



# Monthly Report

**May 2018**

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



## ***May 2018 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 June 8, 2018.

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## May 2018 Operations Performance Highlights

- Peak load of 24,441 MW occurred on 05/29/2018 HB 17
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 5.6 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- High levels of wind curtailment in the North Country this month were coincident with the scheduled outages of the Moses-Adirondack 230kV (#MA2) transmission line, Browns Falls-Taylorville 115kV (#4), Marcy-Coopers Corners 345kV (UCC2-41), Marcy 765/345kV (#AT2), and the forced outage of the St. Lawrence-Moses 230kV (#L33P).
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

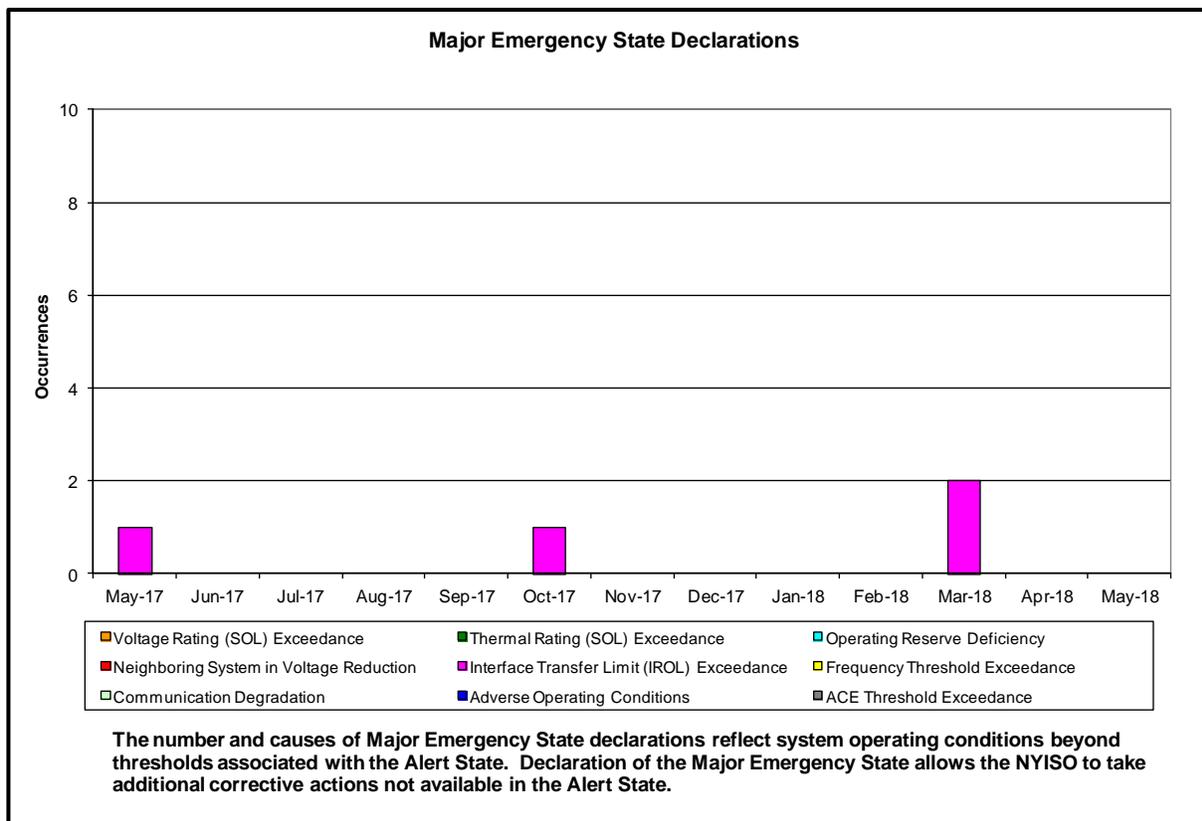
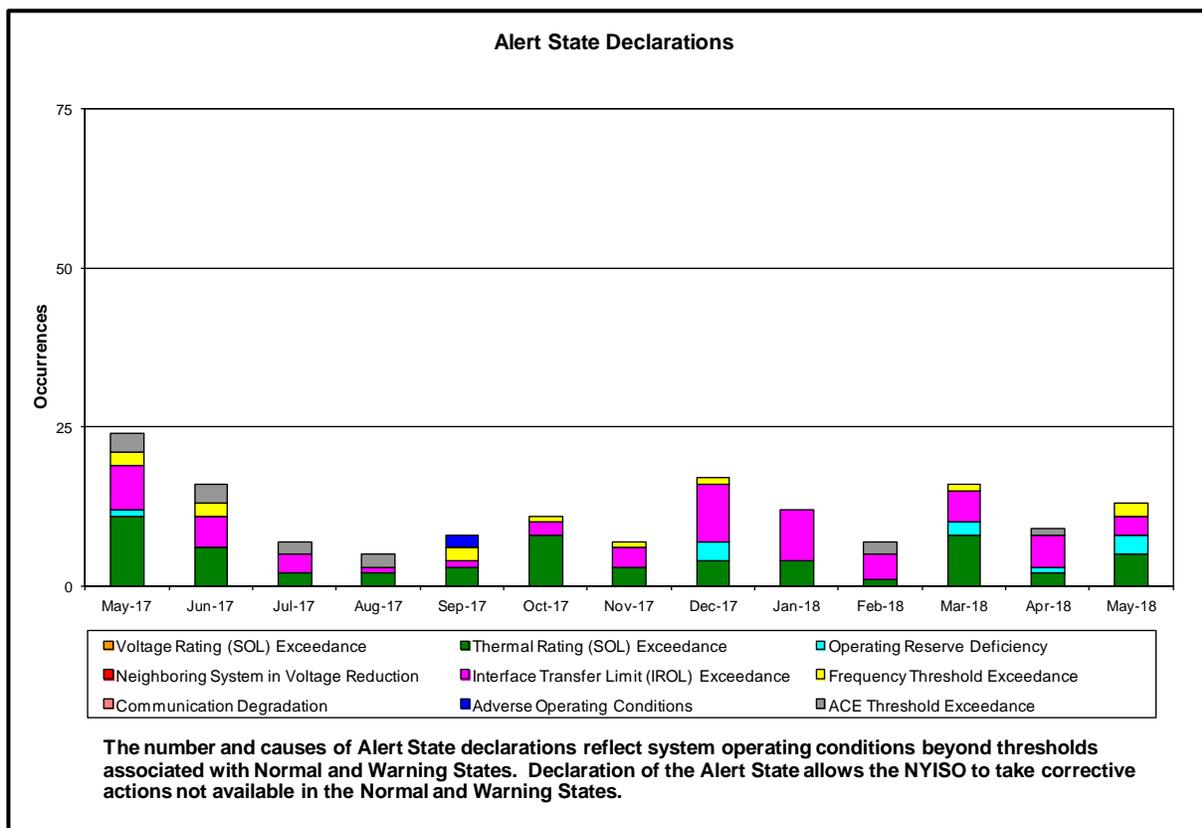
	Current Month Value (\$M)	Year-to-Date Value (\$M)
<b>NY Savings from PJM-NY Congestion Coordination</b>	\$0.43	\$8.79
<b>NY Savings from PJM-NY Coordinated Transaction Scheduling</b>	(\$0.07)	\$0.61
<b>NY Savings from NE-NY Coordinated Transaction Scheduling</b>	(\$0.13)	(\$0.67)
<b>Total NY Savings</b>	\$0.23	\$8.73
<b>Regional Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.25	\$1.27
<b>Regional Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.07	\$0.29
<b>Total Regional Savings</b>	\$0.32	\$1.56

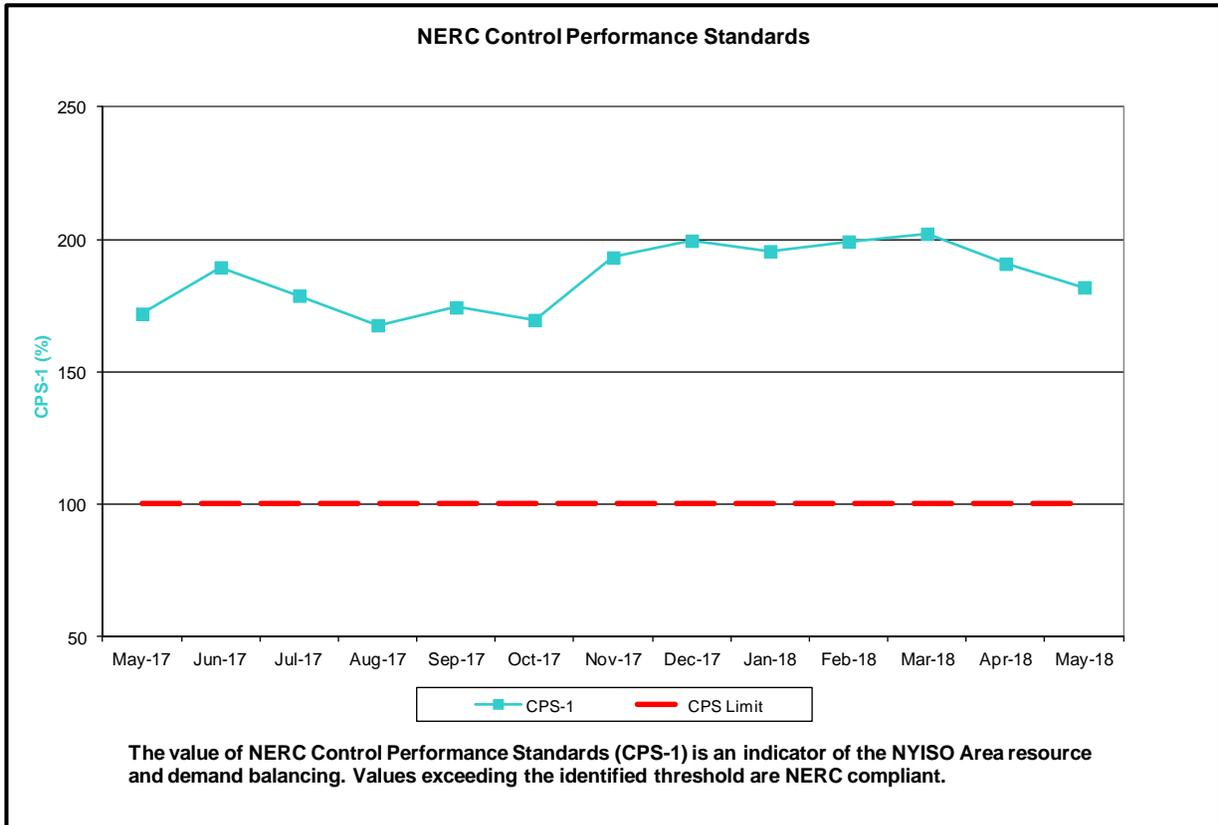
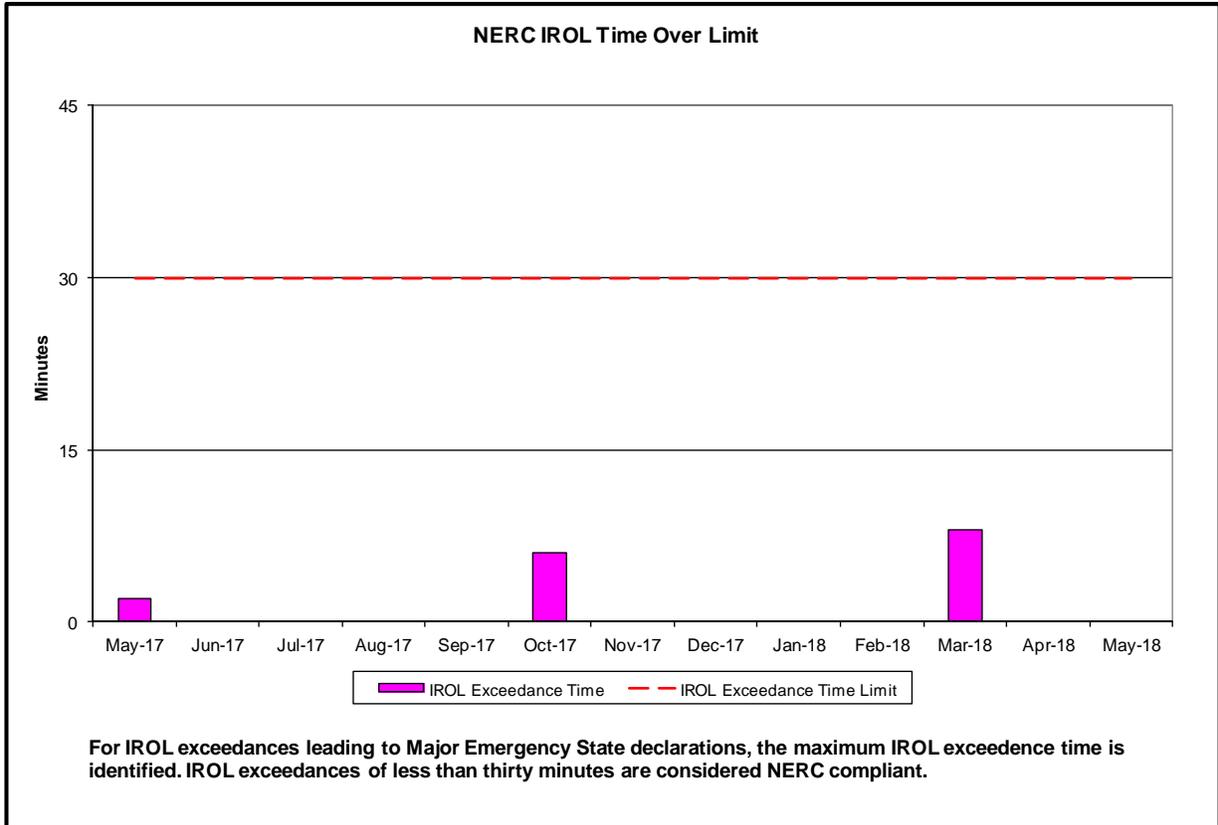
- Statewide uplift cost monthly average was (\$0.17)/MWh
- The following table identifies the Monthly ICAP Spot Market prices and the price delta.

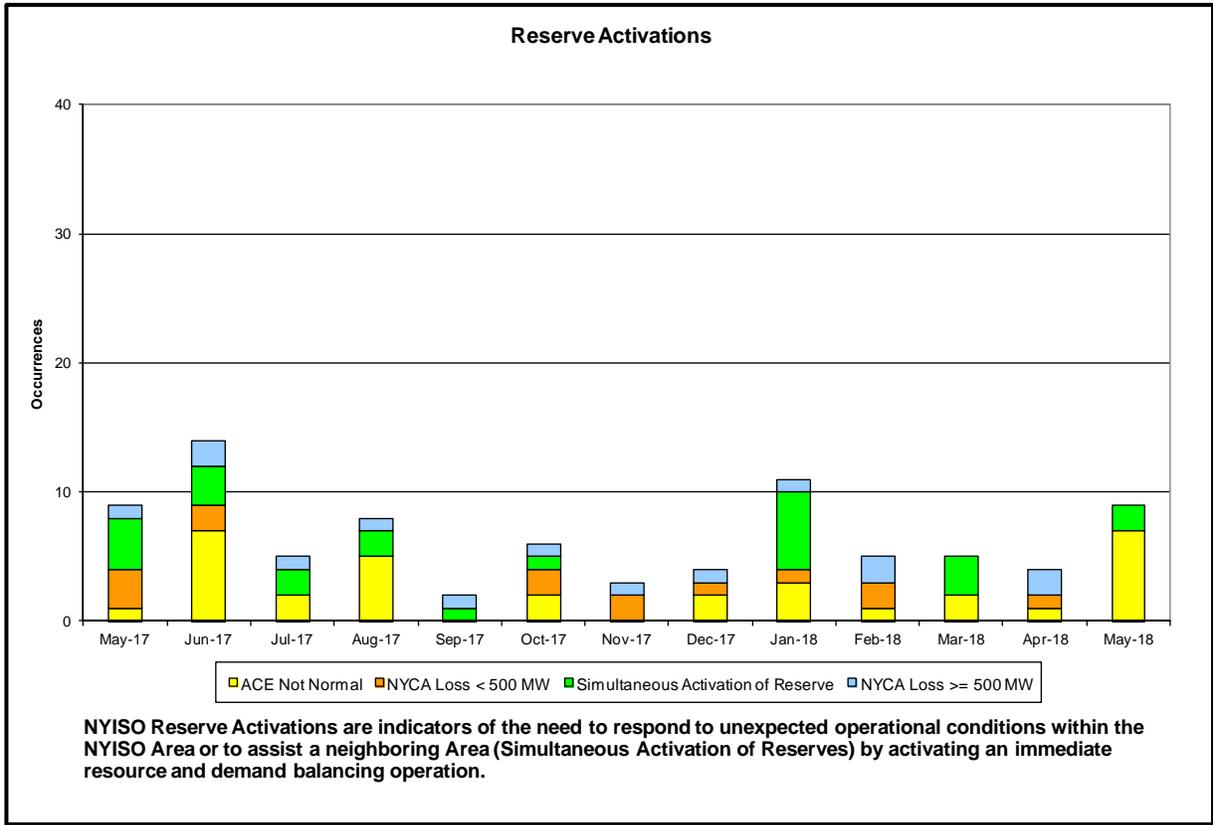
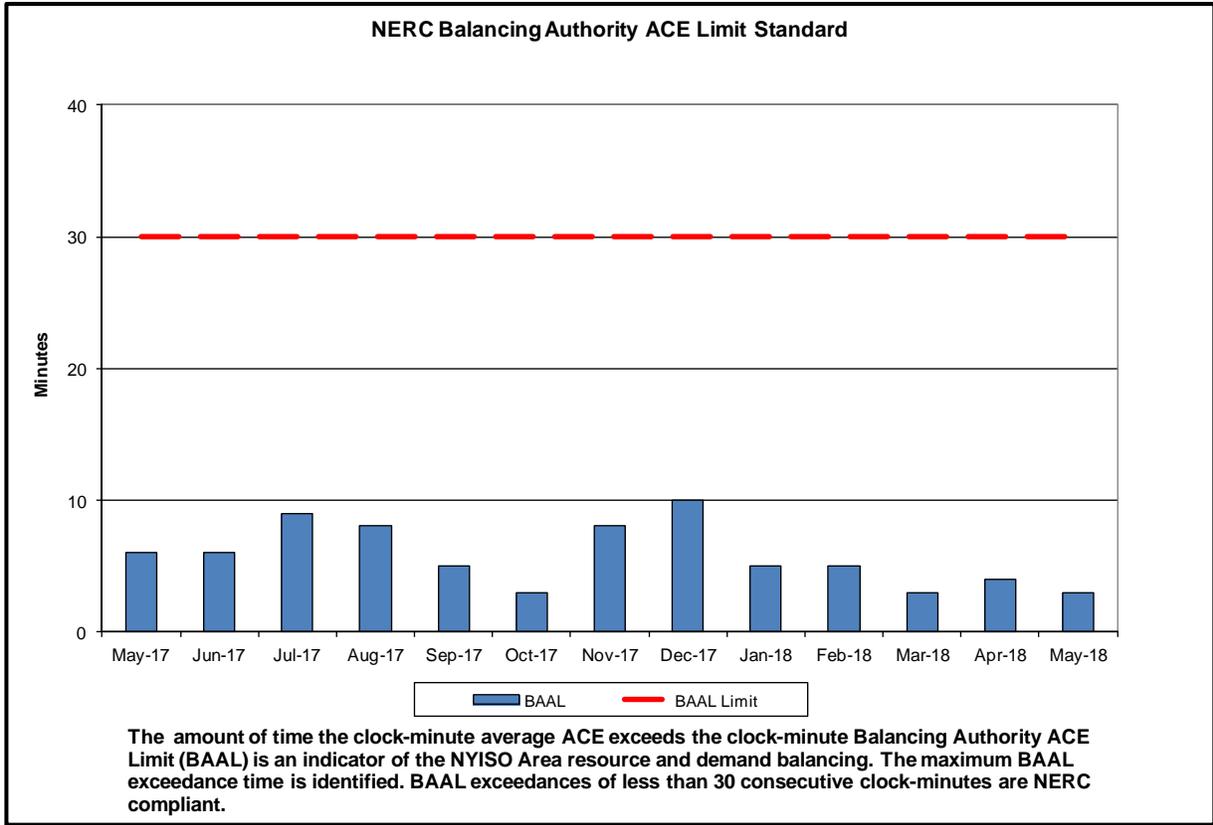
Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
June 2018 Spot Price	\$4.33	\$10.24	\$10.24	\$6.80
May 2018 Spot Price	\$2.70	\$11.86	\$11.86	\$6.81
Delta	\$1.63	(\$1.62)	(\$1.62)	(\$0.01)

- NYC: Price is decreased by \$1.62 due primarily to an increase in Generation UCAP Available
- LHV: Price is decreased by \$1.62 due primarily to an increase in Generation UCAP Available
- NYCA: Price is increased by \$1.63 due primarily to an increase in exports and decrease in imports

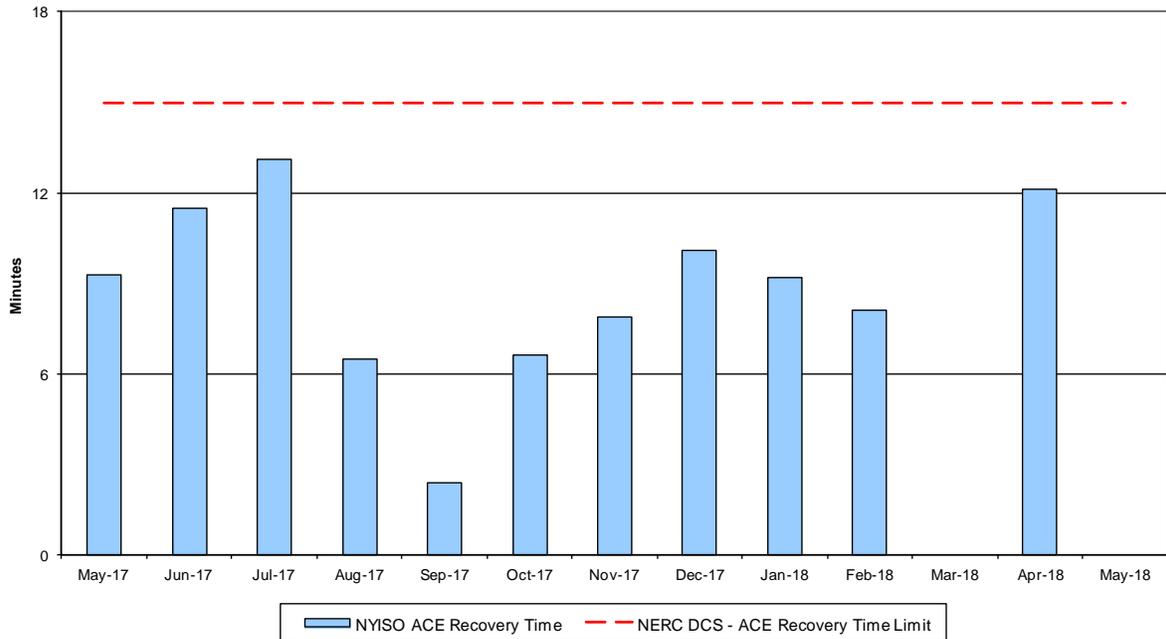
## Reliability Performance Metrics





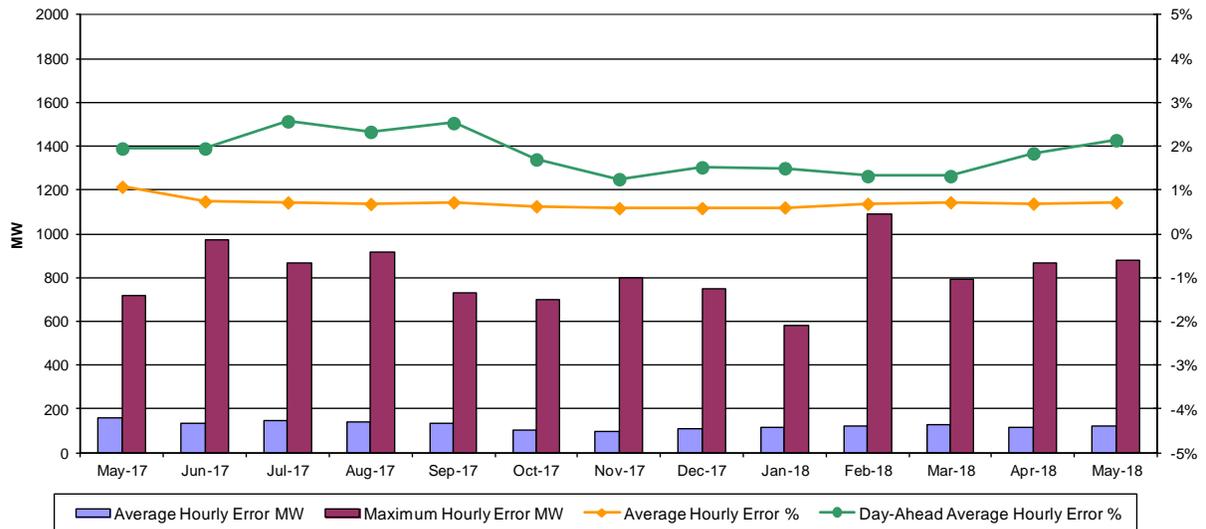


### DCS Event Time to ACE Recovery

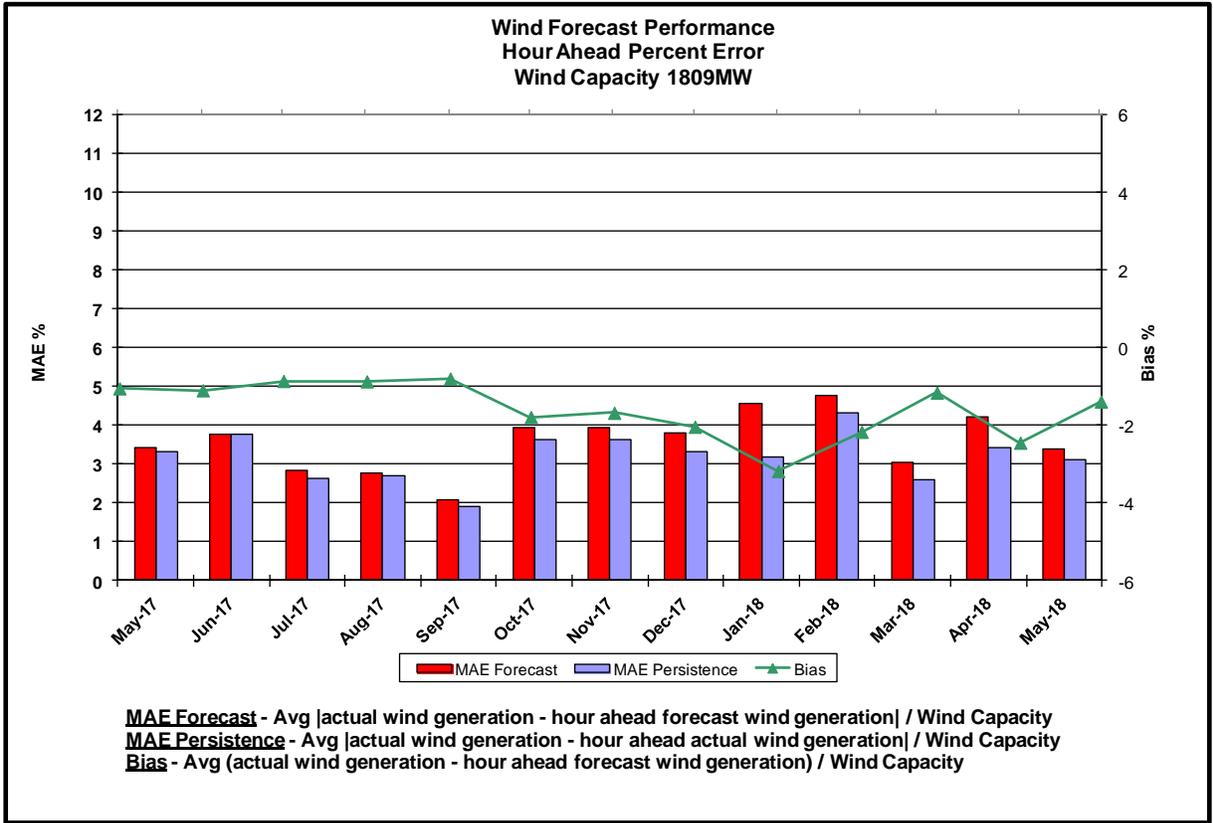
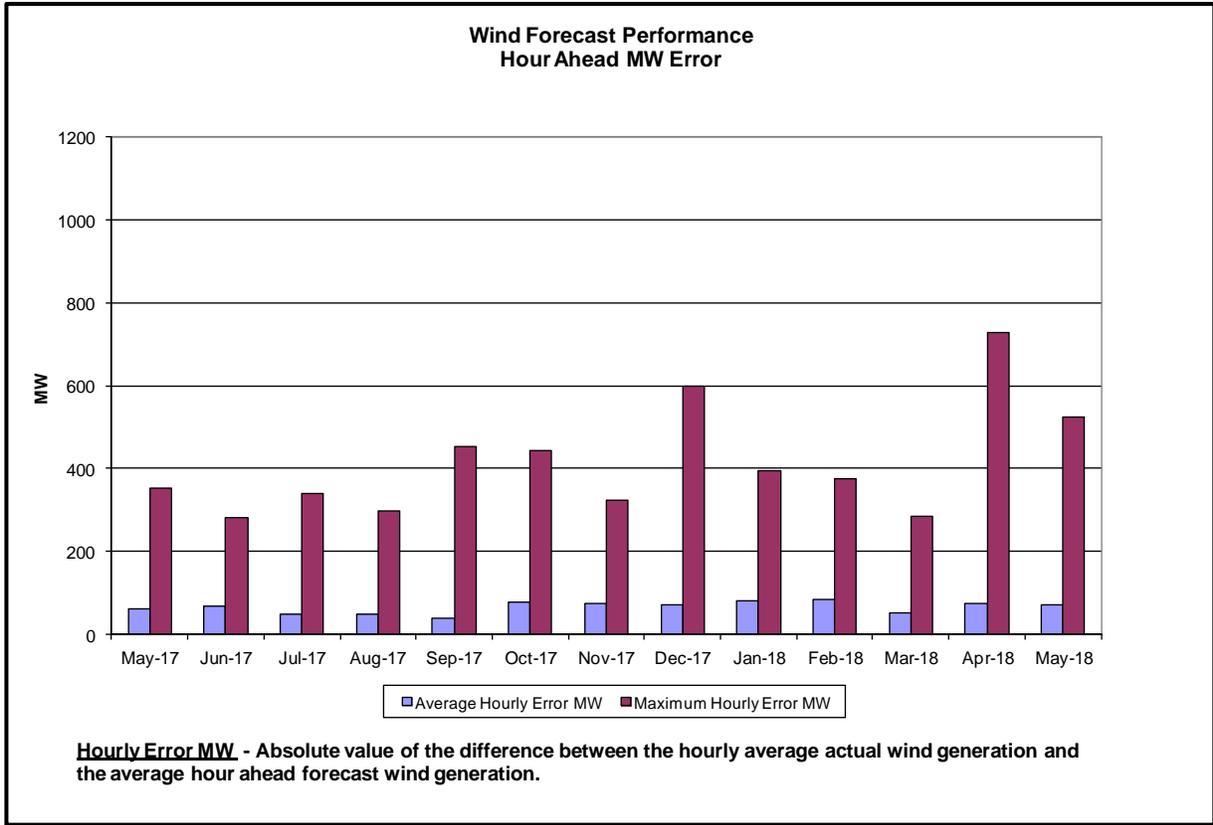


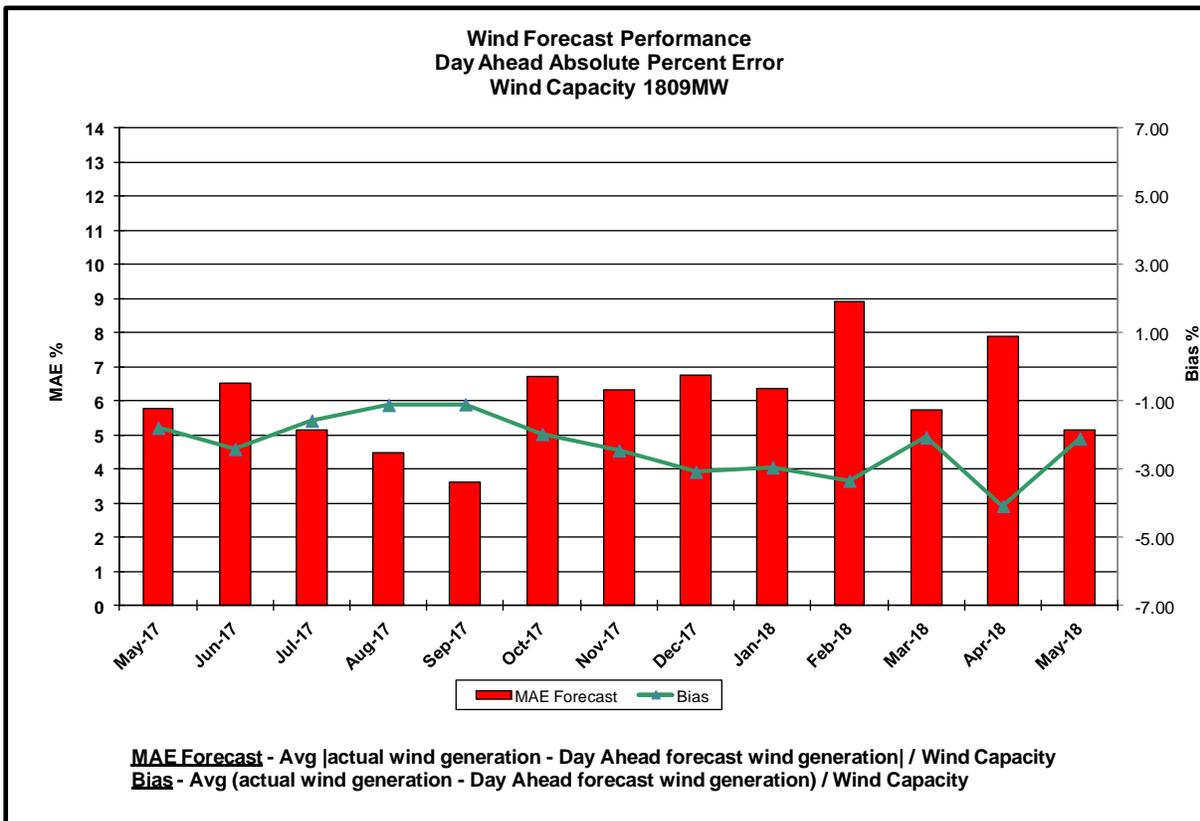
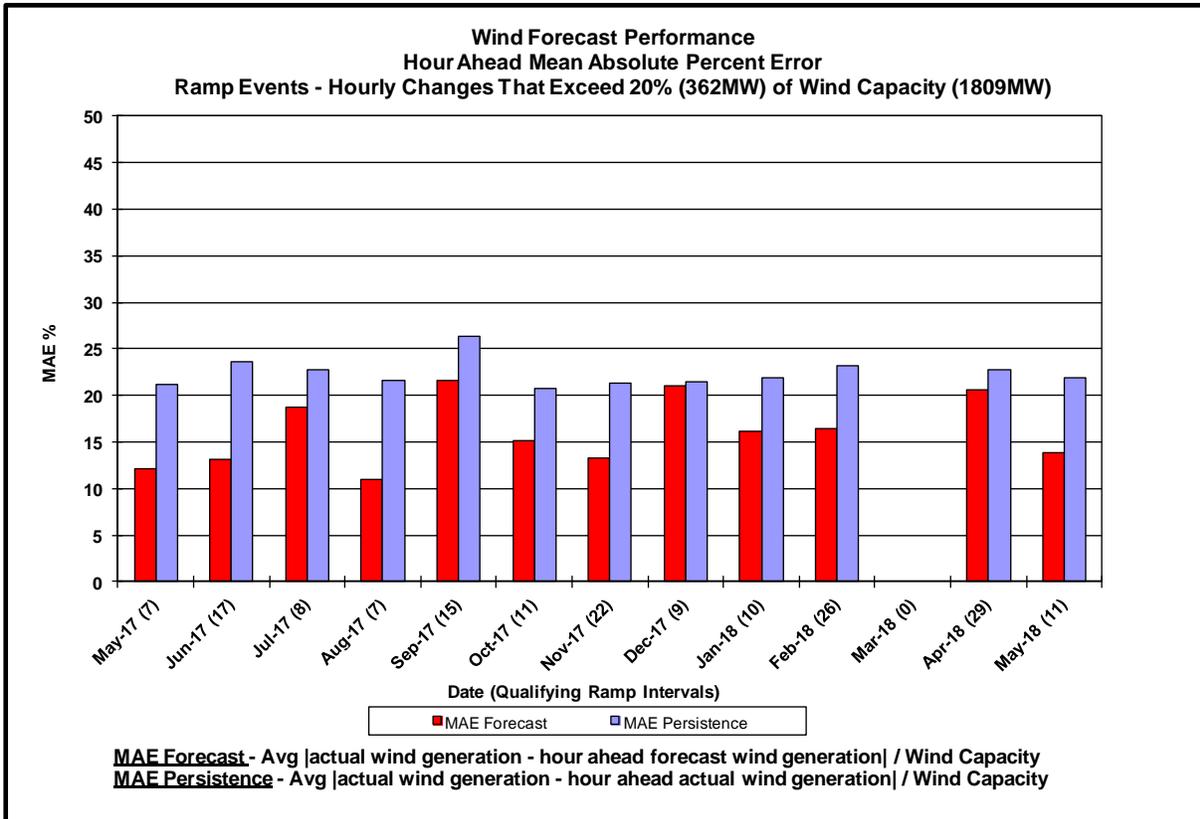
For NYISO initiated Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

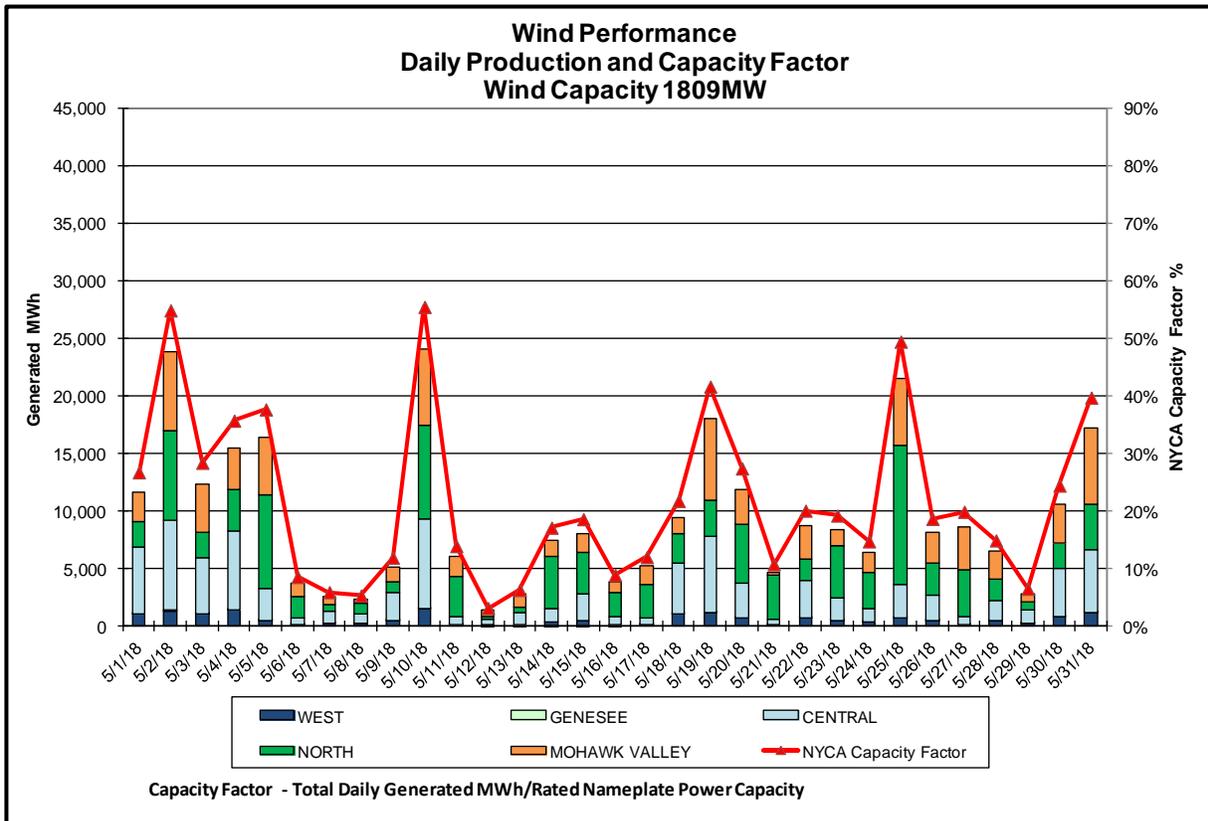
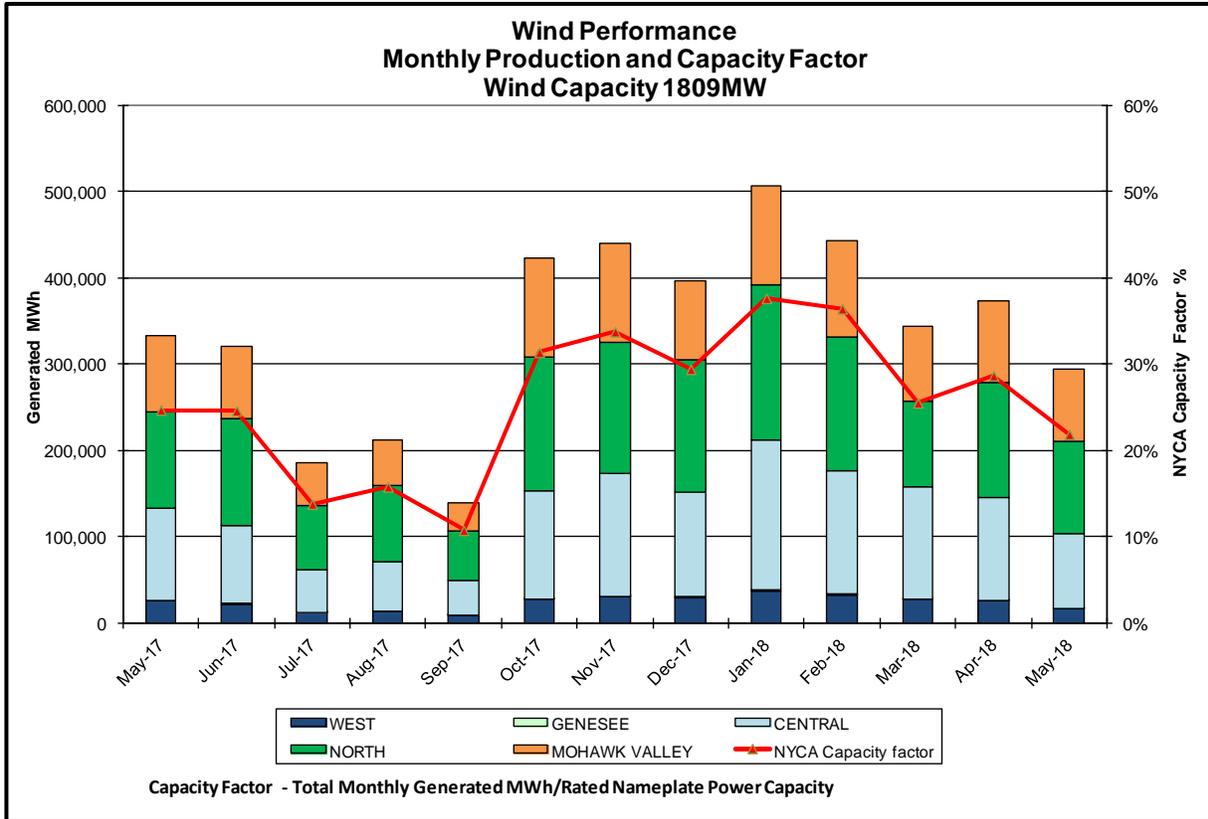
### Load Forecast Performance

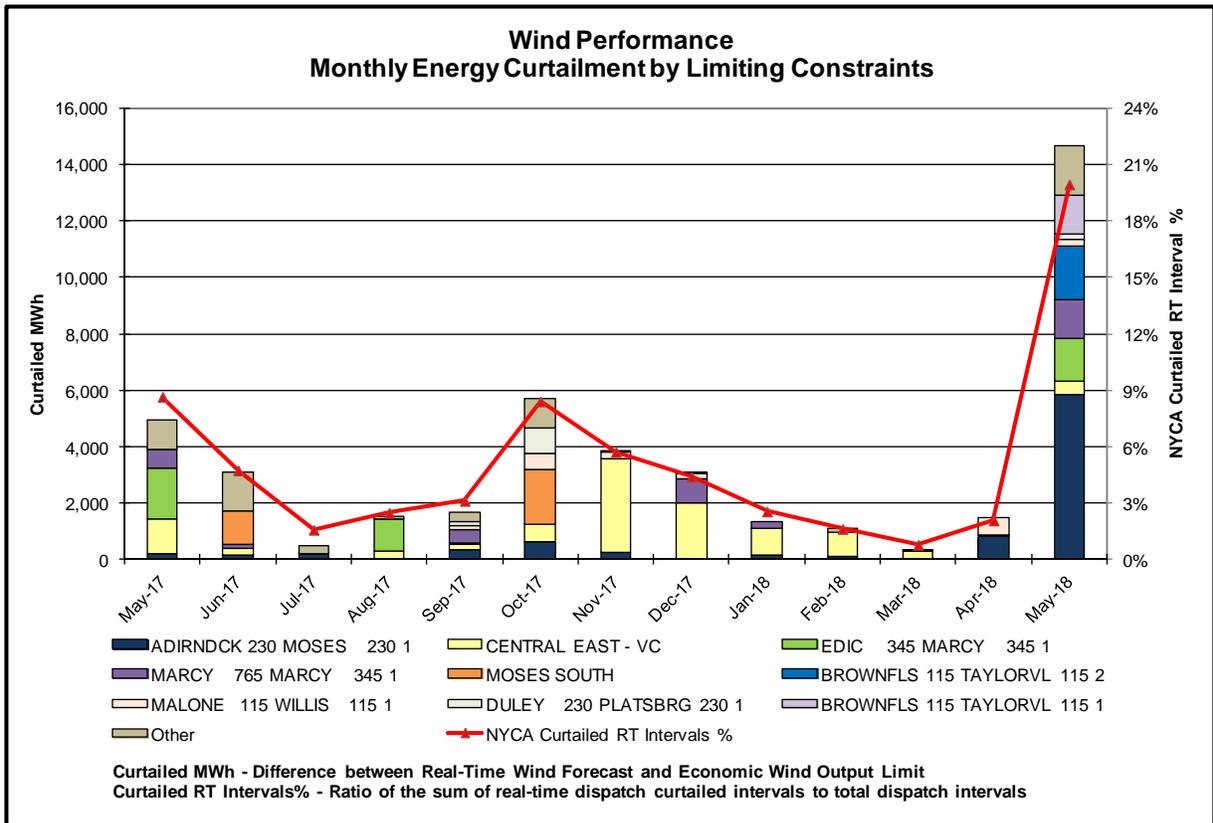
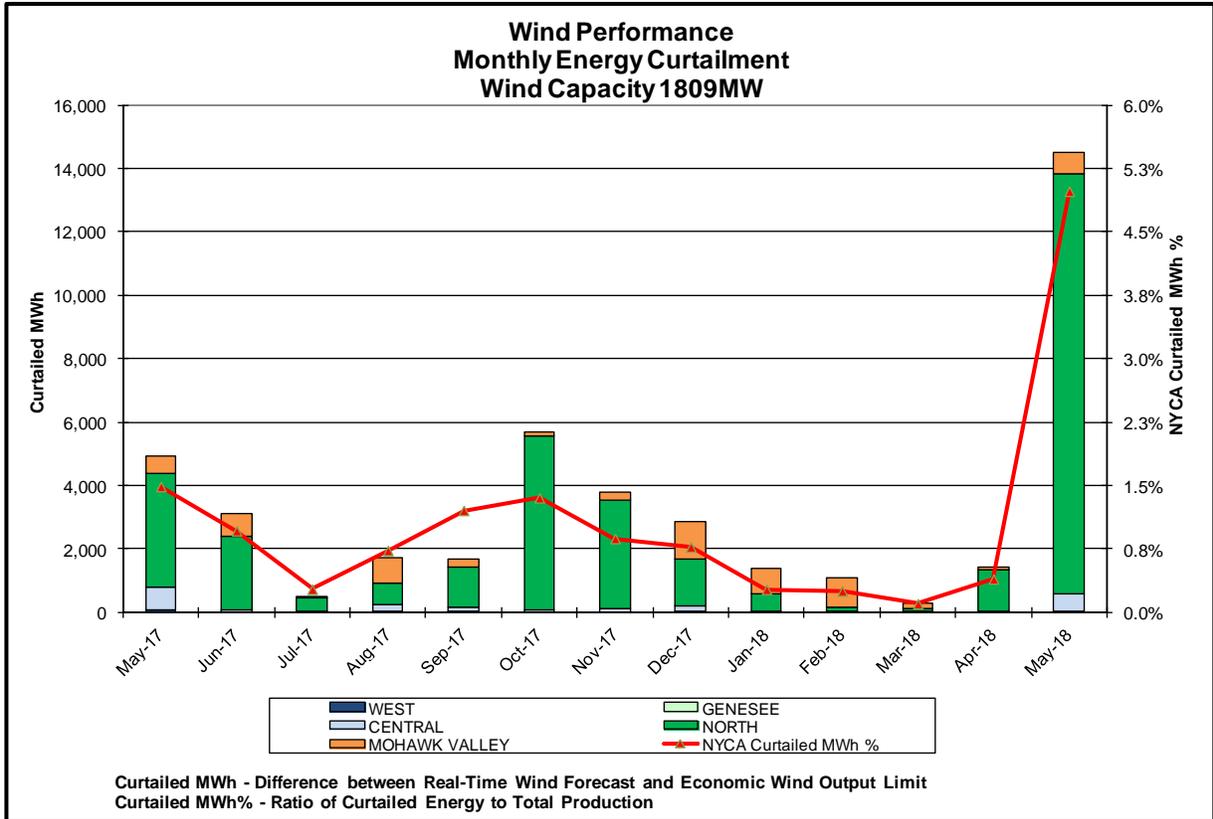


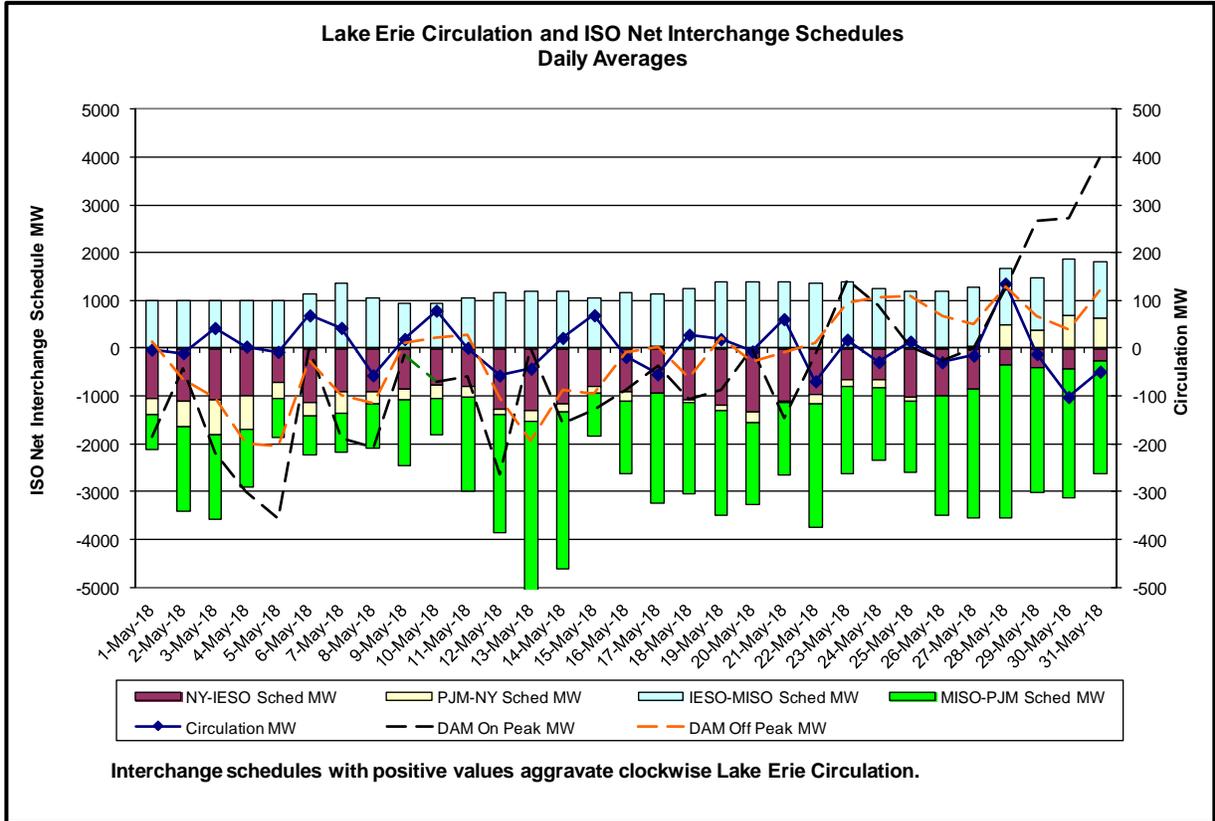
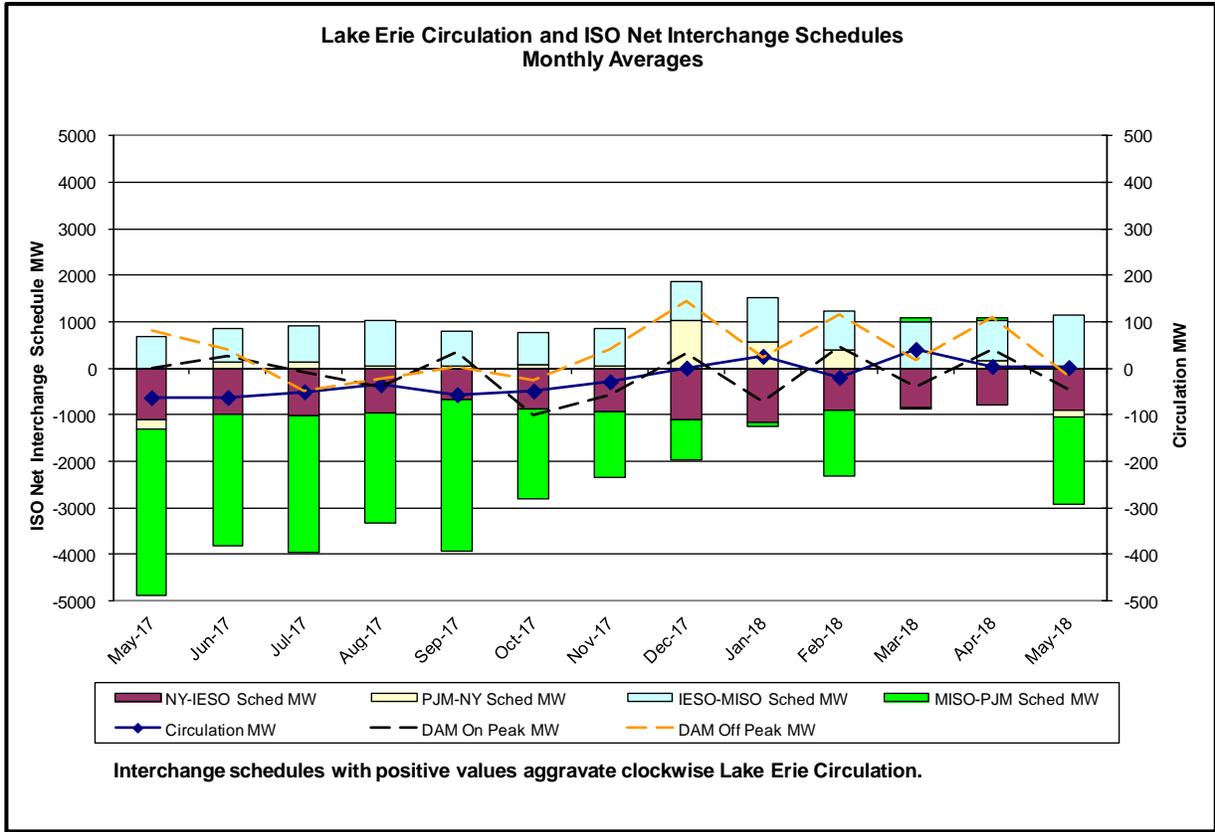
**Hourly Error MW** - Absolute value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.  
**Average Hourly Error %** - Average value of the ratio of hourly average error magnitude to hourly average actual load demand.  
**Day-Ahead Average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



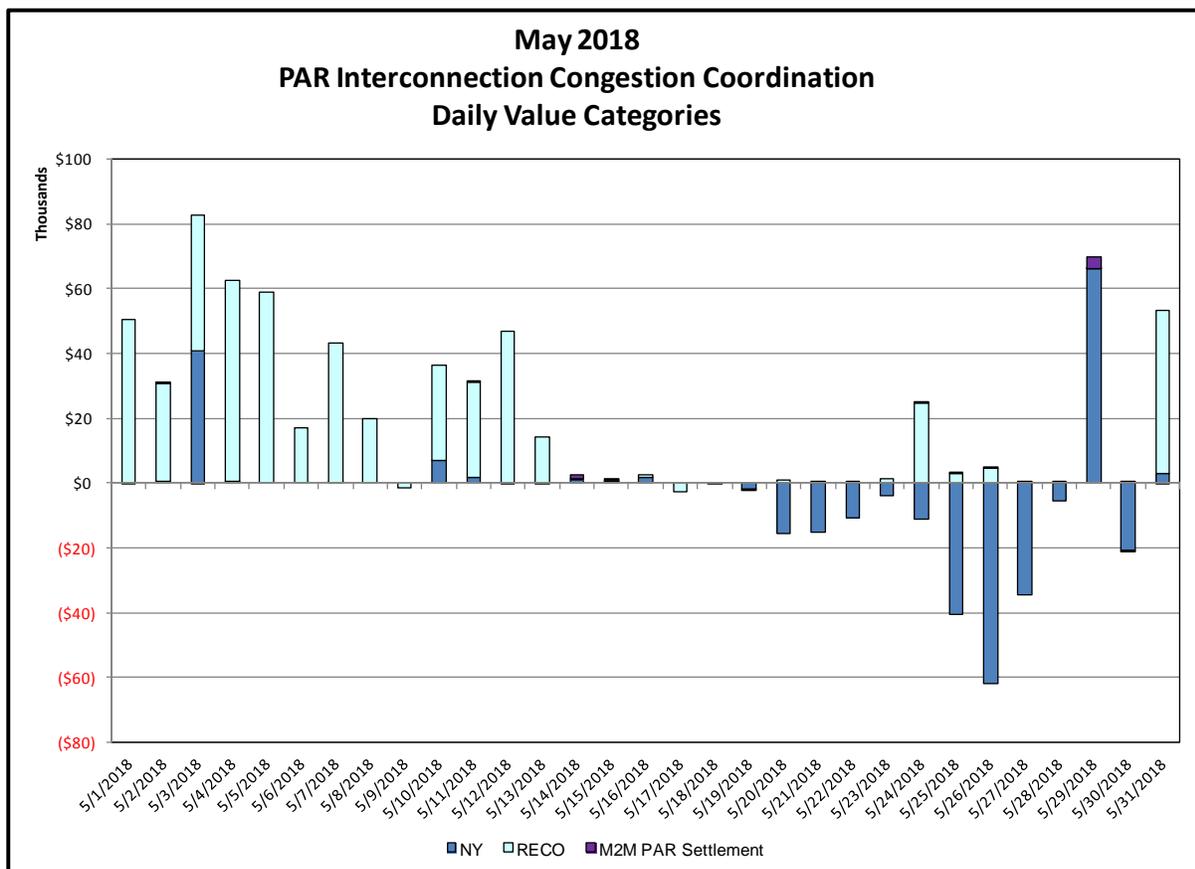
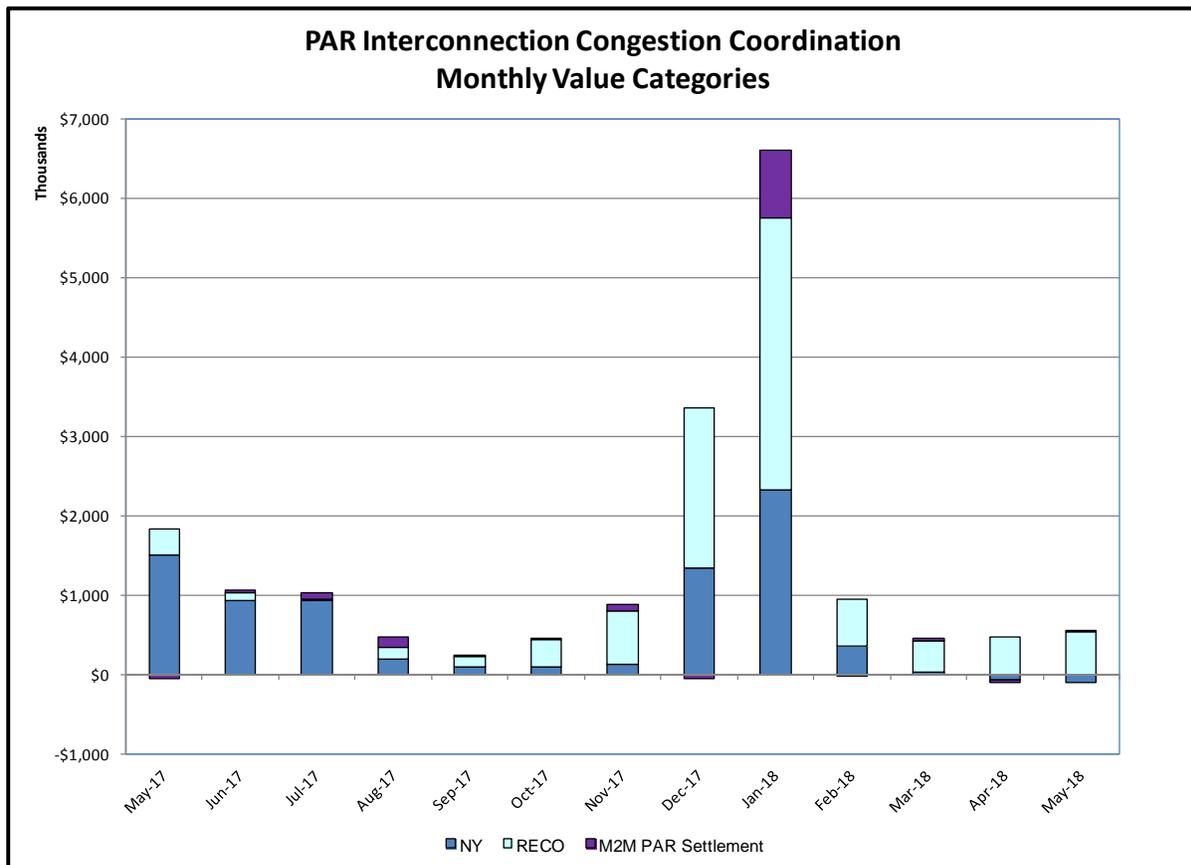






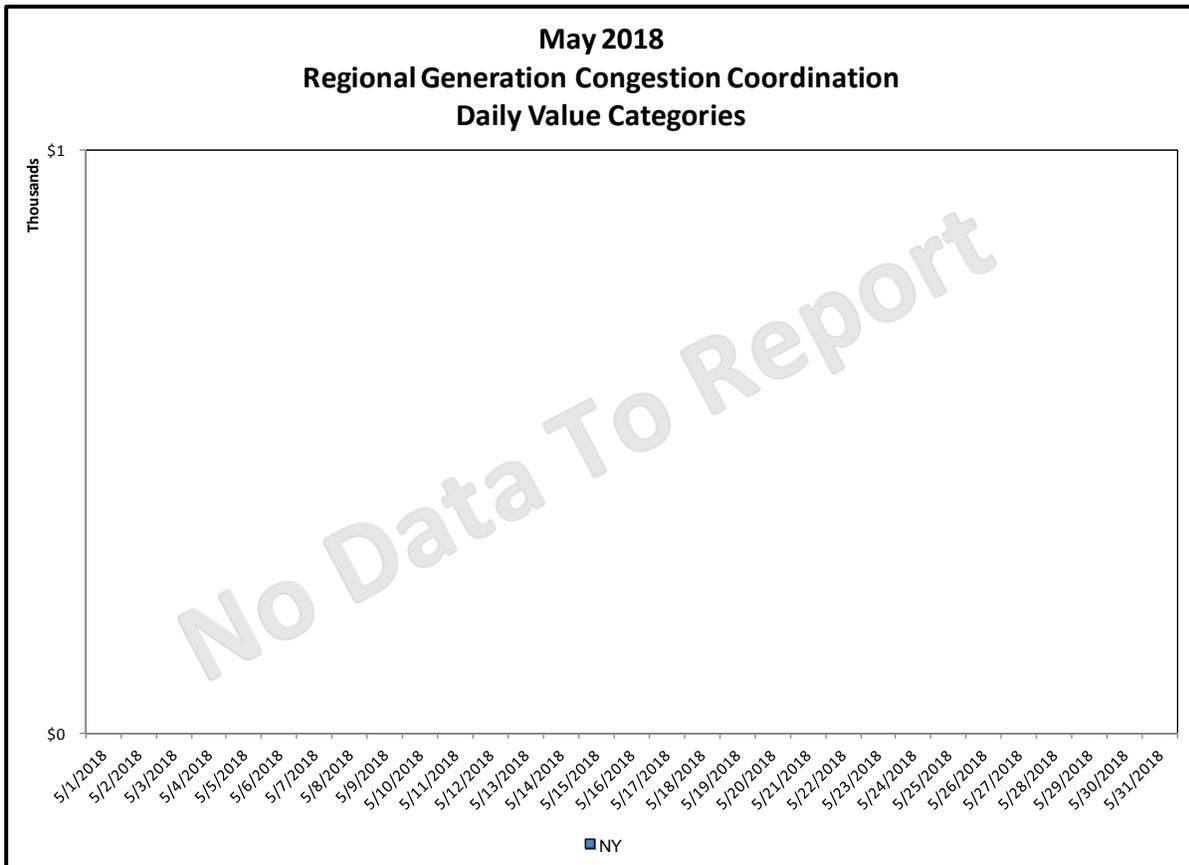
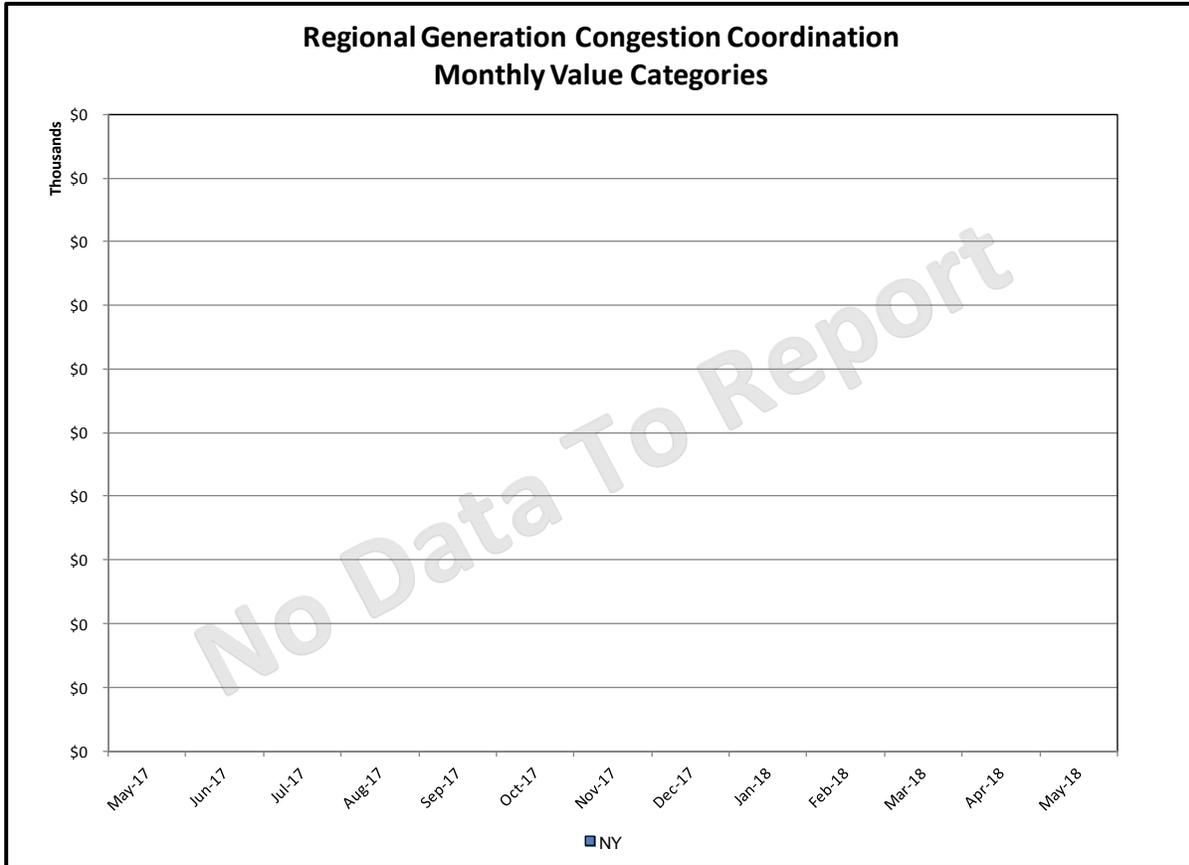


## Broader Regional Market Performance Metrics



**PAR Interconnection Congestion Coordination**

<b><u>Category</u></b>	<b><u>Description</u></b>
<b>NY</b>	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
<b>RECO</b>	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.
<b>M2M PAR Settlement</b>	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.



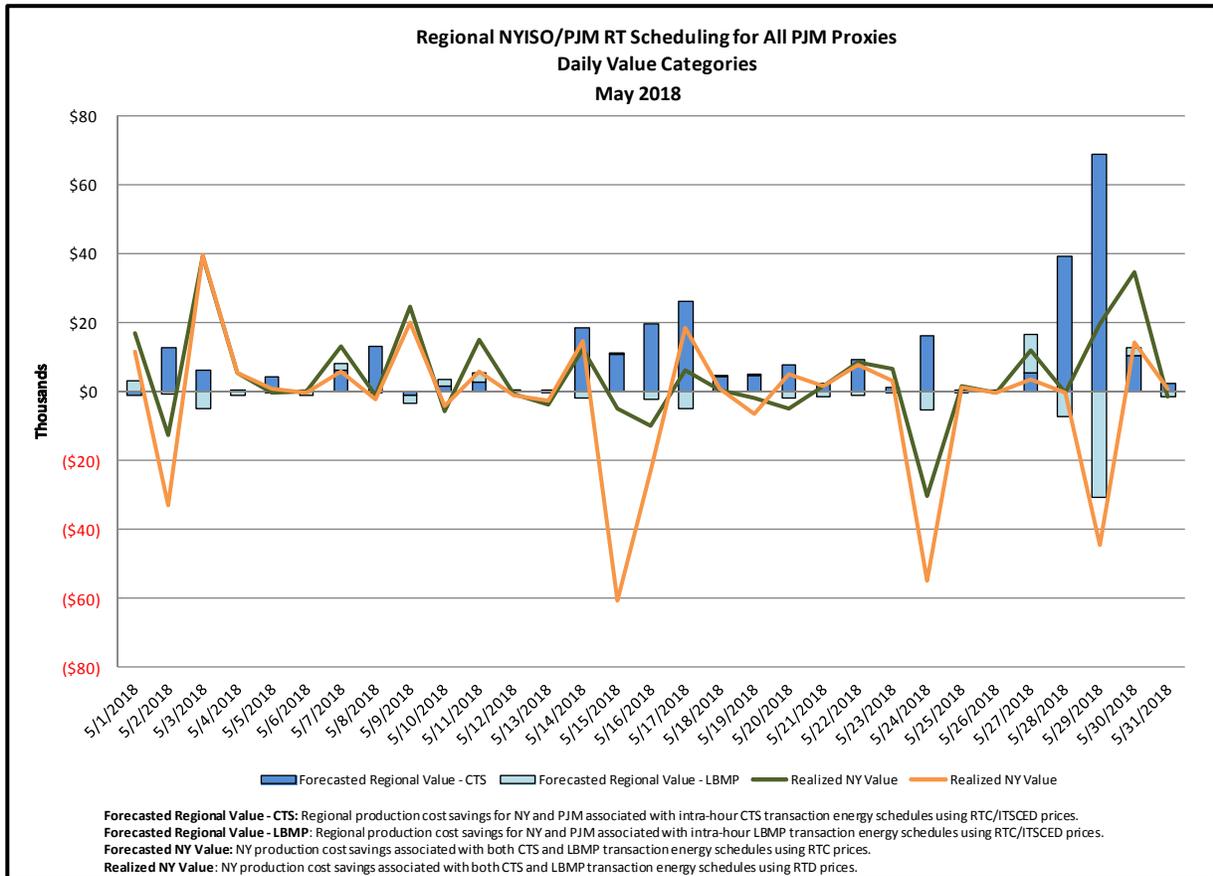
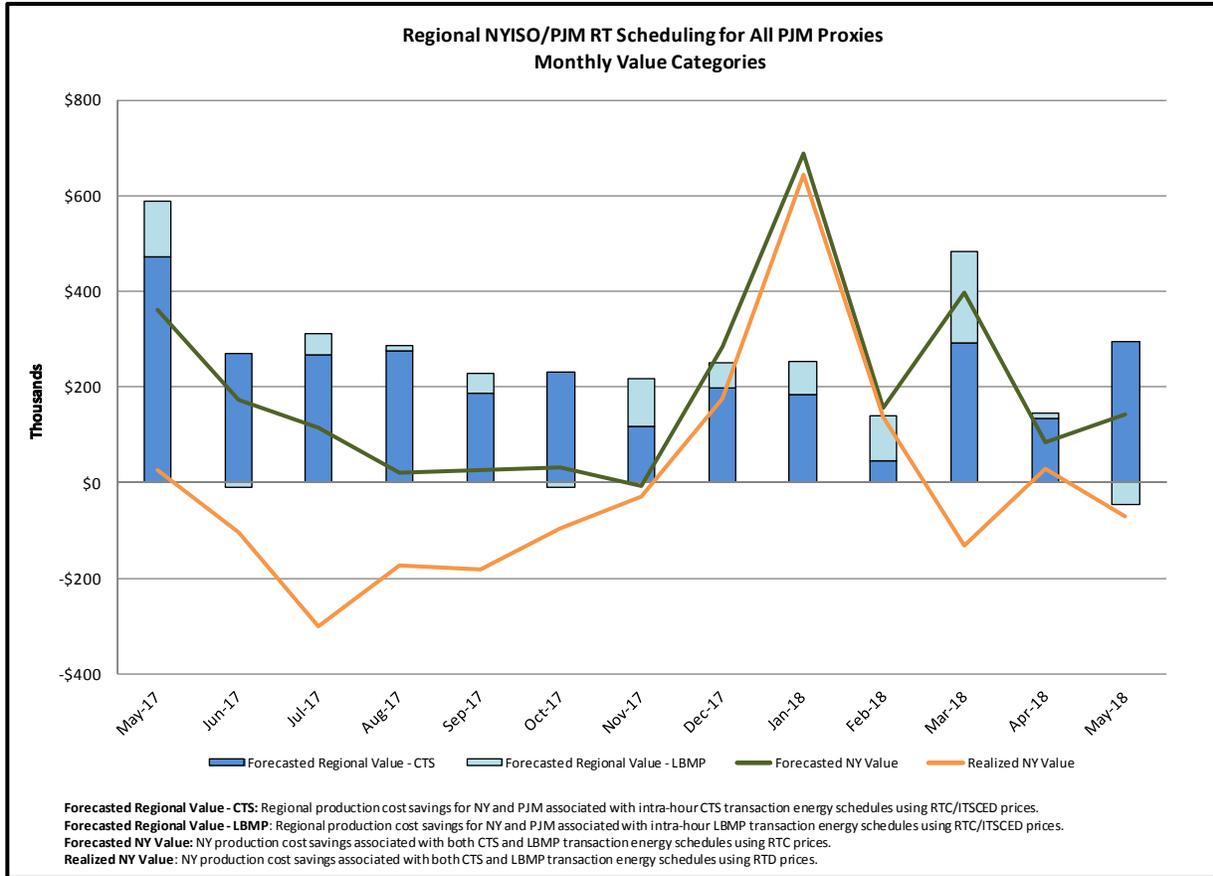
### Regional Generation Congestion Coordination

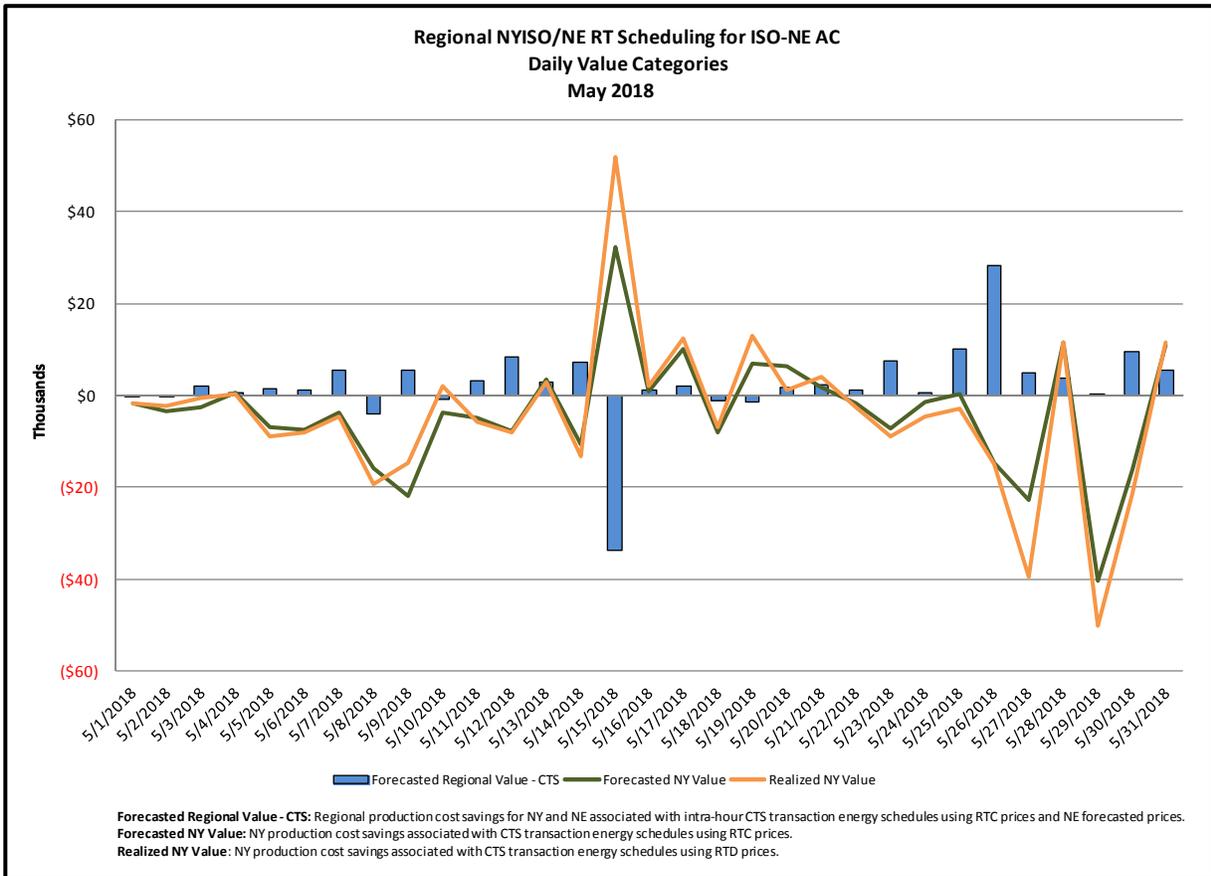
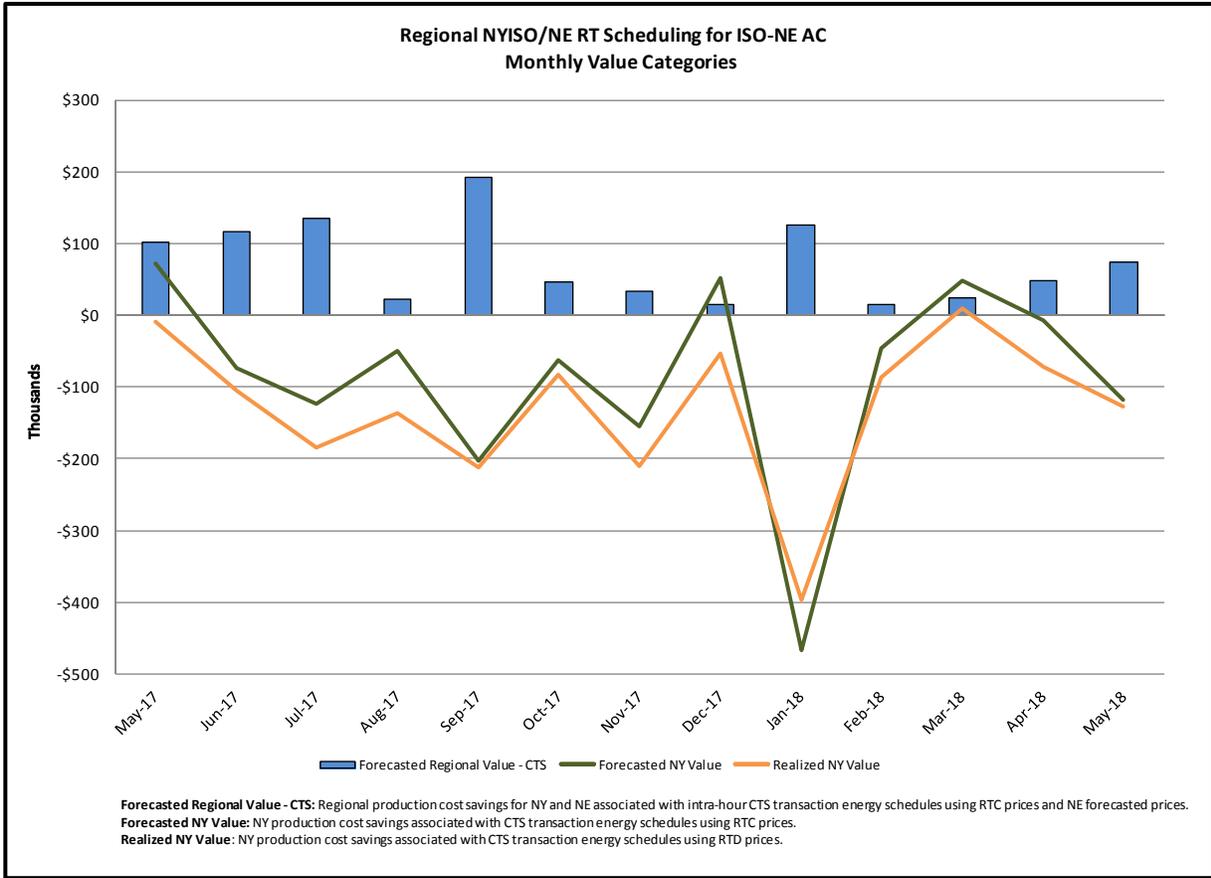
Category

NY

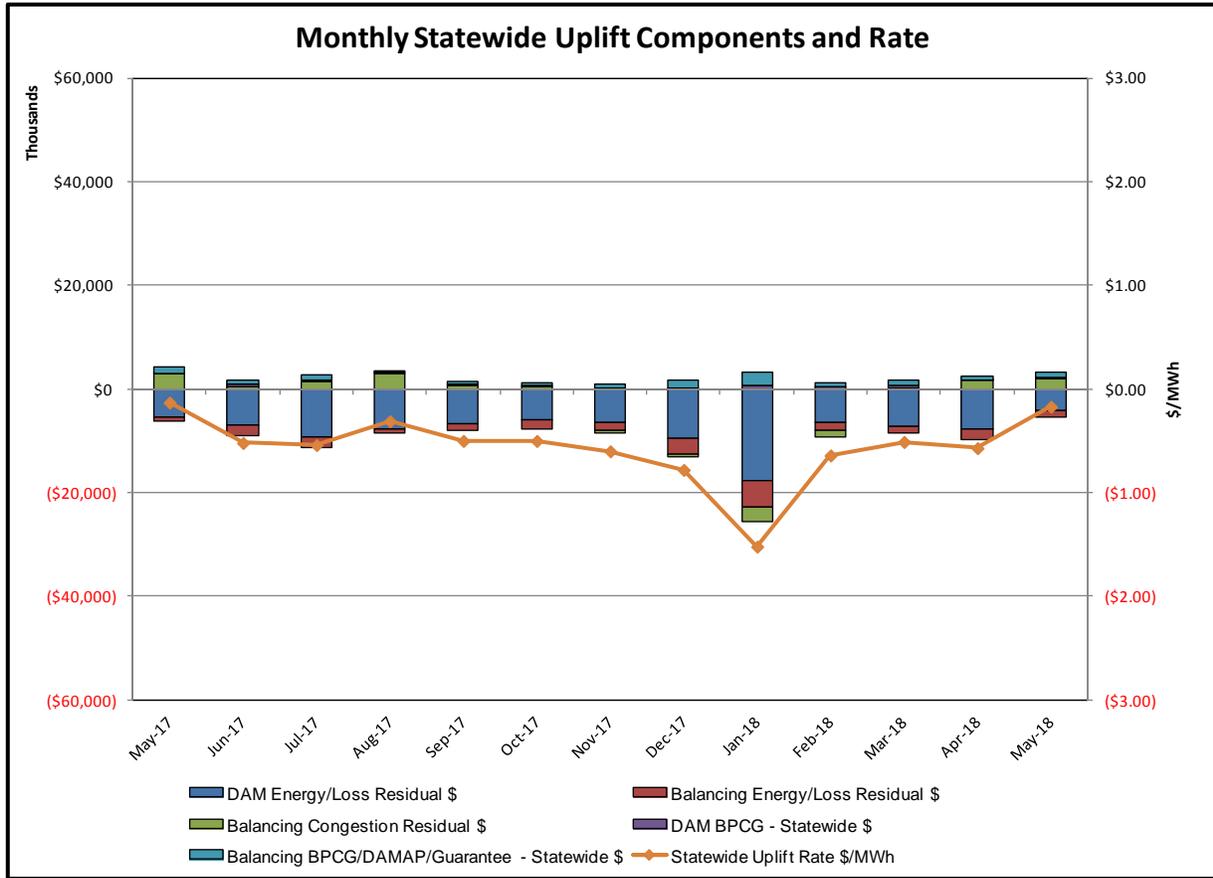
Description

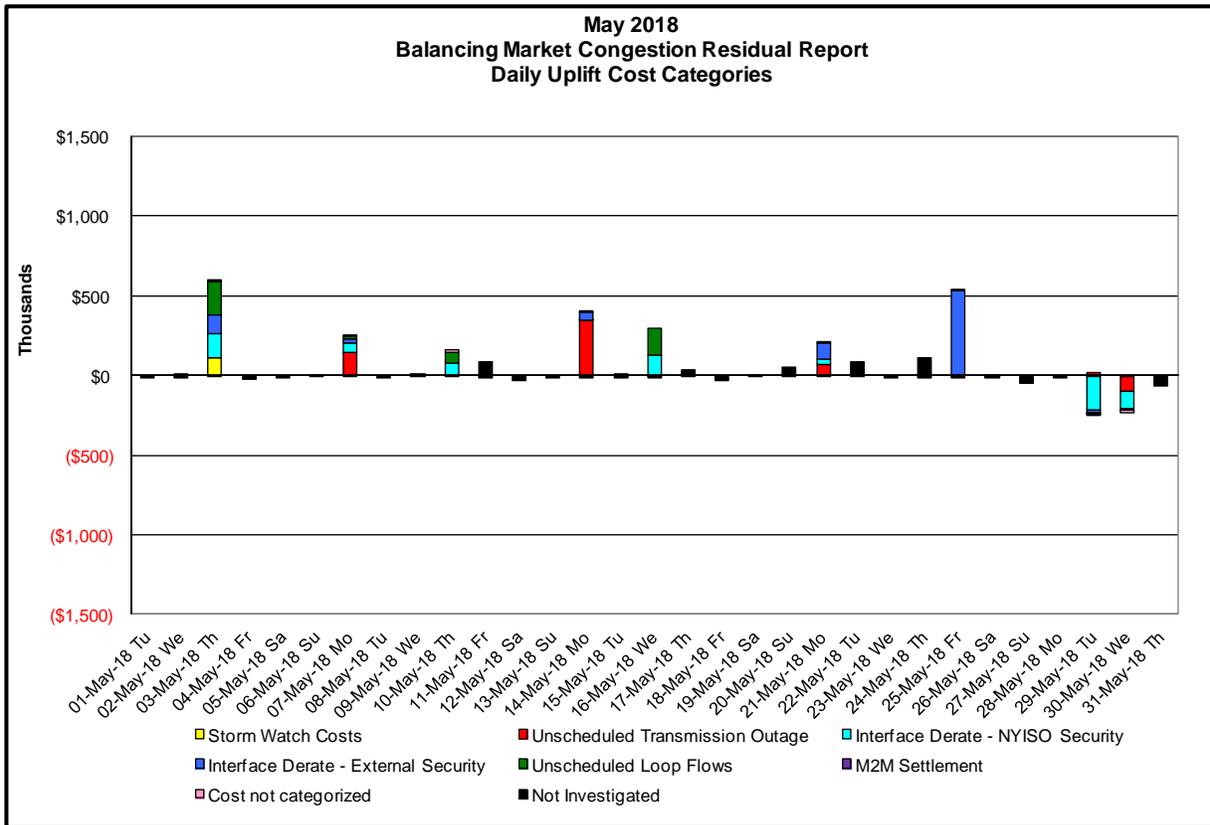
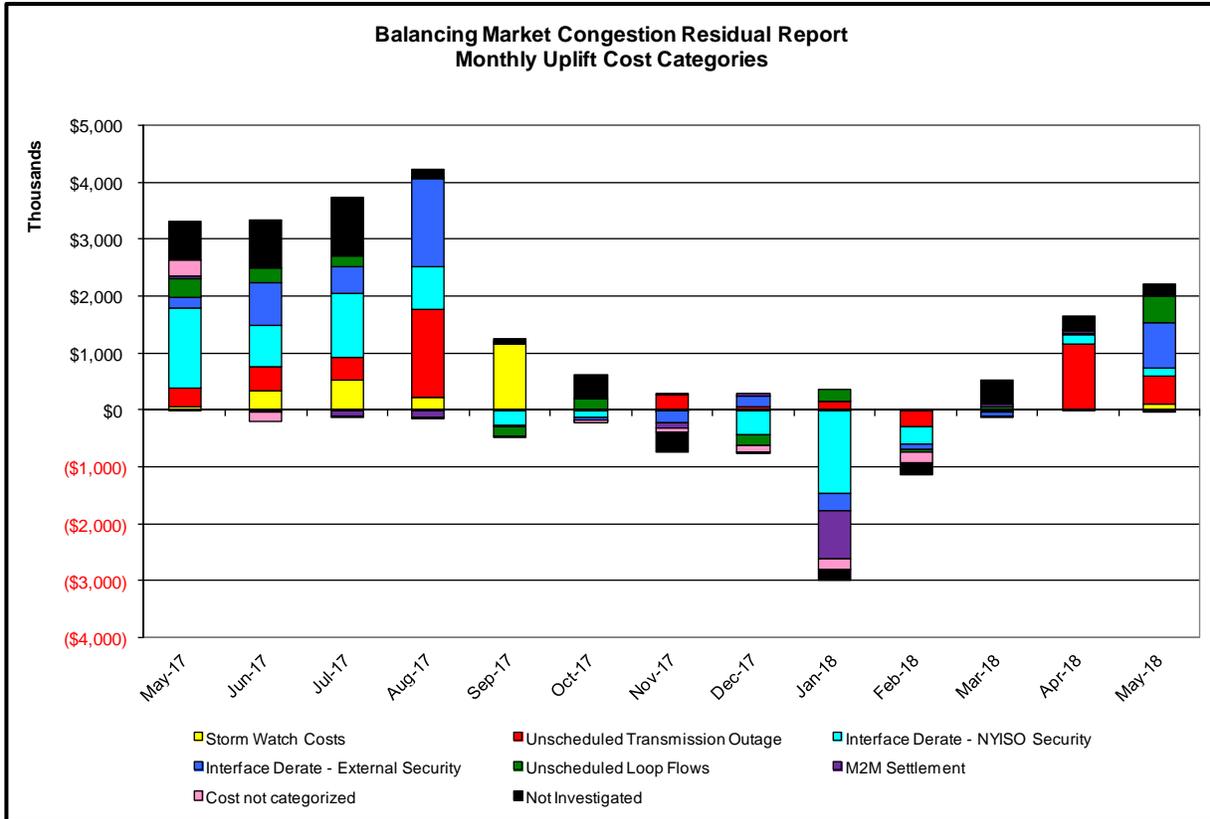
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization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





### Market Performance Metrics





Day's investigated in May: 3,7,10,14,16,21,25,29,30

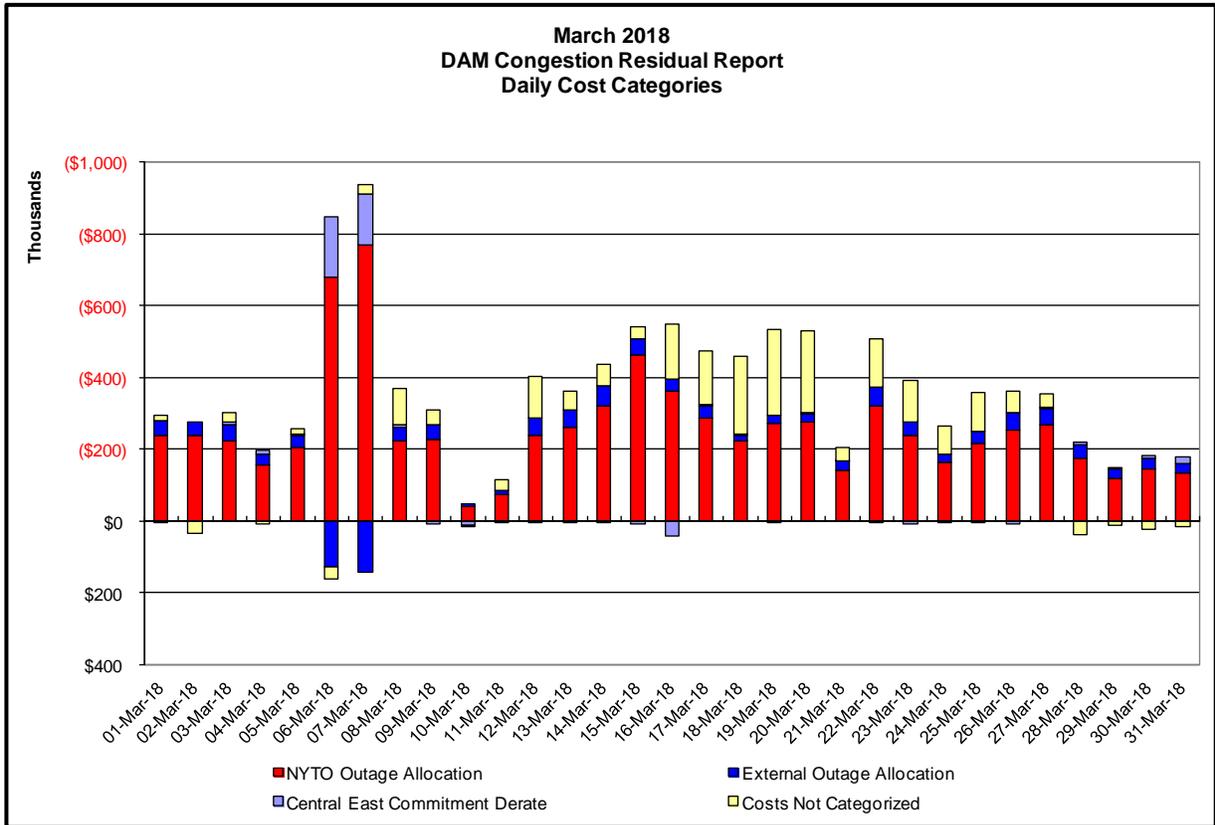
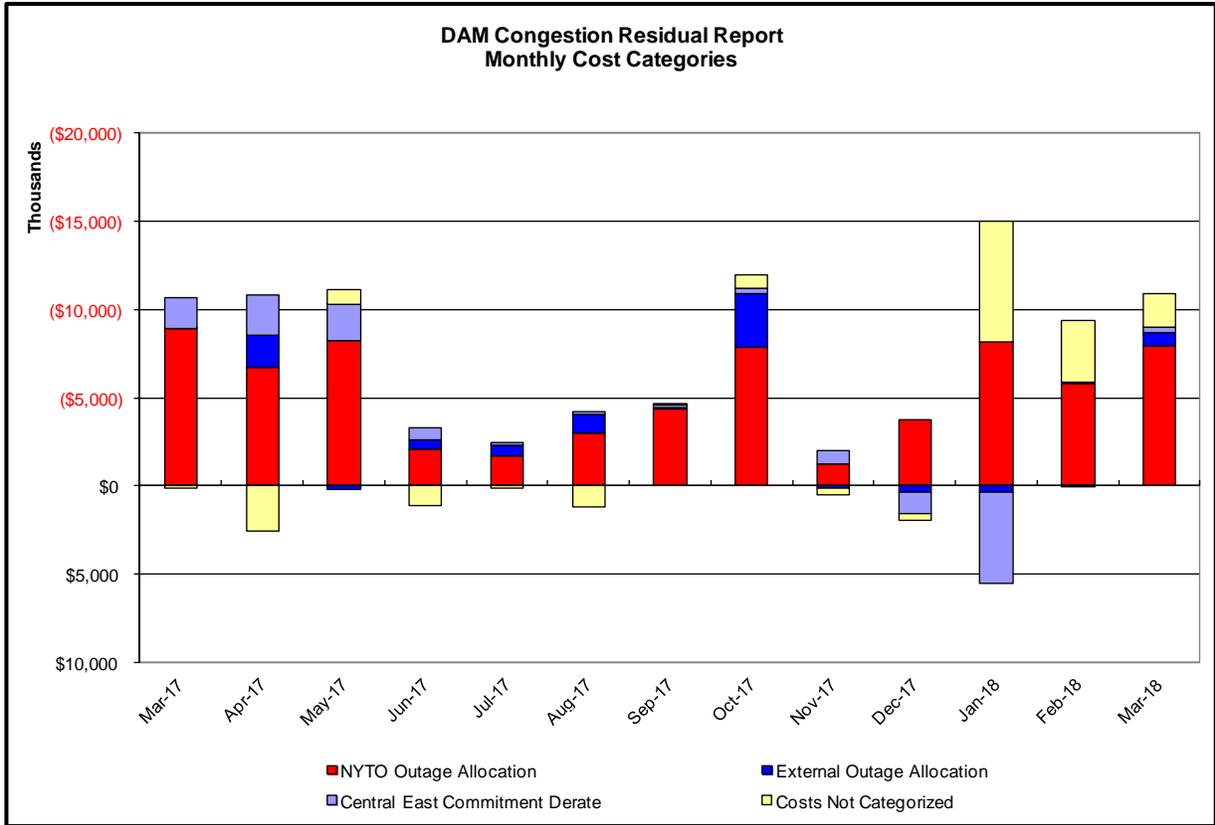
Event	Date (yyyymmdd)	Hours	Description
	5/3/2018	18,19	Thunder Storm Alert
	5/3/2018	10	NYCA DNI Ramp Limit
	5/3/2018	13,14,20,21,23	Derate Adirondack-Moses 230kV (#MA1) I/o SIN:MSU1&7040& HQ GN&LD PROXY
	5/3/2018	12-14,20,23	Derate E13THSTA-W49TH_ST 345kV (#M55) I/o \$SCB DUNW 7 W/ 3 OOS
	5/3/2018	10	Uprate E13THSTA-W49TH_ST 345kV (#M55) I/o \$SCB DUNW 7 W/ 3 OOS
	5/3/2018	10	Uprate Dunwoodie-Shore Rd 345kV (#Y50)
	5/3/2018	10	Uprate E179thSt - Hellgate 138kV (#15055)
	5/3/2018	10	Uprate E179thSt - Hellgate 138kV (#15053)
	5/3/2018	10	Uprate Gowanus-Greenwood 138kV (#42231) I/o \$SCB GOW 6 W/ GOETHALS 6 OOS
	5/3/2018	10	Uprate Greenwood-Vernon 138kV (#31231) I/o \$SCB GOW 6 W/ GOETHALS 6 OOS
	5/3/2018	10	Uprate Hudson Ave-Plymouth St 138kV (#32078)
	5/3/2018	18-20	HQ_CHAT-NY Scheduling Limit
	5/3/2018	10	PJM_AC-NY Scheduling Limit
	5/3/2018	11-14	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Packard 230kV, Niagara-Robinson Road 230kV
	5/3/2018	12	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer 230kV
	5/7/2018	5-23	Extended Outage Sprainbrook-East Garden City 345kV (#Y49)
	5/7/2018	5,9-17	Derate E13THSTA-W49TH_ST 345kV (#M55) I/o \$SCB DUNW 7 W/ 3 OOS
	5/7/2018	6,16	HQ_CHAT-NY Scheduling Limit
	5/7/2018	13	IESO_AC-NY Scheduling Limit
	5/7/2018	11,12,14,15	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Robinson Rd 230kV
	5/7/2018	12	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Dysinger East
	5/10/2018	16,19,23	Derate Adirondack-Moses 230kV (#MA1) I/o SIN:MSU1&7040& HQ GN&LD PROXY
	5/10/2018	16,19	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Packard 230kV
	5/14/2018	7-10	Extended Outage Massena-Marcy 765kV (MSU1)
	5/14/2018	12	NYCA DNI Ramp Limit
	5/14/2018	10	IESO_AC-NY Scheduling Limit
	5/14/2018	12	HQ_CHAT DNI Ramp Limit
	5/16/2018	15,16	Derate Marcy 765/345kV (#AT1) for I/o TWR:Moses MA1&MA2
	5/16/2018	14-16	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Packard 230kV
	5/21/2018	7,9,10,13-15	Forced Outage Gowanus-Greenwood 138kV (#43232)
	5/21/2018	10,13-18	Derate Adirondack-Moses I/o SIN:MSU1&7040& HQ GN&LD PROXY
	5/21/2018	13,14,16	Derate Edic-Marcy 345kV (#UE1-7) I/o TWR:12& UNS-18
	5/21/2018	9	IESO_AC-NY Scheduling Limit
	5/21/2018	13,14,16	NE_AC-NY Scheduling Limit
	5/21/2018	6,7,18	NE_AC Active DNI Ramp Limit
	5/25/2018	6	Extended outage Foxhills-Willowbrook 138kV (#29211)
	5/25/2018	13-17	PJM_AC-NY Scheduling Limit
	5/29/2018	10	Extended outage Farragut-Hudson Avenue 138kV (#32711)
	5/29/2018	10	Forced outage Linden-Goethals 345kV (#A2253)
	5/29/2018	12,13	Uprate Brownsfalls-Taylorville 115kV (#3)
	5/29/2018	16	Uprate Brownsfalls-Taylorville 115kV (#3) I/o SCB:MARCY(3108): UE1-7& VU-19
	5/29/2018	12,13	Uprate Brownsfalls-Taylorville 115kV (#3) I/o SIN:MSU1&7040& HQ GN&LD PROXY
	5/29/2018	17	NE_AC-NY Scheduling Limit
	5/29/2018	17	NE_AC Active DNI Ramp Limit
	5/29/2018	16	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer 230kV
	5/30/2018	15	Early return to service Niagara-Packard 115kV (#193)
	5/30/2018	15	Uprate Brownsfalls-Taylorville 115kV (#3)
	5/30/2018	15	Uprate Brownsfalls-Taylorville 115kV (#3) I/o SCB:MARCY(3108): UE1-7& VU-19
	5/30/2018	11	Uprate Brownsfalls-Taylorville 115kV (#3) I/o SIN:MSU1&7040& HQ GN&LD PROXY
	5/30/2018	0	NYCA DNI Ramp Limit
	5/30/2018	0	NE_AC Active DNI Ramp Limit
	5/30/2018	11	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Packard 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
Unscheduled Transmission Outage	Market-wide	Reduction in DAM to RTM transfers related to unscheduled transmission outage	Forced Line Outage, Unit AVR Outages
Interface Derate - NYISO Security	Market-wide	Reduction in DAM to RTM transfers not related to transmission outage	Interface Derates due to RTM voltages
Interface Derate - External Security	Market-wide	Reduction 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	

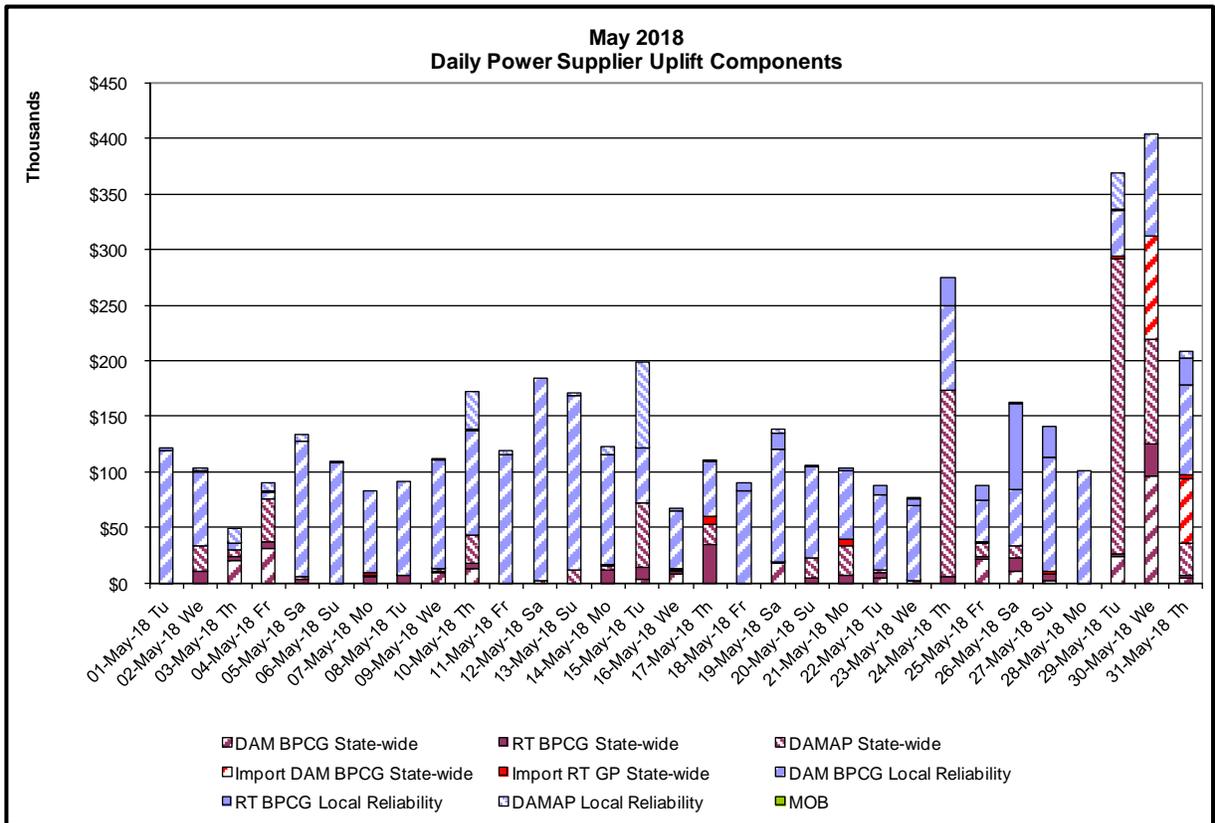
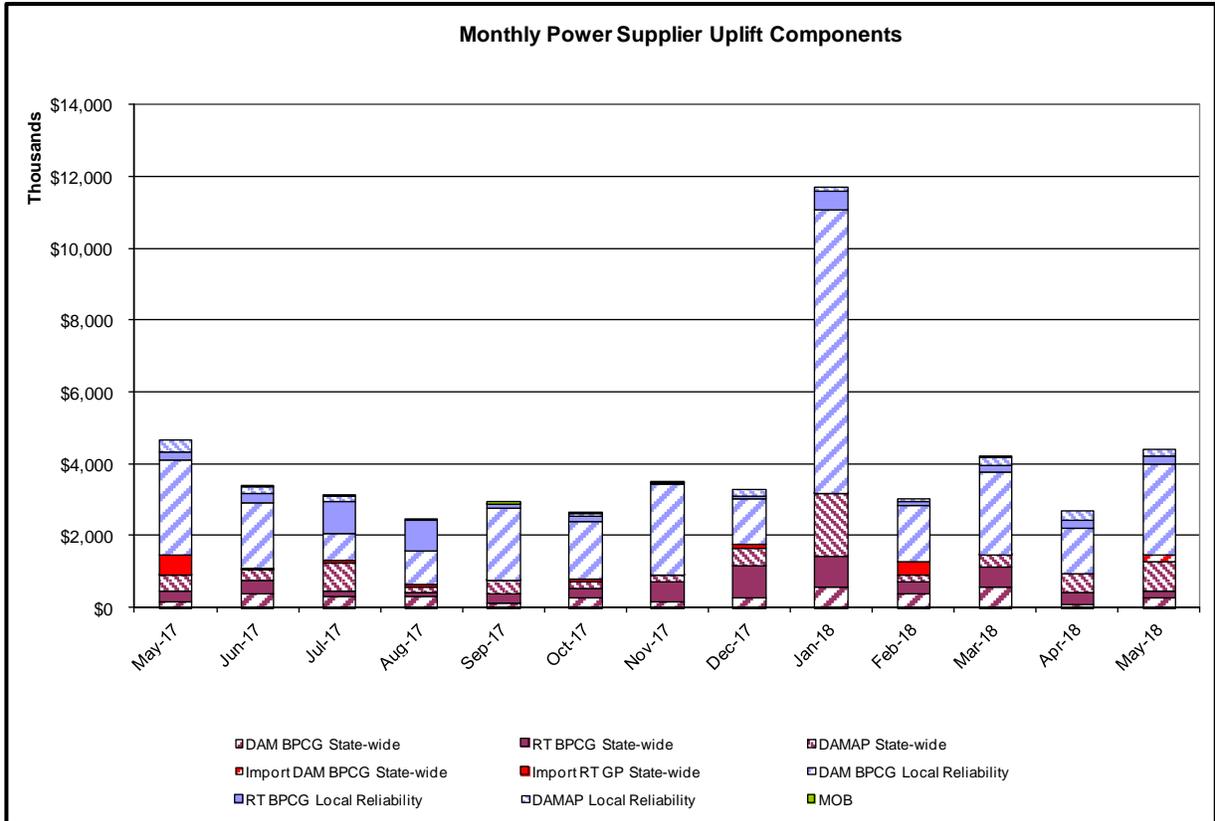
**Monthly Balancing Market Congestion Report Assumptions/Notes**

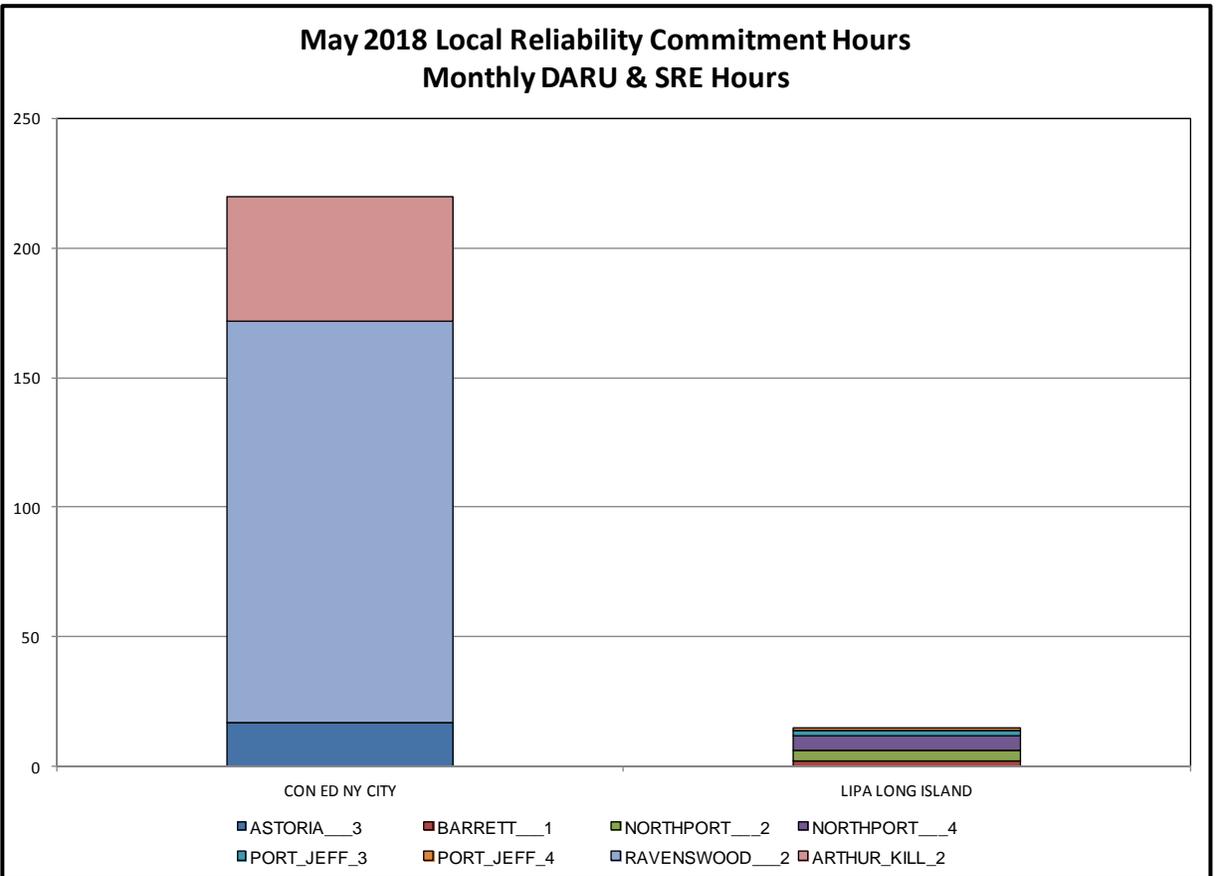
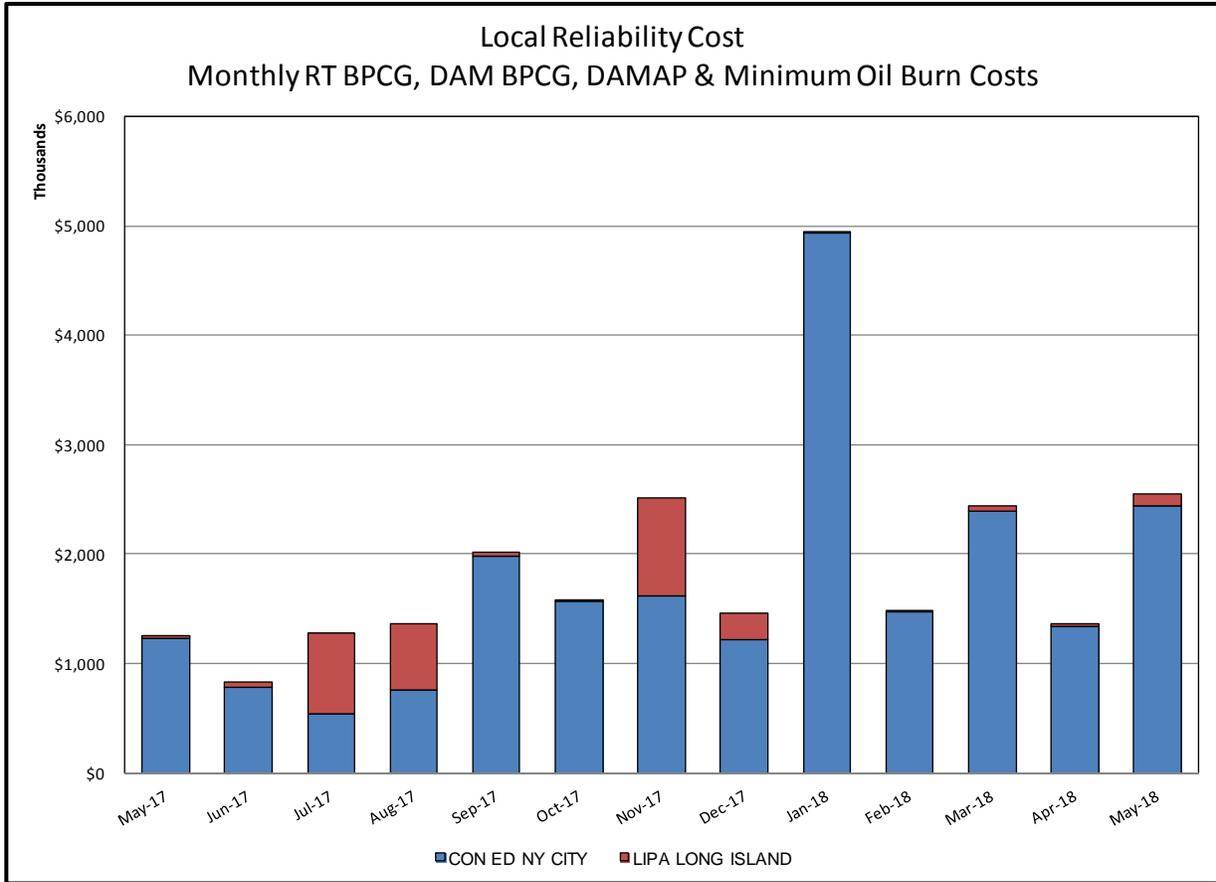
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

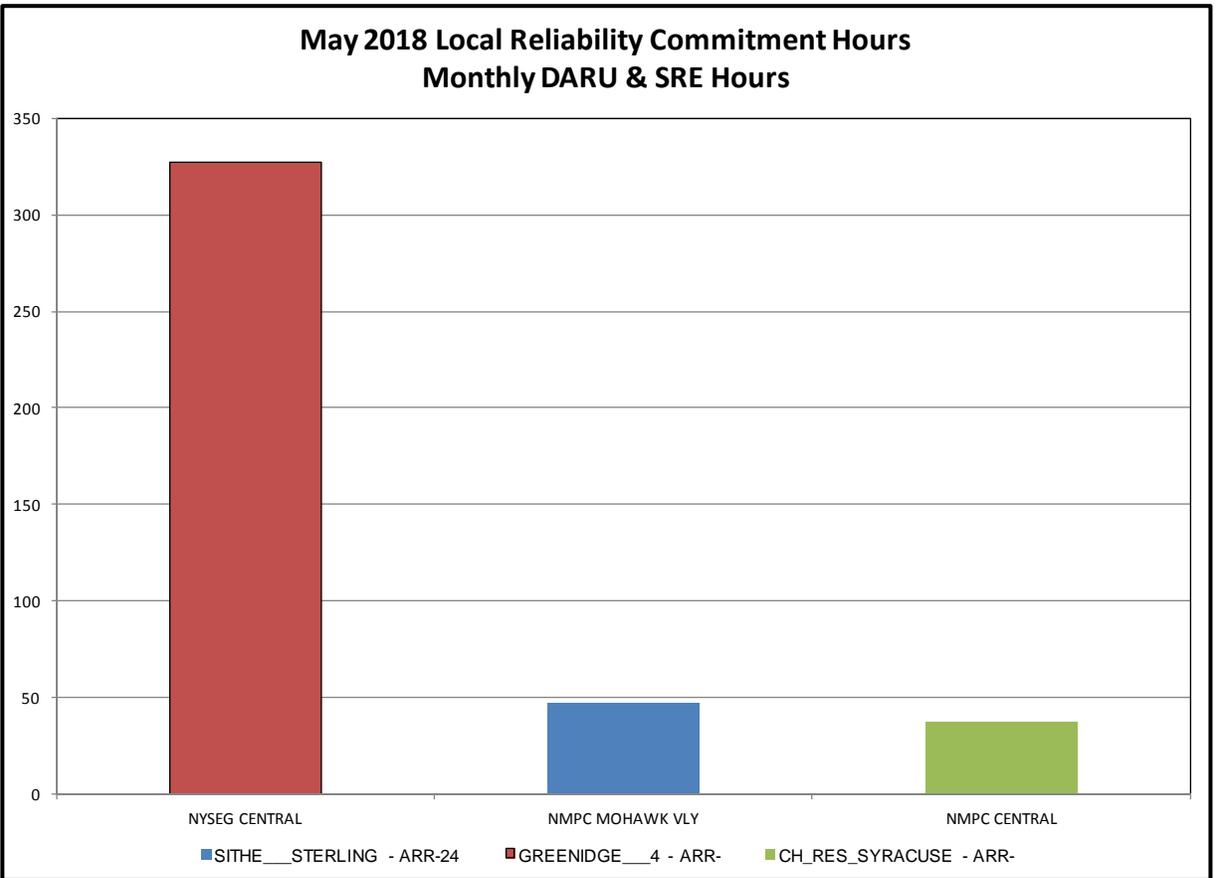
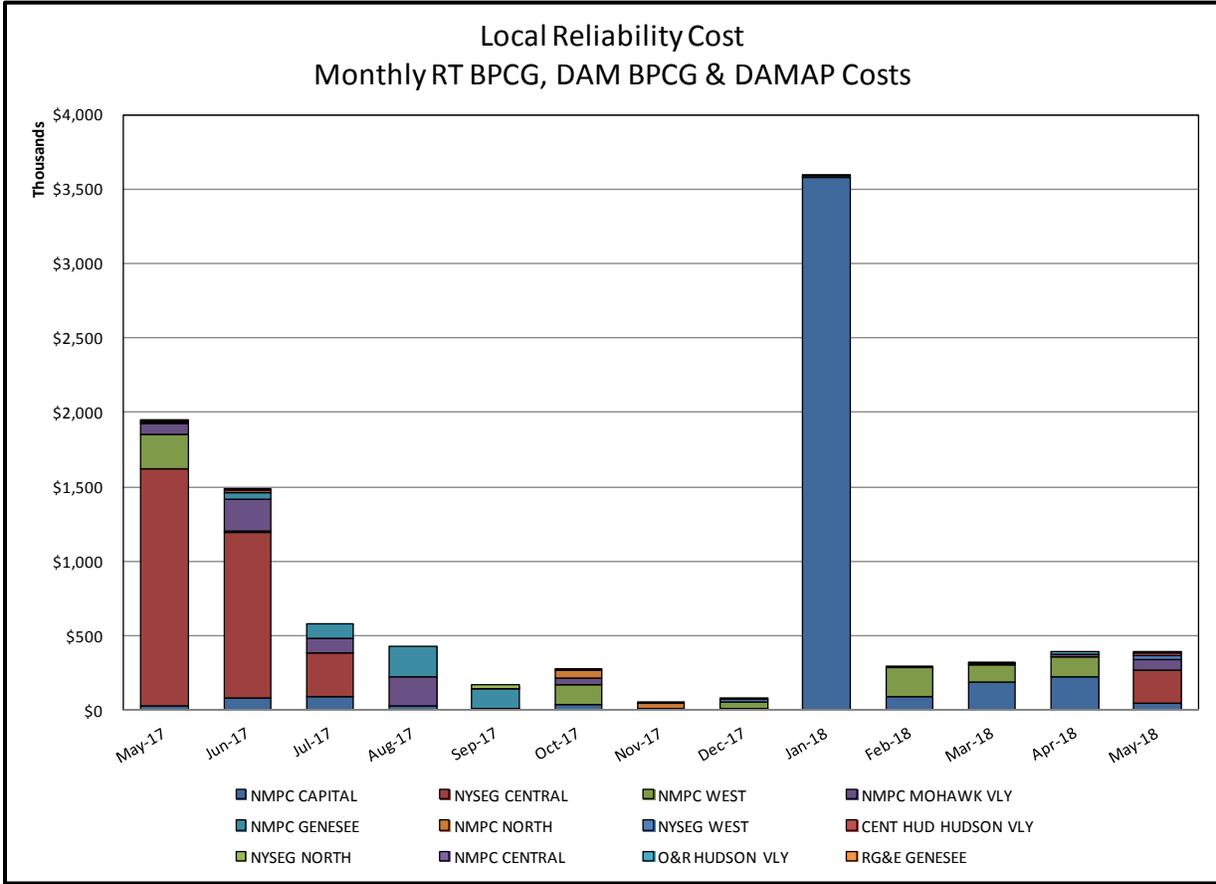


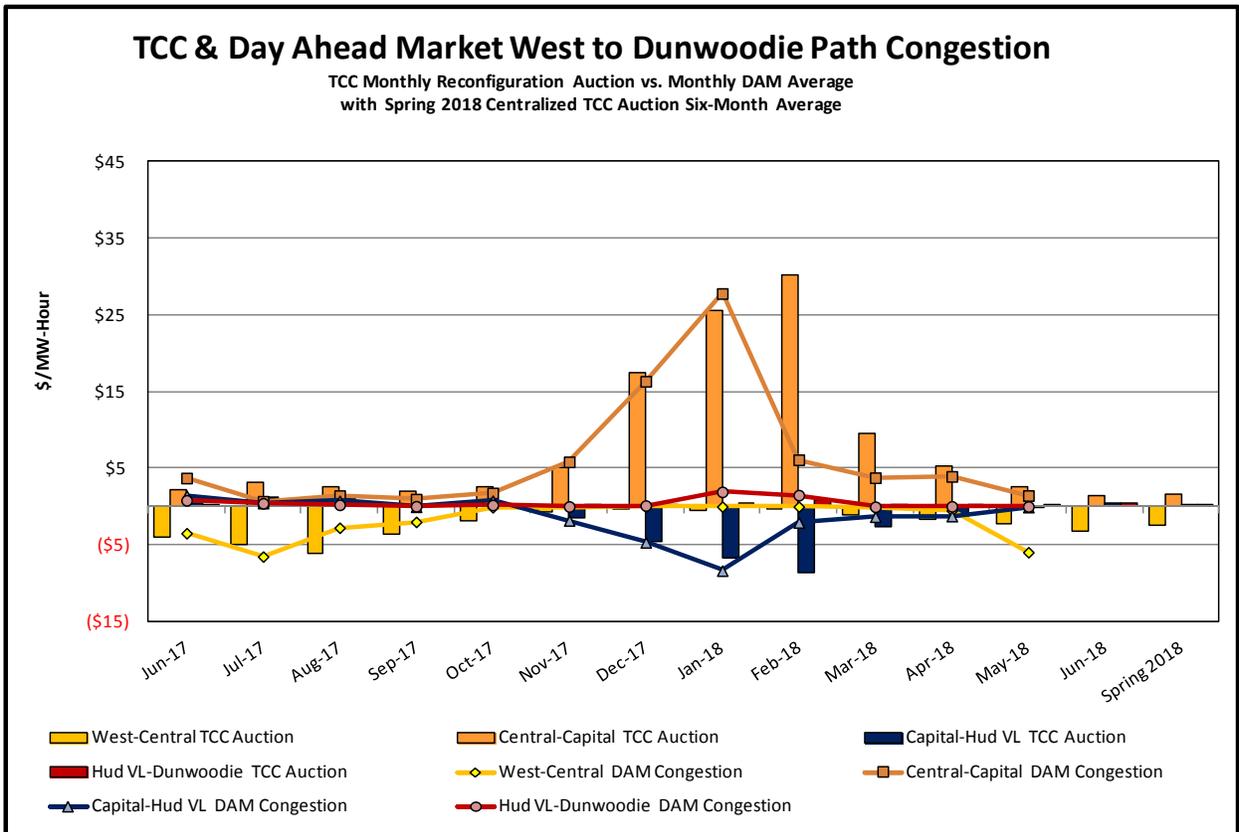
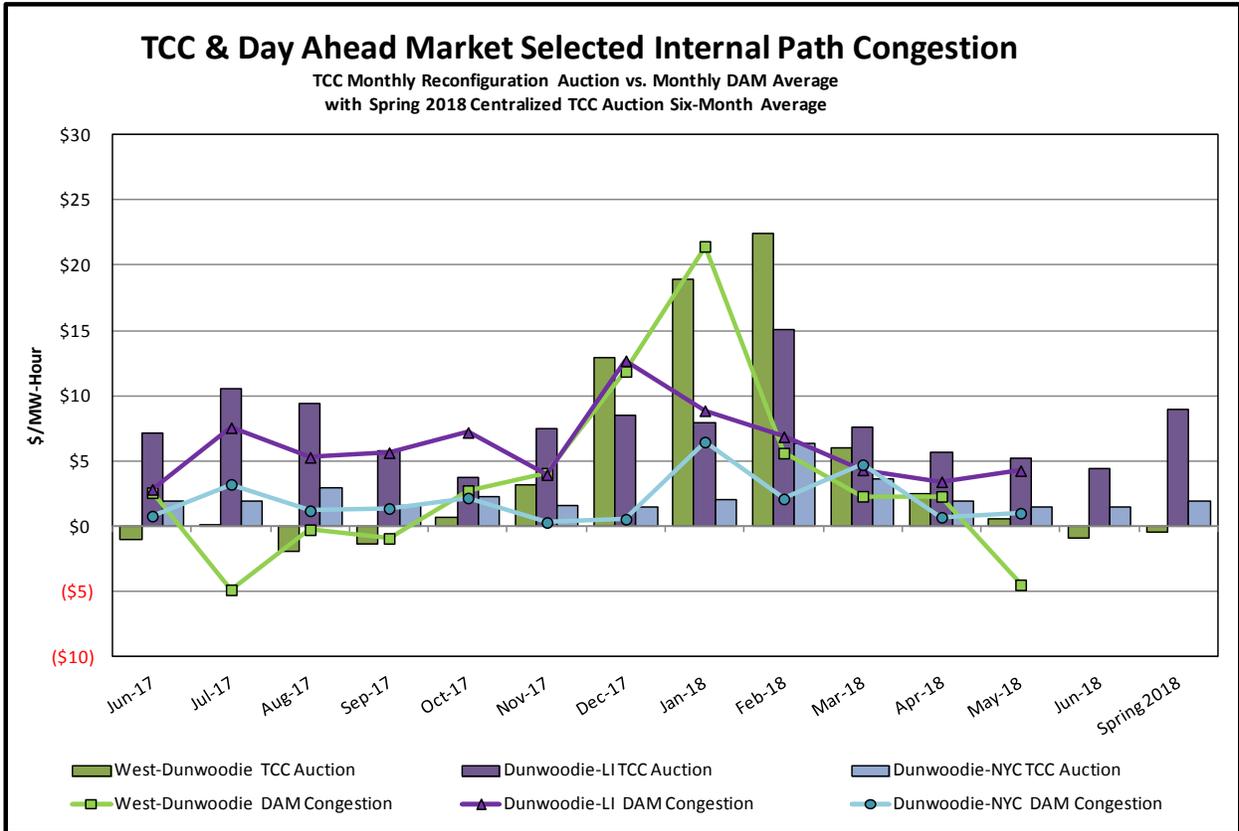
**Day-Ahead Market Congestion Residual Categories**

<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.	



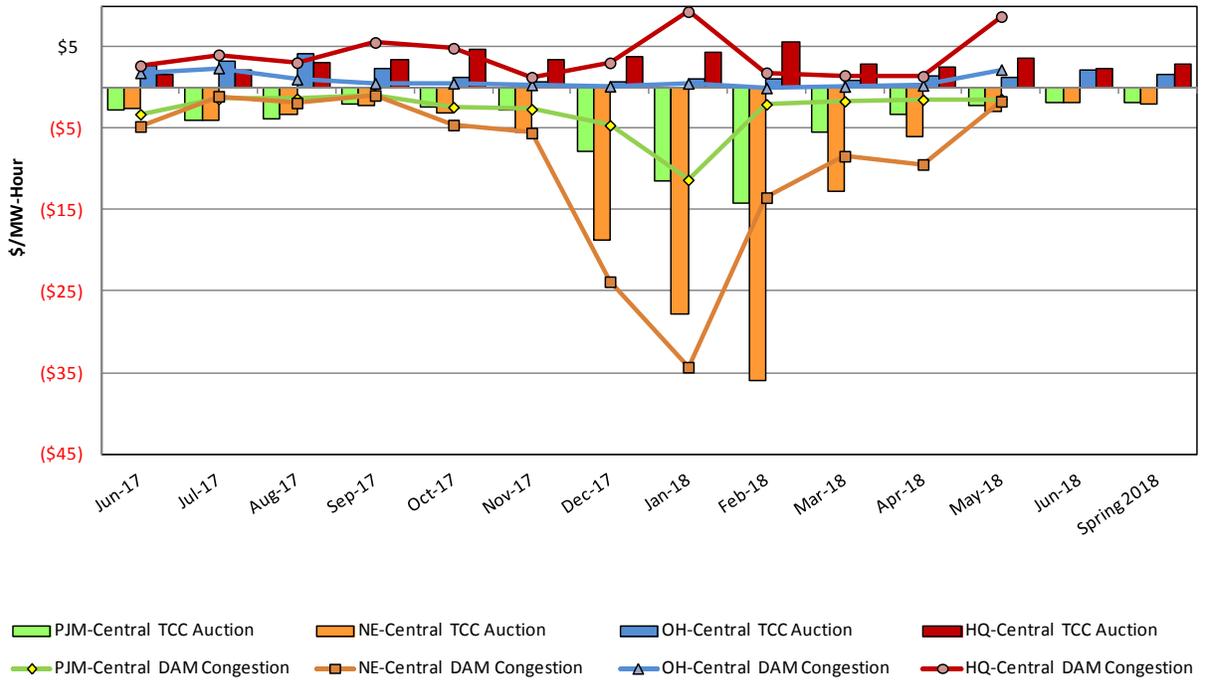


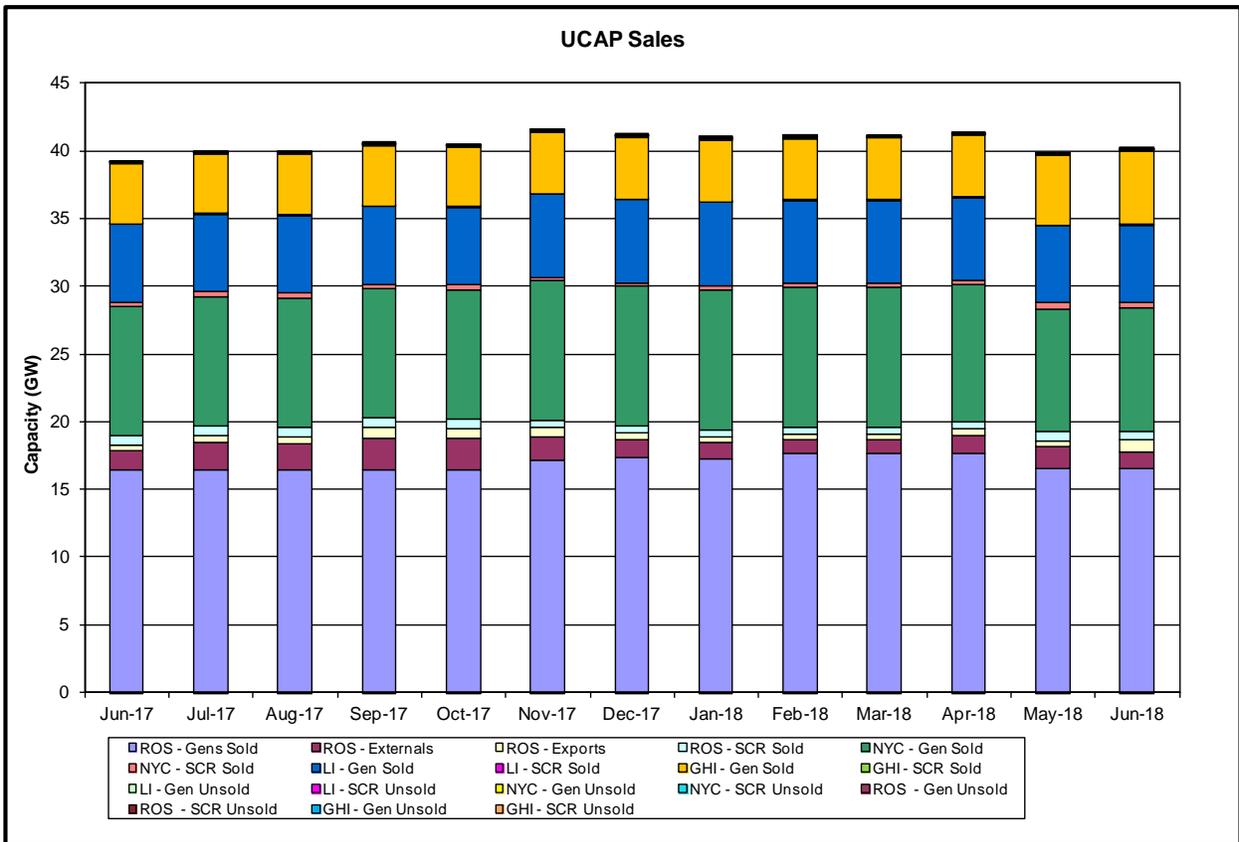
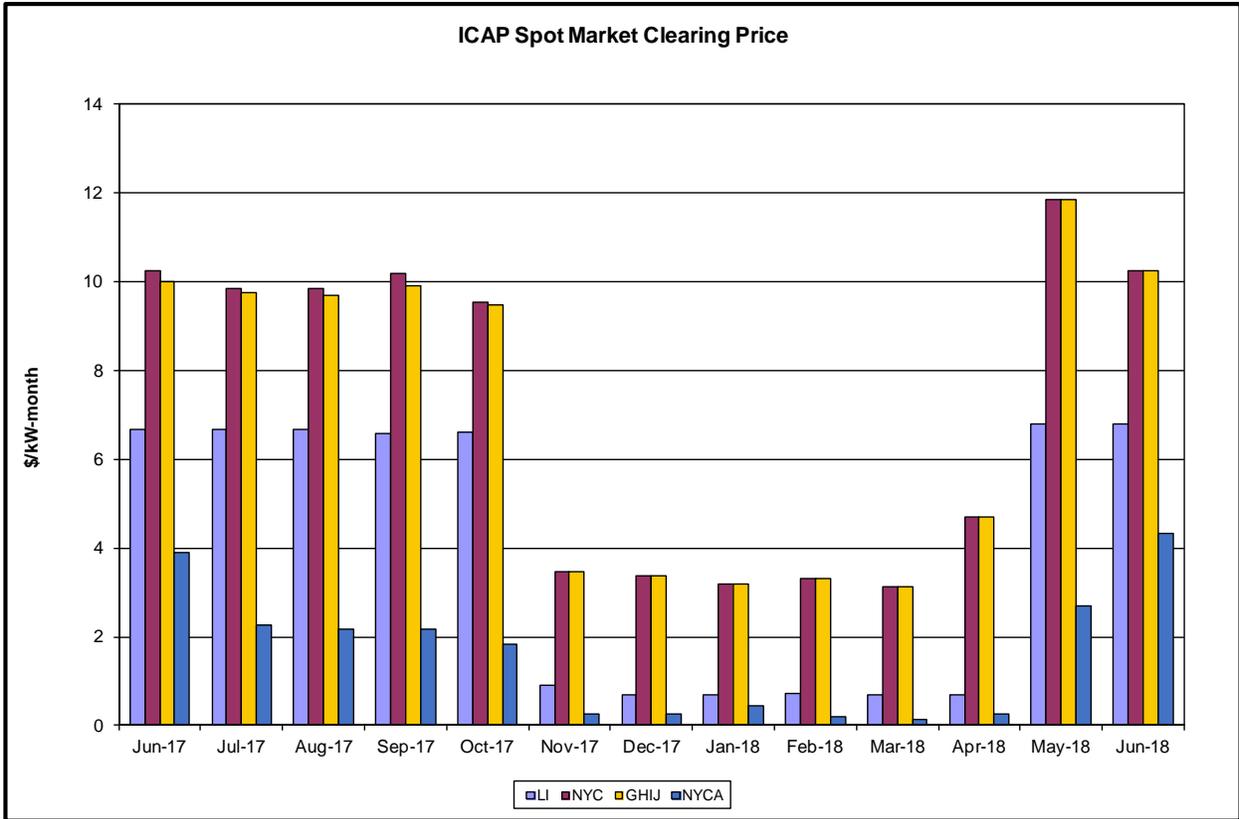




### TCC & Day Ahead Market Selected External Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Spring 2018 Centralized TCC Auction Six-Month Average



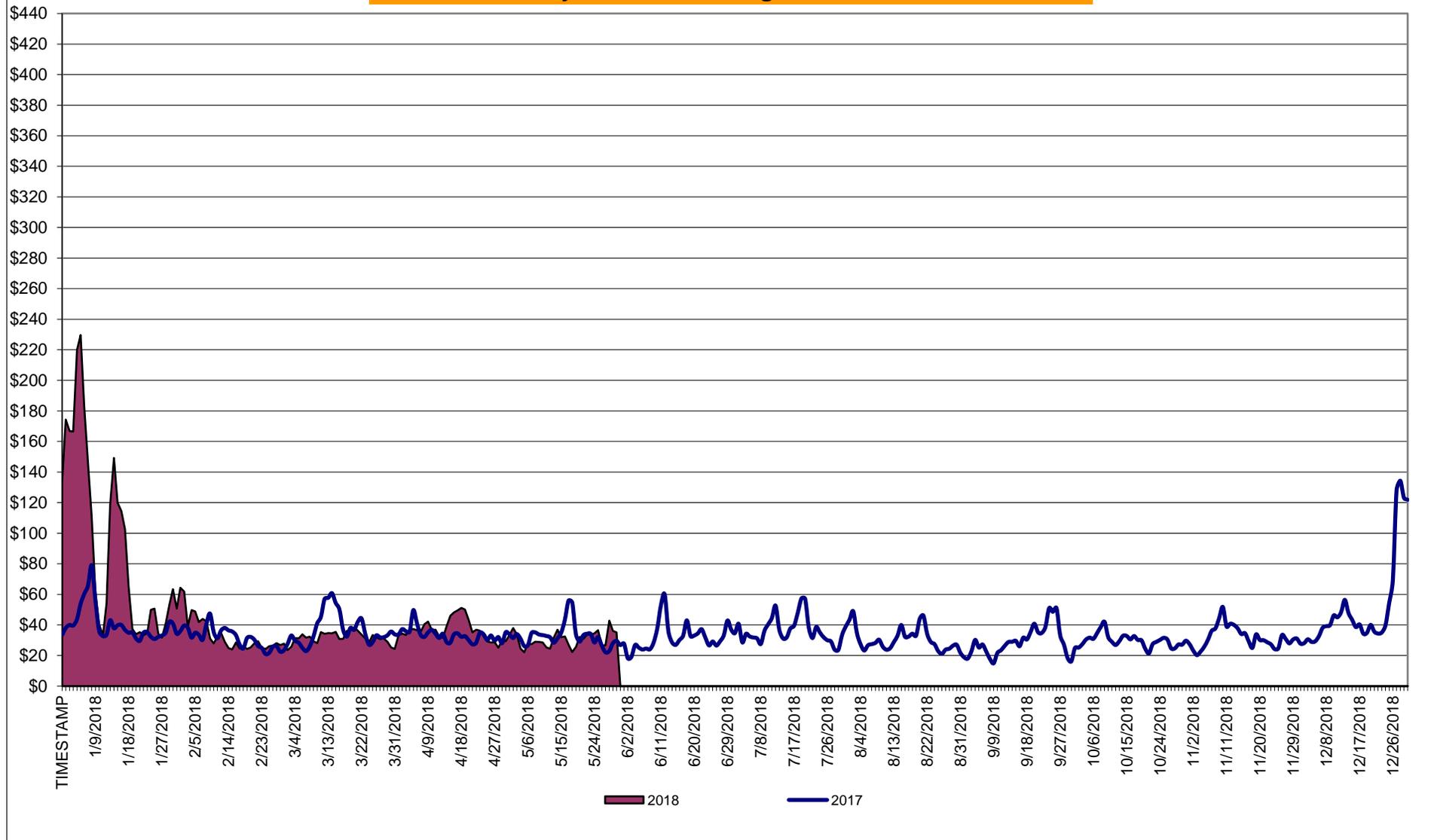


# Market Performance Highlights

## May 2018

- LBMP for May is \$28.78/MWh; lower than \$35.00/MWh in April 2018 and \$31.74/MWh in May 2017.
  - Day Ahead and Real Time Load Weighted LBMPs are lower compared to April.
- May 2018 average year-to-date monthly cost of \$50.20/MWh is a 37% increase from \$36.54/MWh in May 2017.
- Average daily sendout is 397 GWh/day in May; higher than 390 GWh/day in April 2018 and higher than 383 GWh/day in May 2017.
- Natural gas prices were lower and distillate prices were higher compared to the previous month.
  - Natural Gas (Transco Z6 NY) was \$2.55/MMBtu, down from \$2.79/MMBtu in April.
  - Natural gas prices are down 8.8% year-over-year.
  - Jet Kerosene Gulf Coast was \$15.96/MMBtu, up from \$14.94/MMBtu in April.
  - Ultra Low Sulfur No.2 Diesel NY Harbor was \$15.92/MMBtu, up from \$14.85/MMBtu in April.
  - Distillate prices are up 49.7% year-over-year.
- Uplift per MWh is higher compared to the previous month.
  - Uplift (not including NYISO cost of operations) is \$0.05/MWh; higher than (\$0.45)/MWh in April.
    - Local Reliability Share is \$0.22/MWh, higher than \$0.12/MWh in April.
    - Statewide Share is (\$0.17)/MWh, higher than (\$0.57)/MWh in April.
  - TSA \$ per NYC MWh is \$0.08/MWh.
  - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are higher than April.

**Daily NYISO Average Cost/MWh (Energy & Ancillary Services)\***  
**2017 Annual Average \$36.56/MWh**  
**May 2017 YTD Average \$36.71/MWh**  
**May 2018 YTD Average \$50.20/MWh**



\* Excludes ICAP payments.

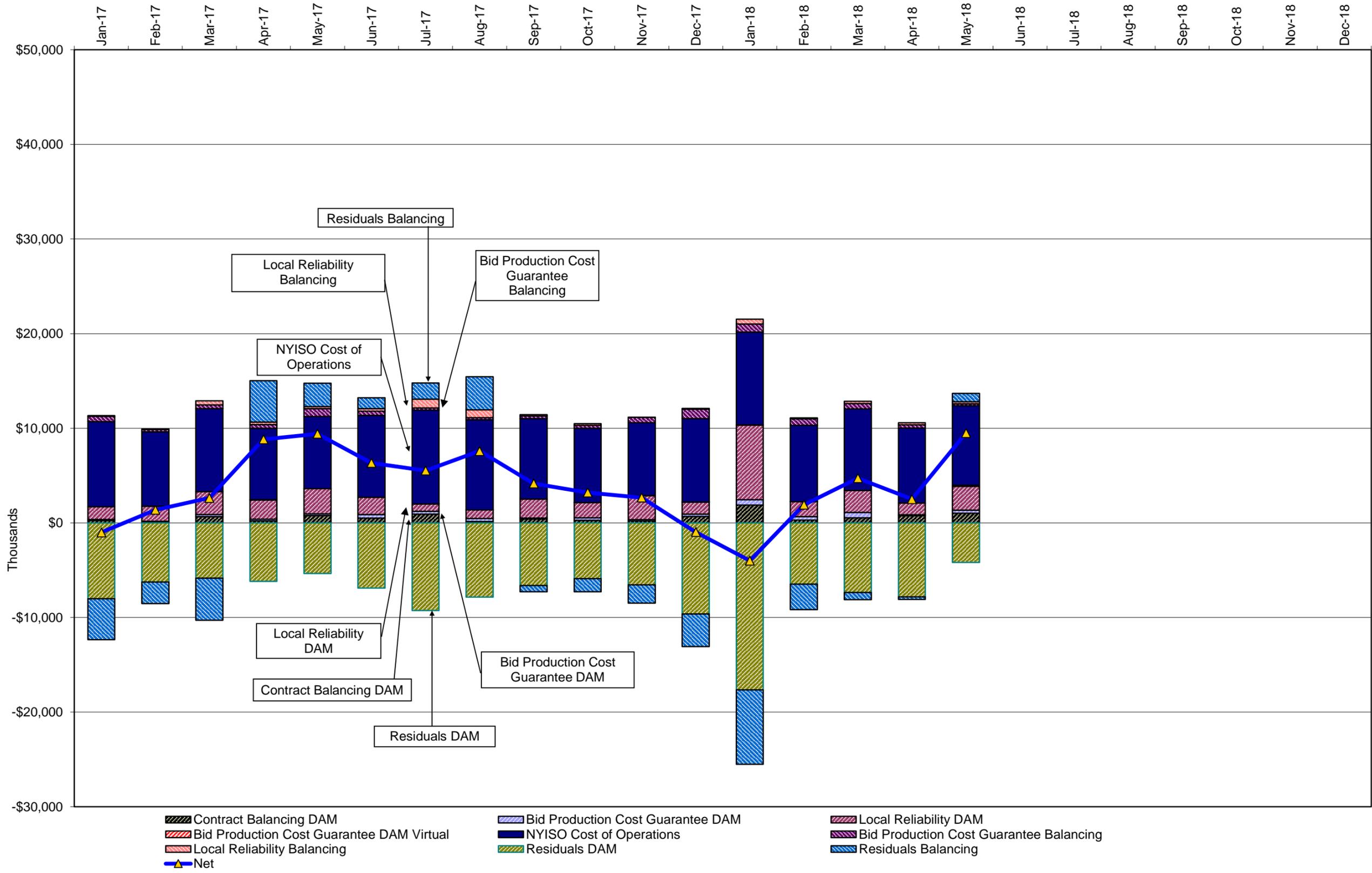
**NYISO Average Cost/MWh (Energy and Ancillary Services) \***  
**from the LBMP Customer point of view**

<b>2018</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	99.55	33.83	29.91	35.00	28.78							
NTAC	0.71	0.58	0.88	1.09	0.88							
Reserve	0.92	0.65	0.64	0.81	0.68							
Regulation	0.15	0.15	0.16	0.12	0.14							
NYISO Cost of Operations	0.65	0.65	0.66	0.65	0.66							
FERC Fee Recovery	0.08	0.10	0.09	0.10	0.09							
Uplift	(0.92)	(0.50)	(0.31)	(0.45)	0.05							
Uplift: Local Reliability Share	0.59	0.14	0.19	0.12	0.22							
Uplift: Statewide Share	(1.52)	(0.64)	(0.51)	(0.57)	(0.17)							
Voltage Support and Black Start	0.40	0.41	0.42	0.41	0.42							
<b>Avg Monthly Cost</b>	101.54	35.87	32.45	37.74	31.70							
Avg YTD Cost	101.54	72.85	60.06	54.82	50.20							
TSA \$ per NYC MWh	0.00	0.00	0.04	0.00	0.08							
<b>2017</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	40.07	30.95	34.97	31.06	31.74	31.76	35.84	30.57	29.57	28.35	30.60	52.63
NTAC	0.66	1.11	0.86	1.05	0.79	0.62	0.87	0.59	0.62	0.50	0.75	0.81
Reserve	0.70	0.67	0.74	0.70	0.61	0.55	0.48	0.44	0.47	0.59	0.55	0.71
Regulation	0.14	0.12	0.13	0.17	0.16	0.13	0.10	0.10	0.11	0.13	0.20	0.15
NYISO Cost of Operations	0.65	0.65	0.65	0.65	0.62	0.63	0.63	0.63	0.63	0.62	0.61	0.60
FERC Fee Recovery	0.09	0.10	0.10	0.12	0.10	0.09	0.07	0.08	0.09	0.10	0.10	0.08
Uplift	(0.73)	(0.54)	(0.46)	0.12	0.10	(0.37)	(0.43)	(0.19)	(0.34)	(0.36)	(0.40)	(0.68)
Uplift: Local Reliability Share	0.10	0.13	0.21	0.20	0.24	0.15	0.11	0.12	0.16	0.14	0.20	0.09
Uplift: Statewide Share	(0.83)	(0.67)	(0.67)	(0.08)	(0.13)	(0.52)	(0.54)	(0.31)	(0.50)	(0.50)	(0.60)	(0.78)
Voltage Support and Black Start	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.37	0.37
<b>Avg Monthly Cost</b>	41.96	33.44	37.38	34.26	34.52	33.80	37.94	32.60	31.54	30.31	32.79	54.67
Avg YTD Cost	41.96	38.02	37.81	37.05	36.54	36.01	36.35	35.80	35.34	34.89	34.72	36.56
TSA \$ per NYC MWh	0.00	0.00	0.00	0.08	0.12	0.56	0.42	0.23	0.00	0.00	0.00	0.00

\* Excludes ICAP payments.  
Market Mitigation and Analysis  
Prepared: 6/7/2018 11:55 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 May 31, 2018



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

<b>2018</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>Day Ahead Market MWh</b>	15,153,751	12,643,854	13,521,386	12,158,686	12,721,073							
DAM LSE Internal LBMP Energy Sales	59%	57%	58%	60%	61%							
DAM External TC LBMP Energy Sales	4%	3%	2%	2%	2%							
DAM Bilateral - Internal Bilaterals	29%	31%	32%	30%	29%							
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	5%	5%	5%							
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	2%	2%	2%							
DAM Bilateral - Wheel Through Bilaterals	1%	2%	2%	2%	2%							
<b>Balancing Energy Market MWh</b>	-149,619	-299,377	-386,811	-72,862	-29,539							
Balancing Energy LSE Internal LBMP Energy Sales	-147%	-101%	-128%	-208%	-458%							
Balancing Energy External TC LBMP Energy Sales	74%	24%	37%	189%	564%							
Balancing Energy Bilateral - Internal Bilaterals	9%	5%	0%	-11%	29%							
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%							
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	22%	9%	6%	34%	51%							
Balancing Energy Bilateral - Wheel Through Bilaterals	-58%	-36%	-15%	-103%	-287%							
<b>Transactions Summary</b>												
LBMP	63%	59%	59%	62%	63%							
Internal Bilaterals	30%	32%	33%	30%	29%							
Import Bilaterals	5%	5%	6%	5%	5%							
Export Bilaterals	2%	2%	2%	2%	2%							
Wheels Through	1%	1%	1%	1%	1%							
<b>Market Share of Total Load</b>												
Day Ahead Market	101.0%	102.4%	102.9%	100.6%	100.2%							
Balancing Energy +	-1.0%	-2.4%	-2.9%	-0.6%	-0.2%							
Total MWh	15,004,132	12,344,477	13,134,575	12,085,824	12,691,534							
Average Daily Energy Sendout/Month GWh	463	426	413	390	397							

<b>2017</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>Day Ahead Market MWh</b>	14,135,019	12,565,206	13,983,865	12,061,475	12,966,981	14,406,180	16,505,801	15,948,927	14,100,695	13,252,368	13,042,826	14,829,403
DAM LSE Internal LBMP Energy Sales	57%	57%	55%	54%	58%	60%	62%	61%	57%	55%	53%	55%
DAM External TC LBMP Energy Sales	2%	2%	1%	1%	1%	1%	1%	1%	1%	2%	3%	5%
DAM Bilateral - Internal Bilaterals	32%	32%	34%	35%	33%	31%	29%	29%	32%	34%	34%	32%
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	5%	6%	4%	5%	4%	5%	5%	5%	5%	5%
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%
DAM Bilateral - Wheel Through Bilaterals	2%	2%	2%	2%	2%	2%	3%	3%	4%	2%	3%	2%
<b>Balancing Energy Market MWh</b>	-256,448	-407,284	-509,053	-466,426	-666,048	-564,312	-747,473	-853,898	-633,990	-510,721	-410,072	-254,003
Balancing Energy LSE Internal LBMP Energy Sales	-157%	-132%	-148%	-115%	-120%	-114%	-100%	-87%	-76%	-102%	-108%	-99%
Balancing Energy External TC LBMP Energy Sales	64%	39%	44%	22%	28%	23%	18%	13%	12%	26%	45%	25%
Balancing Energy Bilateral - Internal Bilaterals	15%	8%	12%	5%	1%	4%	3%	2%	3%	5%	5%	-1%
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	10%	7%	5%	4%	3%	3%	1%	1%	1%	4%	7%	9%
Balancing Energy Bilateral - Wheel Through Bilaterals	-32%	-26%	-13%	-15%	-12%	-16%	-22%	-29%	-40%	-33%	-49%	-34%
<b>Transactions Summary</b>												
LBMP	58%	57%	55%	54%	58%	60%	62%	61%	58%	56%	56%	60%
Internal Bilaterals	33%	34%	36%	37%	34%	32%	30%	31%	33%	36%	36%	32%
Import Bilaterals	5%	5%	5%	6%	4%	5%	5%	5%	5%	5%	5%	5%
Export Bilaterals	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Wheels Through	2%	2%	2%	2%	2%	1%	2%	2%	2%	1%	1%	1%
<b>Market Share of Total Load</b>												
Day Ahead Market	101.8%	103.3%	103.8%	104.0%	105.4%	104.1%	104.7%	105.7%	104.7%	104.0%	103.2%	101.7%
Balancing Energy +	-1.8%	-3.3%	-3.8%	-4.0%	-5.4%	-4.1%	-4.7%	-5.7%	-4.7%	-4.0%	-3.2%	-1.7%
Total MWh	13,878,571	12,157,922	13,474,812	11,595,049	12,300,933	13,841,868	15,758,328	15,095,029	13,466,705	12,741,647	12,632,754	14,575,400
Average Daily Energy Sendout/Month GWh	431	418	419	377	383	454	498	477	437	398	403	444

+ 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 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>
<b><u>DAY AHEAD LBMP</u></b>												
Price *	\$83.53	\$30.37	\$27.37	\$32.40	\$25.97							
Standard Deviation	\$58.94	\$12.38	\$6.34	\$9.06	\$9.22							
Load Weighted Price **	\$88.42	\$31.44	\$27.95	\$33.14	\$27.26							
<b><u>RTC LBMP</u></b>												
Price *	\$81.65	\$27.73	\$25.99	\$30.80	\$25.40							
Standard Deviation	\$60.83	\$11.96	\$8.99	\$14.30	\$20.37							
Load Weighted Price **	\$85.85	\$28.54	\$26.46	\$31.47	\$27.08							
<b><u>REAL TIME LBMP</u></b>												
Price *	\$87.94	\$28.50	\$26.49	\$34.53	\$25.57							
Standard Deviation	\$87.41	\$17.36	\$12.25	\$26.57	\$23.49							
Load Weighted Price **	\$93.59	\$29.49	\$27.09	\$35.72	\$27.47							
Average Daily Energy Sendout/Month GWh	463	426	413	390	397							

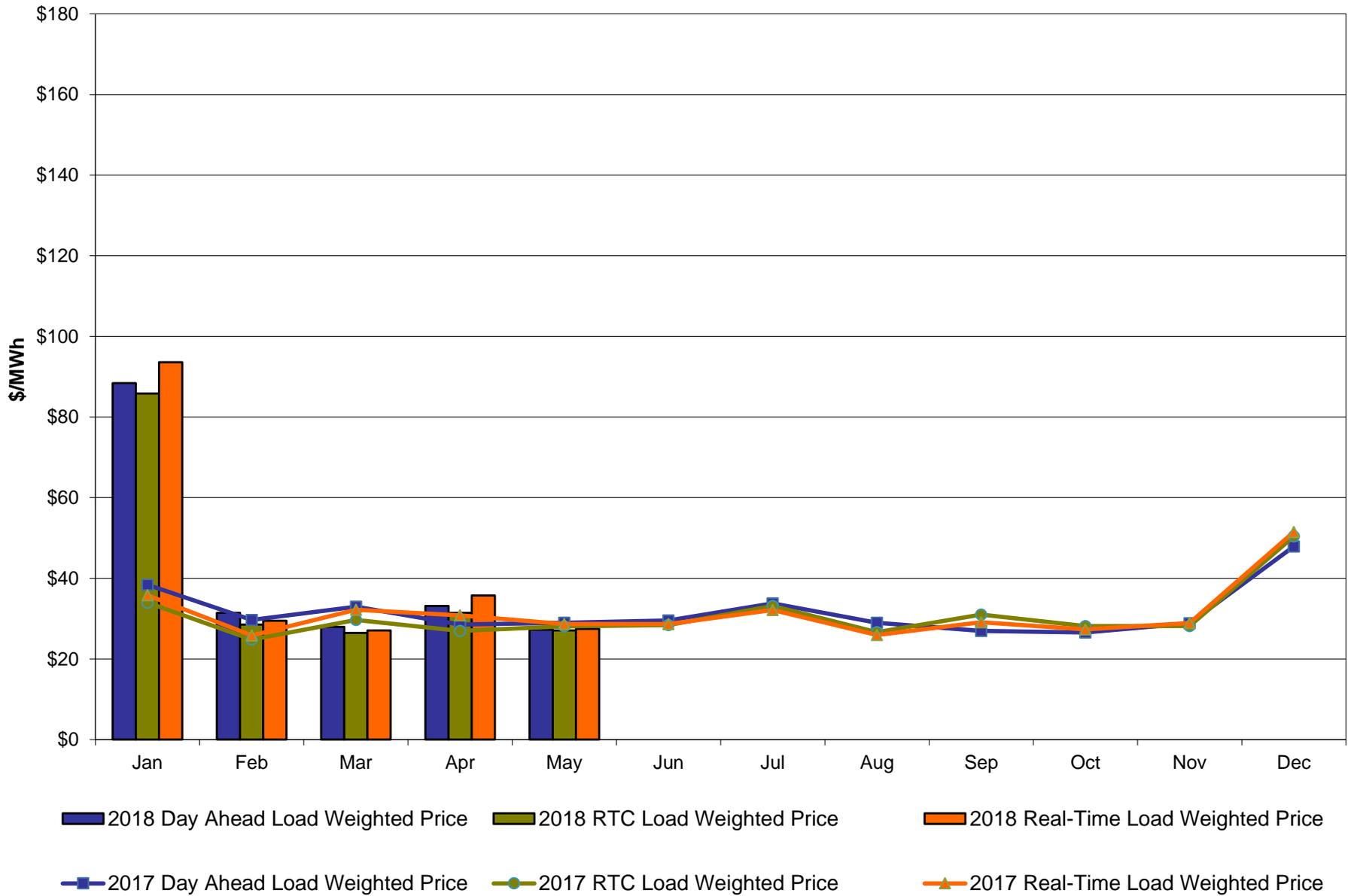
### NYISO Markets 2017 Energy Statistics

	<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 *	\$37.22	\$28.84	\$32.04	\$27.70	\$27.66	\$27.37	\$31.64	\$27.28	\$25.05	\$25.49	\$27.88	\$45.46
Standard Deviation	\$13.20	\$7.97	\$11.95	\$7.66	\$9.47	\$12.37	\$13.51	\$10.60	\$12.09	\$8.53	\$9.87	\$31.56
Load Weighted Price **	\$38.42	\$29.66	\$32.96	\$28.56	\$28.95	\$29.52	\$33.78	\$29.00	\$26.95	\$26.57	\$28.83	\$47.90
<b><u>RTC LBMP</u></b>												
Price *	\$32.87	\$24.09	\$28.86	\$26.19	\$26.19	\$26.40	\$30.84	\$25.26	\$27.97	\$26.91	\$27.35	\$47.75
Standard Deviation	\$14.57	\$9.52	\$13.70	\$10.36	\$21.29	\$14.76	\$18.14	\$13.08	\$27.14	\$13.40	\$10.54	\$37.33
Load Weighted Price **	\$33.96	\$24.81	\$29.67	\$26.98	\$28.10	\$28.39	\$33.13	\$26.65	\$30.98	\$28.13	\$28.15	\$50.39
<b><u>REAL TIME LBMP</u></b>												
Price *	\$34.61	\$25.14	\$31.21	\$29.61	\$26.56	\$26.16	\$29.47	\$24.36	\$26.08	\$25.95	\$27.91	\$48.42
Standard Deviation	\$18.20	\$14.21	\$25.02	\$39.82	\$26.11	\$19.00	\$20.25	\$14.03	\$25.72	\$14.49	\$15.86	\$42.66
Load Weighted Price **	\$35.80	\$25.84	\$32.21	\$30.81	\$28.64	\$28.67	\$32.11	\$25.95	\$29.13	\$27.33	\$28.90	\$51.49
Average Daily Energy Sendout/Month GWh	431	418	419	377	383	454	498	477	437	398	403	444

\* Average zonal load weighted prices.

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

## NYISO Monthly Average Internal LBMPs 2017- 2018

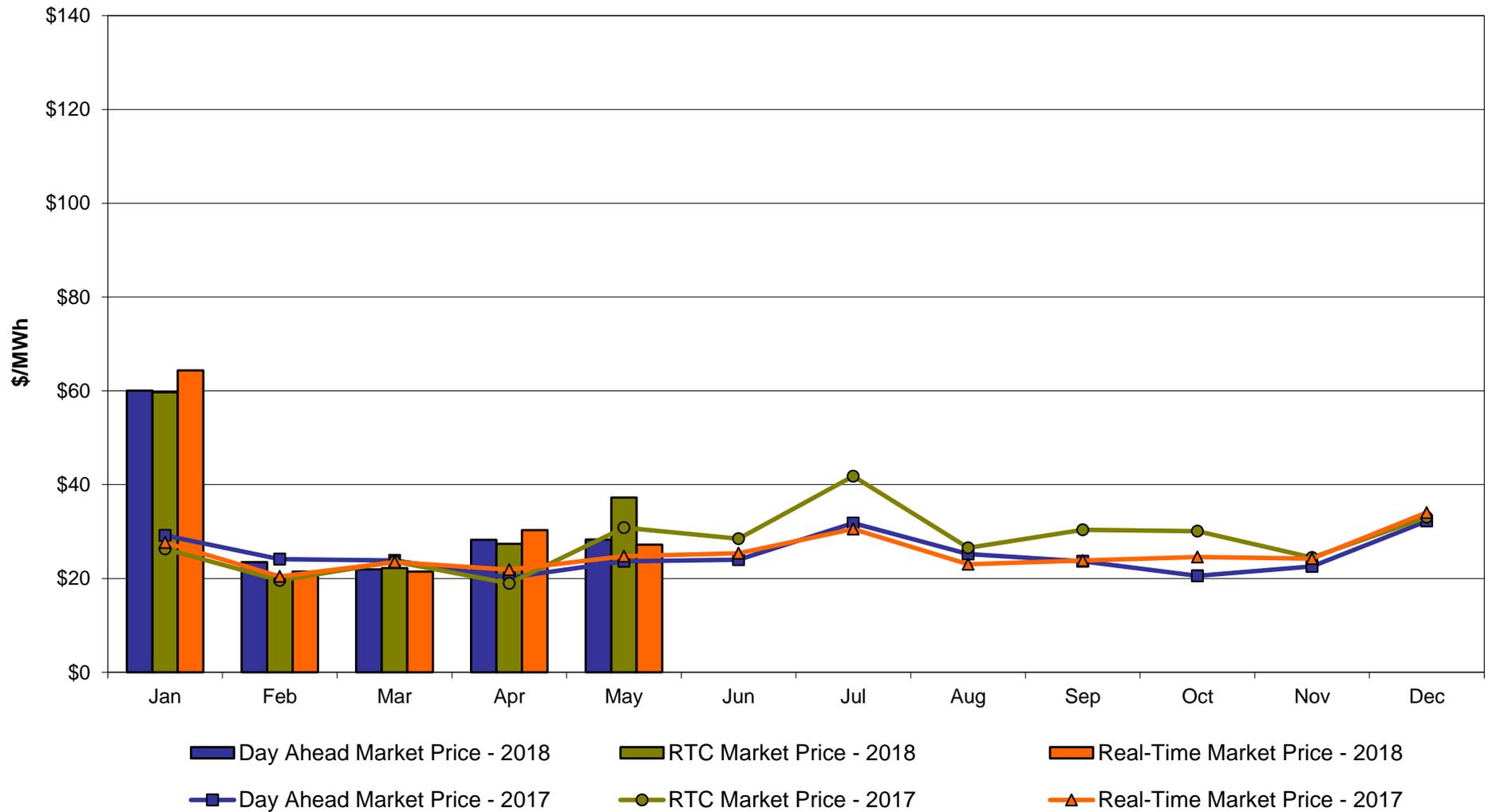


**May 2018 Zonal LBMP Statistics for NYISO (\$/MWh)**

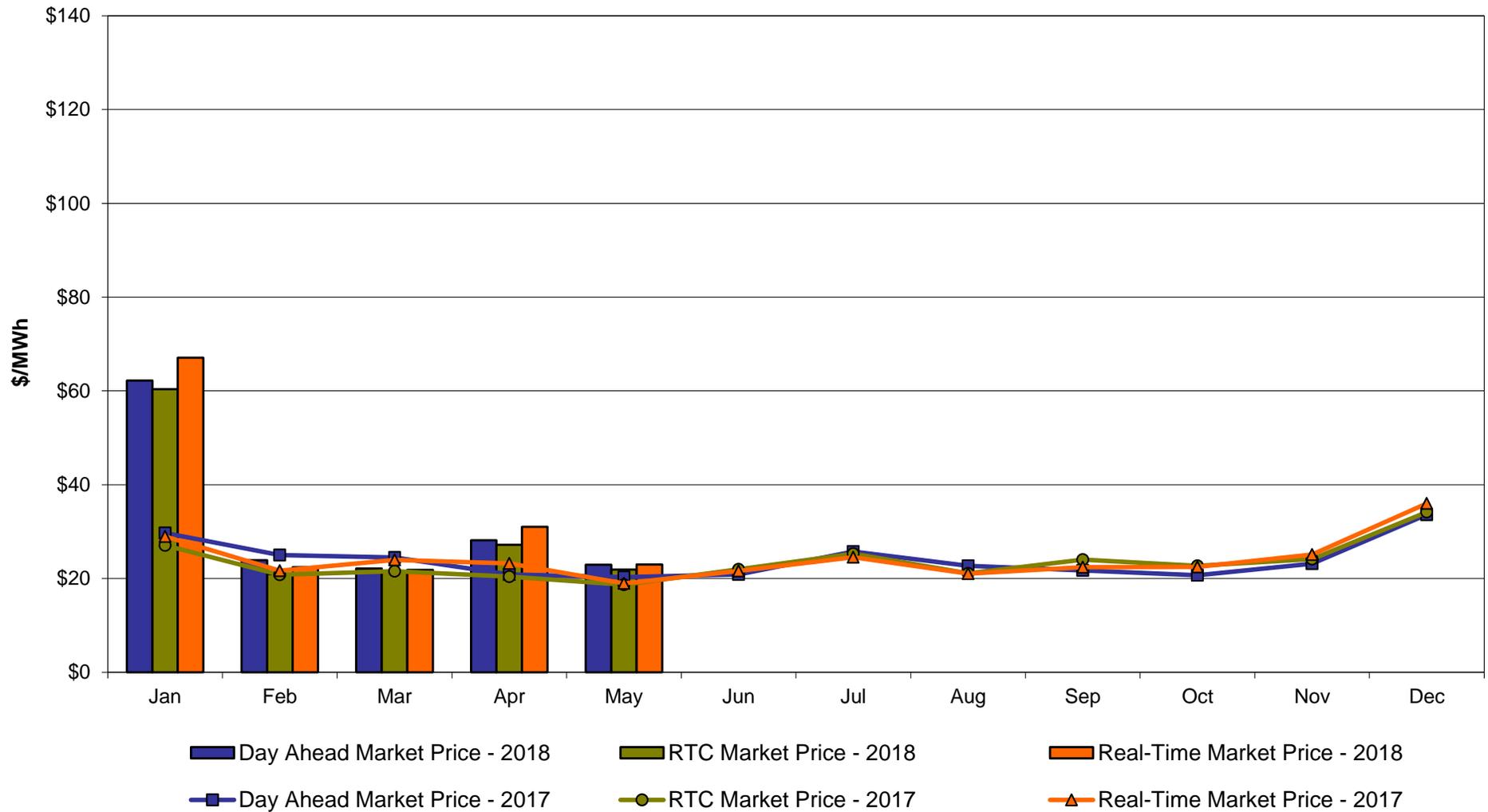
	<u>WEST Zone A</u>	<u>GENESEE Zone B</u>	<u>NORTH Zone D</u>	<u>CENTRAL Zone C</u>	<u>MOHAWK VALLEY Zone E</u>	<u>CAPITAL Zone F</u>	<u>HUDSON VALLEY Zone G</u>	<u>MILLWOOD Zone H</u>	<u>DUNWOODIE Zone I</u>	<u>NEW YORK CITY Zone J</u>	<u>LONG ISLAND Zone K</u>
<b>DAY AHEAD LBMP</b>											
Unweighted Price *	28.31	22.22	10.35	22.94	21.60	24.99	25.61	25.71	25.75	26.96	30.44
Standard Deviation	23.83	7.93	6.72	7.98	7.24	7.50	8.29	8.35	8.36	9.14	9.94
<b>RTC LBMP</b>											
Unweighted Price *	37.27	21.21	8.87	21.87	19.89	23.25	23.57	23.60	23.62	25.64	27.11
Standard Deviation	103.93	16.29	44.87	14.95	14.95	13.52	14.07	14.11	14.10	14.27	18.49
<b>REAL TIME LBMP</b>											
Unweighted Price *	27.22	22.08	9.30	22.97	21.27	24.81	25.18	25.21	25.22	27.63	27.58
Standard Deviation	59.08	21.66	45.03	22.20	21.90	21.76	22.58	22.64	22.64	23.11	24.48
	<u>ONTARIO IESO Zone O</u>	<u>HYDRO QUEBEC (Wheel) Zone M</u>	<u>HYDRO QUEBEC (Import/Export) Zone M</u>	<u>PJM Zone P</u>	<u>NEW ENGLAND Zone N</u>	<u>CROSS SOUND CABLE Controllable Line</u>	<u>NORTHPORT- NORWALK Controllable Line</u>	<u>NEPTUNE Controllable Line</u>	<u>LINDEN VFT Controllable Line</u>	<u>HUDSON Controllable Line</u>	<u>Dennison Controllable Line</u>
<b>DAY AHEAD LBMP</b>											
Unweighted Price *	19.76	13.25	13.25	24.68	25.28	29.82	28.27	29.32	27.07	26.09	8.94
Standard Deviation	7.27	6.77	6.77	8.87	7.44	9.67	8.64	9.56	9.35	8.53	5.49
<b>RTC LBMP</b>											
Unweighted Price *	15.62	11.55	11.55	26.02	22.62	26.55	26.06	26.35	25.76	24.01	7.60
Standard Deviation	20.54	34.04	34.04	48.37	14.30	17.59	16.21	17.68	13.87	14.25	47.43
<b>REAL TIME LBMP</b>											
Unweighted Price *	19.18	11.50	11.50	26.63	24.49	27.13	25.94	26.95	27.71	25.73	8.41
Standard Deviation	23.81	46.22	46.22	50.14	20.71	24.33	25.61	24.44	23.00	22.81	46.07

\* Straight LBMP averages

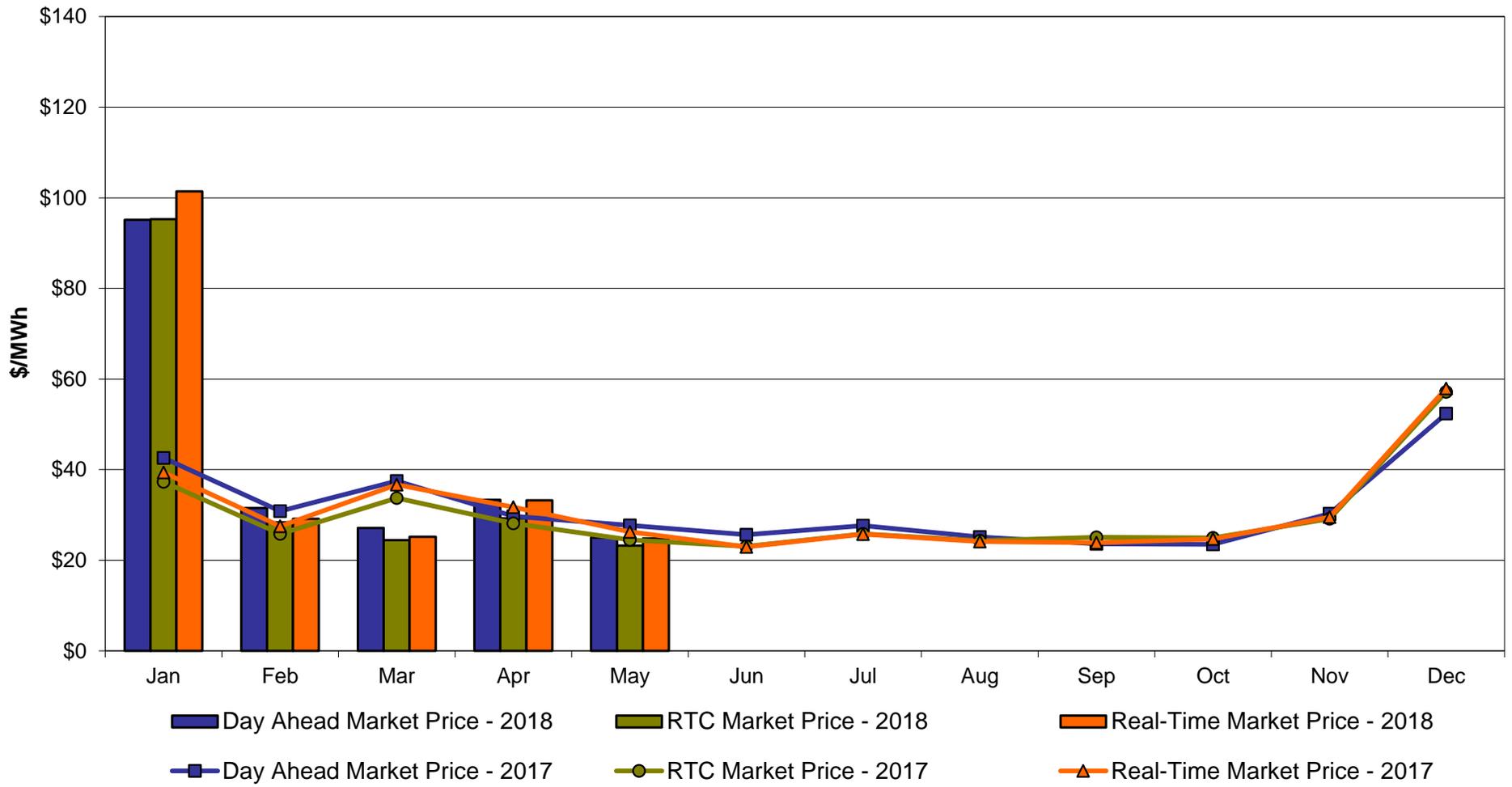
**West Zone A  
Monthly Average LBMP Prices 2017 - 2018**



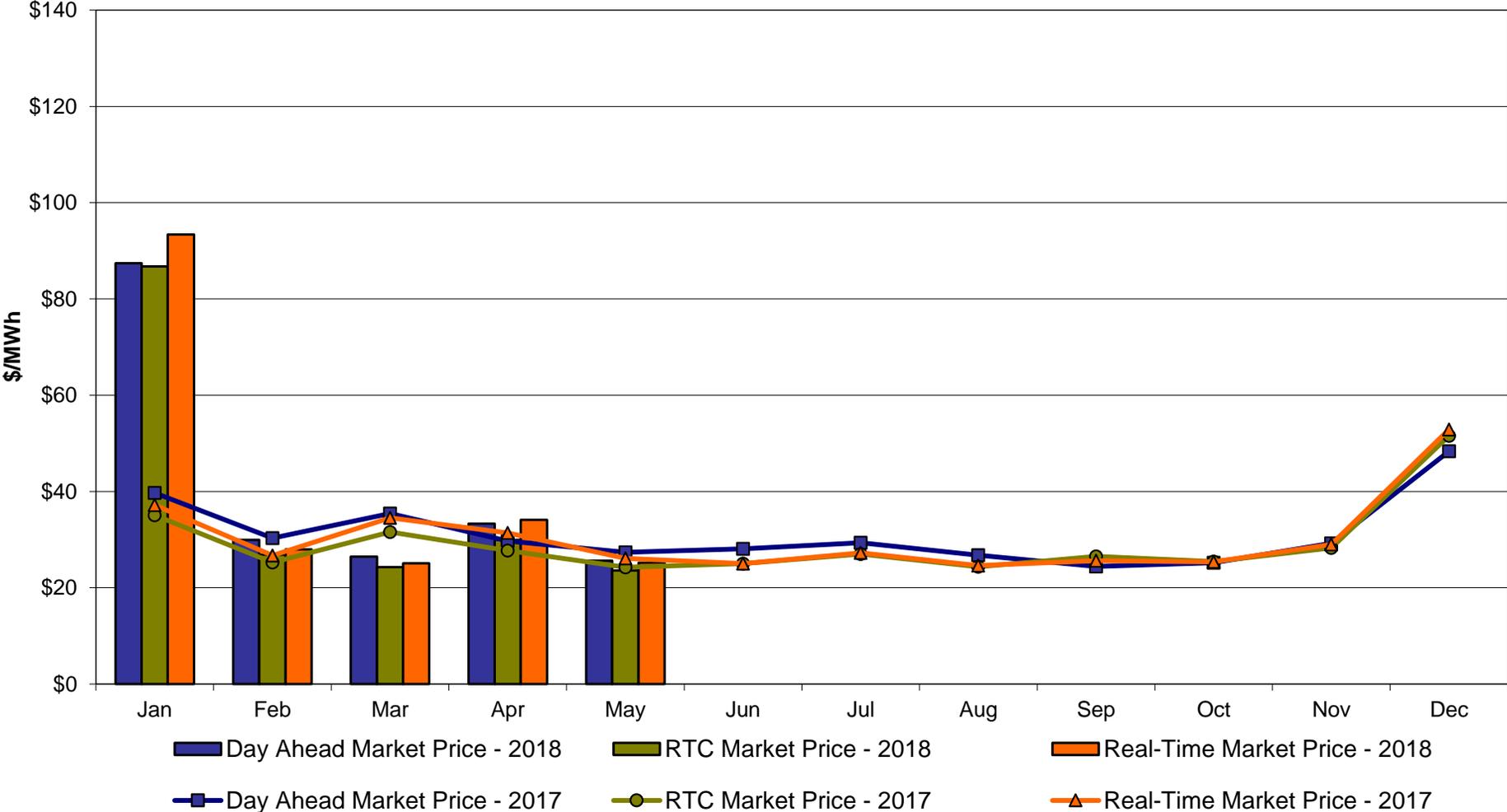
**Central Zone C  
Monthly Average LBMP Prices 2017 - 2018**



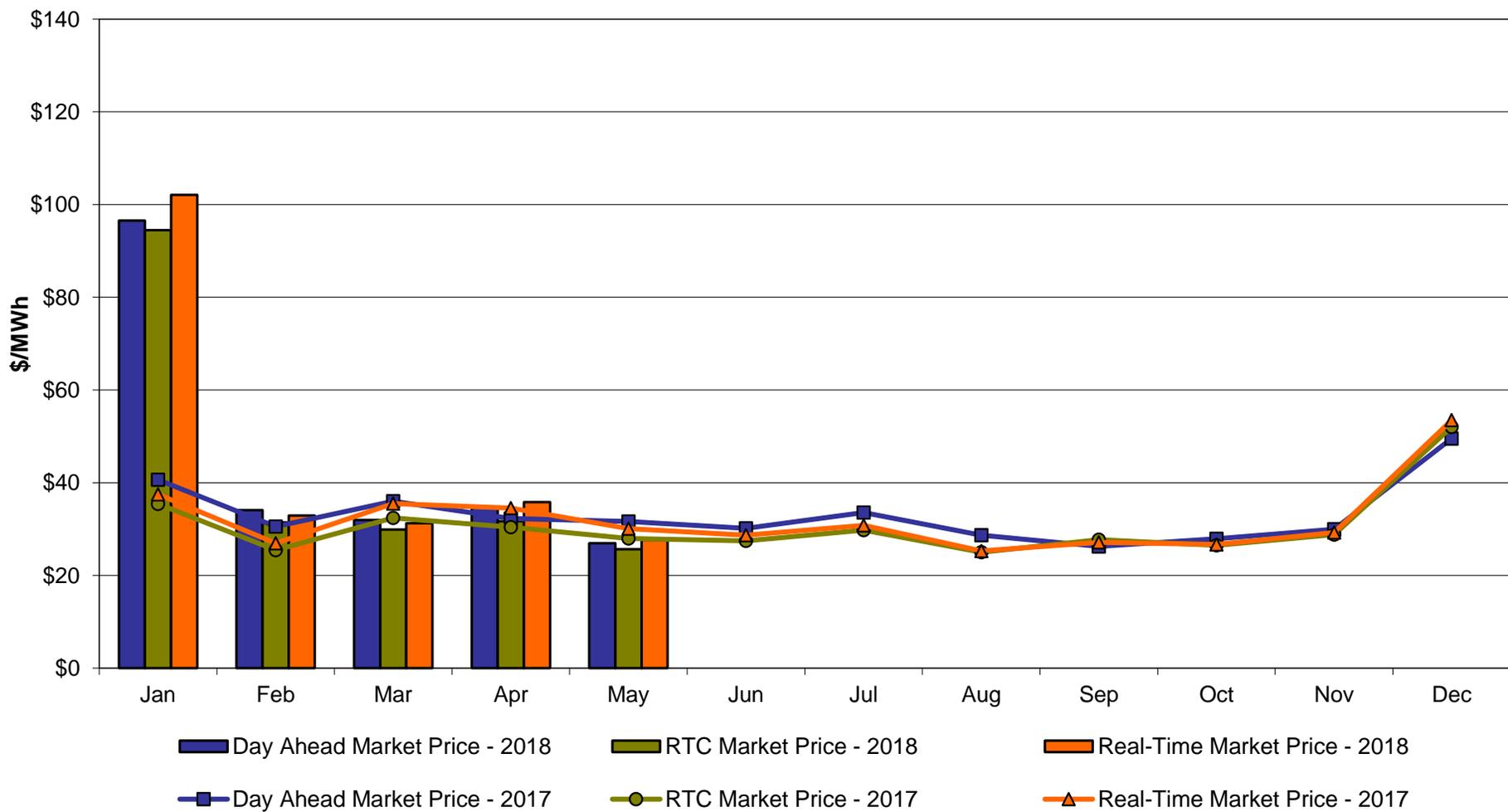
### Capital Zone F Monthly Average LBMP Prices 2017 - 2018



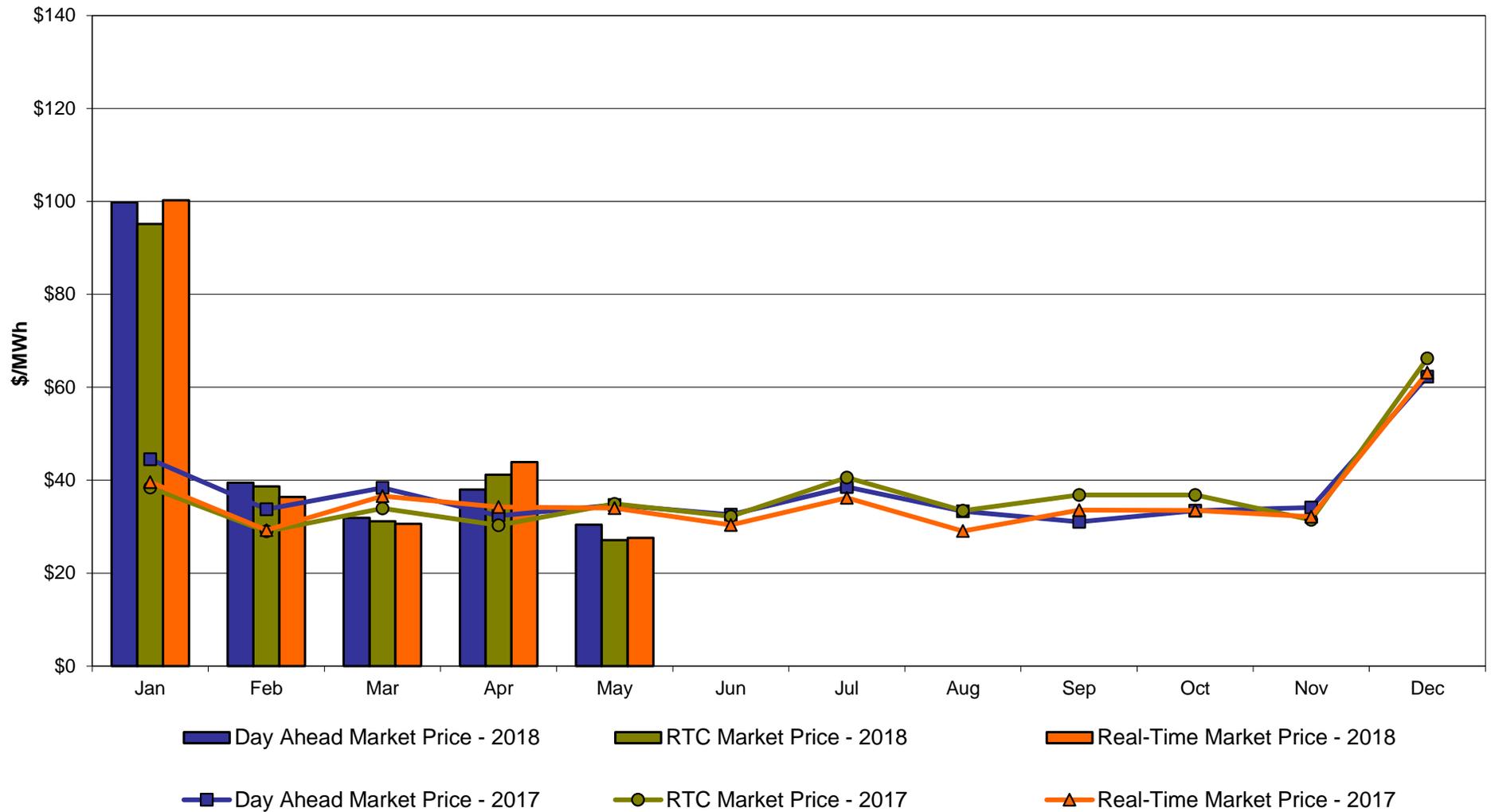
### Hudson Valley Zone G Monthly Average LBMP Prices 2017 - 2018



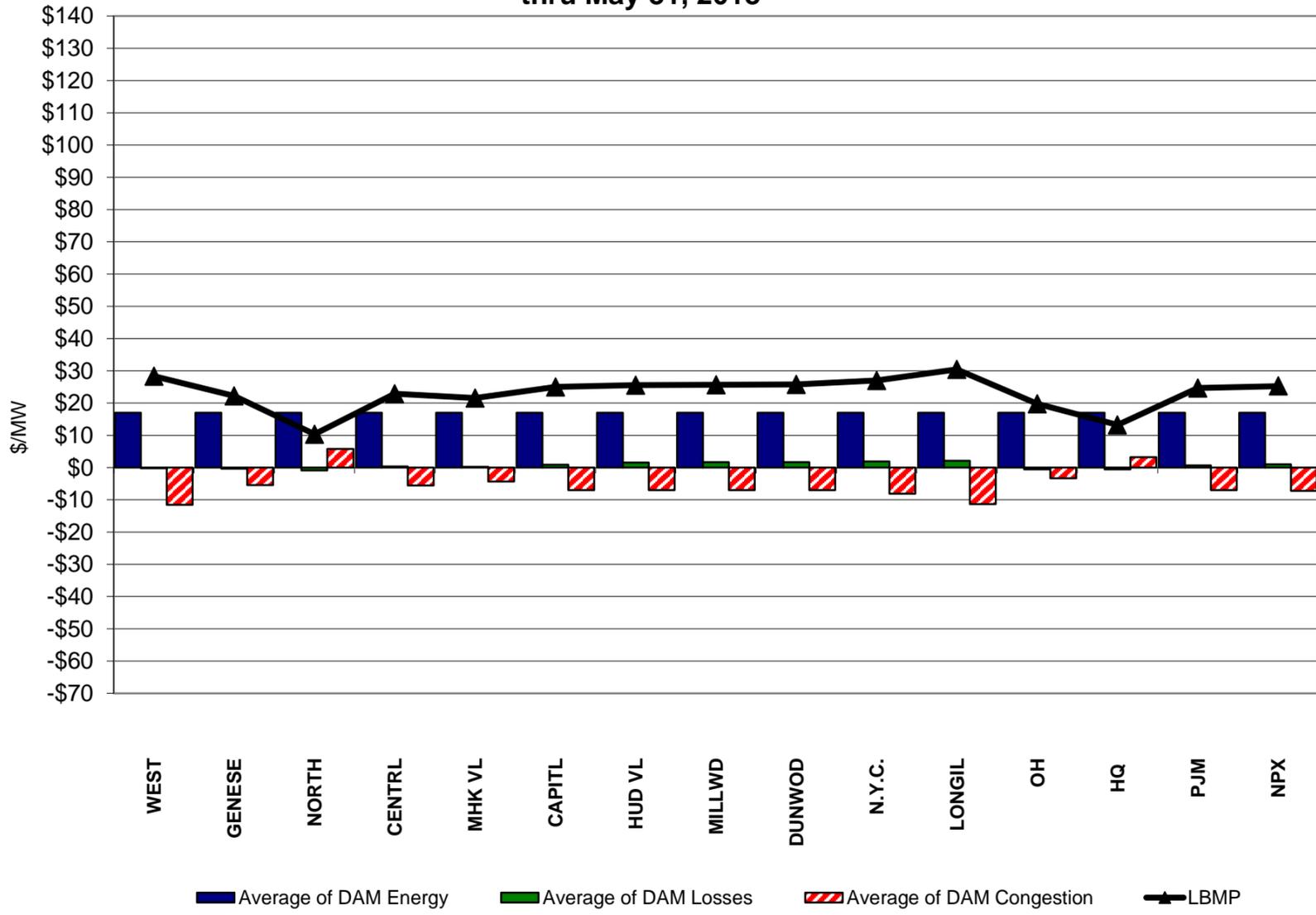
## NYC Zone J Monthly Average LBMP Prices 2017 - 2018



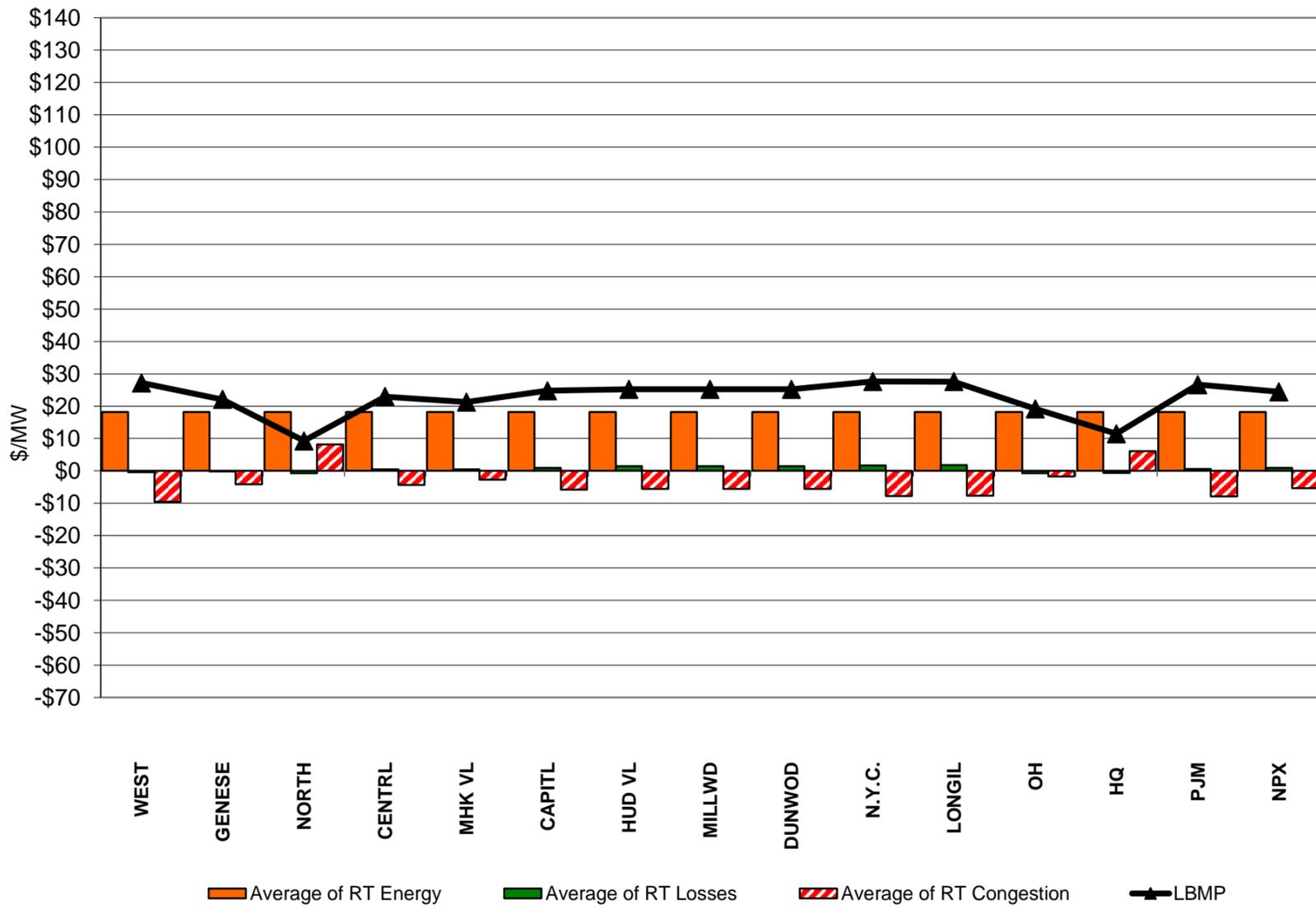
## Long Island Zone K Monthly Average LBMP Prices 2017 - 2018



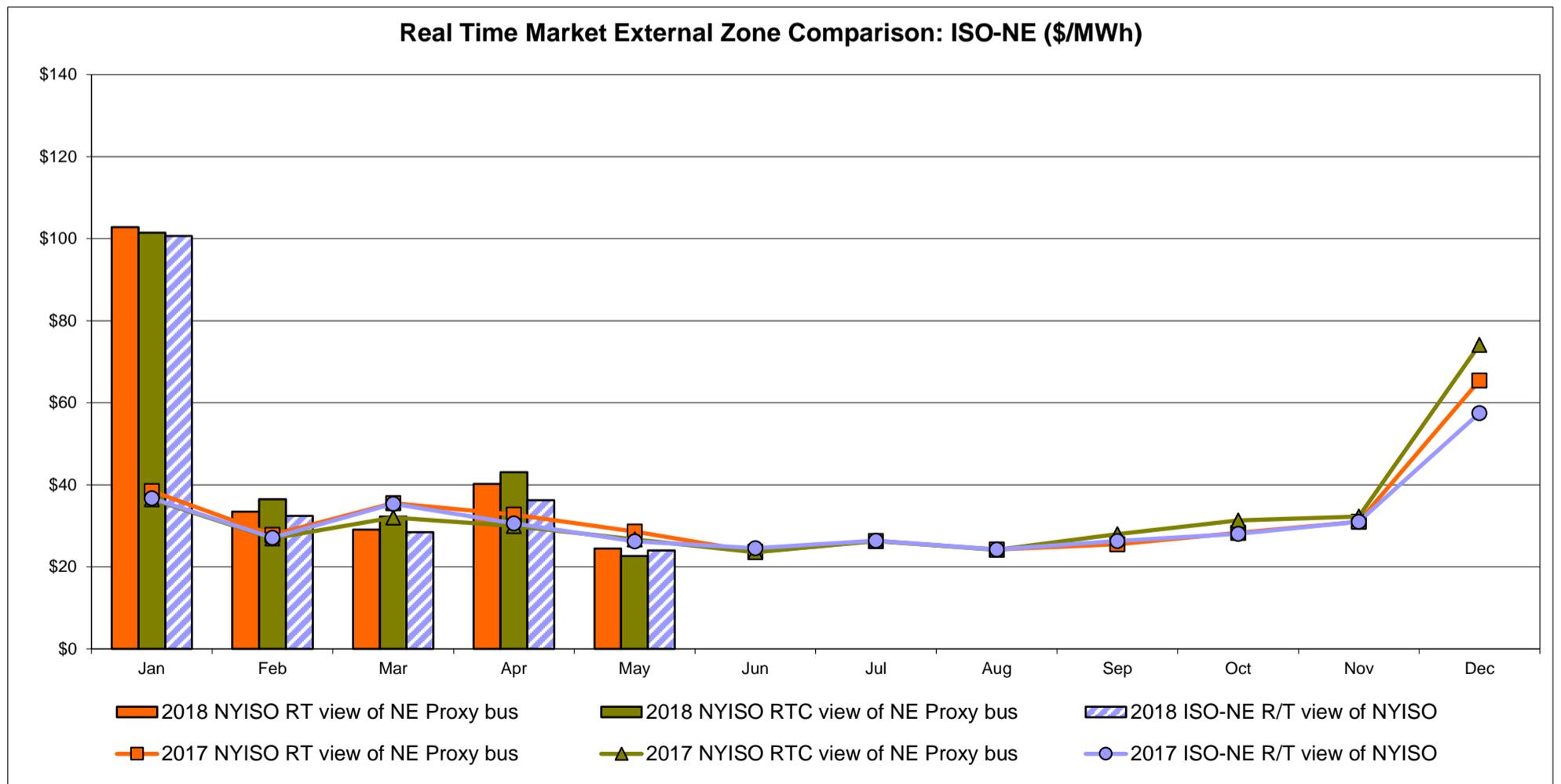
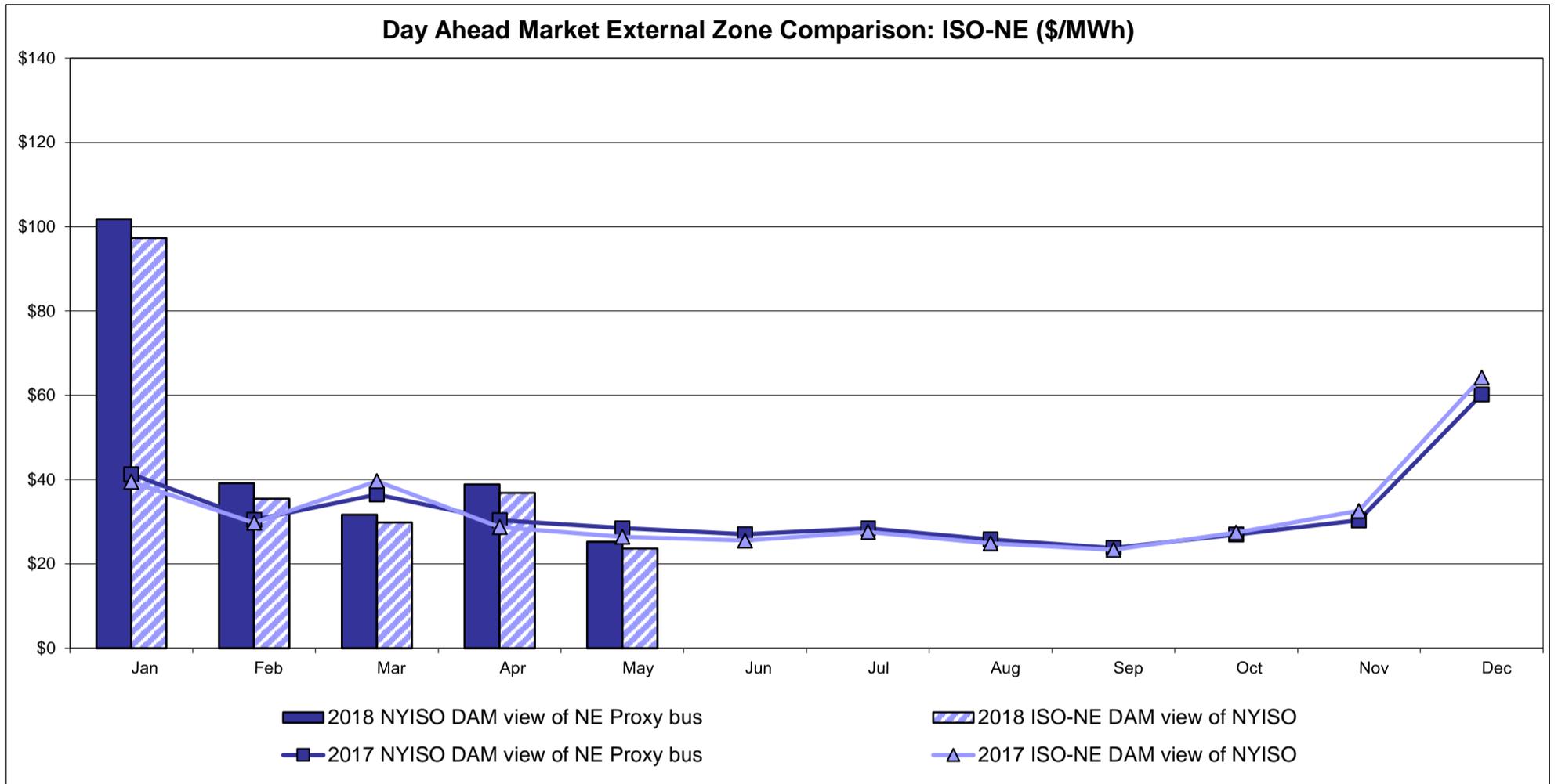
**DAM Zonal Unweighted Monthly Average LBMP Components  
thru May 31, 2018**



**RT Zonal Unweighted Monthly Average LBMP Components  
thru May 31, 2018**

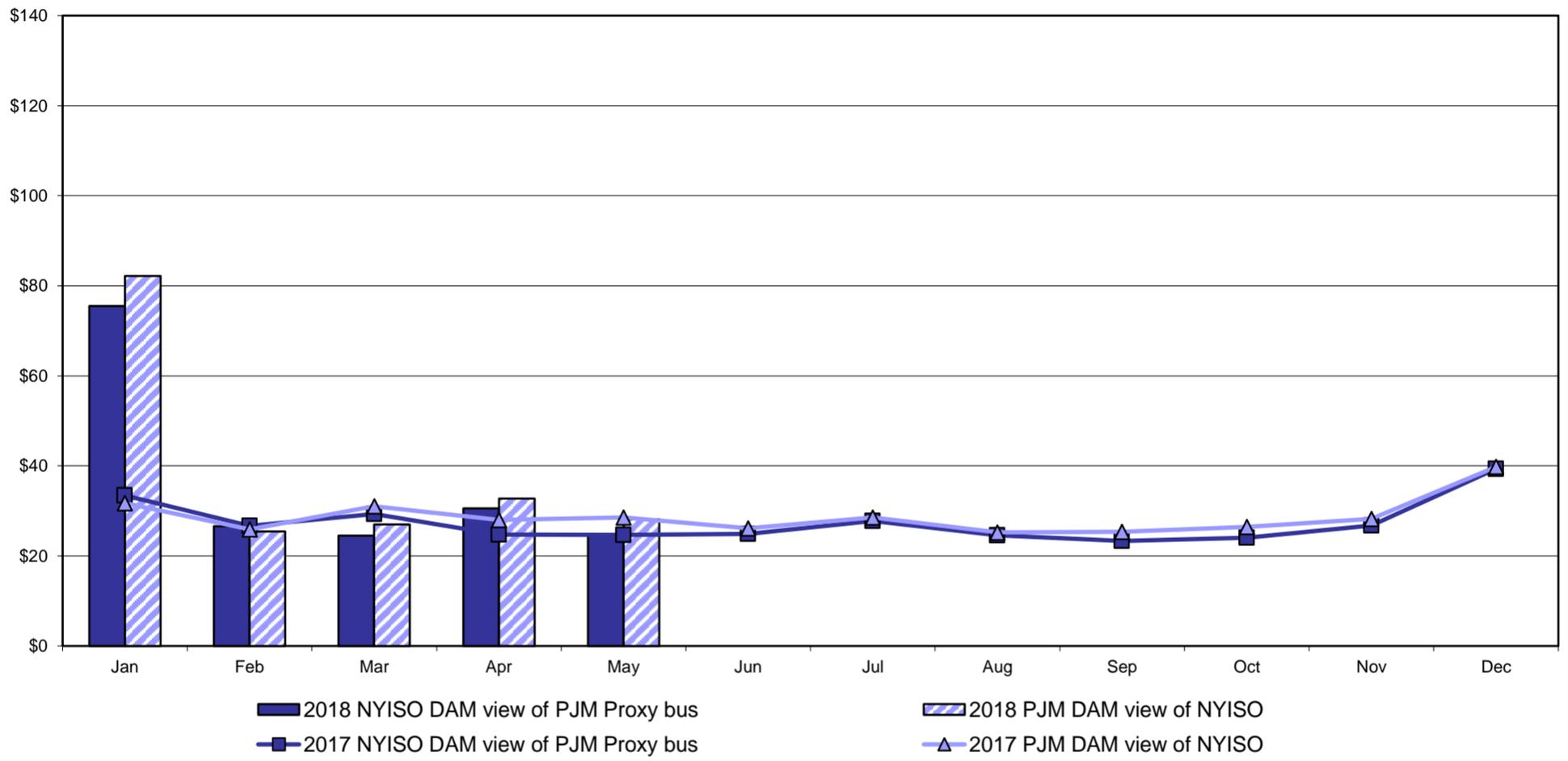


# External Comparison ISO-New England

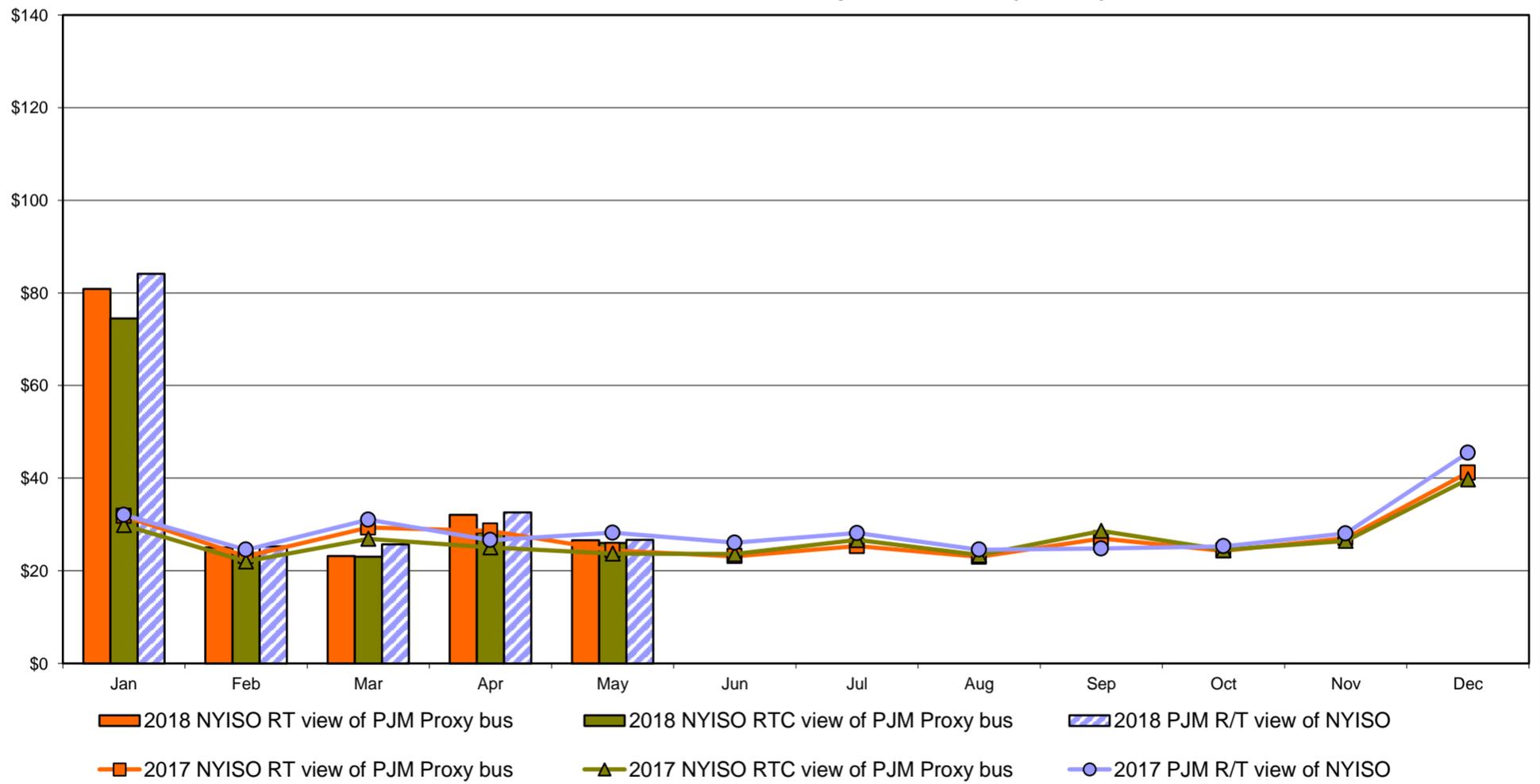


# External Comparison PJM

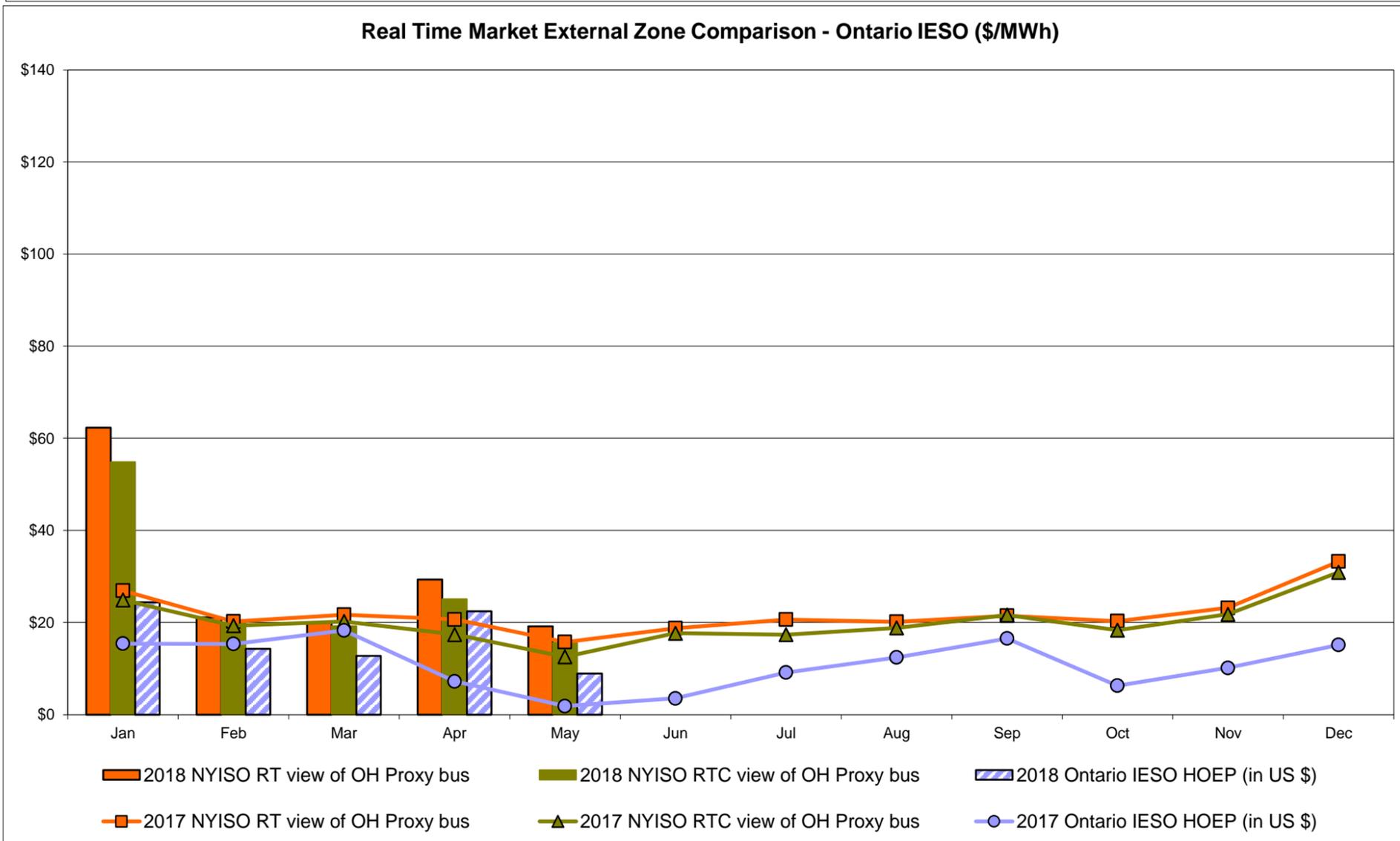
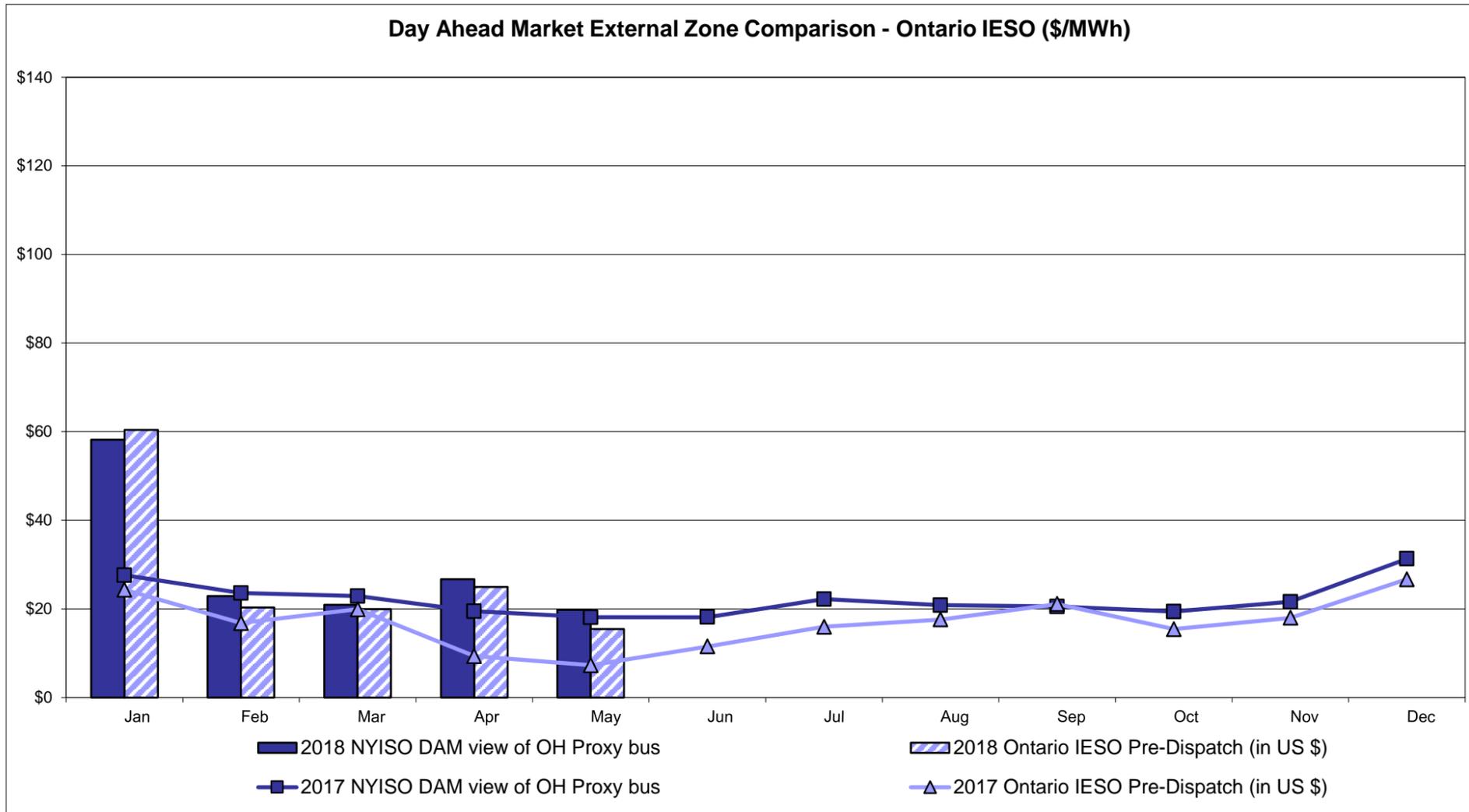
## Day Ahead Market External Zone Comparison - PJM (\$/MWh)



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

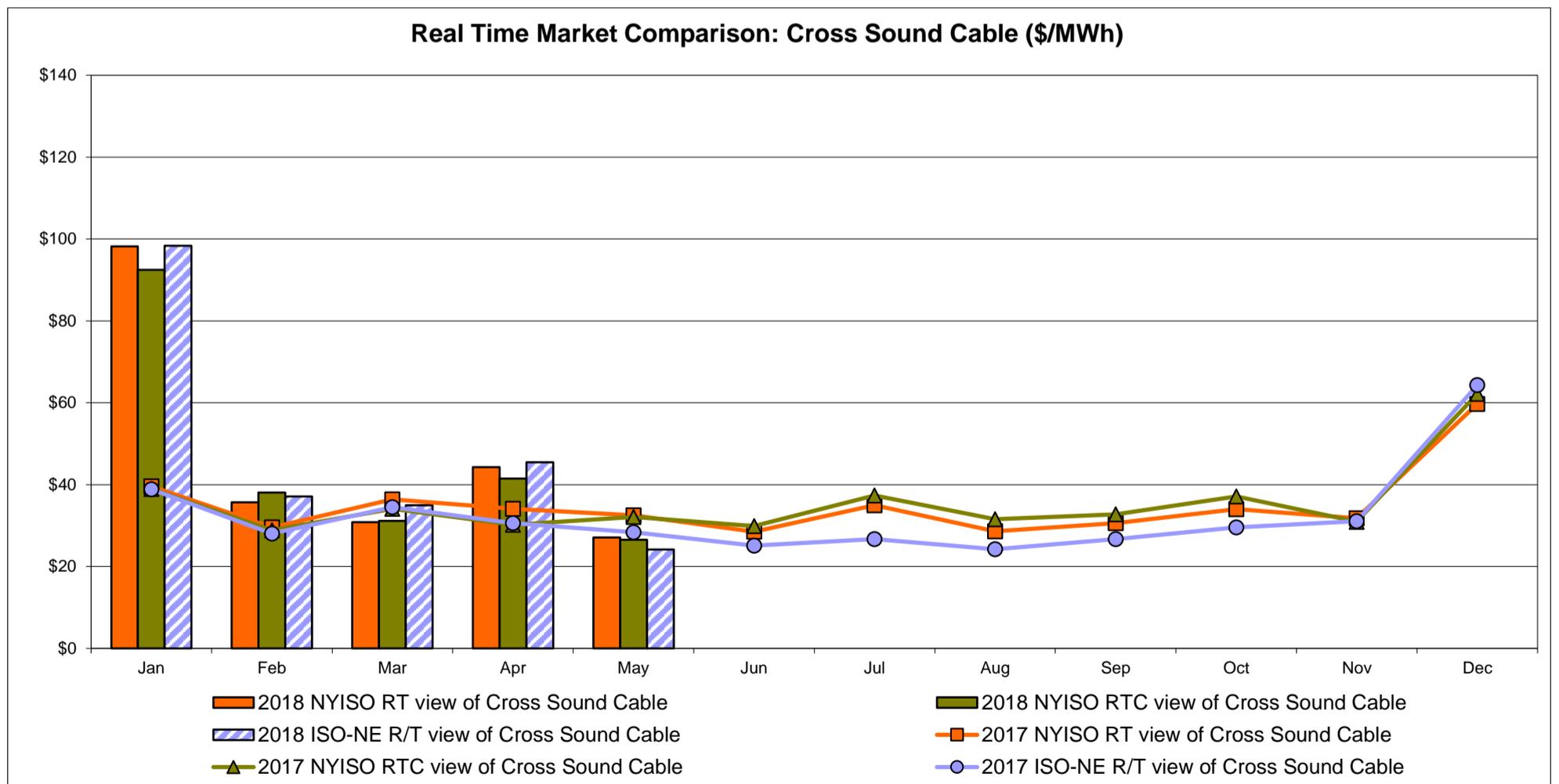
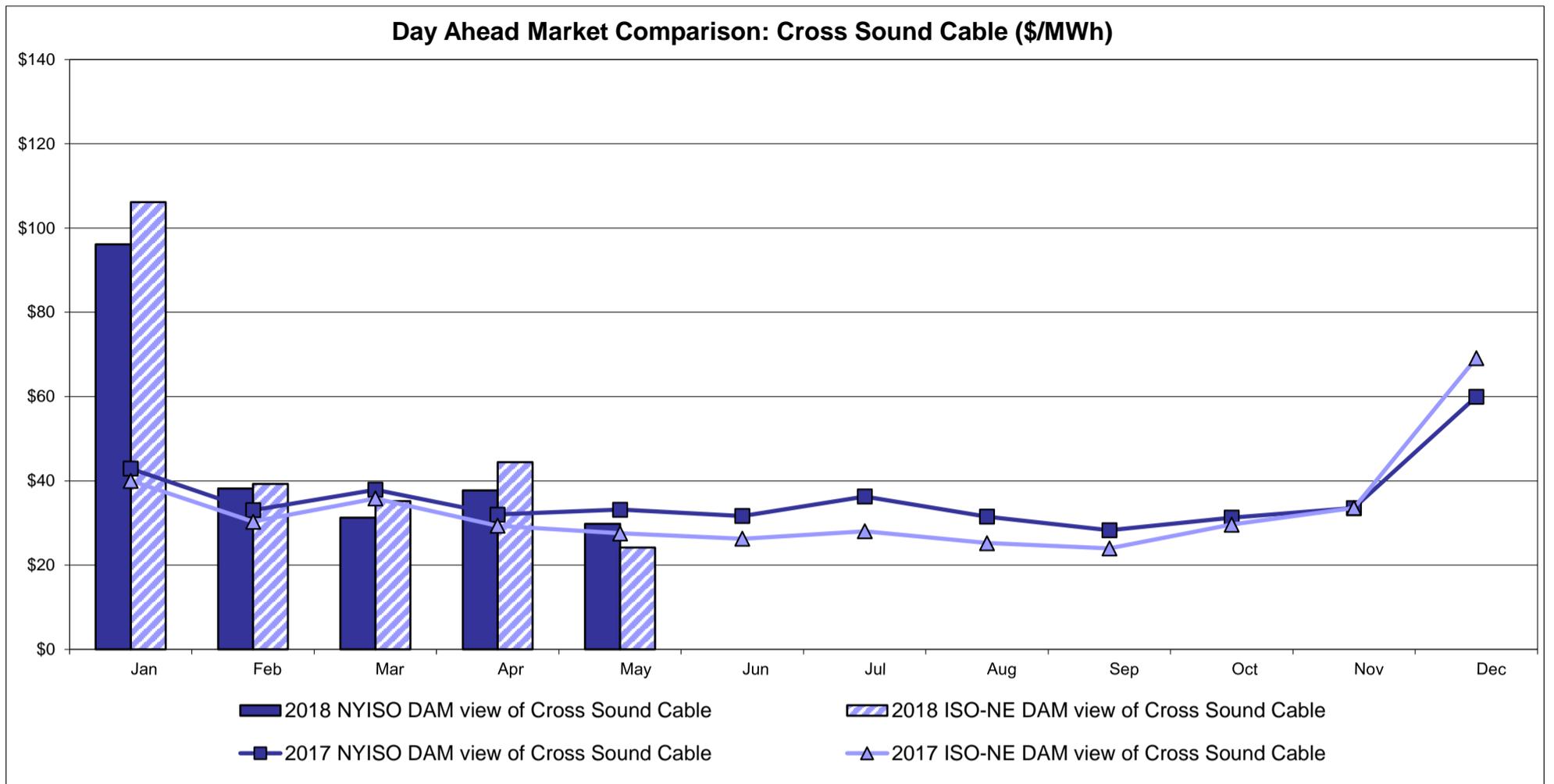


# External Comparison Ontario IESO



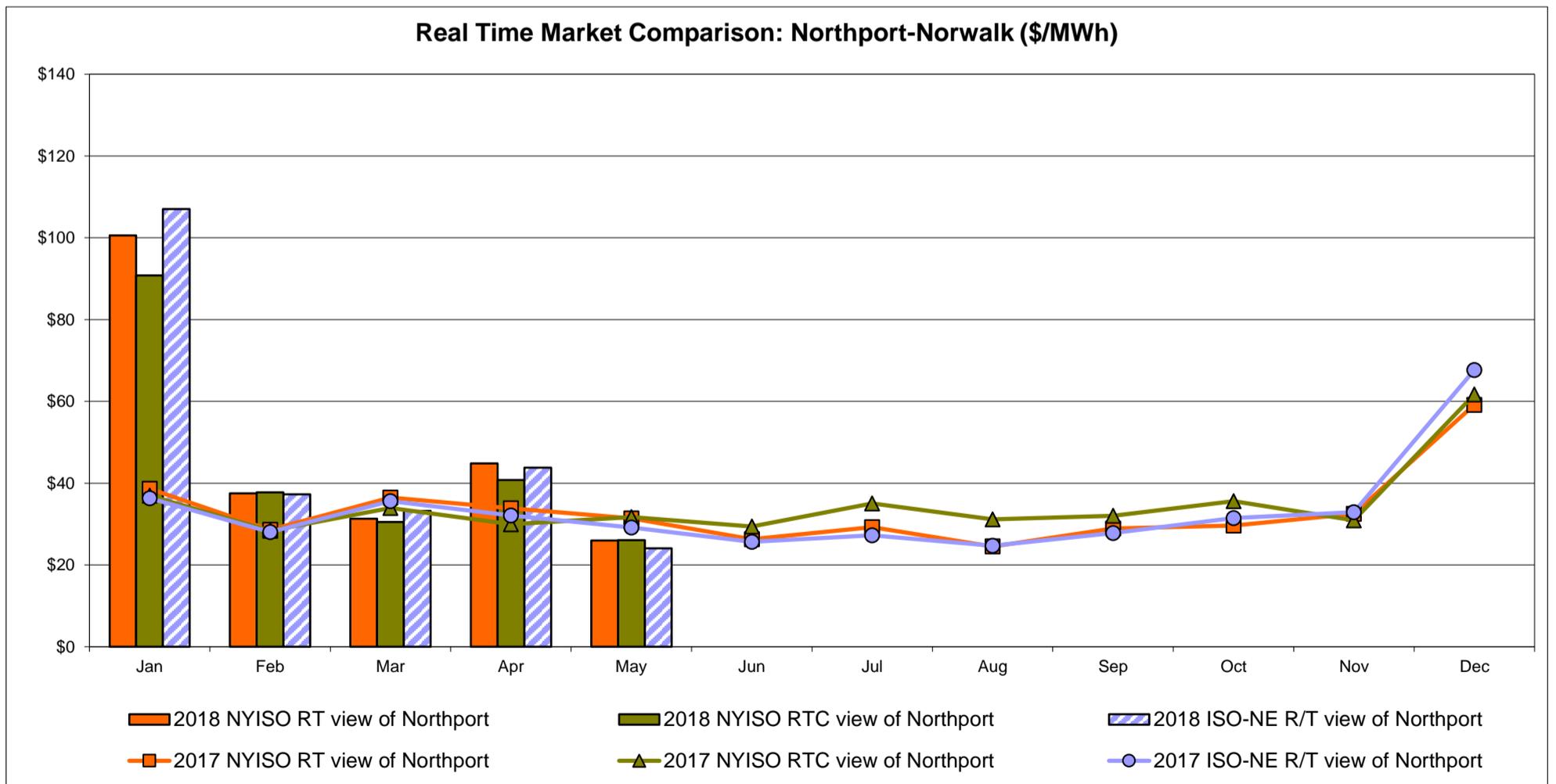
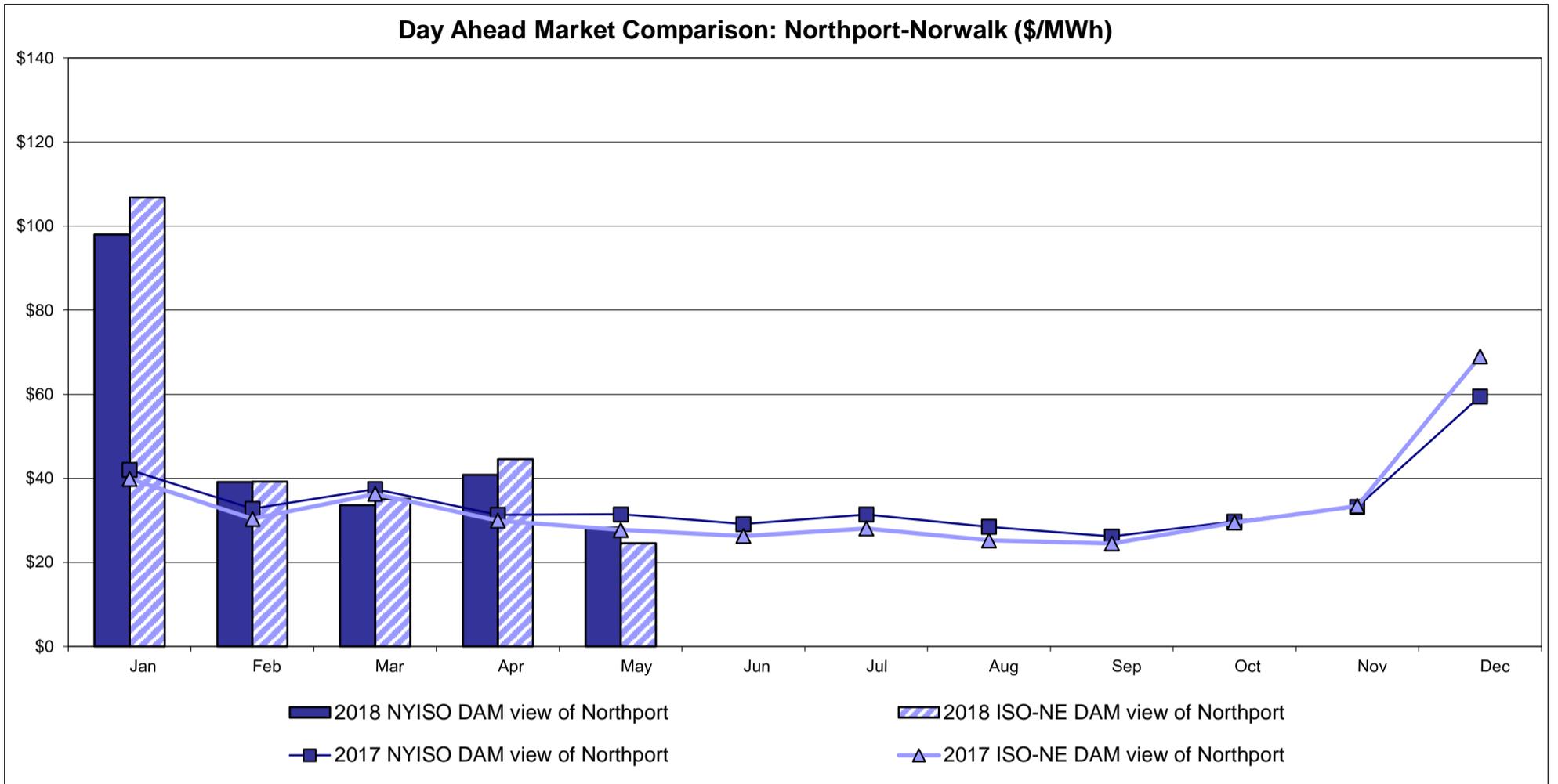
Notes: Exchange factor used for May 2018 was 0.77724234416291 to US  
 HOEP: Hourly Ontario Energy Price  
 Pre-Dispatch: Projected Energy Price

# 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.

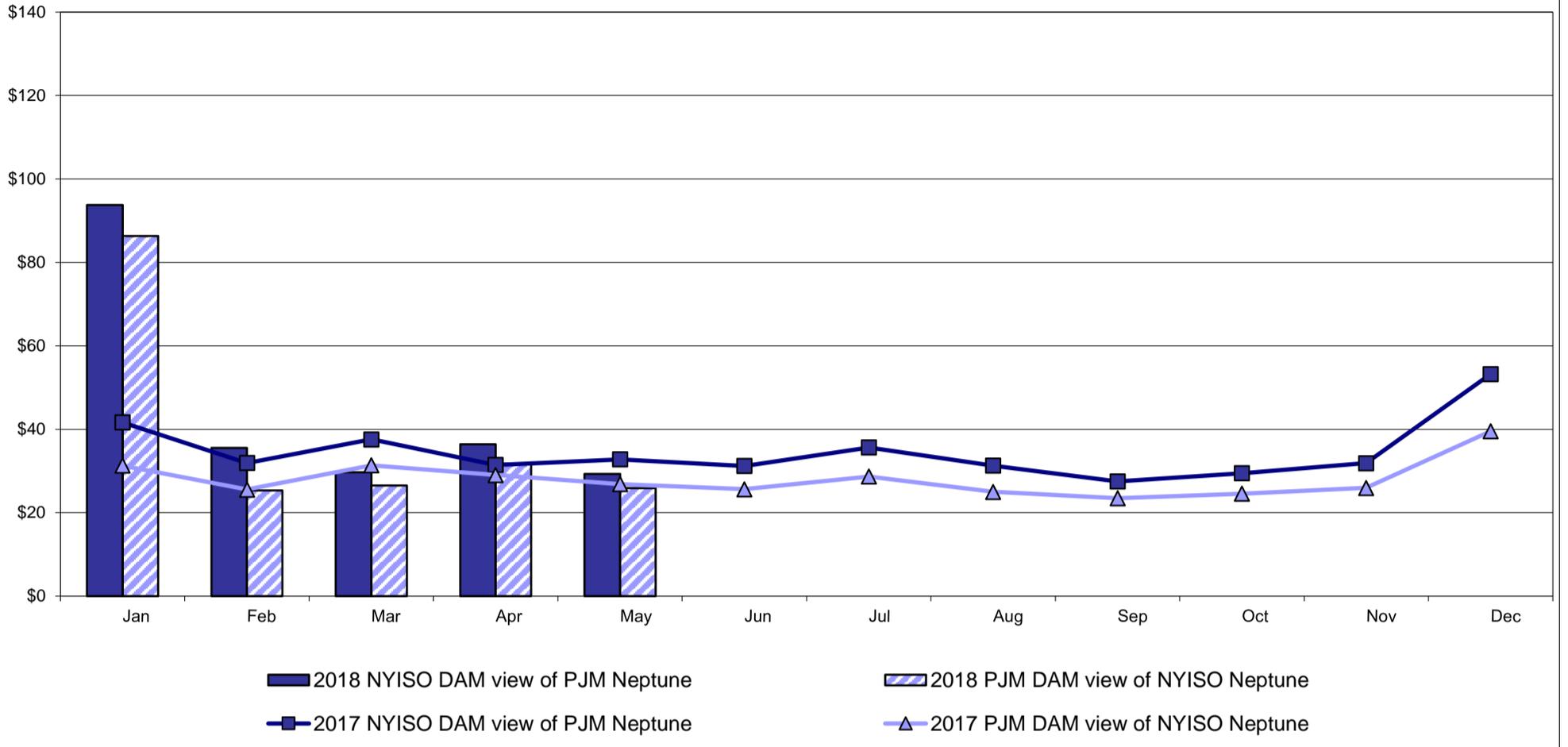
# External Controllable Line: Northport - Norwalk (New England)



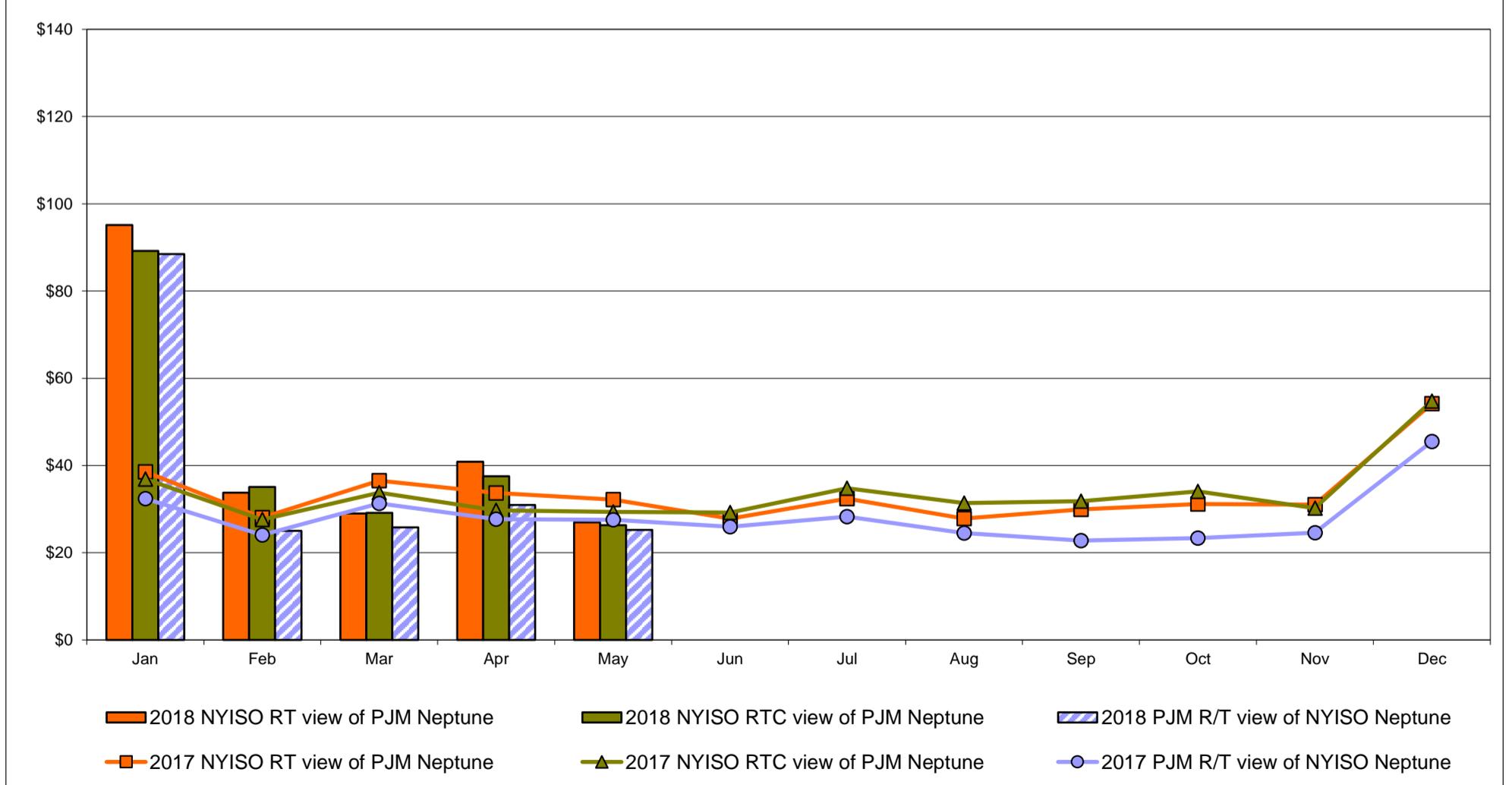
Note:  
 ISO-NE Forecast is an advisory posting @ 18:00 day before.  
 The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.  
 The DAM and R/T prices at the 1385 interface are used for NYISO.

# External Controllable Line: Neptune (PJM)

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

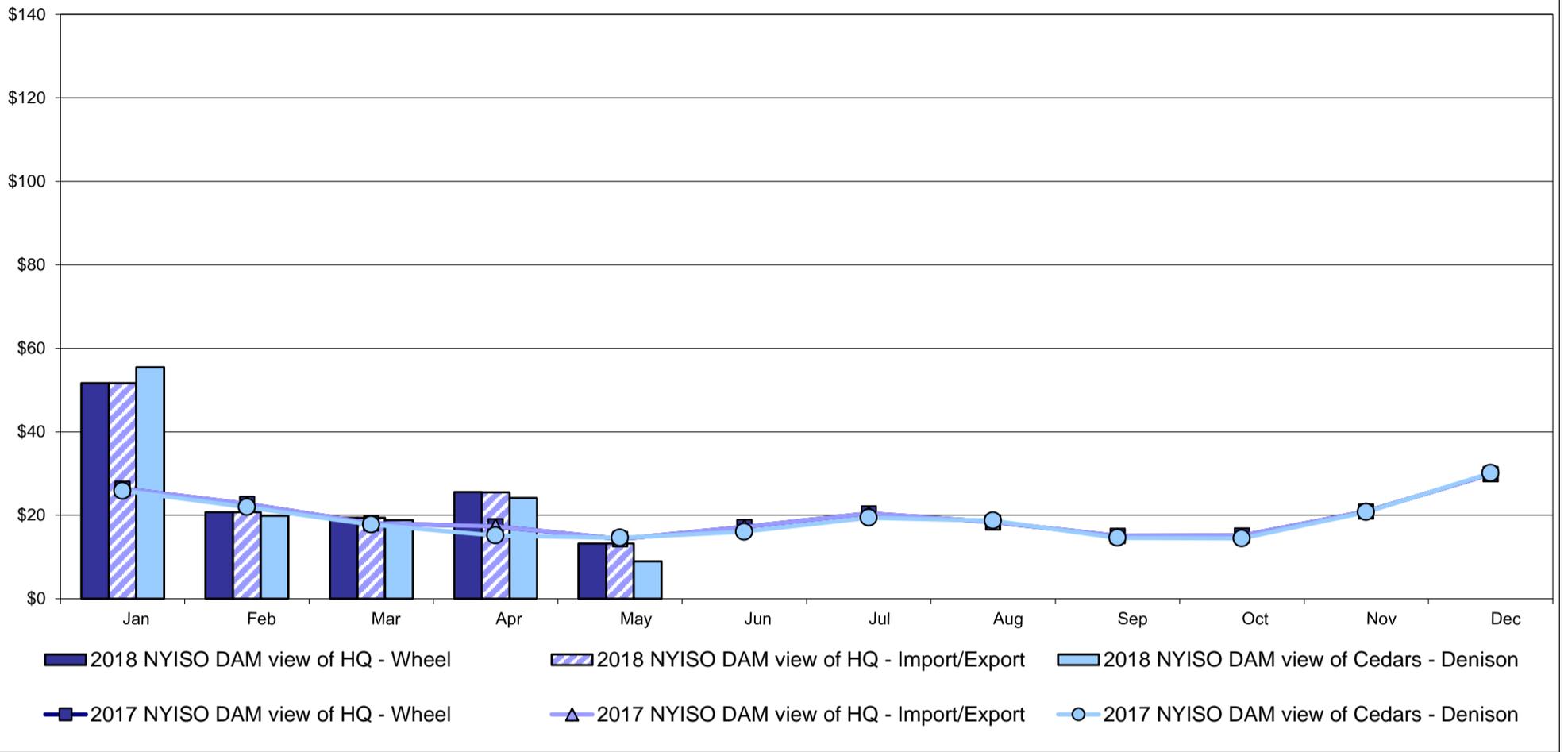


### Real Time Market Comparison: Neptune (\$/MWh)

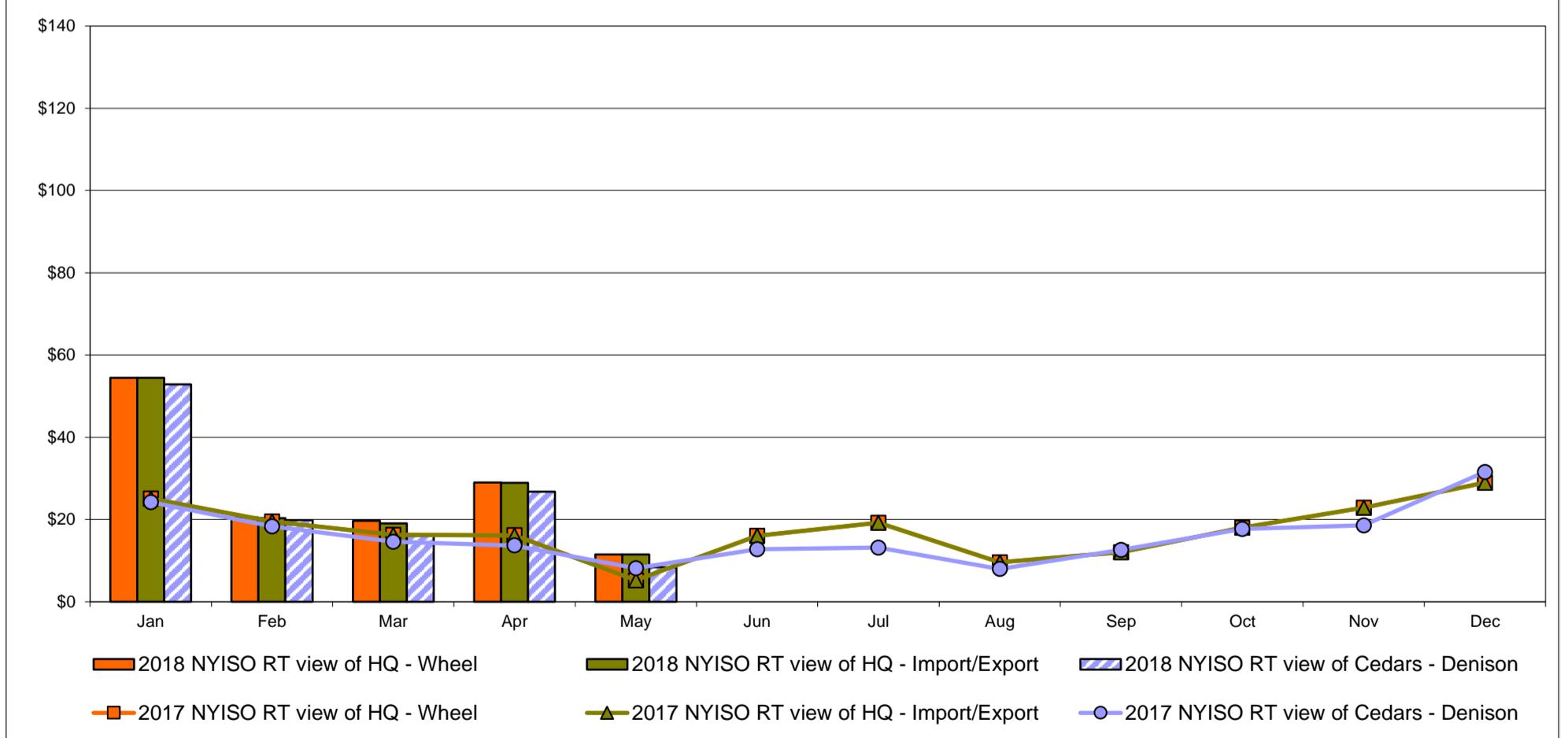


# External Comparison Hydro-Quebec

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

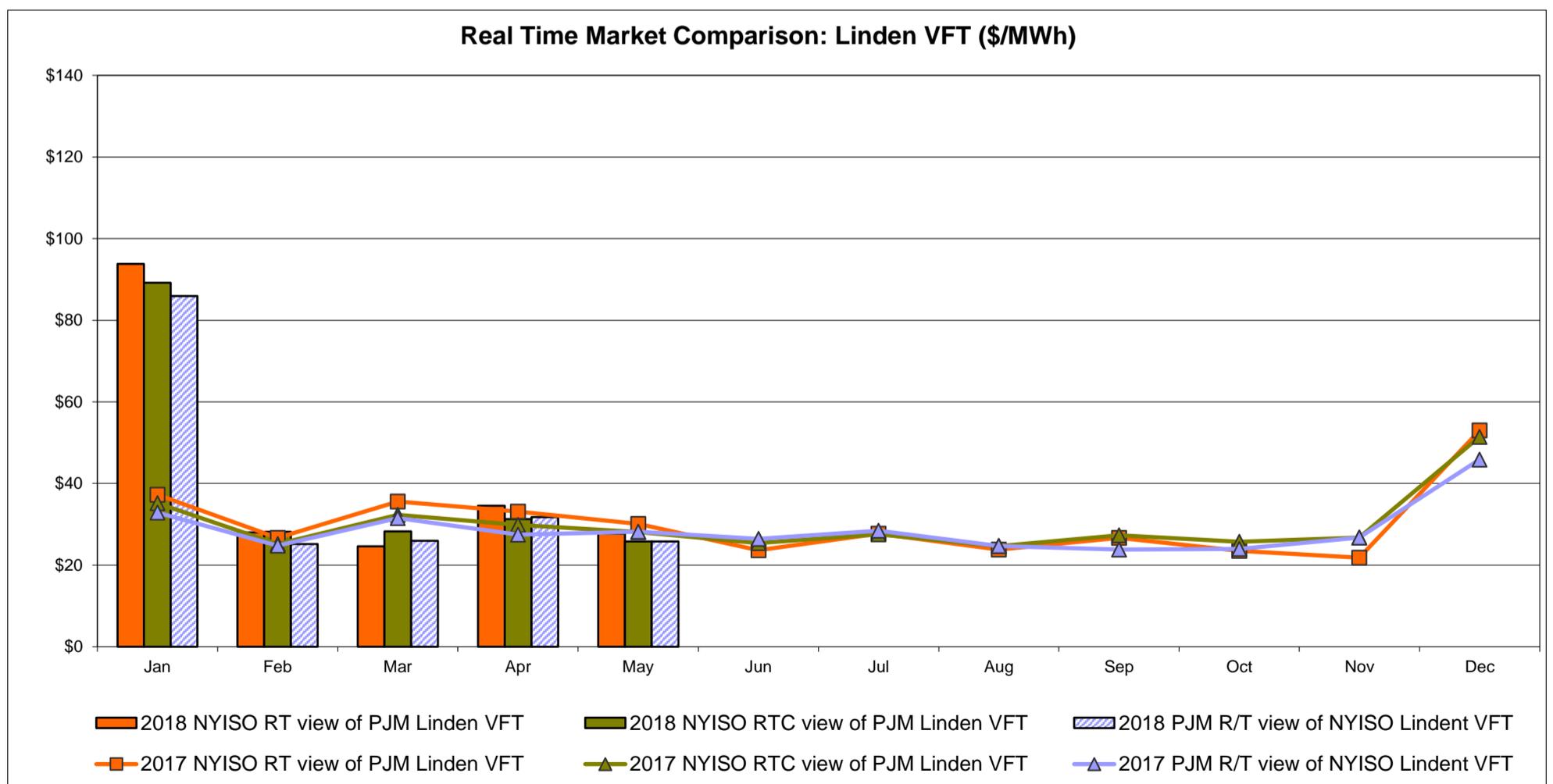
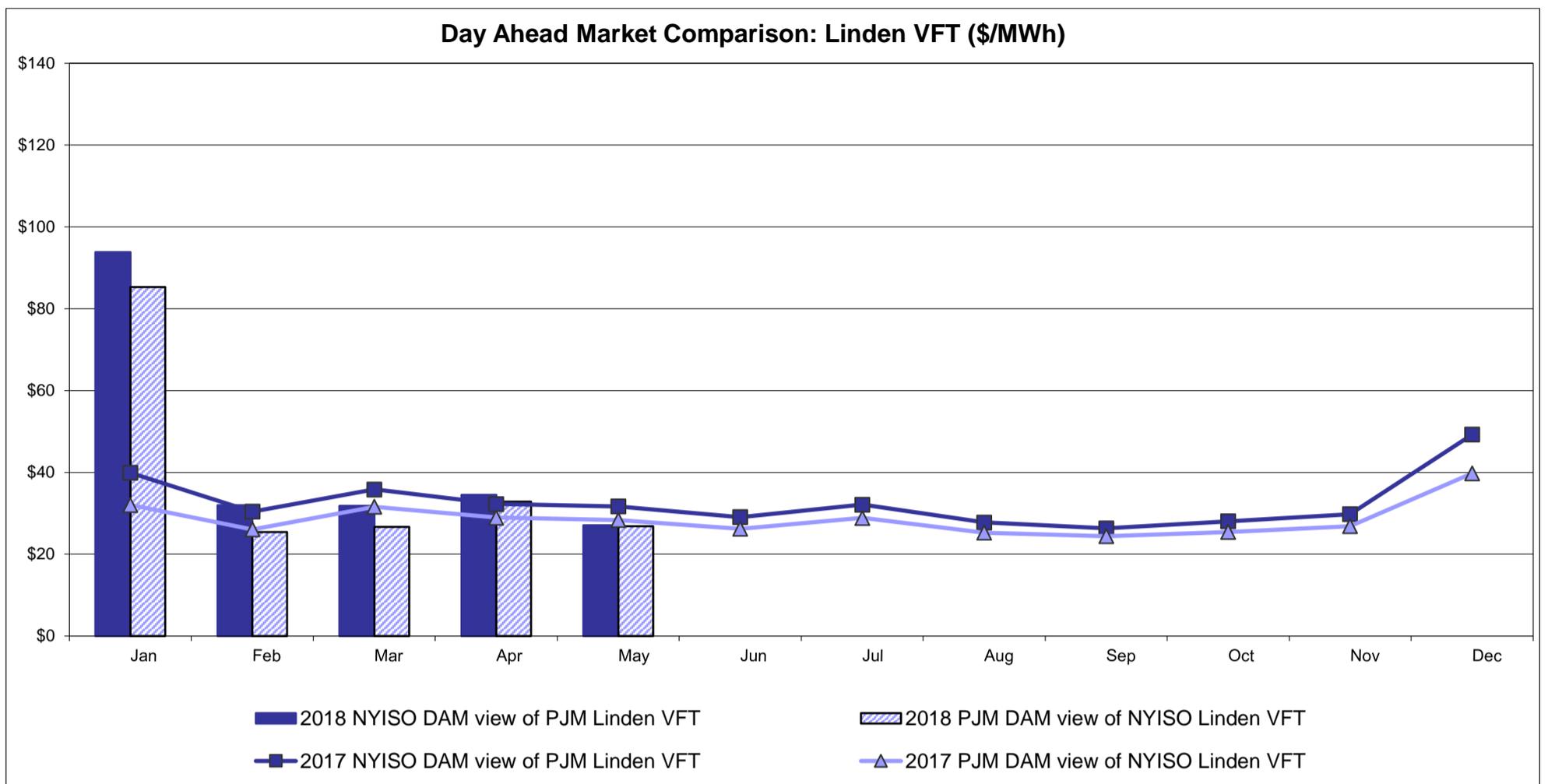


## Real Time Market External Zone Comparison - HQ (\$/MWh)

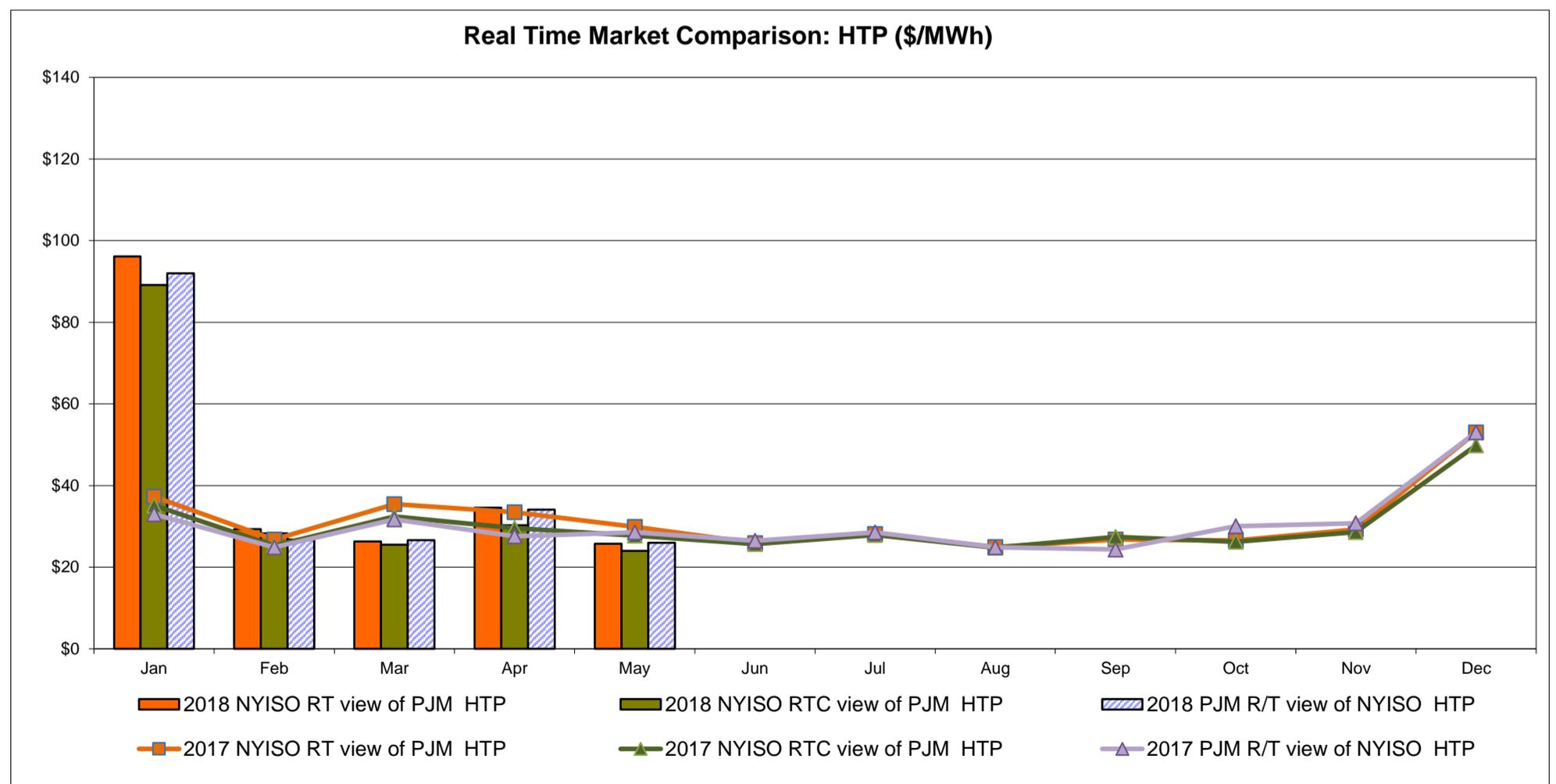
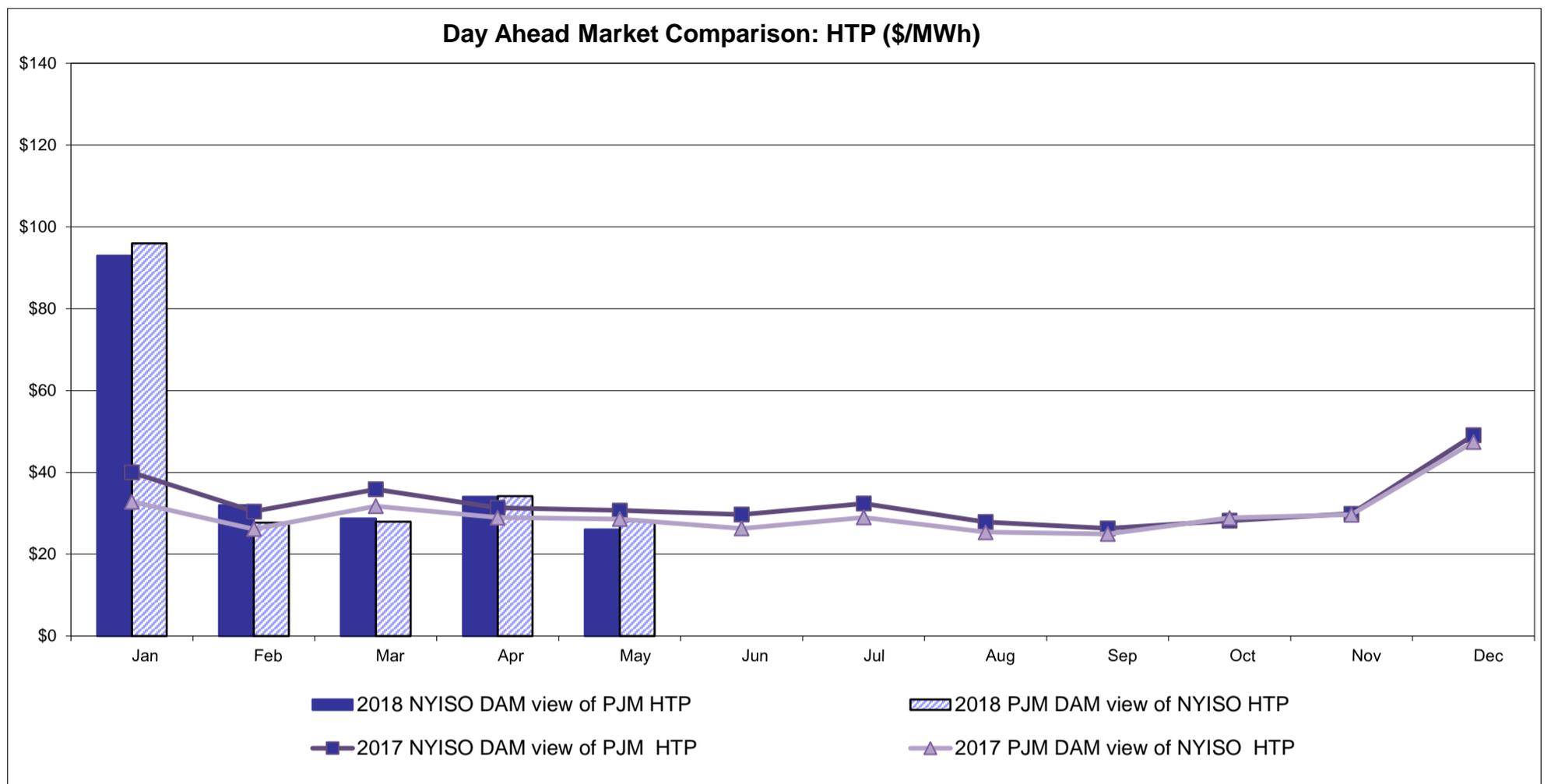


Note:  
Hydro-Quebec Prices are unavailable.

# External Controllable Line: Linden VFT (PJM)



# External Controllable Line: Hudson (PJM)

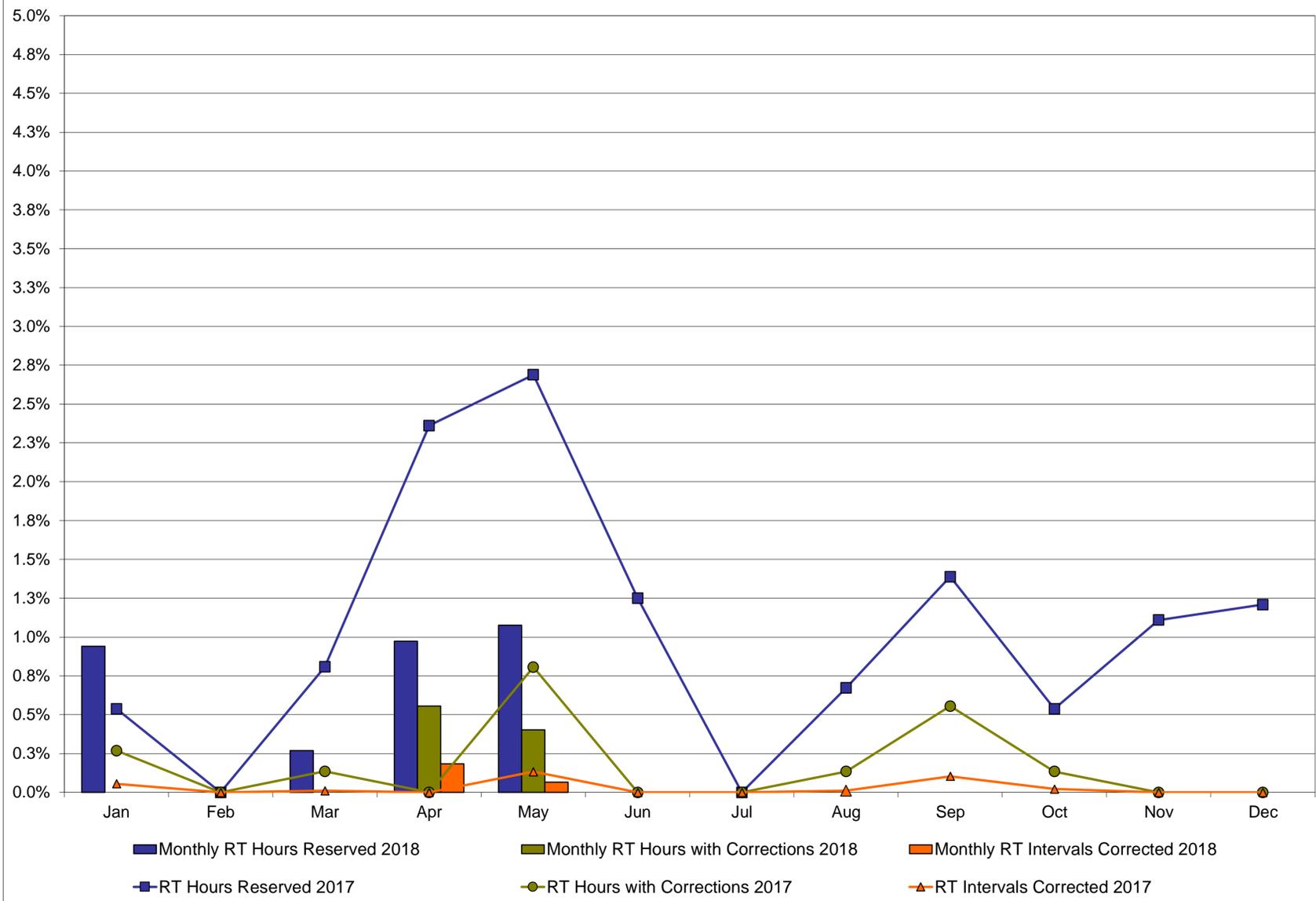


## NYISO Real Time Price Correction Statistics

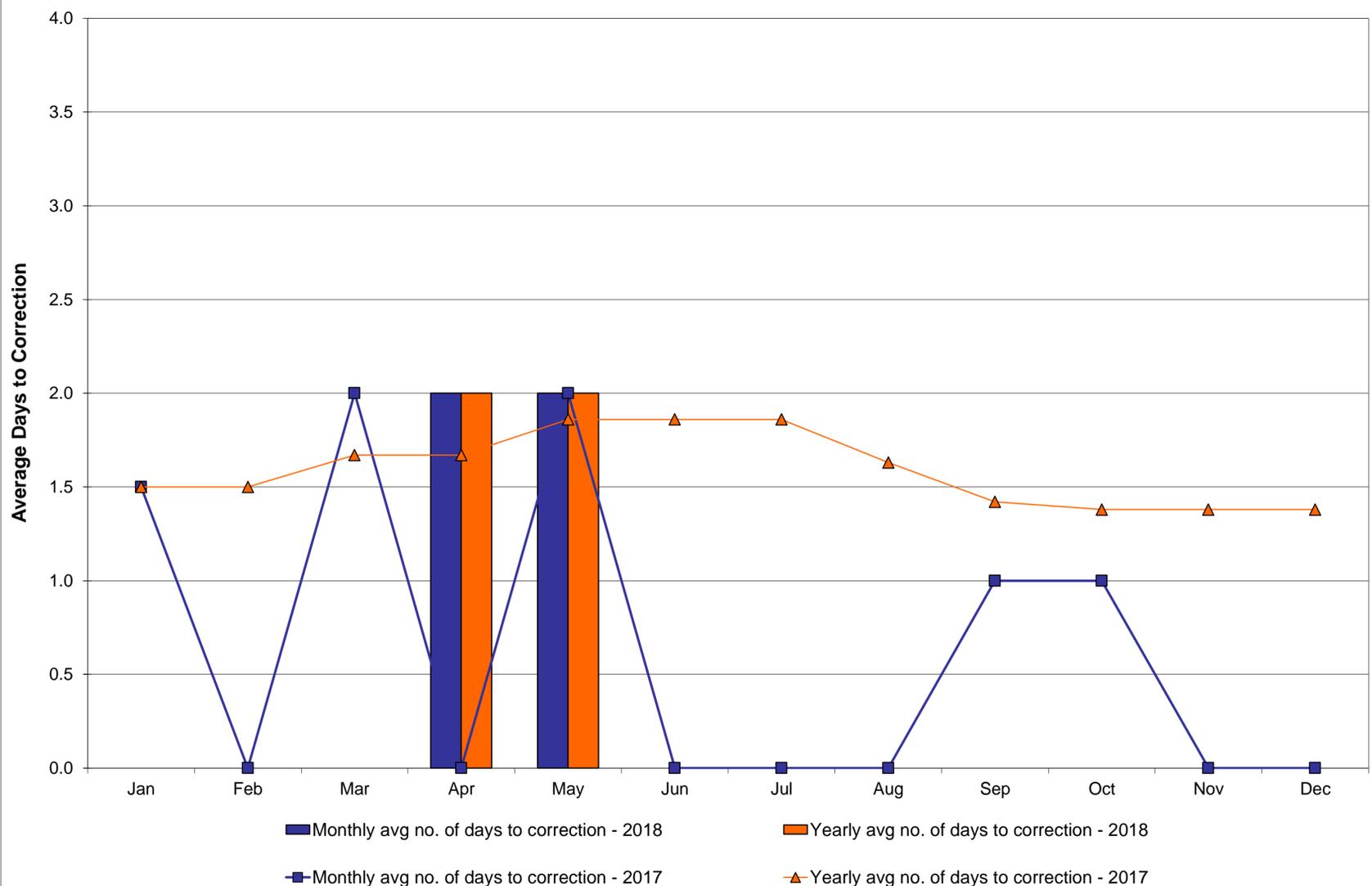
<b>2018</b>		<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<b>Hour Corrections</b>													
Number of hours with corrections	in the month	0	0	0	4	3							
Number of hours	in the month	744	672	743	720	744							
% of hours with corrections	in the month	0.00%	0.00%	0.00%	0.56%	0.40%							
% of hours with corrections	year-to-date	0.00%	0.00%	0.00%	0.14%	0.19%							
<b>Interval Corrections</b>													
Number of intervals corrected	in the month	0	0	0	16	6							
Number of intervals	in the month	9,021	8,112	9,002	8,717	9,033							
% of intervals corrected	in the month	0.00%	0.00%	0.00%	0.18%	0.07%							
% of intervals corrected	year-to-date	0.00%	0.00%	0.00%	0.05%	0.05%							
<b>Hours Reserved</b>													
Number of hours reserved	in the month	7	0	2	7	8							
Number of hours	in the month	744	672	743	720	744							
% of hours reserved	in the month	0.94%	0.00%	0.27%	0.97%	1.08%							
% of hours reserved	year-to-date	0.94%	0.49%	0.42%	0.56%	0.66%							
<b>Days to Correction *</b>													
Avg. number of days to correction	in the month	0.00	0.00	0.00	2.00	2.00							
Avg. number of days to correction	year-to-date	0.00	0.00	0.00	2.00	2.00							
<b>Days Without Corrections</b>													
Days without corrections	in the month	31	28	31	28	28							
Days without corrections	year-to-date	31	59	90	118	146							
<b>2017</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>Hour Corrections</b>													
Number of hours with corrections	in the month	2	0	1	0	6	0	0	1	4	1	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	0.27%	0.00%	0.13%	0.00%	0.81%	0.00%	0.00%	0.13%	0.56%	0.13%	0.00%	0.00%
% of hours with corrections	year-to-date	0.27%	0.14%	0.14%	0.10%	0.25%	0.21%	0.18%	0.17%	0.21%	0.21%	0.19%	0.17%
<b>Interval Corrections</b>													
Number of intervals corrected	in the month	5	0	1	0	12	0	0	1	9	2	0	0
Number of intervals	in the month	8,983	8,101	9,026	8,745	9,004	8,712	8,968	8,980	8,701	9,006	8,712	9,063
% of intervals corrected	in the month	0.06%	0.00%	0.01%	0.00%	0.13%	0.00%	0.00%	0.01%	0.10%	0.02%	0.00%	0.00%
% of intervals corrected	year-to-date	0.06%	0.03%	0.02%	0.02%	0.04%	0.03%	0.03%	0.03%	0.04%	0.03%	0.03%	0.03%
<b>Hours Reserved</b>													
Number of hours reserved	in the month	4	0	6	17	20	9	0	5	10	4	8	9
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744	721	744
% of hours reserved	in the month	0.54%	0.00%	0.81%	2.36%	2.69%	1.25%	0.00%	0.67%	1.39%	0.54%	1.11%	1.21%
% of hours reserved	year-to-date	0.54%	0.28%	0.46%	0.94%	1.30%	1.29%	1.10%	1.05%	1.08%	1.03%	1.04%	1.05%
<b>Days to Correction *</b>													
Avg. number of days to correction	in the month	1.50	0.00	2.00	0.00	2.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Avg. number of days to correction	year-to-date	1.50	1.50	1.67	1.67	1.86	1.86	1.86	1.63	1.42	1.38	1.38	1.38
<b>Days Without Corrections</b>													
Days without corrections	in the month	29	28	30	30	27	30	31	30	26	30	30	31
Days without corrections	year-to-date	29	57	87	117	144	174	205	235	261	291	321	352

\* Calendar days from reservation date.

### Percentage of Real-Time Corrections

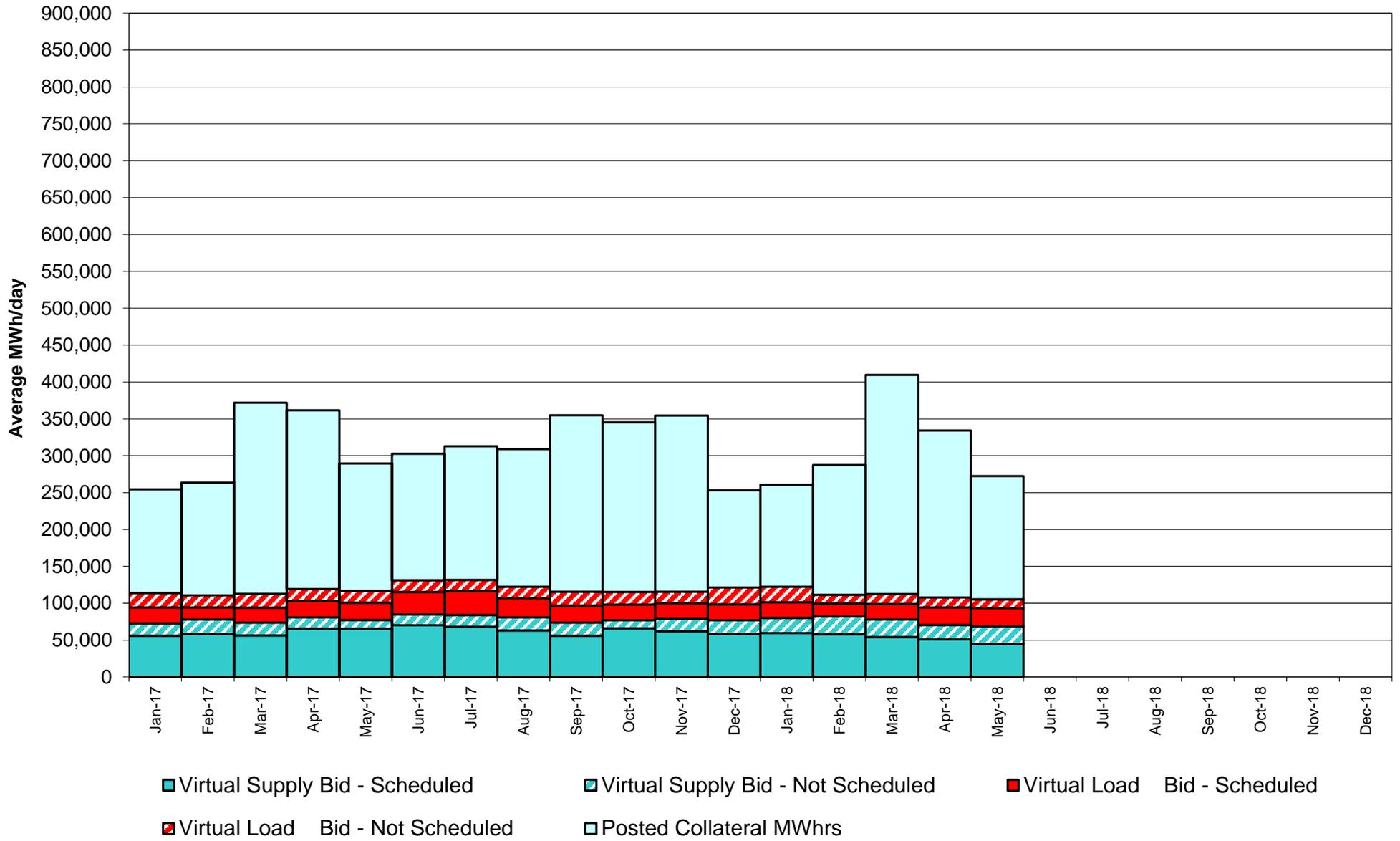


### Annual average time period for making Price Corrections (from reservation date) \*

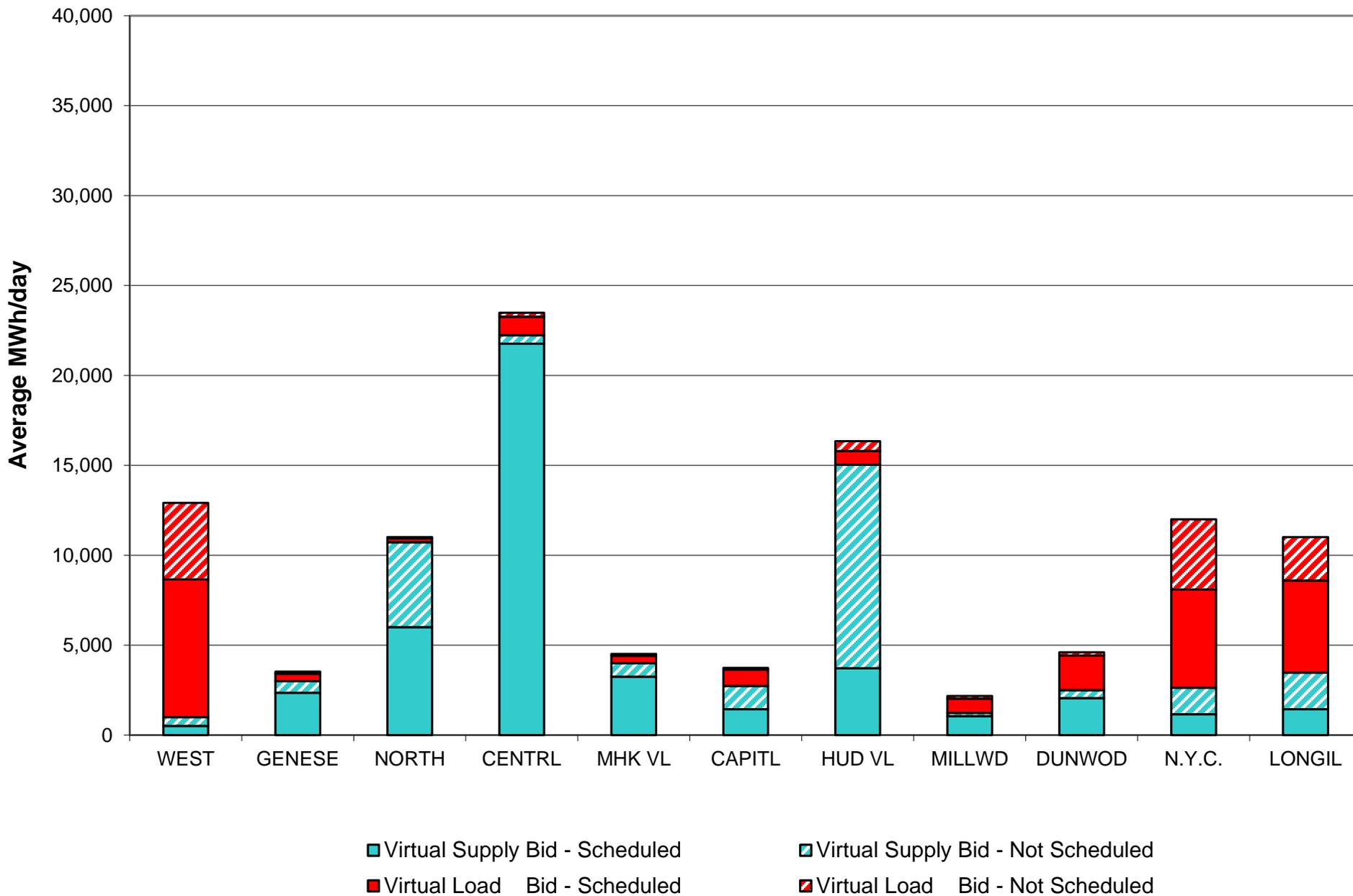


\* Calendar days from reservation date.

## NYISO Virtual Trading Average MWh per day



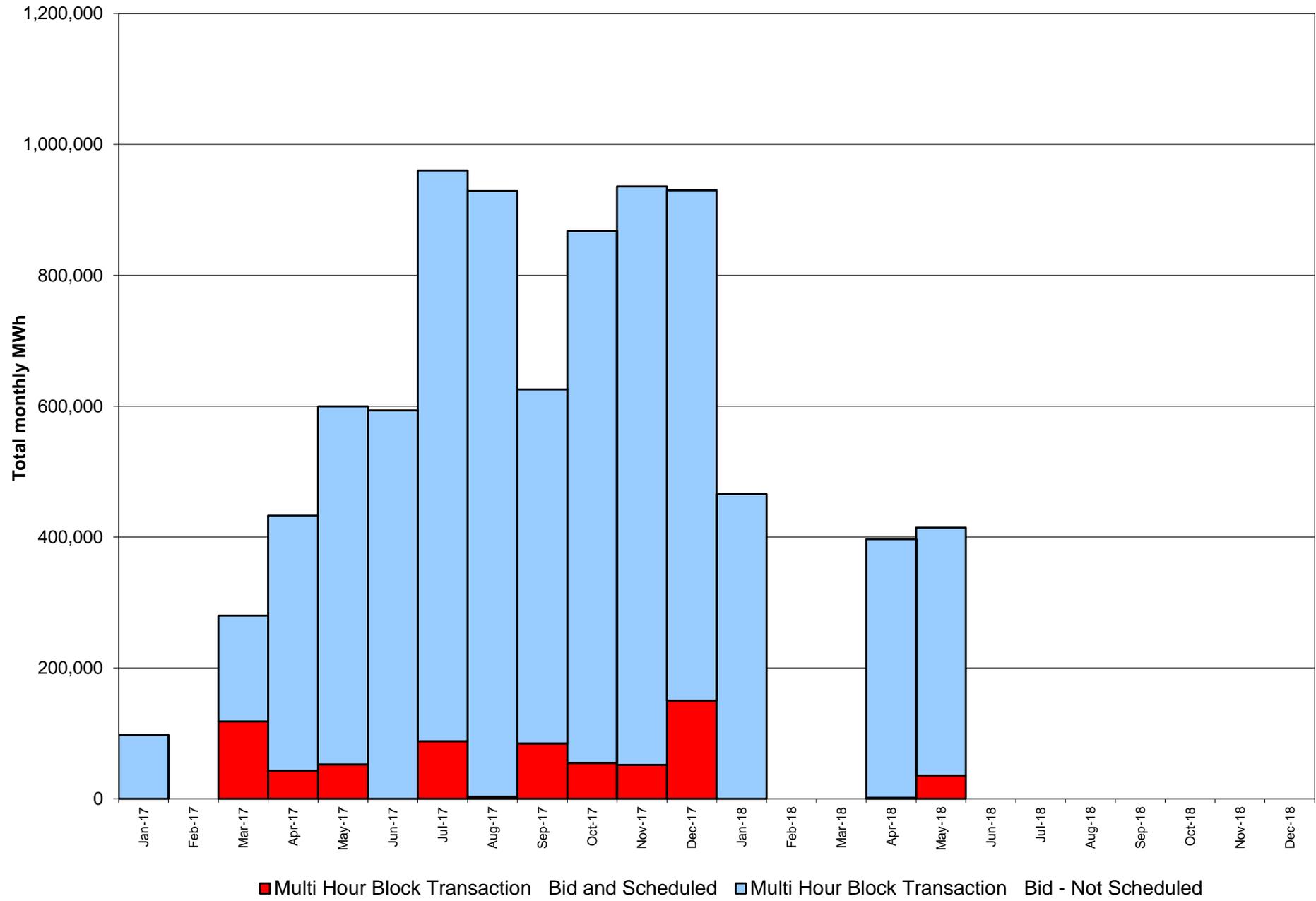
## Virtual Load and Supply Zonal Statistics through May 31, 2018



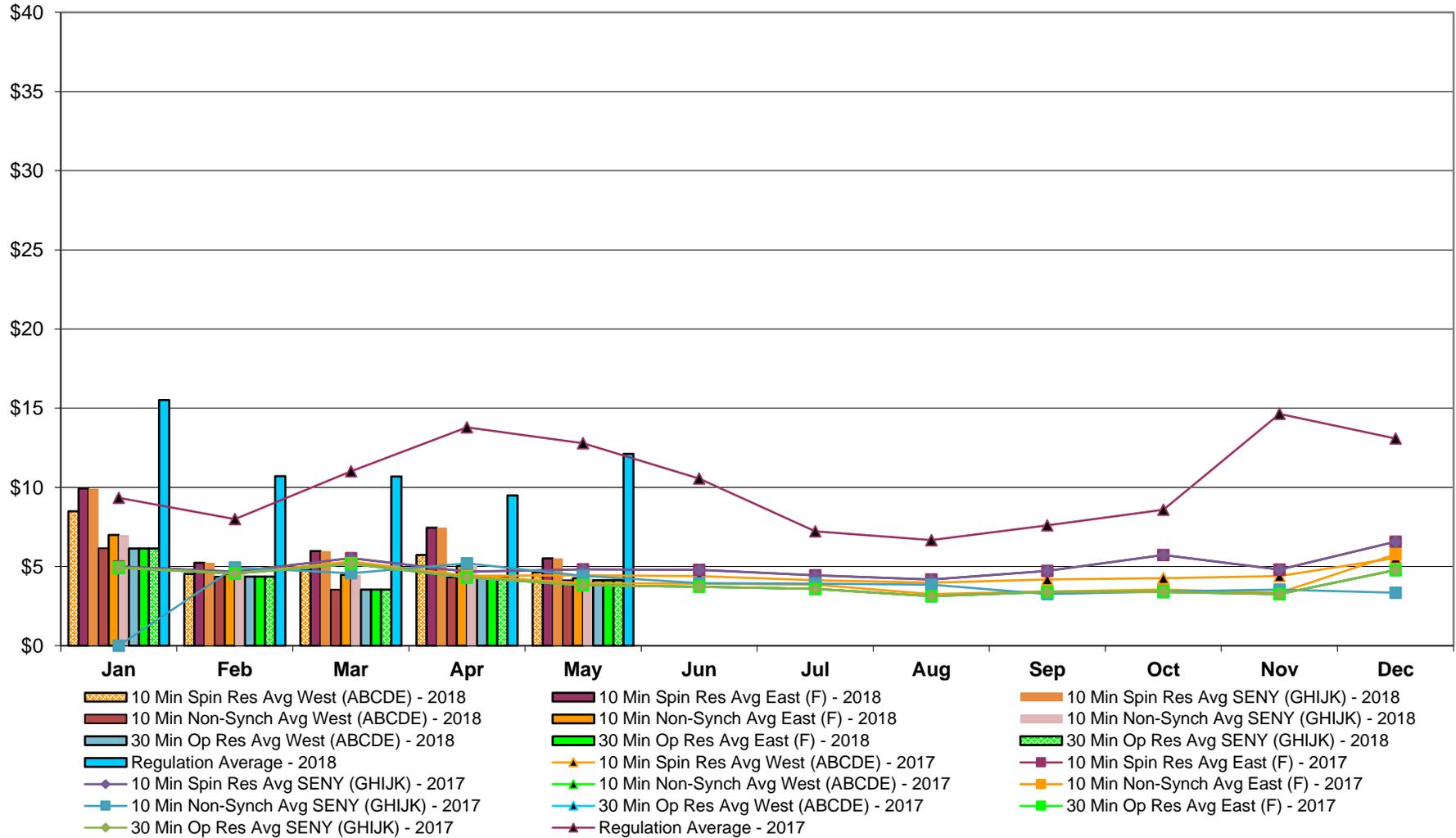
**Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2018**

		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
<b>WEST</b>	Jan-18	4,761	4,241	1,938	427	<b>MHK VL</b>	Jan-18	763	456	2,040	266	<b>DUNWOD</b>	Jan-18	1,795	1,509	2,215	620
	Feb-18	3,058	1,941	1,478	603		Feb-18	512	130	1,910	269		Feb-18	742	658	5,891	824
	Mar-18	7,263	2,535	860	659		Mar-18	569	139	1,896	309		Mar-18	1,367	755	3,530	487
	Apr-18	8,154	3,433	926	393		Apr-18	670	173	1,986	470		Apr-18	1,781	1,047	2,395	333
	May-18	7,658	4,266	516	478		May-18	413	95	3,242	758		May-18	1,933	183	2,052	440
	Jun-18						Jun-18						Jun-18				
	Jul-18						Jul-18						Jul-18				
	Aug-18						Aug-18						Aug-18				
	Sep-18						Sep-18						Sep-18				
	Oct-18						Oct-18						Oct-18				
	Nov-18						Nov-18						Nov-18				
	Dec-18						Dec-18						Dec-18				
<b>GENESE</b>	Jan-18	554	310	3,772	2,739	<b>CAPITL</b>	Jan-18	2,291	1,751	1,887	2,212	<b>N.Y.C.</b>	Jan-18	4,302	5,885	1,359	704
	Feb-18	525	172	1,723	2,671		Feb-18	1,822	269	1,331	2,799		Feb-18	5,644	4,187	1,181	1,086
	Mar-18	537	143	1,381	2,488		Mar-18	1,731	156	1,330	2,851		Mar-18	2,346	4,931	1,727	1,285
	Apr-18	587	234	1,818	1,047		Apr-18	1,743	263	2,032	1,826		Apr-18	3,190	2,460	2,212	1,376
	May-18	405	123	2,353	649		May-18	911	95	1,430	1,303		May-18	5,464	3,912	1,152	1,476
	Jun-18						Jun-18						Jun-18				
	Jul-18						Jul-18						Jul-18				
	Aug-18						Aug-18						Aug-18				
	Sep-18						Sep-18						Sep-18				
	Oct-18						Oct-18						Oct-18				
	Nov-18						Nov-18						Nov-18				
	Dec-18						Dec-18						Dec-18				
<b>NORTH</b>	Jan-18	274	282	8,259	3,265	<b>HUD VL</b>	Jan-18	1,562	1,285	5,029	7,218	<b>LONGIL</b>	Jan-18	3,335	3,714	1,932	1,622
	Feb-18	352	369	7,449	2,777		Feb-18	888	740	4,703	8,761		Feb-18	2,800	2,591	3,061	2,605
	Mar-18	249	367	6,995	2,136		Mar-18	845	1,098	5,169	10,837		Mar-18	3,613	3,021	3,308	1,768
	Apr-18	189	269	7,479	1,848		Apr-18	639	973	5,990	9,863		Apr-18	4,649	3,620	2,505	1,620
	May-18	215	79	6,001	4,717		May-18	773	539	3,727	11,304		May-18	5,128	2,420	1,436	2,031
	Jun-18						Jun-18						Jun-18				
	Jul-18						Jul-18						Jul-18				
	Aug-18						Aug-18						Aug-18				
	Sep-18						Sep-18						Sep-18				
	Oct-18						Oct-18						Oct-18				
	Nov-18						Nov-18						Nov-18				
	Dec-18						Dec-18						Dec-18				
<b>CENTRL</b>	Jan-18	983	434	28,975	647	<b>MILLWD</b>	Jan-18	923	988	2,033	757	<b>NYISO</b>	Jan-18	21,542	20,854	59,437	20,478
	Feb-18	595	215	28,161	483		Feb-18	486	337	1,284	1,197		Feb-18	17,423	11,608	58,172	24,075
	Mar-18	1,977	208	26,643	614		Mar-18	720	141	1,144	421		Mar-18	21,217	13,494	53,984	23,855
	Apr-18	1,753	334	22,490	677		Apr-18	466	526	1,031	163		Apr-18	23,821	13,330	50,864	19,613
	May-18	1,033	221	21,769	470		May-18	790	140	1,050	188		May-18	24,723	12,074	44,726	23,814
	Jun-18						Jun-18						Jun-18				
	Jul-18						Jul-18						Jul-18				
	Aug-18						Aug-18						Aug-18				
	Sep-18						Sep-18						Sep-18				
	Oct-18						Oct-18						Oct-18				
	Nov-18						Nov-18						Nov-18				
	Dec-18						Dec-18						Dec-18				

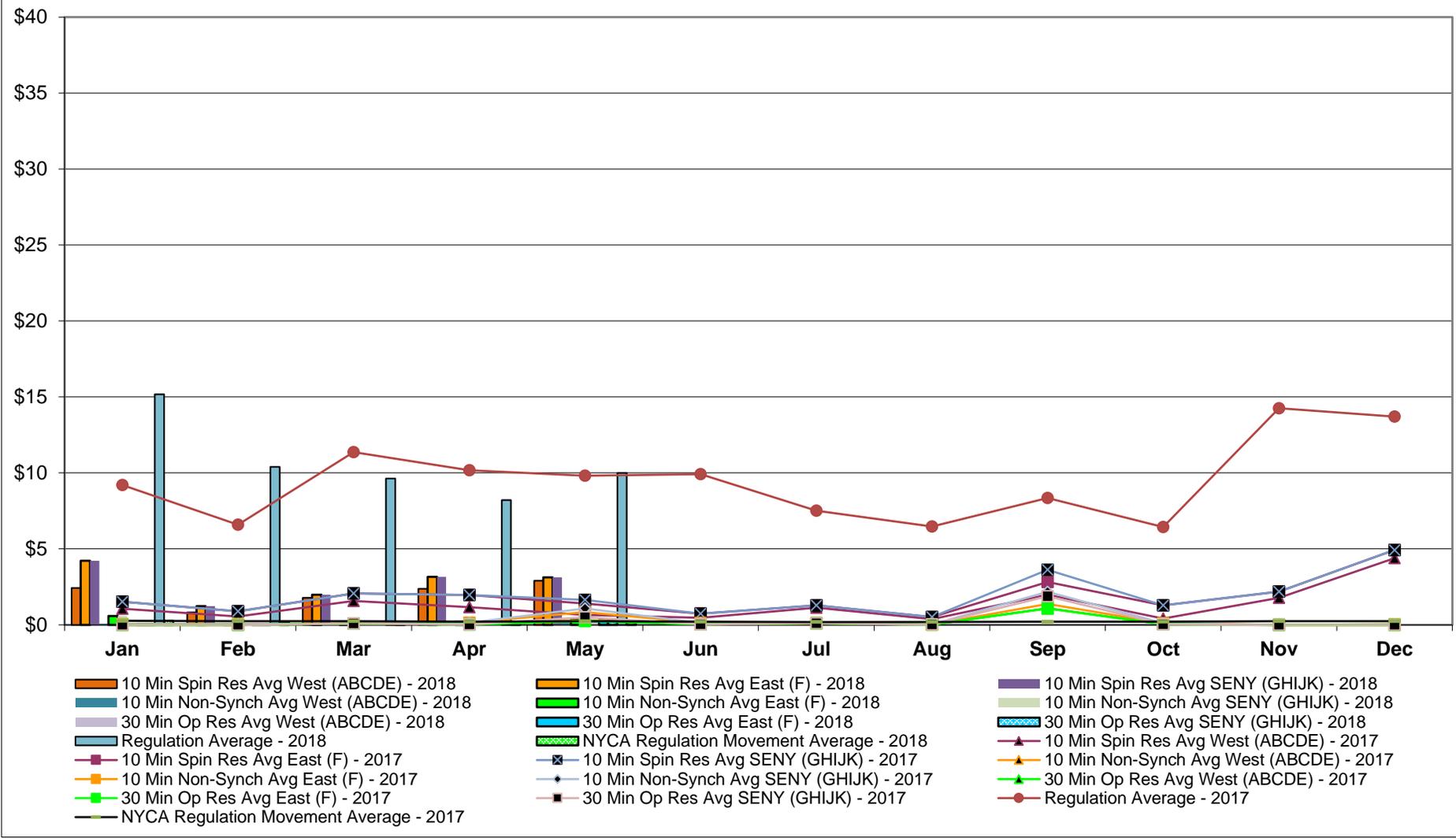
## NYISO Multi Hour Block Transactions Monthly Total MWh



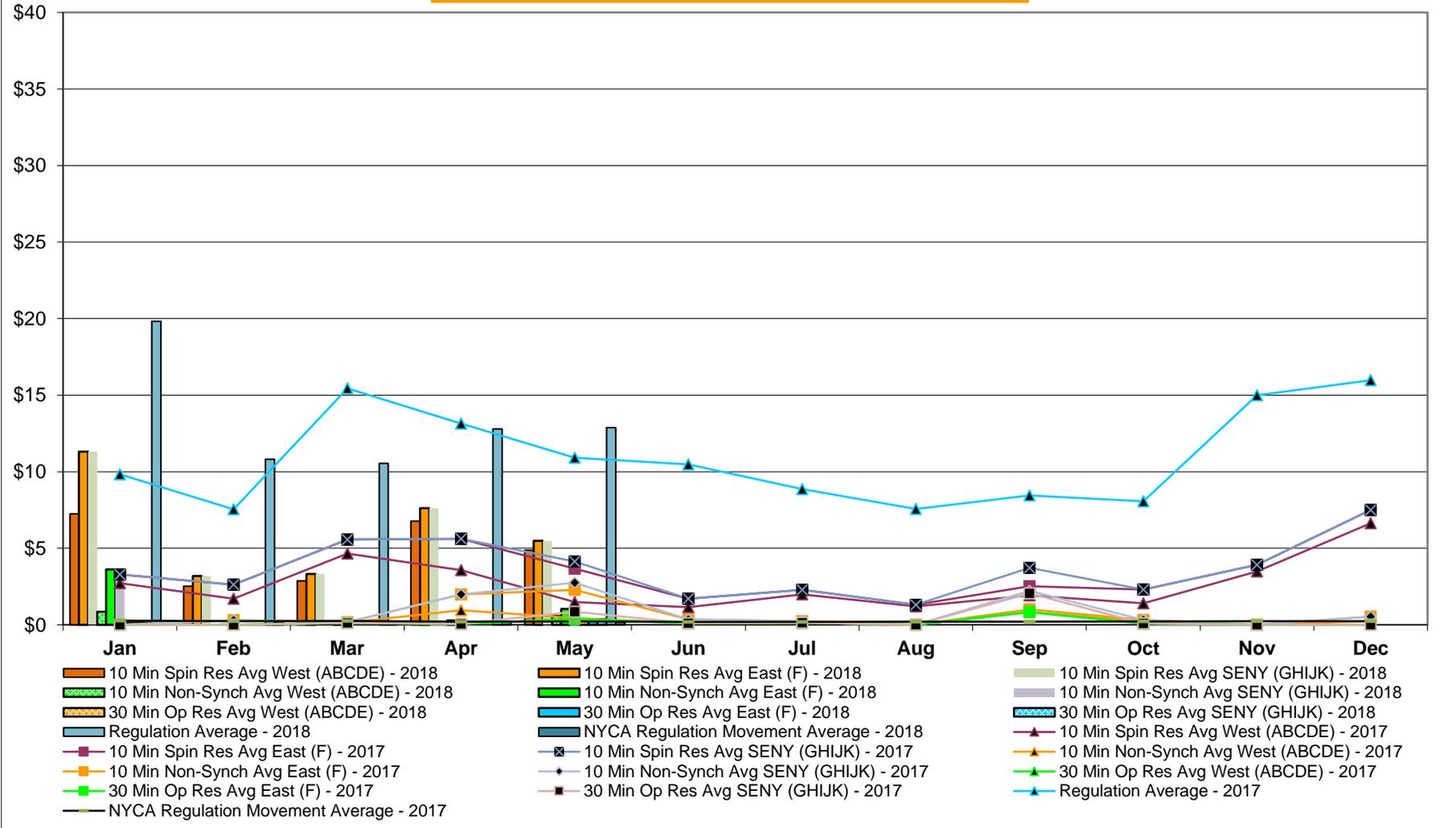
## NYISO Monthly Average Ancillary Service Prices Day Ahead Market 2017 - 2018



## NYISO Monthly Average Ancillary Service Prices RTC Market 2017 - 2018



## NYISO Monthly Average Ancillary Service Prices Real Time Market 2017 - 2018

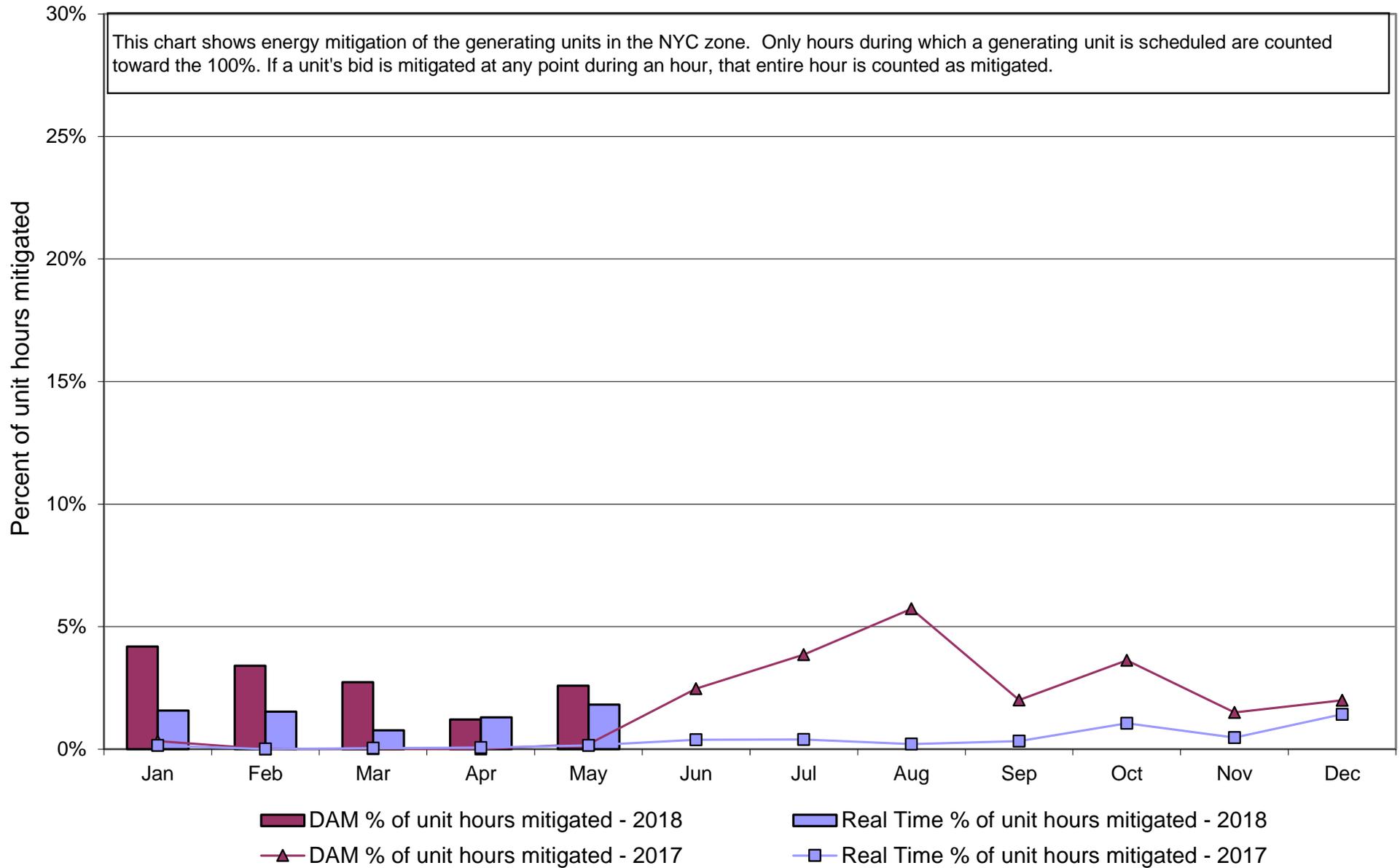


## NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH)

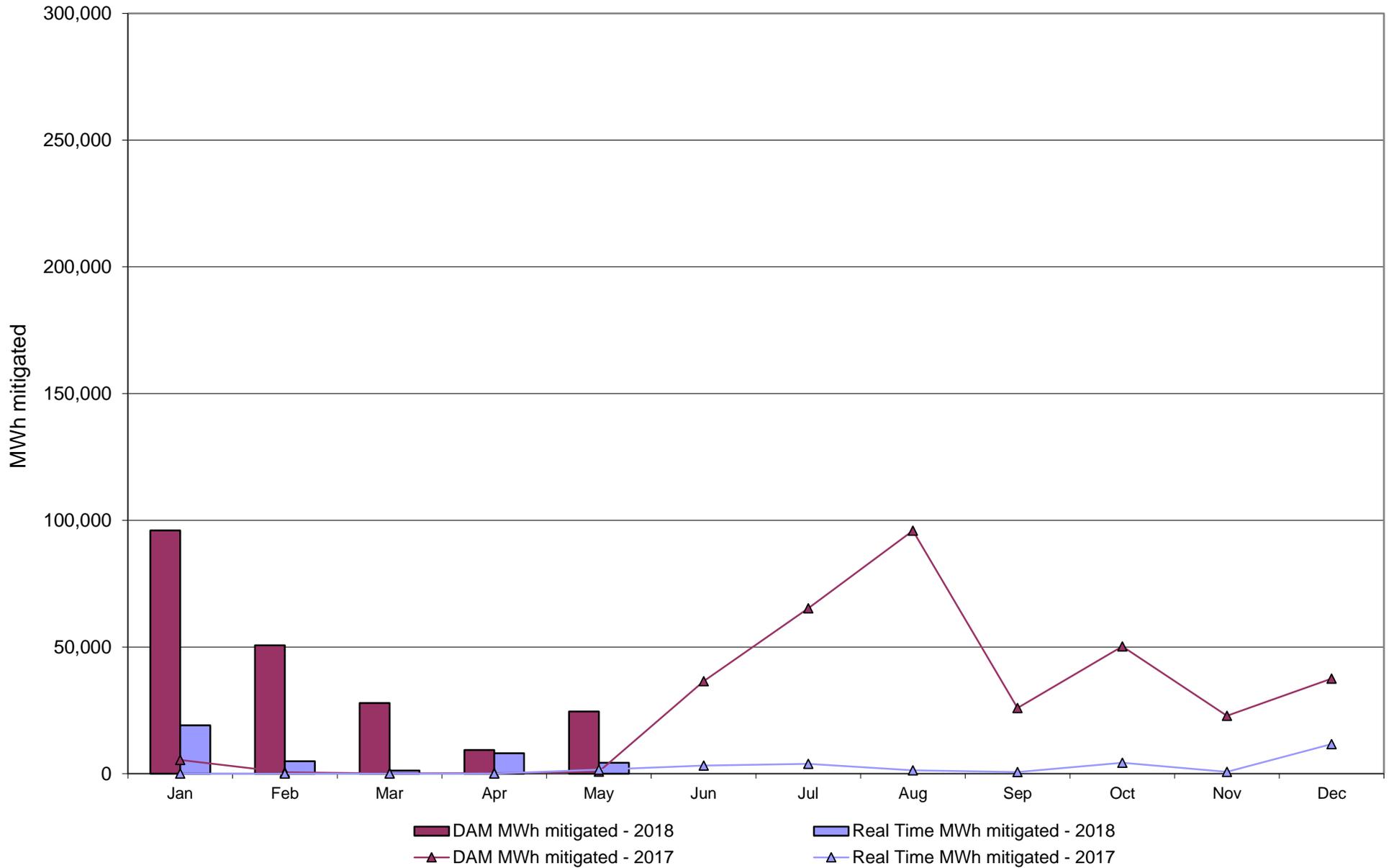
2018	January	February	March	April	May	June	July	August	September	October	November	December
<b>Day Ahead Market</b>												
10 Min Spin SENY (GHIJK)	9.93	5.24	5.97	7.45	5.52							
10 Min Spin East (F)	9.93	5.24	5.97	7.45	5.52							
10 Min Spin West (ABCDE)	8.49	4.53	4.78	5.73	4.65							
10 Min Non Synch SENY (GHIJK)	6.99	4.54	4.48	5.05	4.26							
10 Min Non Synch East (F)	6.99	4.54	4.48	5.05	4.26							
10 Min Non Synch West (ABCDE)	6.15	4.36	3.54	4.31	4.13							
30 Min SENY (GHIJK)	6.14	4.36	3.54	4.31	4.13							
30 Min East (F)	6.14	4.36	3.54	4.31	4.13							
30 Min West (ABCDE)	6.14	4.36	3.54	4.31	4.13							
Regulation	15.51	10.70	10.68	9.49	12.11							
<b>RTC Market</b>												
10 Min Spin SENY (GHIJK)	4.23	1.24	1.98	3.17	3.13							
10 Min Spin East (F)	4.23	1.24	1.98	3.17	3.13							
10 Min Spin West (ABCDE)	2.43	0.82	1.79	2.38	2.91							
10 Min Non Synch SENY (GHIJK)	0.59	0.03	0.01	0.22	0.42							
10 Min Non Synch East (F)	0.59	0.03	0.01	0.22	0.42							
10 Min Non Synch West (ABCDE)	0.08	0.02	0.00	0.00	0.33							
30 Min SENY (GHIJK)	0.08	0.02	0.00	0.00	0.32							
30 Min East (F)	0.08	0.02	0.00	0.00	0.32							
30 Min West (ABCDE)	0.08	0.02	0.00	0.00	0.32							
Regulation	15.17	10.40	9.63	8.22	10.01							
NYCA Regulation Movement	0.26	0.21	0.20	0.22	0.19							
<b>Real Time Market</b>												
10 Min Spin SENY (GHIJK)	11.31	3.19	3.31	7.62	5.48							
10 Min Spin East (F)	11.31	3.19	3.31	7.62	5.48							
10 Min Spin West (ABCDE)	7.24	2.52	2.86	6.77	4.86							
10 Min Non Synch SENY (GHIJK)	3.61	0.01	0.19	0.28	1.03							
10 Min Non Synch East (F)	3.61	0.01	0.19	0.28	1.03							
10 Min Non Synch West (ABCDE)	0.85	0.00	0.00	0.00	0.57							
30 Min SENY (GHIJK)	0.13	0.00	0.00	0.00	0.37							
30 Min East (F)	0.13	0.00	0.00	0.00	0.37							
30 Min West (ABCDE)	0.13	0.00	0.00	0.00	0.37							
Regulation	19.82	10.82	10.54	12.80	12.88							
NYCA Regulation Movement	0.24	0.21	0.20	0.21	0.17							
2017	January	February	March	April	May	June	July	August	September	October	November	December
<b>Day Ahead Market</b>												
10 Min Spin SENY (GHIJK)	5.01	5.38	5.04	6.31	4.93	4.62	6.41	7.12	5.57	5.37	4.83	4.89
10 Min Spin East (F)	5.01	5.38	5.04	6.31	4.93	4.62	6.41	7.12	5.57	5.37	4.83	4.89
10 Min Spin West (ABCDE)	4.94	5.25	4.84	5.60	4.77	4.52	5.78	6.20	5.14	4.89	4.50	4.73
10 Min Non Synch SENY (GHIJK)	4.94	5.25	4.88	5.80	4.83	4.36	6.34	7.07	5.52	5.09	4.43	4.49
10 Min Non Synch East (F)	4.94	5.25	4.88	5.80	4.83	4.36	6.34	7.07	5.52	5.09	4.43	4.49
10 Min Non Synch West (ABCDE)	4.92	5.20	4.84	5.58	4.68	4.32	5.72	6.15	5.10	4.82	4.39	4.43
30 Min SENY (GHIJK)	4.92	5.20	4.84	5.58	4.67	4.32	5.70	6.15	5.10	4.82	4.39	4.43
30 Min East (F)	4.92	5.20	4.84	5.58	4.67	4.32	5.70	6.15	5.10	4.82	4.39	4.43
30 Min West (ABCDE)	4.92	5.20	4.84	5.58	4.67	4.32	5.70	6.15	5.10	4.82	4.39	4.43
Regulation	9.34	8.19	8.05	7.93	6.11	7.00	8.19	8.61	7.00	8.57	7.77	13.80
<b>RTC Market</b>												
10 Min Spin SENY (GHIJK)	1.53	0.59	0.71	1.81	0.43	0.49	2.79	7.26	0.61	0.99	1.05	1.92
10 Min Spin East (F)	1.53	0.59	0.71	1.81	0.43	0.46	2.77	6.88	0.61	0.99	1.05	1.92
10 Min Spin West (ABCDE)	1.06	0.26	0.08	0.95	0.23	0.24	1.72	4.80	0.30	0.29	0.82	1.14
10 Min Non Synch SENY (GHIJK)	0.06	0.00	0.17	0.14	0.05	0.05	1.89	6.06	0.21	0.09	0.00	0.00
10 Min Non Synch East (F)	0.06	0.00	0.17	0.14	0.05	0.02	1.87	5.67	0.21	0.09	0.00	0.00
10 Min Non Synch West (ABCDE)	0.00	0.00	0.00	0.14	0.04	0.02	1.18	3.80	0.16	0.08	0.00	0.00
30 Min SENY (GHIJK)	0.00	0.00	0.00	0.14	0.04	0.04	0.94	3.65	0.15	0.08	0.00	0.00
30 Min East (F)	0.00	0.00	0.00	0.14	0.04	0.02	0.93	3.27	0.15	0.08	0.00	0.00
30 Min West (ABCDE)	0.00	0.00	0.00	0.14	0.04	0.02	0.93	3.27	0.15	0.08	0.00	0.00
Regulation	9.21	6.86	7.15	7.07	5.43	6.09	7.51	10.25	5.52	6.86	7.00	16.70
NYCA Regulation Movement	0.27	0.21	0.20	0.25	0.25	0.23	0.23	0.24	0.24	0.26	0.24	0.26
<b>Real Time Market</b>												
10 Min Spin SENY (GHIJK)	3.29	1.12	1.73	4.34	1.19	1.43	4.73	8.04	1.59	1.96	2.69	3.18
10 Min Spin East (F)	3.29	1.12	1.73	4.34	1.19	1.40	4.72	7.68	1.59	1.96	2.69	3.18
10 Min Spin West (ABCDE)	2.71	0.58	0.48	2.23	0.79	1.00	2.51	4.72	0.90	1.16	2.29	2.33
10 Min Non Synch SENY (GHIJK)	0.00	0.00	0.22	1.20	0.06	0.15	3.49	6.70	0.59	0.18	0.00	0.00
10 Min Non Synch East (F)	0.00	0.00	0.22	1.20	0.06	0.11	3.48	6.34	0.59	0.18	0.00	0.00
10 Min Non Synch West (ABCDE)	0.00	0.00	0.00	0.26	0.03	0.04	1.65	3.56	0.21	0.11	0.00	0.00
30 Min SENY (GHIJK)	0.00	0.00	0.00	0.25	0.03	0.07	0.98	3.48	0.21	0.11	0.00	0.00
30 Min East (F)	0.00	0.00	0.00	0.25	0.03	0.04	0.97	3.12	0.21	0.11	0.00	0.00
30 Min West (ABCDE)	0.00	0.00	0.00	0.25	0.03	0.04	0.97	3.12	0.21	0.11	0.00	0.00
Regulation	9.83	7.21	7.73	8.30	6.06	6.92	8.37	10.31	6.42	7.70	8.21	14.88
NYCA Regulation Movement	0.27	0.22	0.20	0.25	0.25	0.23	0.23	0.24	0.24	0.26	0.23	0.24

## NYISO In City Energy Mitigation - AMP (NYC Zone) 2017 - 2018

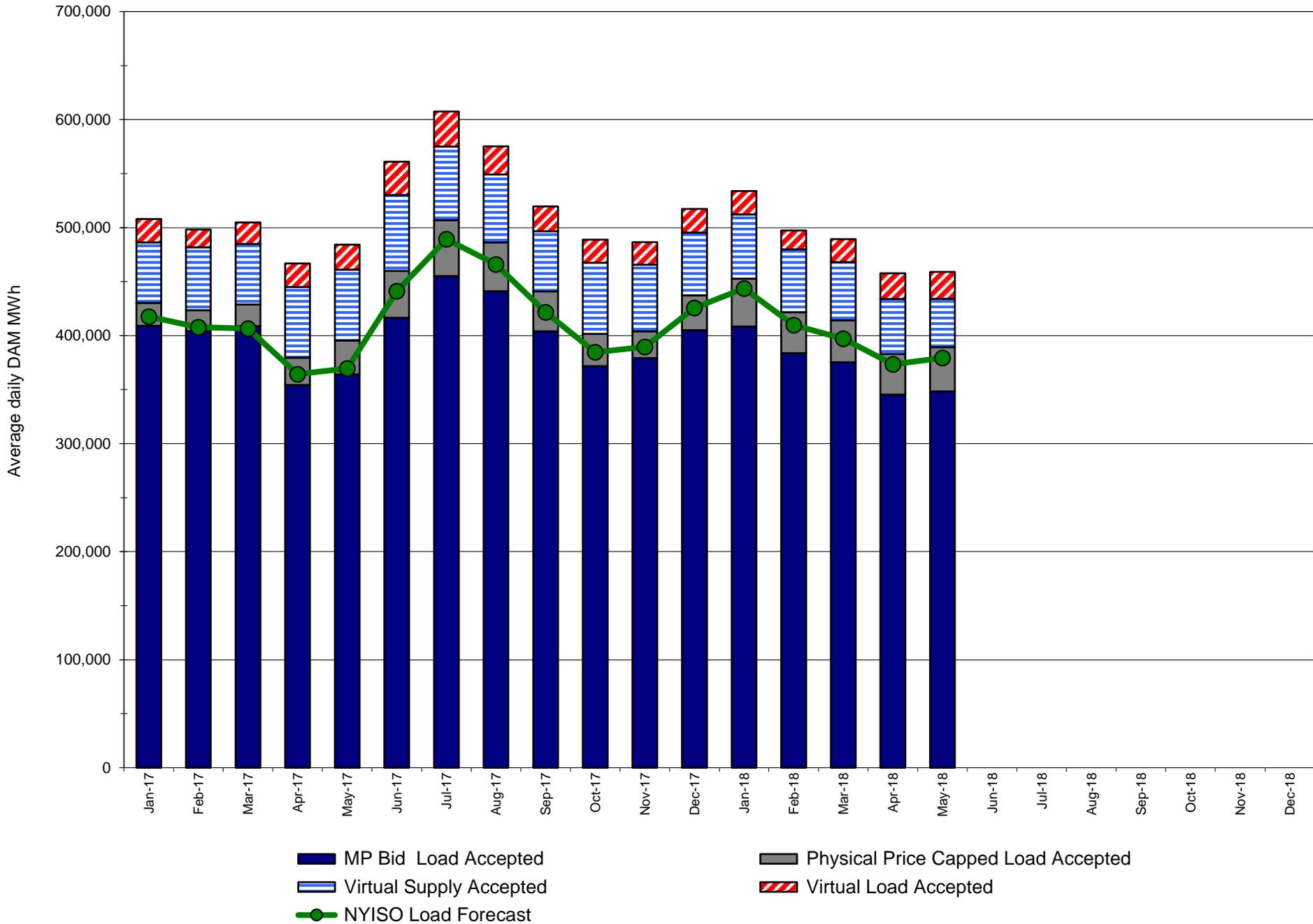
### Percentage of committed unit-hours mitigated



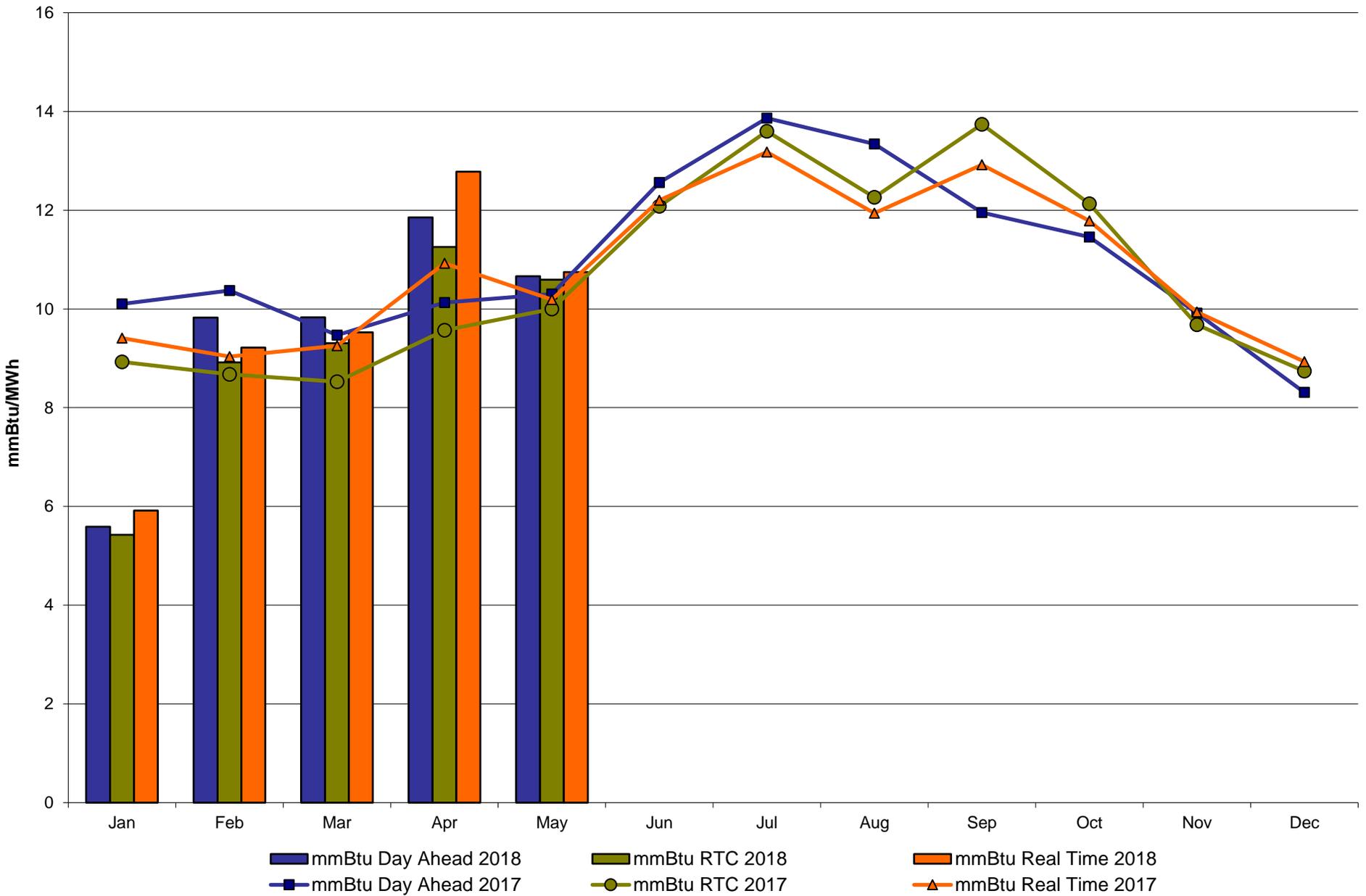
**NYISO In City Energy Mitigation (NYC Zone) 2017 - 2018  
Monthly megawatt hours mitigated**



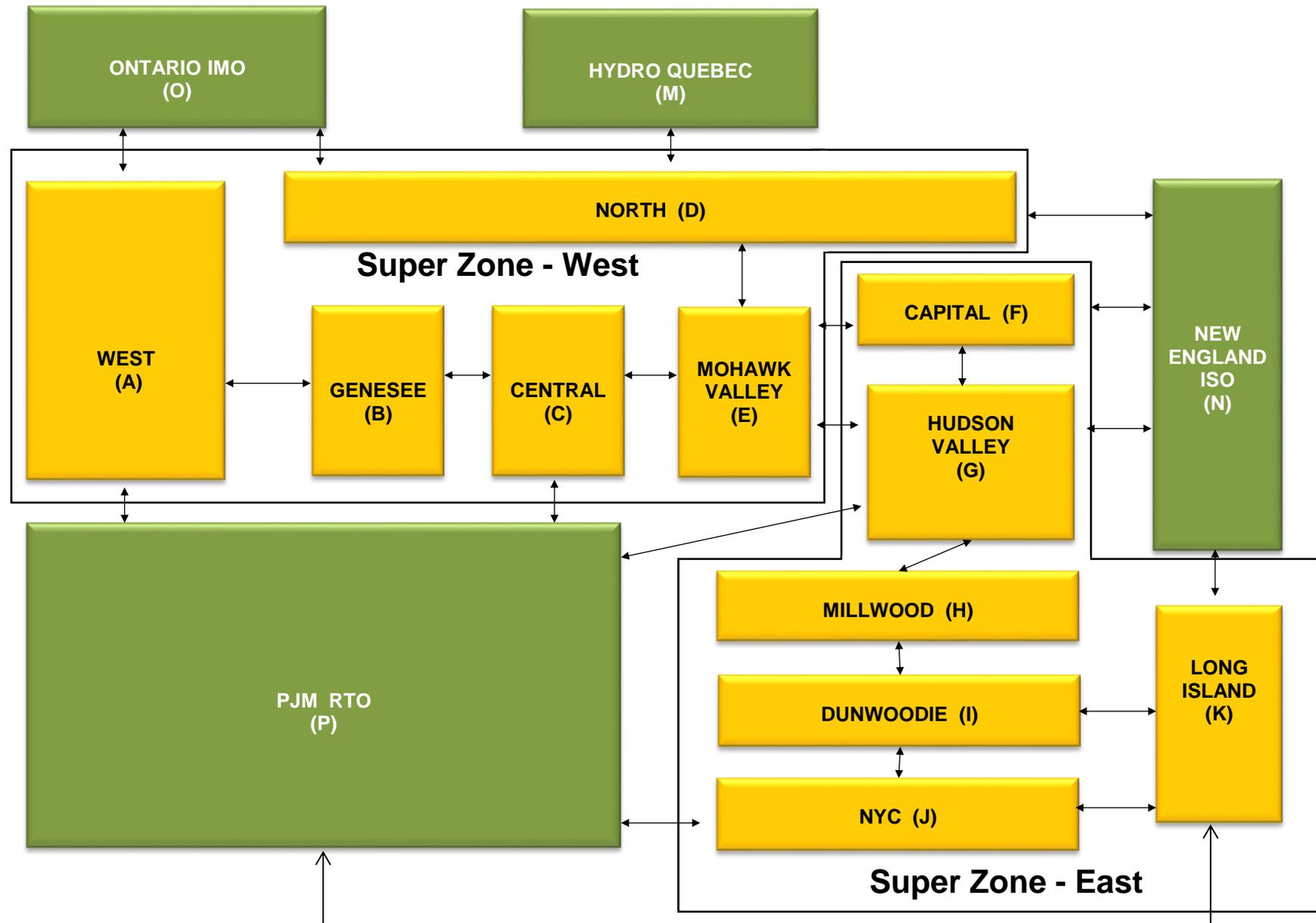
### NYISO Average Daily DAM Load Bid Summary



# Monthly Implied Heat Rate 2017-2018



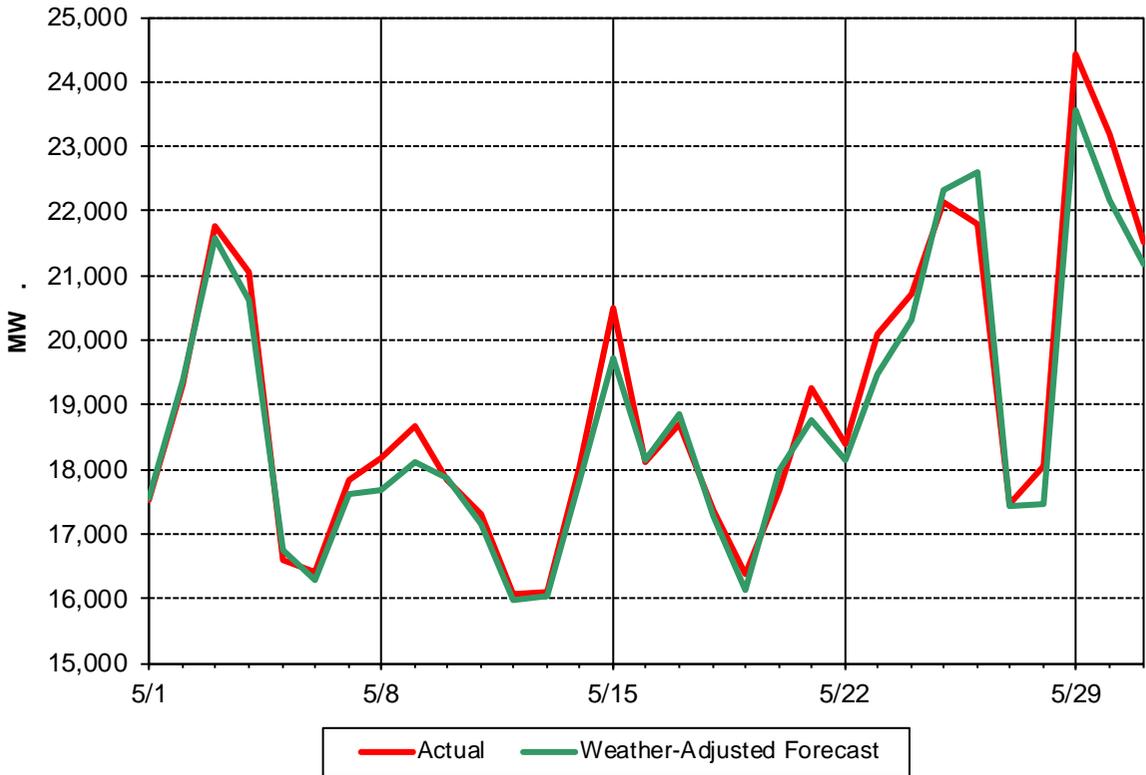
# NYISO LBMP ZONES



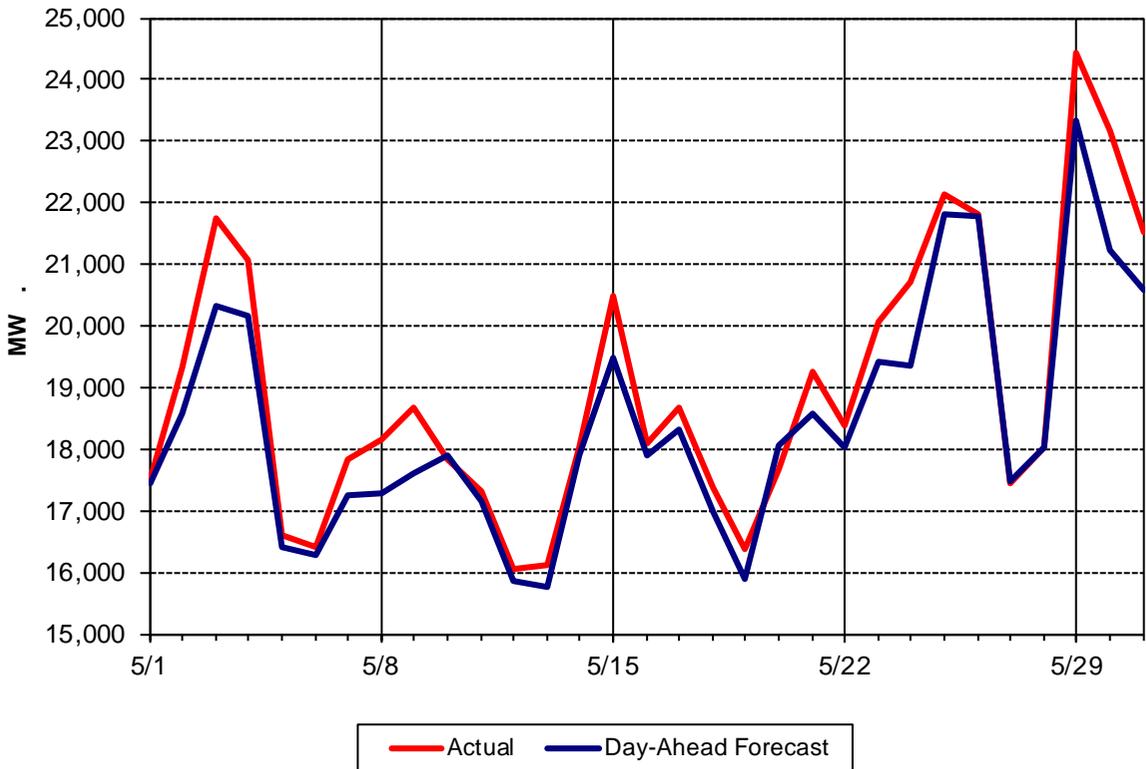
**Billing Codes for Chart C**

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

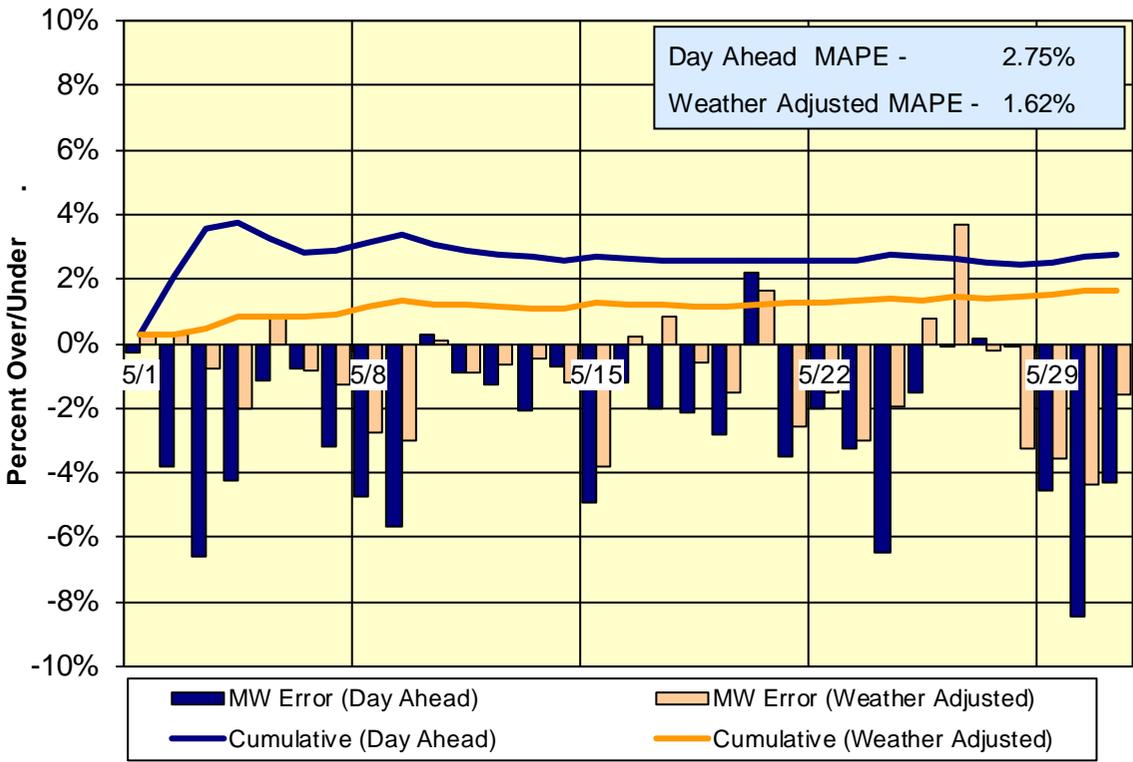
**NYISO Daily Peak Load - May 2018  
Actual vs. Weather-Adjusted Forecast**



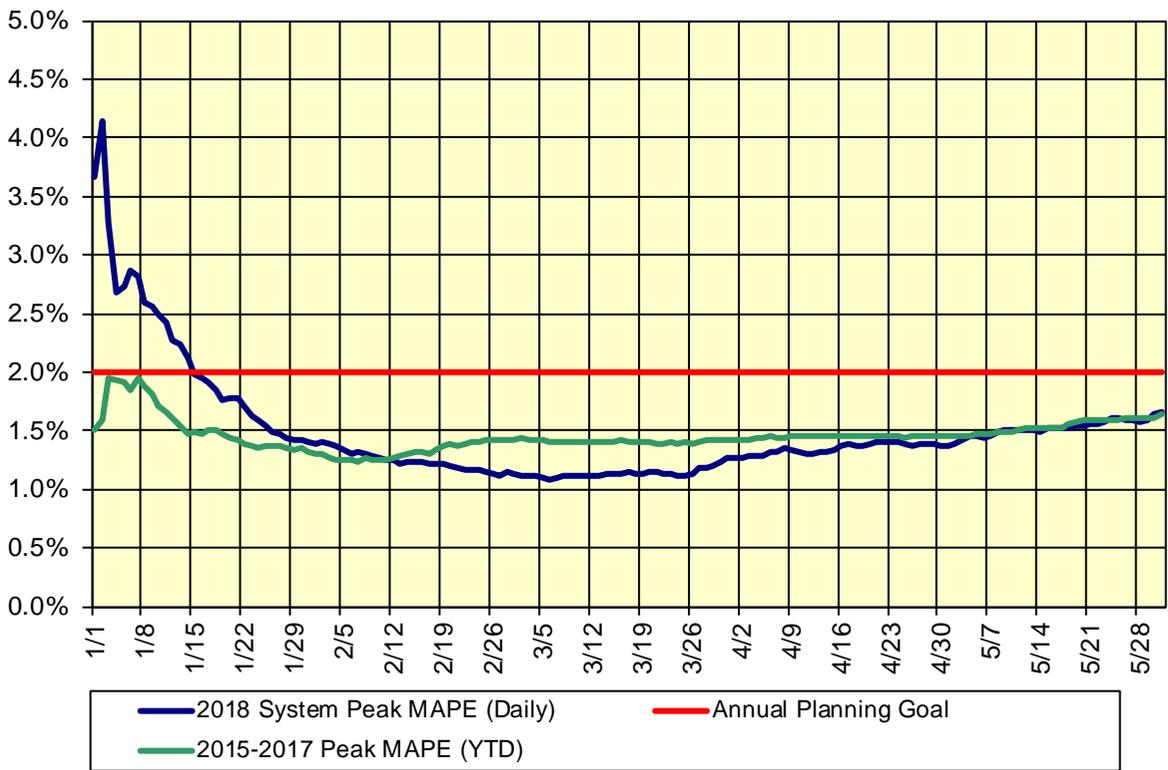
**NYISO Daily Peak Load - May 2018  
Actual vs. Forecast**



### Day Ahead Peak Forecast - May 2018 Percent Error - Actual & Weather Adjusted



### Day-Ahead Forecast Accuracy - Cumulative Performance 2018 Year-to-Date



**Summary Description of Regulatory Filings, Investigations,  
Rulemakings and Related Orders in NYISO Matters – May 2018**

<b>Filing Date</b>	<b>Filing Summary</b>	<b>Docket</b>	<b>Order Date</b>	<b>Order Summary</b>
03/22/2018	NYISO/Consolidated Edison joint filing re: amended and restated LGIA among NYISO, Con Edison and Bayonne Energy Center	ER18-1161-000	05/17/2018	Order accepted revised agreement effective 02/22/2018, as requested
03/23/2018	NYISO 205 filing re: market party fuel cost adjustments	ER18-1168-000	05/14/2018	Order accepted revisions effective 05/23/2018, as requested
04/06/2018	NYISO 205 filing re: revisions to modify the projected true-up exposure credit requirement	ER18-1308-000	05/10/2018	Order accepted revisions effective 06/12/2018, as requested
04/06/2018	NYISO 205 filing re: revisions to modify the current requirement to annually perform informational calculations related to net congestion rent settlements	ER18-1307-000	05/09/2018	Order accepted revisions effective 06/06/2018, as requested
04/18/2018	NYISO comments re: Bayonne EnergyCenter request for tariff waiver concerning the timing of participation in NYISO's monthly ICAP market before the close of the Class Year 2017 process	ER18-1301-000	05/04/2018	Order denied Bayonne Energy Center request for tariff waiver
05/01/2018	NYISO filing to the NYPSC re: Confidential Project Tracking Report - development status of proposed generation and transmission projects through March 2018	PSC Matter No. 10-02007		
05/02/2018	NYISO filing re: correction to a base tariff document used in the 03/19/2018 Order 1000 compliance filing	ER13-102-014		
05/08/2018	Joint reply comments of CAISO, ISO-NE, MISO, NYISO and SPP re: PJM responses to FERC questions concerning grid resilience issues	AD18-7-000		
05/09/2018	NYISO reply comments re: PJM responses to FERC questions concerning grid resilience issues	AD18-7-000		
05/10/2018	NYISO filing on behalf of Niagara Mohawk Power Corporation ("NMPC") re: notice of cancellation of a cost reimbursement agreement (SA 2264) between NMPC and the Oneida Indian Nation	ER18-1564-000		
05/14/2018	NYISO filing on behalf of NYSEG and RG&E re: compliance with 03/15/2018 FERC show cause order concerning changes in the corporate income tax rate and its impact on the revenue requirement of their wholesale transmission service charge	ER18-1588-000		

05/14/2018	NYISO filing on behalf of Central Hudson: compliance with 03/15/2018 FERC show cause order concerning changes in the corporate income tax rate and its impact on the revenue requirement of their wholesale transmission service charge	ER18-1598-000		
05/14/2018	NYISO confidential filing to the NYSPSC re: three-month Reliability Commitment Data Report for the period ending 04/30/2018	PSC Matter No. 10-02007		
05/15/2018	NYISO Order No. 842 compliance filing re: revisions to its Large Facility Interconnection Procedures, Large Generation Interconnection Agreement, Small Generator Interconnection Procedures and Small Generator Interconnection Agreement	ER18-1620-000		
05/17/2018	IRC filing re: motion to extend the time period to comply with Order No. 845 – final rule - generator interconnection procedures and agreements	RM17-8-000		
05/22/2018	NYISO filing re: post technical conference comments concerning reform of affected system coordination in the generator interconnection process	AD18-8-000		
05/22/2018	NYISO filing re: request for clarification or rehearing of Order No. 845 concerning reform of generator interconnection procedures and agreements	RM17-8-001		
05/22/2018	NYISO 205 filing re: revisions to establish external to rest of state deliverability rights	ER18-1668-000		
05/23/2018	NYISO compliance filing re: timeline for completing final market power reviews for generators entering the generator deactivation process	ER16-120-007		
05/29/2018	NYISO filing on behalf of Consolidated Edison Company re: a large generator interconnection agreement between Con Edison and Cogen Technologies Linden Ventures	ER18-1694-000		