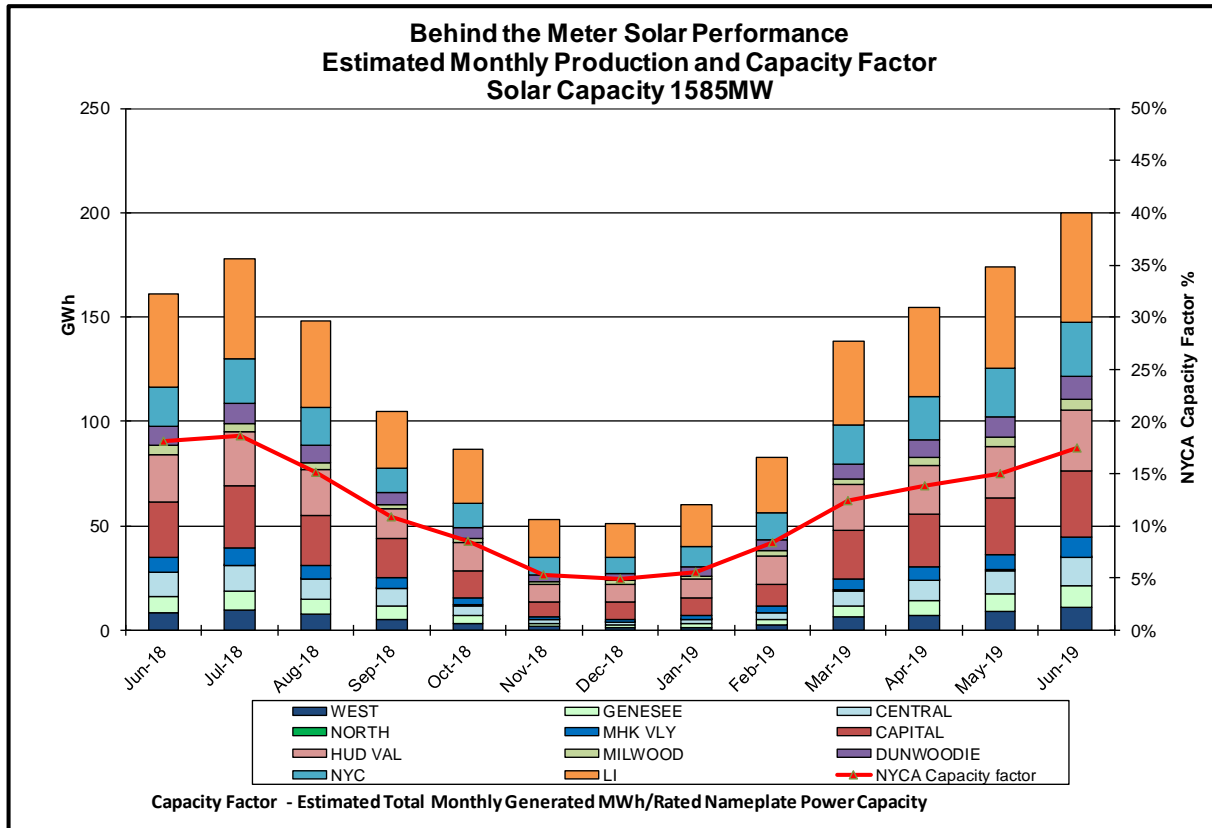
Hourly Error MW - Absolute value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.
Average Hourly Error % - Average value of the ratio of hourly average error magnitude to hourly average actual load demand.
Day-Ahead Average Hourly Error % - 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.

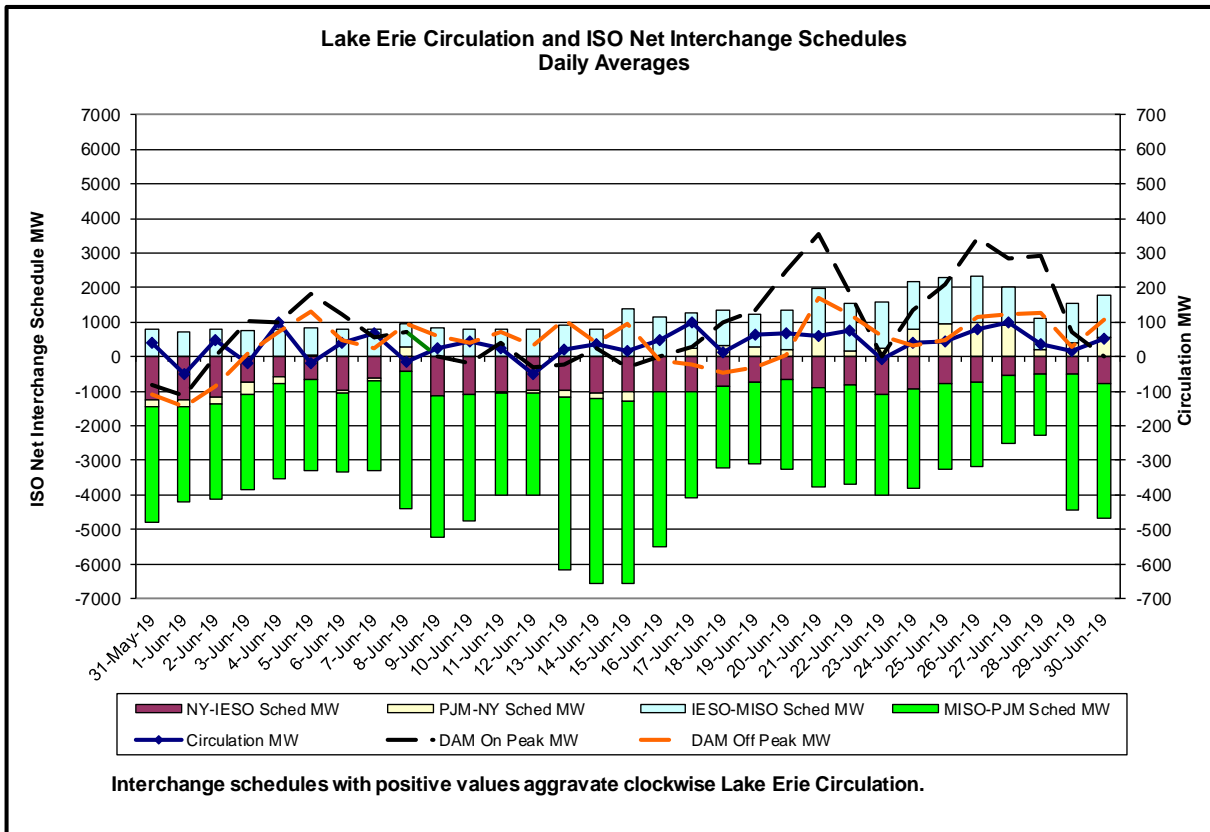
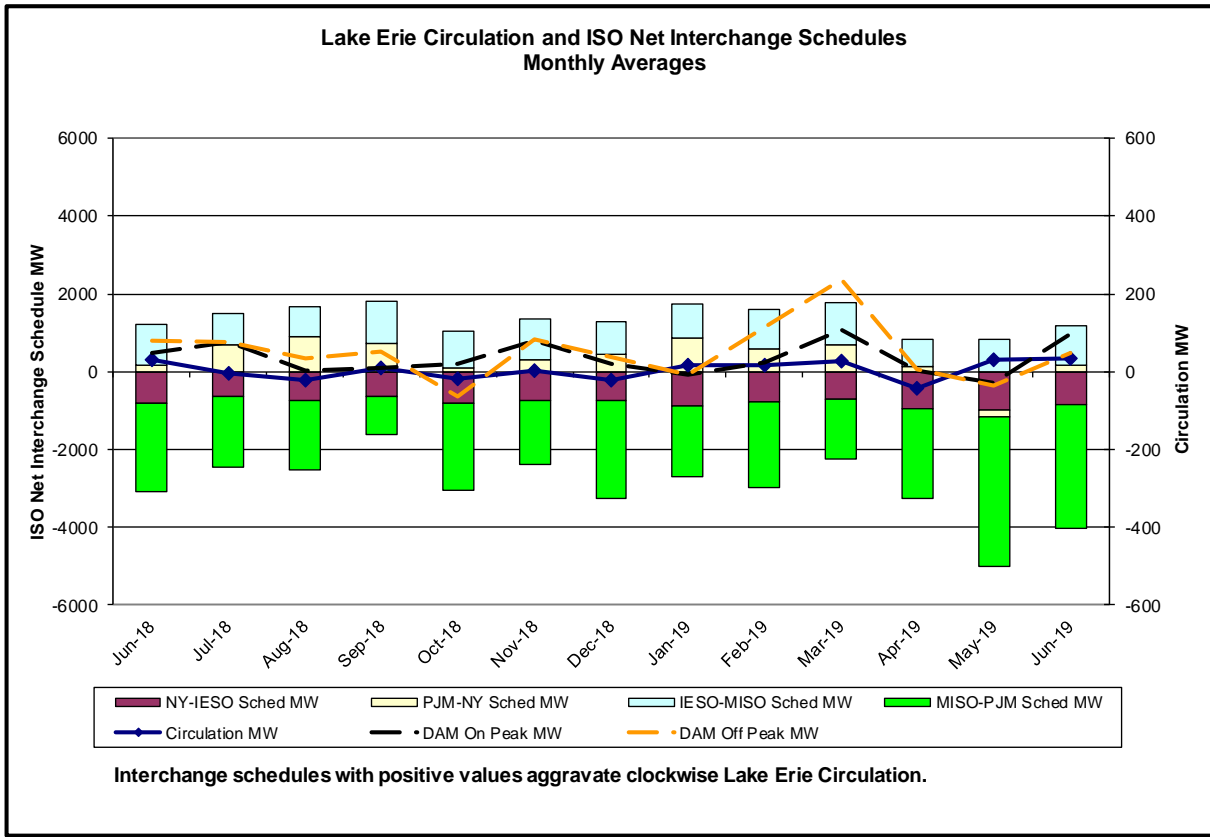




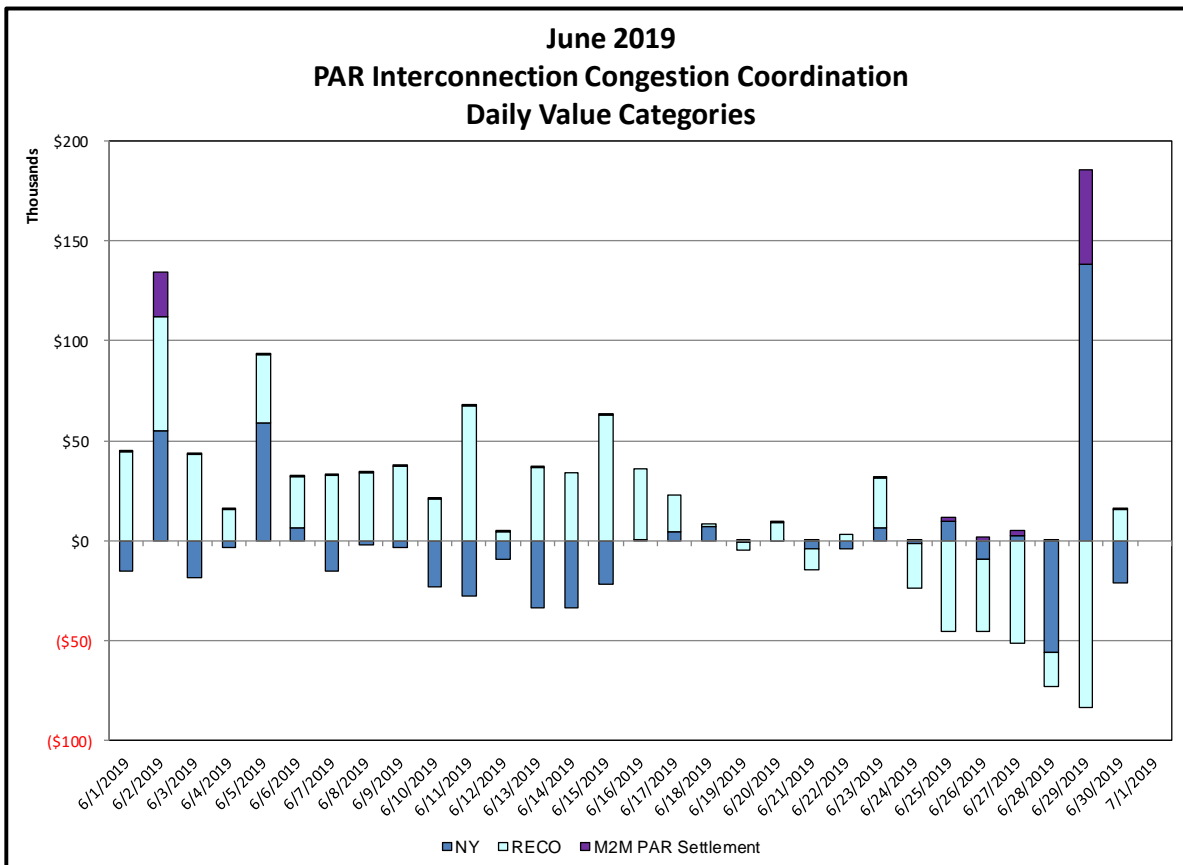
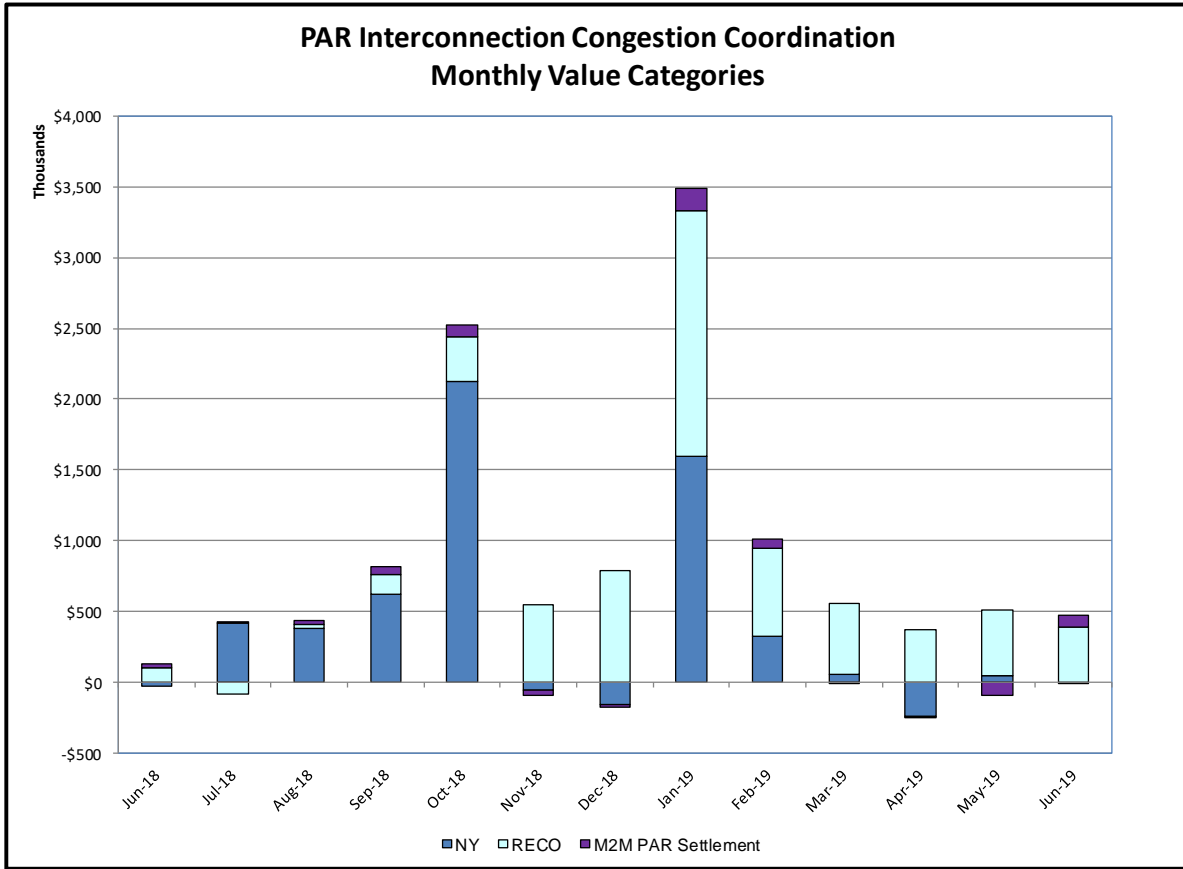






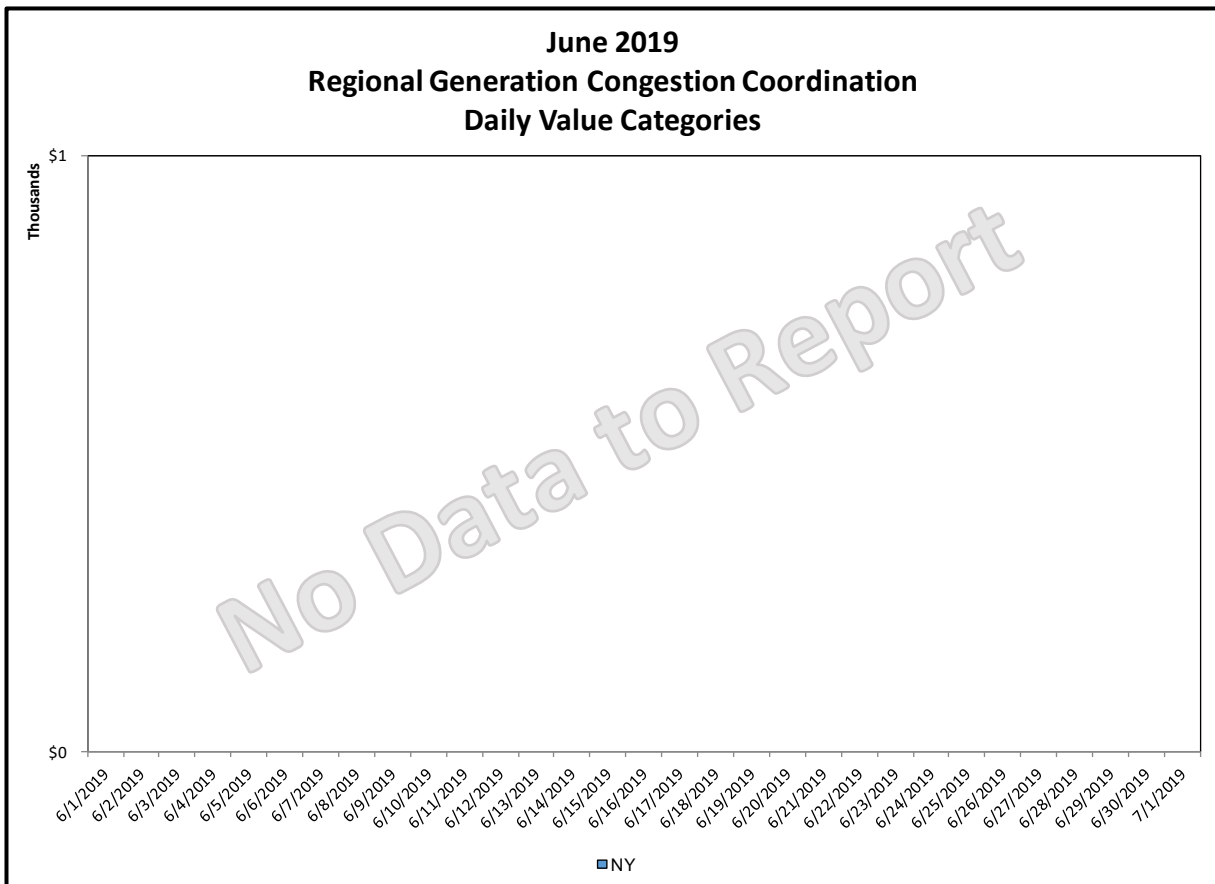
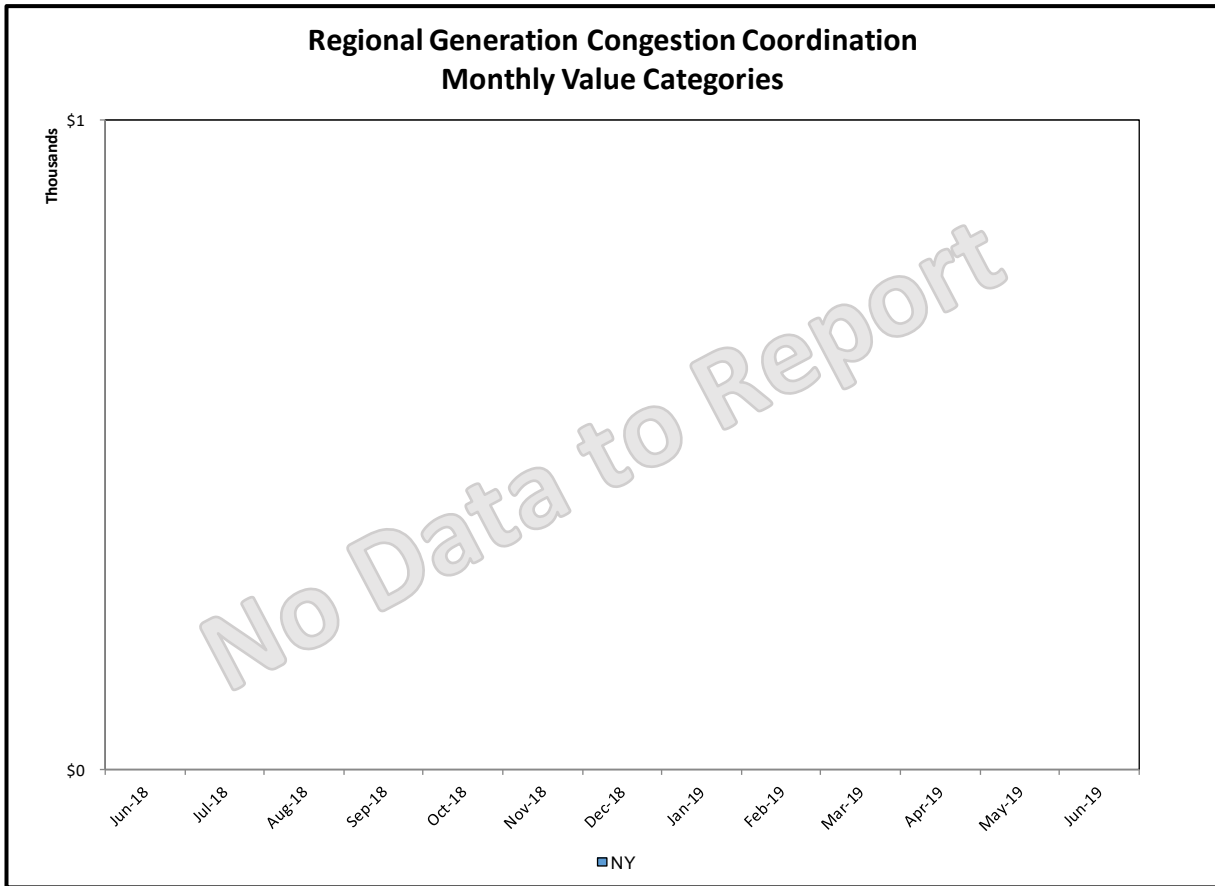


Broader Regional Market Performance Metrics



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.



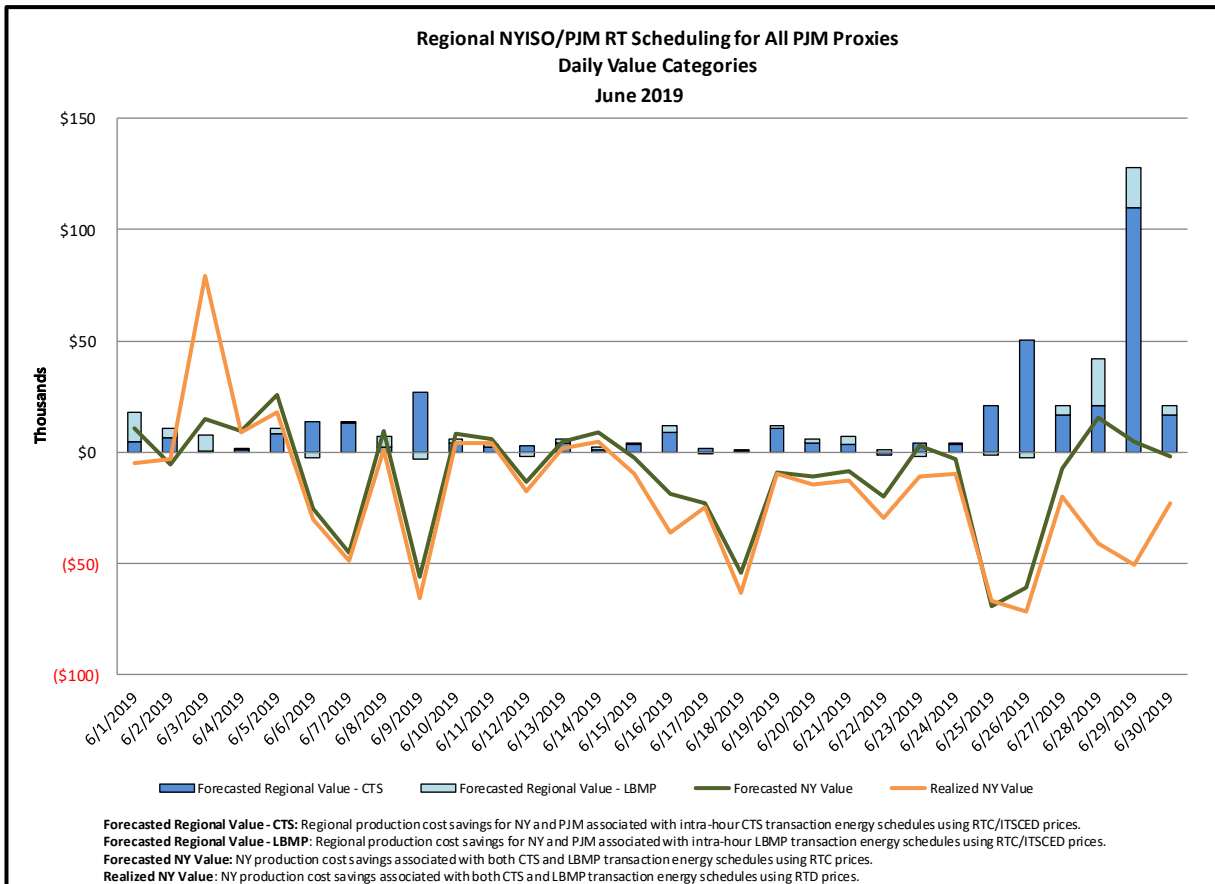
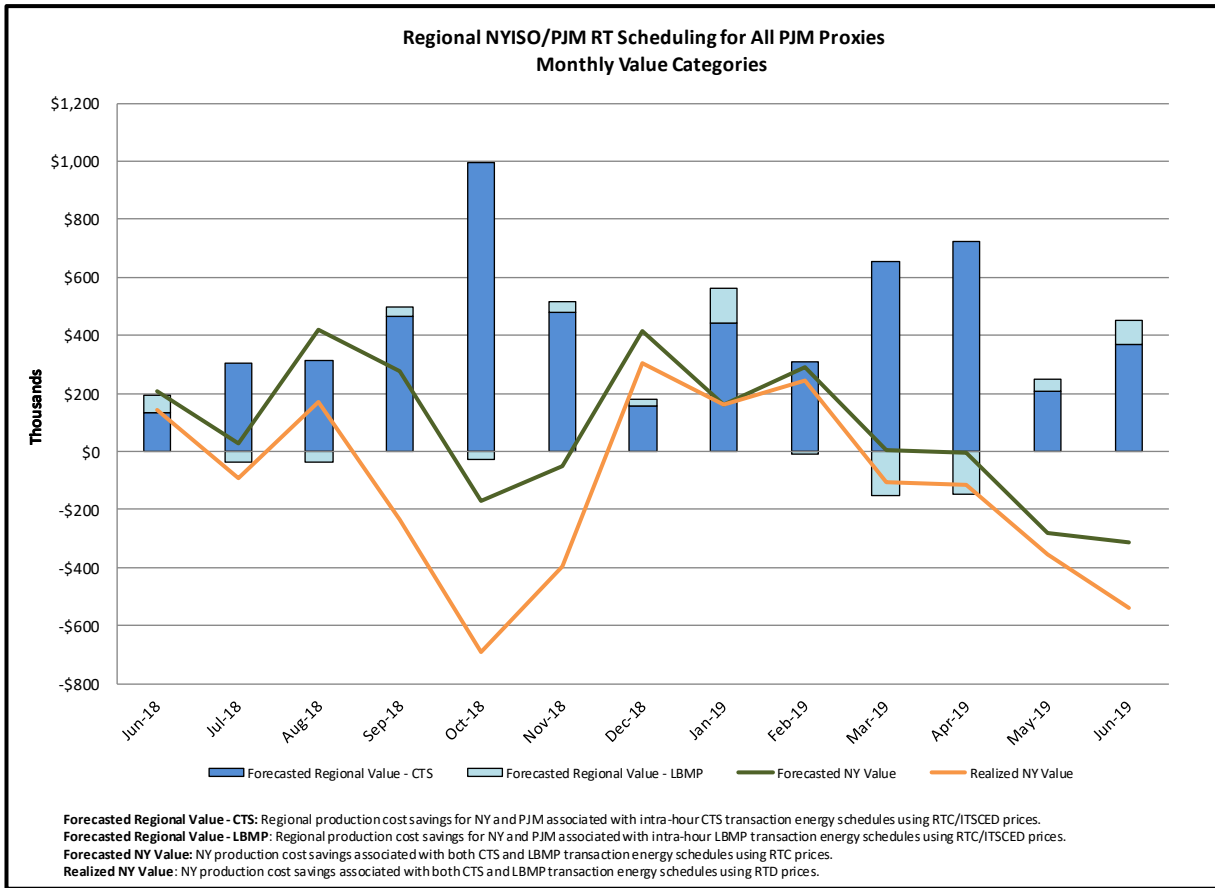
Regional Generation Congestion Coordination

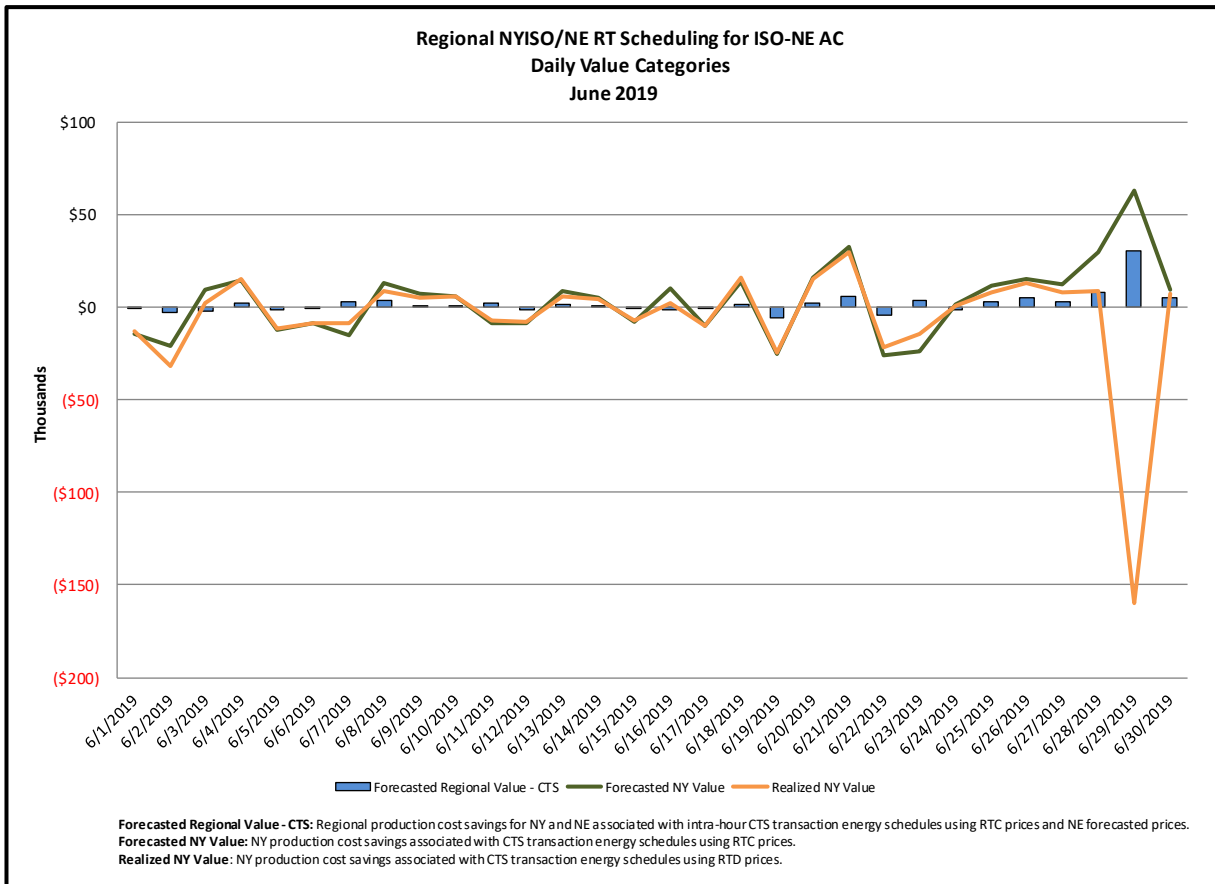
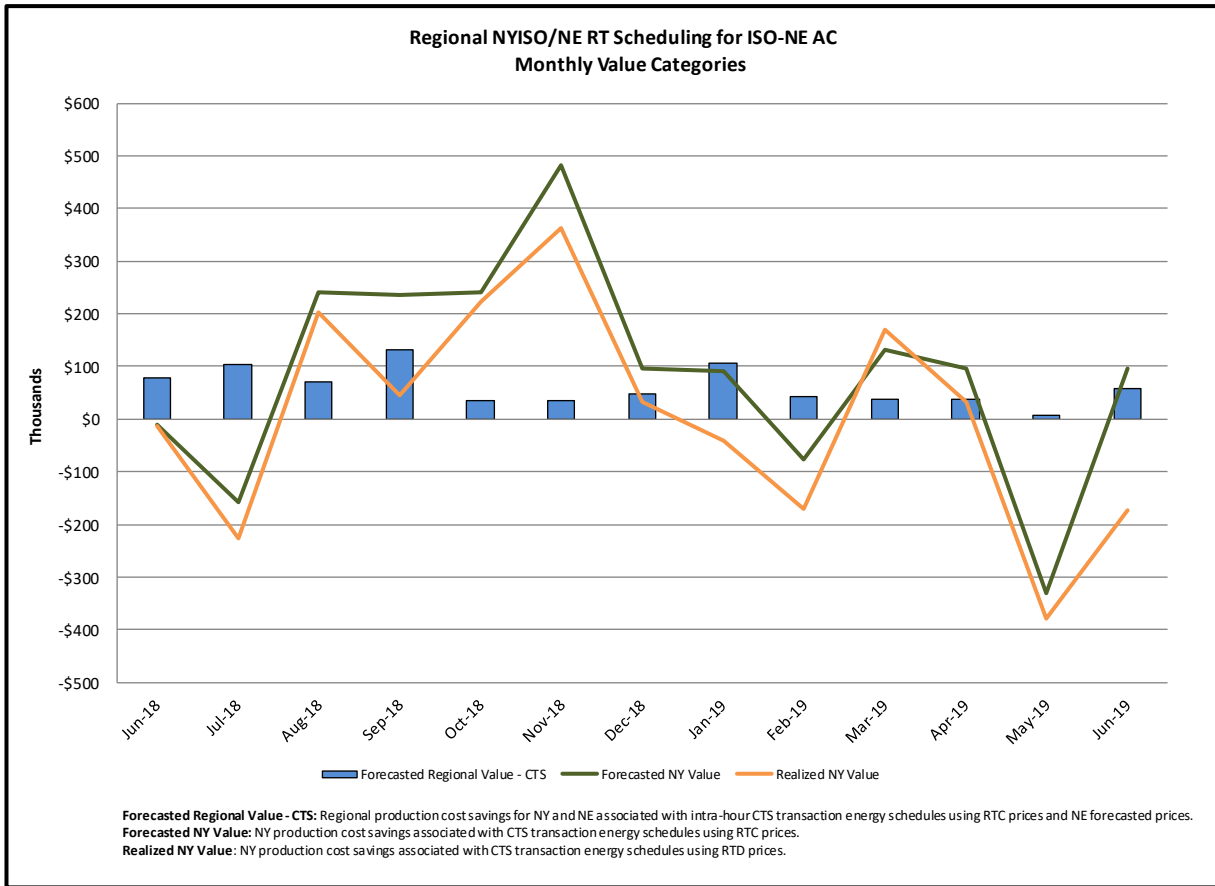
Category

NY

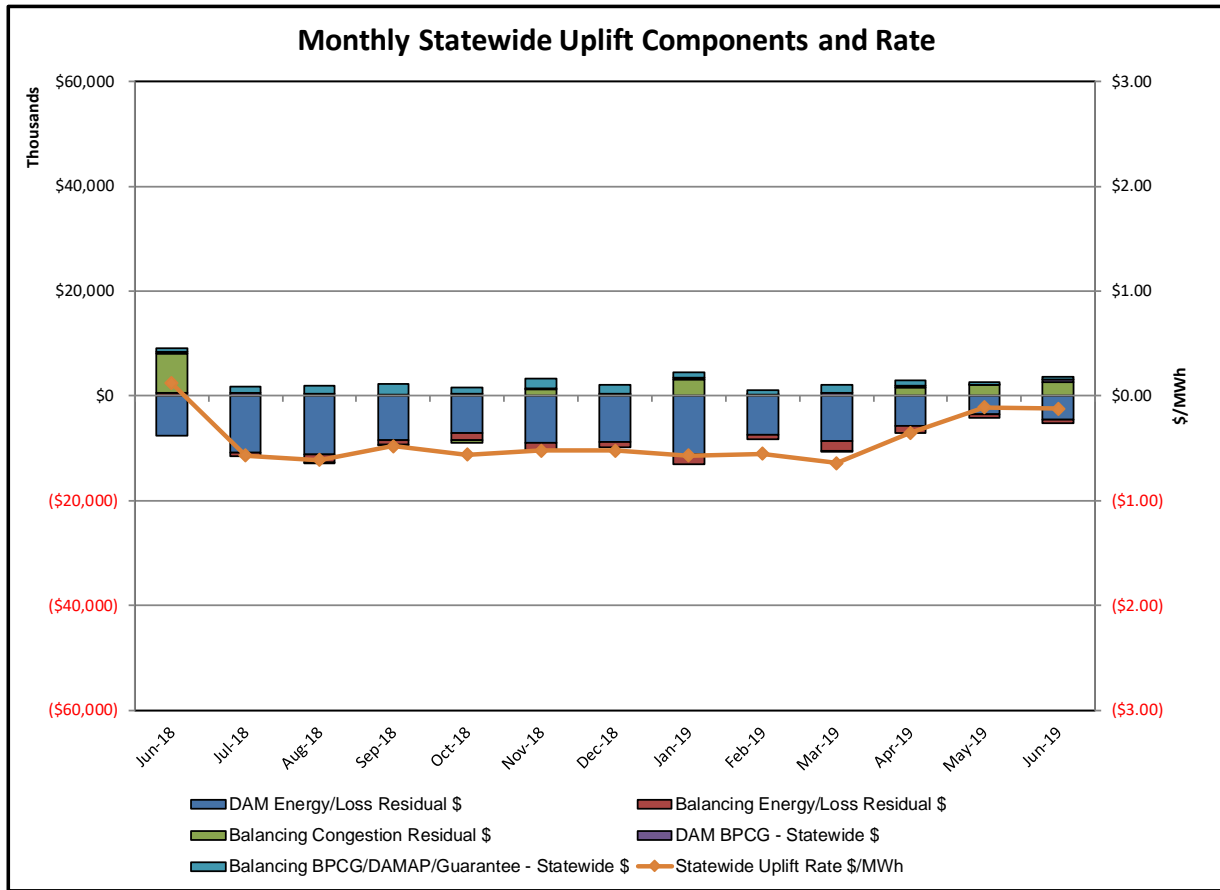
Description

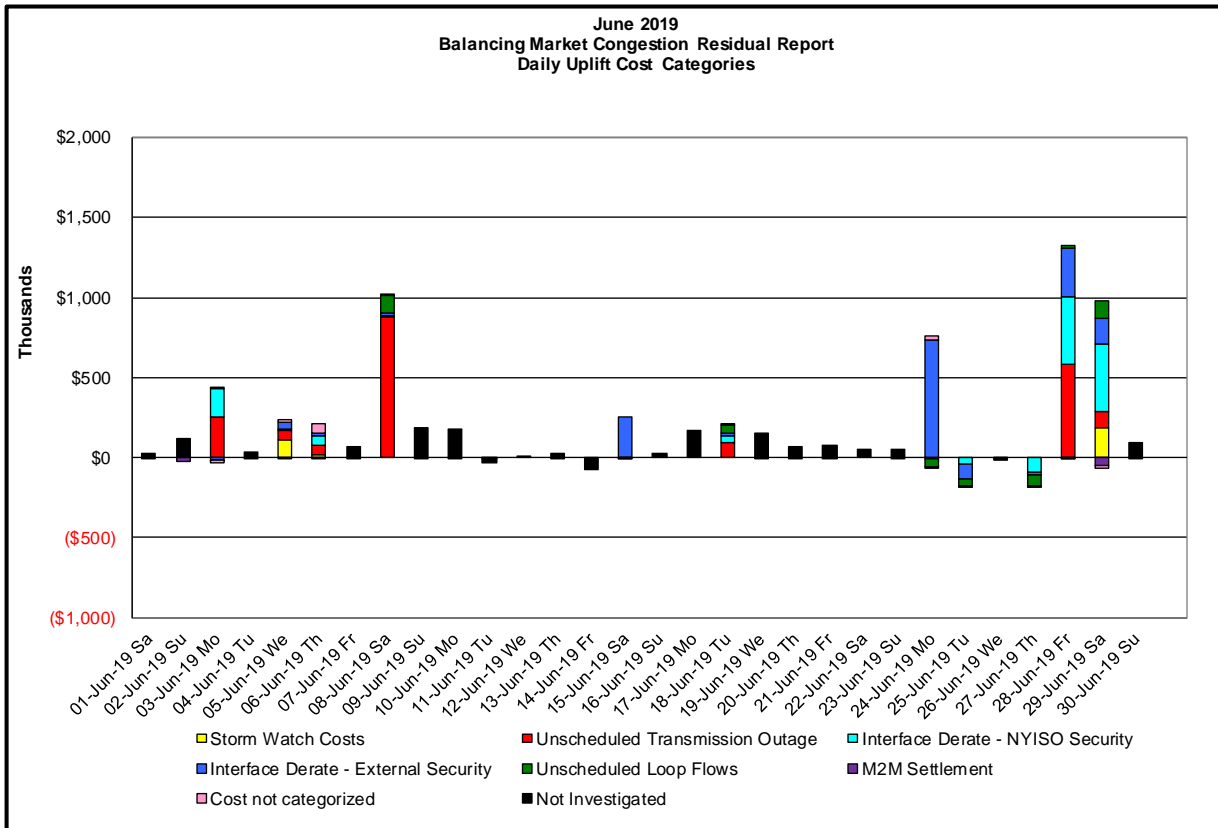
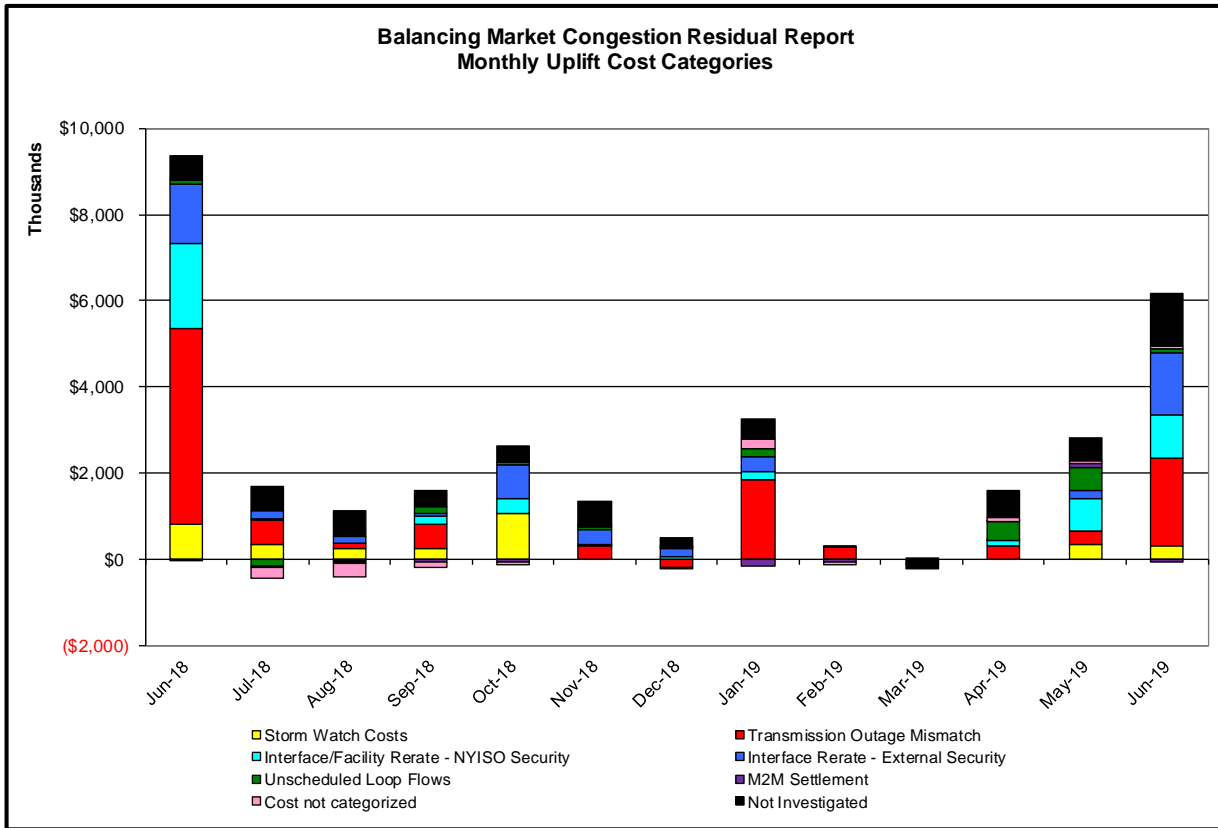
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization of PJM's generation resources to directly address Western or Central NY transmission congestion.





Market Performance Metrics





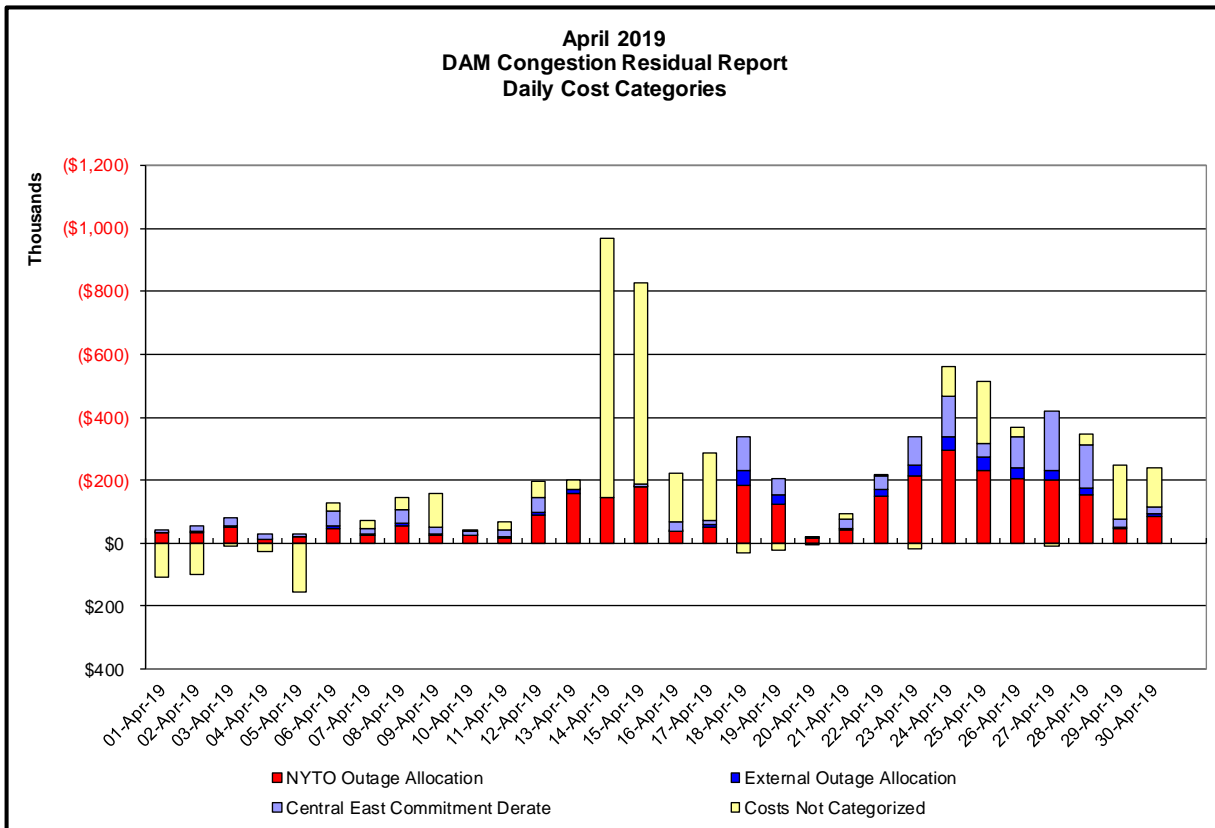
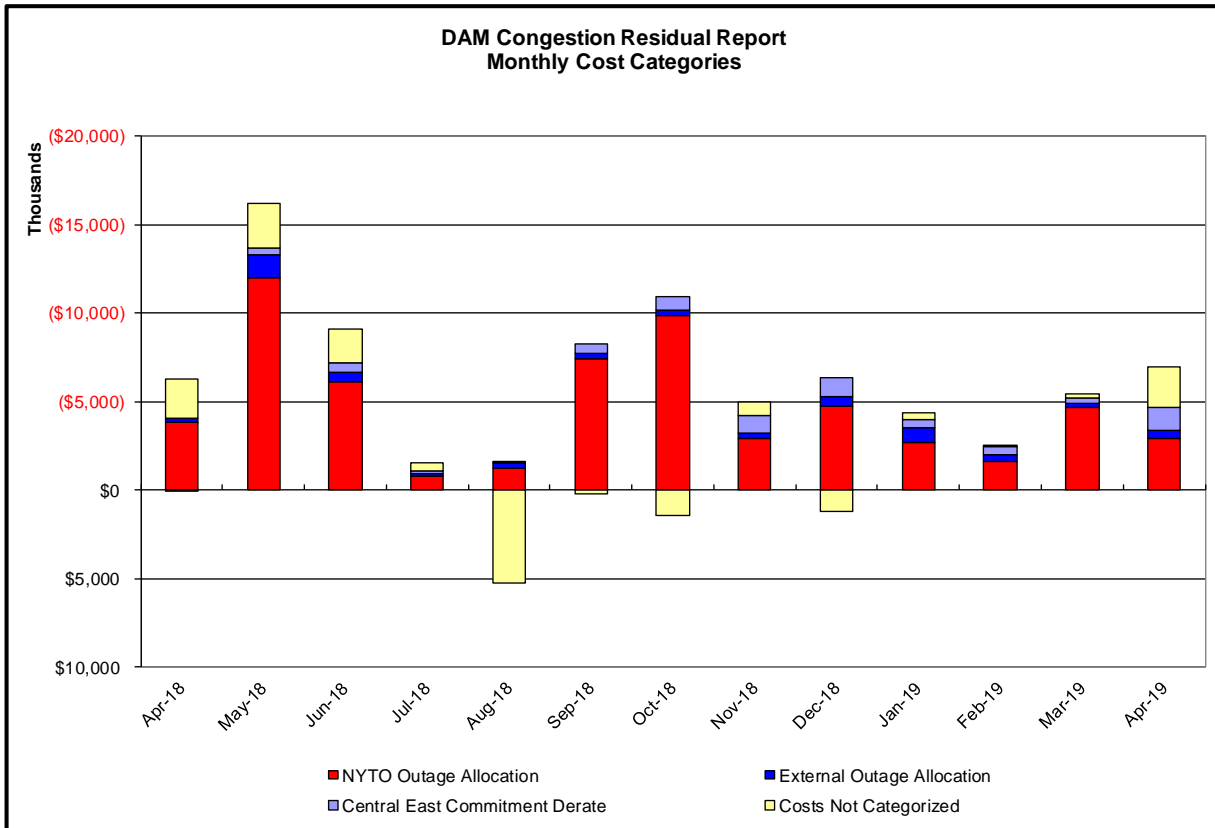
Day's investigated in June: 3, 5, 6, 8, 15, 18, 24, 25, 27, 28, 29			
Event	Date (yyyymmdd)	Hours	Description
	6/3/2019	13-19	Forced Outage Buchanan South-Millwood 345kV (#W97)
	6/3/2019	14,15,22	NYCA DNI Ramp Limit
	6/3/2019	14-16	Derate Central East
	6/3/2019	14,16,17	Derate East Garden City-ValleyStream 138kV (#262) for I/o BUS:BARRETT 292&459&G2&IC9-12
	6/3/2019	13-16	Derate East Garden City-ValleyStream 138kV (#262) for I/o SCB:NEWBRDG 1380 461&BK6+4
	6/3/2019	6,7,10,11,23	Uprate Central East
	6/3/2019	6,10,22,23	NE_AC-NY Scheduling Limit
	6/3/2019	22	PJM_AC-NY Scheduling Limit
	6/3/2019	6,7,10,11,15,22	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	6/3/2019	10	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	6/5/2019	20-23	Thunder Storm Alert
	6/5/2019	16,17,20,22,23	Forced Outage East Garden City 345/138kV AT1
	6/5/2019	7	Derate Dunwoodie-Shore Road 345kV (#Y50) for I/oSCB:SPBK(RNS2):Y49&M29&Y49_ST
	6/5/2019	16	NE_AC DNI Ramp Limit
	6/5/2019	7	IESO_AC-NY Scheduling Limit
	6/5/2019	22,23	NE_NNC1385-NY Scheduling Limit
	6/6/2019	0-1	Thunder Storm Alert
	6/6/2019	0,9-12	Forced Outage East Garden City 345/138kV AT1
	6/6/2019	10,11	Forced Outage Sprainbrook-Tremont 345kV (#X28)
	6/6/2019	21	Forced Outage Beck 220kV Bus Tie (#1K2)
	6/6/2019	11-14,21	Derate Greenwood-Vernon 138kV (#31231) for I/o TWR:GOETHALS 22 & 21
	6/6/2019	9-13,21	Derate Motthaven-Dunwoodie 345kV (#)
	6/6/2019	9	Derate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	6/6/2019	9,12-14	NE_AC Active DNI Ramp Limit
	6/6/2019	10-14	HQ_CHAT-NY Scheduling Limit
	6/6/2019	12	NE_NNC1385-NY Scheduling Limit
	6/8/2019	1,10,12-16,21,22	Forced Outage Niagara-Gardenville 115kV (#180), Packard-Gardenville 115kV (#182)
	6/8/2019	21,22	Derate Niagara Blvd-Packard 115kV (#181) for I/o TWR:PACKARD 77 & 78
	6/8/2019	15,16	PJM_AC-NY DNI Ramp Limit
	6/8/2019	13	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV
	6/15/2019	14	IESO_AC-NY Scheduling Limit
	6/18/2019	6-13,17-20,23	Extended Outage Niagara-Kintigh 345kV (#NS1-38)
	6/18/2019	10-13,17-20	Derate Scriba-Volney 345kV (#20) for I/o Scriba-Volney 345kV (#21)
	6/18/2019	6,23	PJM_AC Active DNI Ramp Limit
	6/18/2019	6,7,11-13	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	6/24/2019	10	NYCA DNI Ramp Limit
	6/24/2019	10,12	Derate Gardenville-Langner Rd 115kV (#180) for I/o TWR:PACKARD 77 & 78
	6/24/2019	12	Derate Niagara 230/115kV AT1 for I/o TWR:PACKARD 77 & 78
	6/24/2019	0,22,23	Uprate Central East
	6/24/2019	15,16	IESO_AC-NY Scheduling Limit
	6/24/2019	0,23	NE_AC DNI Ramp Limit
	6/24/2019	23	NE_AC-NY Scheduling Limit
	6/24/2019	12	PJM_AC-NY Scheduling Limit
	6/24/2019	17-20	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	6/25/2019	0,22,23	NYCA DNI Ramp Limit
	6/25/2019	15	Uprate Calspan-Frnkyong 115kV (#181) I/o TWR:PACKARD 77 & 78
	6/25/2019	5	Uprate Central East
	6/25/2019	15,16,23	Uprate E179thSt-Hellgate West 138kV (#15055)
	6/25/2019	22	Derate Gowanus-Greenwood 138kV (#42232) I/o TWR:GOETHALS 22 & 21
	6/25/2019	9,10,22	Derate Motthaven-Dunwoodie 345kV (#71)
	6/25/2019	9,22	Derate Niagara-Packard 230kV (#61) I/o TWR:PACKARD 62 & BP76
	6/25/2019	9,10	Derate Niagara Blvd-Packard 115kV (#181) I/o TWR:PACKARD 77 & 78
	6/25/2019	0	IESO_AC DNI Ramp Limit
	6/25/2019	5	NE_AC-NY Scheduling Limit
	6/25/2019	15,16	HQ_CHAT-NY Scheduling Limit
	6/25/2019	18	PJM_AC-NY Scheduling Limit
	6/25/2019	22,23	PJM_AC DNI Ramp Limit
	6/25/2019	0,16,18	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	6/25/2019	0	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	6/27/2019	2	Uprate Calspan-Frnkyong 115kV (#181) for I/o TWR:PACKARD 77 & 78
	6/27/2019	20,22	Uprate Calspan-Frnkyong 115kV (#181) for I/o TWR:PACKARD 77 & 78 & SAWY BKS
	6/27/2019	12,13,20	Uprate E179thSt-Hellgate West 138kV (#15055)
	6/27/2019	12-14,16	Uprate Freshkills-Willowbrook 138kV (#29211)
	6/27/2019	22	Uprate North Broadway-Erie St 115kV (#181-922) for I/o TWR:PACK 77 & 78 & SAWY BKS
	6/27/2019	2	Uprate North Broadway-Erie St 115kV (#181-922) for I/o TWR:PACK 77 & 78
	6/27/2019	13	Uprate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	6/27/2019	16,19	Uprate Leeds-Pleasant Valley 345kV (#92) for I/o Athens-Pleasant Valley 345kV (#91)
	6/27/2019	18	Derate Buchanan North-Eastview 345kV (#W93) for I/o TWR:PVILLE F38&F39&Y86&Y87&BK1
	6/27/2019	18	Derate Freshkills-Willowbrook 138kV (#29211)
	6/27/2019	18	Derate Greenwood-Vernon 138kV (#31231)
	6/27/2019	2	NYCA DNI Ramp Limit
	6/27/2019	18	NE_AC DNI Ramp Limit
	6/27/2019	12,20	HQ Chat-NY Scheduling Limit
	6/27/2019	13,16,19,22	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	6/27/2019	13,16	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Leeds-N.Scntdn 345kV
	6/28/2019	2-23	Early Return to Service Buchanan-Ladentown 345kV (#Y88)
	6/28/2019	3,6,8-14,20,22	NYCA DNI Ramp Limit
	6/28/2019	2	Derate Gardenville-Langner Rd 115kV (#180) for I/o TWR:PACKARD 77 & 78
	6/28/2019	18	Derate Niagara 230/115kV AT1 for I/o TWR:PACK 77 & 78 & SAWY BKS
	6/28/2019	2,9-11	Derate Niagara 230/115kV AT1 for I/o TWR:PACKARD 77 & 78
	6/28/2019	2,9,11-23	Uprate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	6/28/2019	12-15,18,20	Derate Niagara Blvd-Packard 115kV (#181) for I/o TWR:PACK 77 & 78 & SAWY BKS
	6/28/2019	9-11	Derate Niagara Blvd-Packard 115kV (#181) for I/o TWR:PACKARD 77 & 78
	6/28/2019	3-6,9,22	PJM_AC DNI Ramp Limit
	6/28/2019	9,10,13,15	NE_NNC1385-NY Scheduling Limit
	6/28/2019	3,8,9,16-19	NE_AC DNI Ramp Limit
	6/28/2019	3	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	6/29/2019	14,15,17	Thunder Storm Alert
	6/29/2019	0,2,3,6	Forced Outage Oakdale-Fraser 345kV (#32)
	6/29/2019	12,14,15,17	NYCA DNI Ramp Limit
	6/29/2019	0,1,3,4,6-15,17	Uprate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	6/29/2019	17	Derate Niagara Blvd-Packard 115kV (#181) for I/o TWR:PACK 77 & 78 & SAWY BKS
	6/29/2019	14-16	NE_AC DNI Ramp Limit
	6/29/2019	16	NE_AC-NY Scheduling Limit
	6/29/2019	10,11,13,14,16	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV

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

<u>Category</u>	<u>Cost Assignment</u>	<u>Events Types</u>	<u>Event Examples</u>
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	

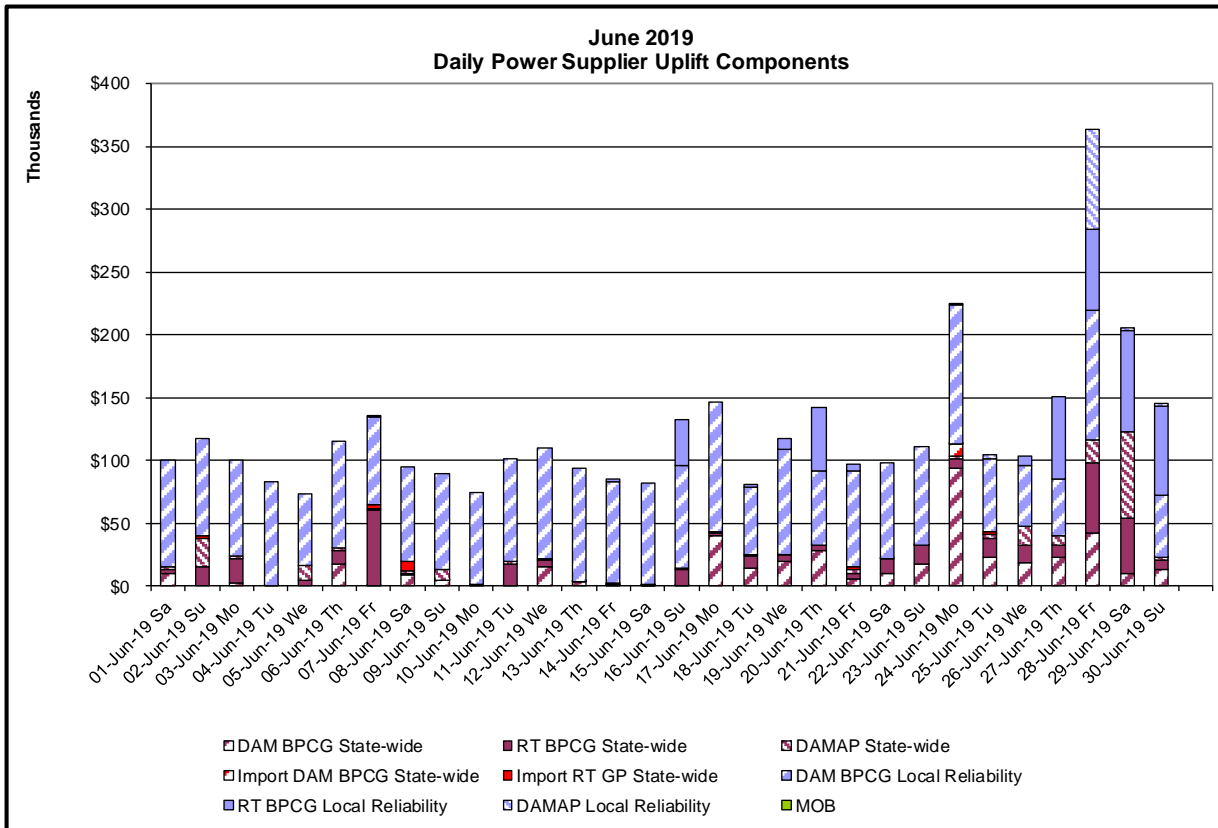
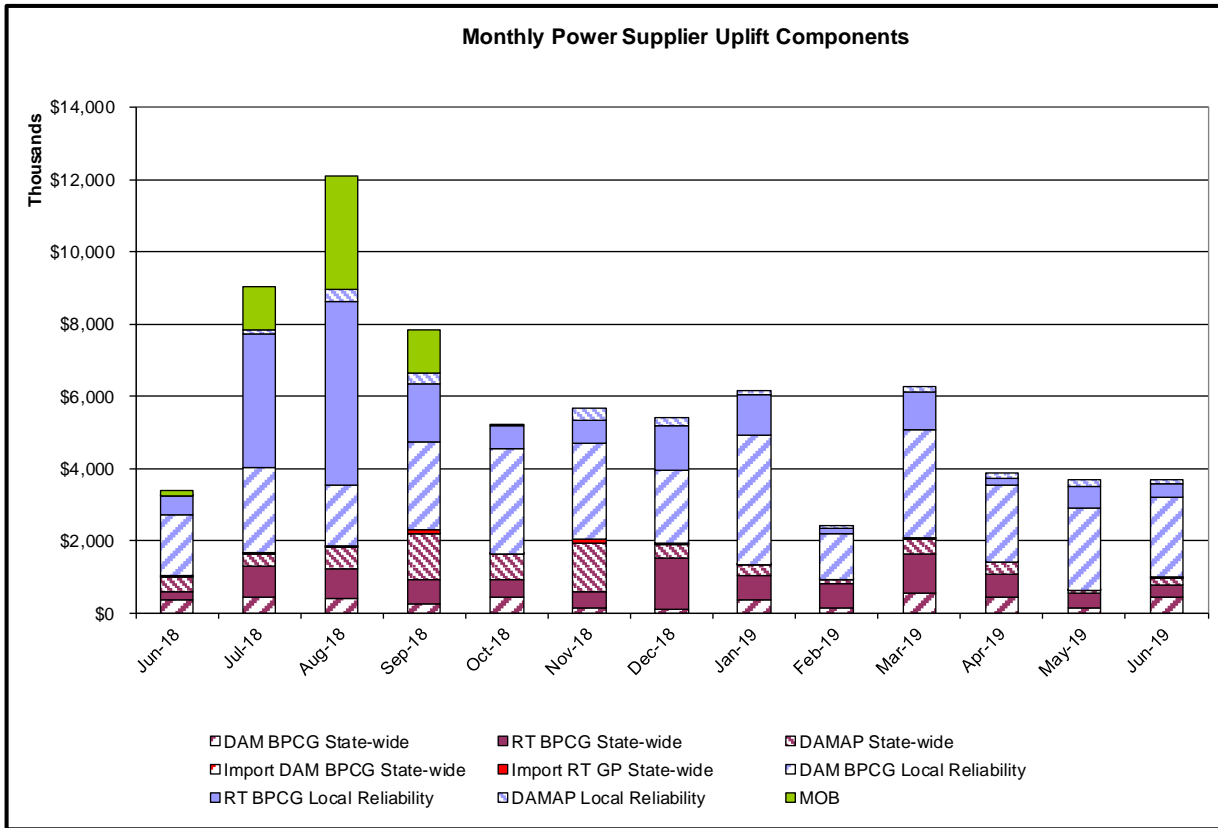
Monthly Balancing Market Congestion Report Assumptions/Notes

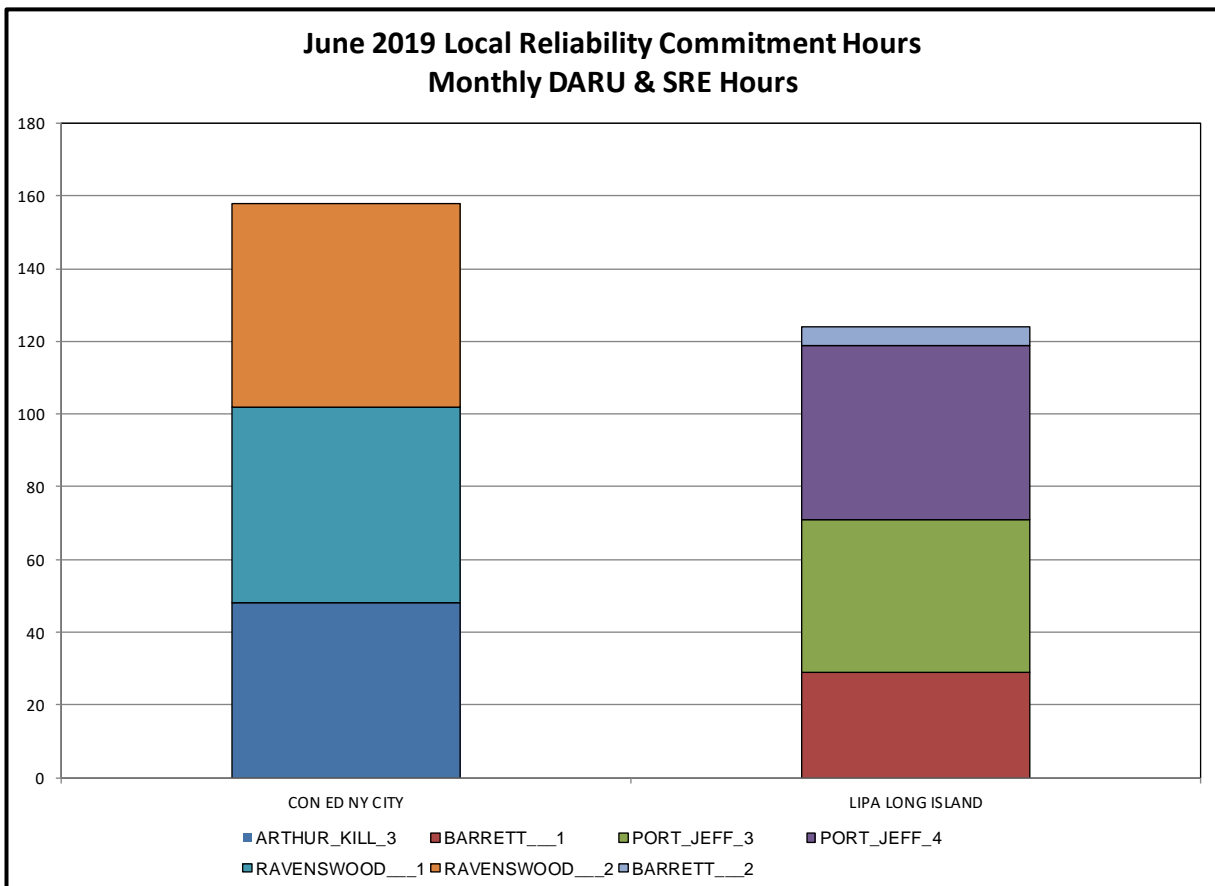
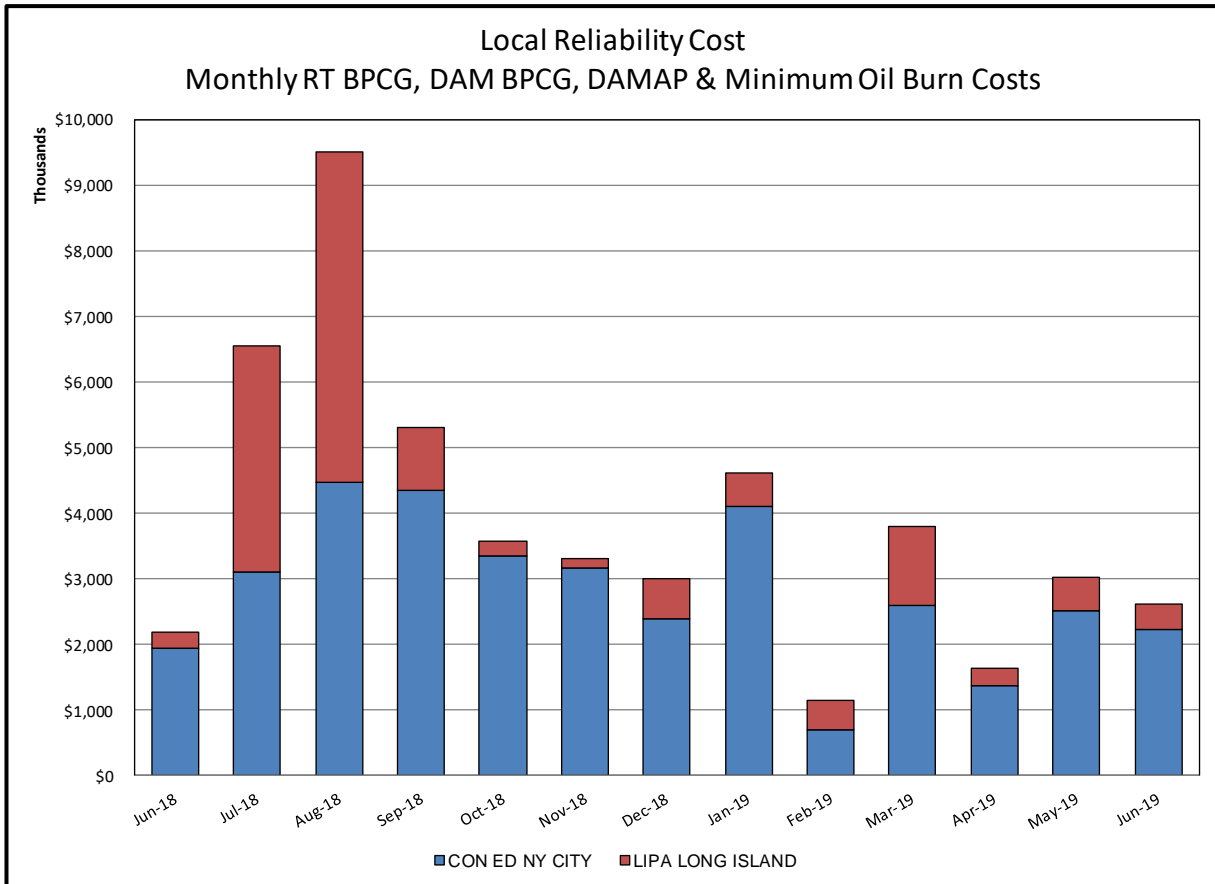
1) Storm Watch Costs are identified as daily total uplift costs
 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
 3) Uplift costs associated with multiple event types are apportioned equally by hour

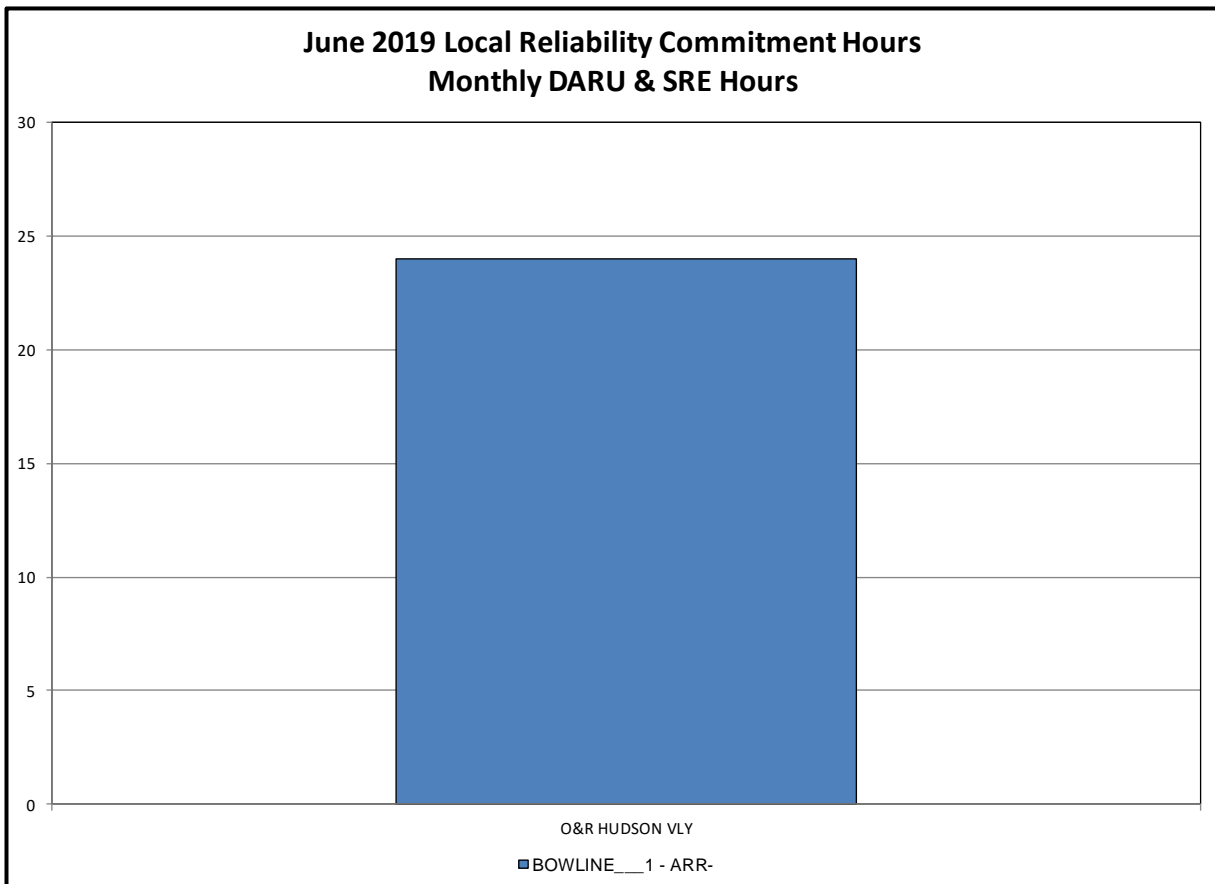
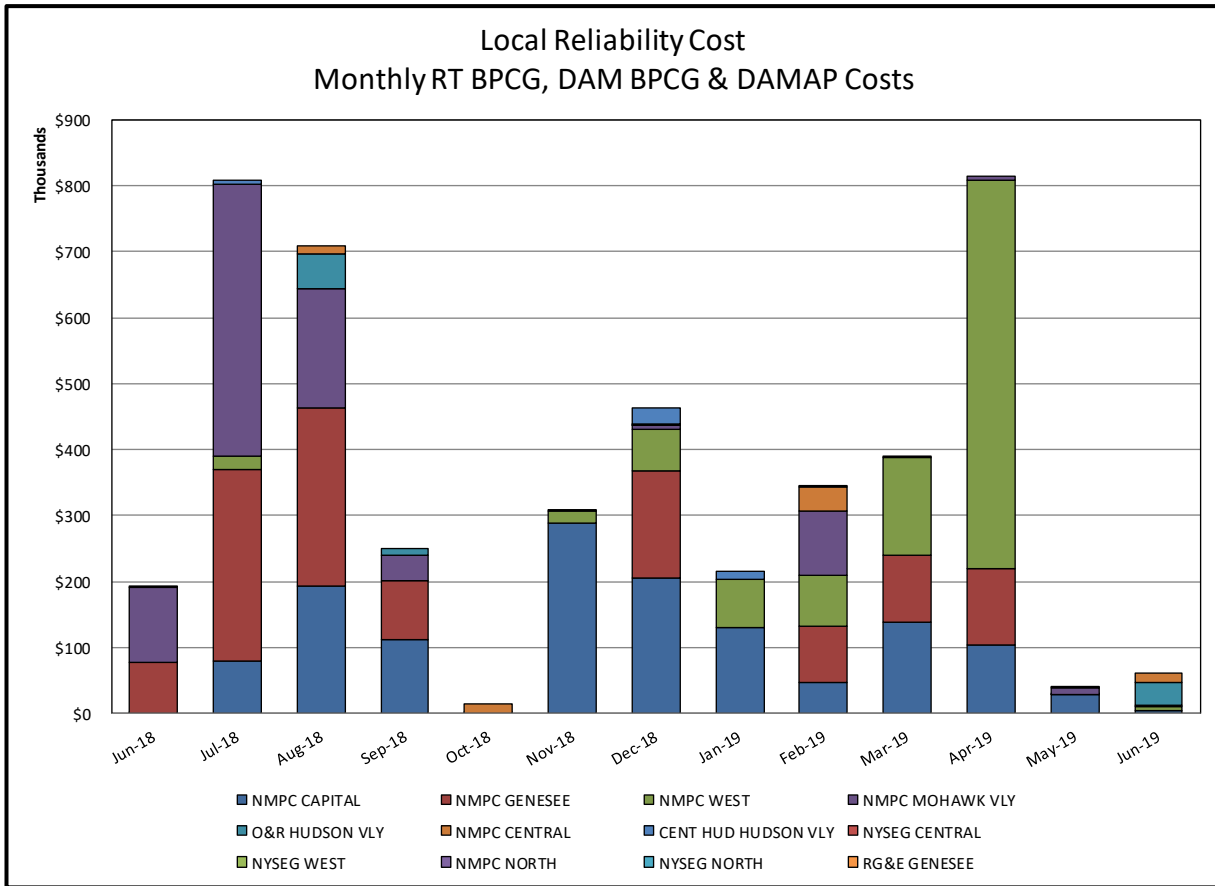


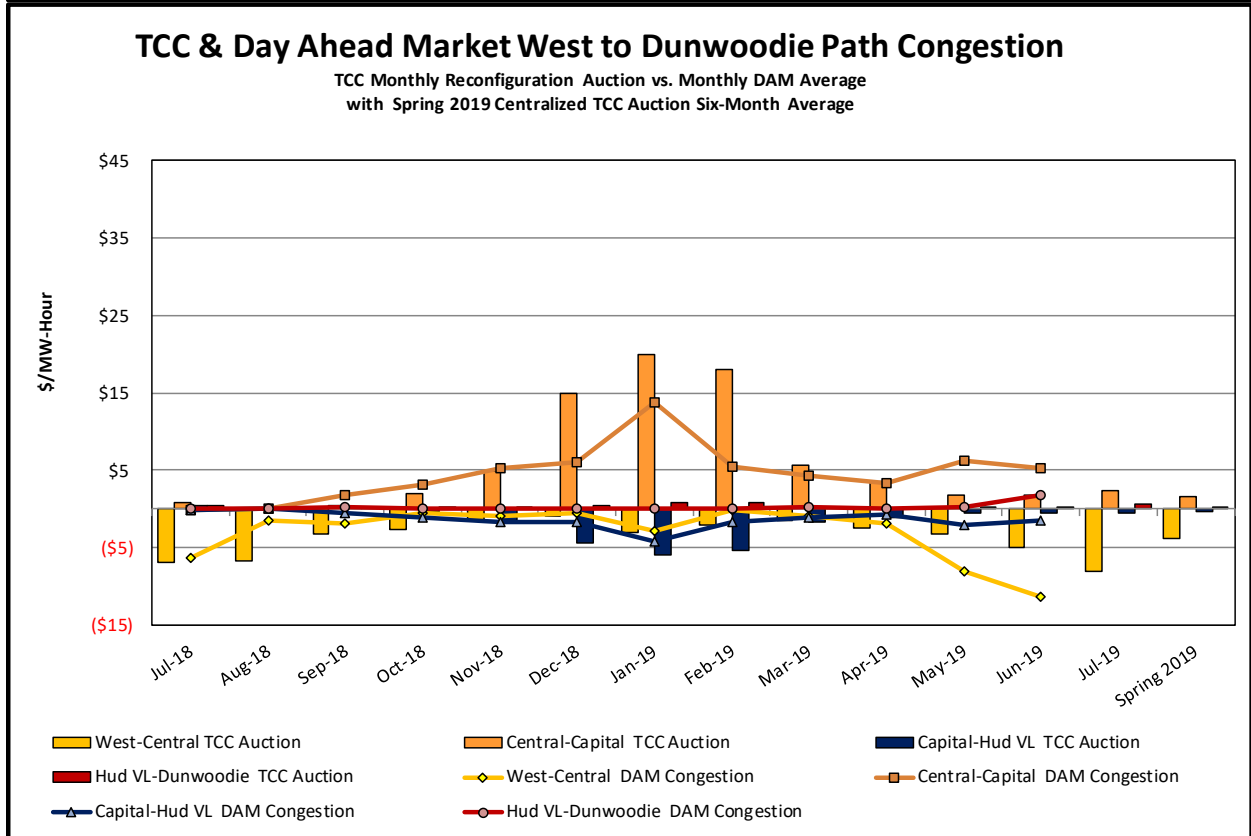
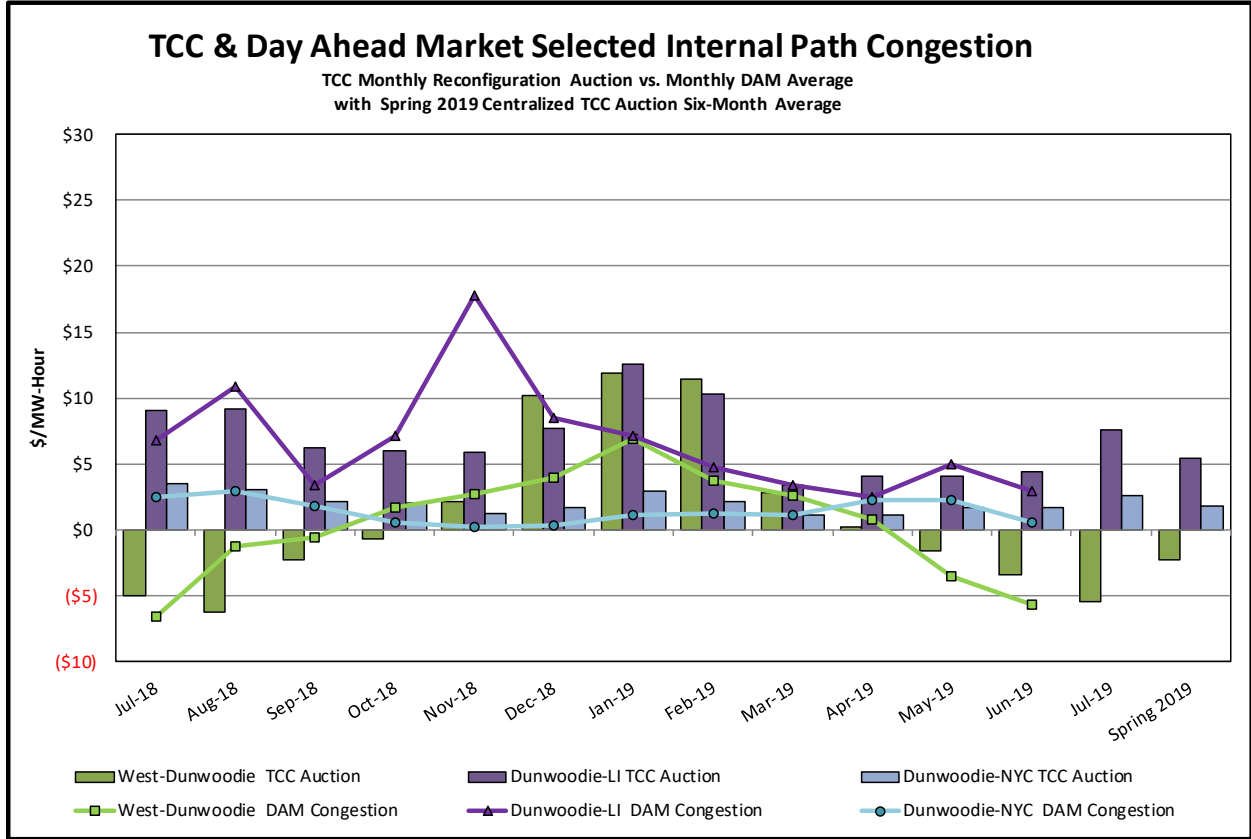
Day-Ahead Market Congestion Residual Categories

<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.
External Outage Allocation	All TO by Monthly Allocation Factor	Direct allocation to transmission equipment status change caused by change in status of external equipment.	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.	



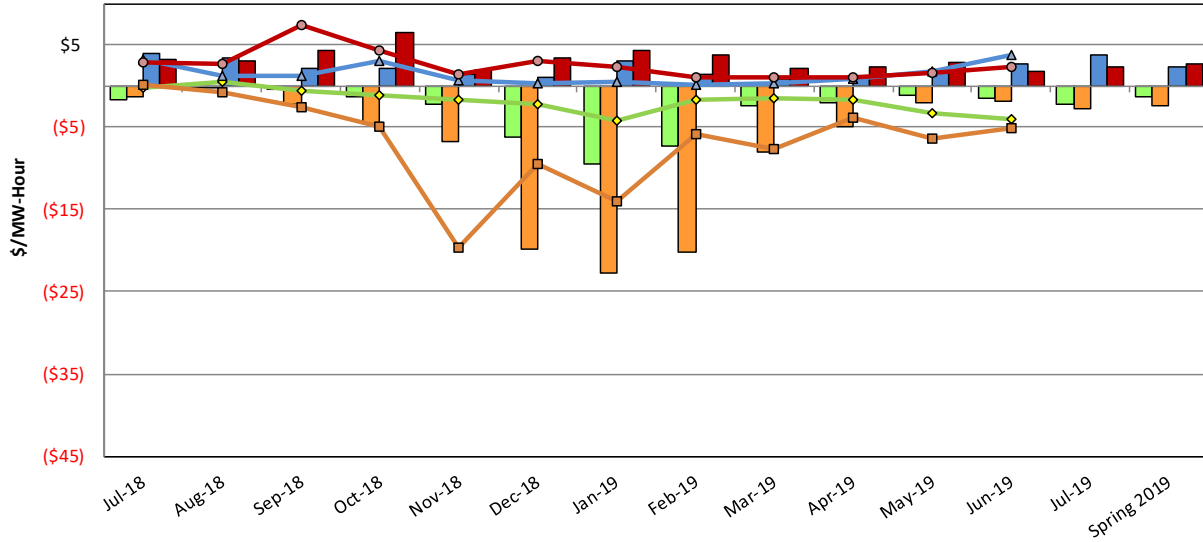




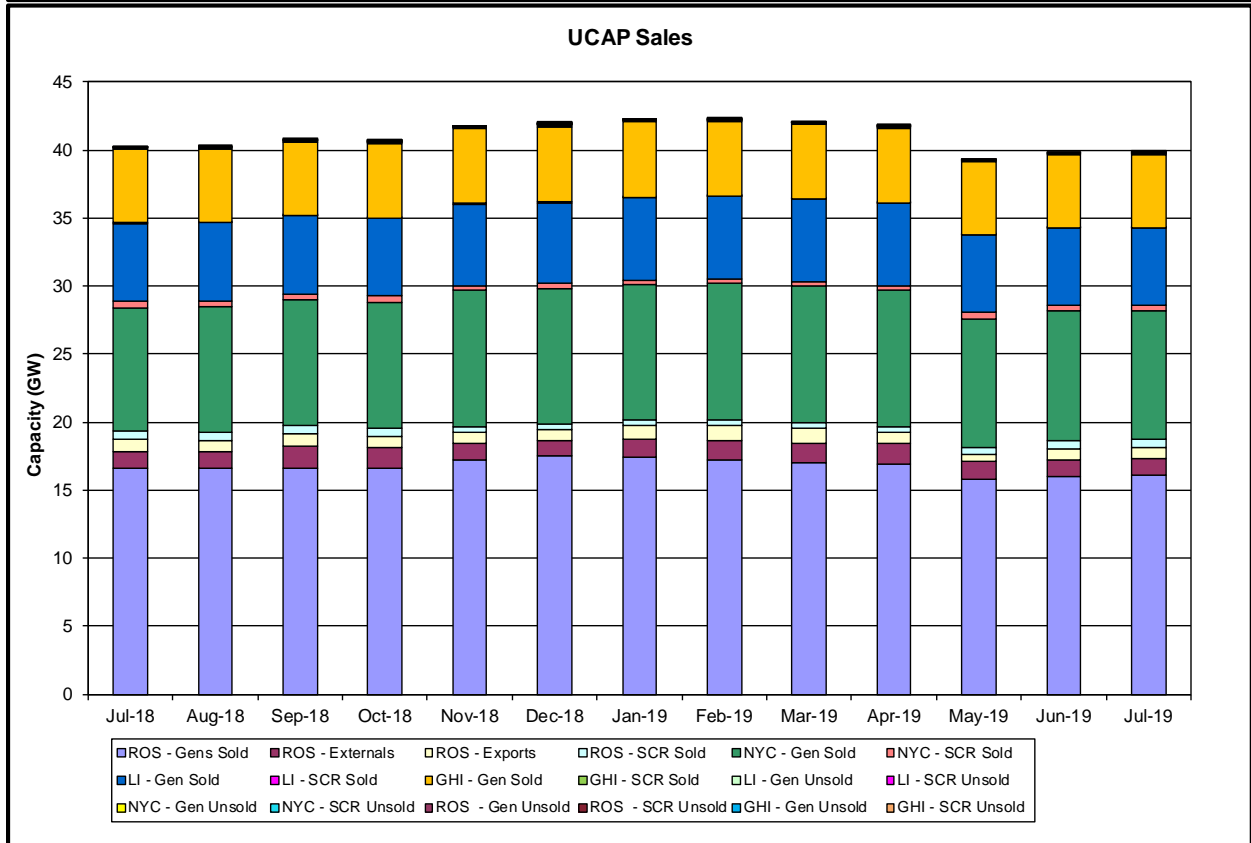
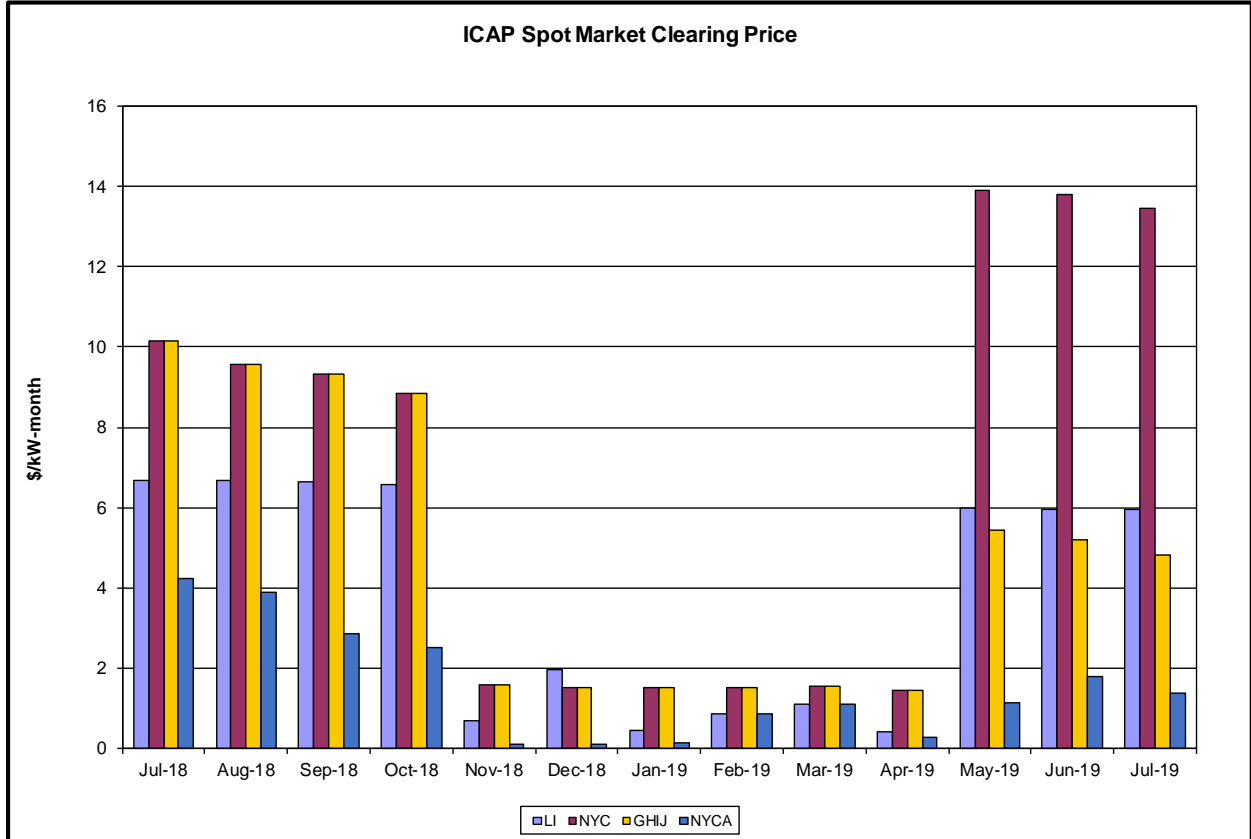


TCC & Day Ahead Market Selected External Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average
with Spring 2019 Centralized TCC Auction Six-Month Average



- PJM-Central TCC Auction
- NE-Central TCC Auction
- OH-Central TCC Auction
- HQ-Central TCC Auction
- ◆ PJM-Central DAM Congestion
- NE-Central DAM Congestion
- ▲ OH-Central DAM Congestion
- HQ-Central DAM Congestion

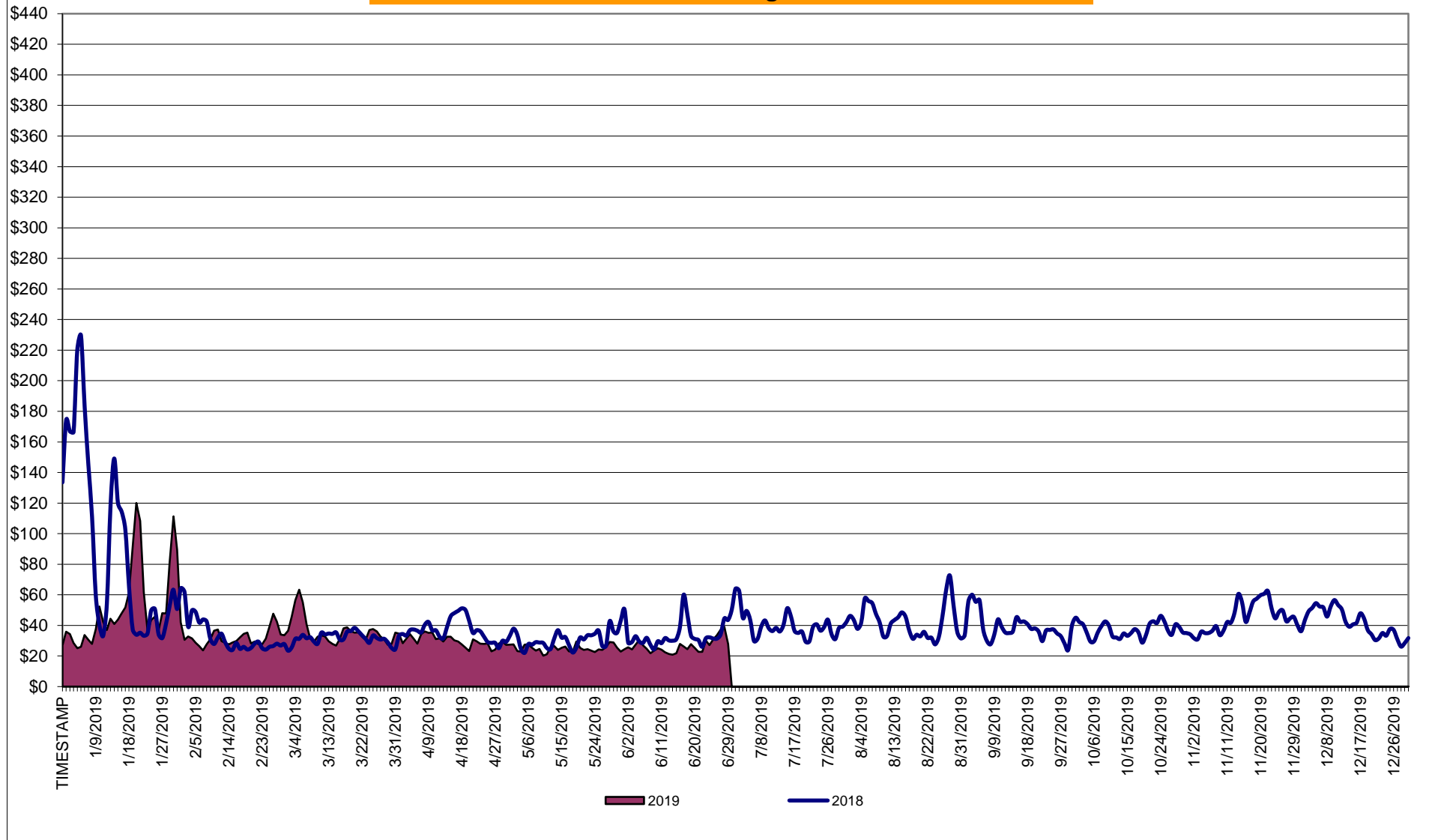


Market Performance Highlights

June 2019

- LBMP for June is \$24.43/MWh; higher than \$23.10/MWh in May 2019 and lower than \$32.53/MWh in June 2018.
 - Day Ahead and Real Time Load Weighted LBMPs are higher compared to May.
- June 2019 average year-to-date monthly cost of \$35.76/MWh is a 25% decrease from \$47.70/MWh in June 2018.
- Average daily sendout is 429 GWh/day in June; higher than 373 GWh/day in May 2019 and lower than 445 GWh/day in June 2018.
- Natural gas prices and distillate prices were lower compared to the previous month.
 - Natural Gas (Transco Z6 NY) was \$2.10/MMBtu, down from \$2.27/MMBtu in May.
 - Natural gas prices are down 14.1% year-over-year.
 - Jet Kerosene Gulf Coast was \$13.50/MMBtu, down from \$14.64/MMBtu in May.
 - Ultra Low Sulfur No.2 Diesel NY Harbor was \$13.23/MMBtu, down from \$14.54/MMBtu in May.
 - Distillate prices are down 13.2% year-over-year.
- Uplift per MWh is lower compared to the previous month.
 - Uplift (not including NYISO cost of operations) is \$0.07/MWh; lower than \$0.13/MWh in May.
 - Local Reliability Share is \$0.19/MWh, lower than \$0.23/MWh in May.
 - Statewide Share is (\$0.12)/MWh, lower than (\$0.11)/MWh in May.
 - TSA \$ per NYC MWh is \$0.77/MWh.
 - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are higher than May.

Daily NYISO Average Cost/MWh (Energy & Ancillary Services)*
2018 Annual Average \$44.92/MWh
June 2018 YTD Average \$47.70/MWh
June 2019 YTD Average \$35.76/MWh



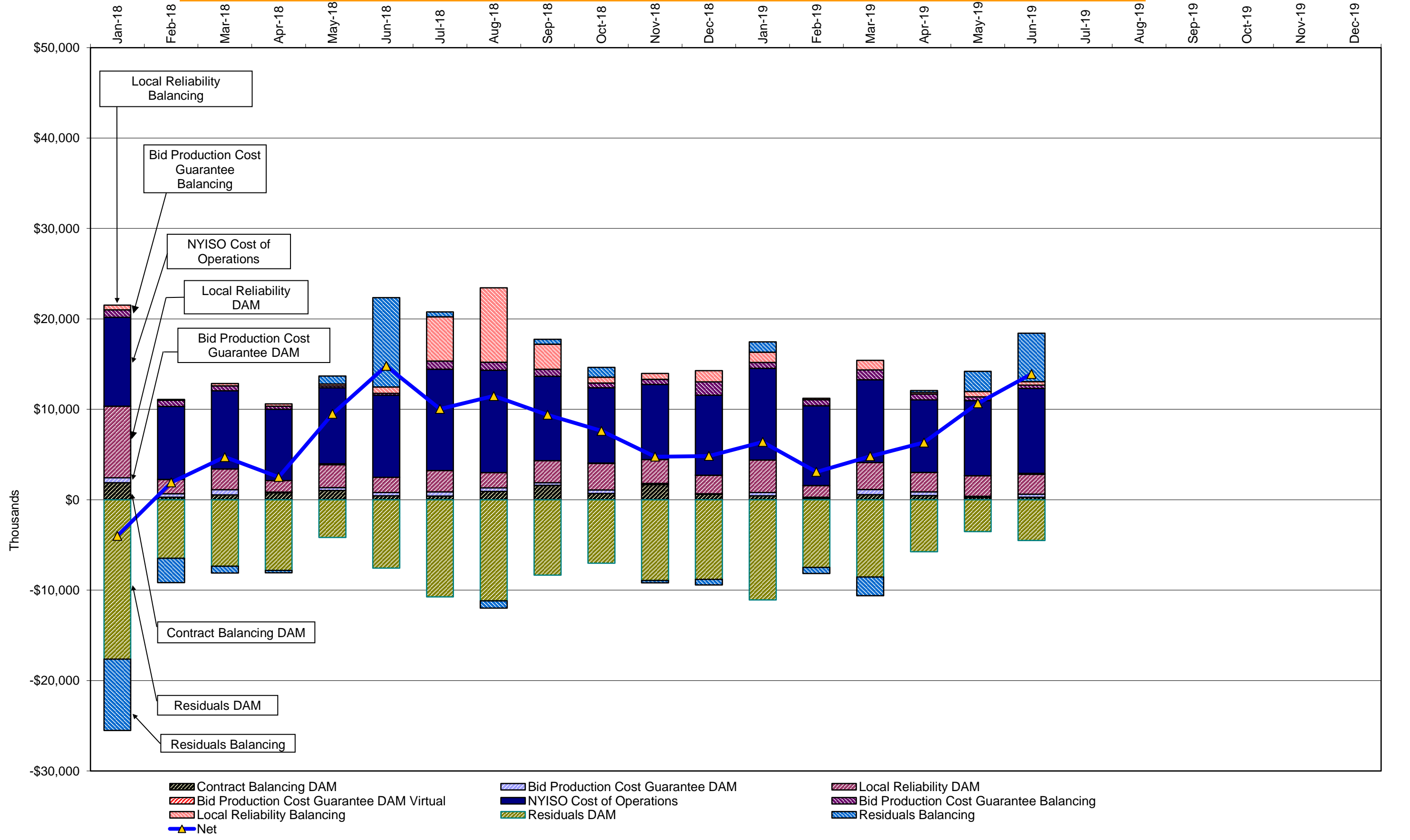
* Excludes ICAP payments.

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

2019	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
LBMP	50.93	33.51	34.91	28.01	23.10	24.43						
NTAC	0.51	0.69	0.98	1.16	0.72	1.08						
Reserve	0.54	0.51	0.55	0.63	0.63	0.50						
Regulation	0.13	0.11	0.10	0.33	0.13	0.09						
NYISO Cost of Operations	0.68	0.68	0.69	0.69	0.68	0.69						
FERC Fee Recovery	0.08	0.09	0.09	0.10	0.10	0.08						
Uplift	(0.25)	(0.44)	(0.33)	(0.15)	0.13	0.07						
Uplift: Local Reliability Share	0.32	0.11	0.31	0.20	0.23	0.19						
Uplift: Statewide Share	(0.57)	(0.55)	(0.64)	(0.35)	(0.11)	(0.12)						
Voltage Support and Black Start	0.37	0.37	0.38	0.38	0.38	0.38						
Avg Monthly Cost	52.99	35.51	37.38	31.16	25.88	27.32						
Avg YTD Cost	52.99	44.93	42.54	40.12	37.57	35.76						
TSA \$ per NYC MWh	0.00	0.00	0.01	0.01	0.19	0.77						
2018	<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	99.55	33.83	29.91	35.00	28.78	32.53	39.58	42.56	38.70	35.85	43.15	40.31
NTAC	0.71	0.58	0.88	1.09	0.88	1.00	0.93	0.72	0.40	0.36	1.18	0.93
Reserve	0.92	0.65	0.64	0.81	0.68	0.57	0.49	0.51	0.52	0.80	0.66	0.54
Regulation	0.15	0.15	0.16	0.12	0.14	0.16	0.09	0.09	0.09	0.16	0.17	0.17
NYISO Cost of Operations	0.65	0.65	0.66	0.65	0.66	0.67	0.67	0.66	0.66	0.63	0.63	0.63
FERC Fee Recovery	0.08	0.10	0.09	0.10	0.09	0.09	0.06	0.06	0.08	0.09	0.09	0.08
Uplift	(0.92)	(0.50)	(0.31)	(0.45)	0.05	0.30	(0.13)	(0.02)	(0.11)	(0.30)	(0.27)	(0.29)
Uplift: Local Reliability Share	0.59	0.14	0.19	0.12	0.22	0.18	0.44	0.59	0.37	0.27	0.25	0.23
Uplift: Statewide Share	(1.52)	(0.64)	(0.51)	(0.57)	(0.17)	0.12	(0.57)	(0.61)	(0.48)	(0.56)	(0.52)	(0.52)
Voltage Support and Black Start	0.40	0.41	0.42	0.41	0.42	0.42	0.42	0.42	0.42	0.40	0.40	0.40
Avg Monthly Cost	101.54	35.87	32.45	37.74	31.70	35.73	42.12	45.01	40.76	38.00	46.01	42.78
Avg YTD Cost	101.54	72.85	60.06	54.82	50.20	47.70	46.64	46.37	45.75	45.03	45.11	44.92
TSA \$ per NYC MWh	0.00	0.00	0.04	0.00	0.08	0.39	0.21	0.14	0.33	0.75	0.00	0.00

* Excludes ICAP payments.
Market Mitigation and Analysis
Prepared: 7/9/2019 2:19 PM

NYISO Dollar Flows - Uplift - OATT Schedule 1 components - Data through June 30, 2019



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

2019	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Day Ahead Market MWh	15,299,458	13,391,383	13,527,834	11,811,029	12,521,583	13,723,372						
DAM LSE Internal LBMP Energy Sales	57%	57%	59%	59%	57%	58%						
DAM External TC LBMP Energy Sales	6%	5%	3%	1%	3%	3%						
DAM Bilateral - Internal Bilaterals	29%	30%	30%	31%	32%	29%						
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	5%	5%	6%	5%						
DAM Bilateral - Export/Non-LBMP Market Bilaterals	1%	1%	2%	2%	2%	2%						
DAM Bilateral - Wheel Through Bilaterals	2%	2%	2%	2%	1%	2%						
Balancing Energy Market MWh	-322,442	-323,188	-261,217	-218,482	-392,699	-102,044						
Balancing Energy LSE Internal LBMP Energy Sales	-120%	-126%	-138%	-178%	-150%	-264%						
Balancing Energy External TC LBMP Energy Sales	65%	67%	82%	113%	68%	233%						
Balancing Energy Bilateral - Internal Bilaterals	-4%	-1%	-3%	2%	1%	0%						
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%	0%						
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	3%	7%	6%	7%	2%	8%						
Balancing Energy Bilateral - Wheel Through Bilaterals	-45%	-47%	-47%	-44%	-21%	-77%						
Transactions Summary												
LBMP	63%	62%	61%	60%	59%	62%						
Internal Bilaterals	29%	30%	30%	31%	33%	30%						
Import Bilaterals	5%	5%	6%	6%	6%	5%						
Export Bilaterals	1%	2%	2%	2%	2%	2%						
Wheels Through	1%	1%	1%	1%	0%	1%						
Market Share of Total Load												
Day Ahead Market	102.2%	102.5%	102.0%	101.9%	103.2%	100.7%						
Balancing Energy +	-2.2%	-2.5%	-2.0%	-1.9%	-3.2%	-0.7%						
Total MWh	14,977,016	13,068,195	13,266,617	11,592,547	12,128,884	13,621,328						
Average Daily Energy Sendout/Month GWh	449	436	411	371	373	429						

2018	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Day Ahead Market MWh	15,153,751	12,643,854	13,521,386	12,158,686	12,721,073	13,983,384	16,839,994	17,195,447	14,432,632	13,548,828	13,506,134	14,450,460
DAM LSE Internal LBMP Energy Sales	59%	57%	58%	60%	61%	61%	65%	65%	61%	57%	58%	56%
DAM External TC LBMP Energy Sales	4%	3%	2%	2%	2%	1%	1%	2%	3%	6%	6%	6%
DAM Bilateral - Internal Bilaterals	29%	31%	32%	30%	29%	30%	26%	25%	28%	29%	30%	30%
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	5%	5%	5%	5%	4%	4%	5%	5%	2%	5%
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%	2%	2%
DAM Bilateral - Wheel Through Bilaterals	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%
Balancing Energy Market MWh	-149,619	-299,377	-386,811	-72,862	-29,539	-354,112	-80,438	-44,732	-210,436	-314,885	-304,277	-428,748
Balancing Energy LSE Internal LBMP Energy Sales	-147%	-101%	-128%	-208%	-458%	-113%	-123%	-75%	-82%	-105%	-100%	-94%
Balancing Energy External TC LBMP Energy Sales	74%	24%	37%	189%	564%	29%	129%	209%	14%	30%	18%	27%
Balancing Energy Bilateral - Internal Bilaterals	9%	5%	0%	-11%	29%	5%	18%	23%	7%	2%	3%	3%
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	22%	9%	6%	34%	51%	3%	14%	25%	3%	0%	0%	0%
Balancing Energy Bilateral - Wheel Through Bilaterals	-58%	-36%	-15%	-103%	-287%	-23%	-138%	-281%	-42%	-27%	-31%	-36%
Transactions Summary												
LBMP	63%	59%	59%	62%	63%	61%	66%	68%	64%	63%	64%	61%
Internal Bilaterals	30%	32%	33%	30%	29%	31%	27%	25%	28%	30%	31%	31%
Import Bilaterals	5%	5%	6%	5%	5%	5%	4%	4%	5%	5%	3%	5%
Export Bilaterals	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%	2%	2%
Wheels Through	1%	1%	1%	1%	1%	2%	1%	1%	2%	1%	1%	1%
Market Share of Total Load												
Day Ahead Market	101.0%	102.4%	102.9%	100.6%	100.2%	102.6%	100.5%	100.3%	101.5%	102.4%	102.3%	103.1%
Balancing Energy +	-1.0%	-2.4%	-2.9%	-0.6%	-0.2%	-2.6%	-0.5%	-0.3%	-1.5%	-2.4%	-2.3%	-3.1%
Total MWh	15,004,132	12,344,477	13,134,575	12,085,824	12,691,534	13,629,272	16,759,556	17,150,715	14,222,196	13,233,943	13,201,857	14,021,712
Average Daily Energy Sendout/Month GWh	463	426	413	390	397	445	529	537	458	399	411	425

+ 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 2019 Energy Statistics

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<u>DAY AHEAD LBMP</u>												
Price *	\$45.01	\$30.66	\$32.34	\$25.97	\$21.16	\$21.79						
Standard Deviation	\$25.67	\$12.86	\$9.30	\$6.32	\$5.89	\$7.28						
Load Weighted Price **	\$46.88	\$31.53	\$33.14	\$26.57	\$21.89	\$23.04						
<u>RTC LBMP</u>												
Price *	\$40.86	\$29.74	\$31.04	\$25.07	\$21.88	\$25.67						
Standard Deviation	\$23.02	\$10.79	\$8.48	\$7.53	\$8.01	\$23.45						
Load Weighted Price **	\$42.39	\$30.32	\$31.62	\$25.54	\$22.44	\$27.64						
<u>REAL TIME LBMP</u>												
Price *	\$39.54	\$30.13	\$31.46	\$24.47	\$20.56	\$23.30						
Standard Deviation	\$26.03	\$13.77	\$12.54	\$17.27	\$10.35	\$17.49						
Load Weighted Price **	\$41.24	\$30.80	\$32.06	\$25.06	\$21.28	\$25.05						
Average Daily Energy Sendout/Month GWh	449	436	411	371	373	429						

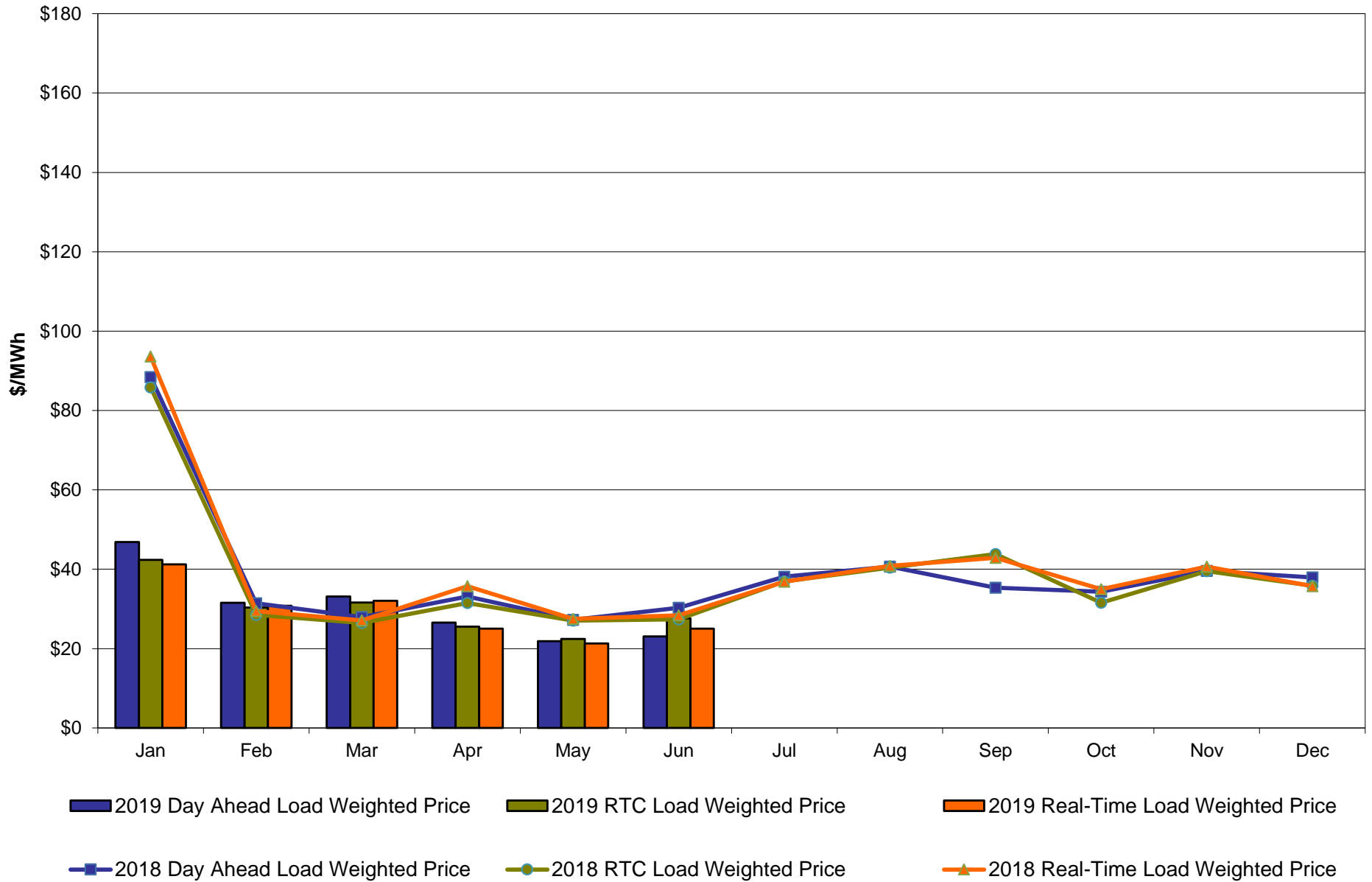
NYISO Markets 2018 Energy Statistics

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<u>DAY AHEAD LBMP</u>												
Price *	\$83.53	\$30.37	\$27.37	\$32.40	\$25.97	\$28.41	\$35.73	\$38.00	\$33.28	\$33.27	\$38.36	\$36.88
Standard Deviation	\$58.94	\$12.38	\$6.34	\$9.06	\$9.22	\$11.42	\$15.25	\$16.51	\$12.01	\$9.24	\$11.36	\$11.61
Load Weighted Price **	\$88.42	\$31.44	\$27.95	\$33.14	\$27.26	\$30.27	\$38.14	\$40.64	\$35.33	\$34.33	\$39.55	\$37.96
<u>RTC LBMP</u>												
Price *	\$81.65	\$27.73	\$25.99	\$30.80	\$25.40	\$26.06	\$34.65	\$38.13	\$39.52	\$30.92	\$38.37	\$35.01
Standard Deviation	\$60.83	\$11.96	\$8.99	\$14.30	\$20.37	\$12.78	\$17.44	\$20.05	\$61.50	\$13.43	\$17.24	\$12.27
Load Weighted Price **	\$85.85	\$28.54	\$26.46	\$31.47	\$27.08	\$27.35	\$36.93	\$40.40	\$43.83	\$31.55	\$39.53	\$35.84
<u>REAL TIME LBMP</u>												
Price *	\$87.94	\$28.50	\$26.49	\$34.53	\$25.57	\$26.31	\$34.34	\$38.07	\$38.15	\$33.88	\$39.18	\$34.74
Standard Deviation	\$87.41	\$17.36	\$12.25	\$26.57	\$23.49	\$24.34	\$18.44	\$27.21	\$46.81	\$37.42	\$26.15	\$17.44
Load Weighted Price **	\$93.59	\$29.49	\$27.09	\$35.72	\$27.47	\$28.38	\$36.84	\$40.87	\$42.87	\$34.94	\$40.63	\$35.70
Average Daily Energy Sendout/Month GWh	463	426	413	390	397	445	529	537	458	399	411	425

* Average zonal load weighted prices.

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

NYISO Monthly Average Internal LBMPs 2018- 2019

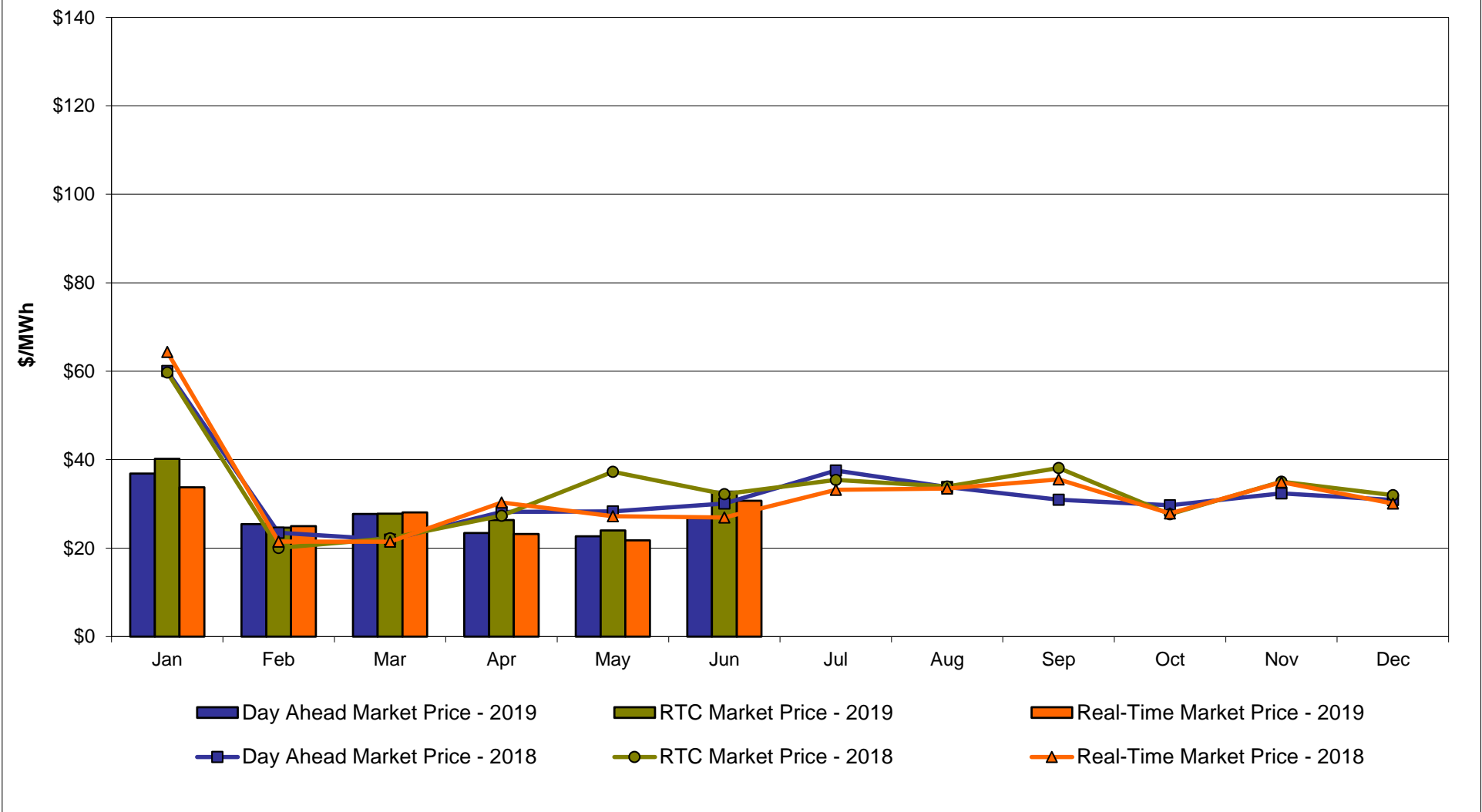


June 2019 Zonal LBMP Statistics for NYISO (\$/MWh)

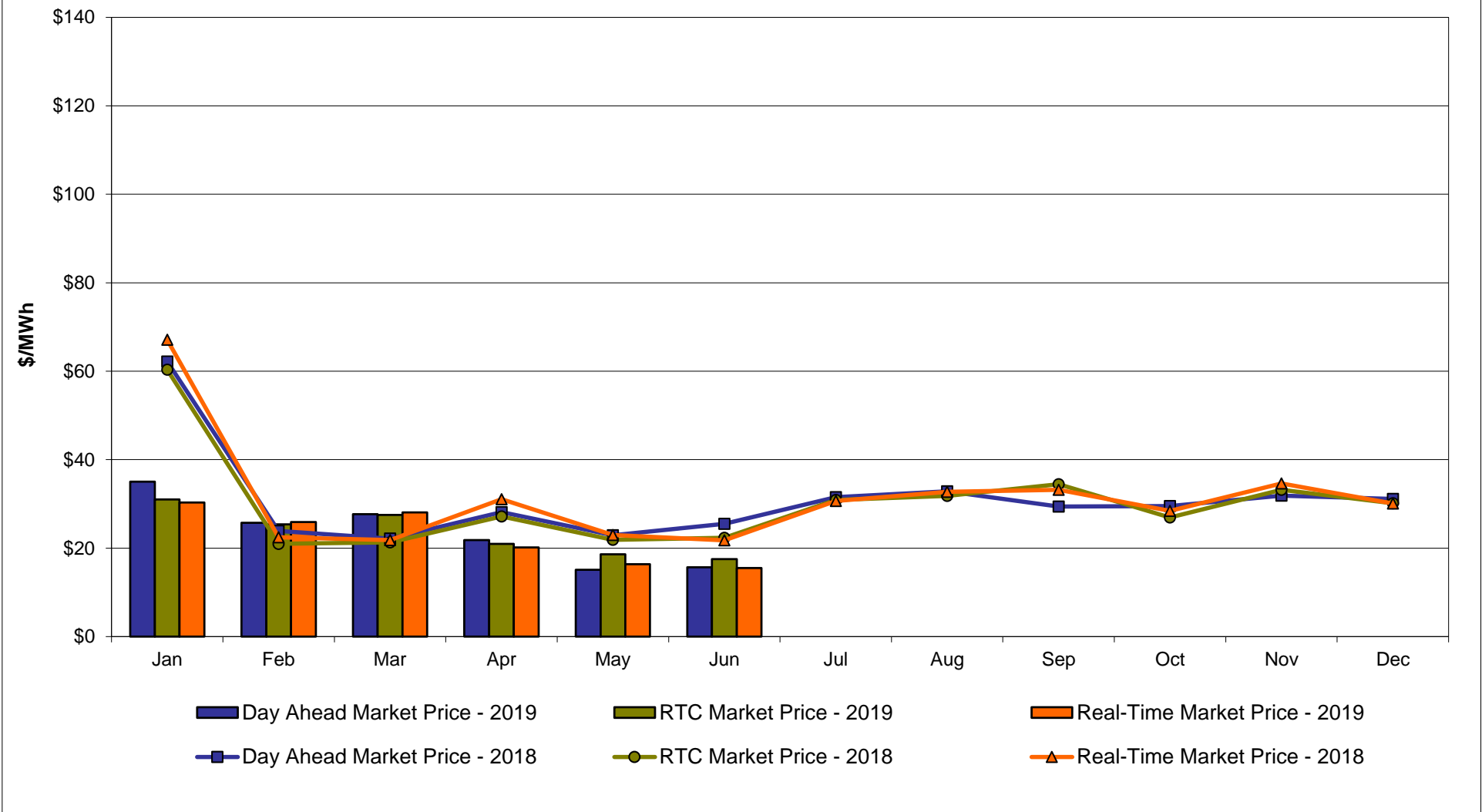
	<u>WEST Zone A</u>	<u>GENESEE Zone B</u>	<u>NORTH Zone D</u>	<u>CENTRAL Zone C</u>	<u>MOHAWK VALLEY Zone E</u>	<u>CAPITAL Zone F</u>	<u>HUDSON VALLEY Zone G</u>	<u>MILLWOOD Zone H</u>	<u>DUNWOODIE Zone I</u>	<u>NEW YORK CITY Zone J</u>	<u>LONG ISLAND Zone K</u>
<u>DAY AHEAD LBMP</u>											
Unweighted Price *	26.76	13.74	11.15	15.67	14.96	21.75	20.64	22.09	22.69	23.41	26.03
Standard Deviation	17.91	6.32	5.85	7.20	6.41	4.04	4.99	6.13	7.17	7.30	8.07
<u>RTC LBMP</u>											
Unweighted Price *	32.78	15.50	14.38	17.52	16.88	22.56	22.32	24.70	25.73	26.40	35.73
Standard Deviation	30.43	10.03	9.65	10.42	9.41	7.69	23.69	30.94	32.41	32.40	50.66
<u>REAL TIME LBMP</u>											
Unweighted Price *	30.72	13.59	12.53	15.51	14.77	21.16	19.61	22.41	23.74	24.74	31.04
Standard Deviation	36.81	11.21	10.95	11.79	10.85	9.12	20.85	20.96	22.75	22.94	31.83
	<u>ONTARIO IESO Zone O</u>	<u>HYDRO QUEBEC (Wheel) Zone M</u>	<u>HYDRO QUEBEC (Import/Export) Zone M</u>	<u>PJM Zone P</u>	<u>NEW ENGLAND Zone N</u>	<u>CROSS SOUND CABLE Controllable Line</u>	<u>NORTHPORT- NORWALK Controllable Line</u>	<u>NEPTUNE Controllable Line</u>	<u>LINDEN VFT Controllable Line</u>	<u>HUDSON Controllable Line</u>	<u>Dennison Controllable Line</u>
<u>DAY AHEAD LBMP</u>											
Unweighted Price *	11.26	12.47	12.47	20.07	21.68	25.28	23.78	24.84	23.20	23.18	10.94
Standard Deviation	4.39	5.70	5.70	7.20	4.51	7.86	6.01	7.79	7.06	7.14	5.64
<u>RTC LBMP</u>											
Unweighted Price *	12.83	13.40	13.40	22.59	23.26	34.66	32.29	34.06	24.36	26.16	14.41
Standard Deviation	10.26	12.89	12.89	21.58	11.34	50.27	39.27	50.24	17.96	34.05	11.63
<u>REAL TIME LBMP</u>											
Unweighted Price *	5.46	12.28	12.28	20.00	21.65	30.51	24.60	30.34	23.21	24.25	12.26
Standard Deviation	49.81	12.73	12.73	22.44	14.85	31.78	28.59	32.84	16.84	24.30	10.67

* Straight LBMP averages

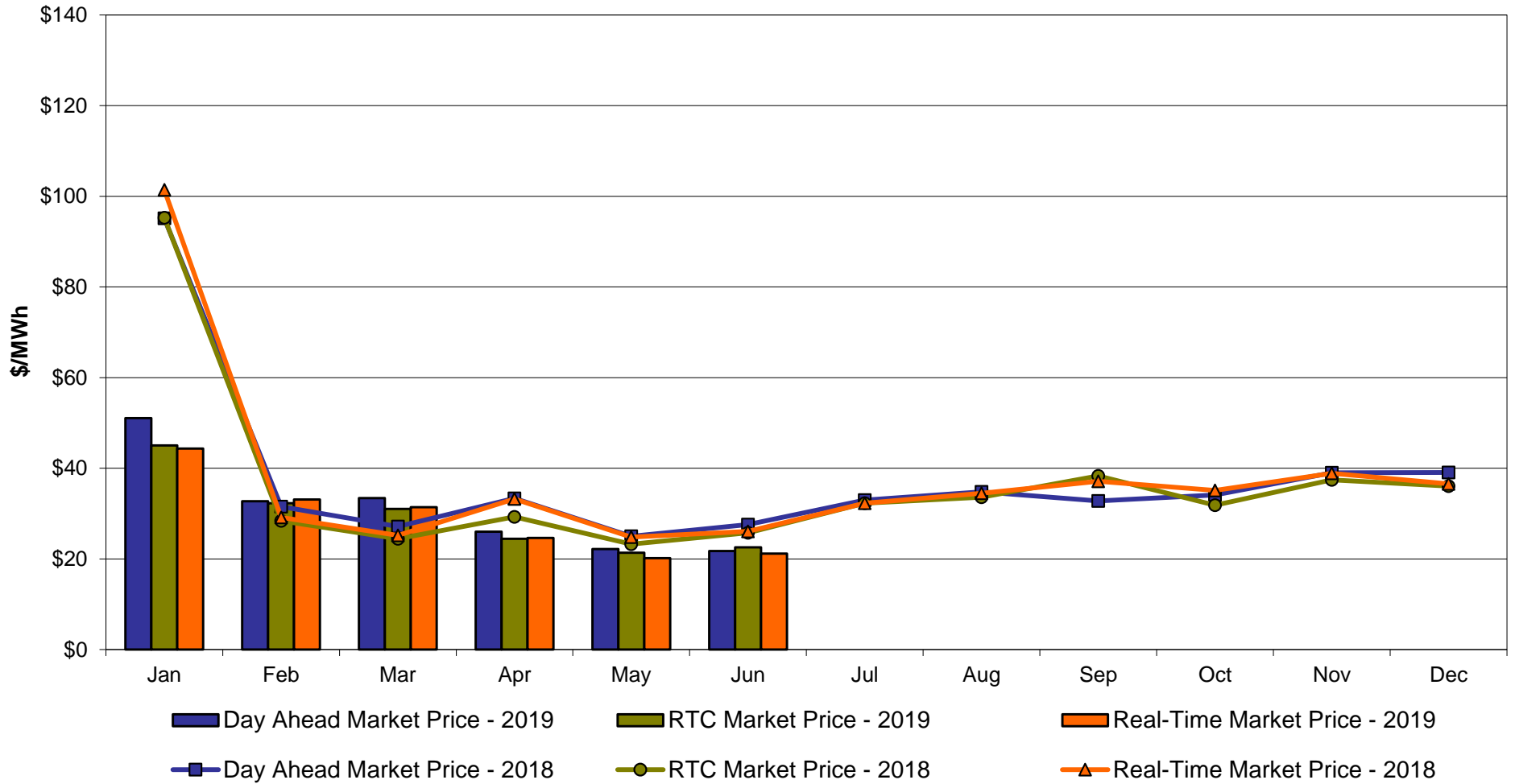
West Zone A
Monthly Average LBMP Prices 2018 - 2019



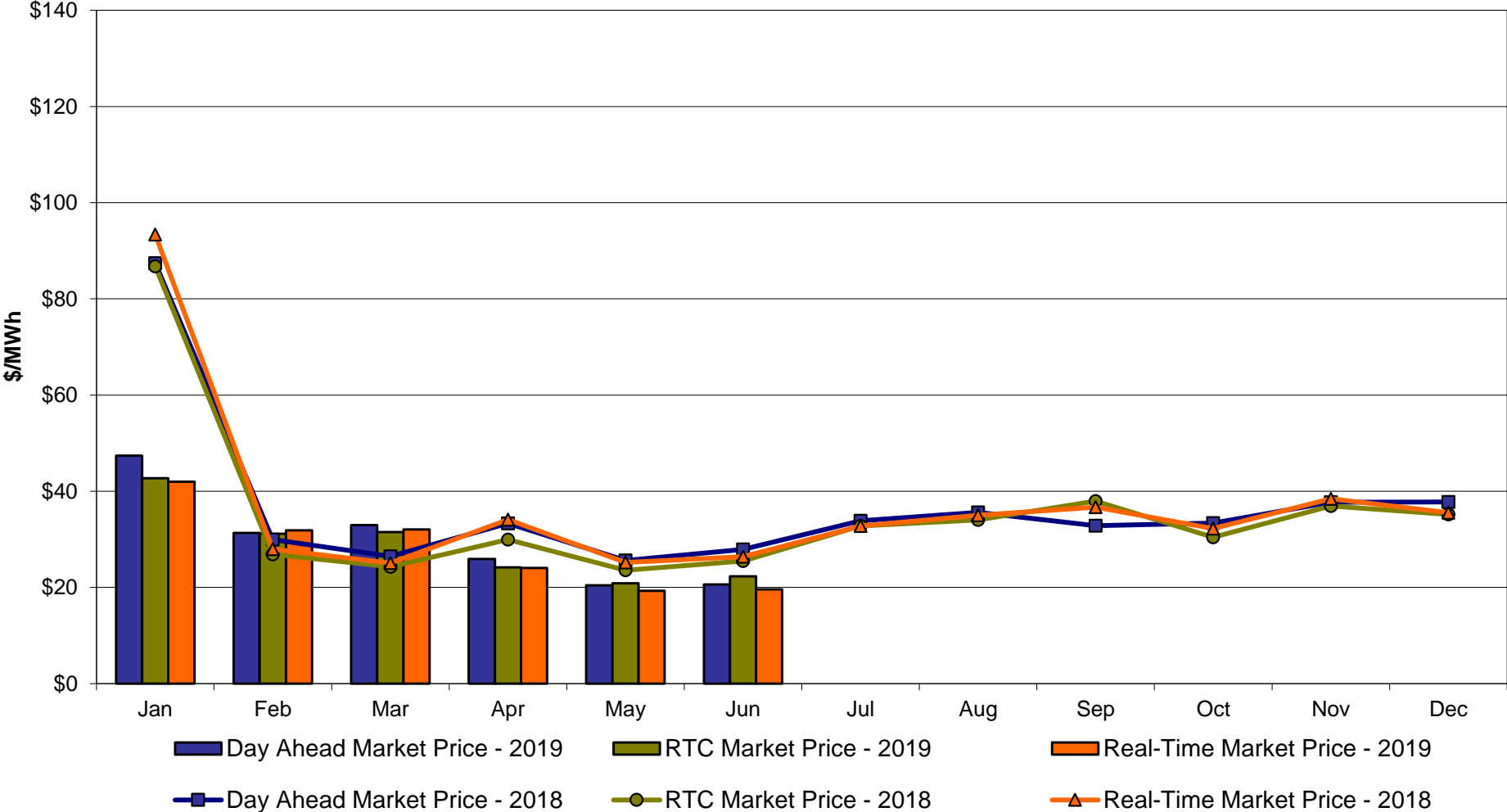
Central Zone C Monthly Average LBMP Prices 2018 - 2019



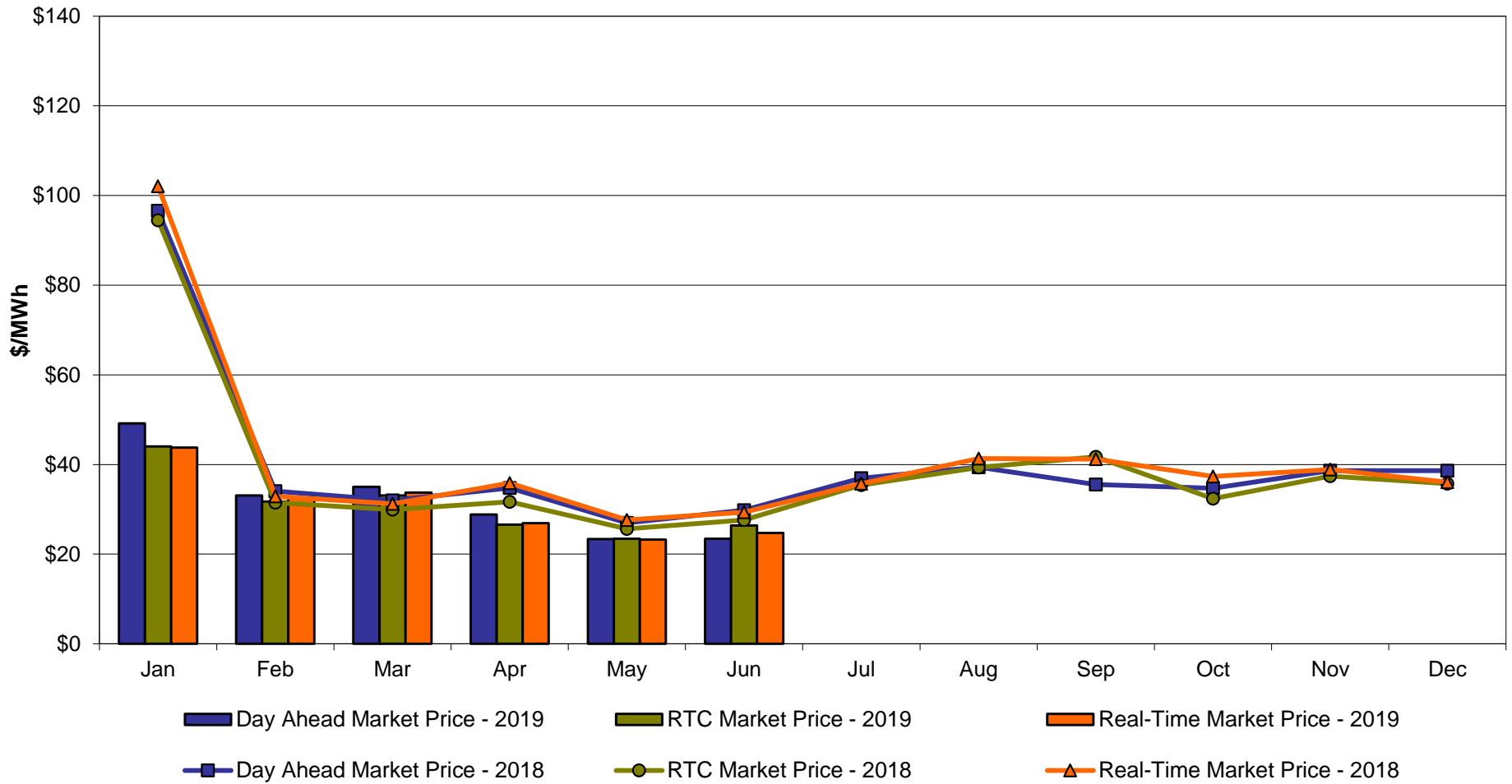
Capital Zone F Monthly Average LBMP Prices 2018 - 2019



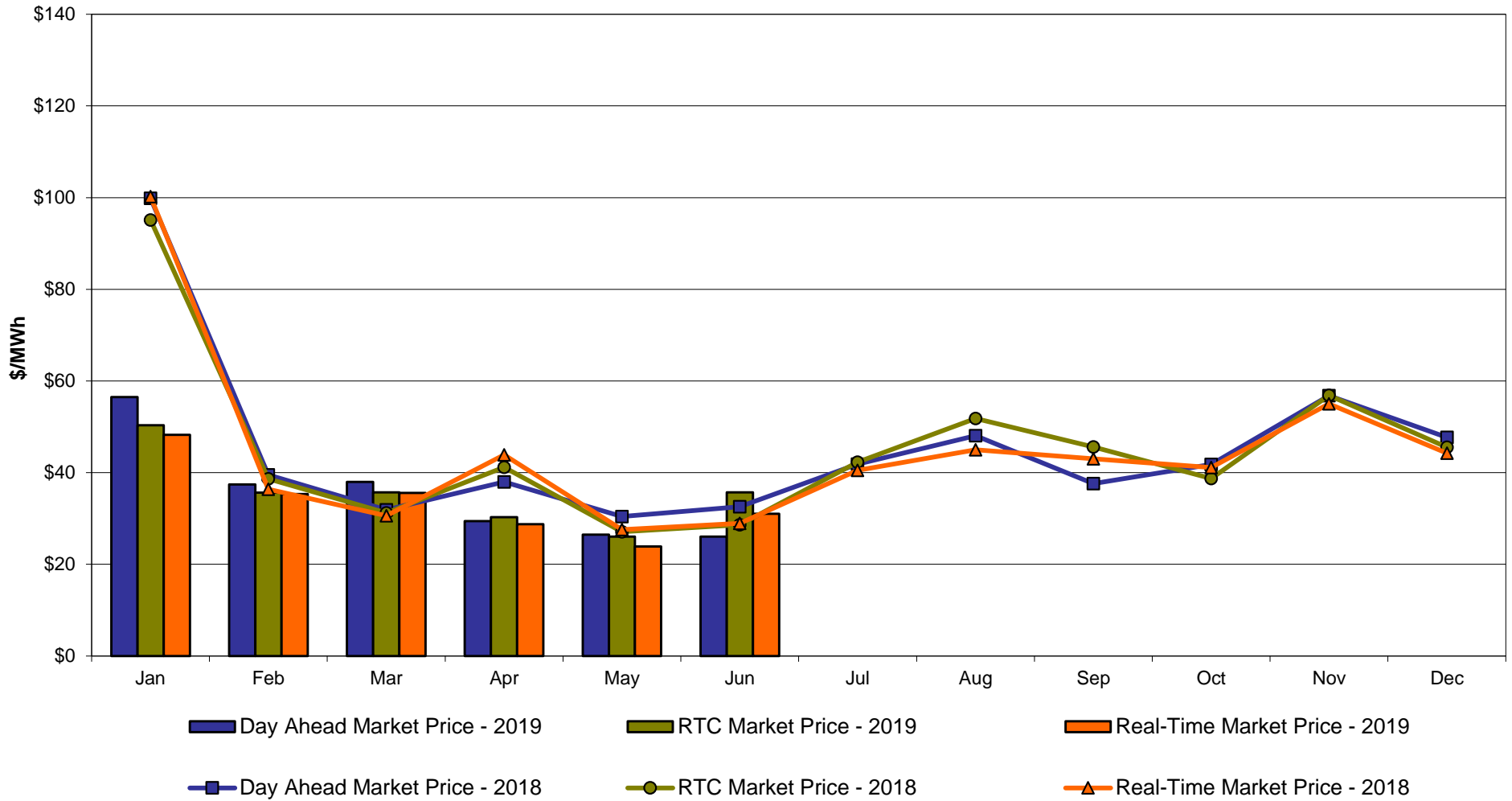
Hudson Valley Zone G Monthly Average LBMP Prices 2018 - 2019



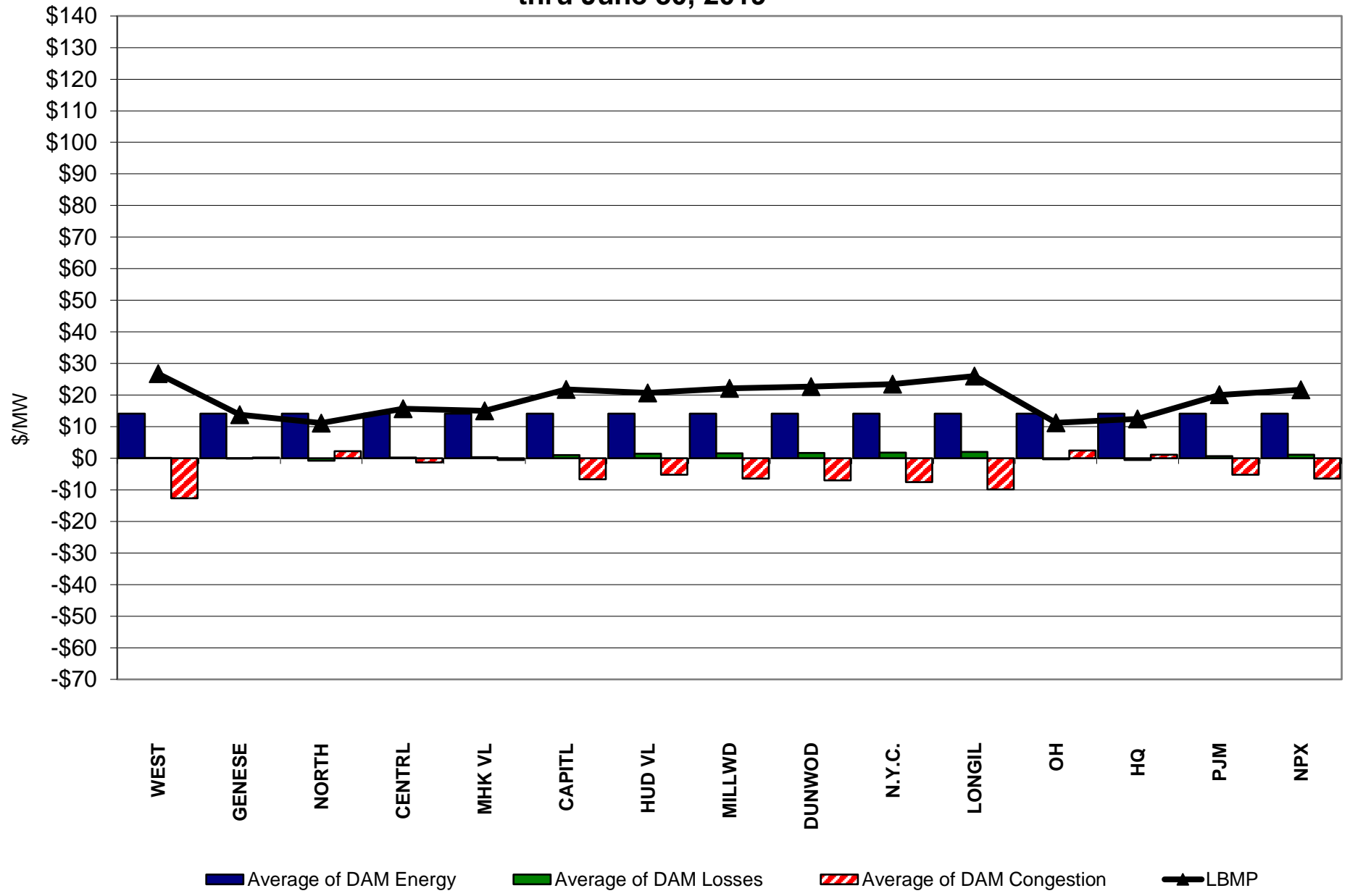
NYC Zone J Monthly Average LBMP Prices 2018 - 2019



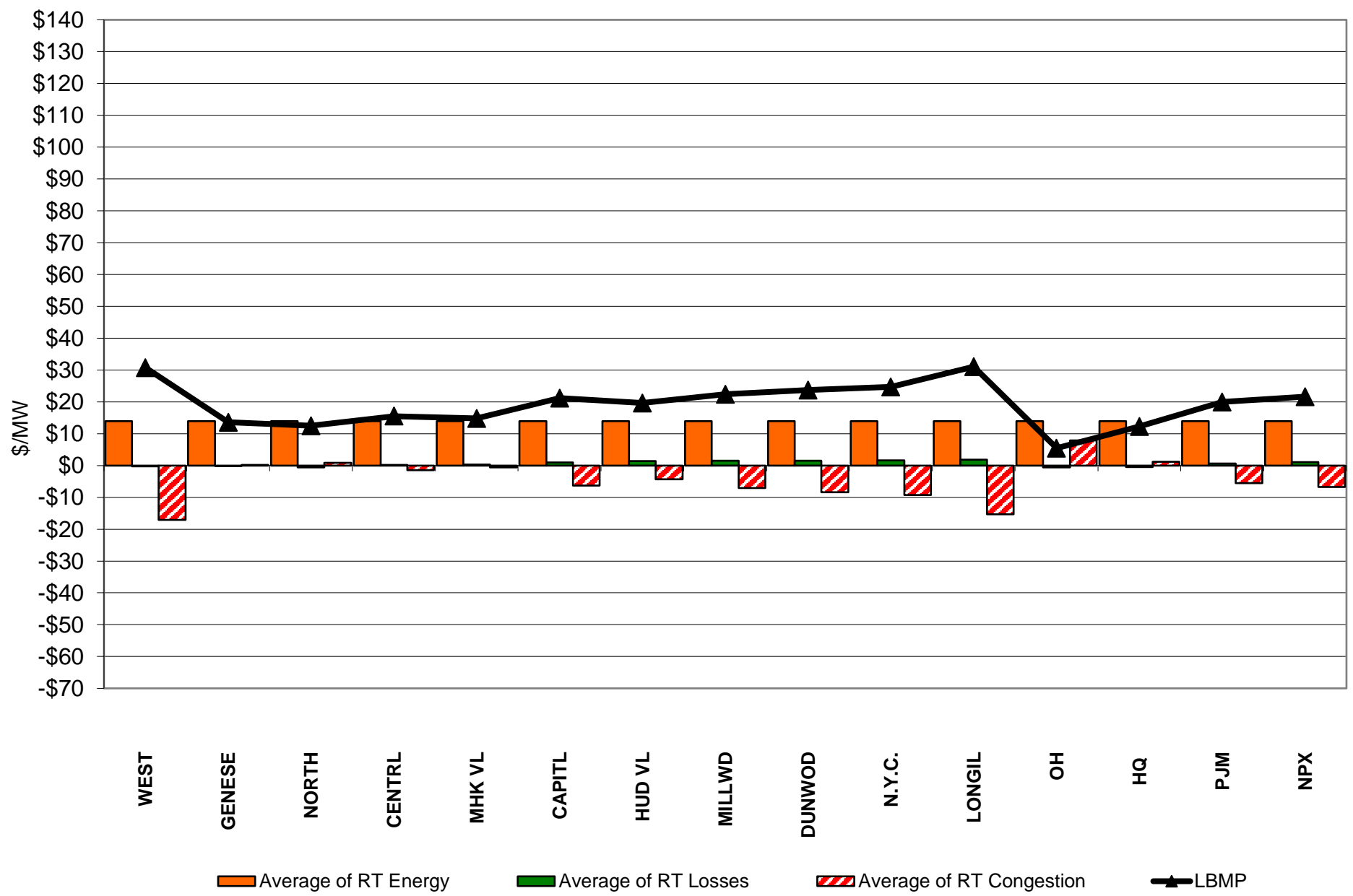
Long Island Zone K Monthly Average LBMP Prices 2018 - 2019



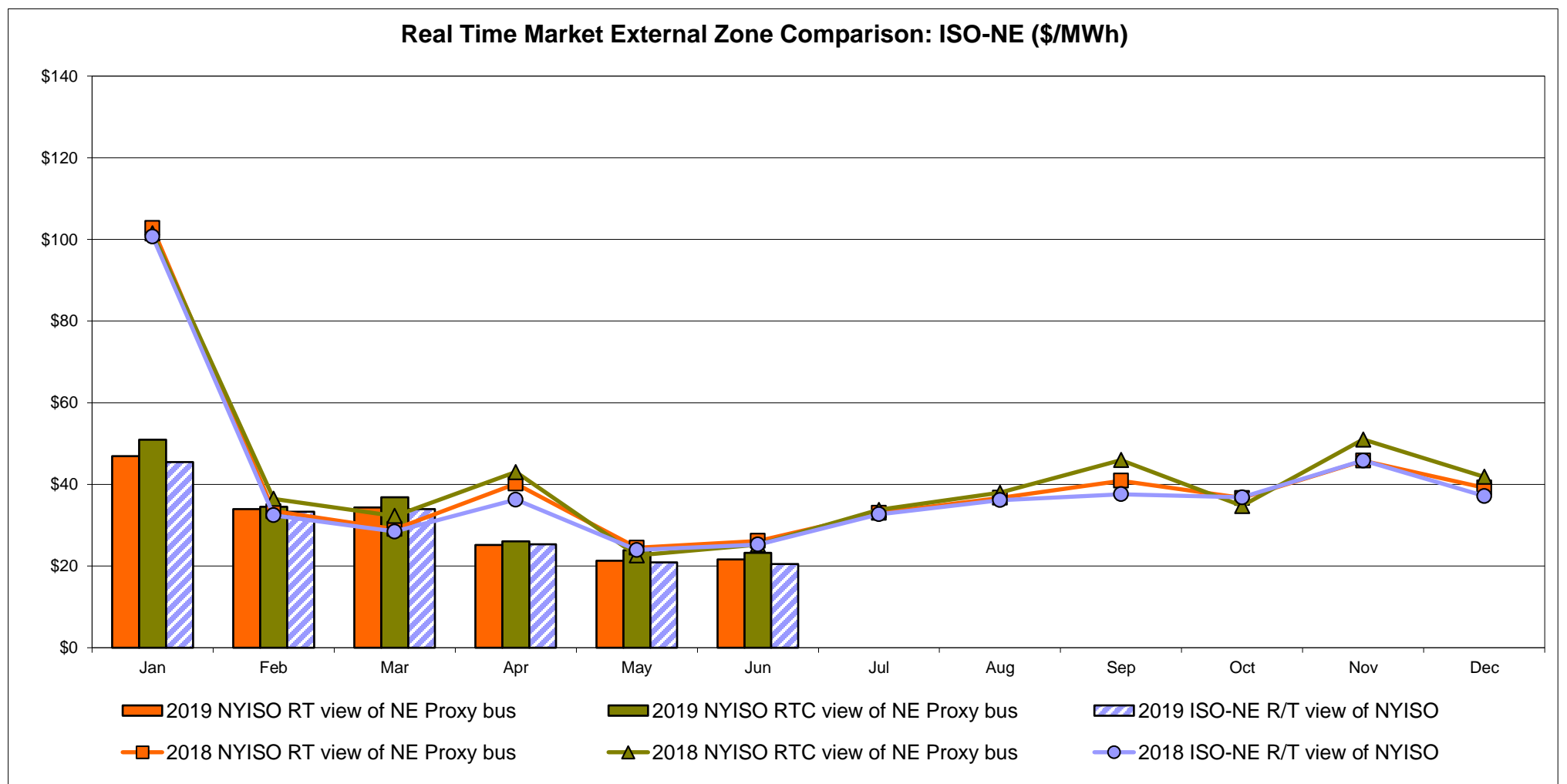
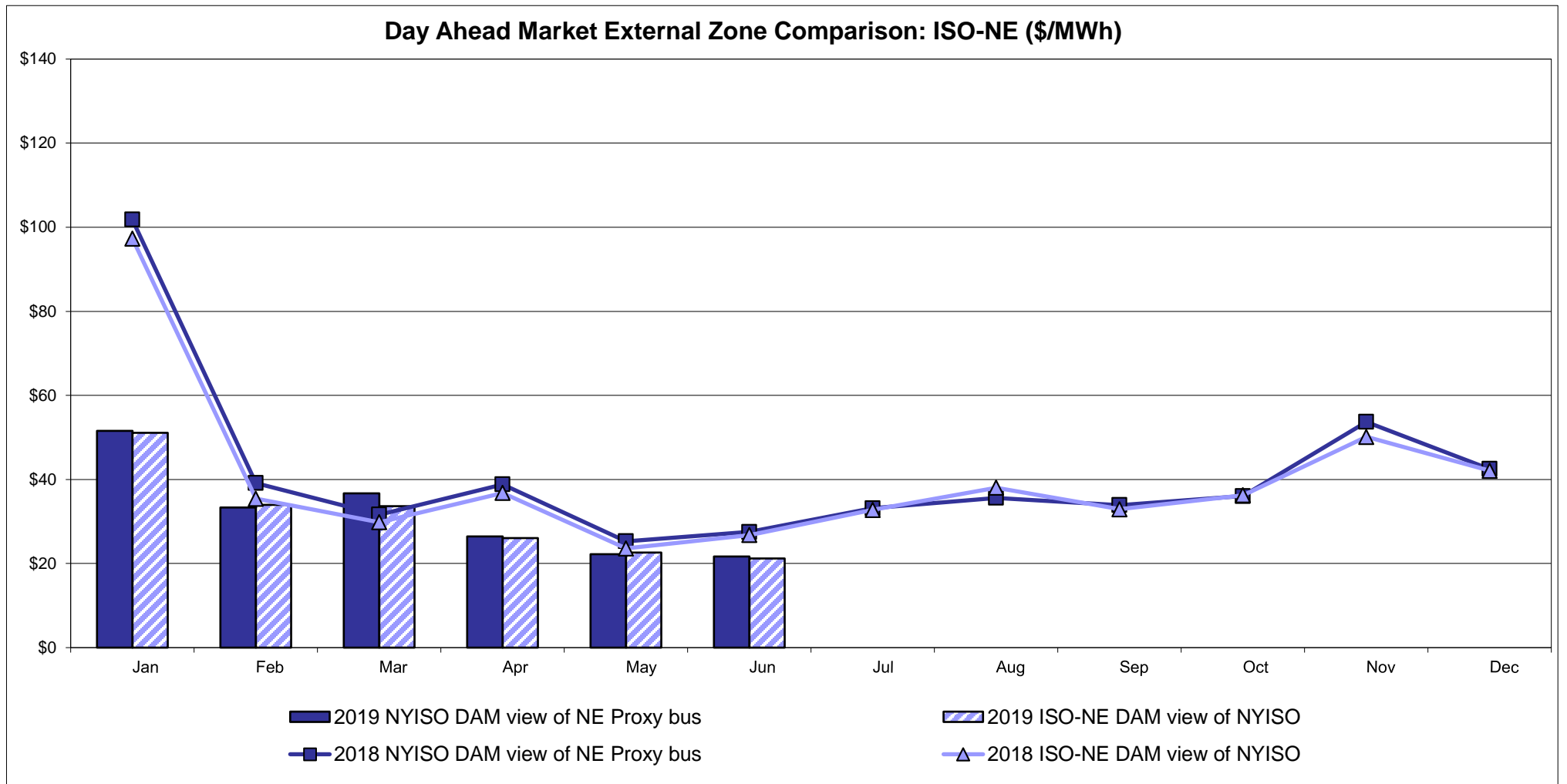
**DAM Zonal Unweighted Monthly Average LBMP Components
thru June 30, 2019**



**RT Zonal Unweighted Monthly Average LBMP Components
thru June 30, 2019**

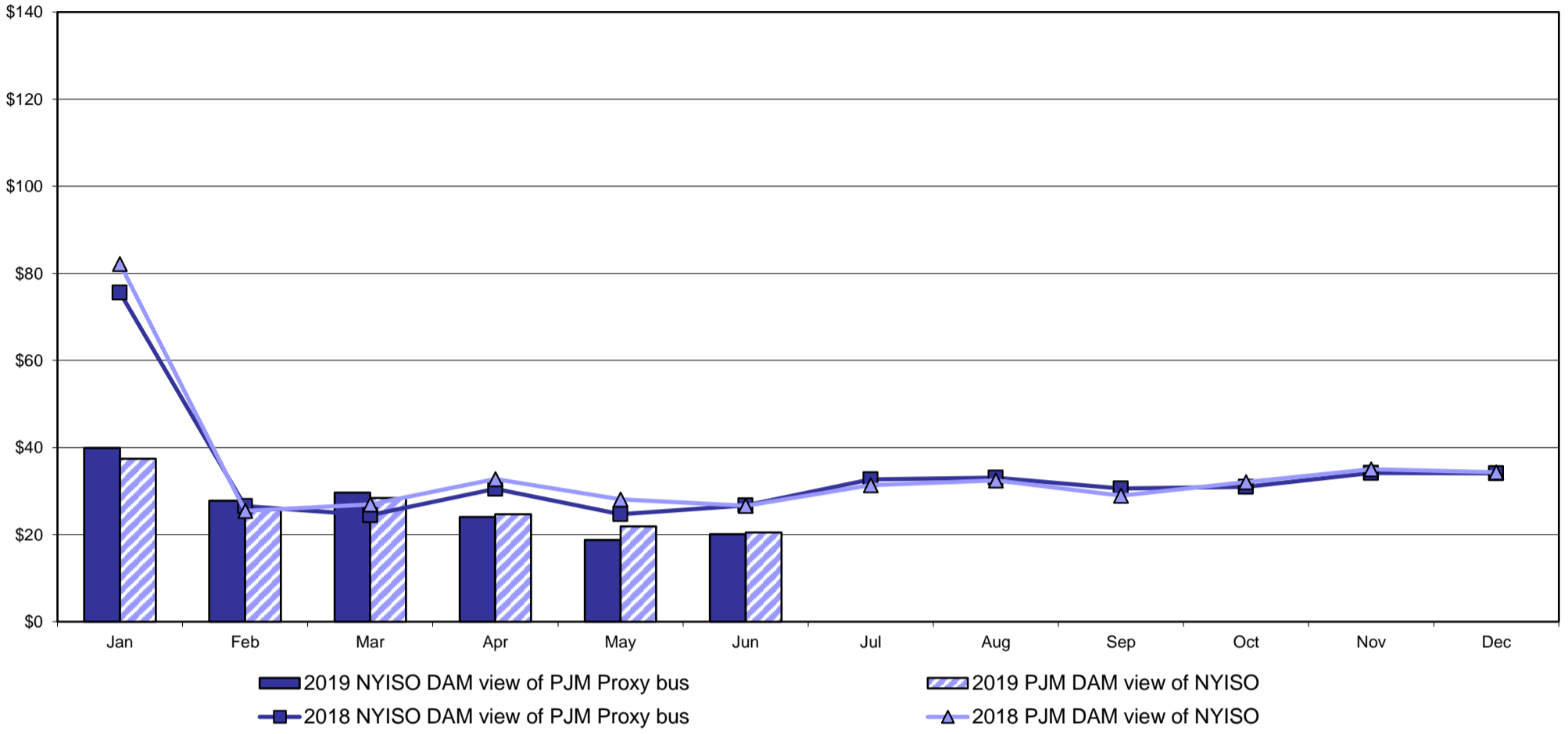


External Comparison ISO-New England

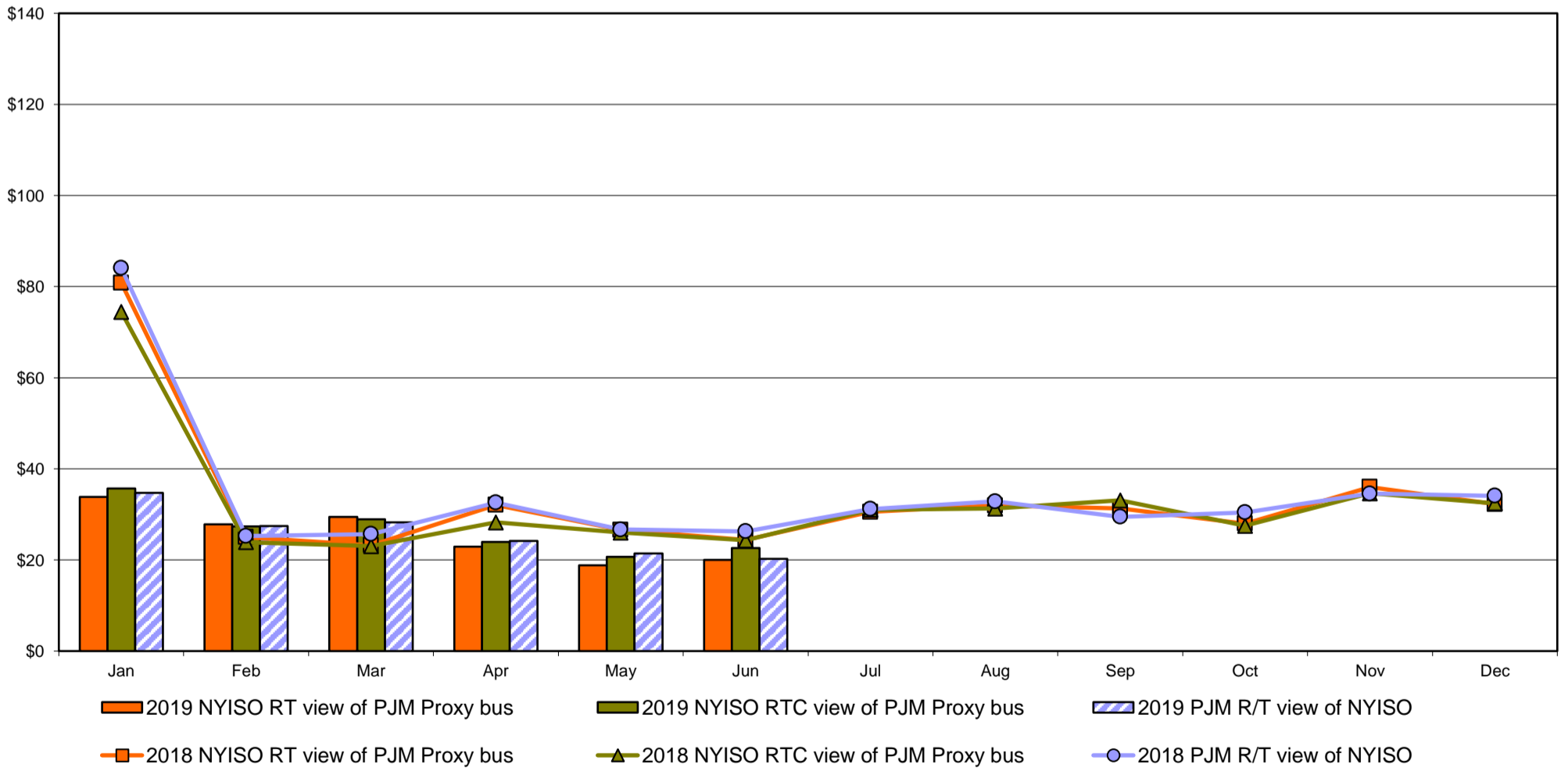


External Comparison PJM

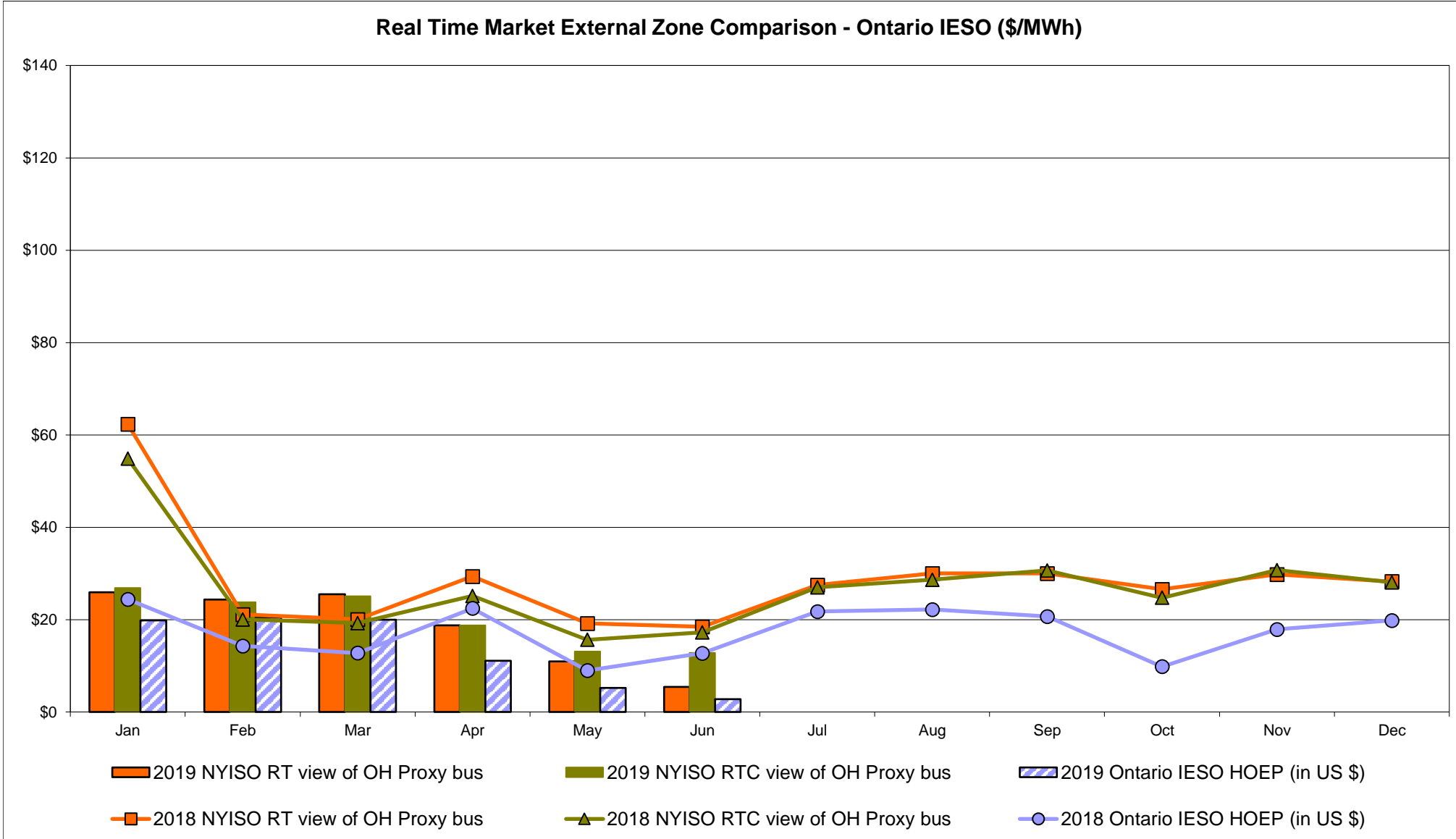
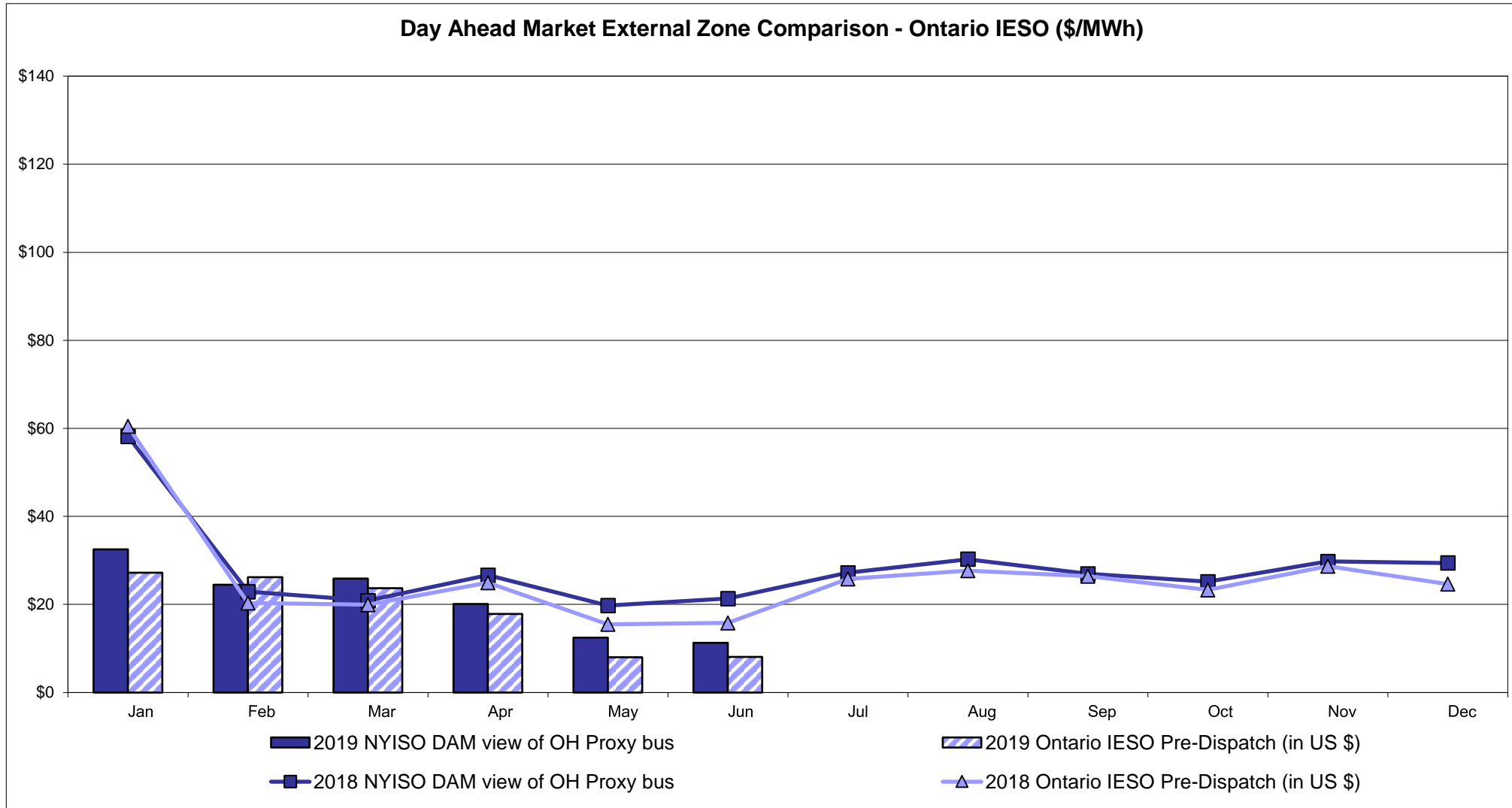
Day Ahead Market External Zone Comparison - PJM (\$/MWh)



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

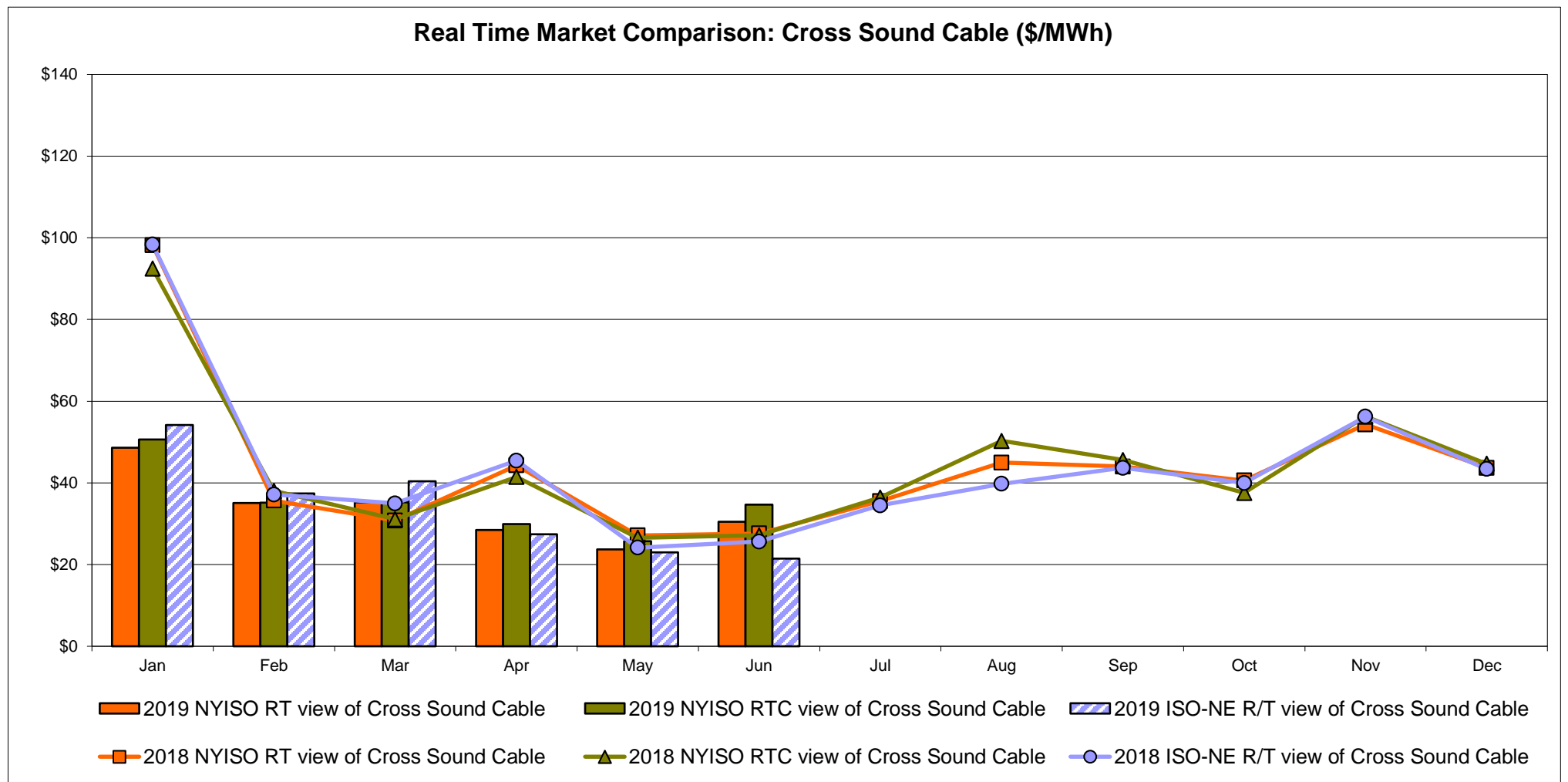
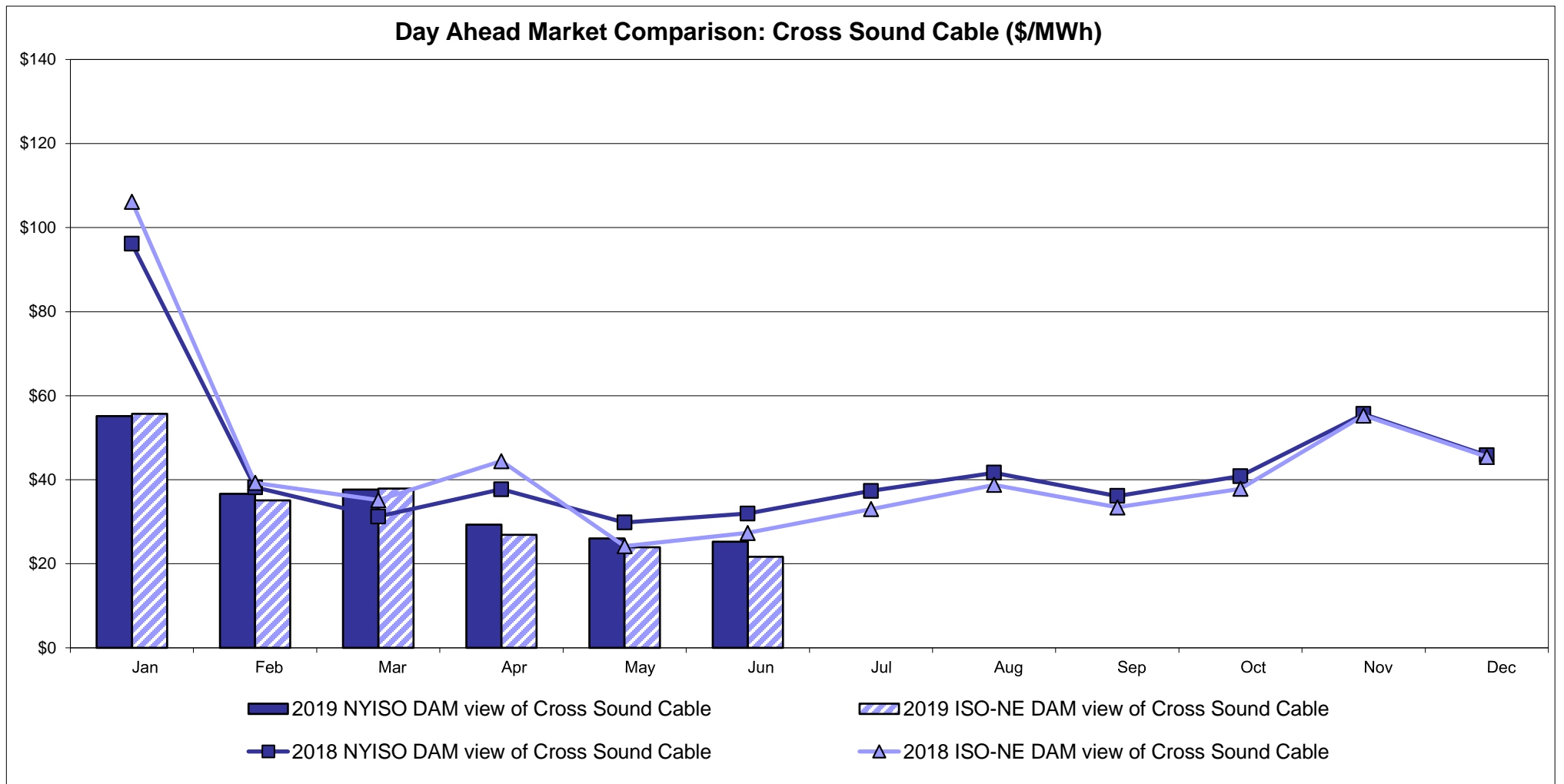


External Comparison Ontario IESO



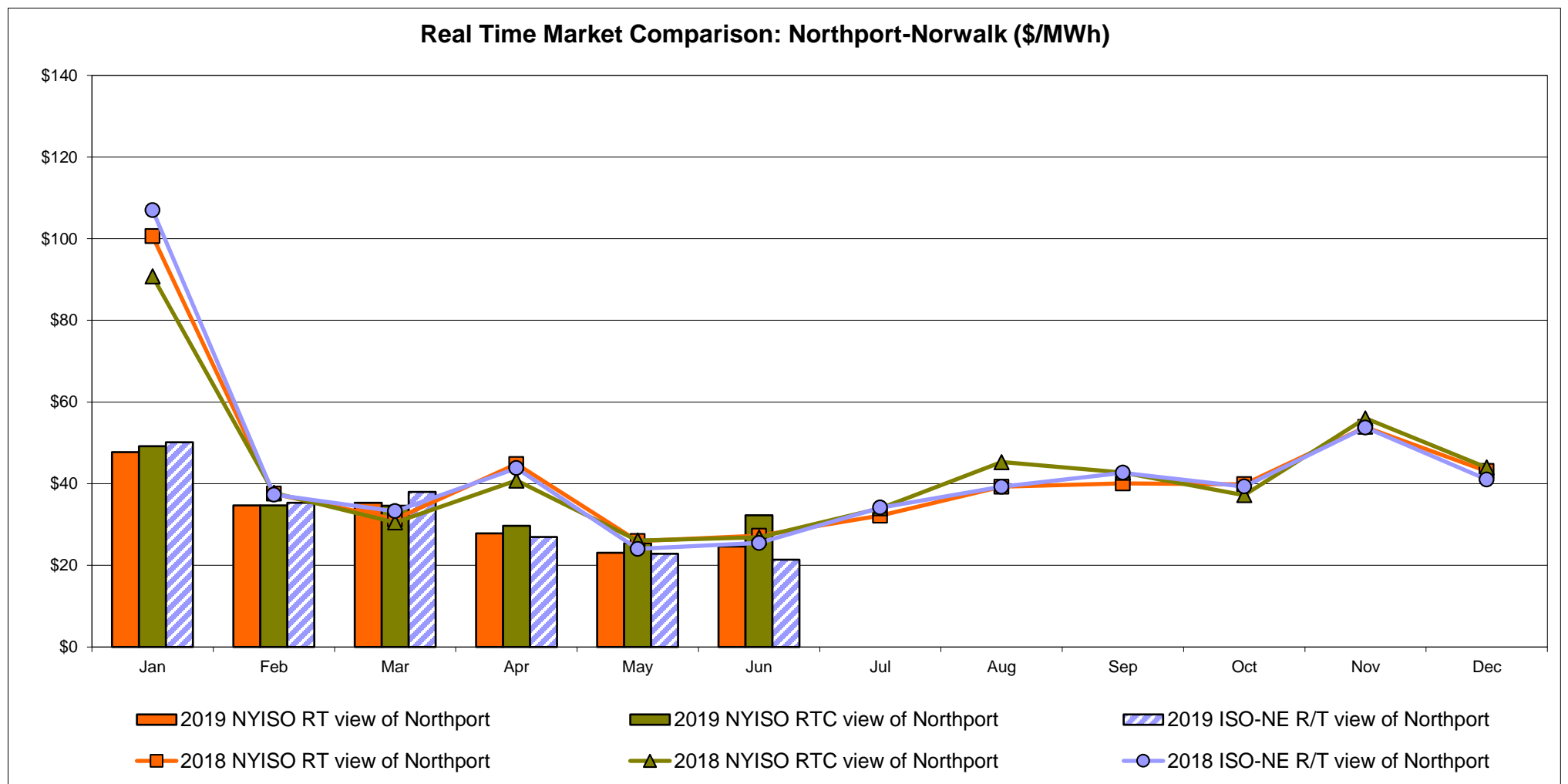
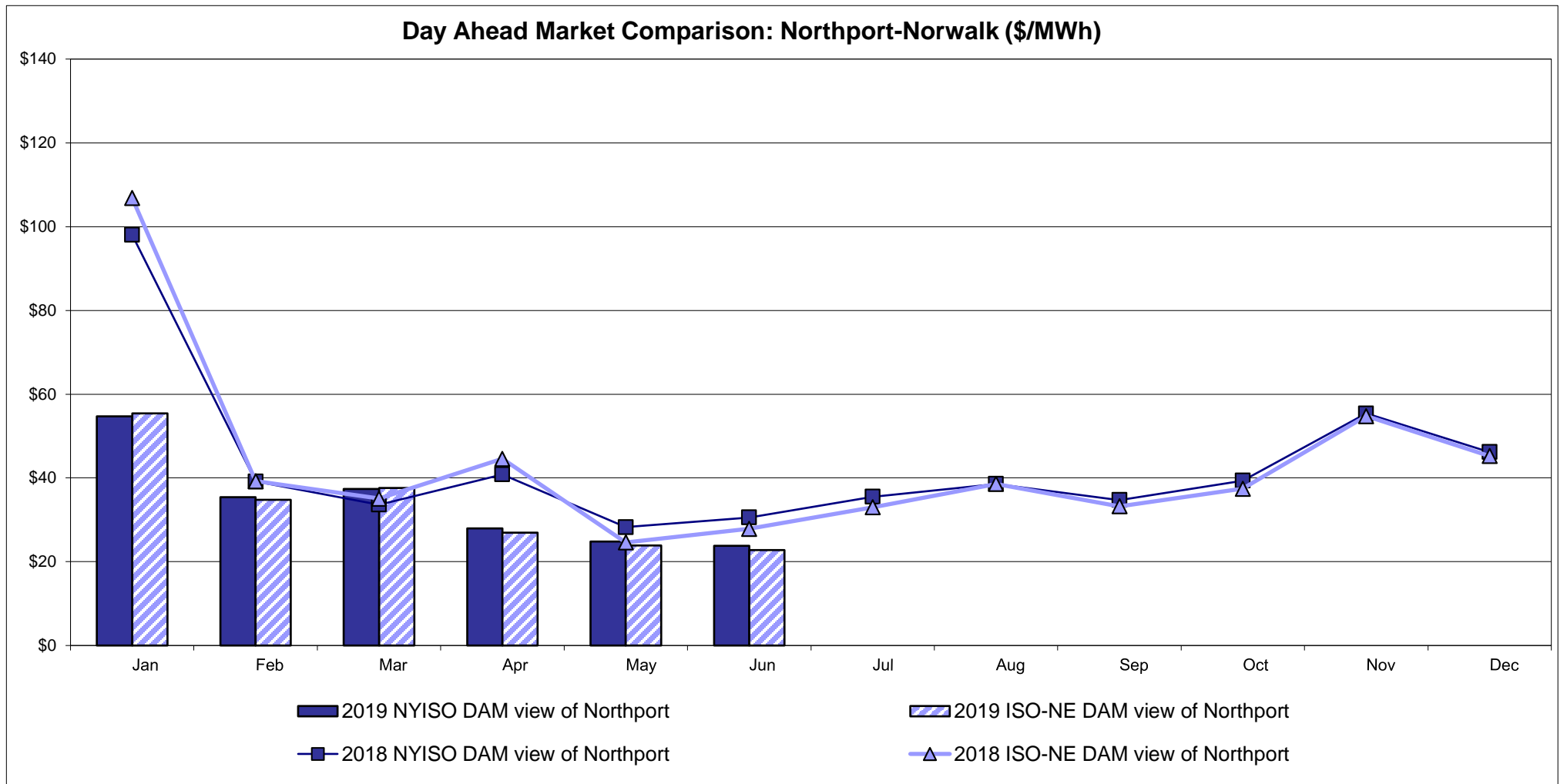
Notes: Exchange factor used for June 2019 was 0.752502069380691 to US
 HOEP: Hourly Ontario Energy Price
 Pre-Dispatch: Projected Energy Price

External Controllable Line: Cross Sound Cable (New England)



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

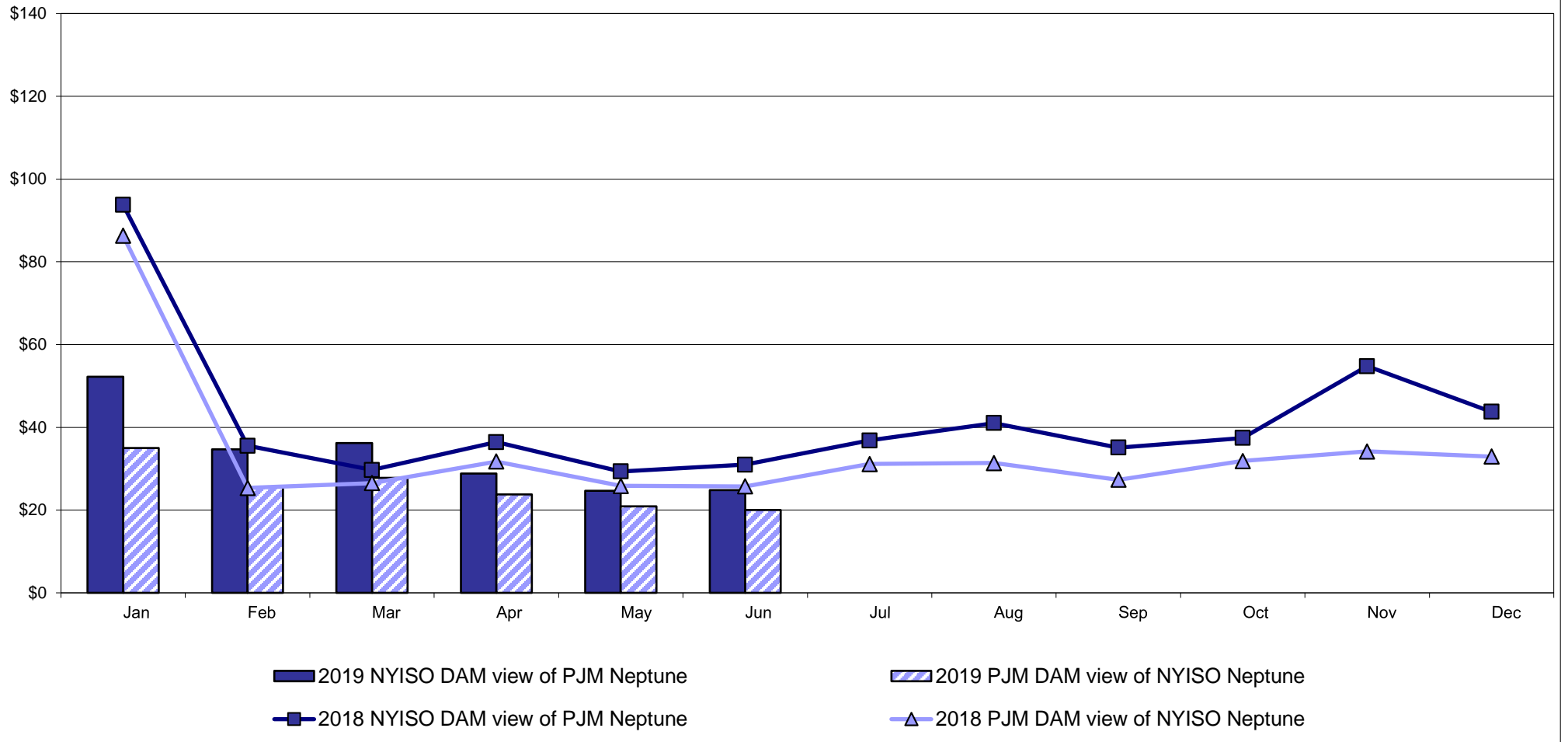
External Controllable Line: Northport - Norwalk (New England)



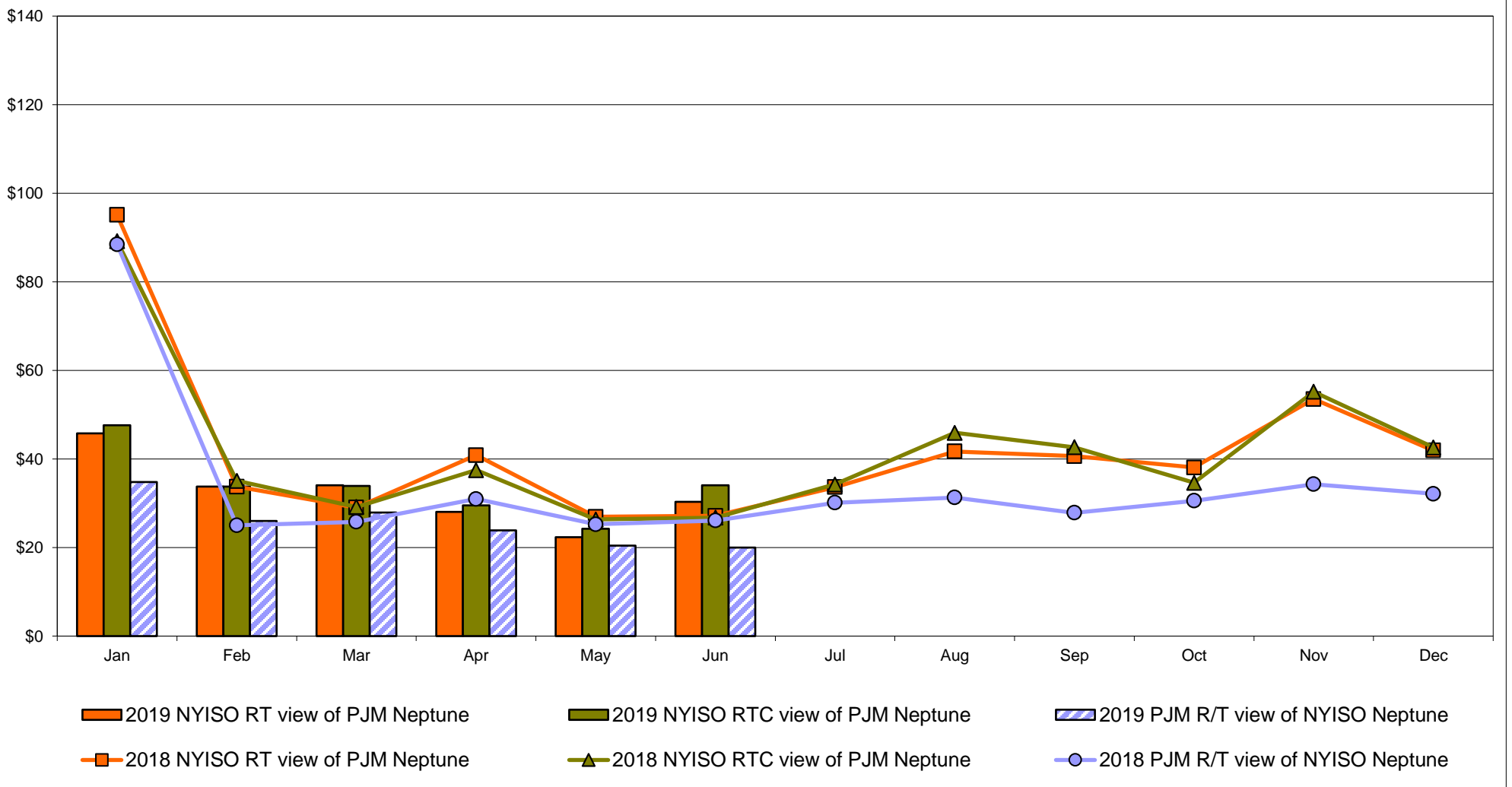
Note:
 ISO-NE Forecast is an advisory posting @ 18:00 day before.
 The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.
 The DAM and R/T prices at the 1385 interface are used for NYISO.

External Controllable Line: Neptune (PJM)

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

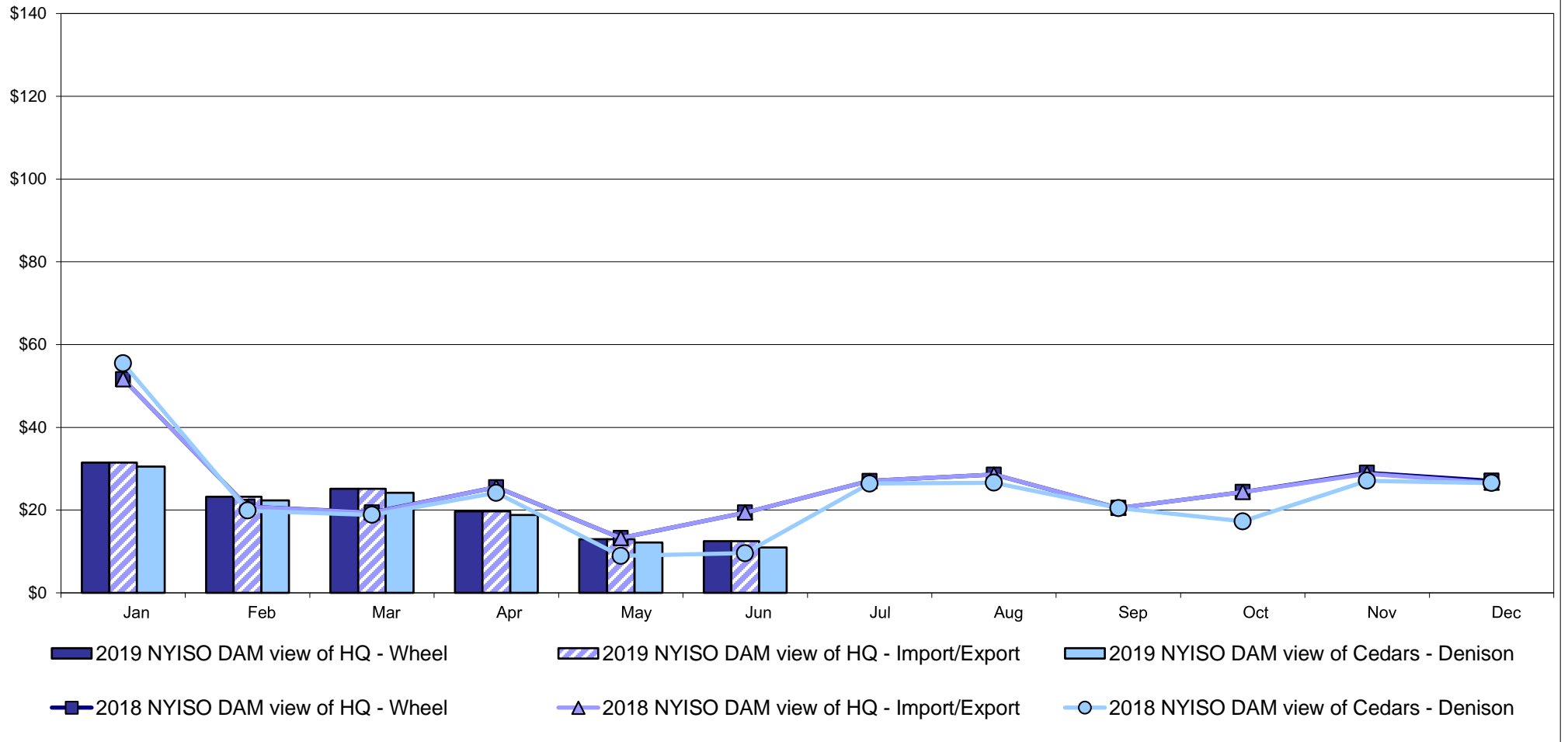


Real Time Market Comparison: Neptune (\$/MWh)

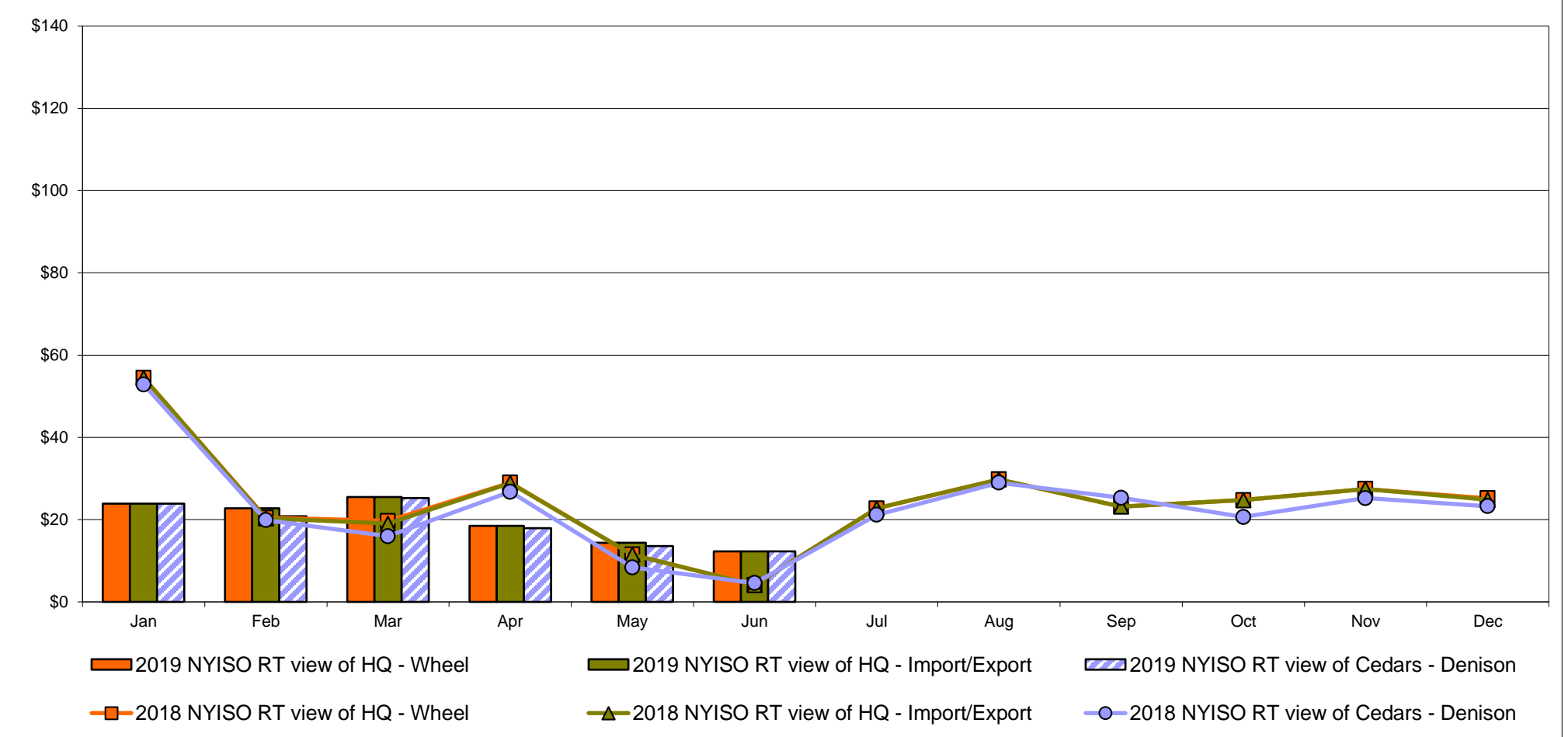


External Comparison Hydro-Quebec

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

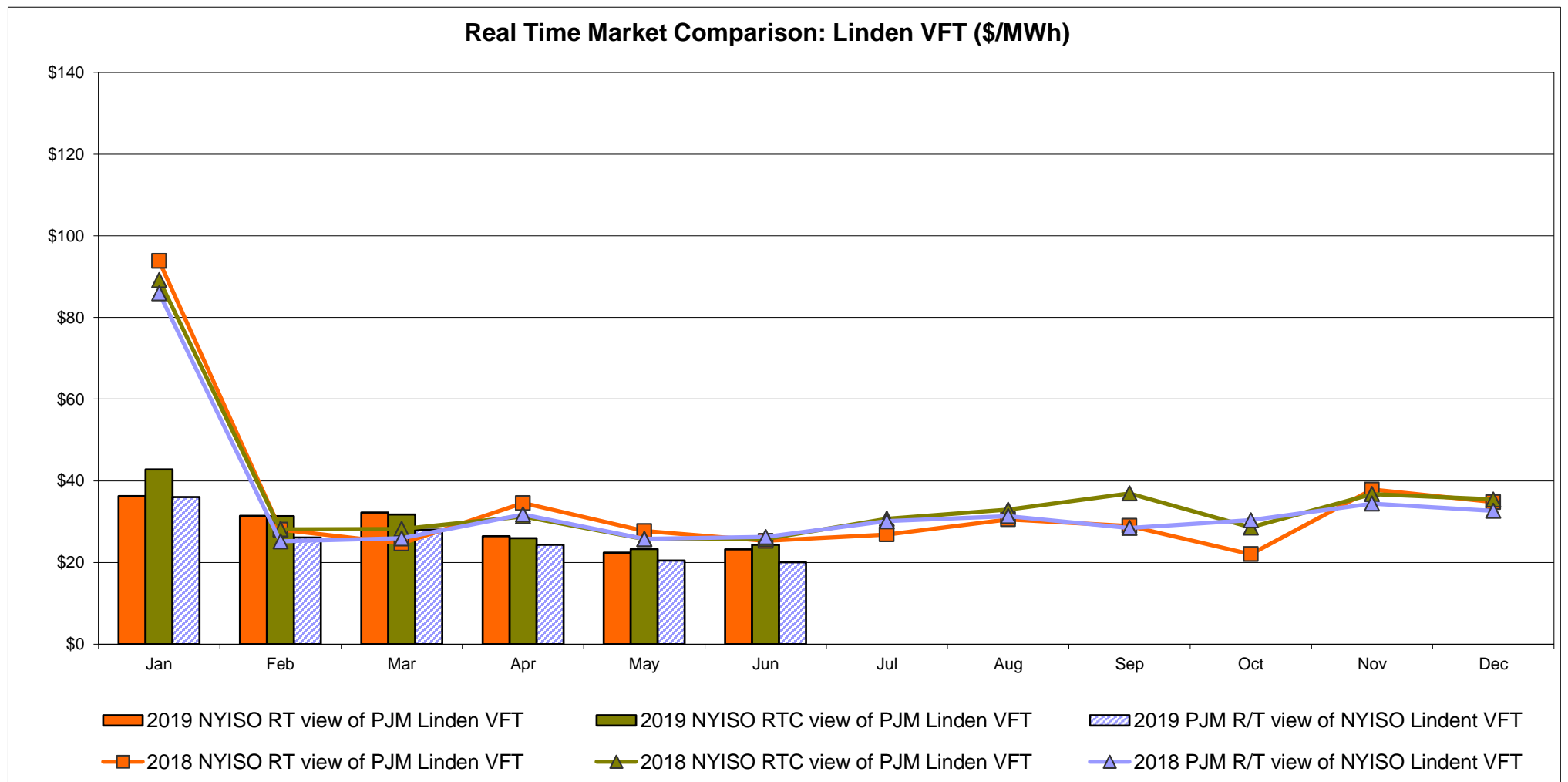
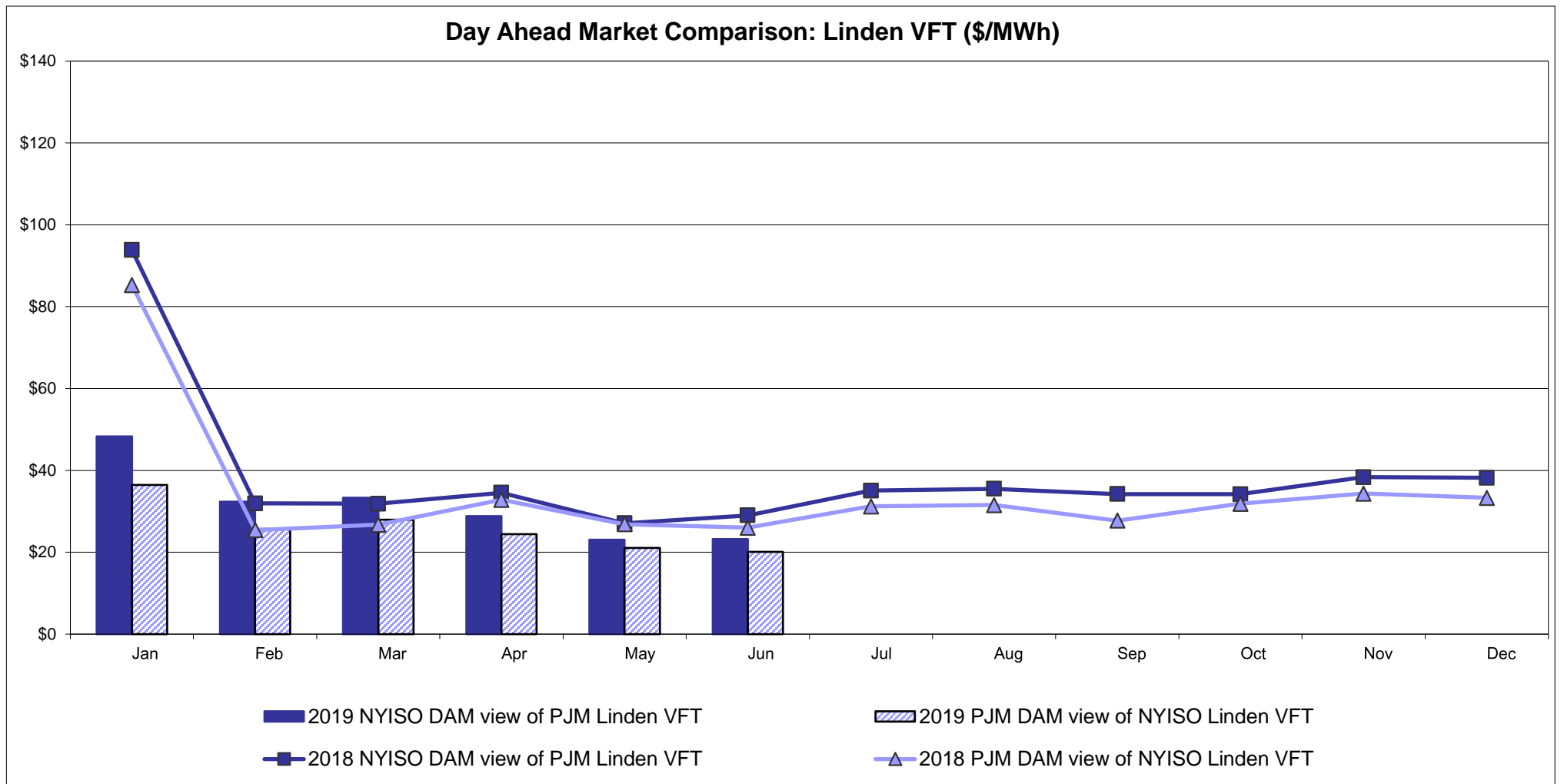


Real Time Market External Zone Comparison - HQ (\$/MWh)

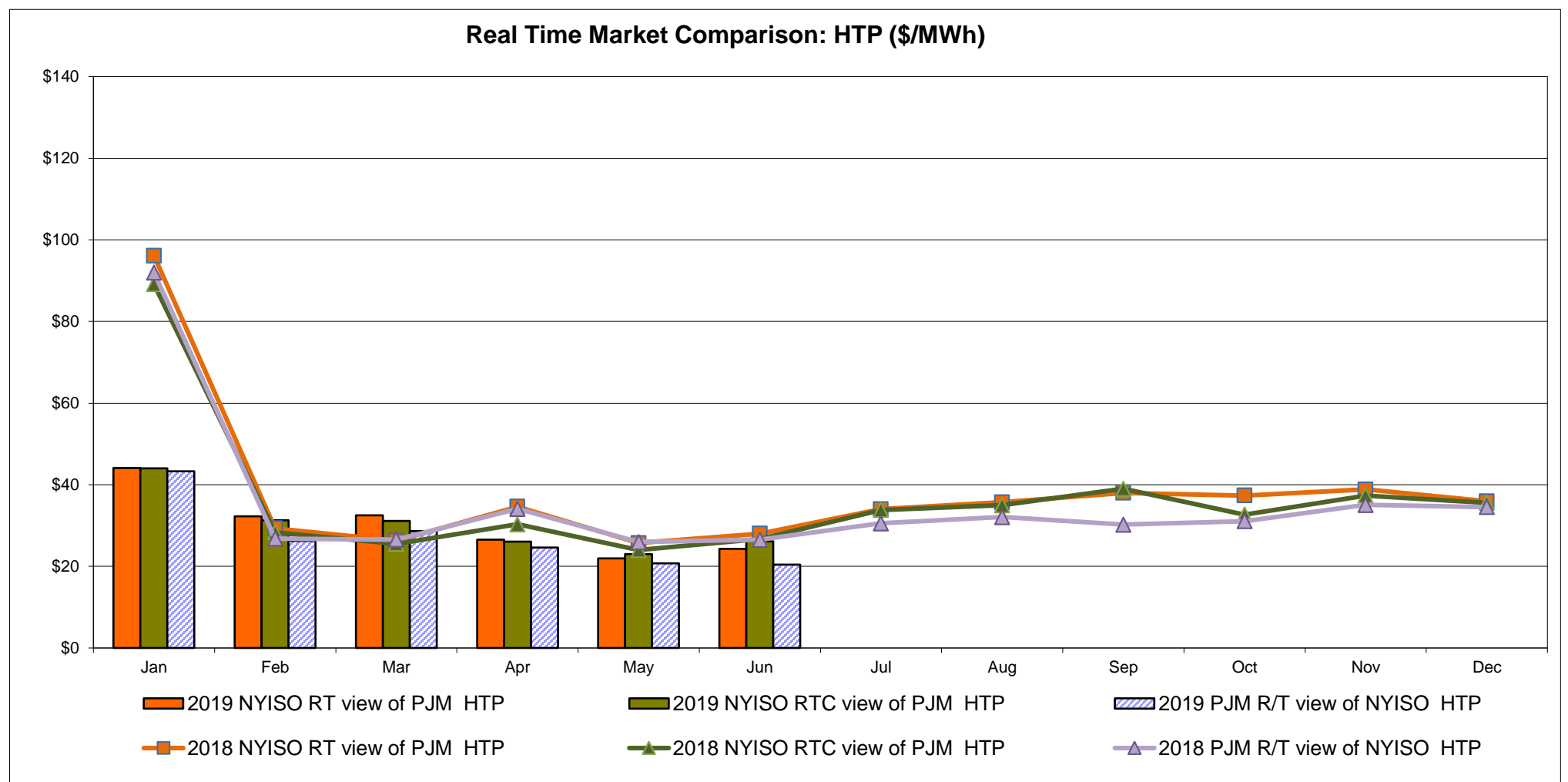
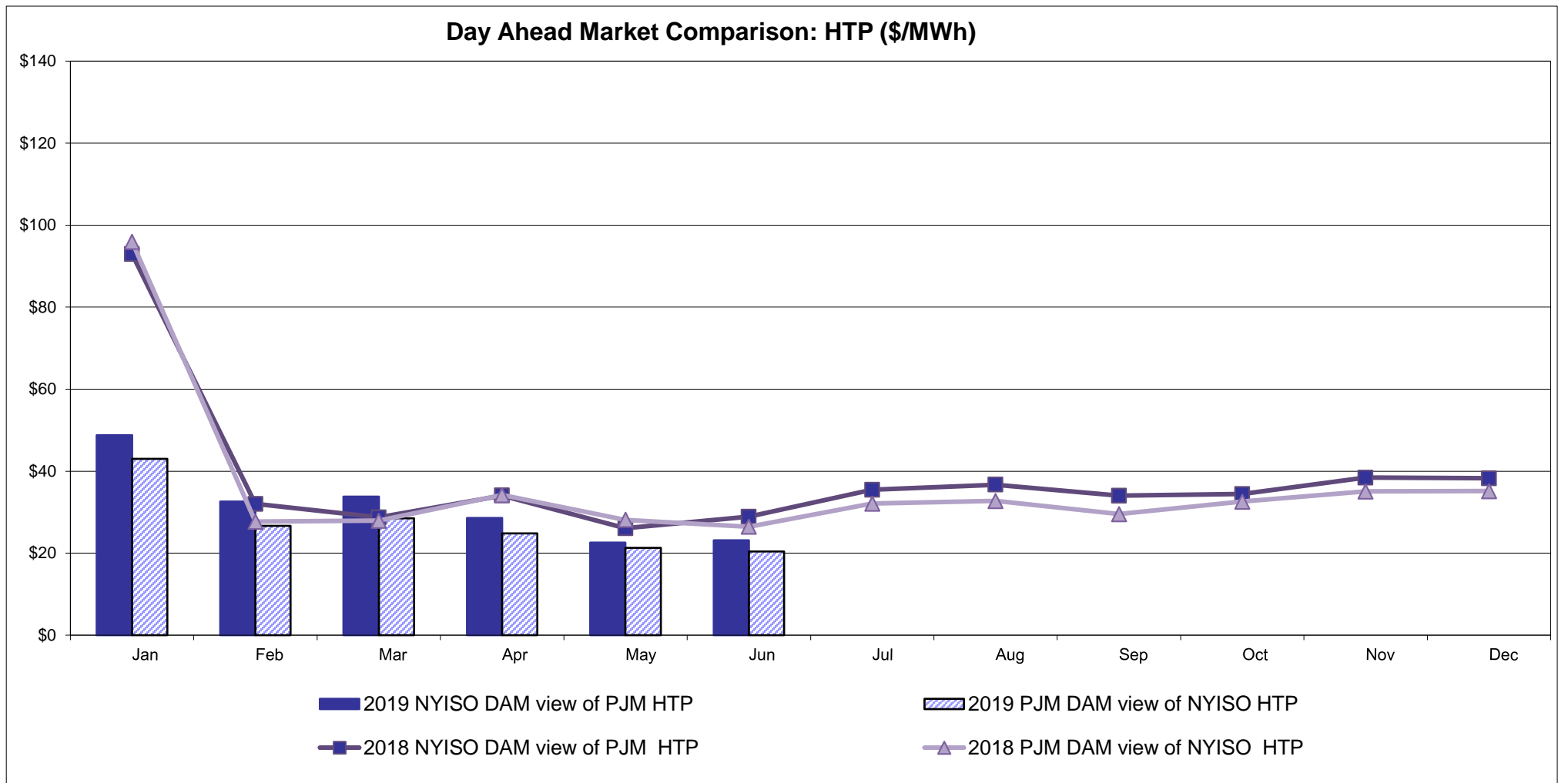


Note:
Hydro-Quebec Prices are unavailable.

External Controllable Line: Linden VFT (PJM)



External Controllable Line: Hudson (PJM)

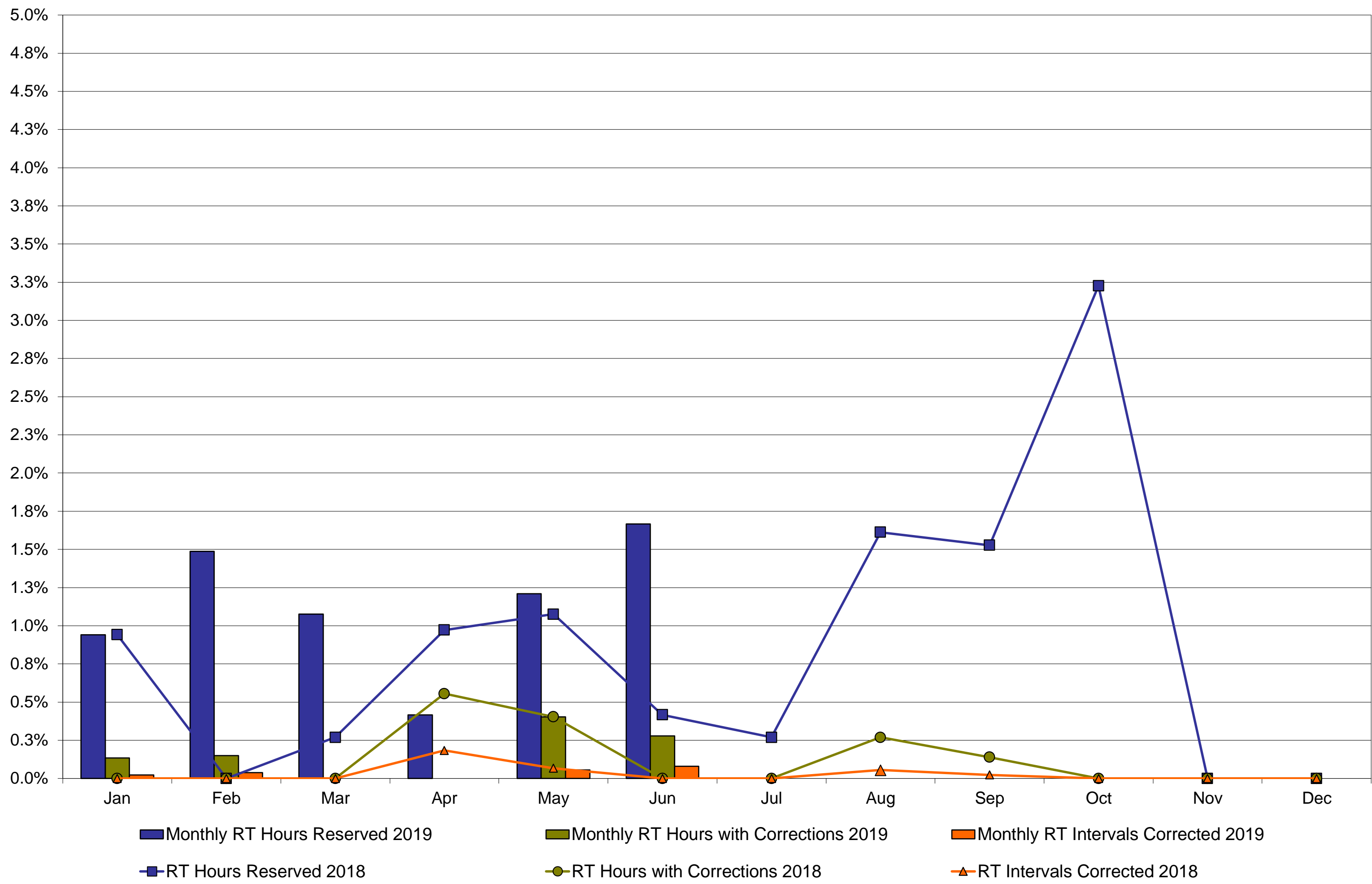


NYISO Real Time Price Correction Statistics

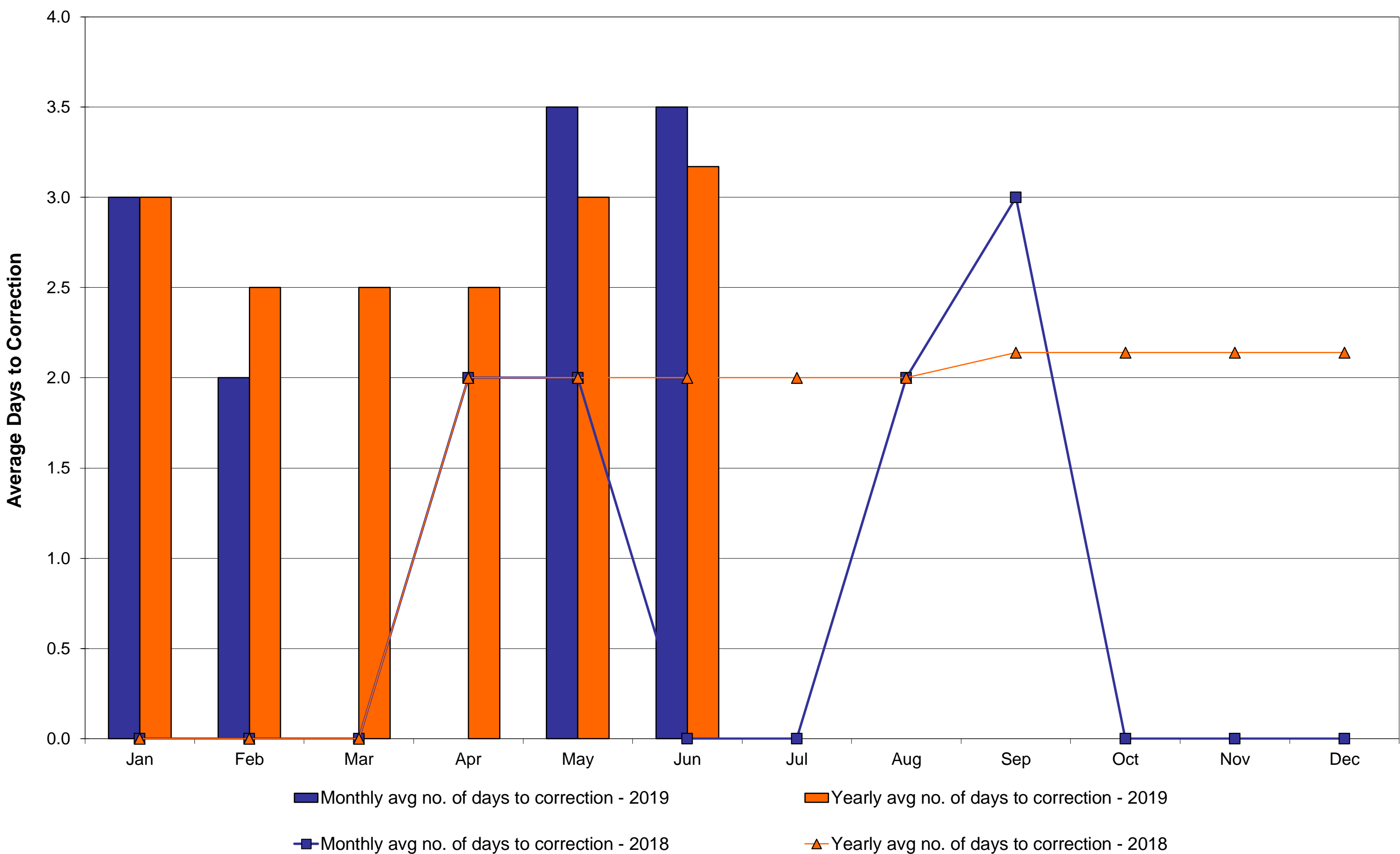
2019		<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Hour Corrections													
Number of hours with corrections	in the month	1	1	0	0	3	2						
Number of hours	in the month	744	672	743	720	744	720						
% of hours with corrections	in the month	0.13%	0.15%	0.00%	0.00%	0.40%	0.28%						
% of hours with corrections	year-to-date	0.13%	0.14%	0.09%	0.07%	0.14%	0.16%						
Interval Corrections													
Number of intervals corrected	in the month	2	3	0	0	5	7						
Number of intervals	in the month	9,071	8,131	9,008	8,750	9,033	8,863						
% of intervals corrected	in the month	0.02%	0.04%	0.00%	0.00%	0.06%	0.08%						
% of intervals corrected	year-to-date	0.02%	0.03%	0.02%	0.01%	0.02%	0.03%						
Hours Reserved													
Number of hours reserved	in the month	7	10	8	3	9	12						
Number of hours	in the month	744	672	743	720	744	720						
% of hours reserved	in the month	0.94%	1.49%	1.08%	0.42%	1.21%	1.67%						
% of hours reserved	year-to-date	0.94%	1.20%	1.16%	0.97%	1.02%	1.13%						
Days to Correction *													
Avg. number of days to correction	in the month	3.00	2.00	0.00	0.00	3.50	3.50						
Avg. number of days to correction	year-to-date	3.00	2.50	2.50	2.50	3.00	3.17						
Days Without Corrections													
Days without corrections	in the month	30	27	31	30	29	28						
Days without corrections	year-to-date	30	57	88	118	147	175						
2018		<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Hour Corrections													
Number of hours with corrections	in the month	0	0	0	4	3	0	0	2	1	0	0	0
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	0.00%	0.00%	0.00%	0.56%	0.40%	0.00%	0.00%	0.27%	0.14%	0.00%	0.00%	0.00%
% of hours with corrections	year-to-date	0.00%	0.00%	0.00%	0.14%	0.19%	0.16%	0.14%	0.15%	0.15%	0.14%	0.12%	0.11%
Interval Corrections													
Number of intervals corrected	in the month	0	0	0	16	6	0	0	5	2	0	0	0
Number of intervals	in the month	9,021	8,112	9,002	8,717	9,033	8,723	9,021	9,071	8,723	8,990	8,763	8,993
% of intervals corrected	in the month	0.00%	0.00%	0.00%	0.18%	0.07%	0.00%	0.00%	0.06%	0.02%	0.00%	0.00%	0.00%
% of intervals corrected	year-to-date	0.00%	0.00%	0.00%	0.05%	0.05%	0.04%	0.04%	0.04%	0.04%	0.03%	0.03%	0.03%
Hours Reserved													
Number of hours reserved	in the month	7	0	2	7	8	3	2	12	11	24	0	0
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%	0.00%	0.27%	0.97%	1.08%	0.42%	0.27%	1.61%	1.53%	3.23%	0.00%	0.00%
% of hours reserved	year-to-date	0.94%	0.49%	0.42%	0.56%	0.66%	0.62%	0.57%	0.70%	0.79%	1.04%	0.95%	0.87%
Days to Correction *													
Avg. number of days to correction	in the month	0.00	0.00	0.00	2.00	2.00	0.00	0.00	2.00	3.00	0.00	0.00	0.00
Avg. number of days to correction	year-to-date	0.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.14	2.14	2.14	2.14
Days Without Corrections													
Days without corrections	in the month	31	28	31	28	28	30	31	30	29	31	30	31
Days without corrections	year-to-date	31	59	90	118	146	176	207	237	266	297	327	358

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

Percentage of Real-Time Corrections

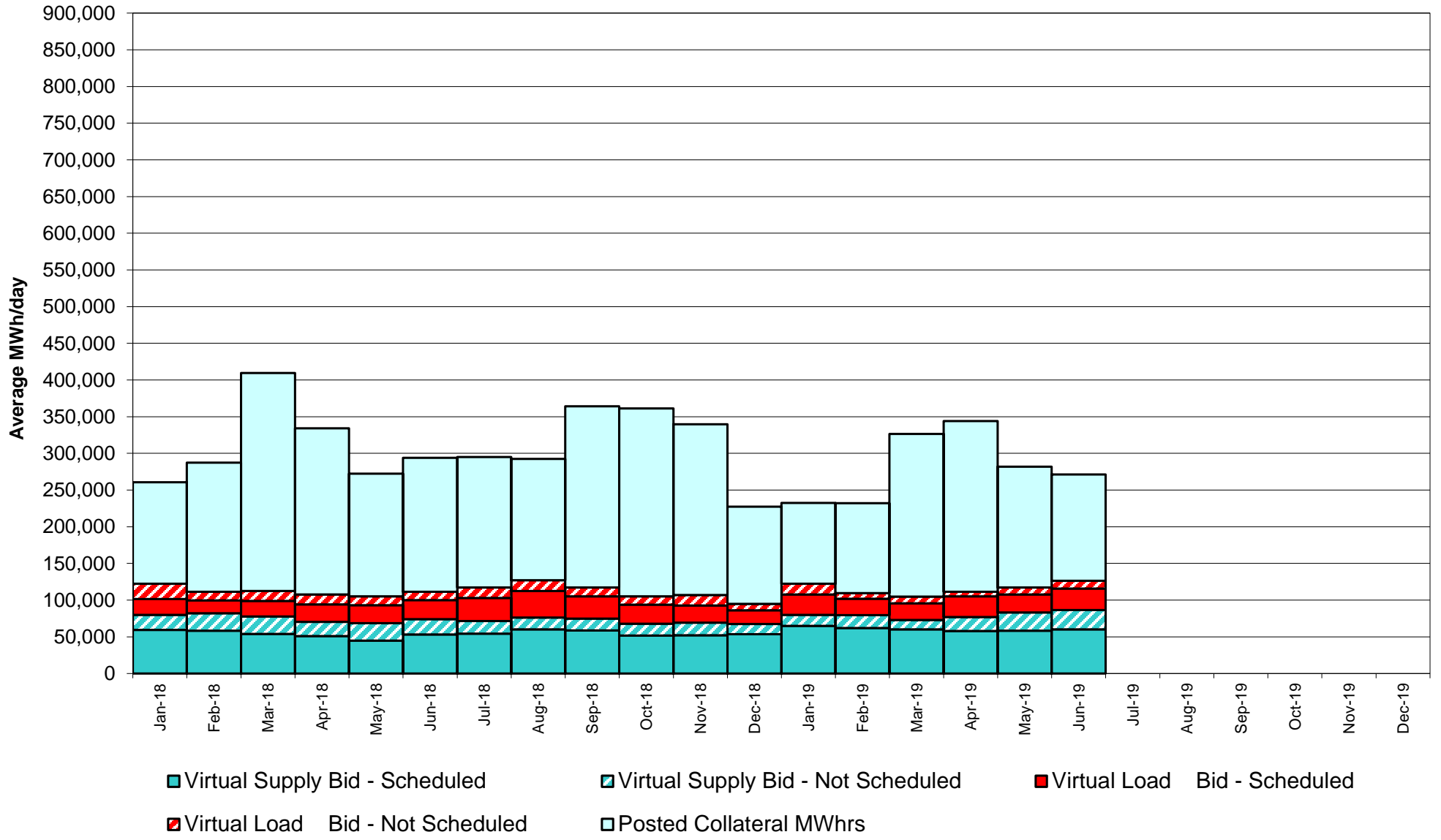


Annual average time period for making Price Corrections (from reservation date) *

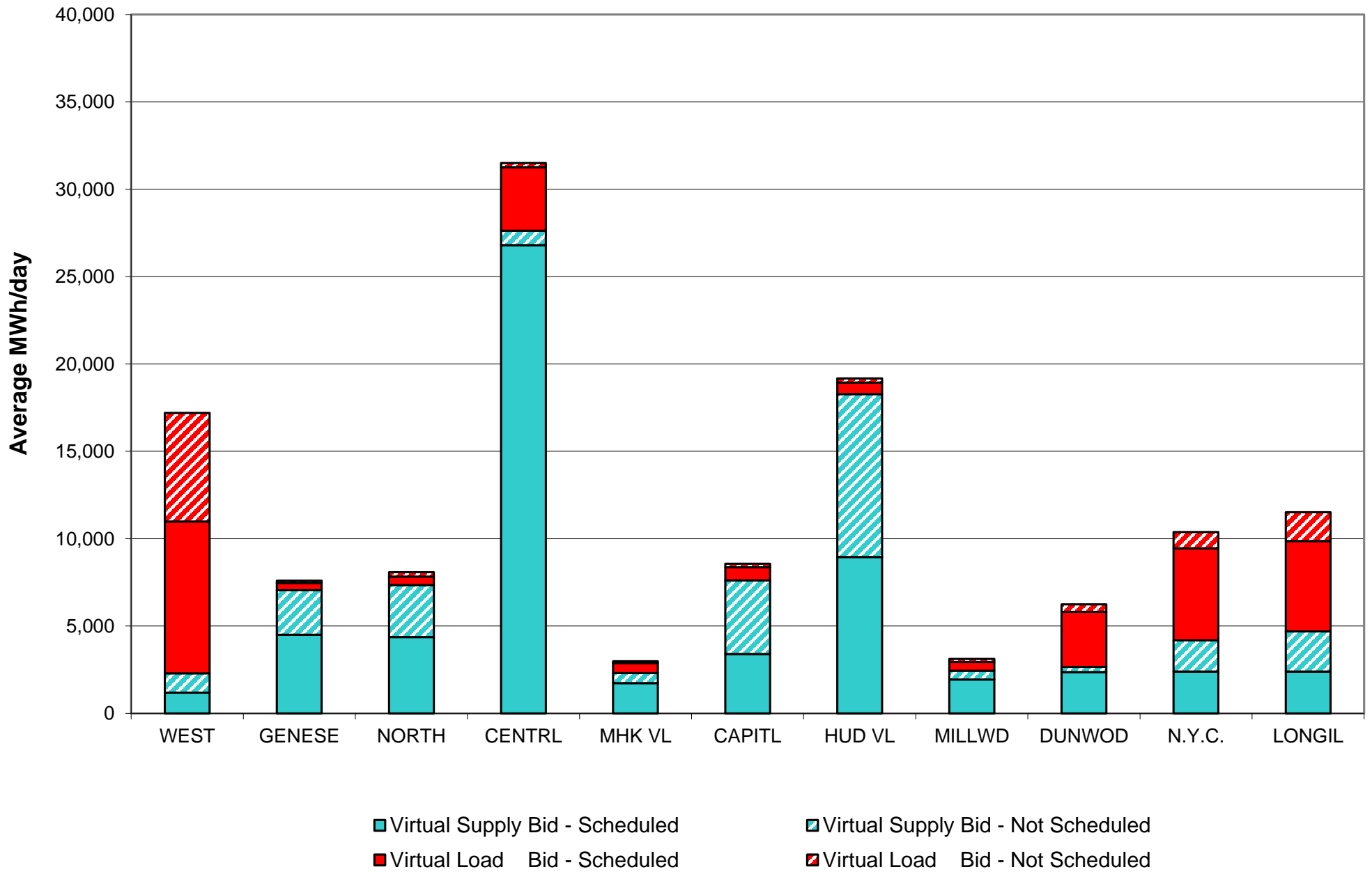


*Calendar days from reservation date; for June 2018 forward, business days from market date

NYISO Virtual Trading Average MWh per day



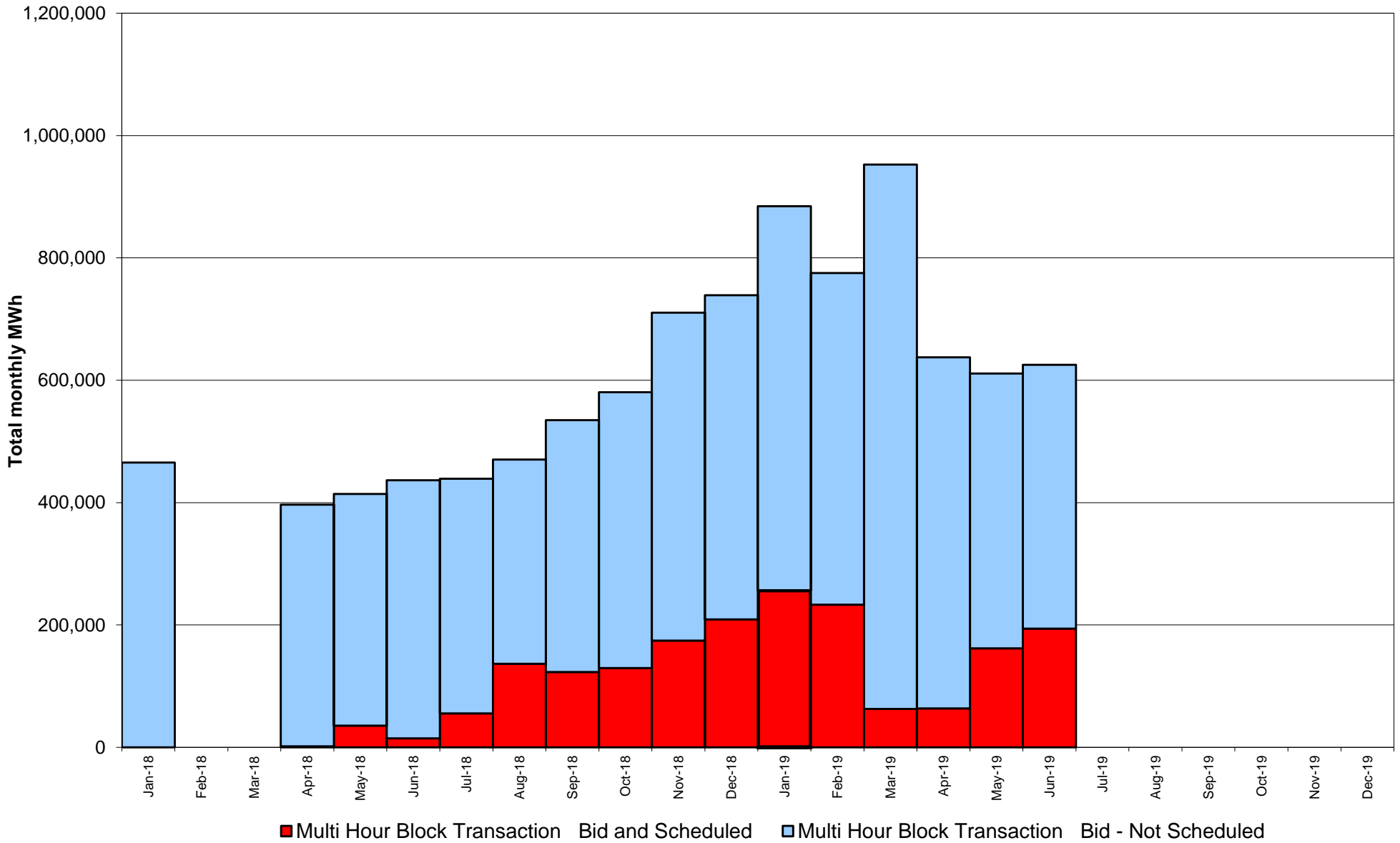
Virtual Load and Supply Zonal Statistics through June 30, 2019



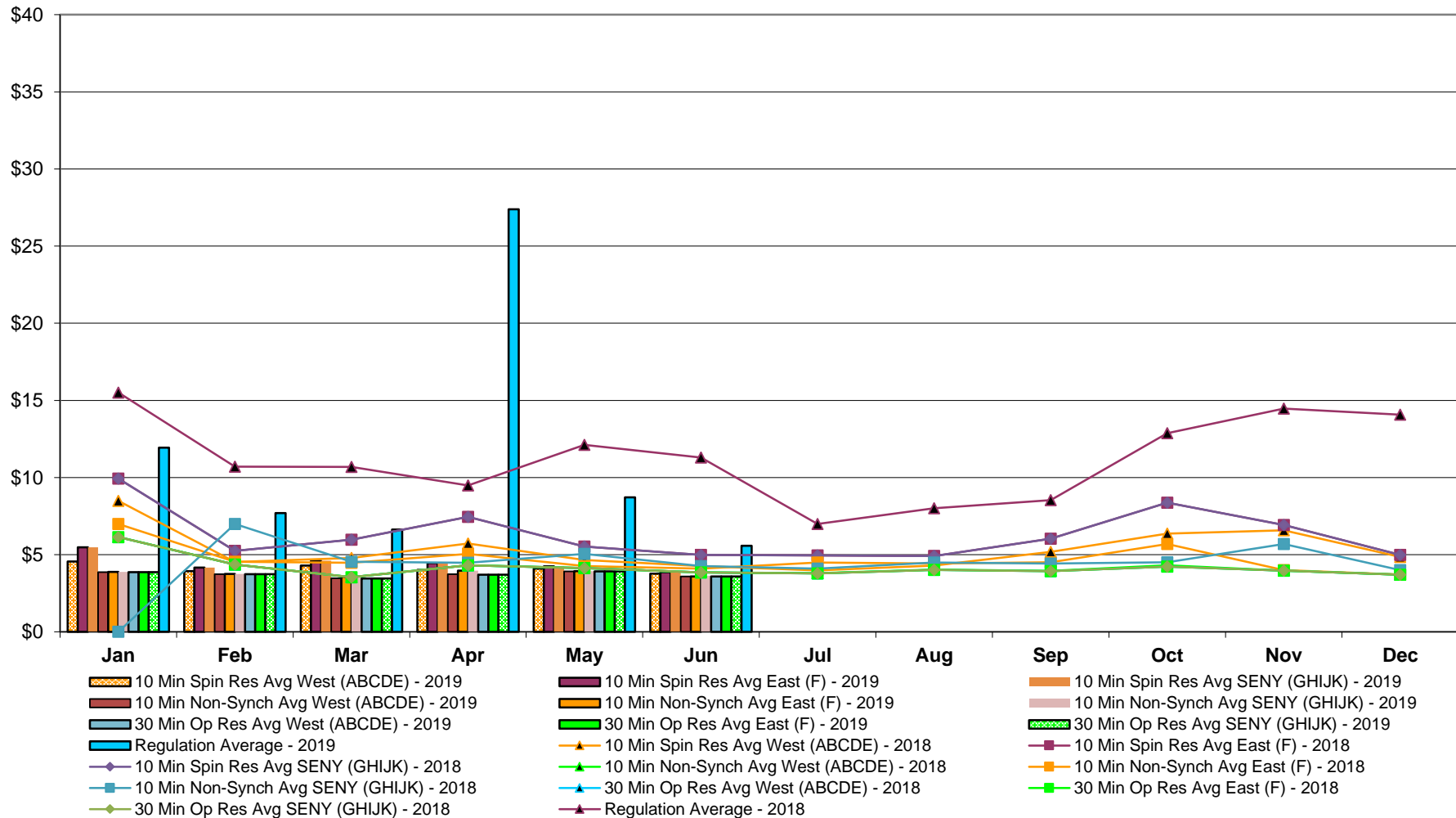
Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2019

		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-19	9,007	5,211	1,609	797	MHK VL	Jan-19	1,171	117	1,965	471	DUNWOD	Jan-19	1,370	798	2,651	203
	Feb-19	6,628	2,000	1,397	921		Feb-19	872	75	1,709	596		Feb-19	1,064	494	3,273	259
	Mar-19	5,264	2,548	1,107	569		Mar-19	1,275	113	2,208	386		Mar-19	1,159	471	3,571	199
	Apr-19	9,744	2,589	721	461		Apr-19	843	43	1,904	331		Apr-19	1,446	125	3,278	228
	May-19	7,022	5,165	818	783		May-19	527	32	2,337	489		May-19	1,459	153	2,999	255
	Jun-19	8,695	6,210	1,183	1,106		Jun-19	577	98	1,731	582		Jun-19	3,157	426	2,365	290
	Jul-19						Jul-19						Jul-19				
	Aug-19						Aug-19						Aug-19				
	Sep-19						Sep-19						Sep-19				
	Oct-19						Oct-19						Oct-19				
	Nov-19						Nov-19						Nov-19				
	Dec-19						Dec-19						Dec-19				
GENESE	Jan-19	527	153	3,560	529	CAPITL	Jan-19	3,042	962	1,550	1,424	N.Y.C.	Jan-19	3,665	3,061	2,599	1,366
	Feb-19	896	66	3,776	520		Feb-19	2,591	485	1,851	1,756		Feb-19	2,545	2,025	2,248	1,648
	Mar-19	987	241	3,224	432		Mar-19	2,012	383	2,004	1,666		Mar-19	3,746	1,774	2,432	968
	Apr-19	808	83	4,479	475		Apr-19	1,585	232	2,102	1,111		Apr-19	3,431	656	2,869	4,012
	May-19	343	171	2,680	1,446		May-19	1,438	362	3,006	2,580		May-19	4,207	977	3,304	4,320
	Jun-19	407	146	4,498	2,552		Jun-19	741	206	3,393	4,222		Jun-19	5,271	930	2,404	1,778
	Jul-19						Jul-19						Jul-19				
	Aug-19						Aug-19						Aug-19				
	Sep-19						Sep-19						Sep-19				
	Oct-19						Oct-19						Oct-19				
	Nov-19						Nov-19						Nov-19				
	Dec-19						Dec-19						Dec-19				
NORTH	Jan-19	484	540	6,406	1,553	HUD VL	Jan-19	856	980	9,176	7,130	LONGIL	Jan-19	3,362	2,135	3,091	1,056
	Feb-19	431	359	6,559	1,743		Feb-19	977	843	7,408	7,858		Feb-19	2,514	1,297	3,446	1,425
	Mar-19	349	419	6,855	1,845		Mar-19	1,460	1,425	8,787	4,948		Mar-19	2,752	1,198	3,372	1,025
	Apr-19	284	186	7,243	1,823		Apr-19	1,011	487	7,962	8,845		Apr-19	4,934	1,386	3,096	697
	May-19	498	446	4,995	2,954		May-19	1,064	457	6,634	9,871		May-19	3,869	1,430	3,396	1,359
	Jun-19	481	256	4,364	2,986		Jun-19	658	249	8,949	9,323		Jun-19	5,177	1,639	2,391	2,303
	Jul-19						Jul-19						Jul-19				
	Aug-19						Aug-19						Aug-19				
	Sep-19						Sep-19						Sep-19				
	Oct-19						Oct-19						Oct-19				
	Nov-19						Nov-19						Nov-19				
	Dec-19						Dec-19						Dec-19				
CENTRL	Jan-19	3,795	374	30,145	507	MILLWD	Jan-19	405	386	2,051	169	NYISO	Jan-19	27,683	14,720	64,802	15,203
	Feb-19	3,059	123	29,111	609		Feb-19	540	138	1,311	247		Feb-19	22,118	7,905	62,089	17,582
	Mar-19	3,411	332	25,195	542		Mar-19	505	89	1,404	155		Mar-19	22,918	8,993	60,159	12,736
	Apr-19	3,475	150	22,748	453		Apr-19	686	215	1,636	371		Apr-19	28,247	6,153	58,038	18,807
	May-19	3,220	195	26,474	474		May-19	613	226	1,687	505		May-19	24,261	9,615	58,331	25,035
	Jun-19	3,635	241	26,799	832		Jun-19	495	182	1,940	506		Jun-19	29,295	10,583	60,017	26,481
	Jul-19						Jul-19						Jul-19				
	Aug-19						Aug-19						Aug-19				
	Sep-19						Sep-19						Sep-19				
	Oct-19						Oct-19						Oct-19				
	Nov-19						Nov-19						Nov-19				
	Dec-19						Dec-19						Dec-19				

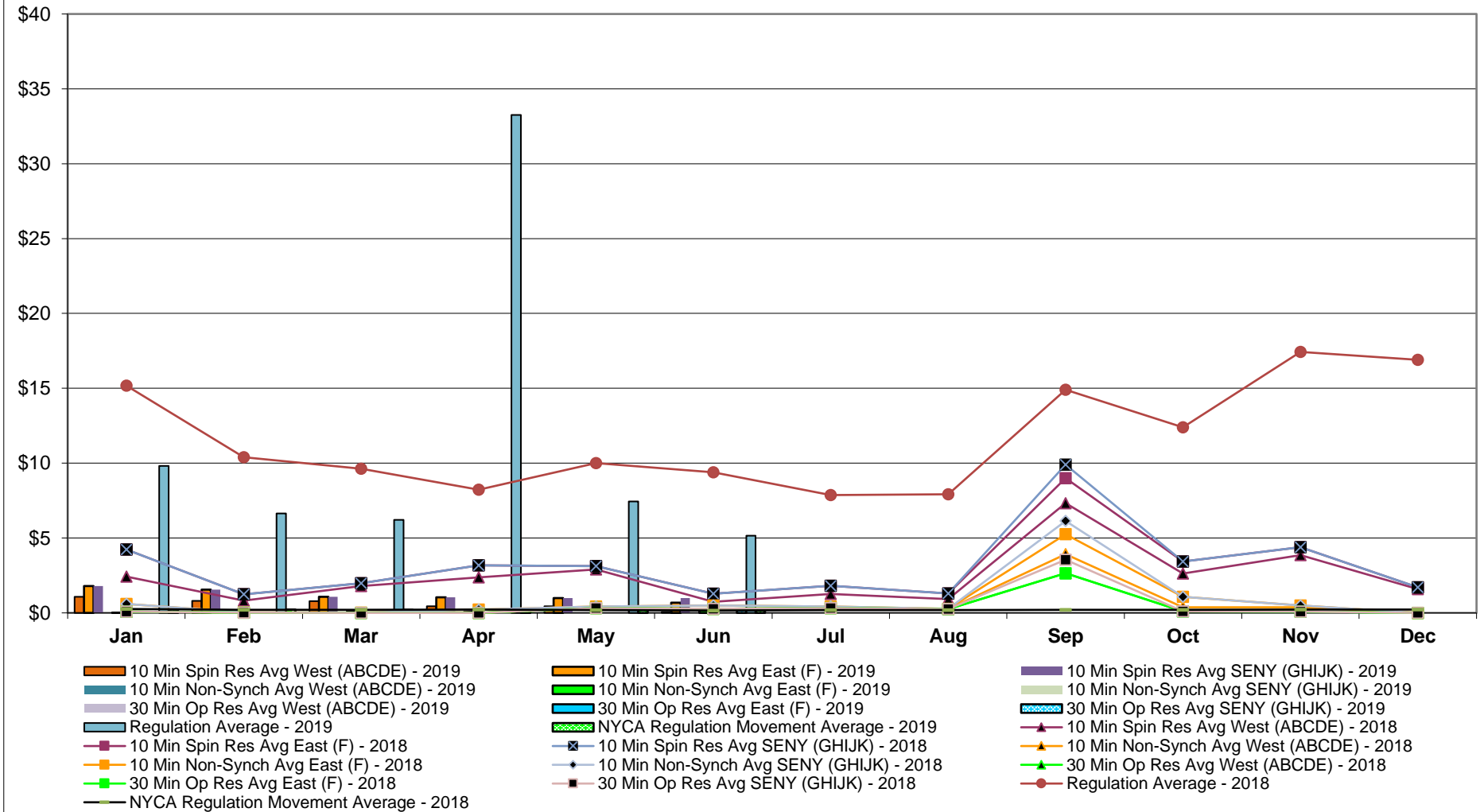
NYISO Multi Hour Block Transactions Monthly Total MWh



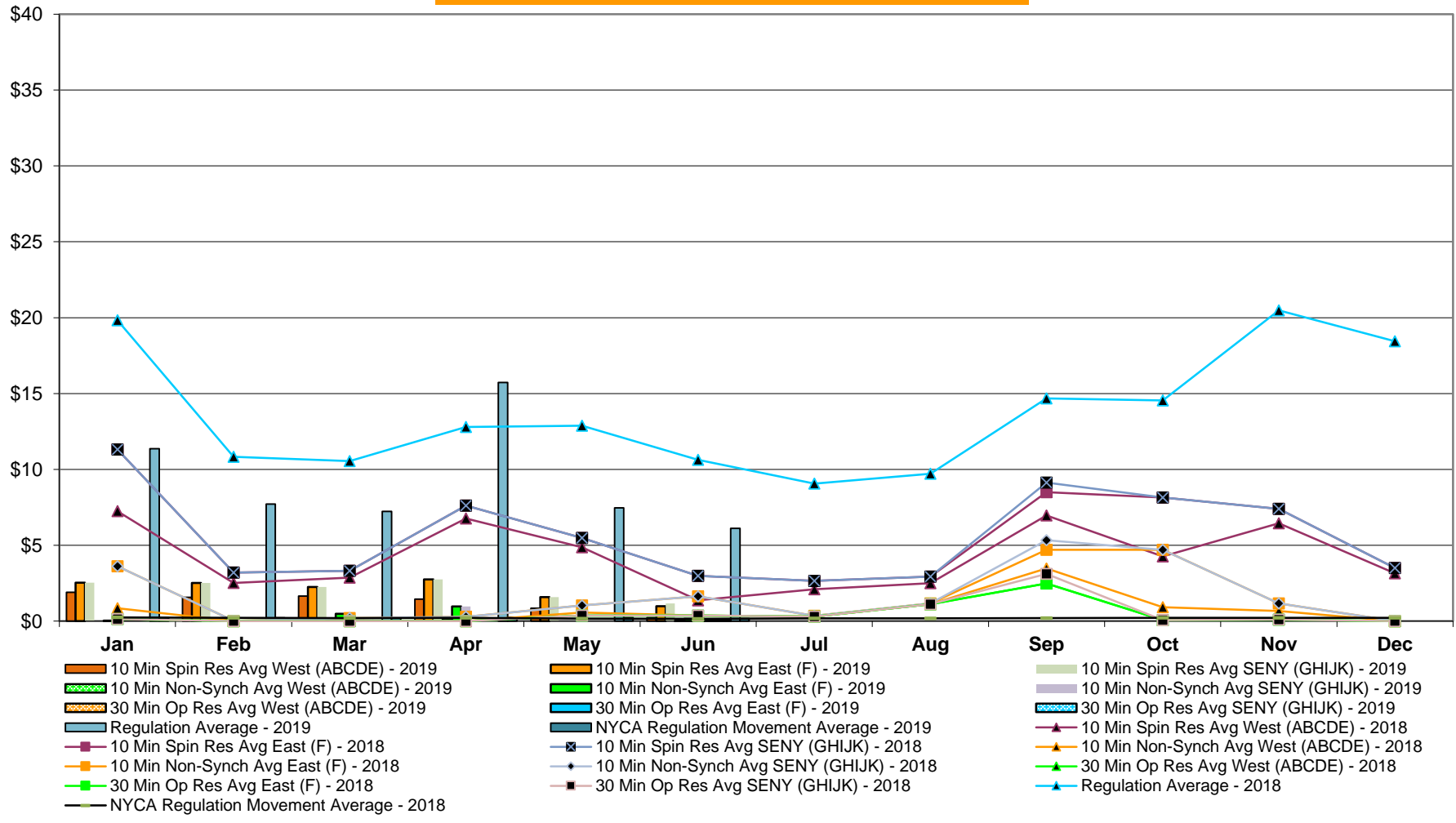
NYISO Monthly Average Ancillary Service Prices Day Ahead Market 2018 - 2019



NYISO Monthly Average Ancillary Service Prices RTC Market 2018 - 2019



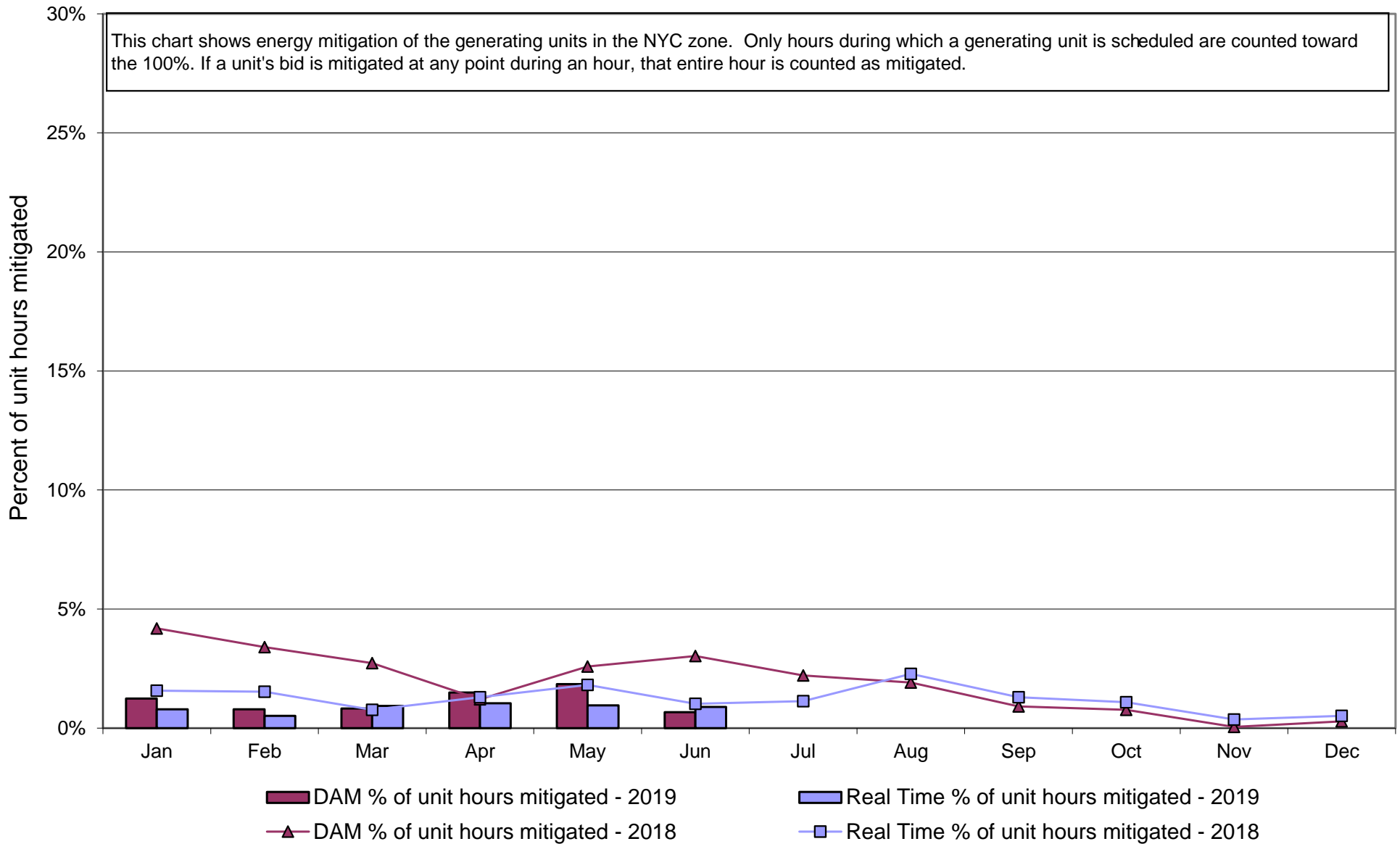
NYISO Monthly Average Ancillary Service Prices Real Time Market 2018 - 2019



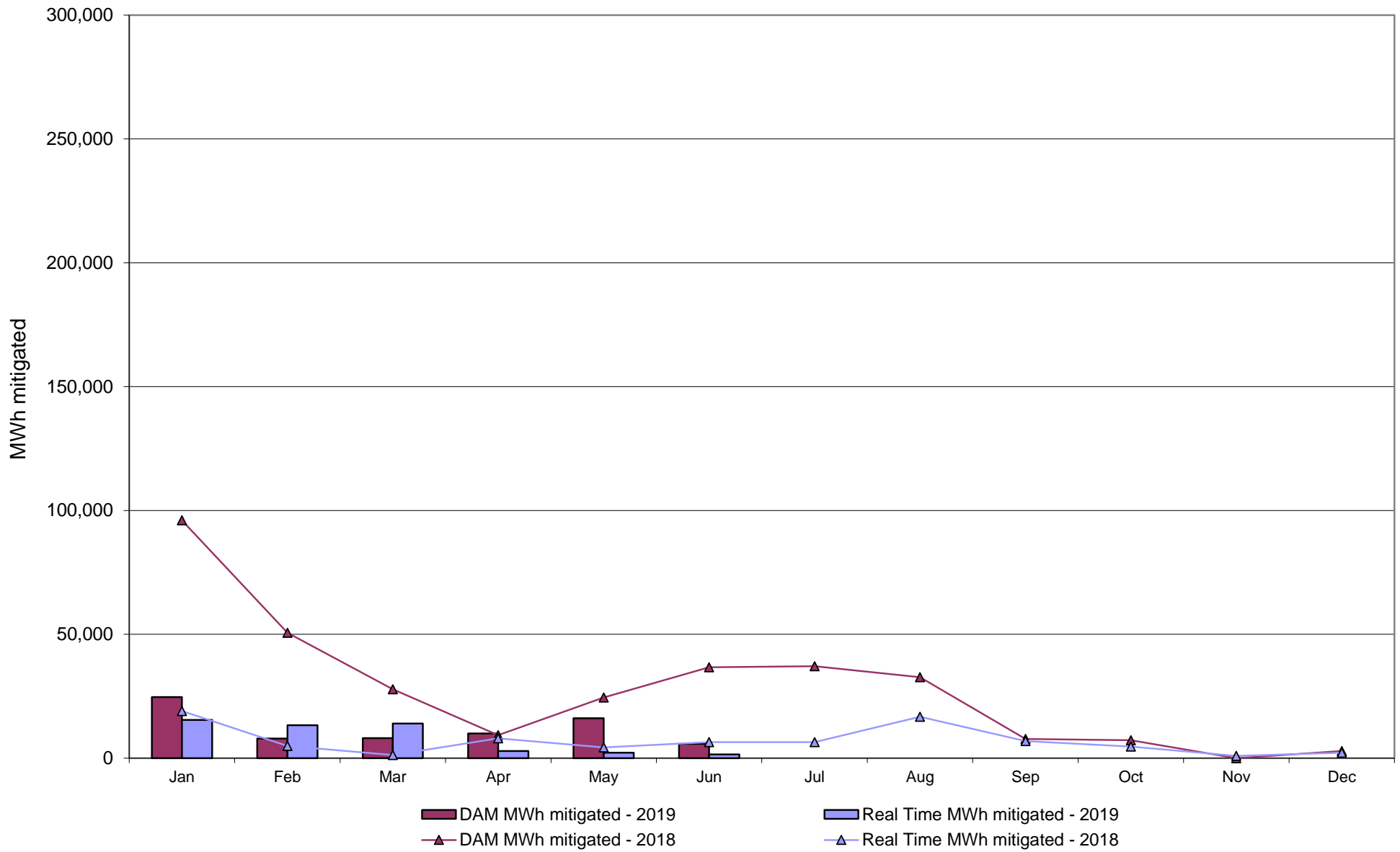
NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH)

2019	January	February	March	April	May	June	July	August	September	October	November	December
Day Ahead Market												
10 Min Spin SENY (GHIJK)	5.47	4.17	4.61	4.46	4.25	3.90						
10 Min Spin East (F)	5.47	4.17	4.61	4.46	4.25	3.86						
10 Min Spin West (ABCDE)	4.56	3.94	4.30	4.01	4.09	3.77						
10 Min Non Synch SENY (GHIJK)	3.88	3.75	3.57	3.96	3.94	3.63						
10 Min Non Synch East (F)	3.88	3.75	3.57	3.96	3.94	3.59						
10 Min Non Synch West (ABCDE)	3.86	3.74	3.47	3.73	3.91	3.58						
30 Min SENY (GHIJK)	3.86	3.74	3.46	3.71	3.91	3.58						
30 Min East (F)	3.86	3.74	3.46	3.71	3.91	3.58						
30 Min West (ABCDE)	3.86	3.74	3.46	3.71	3.91	3.58						
Regulation	11.94	7.69	6.62	27.38	8.71	5.57						
RTC Market												
10 Min Spin SENY (GHIJK)	1.80	1.55	1.08	1.04	0.99	0.99						
10 Min Spin East (F)	1.80	1.55	1.08	1.04	0.99	0.69						
10 Min Spin West (ABCDE)	1.08	0.80	0.79	0.44	0.44	0.05						
10 Min Non Synch SENY (GHIJK)	0.01	0.08	0.11	0.13	0.00	0.52						
10 Min Non Synch East (F)	0.01	0.08	0.11	0.13	0.00	0.22						
10 Min Non Synch West (ABCDE)	0.00	0.01	0.01	0.00	0.00	0.00						
30 Min SENY (GHIJK)	0.00	0.01	0.01	0.00	0.00	0.24						
30 Min East (F)	0.00	0.01	0.01	0.00	0.00	0.00						
30 Min West (ABCDE)	0.00	0.01	0.01	0.00	0.00	0.00						
Regulation	9.81	6.64	6.21	33.26	7.45	5.16						
NYCA Regulation Movement	0.23	0.22	0.21	0.25	0.24	0.18						
Real Time Market												
10 Min Spin SENY (GHIJK)	2.53	2.51	2.24	2.75	1.58	1.17						
10 Min Spin East (F)	2.53	2.51	2.24	2.75	1.58	0.98						
10 Min Spin West (ABCDE)	1.89	1.57	1.64	1.45	0.85	0.23						
10 Min Non Synch SENY (GHIJK)	0.03	0.18	0.48	0.96	0.00	0.33						
10 Min Non Synch East (F)	0.03	0.18	0.48	0.96	0.00	0.15						
10 Min Non Synch West (ABCDE)	0.00	0.01	0.09	0.17	0.00	0.02						
30 Min SENY (GHIJK)	0.00	0.01	0.03	0.00	0.00	0.13						
30 Min East (F)	0.00	0.01	0.03	0.00	0.00	0.02						
30 Min West (ABCDE)	0.00	0.01	0.03	0.00	0.00	0.02						
Regulation	11.36	7.72	7.23	15.73	7.47	6.11						
NYCA Regulation Movement	0.22	0.22	0.20	0.25	0.23	0.17						
2018												
Day Ahead Market												
10 Min Spin SENY (GHIJK)	9.93	5.24	5.97	7.45	5.52	4.98	4.95	4.91	6.04	8.37	6.93	4.99
10 Min Spin East (F)	9.93	5.24	5.97	7.45	5.52	4.98	4.95	4.91	6.04	8.37	6.93	4.99
10 Min Spin West (ABCDE)	8.49	4.53	4.78	5.73	4.65	4.26	3.98	4.30	5.18	6.36	6.57	4.86
10 Min Non Synch SENY (GHIJK)	6.99	4.54	4.48	5.05	4.26	4.09	4.49	4.43	4.51	5.69	4.00	3.71
10 Min Non Synch East (F)	6.99	4.54	4.48	5.05	4.26	4.09	4.49	4.43	4.51	5.69	4.00	3.71
10 Min Non Synch West (ABCDE)	6.15	4.36	3.54	4.31	4.13	3.85	3.80	4.03	3.95	4.31	3.97	3.70
30 Min SENY (GHIJK)	6.14	4.36	3.54	4.31	4.13	3.85	3.79	4.02	3.94	4.22	3.97	3.70
30 Min East (F)	6.14	4.36	3.54	4.31	4.13	3.85	3.79	4.02	3.94	4.22	3.97	3.70
30 Min West (ABCDE)	6.14	4.36	3.54	4.31	4.13	3.85	3.79	4.02	3.94	4.22	3.97	3.70
Regulation	15.51	10.70	10.68	9.49	12.11	11.30	6.99	8.00	8.54	12.88	14.47	14.07
RTC Market												
10 Min Spin SENY (GHIJK)	4.23	1.24	1.98	3.17	3.13	1.28	1.81	1.29	9.90	3.43	4.39	1.71
10 Min Spin East (F)	4.23	1.24	1.98	3.17	3.13	1.28	1.81	1.29	9.00	3.43	4.39	1.71
10 Min Spin West (ABCDE)	2.43	0.82	1.79	2.38	2.91	0.74	1.27	0.93	7.33	2.63	3.85	1.58
10 Min Non Synch SENY (GHIJK)	0.59	0.03	0.01	0.22	0.42	0.49	0.42	0.27	6.14	1.07	0.50	0.00
10 Min Non Synch East (F)	0.59	0.03	0.01	0.22	0.42	0.49	0.42	0.27	5.25	1.07	0.50	0.00
10 Min Non Synch West (ABCDE)	0.08	0.02	0.00	0.00	0.33	0.27	0.33	0.25	3.92	0.38	0.38	0.00
30 Min SENY (GHIJK)	0.08	0.02	0.00	0.00	0.32	0.27	0.33	0.25	3.55	0.11	0.09	0.00
30 Min East (F)	0.08	0.02	0.00	0.00	0.32	0.27	0.33	0.25	2.65	0.11	0.09	0.00
30 Min West (ABCDE)	0.08	0.02	0.00	0.00	0.32	0.27	0.33	0.25	2.65	0.11	0.09	0.00
Regulation	15.17	10.40	9.63	8.22	10.01	9.39	7.87	7.92	14.90	12.40	17.43	16.90
NYCA Regulation Movement	0.26	0.21	0.20	0.22	0.19	0.16	0.19	0.19	0.20	0.21	0.22	0.22
Real Time Market												
10 Min Spin SENY (GHIJK)	11.31	3.19	3.31	7.62	5.48	2.98	2.65	2.93	9.13	8.14	7.39	3.49
10 Min Spin East (F)	11.31	3.19	3.31	7.62	5.48	2.98	2.65	2.93	8.50	8.14	7.39	3.49
10 Min Spin West (ABCDE)	7.24	2.52	2.86	6.77	4.86	1.37	2.10	2.50	6.96	4.26	6.45	3.15
10 Min Non Synch SENY (GHIJK)	3.61	0.01	0.19	0.28	1.03	1.63	0.35	1.16	5.33	4.70	1.16	0.00
10 Min Non Synch East (F)	3.61	0.01	0.19	0.28	1.03	1.63	0.35	1.16	4.70	4.70	1.16	0.00
10 Min Non Synch West (ABCDE)	0.85	0.00	0.00	0.00	0.57	0.37	0.29	1.12	3.47	0.92	0.67	0.00
30 Min SENY (GHIJK)	0.13	0.00	0.00	0.00	0.37	0.37	0.29	1.12	3.11	0.06	0.10	0.00
30 Min East (F)	0.13	0.00	0.00	0.00	0.37	0.37	0.29	1.12	2.48	0.06	0.10	0.00
30 Min West (ABCDE)	0.13	0.00	0.00	0.00	0.37	0.37	0.29	1.12	2.48	0.06	0.10	0.00
Regulation	19.82	10.82	10.54	12.80	12.88	10.62	9.06	9.71	14.67	14.54	20.48	18.44
NYCA Regulation Movement	0.24	0.21	0.20	0.21	0.17	0.15	0.18	0.18	0.20	0.21	0.22	0.21

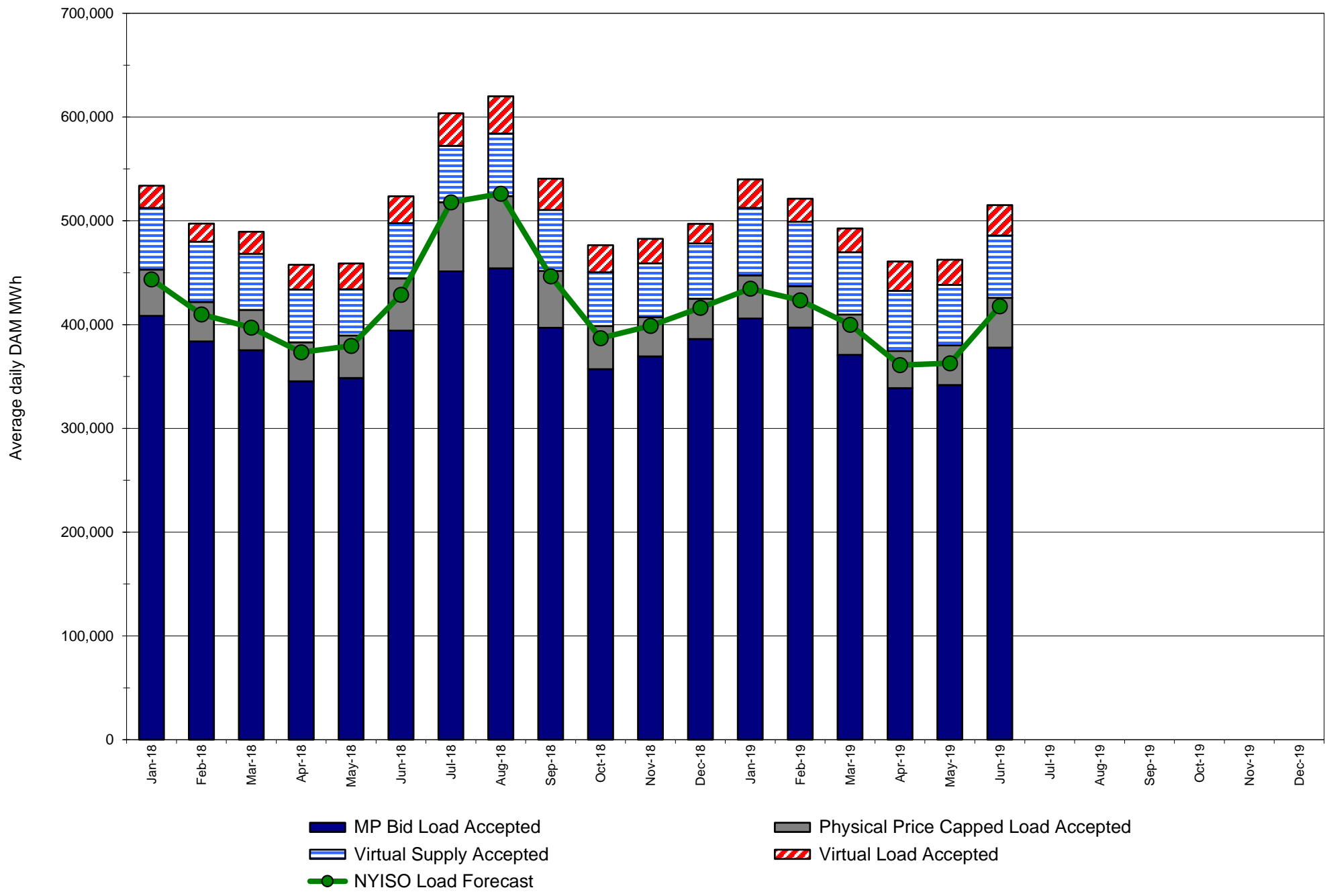
NYISO In City Energy Mitigation - AMP (NYC Zone) 2018 - 2019 Percentage of committed unit-hours mitigated



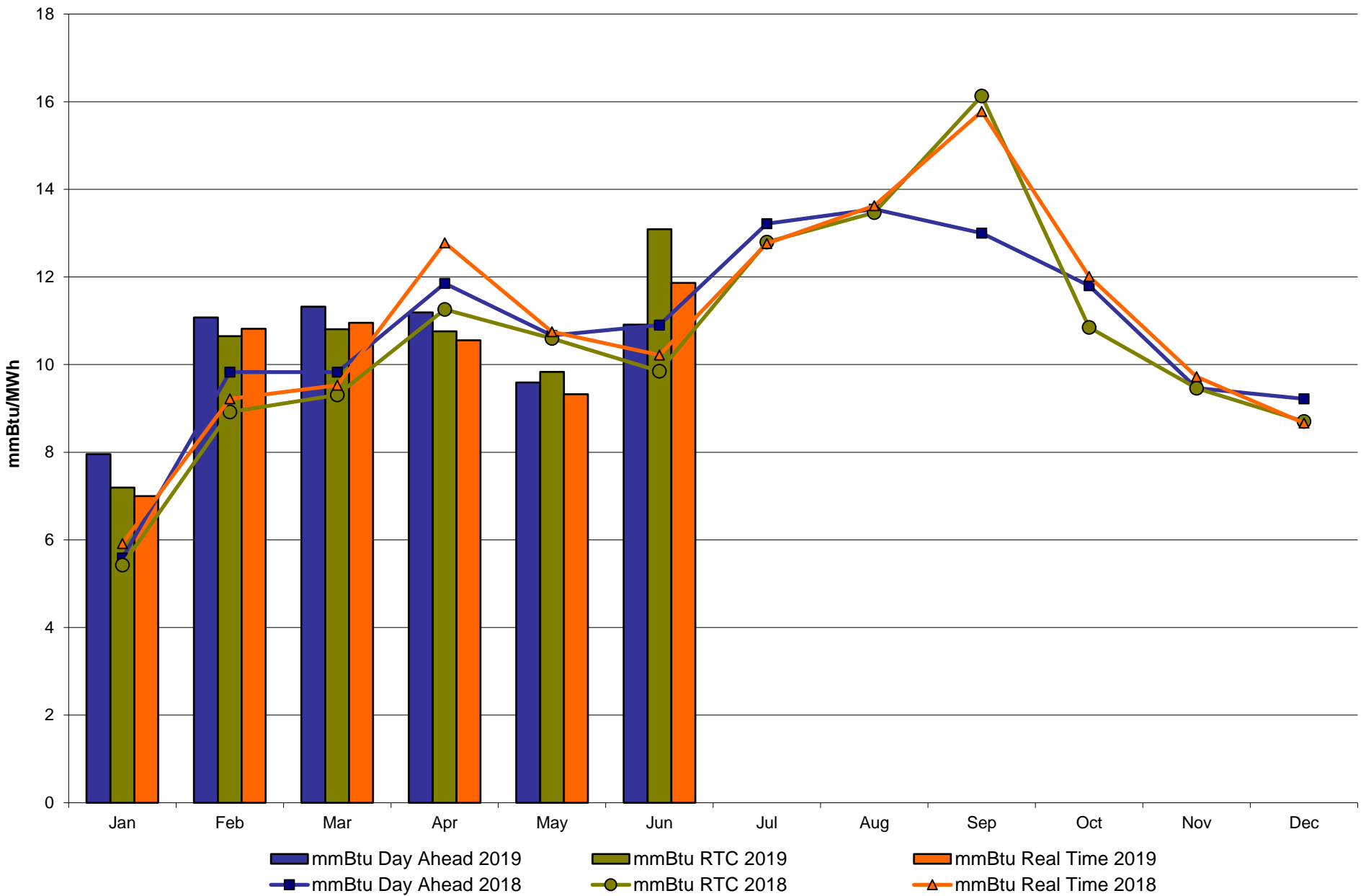
NYISO In City Energy Mitigation (NYC Zone) 2018 - 2019
Monthly megawatt hours mitigated



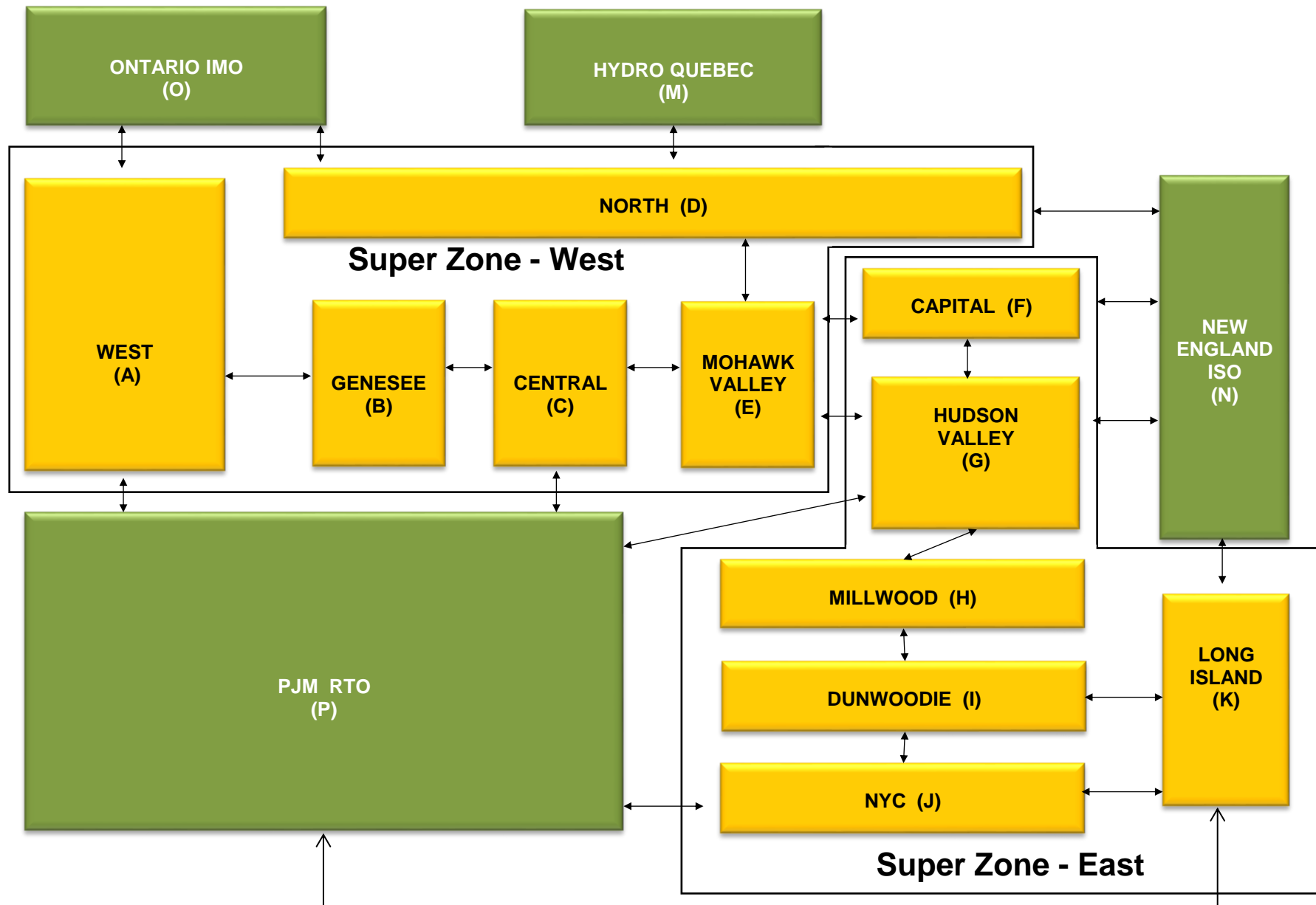
NYISO Average Daily DAM Load Bid Summary



Monthly Implied Heat Rate 2018-2019



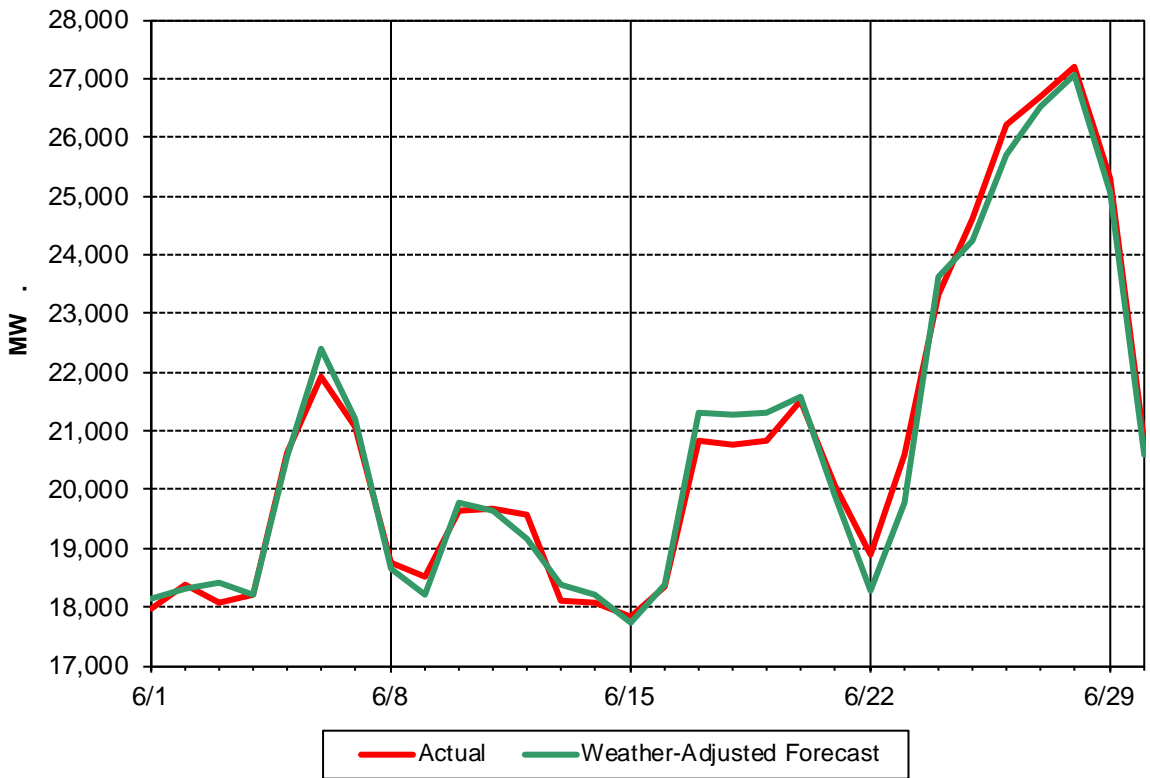
NYISO LBMP ZONES



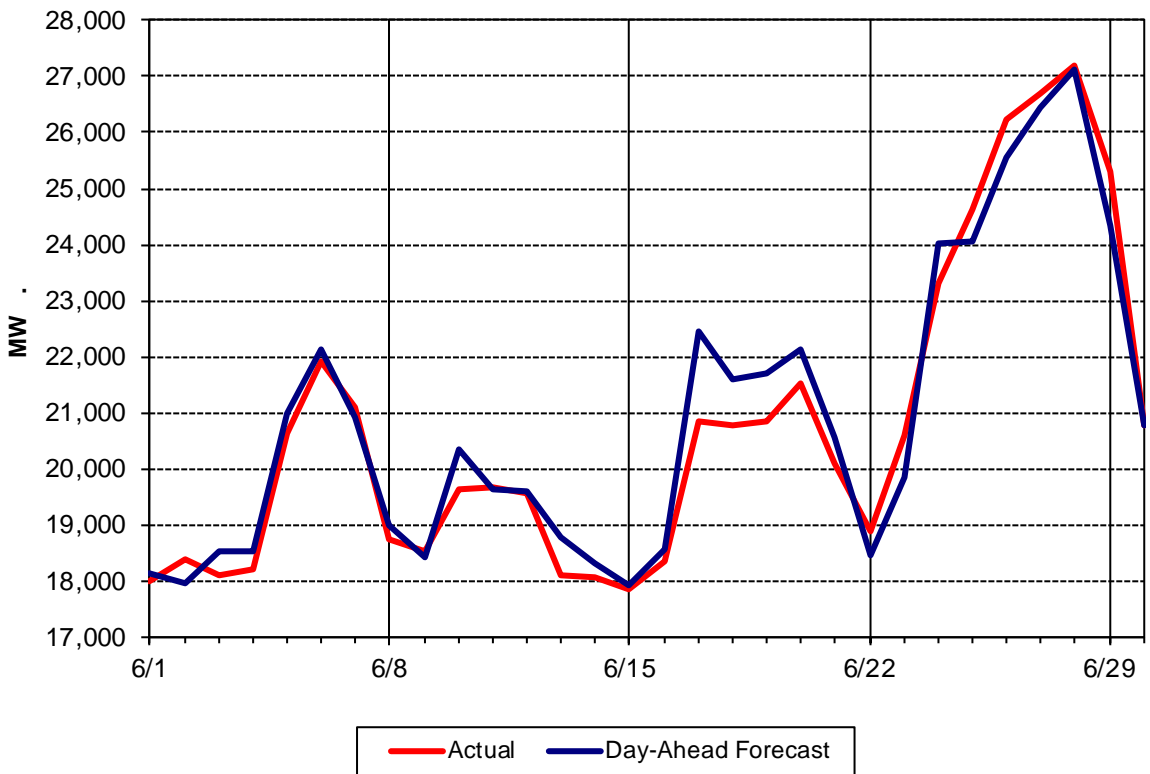
Billing Codes for Chart C

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

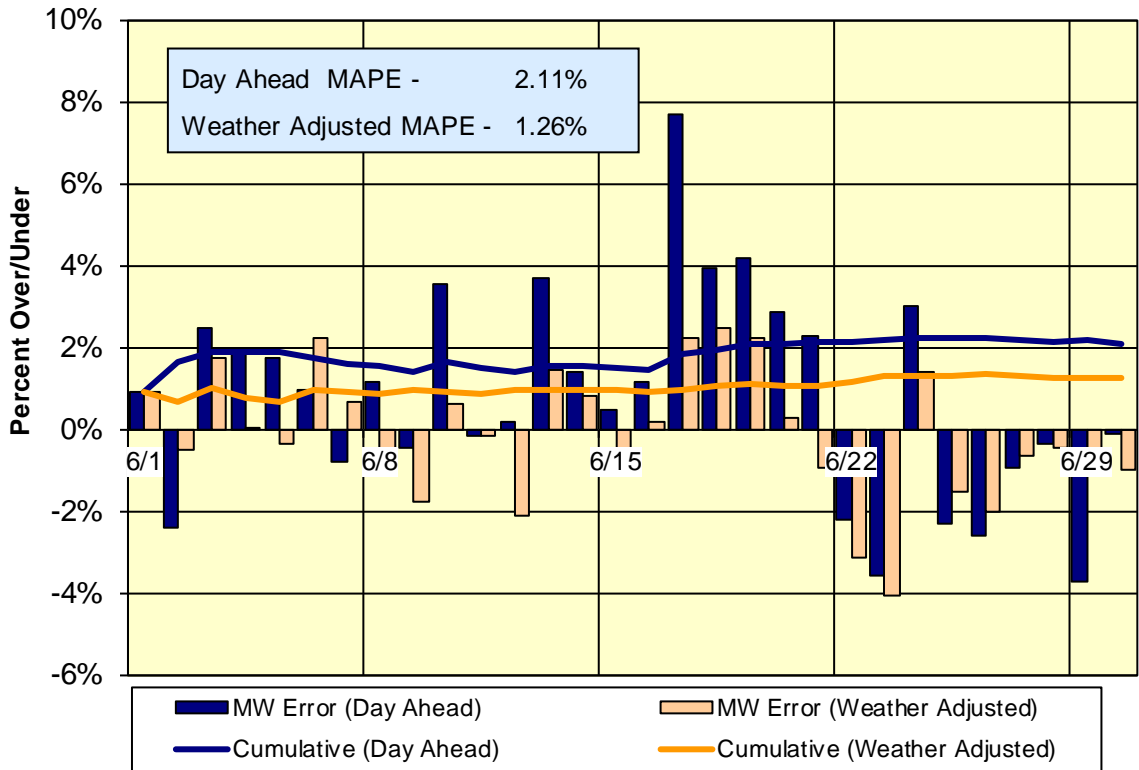
**NYISO Daily Peak Load - June 2019
Actual vs. Weather-Adjusted Forecast**



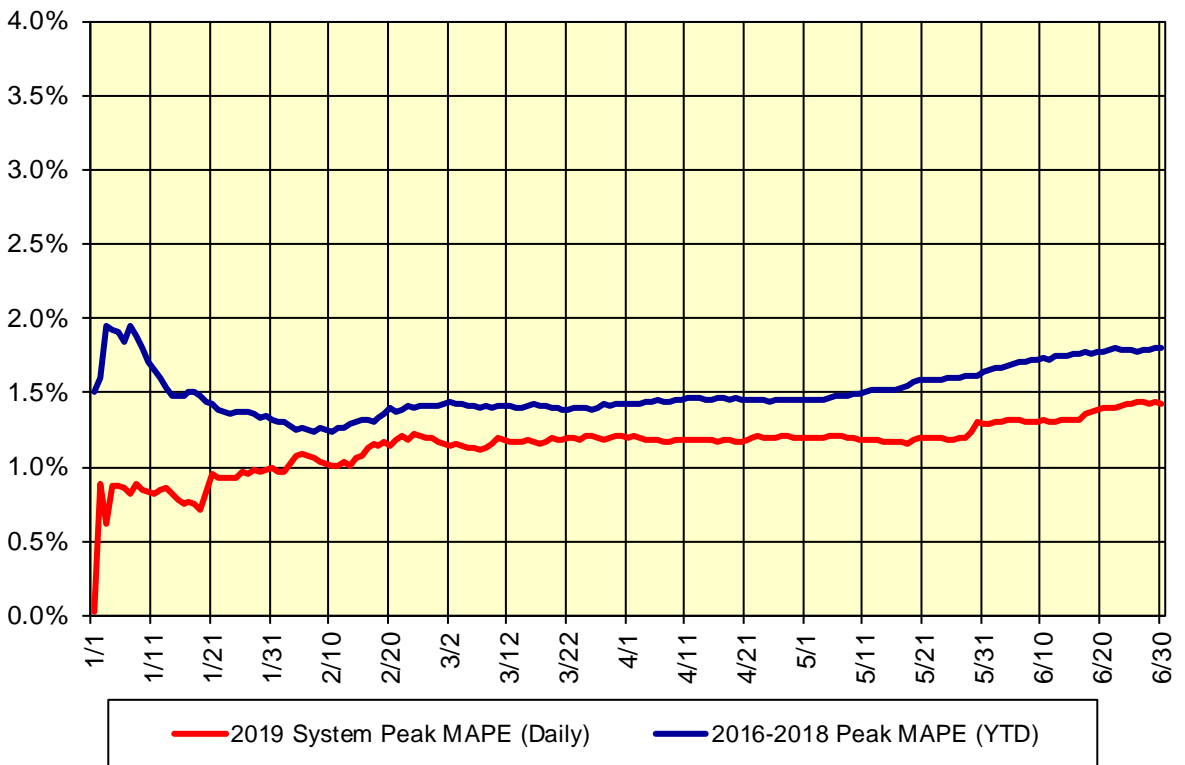
**NYISO Daily Peak Load - June 2019
Actual vs. Forecast**



Day Ahead Peak Forecast - June 2019 Percent Error - Actual & Weather-Adjusted



Day-Ahead Forecast Accuracy - Cumulative Performance 2019 Year-to-Date



**Summary Description of Regulatory Filings, Investigations,
Rulemakings and Related Orders in NYISO Matters – June 2019**

Filing Date	Filing Summary	Docket No.	Order Date	Order Summary
04/26/2019	NYISO 205 filing re: implement a new locational operating reserves region for New York City (Load Zone J)	ER19-1678-000	06/21/2019	Letter order accepted revisions effective 06/26/2019, as requested
06/11/2019	NYISO 205 filing re: revisions to implement modified requirements for external installed capacity suppliers and external generators that are associated with an unforced capacity sale to New York	ER19-2104-000		
06/14/2019	NYISO 205 filing re: MST 26.6 revisions to modify the provision of cash collateral	ER19-2136-000		
06/17/2019	NYISO confidential filing to the NYPSC re: three-month Reliability Commitment Data Report for the period ending 05/31/2019	PSC Matter No. 10-02007		
06/24/2019	ISO/RTO Council filing re: NOPR comments related to the Critical Infrastructure Reliability Standard CIP-012-1 (Cyber Security – Communication between Control Centers)	RM18-20-000		
06/27/2019	NYISO 205 filing re: participation model for aggregations of resources and Distributed Energy Resources	ER19-2276-000		
06/28/2019	NYISO and PJM joint filing re: revisions to the Joint Operating Agreement concerning Market-to-Market (M2M) flowgates for M2M coordination	ER19-2282-000		
06/28/2019	NYISO informational filing re: confidential CEII copy of the Consolidated Edison System Restoration Plan	ER12-2568-000		