



# Monthly Report

October 2016

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



## ***October 2016 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 November 8, 2016.

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## October 2016 Operations Performance Highlights

- Peak load of 21,143 MW occurred on 10/18/2016 HB 18
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 0 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- Higher levels of wind curtailment in the North Country this month were coincident with the scheduled outages of the Chateaugay-Massena 765kV (#7040), Massena-Marcy 765kV (#MSU1), and Moses-Massena 230kV (#MMS1/MMS2) transmission lines.
- On 10/21/2016, the Gardenville-Stolle Road 230kV (#66) transmission line ratings were increased by 104MW due to NYSEG efforts to advance part of a 2019 project to upgrade restrictive terminal equipment.
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

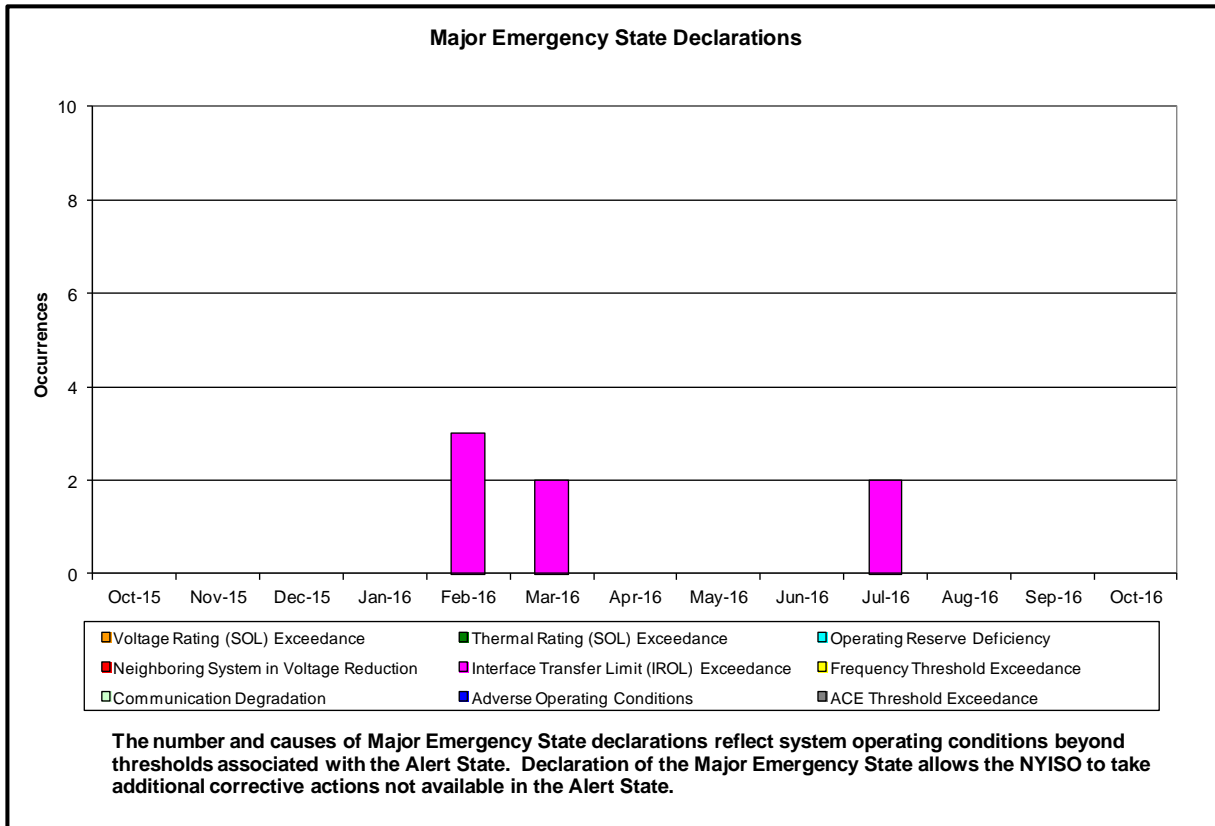
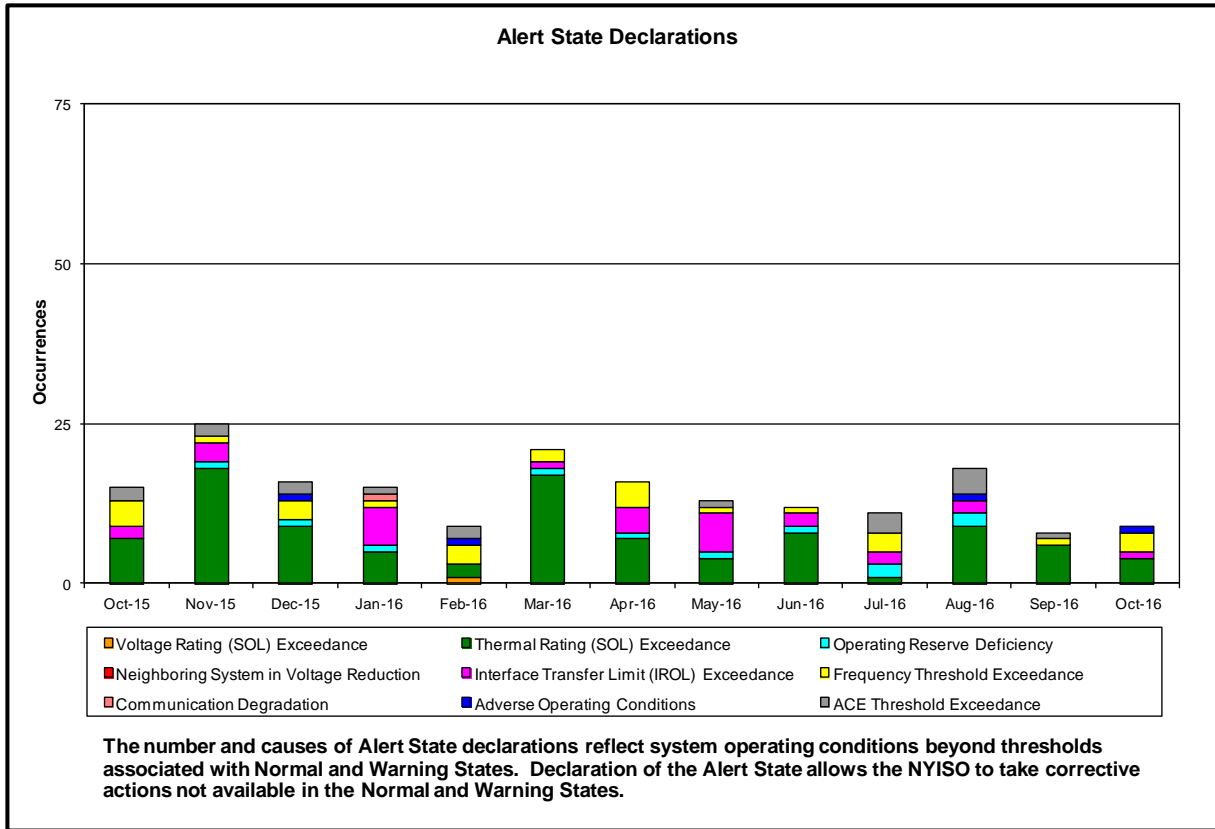
	Current Month Value (\$M)	Year-to-Date Value (\$M)
<b>NY Savings from PJM-NY Congestion Coordination</b>	\$0.11	\$16.70
<b>NY Savings from PJM-NY Coordinated Transaction Scheduling</b>	(\$0.08)	(\$0.55)
<b>NY Savings from NE-NY Coordinated Transaction Scheduling</b>	(\$0.04)	(\$1.52)
<b>Total NY Savings</b>	(\$0.01)	\$14.63
<b>Regional Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.13	\$2.14
<b>Regional Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.07	\$1.51
<b>Total Regional Savings</b>	\$0.20	\$3.65

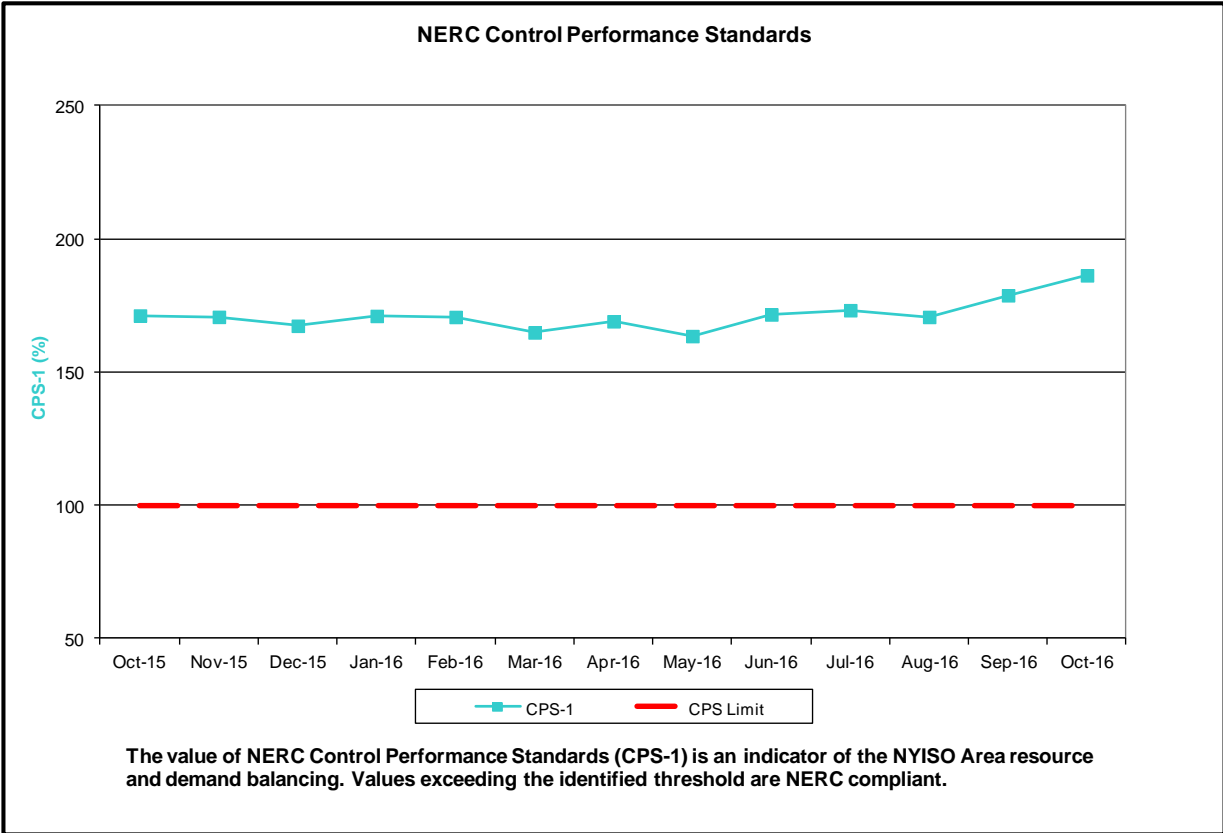
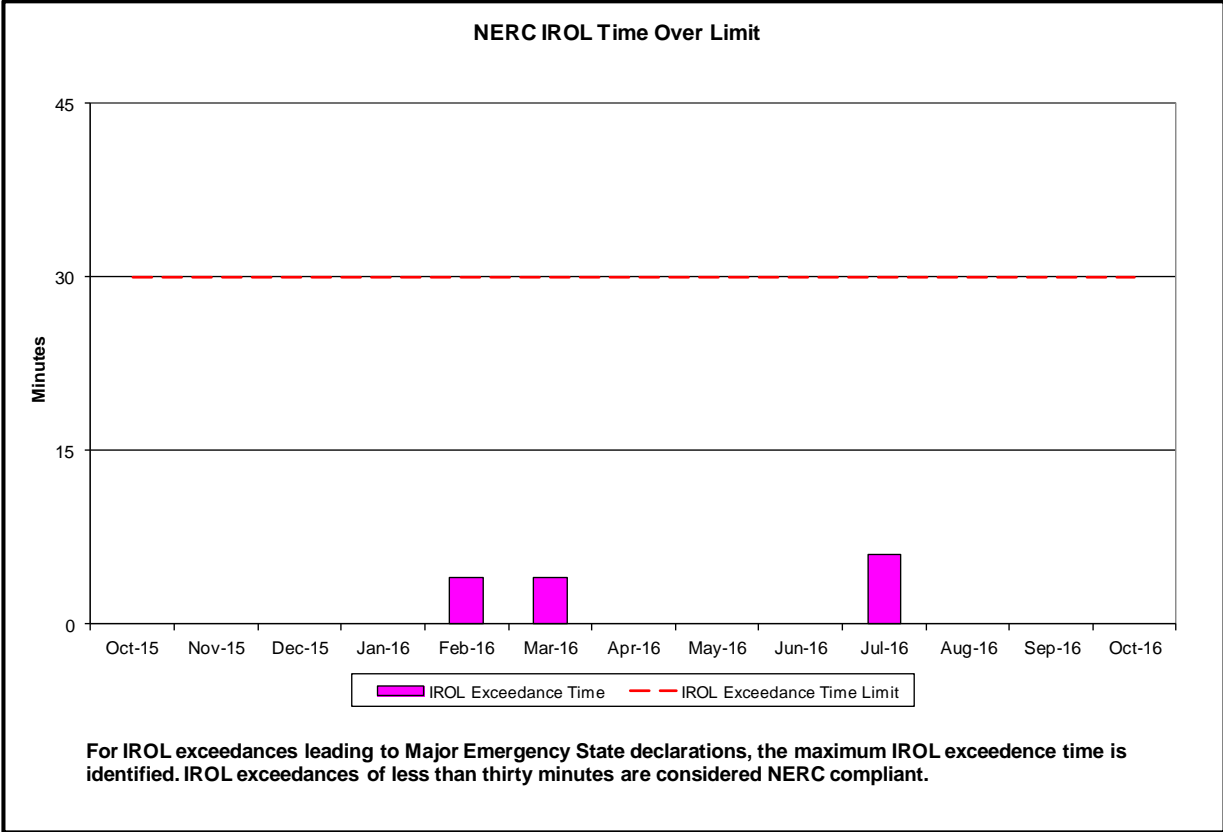
- Statewide uplift cost monthly average was (\$0.24)/MWh
- The following table identifies the Monthly ICAP spot market prices by locality and changes from the end of the prior Winter Capability period.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
November 2016 Spot Price	\$0.35	\$3.69	\$3.69	\$0.35
April 2016 Spot Price	\$0.58	\$3.03	\$5.65	\$1.60
Delta	(\$0.23)	\$0.66	(\$1.96)	(\$1.25)

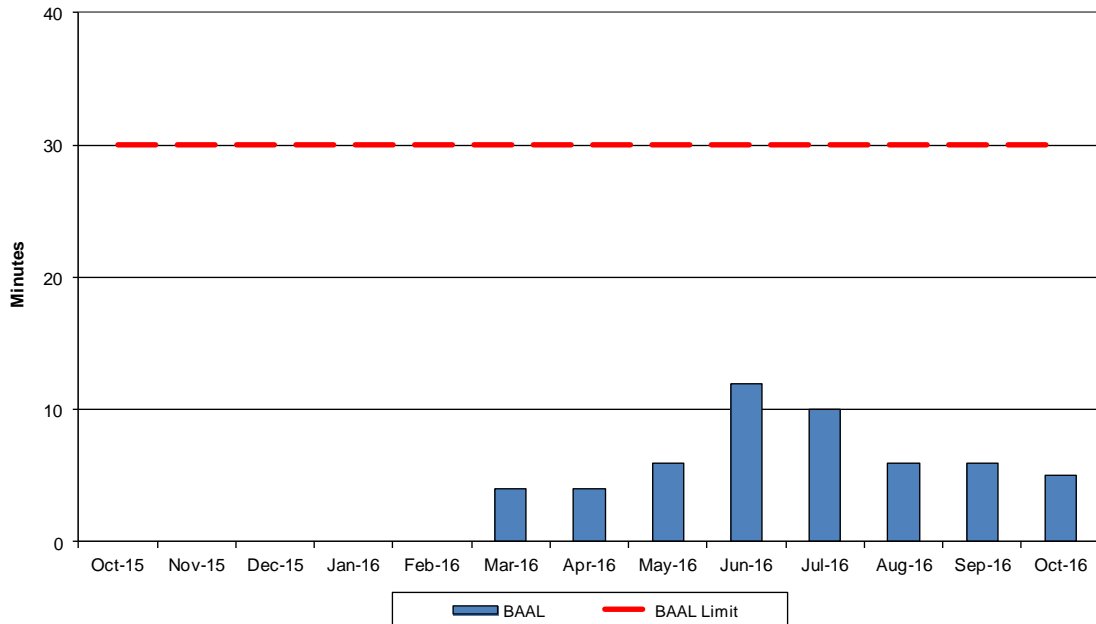
- Price changes from April 2016 to November 2016 are driven mainly by changes in supply as well as Capability Year inputs such as demand curve parameters, Locational Capacity Requirements, the installed Reserve margins and the load forecast.
- NYCA set the LI price and Lower Hudson Valley set the NYC price for this month.

- Reliability Performance Metrics



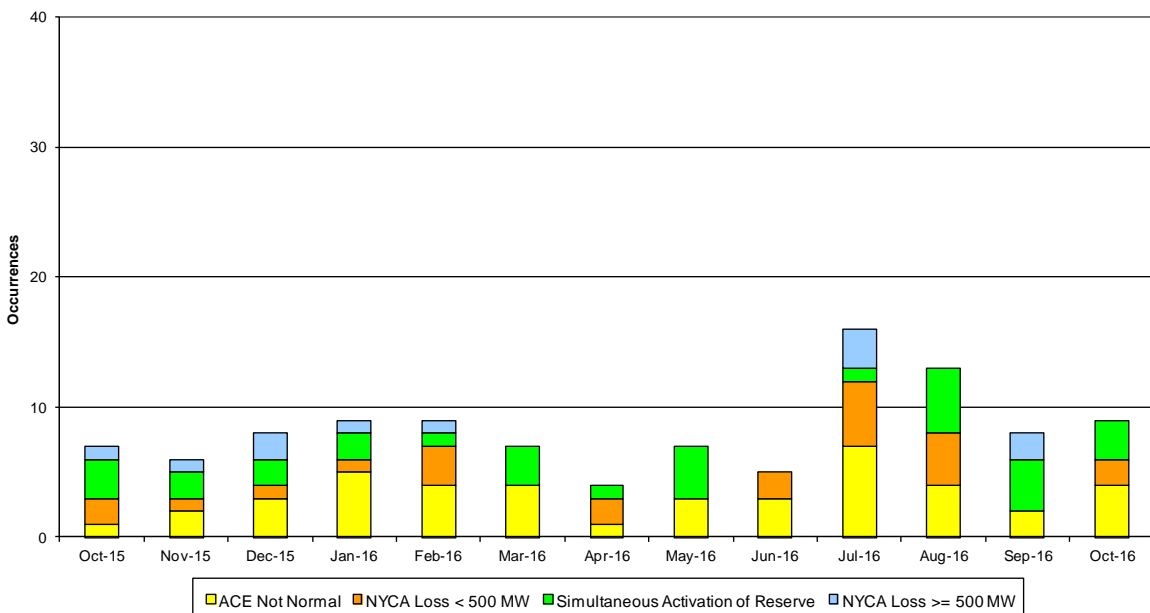


### NERC Balancing Authority ACE Limit Standard



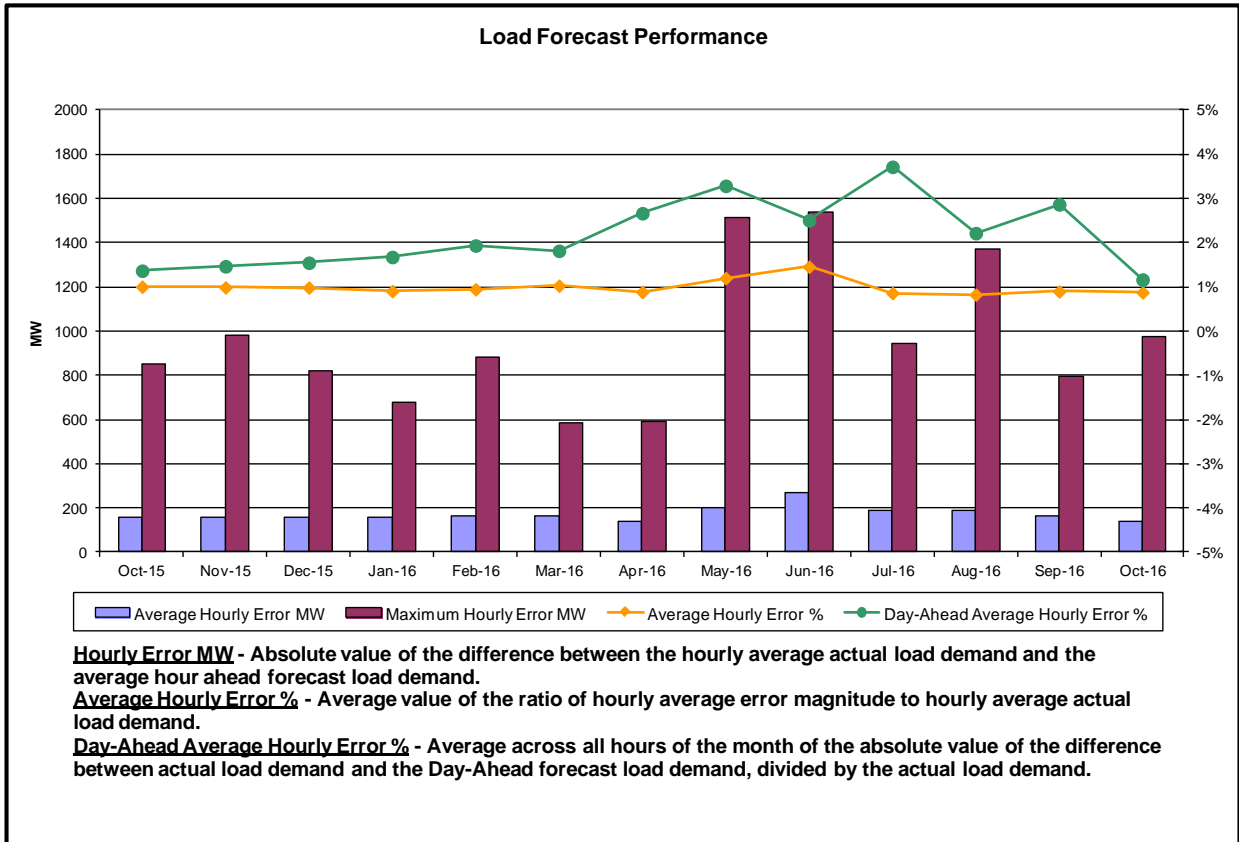
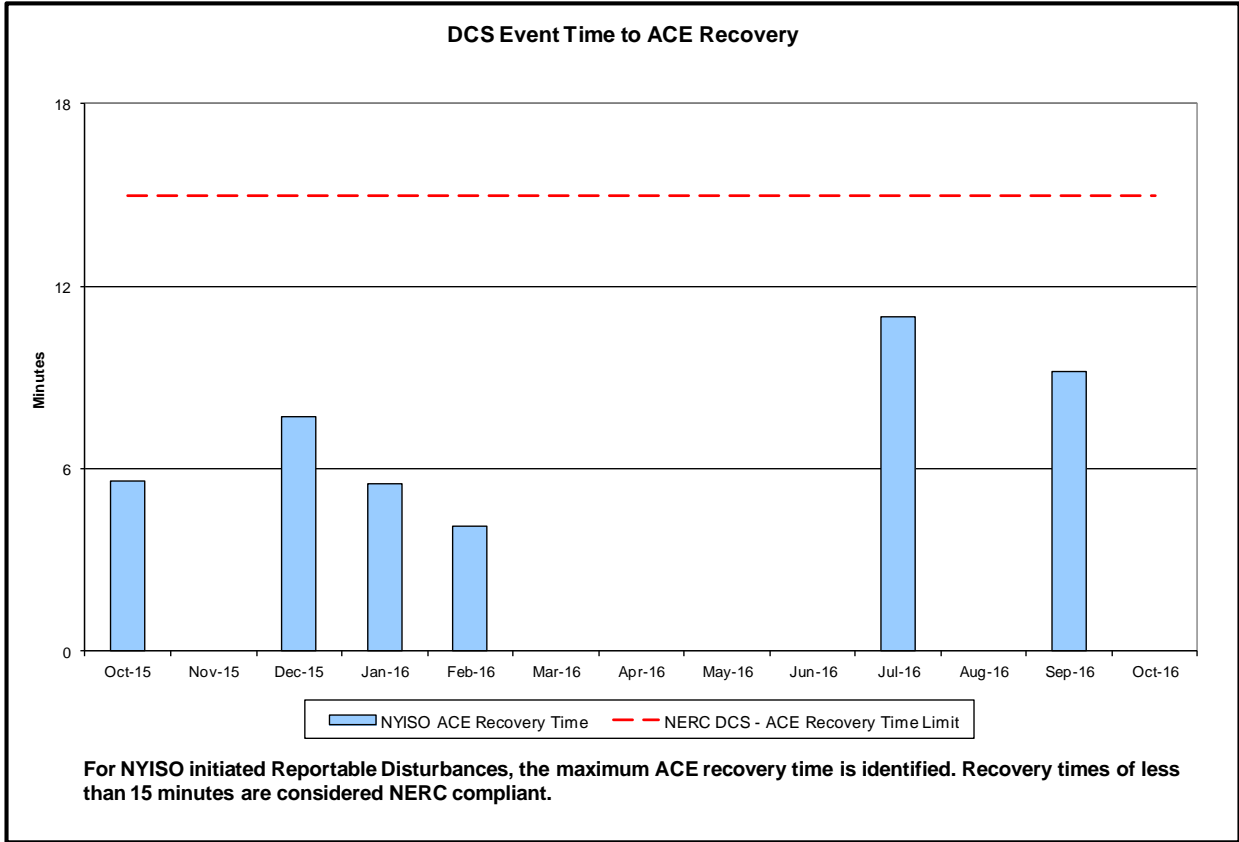
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

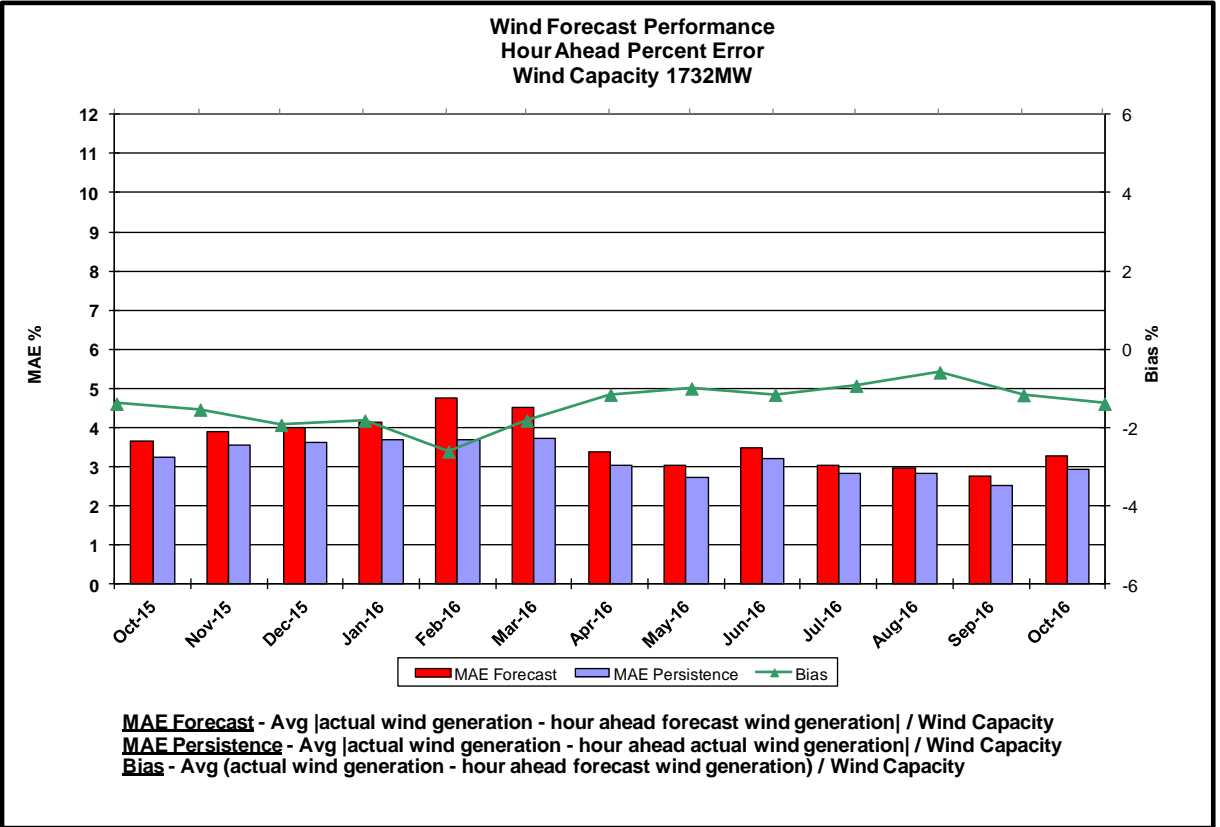
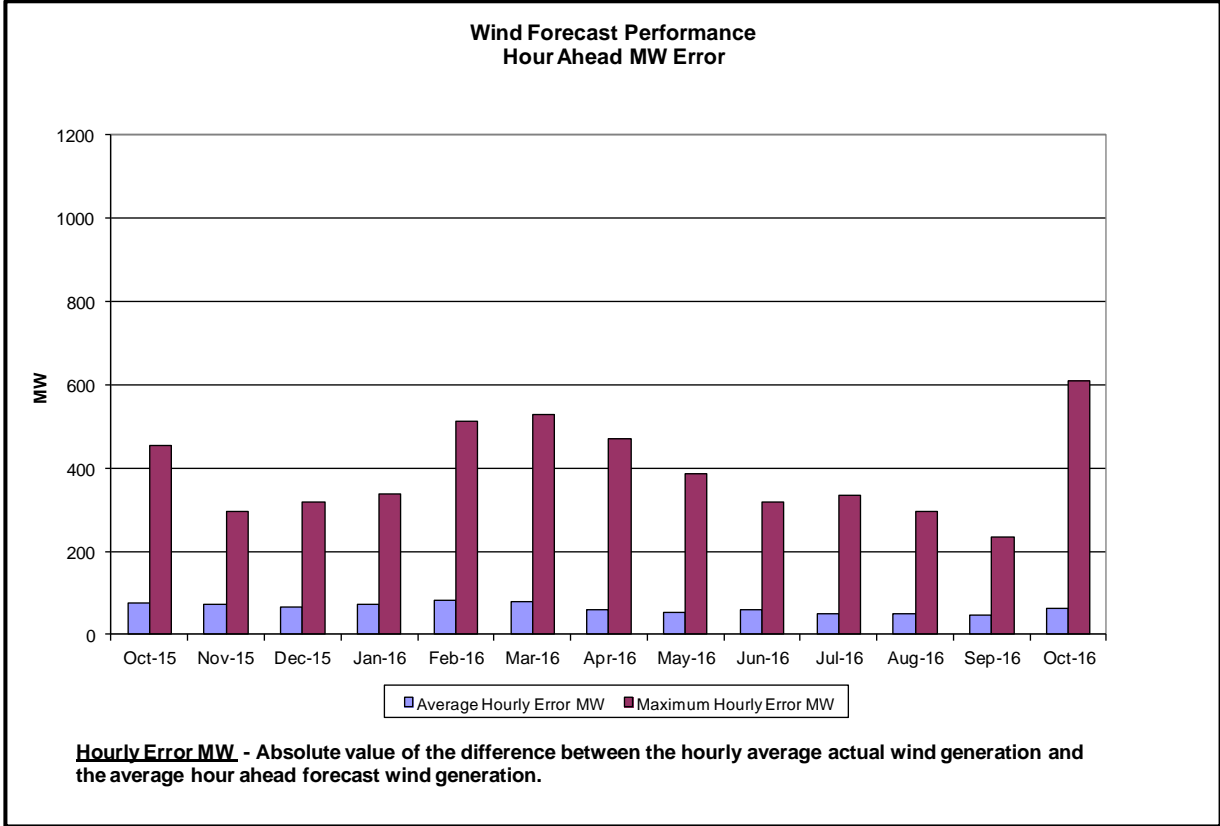
### Reserve Activations

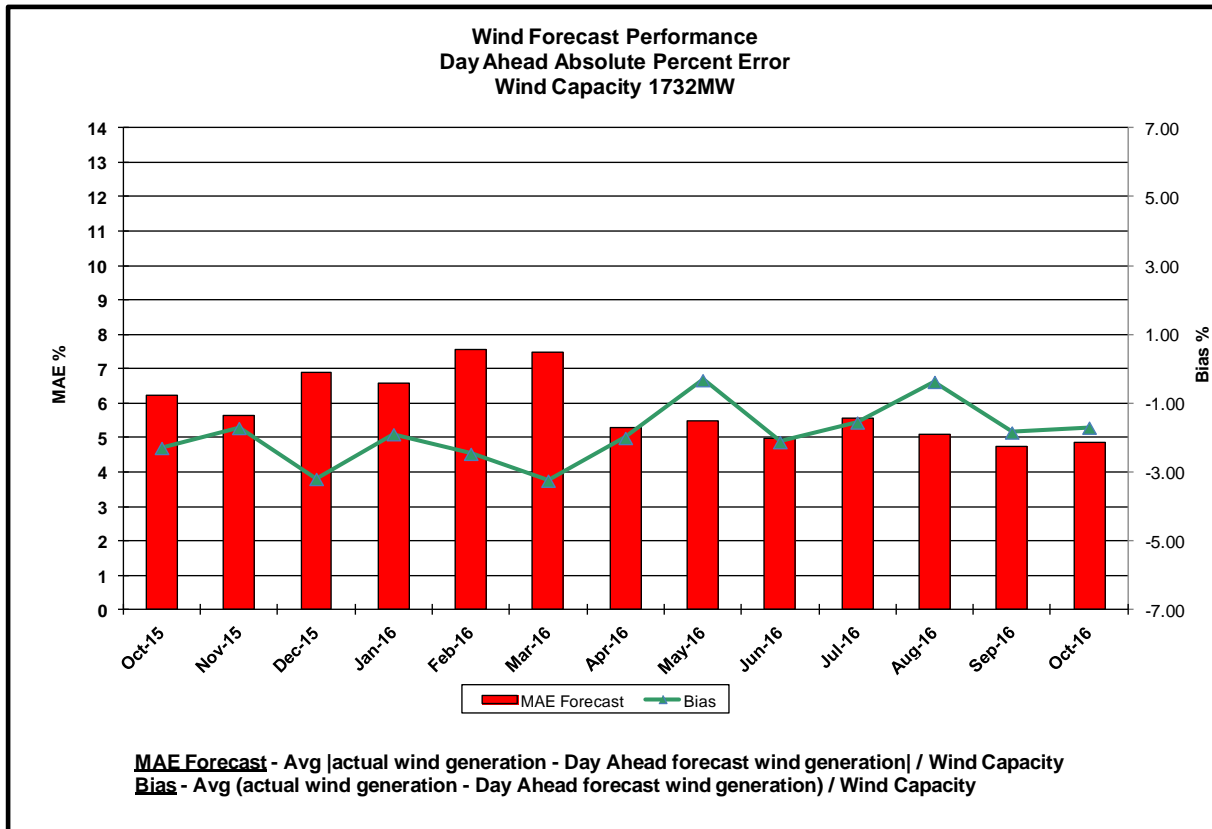
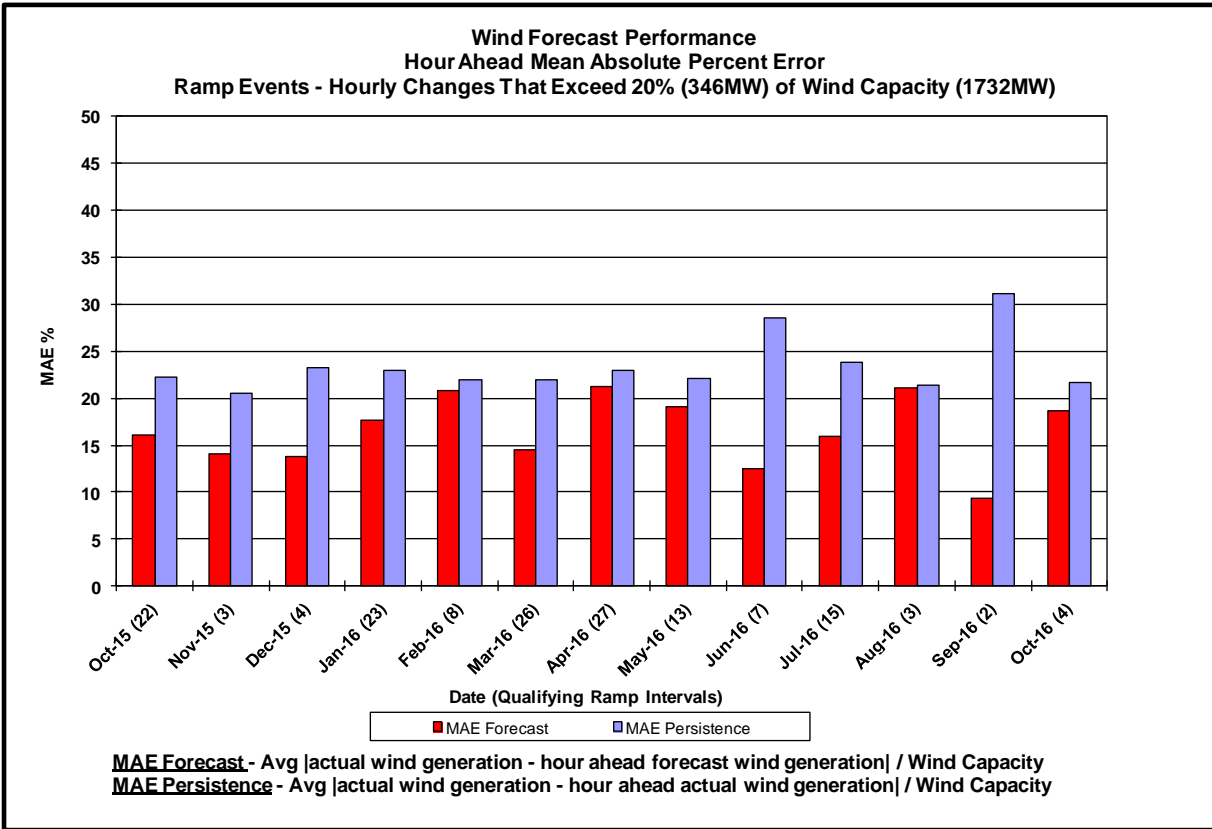


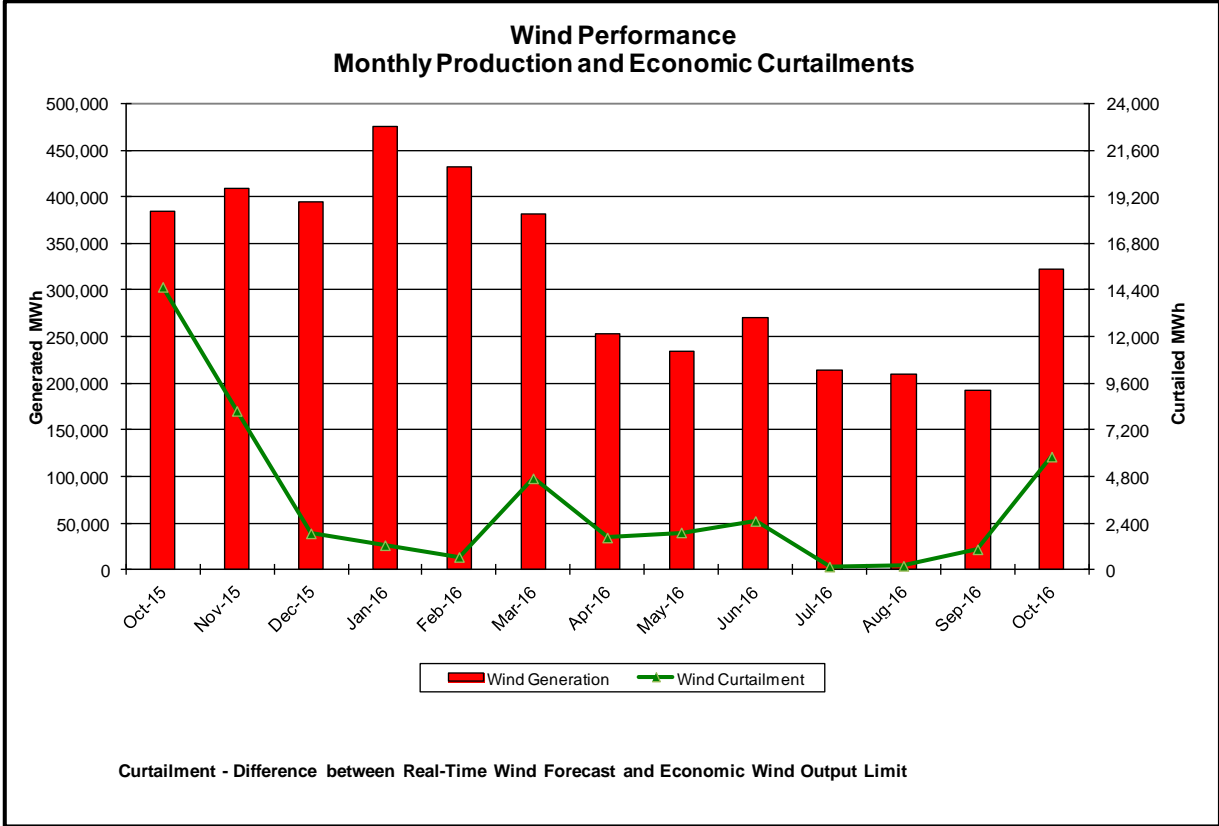
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

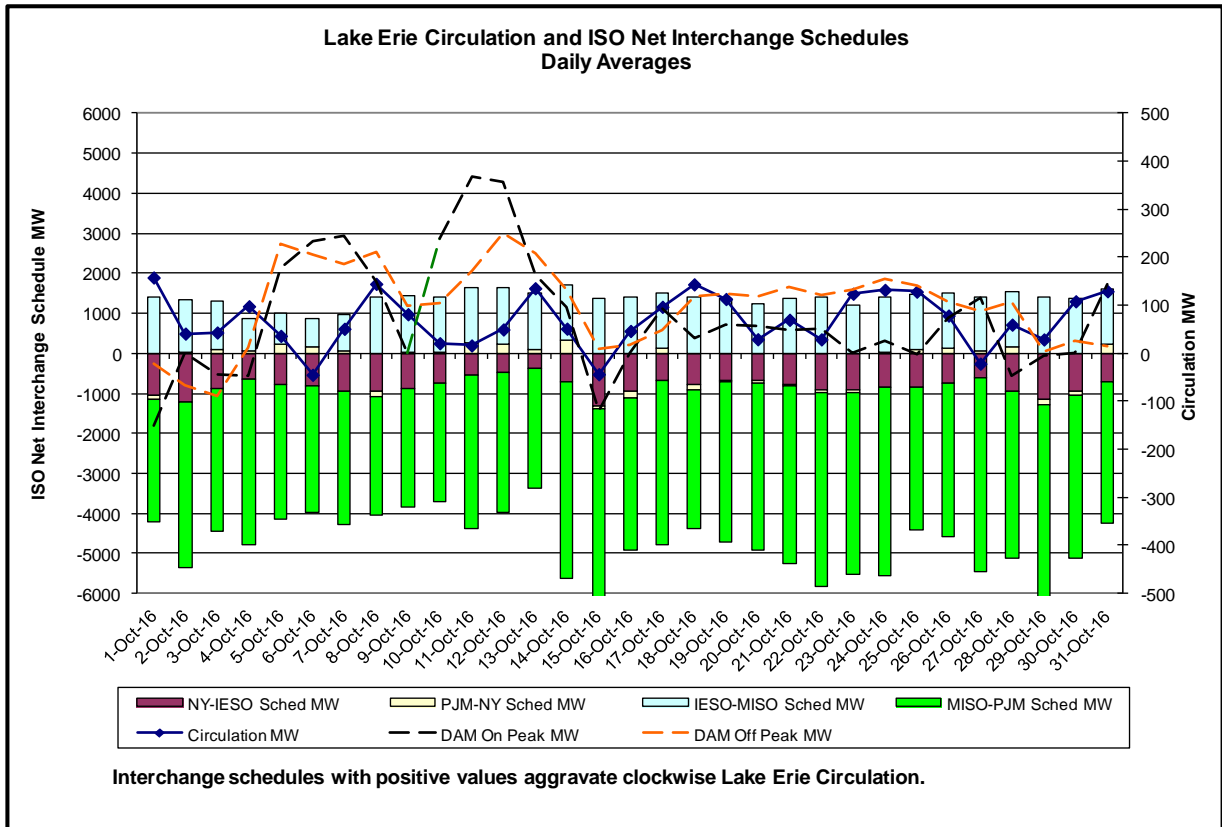
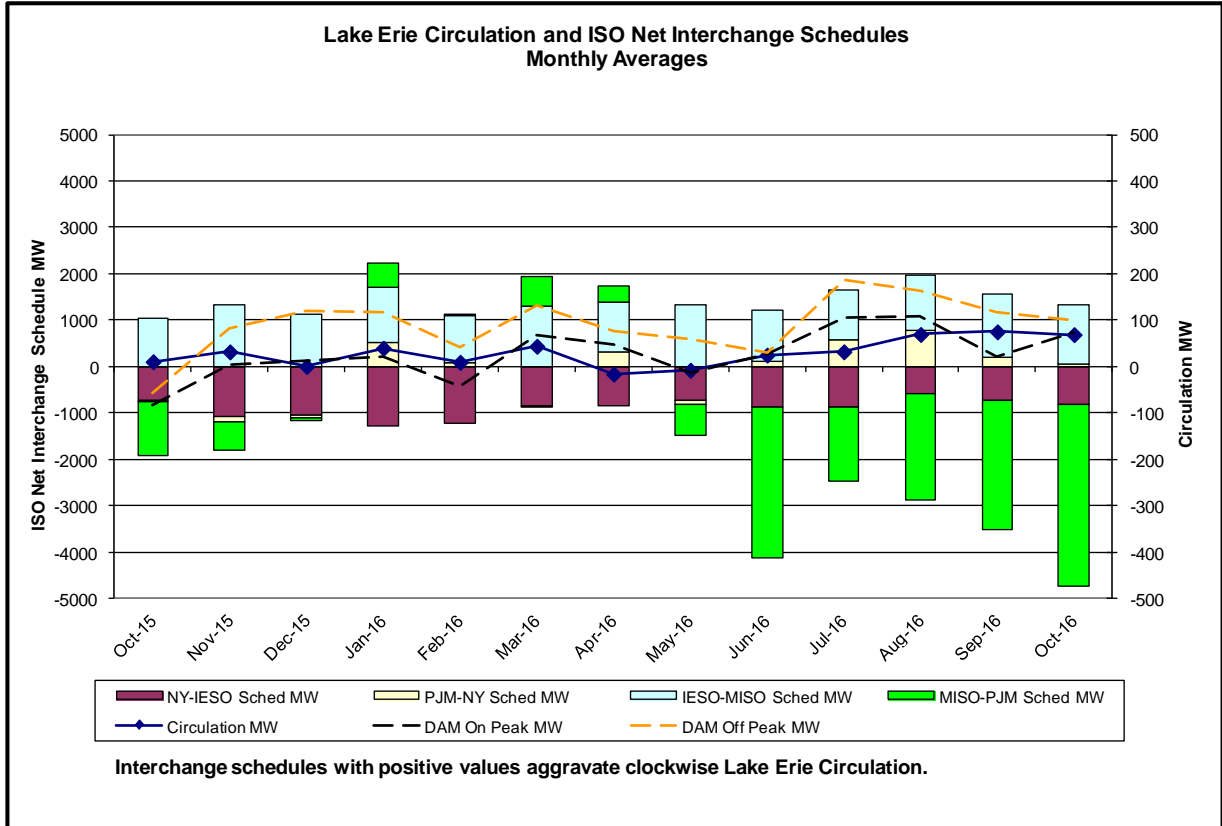




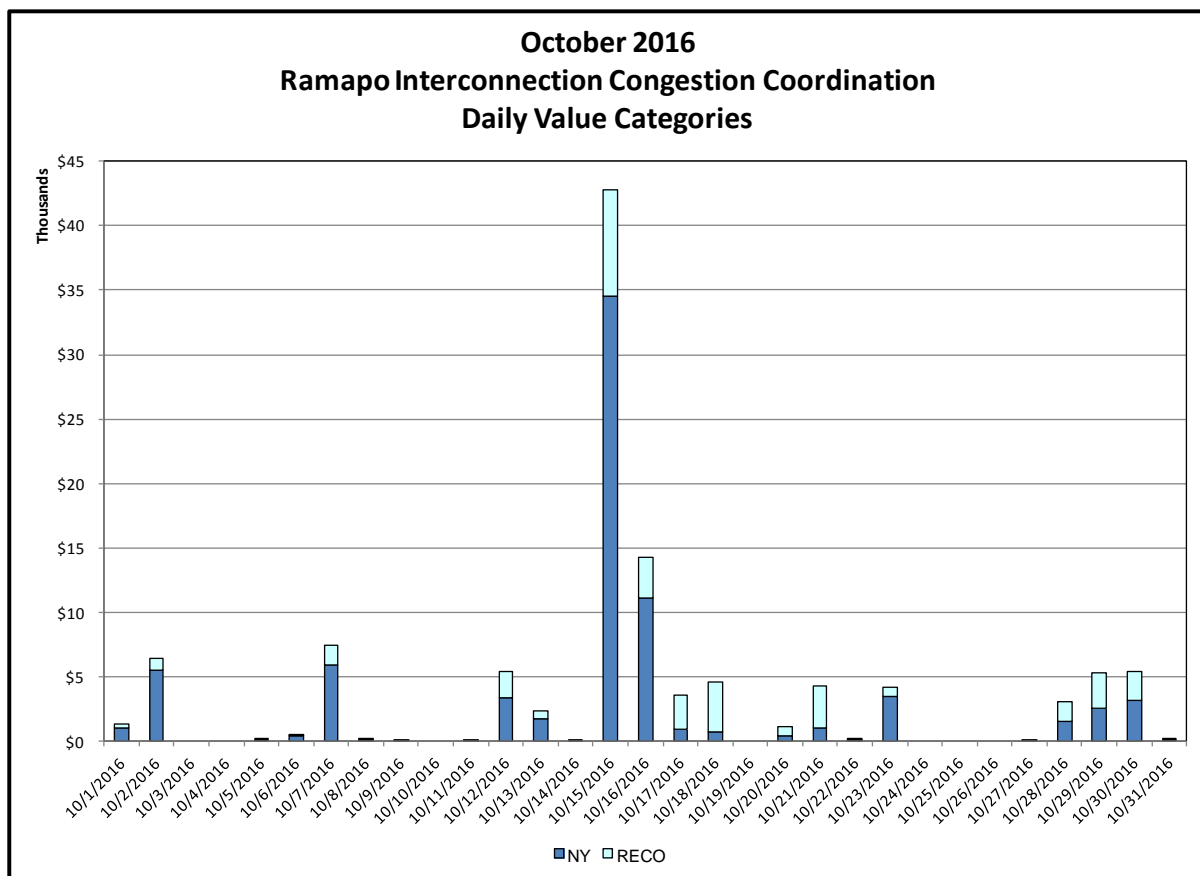
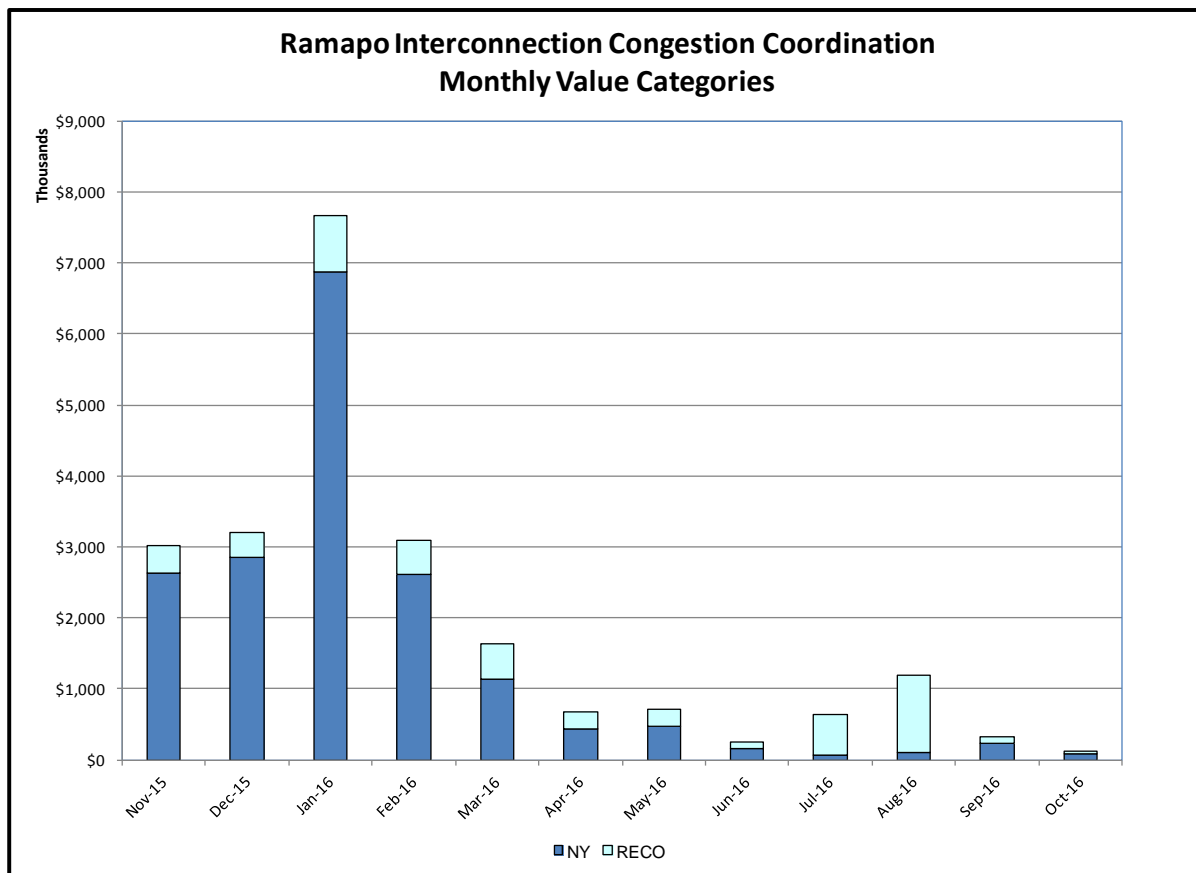






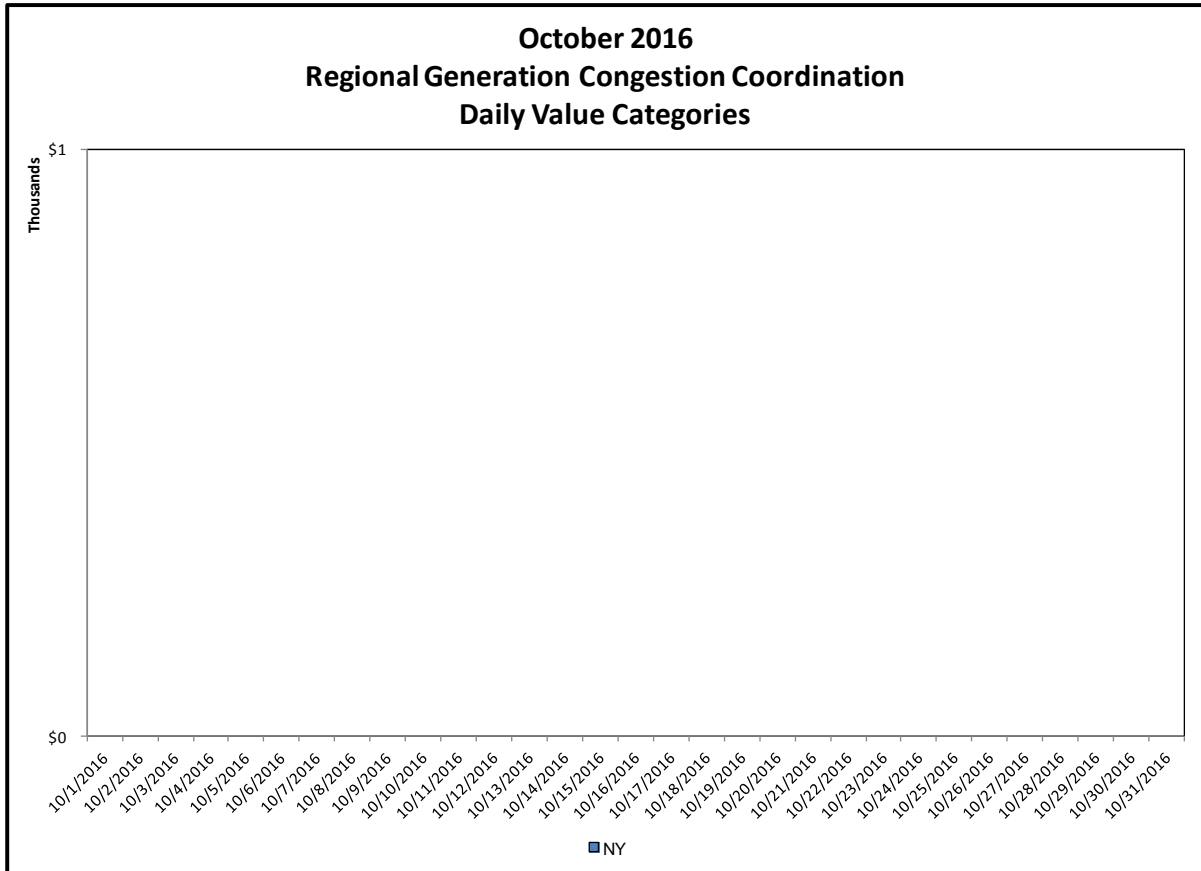
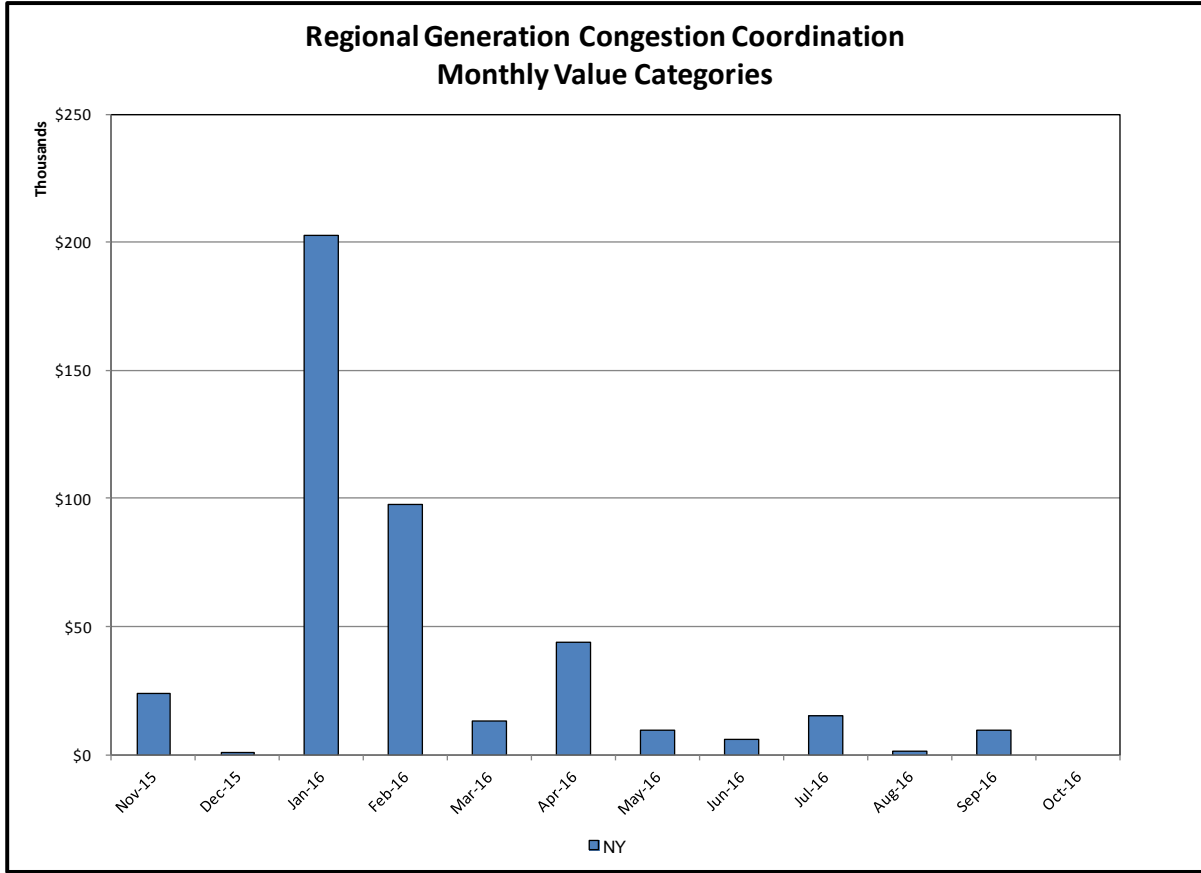


## Broader Regional Market Performance Metrics



**Ramapo Interconnection Congestion Coordination**

<u>Category</u>	<u>Description</u>
NY	<p>Represents the value NY realizes from Market-to-Market Ramapo Coordination. When experiencing congestion, this includes (1) the estimated savings to NY for additional deliveries into NY, plus (2) PJM compensation to NY for additional deliveries into PJM (as compared to the Ramapo Target level, excluding RECO). This is net of any settlements to PJM when they are congested.</p>
RECO	<p>Represents the value of PJM's obligation to deliver 80% of service to RECO load over Ramapo 5018. This includes (1) the estimated reduction in NYCA congestion due to the PJM delivery of RECO over Ramapo 5018, plus (2) PJM compensation to NY for NYCA congestion for the under-delivery or inability to deliver service to RECO load over Ramapo 5018.</p>





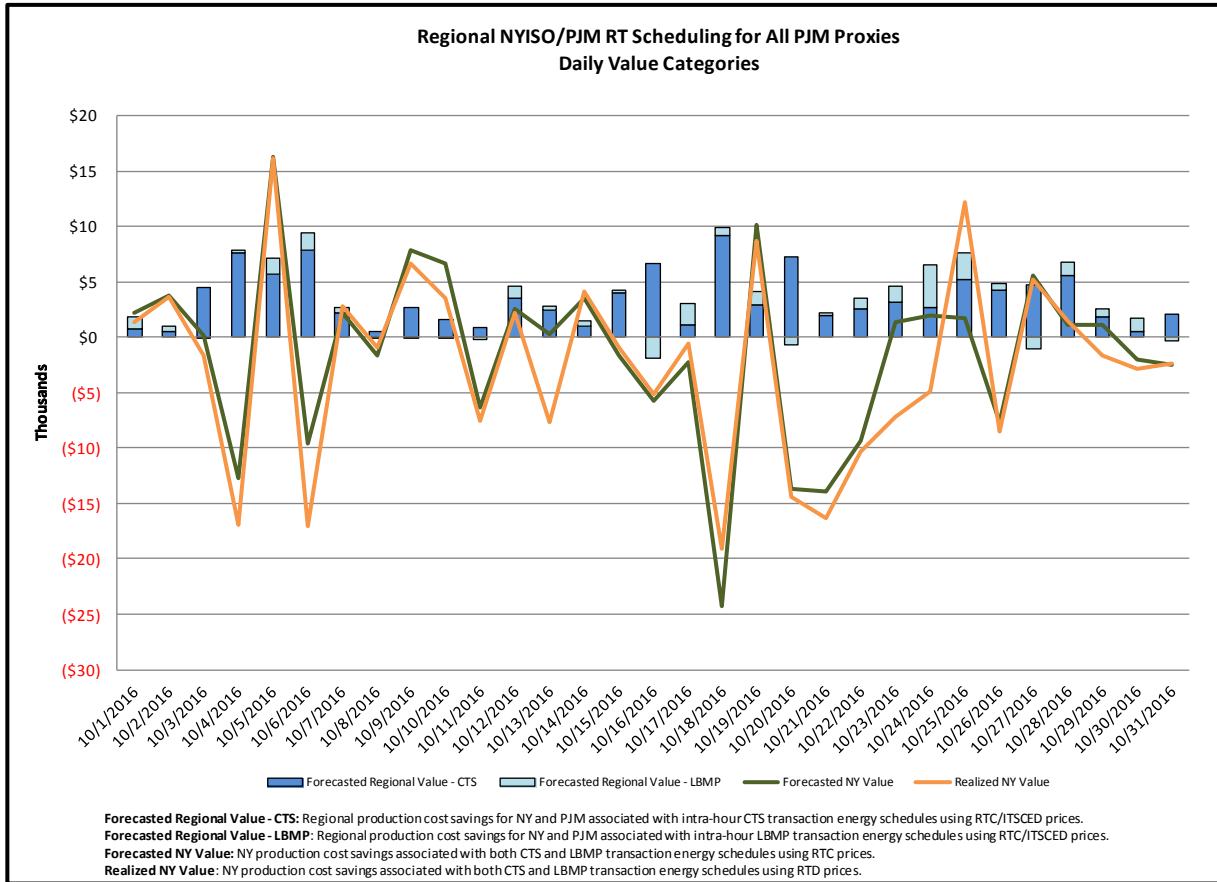
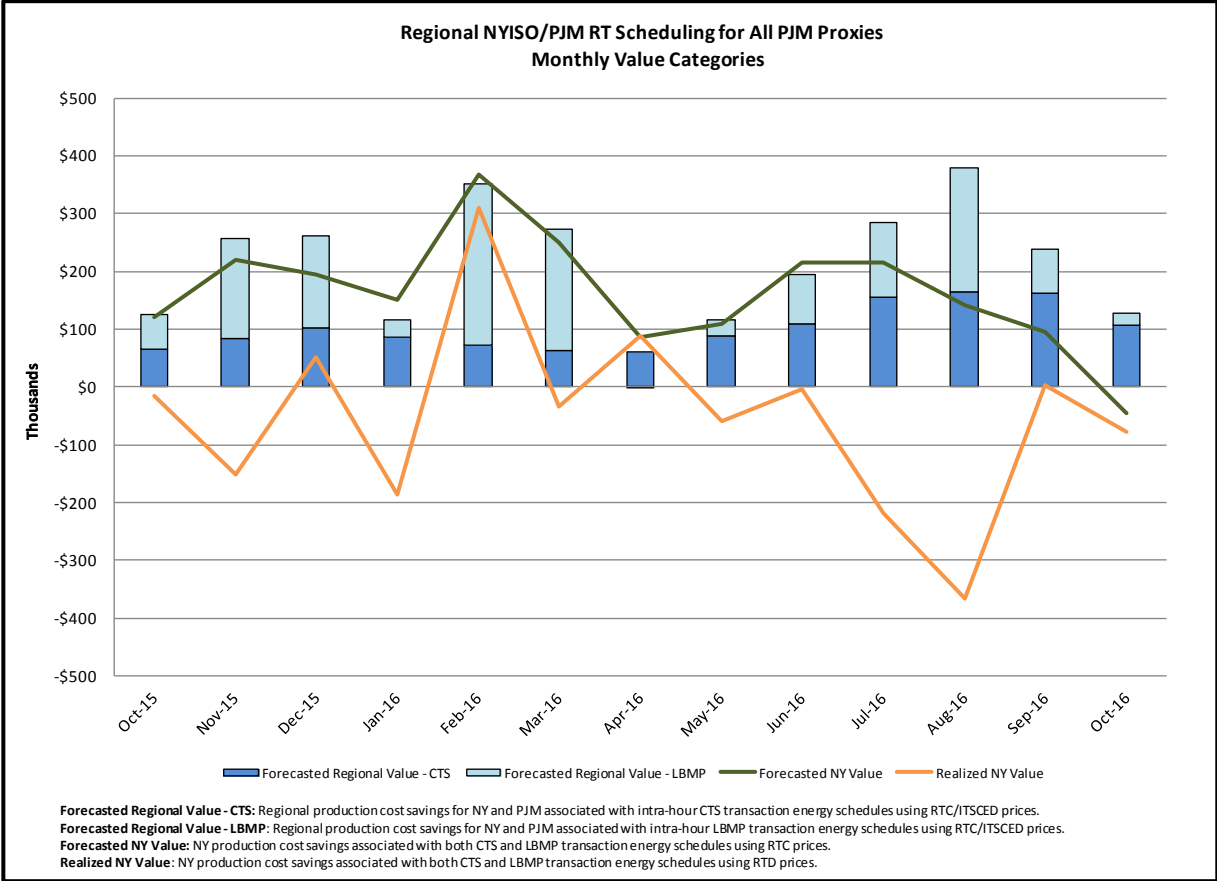
### Regional Generation Congestion Coordination

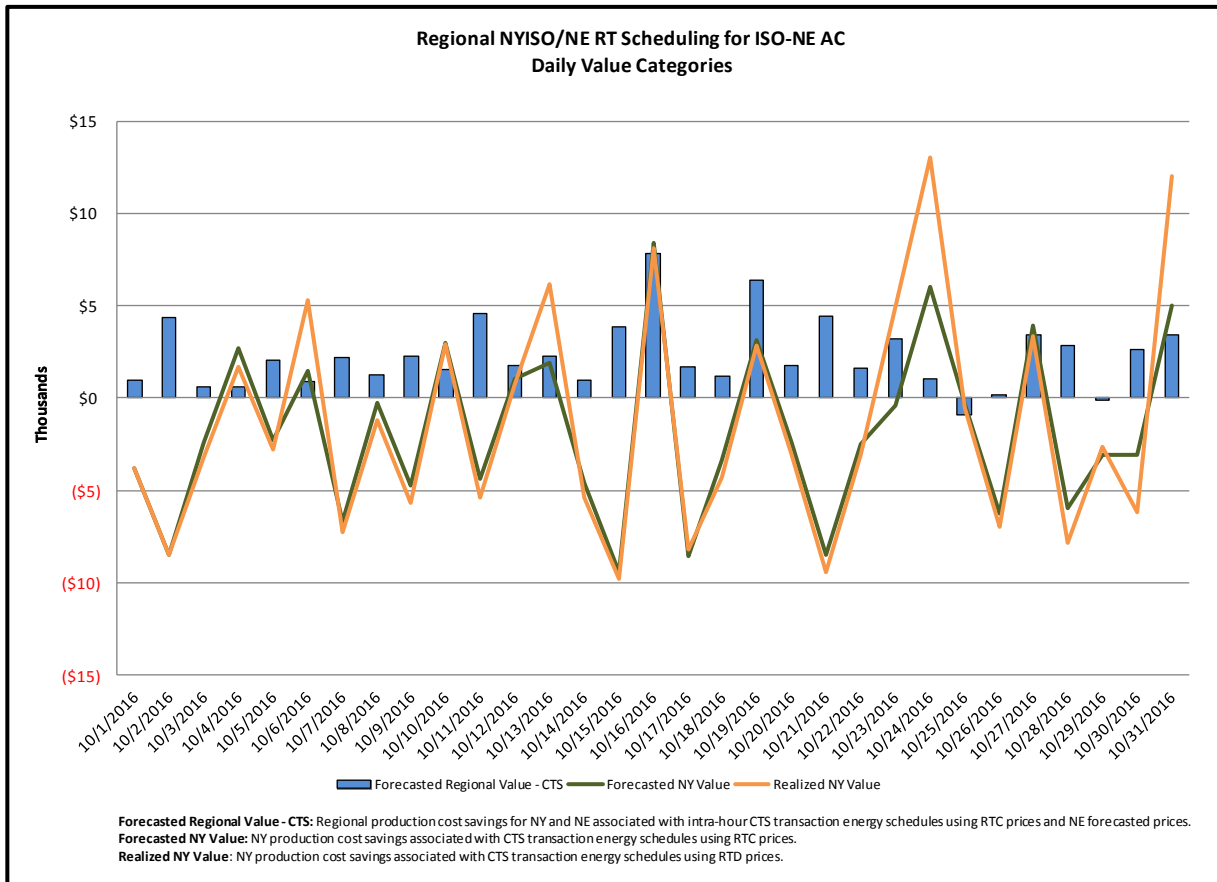
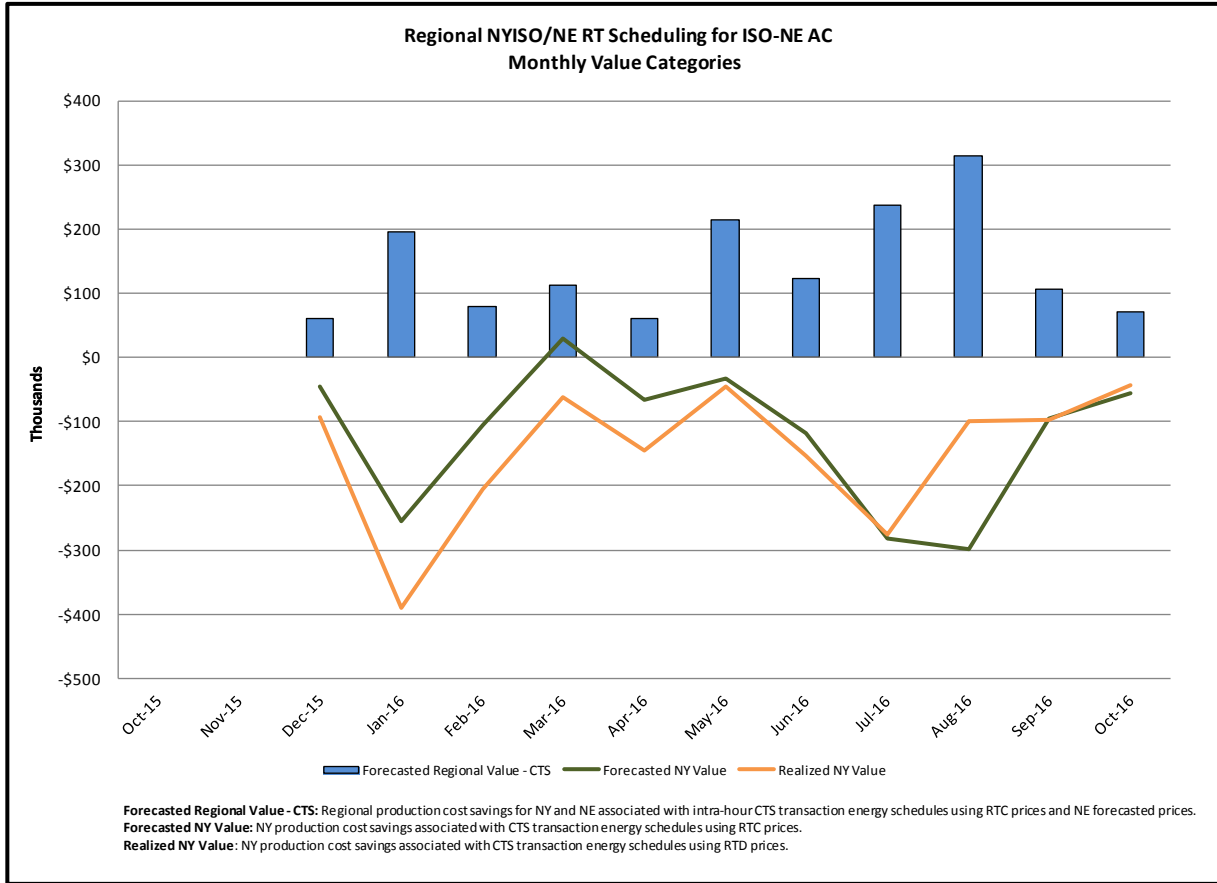
Category

NY

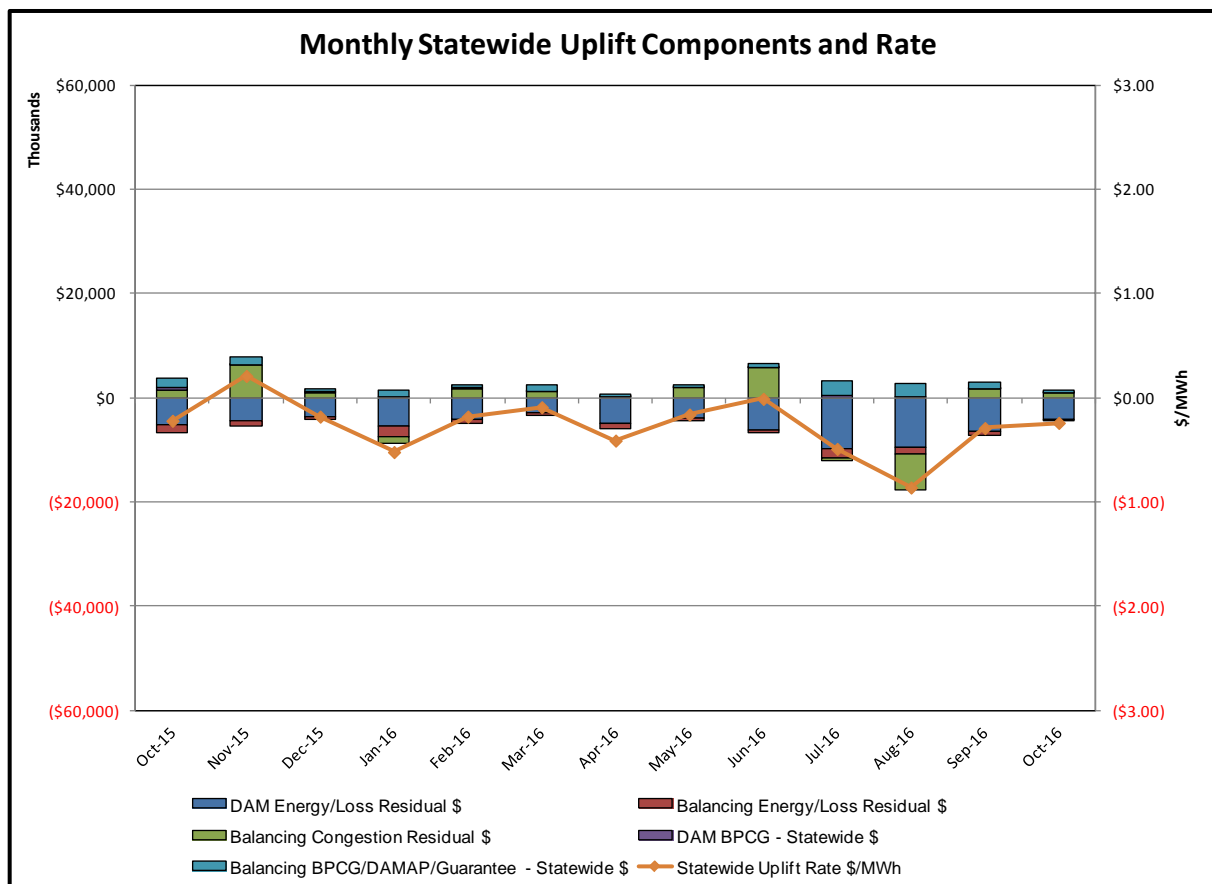
Description

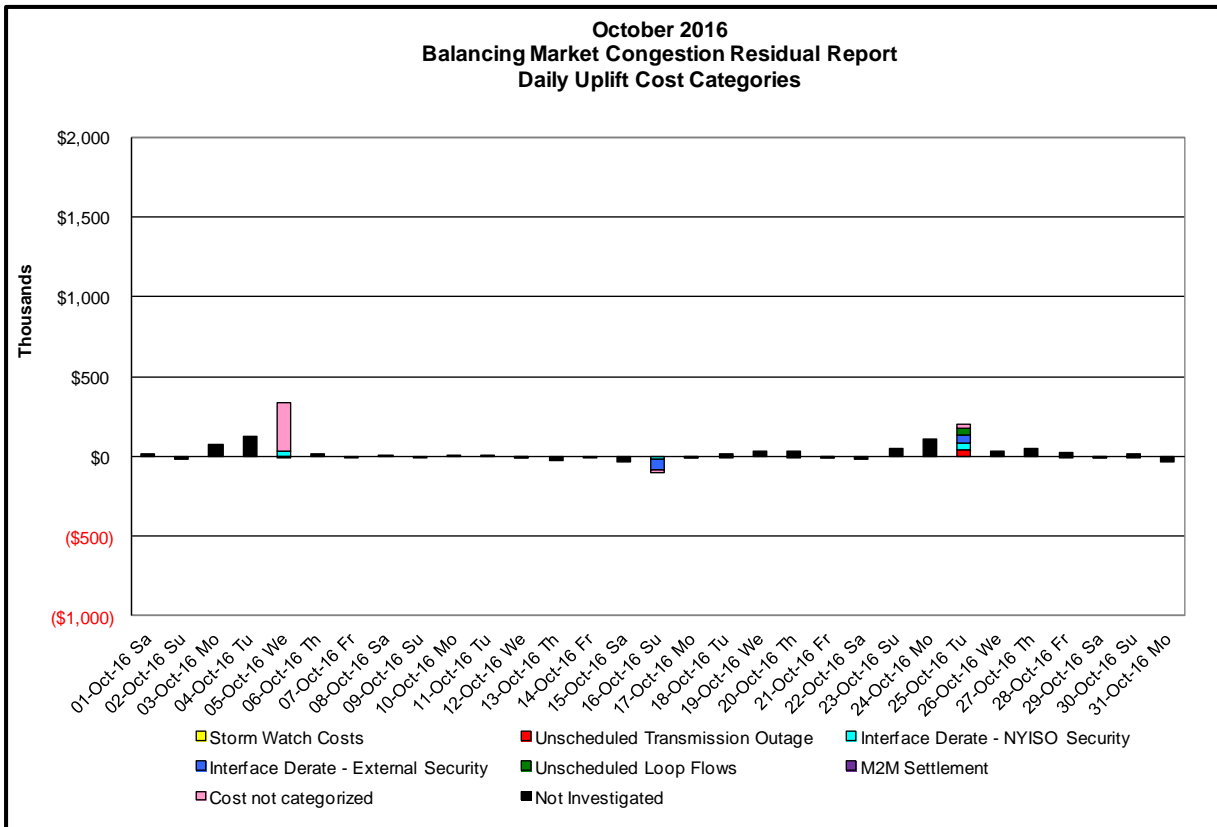
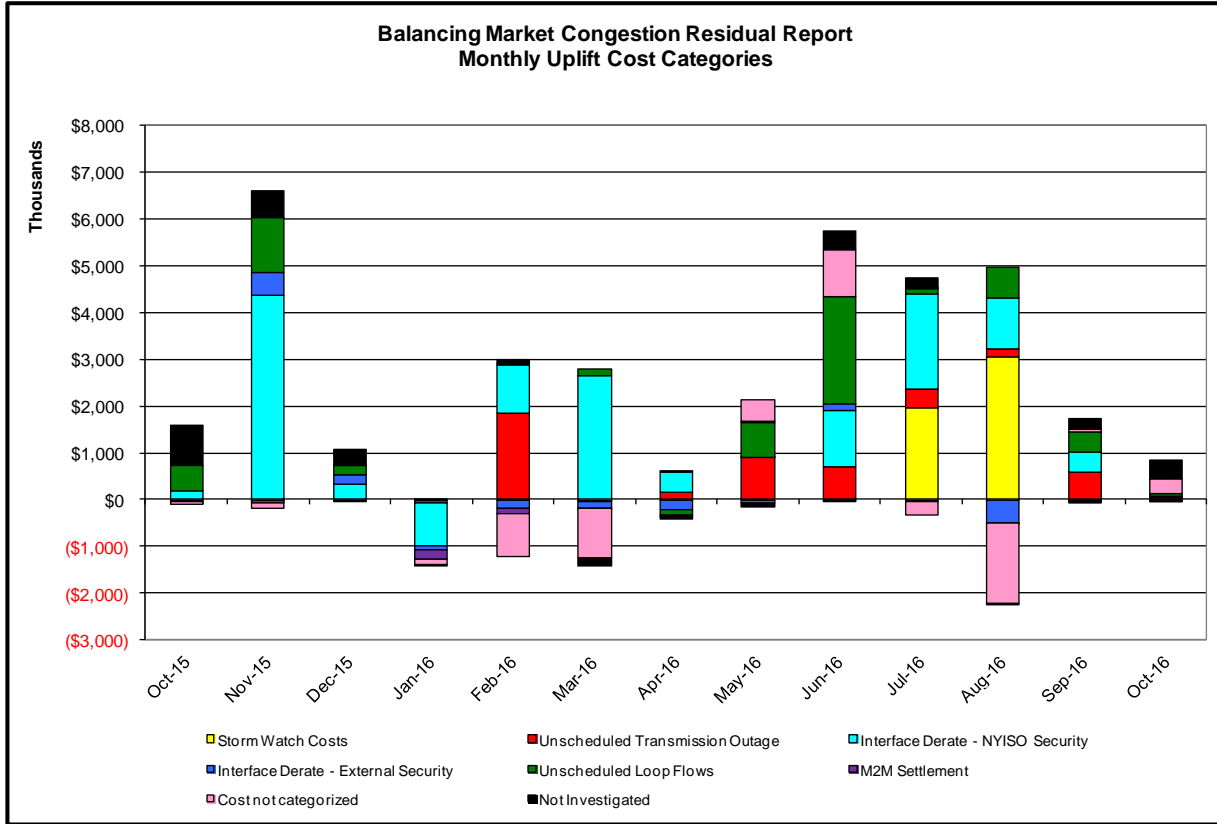
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization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





## Market Performance Metrics





Day's investigated in October: 5, 16, 25

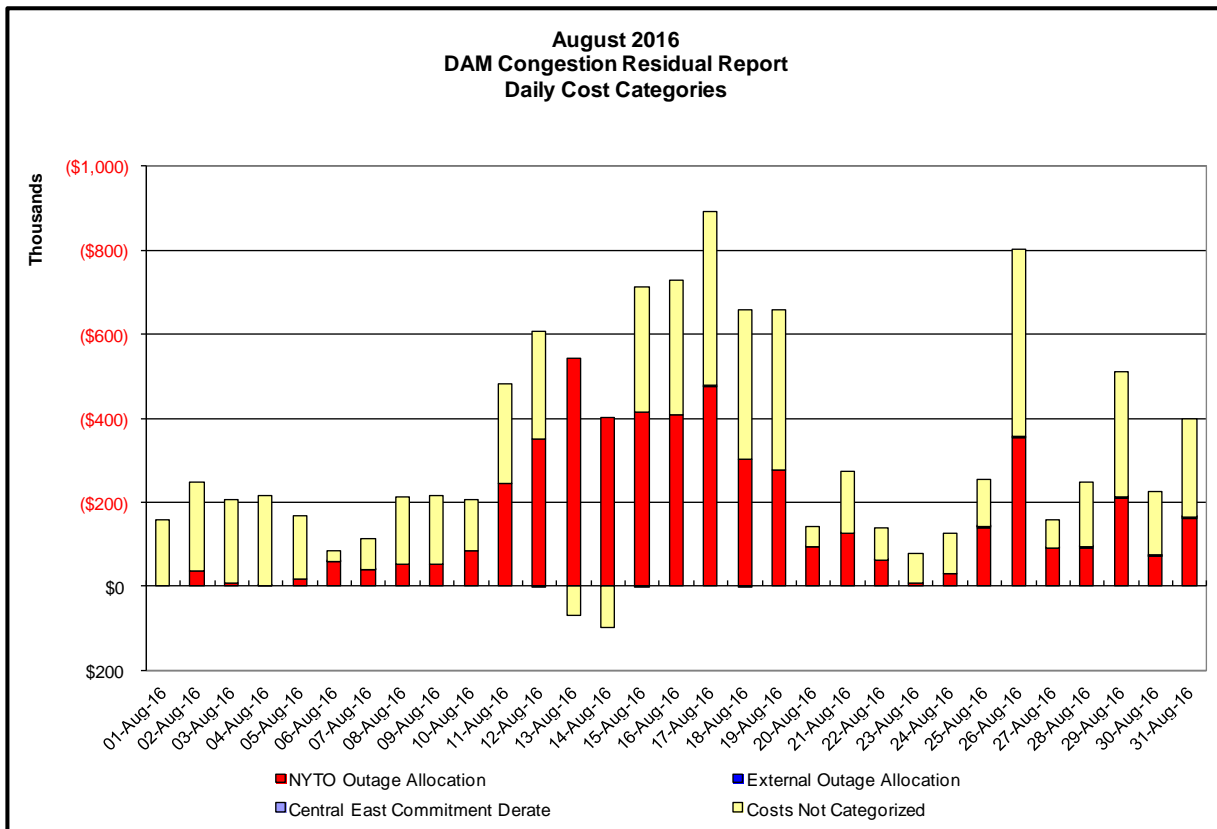
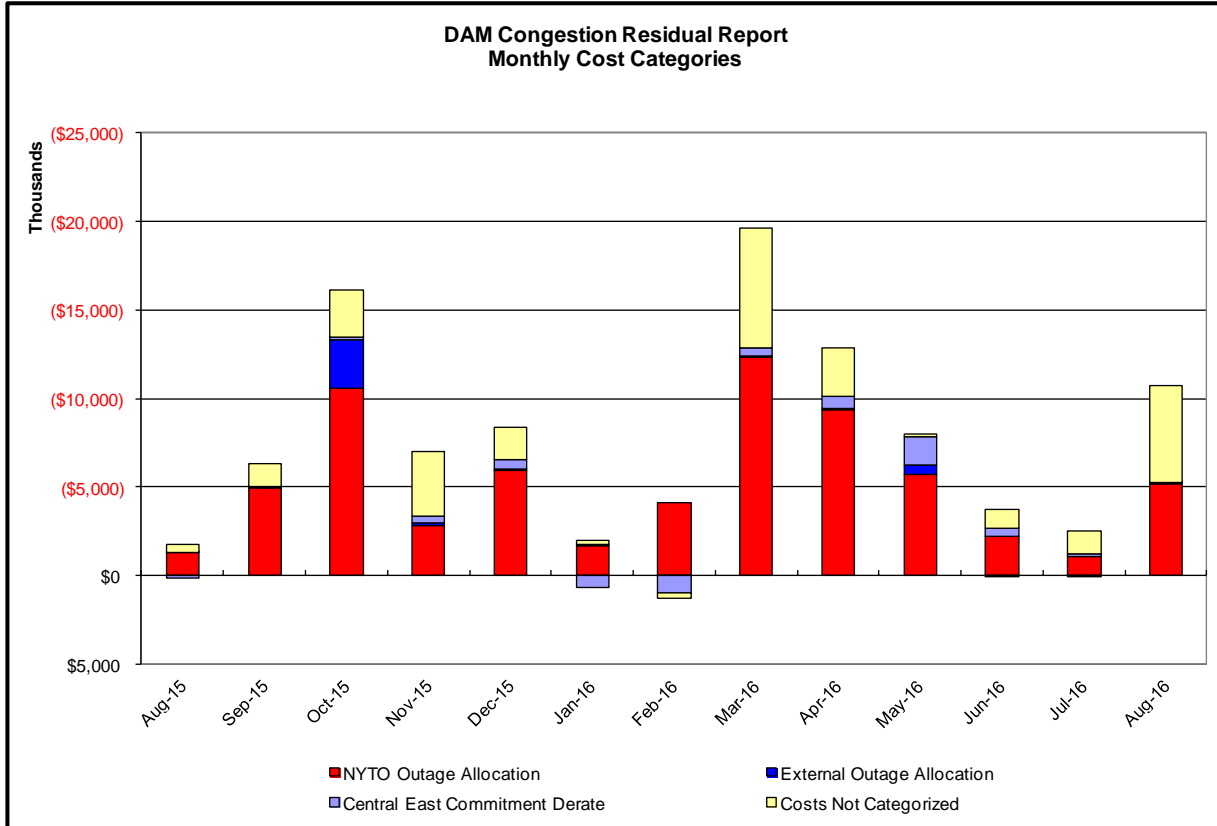
Event	Date (yyyymmdd)	Hours	Description
	10/5/2016	15	NYCA DNI Ramp Limit
	10/5/2016	19	NE_AC-NY Scheduling Limit
	10/16/2016	19,21,22	NYCA DNI Ramp Limit
	10/16/2016	16,18-22	IESO_AC DNI Ramp Limit
	10/25/2016	7-10	Forced outage Adirondack-Porter 230kV (#12)
	10/25/2016	11	NYCA DNI Ramp Limit
	10/25/2016	10	Derate Marcy 765/345kV (#AT1) for I/o Chases Lake-Porter 230kV (#11)
	10/25/2016	9,10	Derate Packard-Sawyer 230kV (#77) for I/o BUS:PACKARD BK3 & 61 & 78
	10/25/2016	10	Derate Packard-Sawyer 230kV (#78) for I/o Packard-Sawyer 230kV (#77)
	10/25/2016	21,23	HQ_Chat-NY Scheduling Limit
	10/25/2016	7-10	HQ_Cedars-NY Scheduling Limit
	10/25/2016	7-11,21,23	NE_AC-NY Scheduling Limit
	10/25/2016	10,11,18	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer 230kV (#77)

**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**

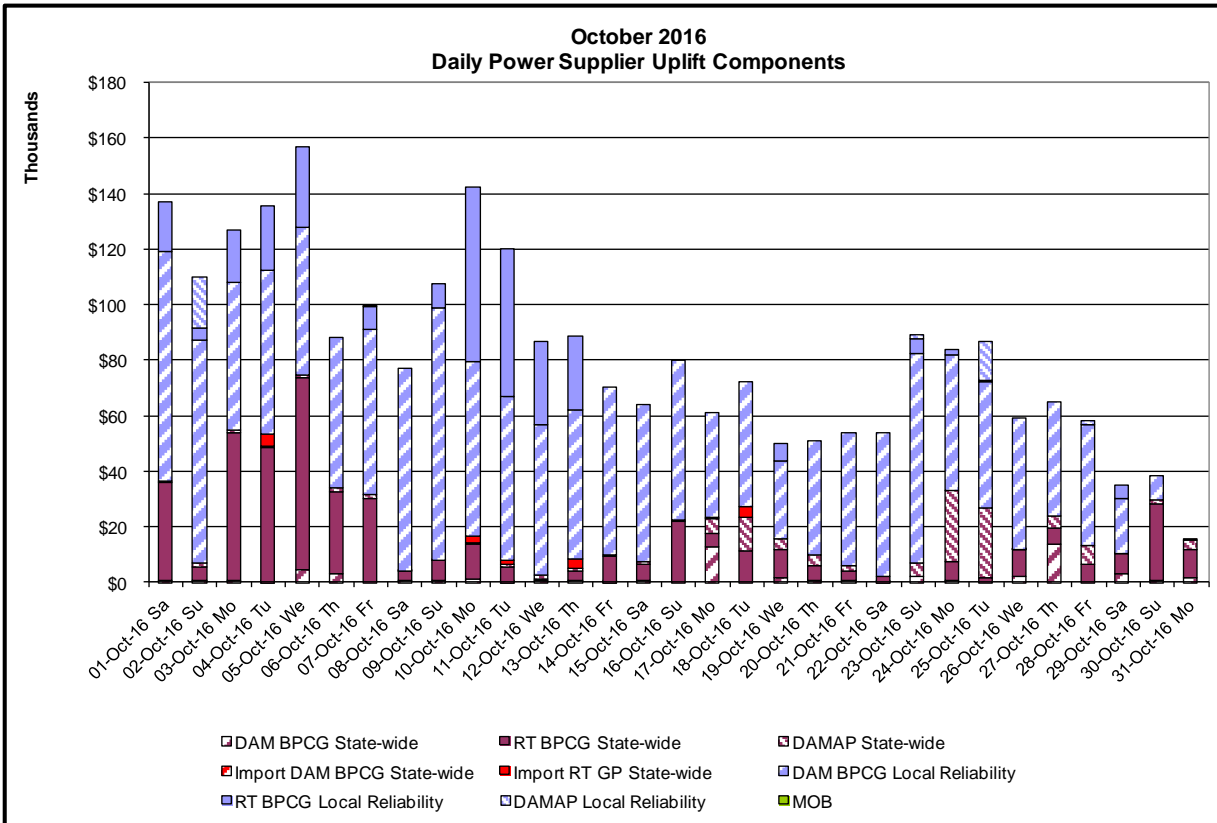
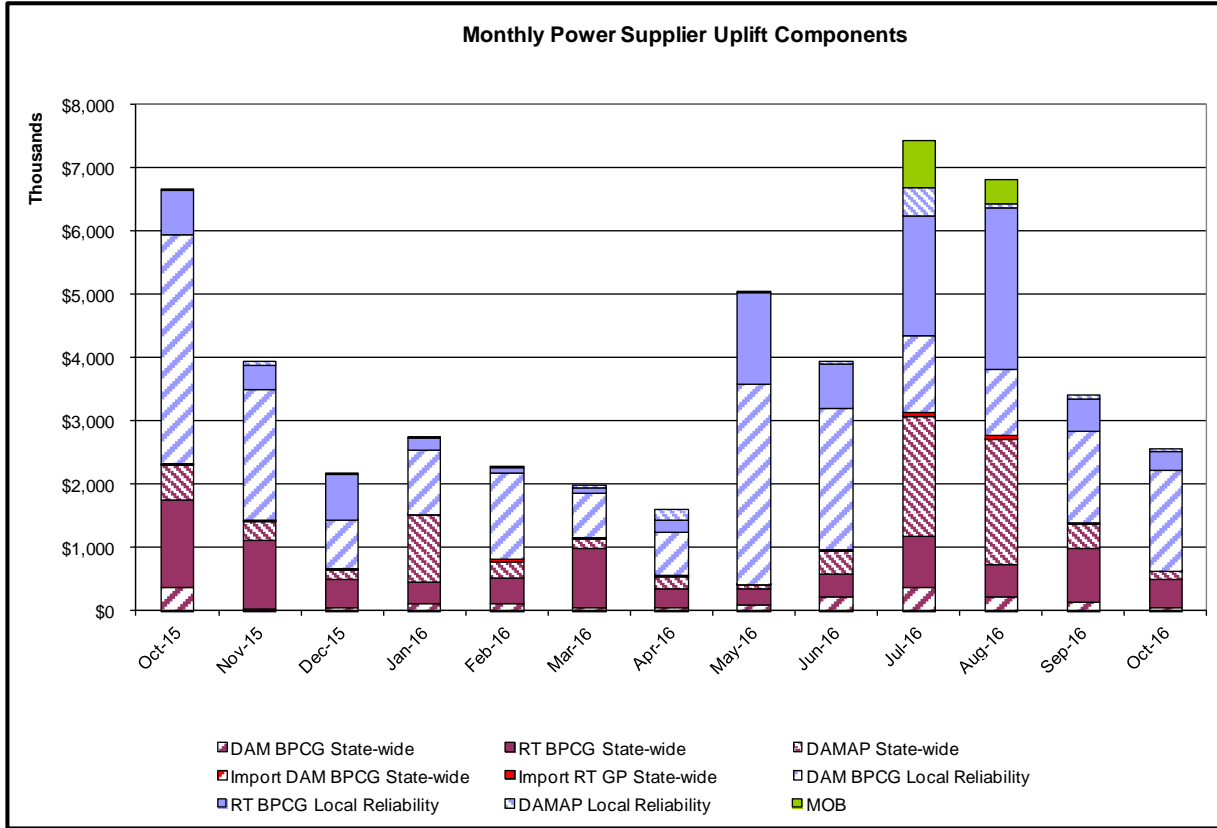
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

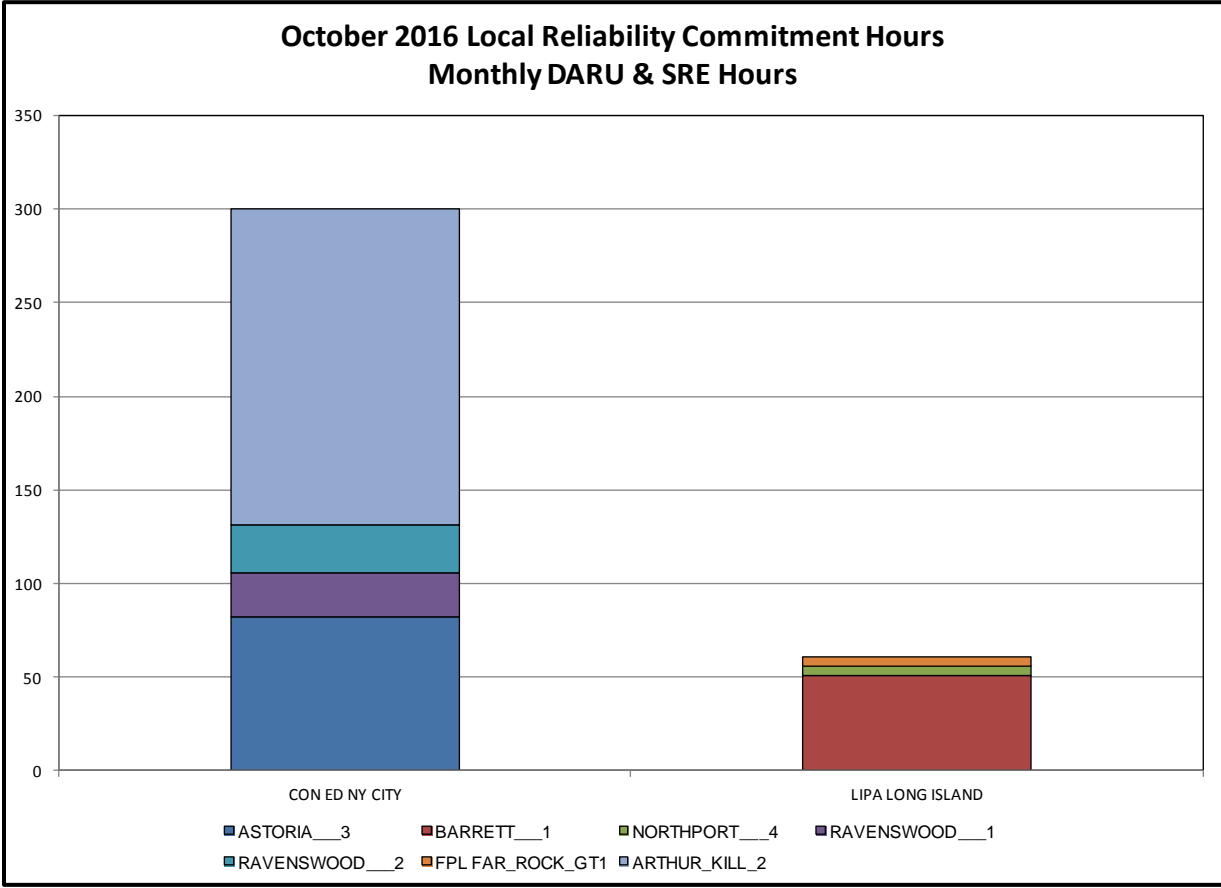
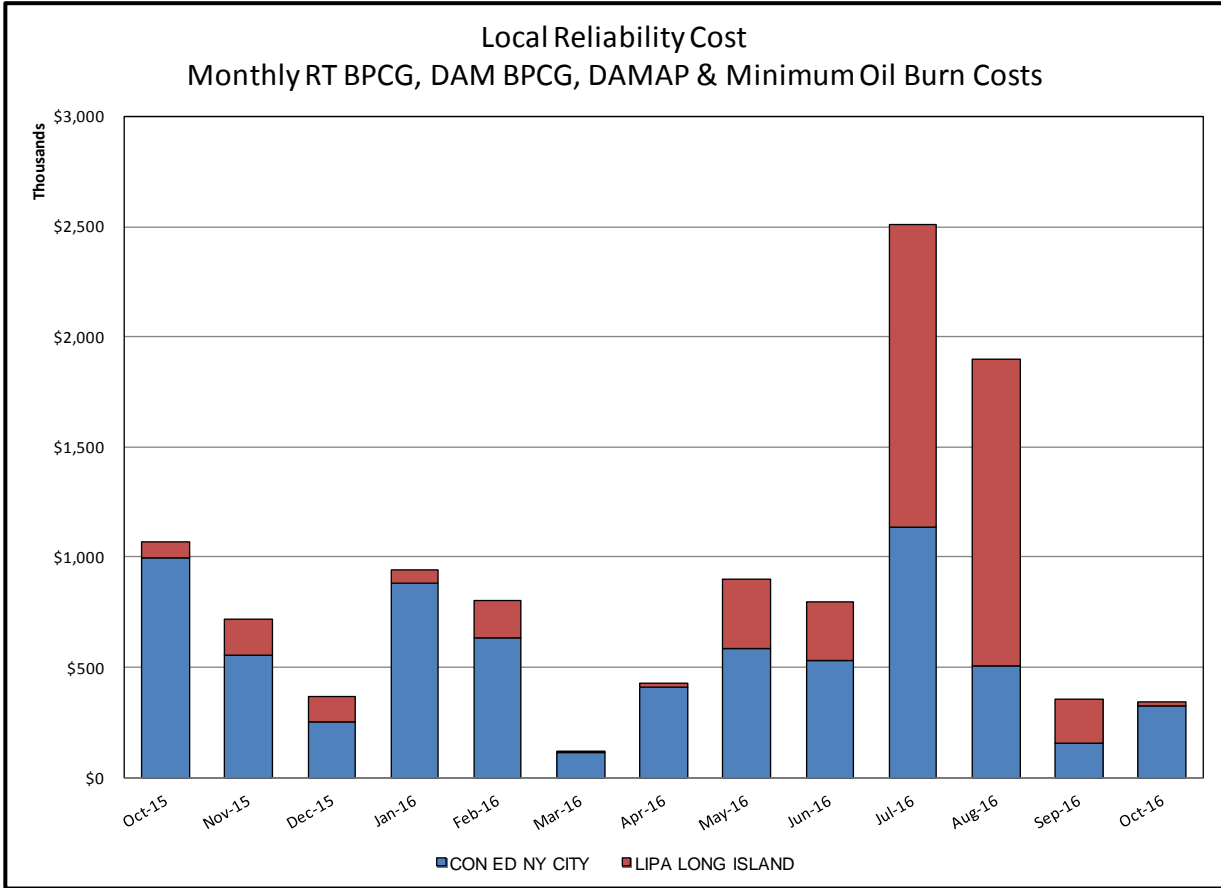


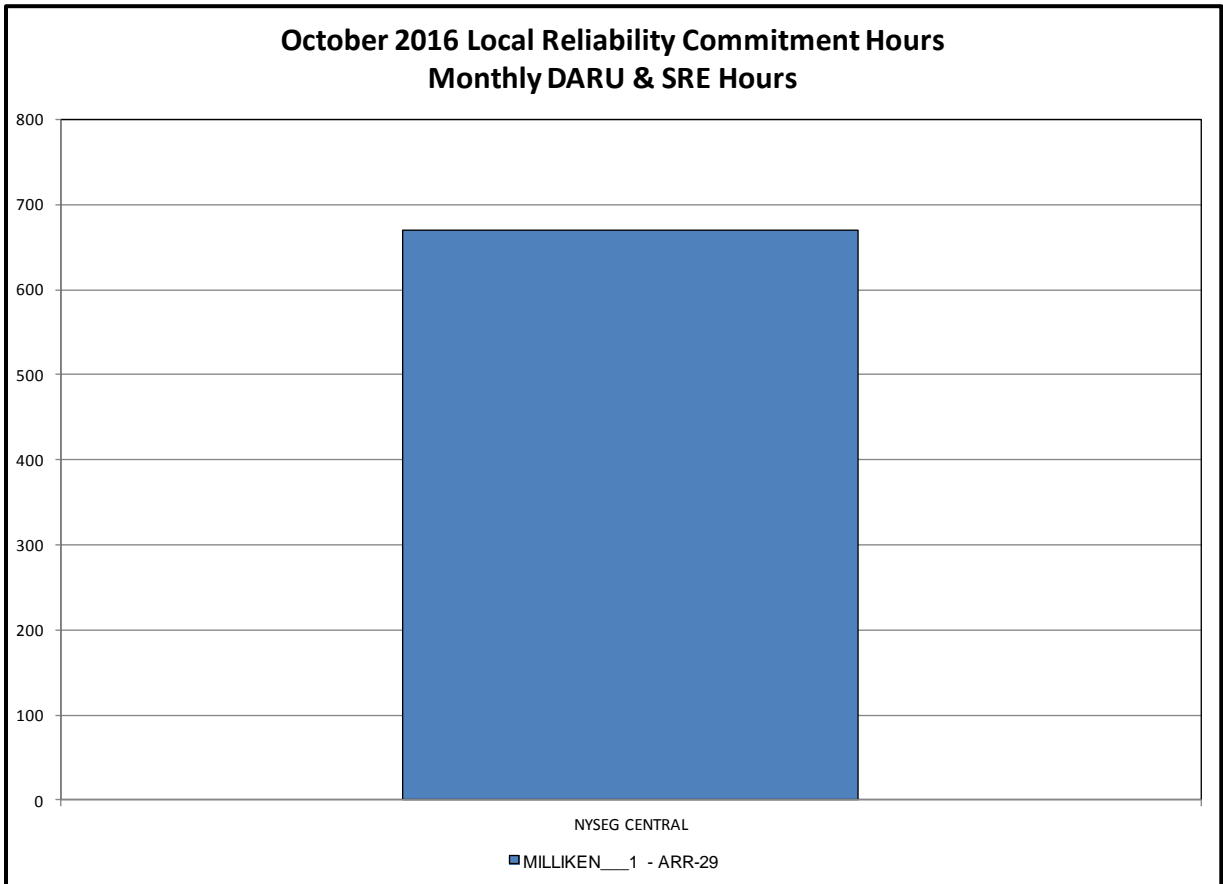
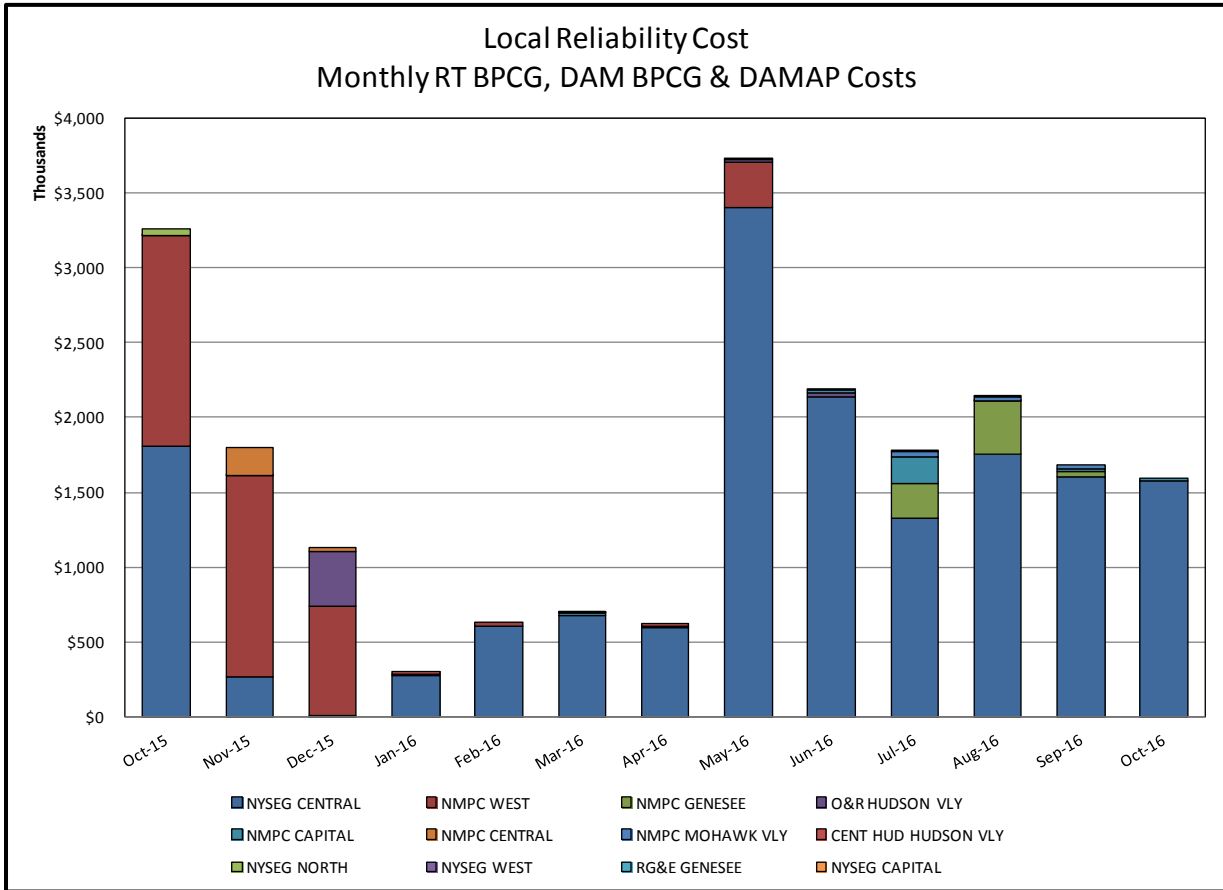
**Day-Ahead Market Congestion Residual Categories**

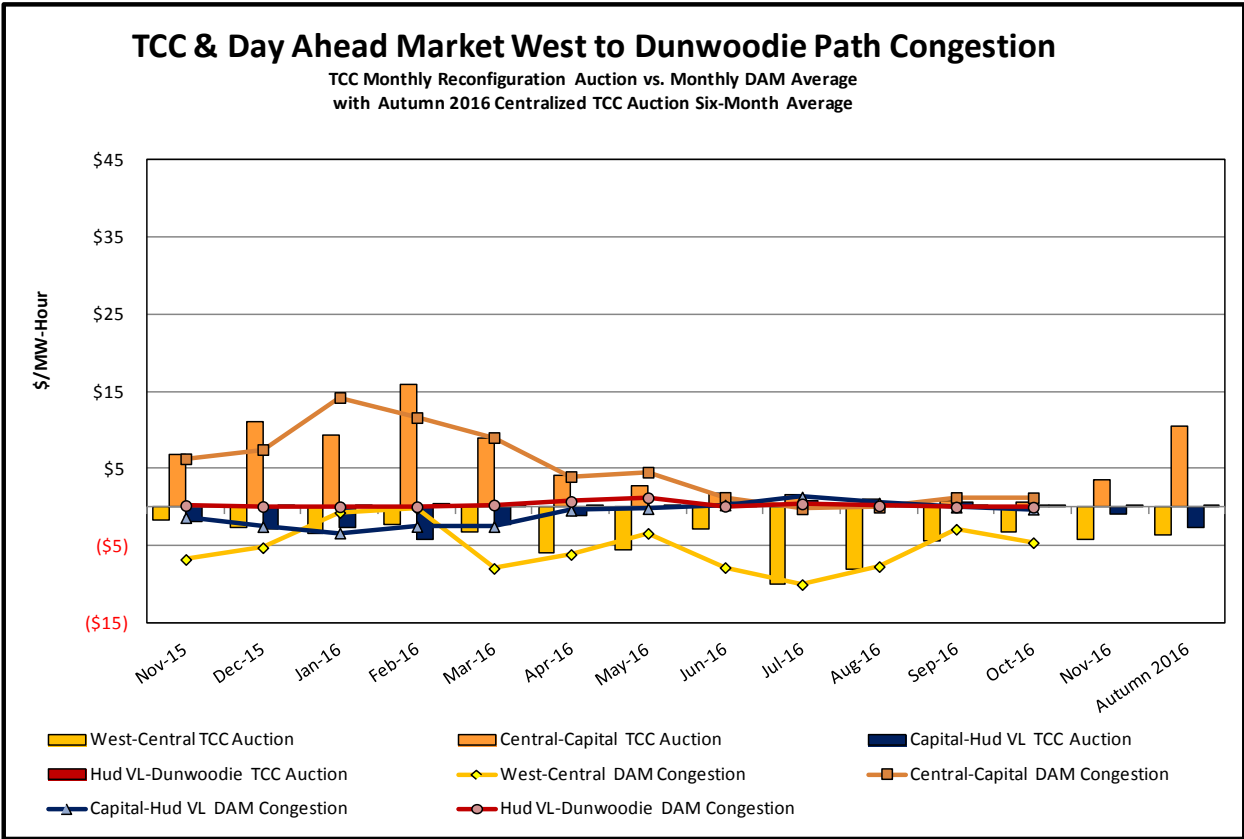
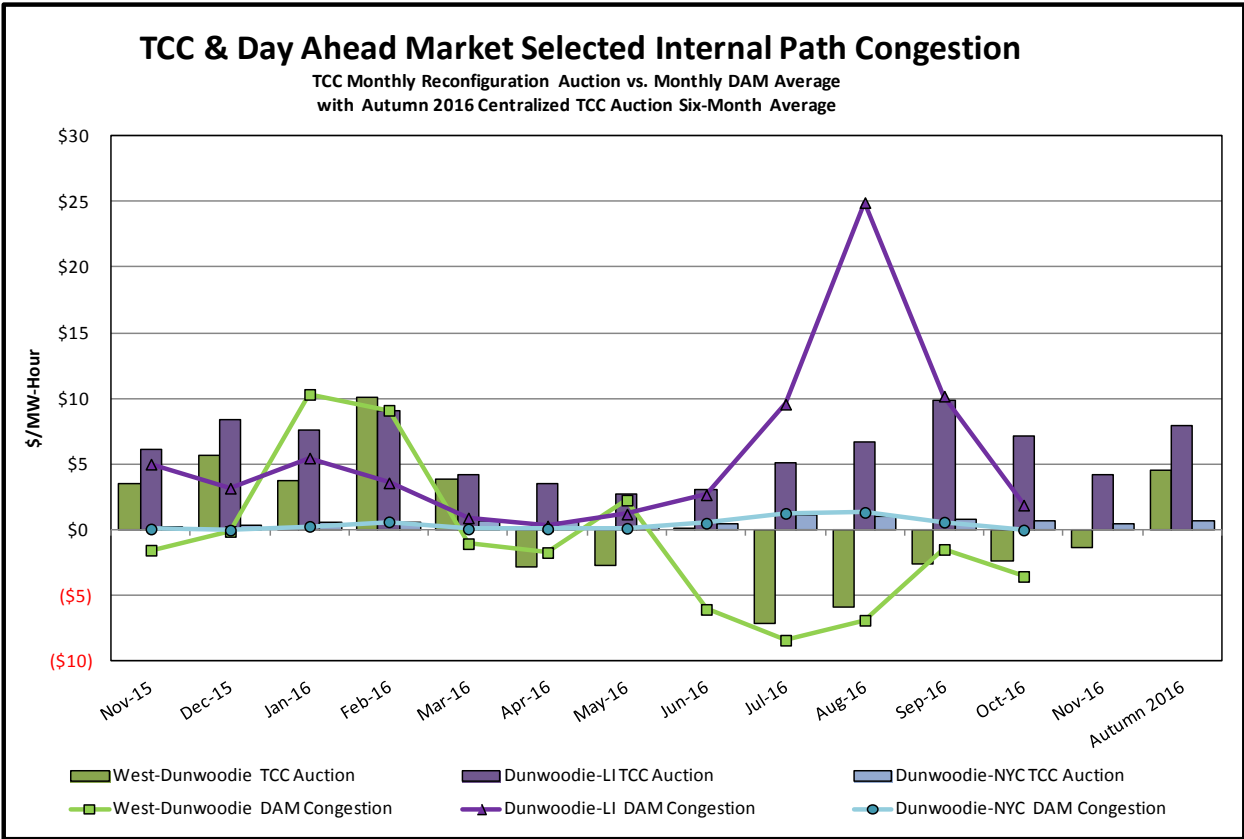
<u>Category</u>	<u>Cost Assignment</u>	<u>Events Types</u>	<u>Event Examples</u>
NYTO Outage Allocation	Responsible TO	Direct allocation to NYTO's responsible for transmission equipment status change.	DAM scheduled outage for equipment modeled in-service for the TCC Auction.
External Outage Allocation	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.	





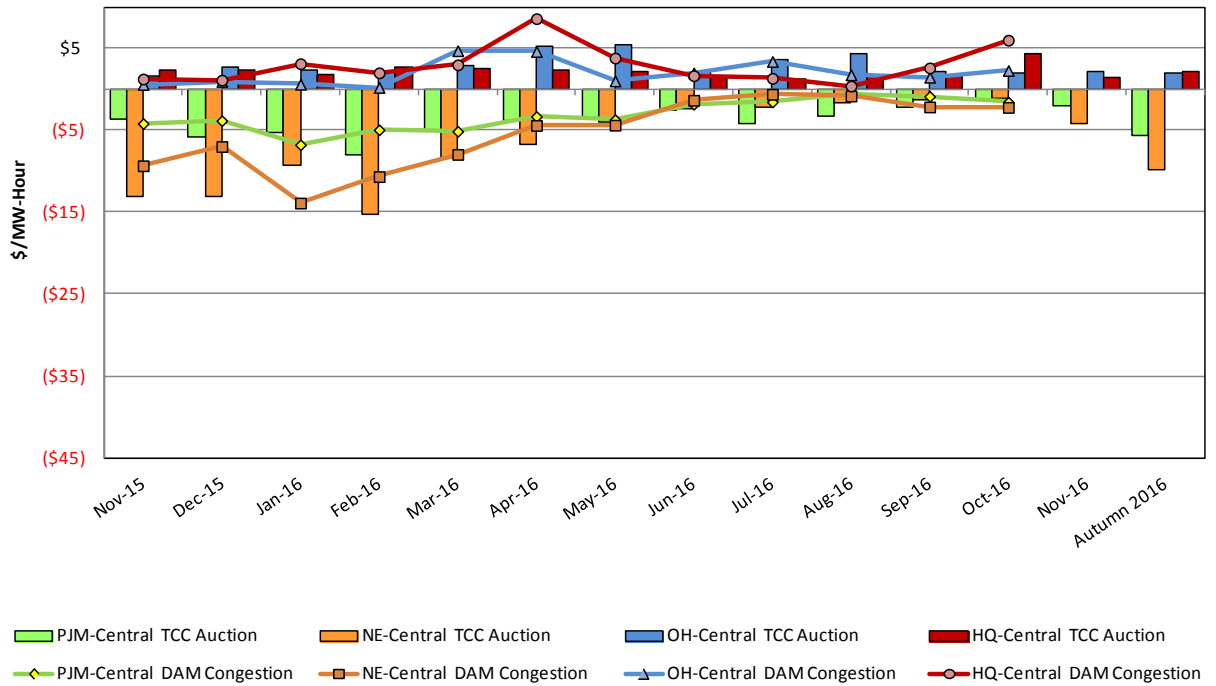


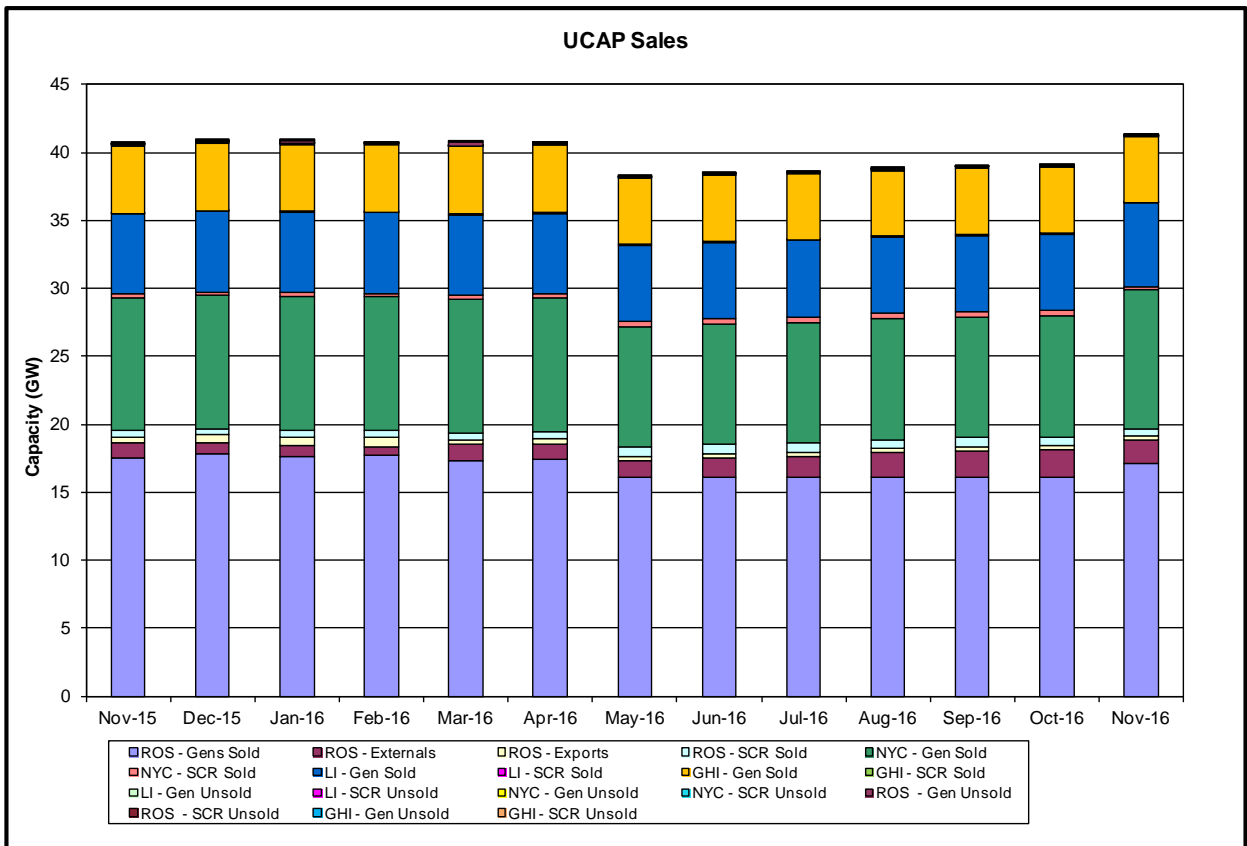
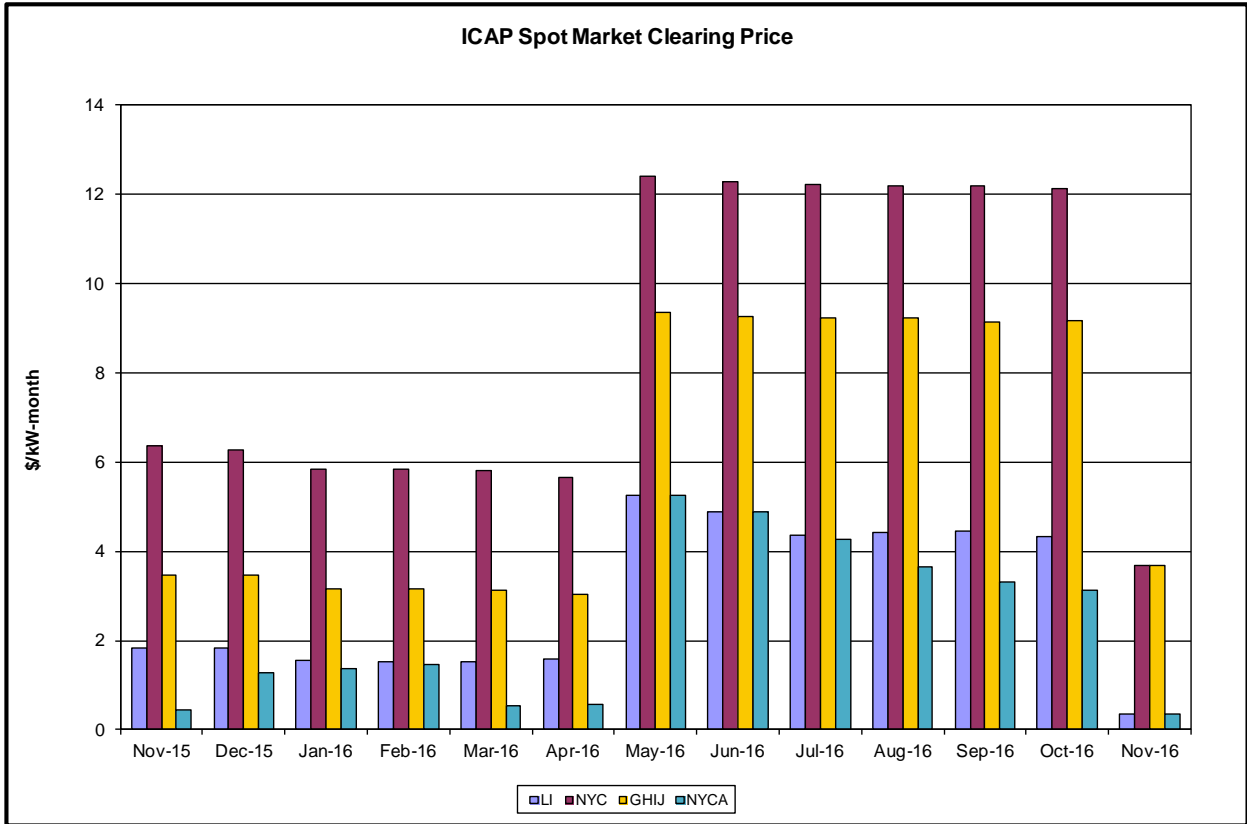




### TCC & Day Ahead Market Selected External Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Autumn 2016 Centralized TCC Auction Six-Month Average

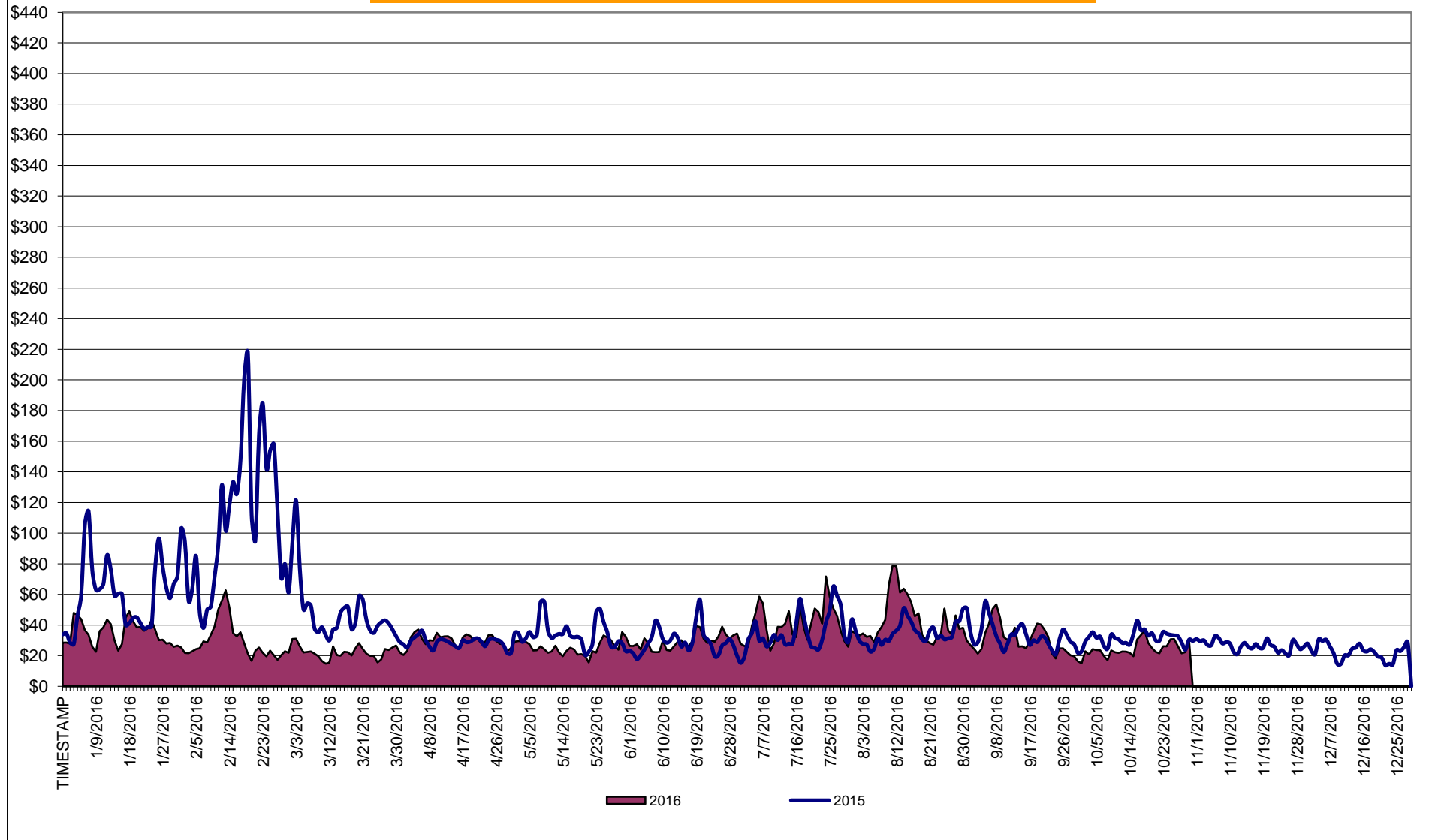




# Market Performance Highlights for October 2016

- **LBMP for October is \$22.33/MWh; lower than \$30.89/MWh in September 2016 and \$30.05/MWh in October 2015.**
  - Day Ahead and Real Time Load Weighted LBMPs are lower compared to September.
- **October 2016 average year-to-date monthly cost of \$33.54/MWh is a 29% decrease from \$47.17/MWh in October 2015.**
- **Average daily sendout is 391 GWh/day in October; lower than 458 GWh/day in September 2016 and higher than 389 GWh/day in October 2015.**
- **Natural gas prices were lower and distillate prices were higher compared to the previous month.**
  - Natural Gas (Transco Z6 NY) was \$1.18/MMBtu, down from \$1.32/MMBtu in September.
    - Natural gas prices are down 45.5% year-over-year
  - Jet Kerosene Gulf Coast was \$10.77/MMBtu, up from \$9.73/MMBtu in September.
  - Ultra Low Sulfur No.2 Diesel NY Harbor was \$11.12/MMBtu, up from \$10.09/MMBtu in September.
    - Distillate prices are up 5.6% year-over-year
- **Uplift per MWh is higher compared to the previous month.**
  - Uplift (not including NYISO cost of operations) is (\$0.09)/MWh; higher than (\$0.15)/MWh in September.
    - Local Reliability Share is \$0.15/MWh, higher than \$0.14/MWh in September.
    - Statewide Share is (\$0.24)/MWh, higher than (\$0.29)/MWh in September.
  - TSA \$ per NYC MWh is \$0.00/MWh.
  - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are lower than September.

**Daily NYISO Average Cost/MWh (Energy & Ancillary Services)\***  
**2015 Annual Average \$44.10/MWh**  
**October 2015 YTD Average \$47.17/MWh**  
**October 2016 YTD Average \$33.54/MWh**



\* Excludes ICAP payments.



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

<b>2016</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	34.29	28.71	20.66	27.96	23.31	27.35	40.01	42.99	30.89	22.33		
NTAC	0.59	0.78	0.62	1.14	1.10	0.93	0.78	0.54	0.55	0.86		
Reserve	0.77	0.73	0.73	0.87	0.71	0.59	0.67	0.68	0.69	0.77		
Regulation	0.12	0.12	0.12	0.12	0.11	0.12	0.10	0.10	0.10	0.15		
NYISO Cost of Operations	0.64	0.65	0.65	0.64	0.65	0.66	0.65	0.65	0.64	0.64		
FERC Fee Recovery	0.09	0.10	0.11	0.10	0.09	0.09	0.07	0.06	0.08	0.10		
Uplift	(0.43)	(0.07)	(0.03)	(0.34)	0.19	0.20	(0.26)	(0.63)	(0.15)	(0.09)		
Uplift: Local Reliability Share	0.09	0.11	0.06	0.07	0.35	0.21	0.23	0.22	0.14	0.15		
Uplift: Statewide Share	(0.52)	(0.18)	(0.09)	(0.41)	(0.16)	(0.01)	(0.49)	(0.86)	(0.29)	(0.24)		
Voltage Support and Black Start	<u>0.35</u>	<u>0.36</u>	<u>0.36</u>	<u>0.35</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>		
<b>Avg Monthly Cost</b>	36.42	31.37	23.23	30.84	26.52	30.29	42.40	44.75	33.16	25.12		
Avg YTD Cost	36.42	34.02	30.68	30.71	29.85	29.93	32.32	34.43	34.31	33.54		
TSA \$ per NYC MWh	0.00	0.00	0.05	0.00	0.00	0.02	0.84	1.64	0.00	0.00		
<b>2015</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	59.61	114.37	52.09	28.36	32.98	28.20	34.77	33.09	34.40	30.05	24.83	20.91
NTAC	0.32	0.35	0.41	0.64	0.56	0.80	0.54	0.60	0.63	0.53	0.68	1.05
Reserve	0.27	0.37	0.56	0.36	0.38	0.24	0.27	0.20	0.28	0.28	0.47	0.60
Regulation	0.10	0.18	0.11	0.12	0.10	0.13	0.12	0.12	0.10	0.12	0.13	0.13
NYISO Cost of Operations	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.69	0.70	0.69
Uplift	(0.48)	(1.08)	(0.68)	(0.15)	0.26	0.33	0.04	0.03	(0.15)	0.10	0.44	(0.07)
Uplift: Local Reliability Share	0.25	0.33	0.13	0.27	0.30	0.37	0.35	0.36	0.22	0.33	0.20	0.12
Uplift: Statewide Share	(0.73)	(1.41)	(0.81)	(0.42)	(0.05)	(0.04)	(0.30)	(0.33)	(0.37)	(0.23)	0.25	(0.18)
Voltage Support and Black Start	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.39</u>	<u>0.38</u>
<b>Avg Monthly Cost</b>	60.91	115.27	53.58	30.41	35.37	30.79	36.84	35.14	36.35	32.18	27.64	23.71
Avg YTD Cost	60.91	87.74	76.64	66.82	60.96	56.02	52.77	50.20	48.59	47.17	45.66	44.10
TSA \$ per NYC MWh	0.00	0.00	0.00	0.00	0.17	0.50	0.07	0.06	0.01	0.00	0.00	0.00
<b>2014</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	183.36	123.19	109.58	46.09	40.30	43.39	43.97	34.48	37.63	35.61	42.89	38.08
NTAC	0.56	0.64	0.39	1.18	0.69	0.78	0.43	0.41	0.50	0.57	0.68	0.86
Reserve	0.78	0.49	0.56	0.46	0.28	0.27	0.26	0.26	0.29	0.48	0.37	0.23
Regulation	0.27	0.21	0.22	0.13	0.12	0.12	0.12	0.13	0.11	0.12	0.11	0.08
NYISO Cost of Operations	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Uplift	0.22	0.56	0.35	(0.09)	0.07	(0.21)	(0.26)	(0.19)	(0.20)	(0.24)	(0.40)	(0.20)
Uplift: Local Reliability Share	1.43	0.75	0.62	0.15	0.51	0.32	0.29	0.27	0.26	0.26	0.24	0.13
Uplift: Statewide Share	(1.21)	(0.19)	(0.27)	(0.24)	(0.44)	(0.53)	(0.55)	(0.45)	(0.46)	(0.50)	(0.64)	(0.33)
Voltage Support and Black Start	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>	<u>0.36</u>
<b>Avg Monthly Cost</b>	186.24	126.14	112.15	48.82	42.51	45.39	45.57	36.14	39.38	37.59	44.71	40.09
Avg YTD Cost	186.24	157.93	142.77	121.97	108.36	97.84	89.46	82.60	78.07	74.63	72.06	69.31
TSA \$ per NYC MWh	0.00	0.00	0.00	0.00	0.00	0.03	0.35	0.00	0.42	0.00	0.00	0.00

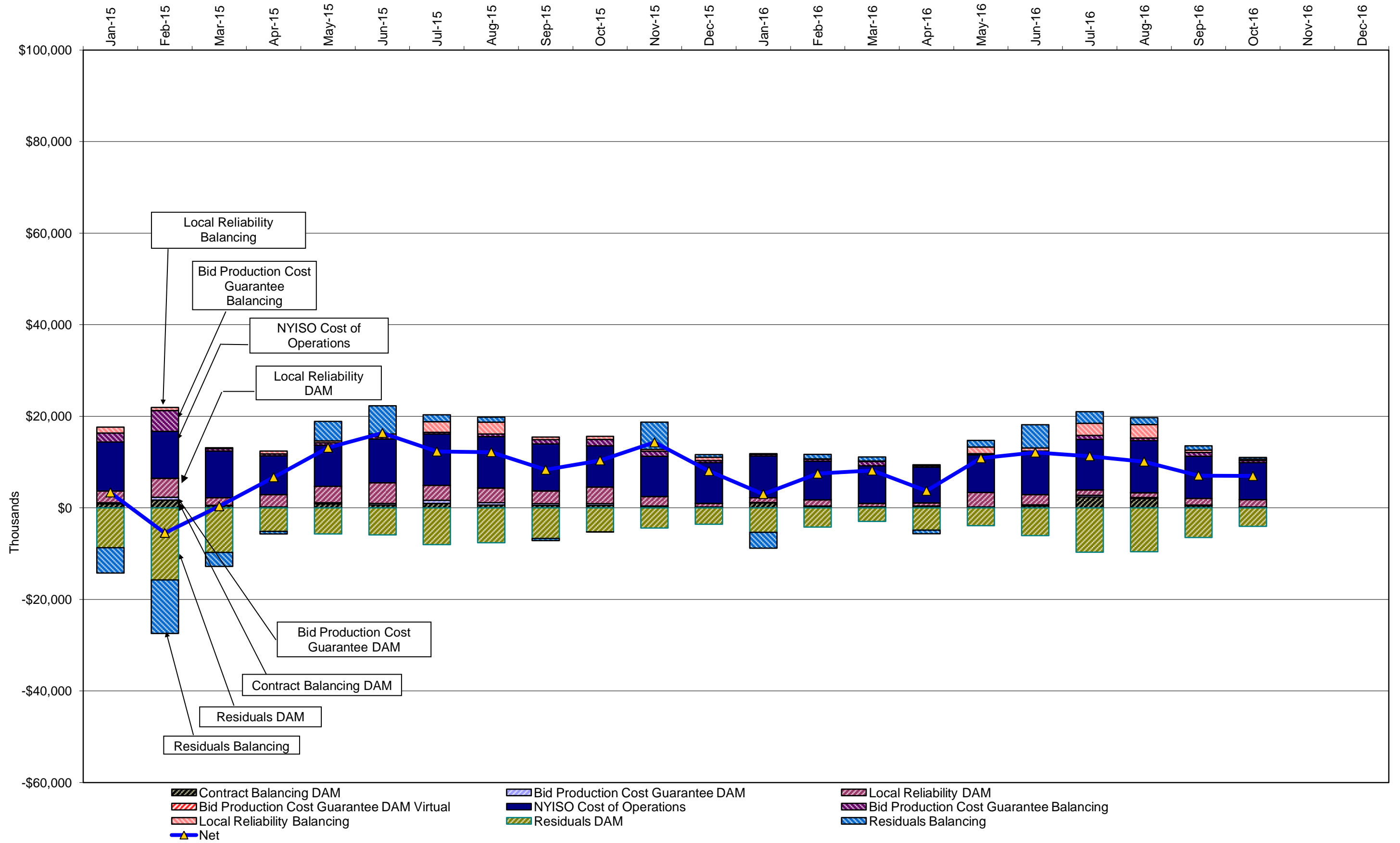
\* Excludes ICAP payments.

Market Mitigation and Analysis  
Prepared: 11/7/2016 11:05 AM

Data reflects true-ups thru December 2015.

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 October 31, 2016



DAM Contract Balancing amounts are for payments made to generating units to make them whole for being dispatched below their Day-Ahead schedule, as a result of out-of-merit dispatches.  
 DAM Bid Production Cost Guarantees for Virtual Transactions are included in the chart and are shown from the inception of Virtual Transactions. These values are small and cannot be identified on the chart.  
 DAM residuals consist of both energy and loss revenue collections and payments. By design, there is a net over collection of revenues due to the difference between the marginal losses paid to generation and the average losses charged to loads.

## NYISO Markets Transactions

<u>2016</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<b>Day Ahead Market MWh</b>	14,760,915	13,614,754	13,413,781	12,496,141	12,959,886	14,095,904	16,950,819	17,413,898	14,563,318	13,014,354		
DAM LSE Internal LBMP Energy Sales	54%	55%	55%	57%	58%	60%	64%	63%	60%	56%		
DAM External TC LBMP Energy Sales	4%	2%	1%	5%	2%	1%	1%	3%	3%	2%		
DAM Bilateral - Internal Bilaterals	34%	34%	35%	28%	31%	30%	28%	27%	30%	33%		
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	5%	6%	5%	5%	4%	4%	5%	5%		
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	1%	2%	2%	2%	2%	1%	1%	1%	2%		
DAM Bilateral - Wheel Through Bilaterals	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%		
<b>Balancing Energy Market MWh</b>	-522,919	-580,900	-741,701	-303,313	-180,848	-143,015	-86,025	224,316	-250,802	-477,109		
Balancing Energy LSE Internal LBMP Energy Sales	-125%	-114%	-118%	-76%	-147%	-203%	-347%	42%	-139%	-111%		
Balancing Energy External TC LBMP Energy Sales	12%	13%	19%	-13%	55%	77%	204%	56%	49%	21%		
Balancing Energy Bilateral - Internal Bilaterals	19%	9%	4%	8%	27%	47%	62%	28%	18%	6%		
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	6%	5%	3%	5%	7%	10%	15%	5%	5%	4%		
Balancing Energy Bilateral - Wheel Through Bilaterals	-12%	-12%	-8%	-24%	-42%	-32%	-34%	-31%	-32%	-21%		
<b>Transactions Summary</b>												
LBMP	56%	56%	54%	62%	59%	61%	65%	66%	62%	57%		
Internal Bilaterals	36%	36%	37%	29%	32%	31%	28%	27%	30%	35%		
Import Bilaterals	5%	5%	6%	6%	5%	5%	4%	4%	5%	5%		
Export Bilaterals	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%		
Wheels Through	1%	1%	1%	1%	2%	2%	1%	1%	2%	1%		
<b>Market Share of Total Load</b>												
Day Ahead Market	103.7%	104.5%	105.9%	102.5%	101.4%	101.0%	100.5%	98.7%	101.8%	103.8%		
Balancing Energy +	-3.7%	-4.5%	-5.9%	-2.5%	-1.4%	-1.0%	-0.5%	1.3%	-1.8%	-3.8%		
Total MWh	14,237,996	13,033,853	12,672,080	12,192,828	12,779,038	13,952,889	16,864,794	17,638,213	14,312,516	12,537,245		
Average Daily Energy Sendout/Month GWh	439	436	397	385	397	456	532	548	458	391		
<b>2015</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>	15,961,306	14,967,371	15,059,207	12,589,321	13,291,917	14,277,299	16,573,027	16,333,932	14,740,907	13,546,033	13,338,332	13,620,002
DAM LSE Internal LBMP Energy Sales	55%	54%	53%	55%	57%	57%	62%	61%	58%	53%	53%	55%
DAM External TC LBMP Energy Sales	5%	6%	6%	4%	2%	1%	1%	1%	3%	6%	5%	1%
DAM Bilateral - Internal Bilaterals	35%	33%	33%	33%	35%	33%	30%	31%	31%	34%	33%	35%
DAM Bilateral - Import/Non-LBMP Market Bilaterals	3%	5%	5%	6%	4%	5%	4%	4%	5%	5%	5%	5%
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	1%	2%	1%	1%	1%	1%	1%	2%	2%	2%
DAM Bilateral - Wheel Through Bilaterals	0%	1%	1%	1%	0%	2%	2%	2%	2%	1%	2%	2%
<b>Balancing Energy Market MWh</b>	-650,944	-296,616	-396,739	-409,205	-331,091	-549,794	-505,637	-228,461	-33,268	-604,600	-718,787	-642,268
Balancing Energy LSE Internal LBMP Energy Sales	-149%	-247%	-192%	-147%	-142%	-106%	-120%	-139%	-345%	-115%	-110%	-115%
Balancing Energy External TC LBMP Energy Sales	30%	113%	64%	36%	35%	16%	25%	50%	110%	12%	12%	17%
Balancing Energy Bilateral - Internal Bilaterals	13%	14%	19%	5%	6%	6%	13%	25%	239%	7%	4%	5%
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	6%	8%	12%	12%	10%	4%	3%	8%	46%	5%	5%	6%
Balancing Energy Bilateral - Wheel Through Bilaterals	0%	12%	-4%	-5%	-9%	-22%	-21%	-44%	-149%	-9%	-11%	-13%
<b>Transactions Summary</b>												
LBMP	58%	59%	57%	57%	58%	57%	61%	61%	61%	56%	56%	54%
Internal Bilaterals	37%	34%	35%	35%	36%	35%	32%	32%	32%	36%	35%	37%
Import Bilaterals	3%	5%	5%	6%	4%	5%	5%	5%	5%	5%	6%	6%
Export Bilaterals	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%	2%	2%
Wheels Through	0%	1%	1%	0%	0%	1%	1%	1%	1%	0%	1%	1%
<b>Market Share of Total Load</b>												
Day Ahead Market	104.3%	102.0%	102.7%	103.4%	102.6%	104.0%	103.1%	101.4%	100.2%	104.7%	105.7%	104.9%
Balancing Energy +	-4.3%	-2.0%	-2.7%	-3.4%	-2.6%	-4.0%	-3.1%	-1.4%	-0.2%	-4.7%	-5.7%	-4.9%
Total MWh	15,310,362	14,670,755	14,662,468	12,180,116	12,960,826	13,727,505	16,067,390	16,105,471	14,707,639	12,941,433	12,619,545	12,977,734
Average Daily Energy Sendout/Month GWh	462	481	436	387	409	450	512	511	473	389	396	408

+ 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 2016 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 *	\$31.01	\$25.76	\$18.63	\$26.39	\$21.07	\$24.83	\$35.24	\$38.25	\$27.15	\$20.37		
Standard Deviation	\$10.86	\$12.46	\$6.99	\$6.95	\$7.04	\$9.21	\$18.37	\$20.59	\$13.55	\$7.48		
Load Weighted Price **	\$32.13	\$26.75	\$19.37	\$27.14	\$22.12	\$26.30	\$38.29	\$41.41	\$29.38	\$21.29		
<b><u>RTC LBMP</u></b>												
Price *	\$26.12	\$24.10	\$16.41	\$23.41	\$19.96	\$24.29	\$36.22	\$45.03	\$24.70	\$19.76		
Standard Deviation	\$16.06	\$17.89	\$11.32	\$9.09	\$11.44	\$16.58	\$38.04	\$70.57	\$17.46	\$8.96		
Load Weighted Price **	\$27.16	\$25.29	\$17.11	\$24.10	\$21.23	\$25.73	\$39.42	\$50.28	\$26.97	\$20.64		
<b><u>REAL TIME LBMP</u></b>												
Price *	\$30.15	\$24.28	\$17.84	\$25.71	\$20.67	\$25.87	\$34.40	\$40.87	\$24.90	\$20.91		
Standard Deviation	\$60.09	\$18.19	\$15.06	\$16.59	\$12.84	\$19.27	\$38.56	\$52.85	\$20.70	\$12.15		
Load Weighted Price **	\$31.80	\$25.61	\$18.64	\$26.57	\$21.99	\$27.39	\$38.20	\$45.82	\$27.38	\$21.81		
Average Daily Energy Sendout/Month GWh	439	436	397	385	397	456	532	548	458	391		

### NYISO Markets 2015 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 *	\$53.35	\$101.48	\$46.59	\$26.07	\$29.21	\$24.30	\$30.27	\$30.01	\$30.18	\$27.11	\$22.18	\$18.94
Standard Deviation	\$24.61	\$48.85	\$21.51	\$6.73	\$13.44	\$11.96	\$17.67	\$12.05	\$13.37	\$7.64	\$7.94	\$8.41
Load Weighted Price **	\$55.40	\$104.52	\$48.01	\$26.84	\$31.08	\$26.12	\$32.94	\$31.81	\$32.46	\$27.95	\$23.12	\$19.97
<b><u>RTC LBMP</u></b>												
Price *	\$46.98	\$95.06	\$43.43	\$25.11	\$32.85	\$24.73	\$27.51	\$31.83	\$32.39	\$23.97	\$20.07	\$19.34
Standard Deviation	\$22.84	\$47.55	\$29.42	\$12.31	\$35.40	\$24.71	\$21.84	\$23.25	\$22.99	\$10.56	\$15.66	\$14.23
Load Weighted Price **	\$48.59	\$97.62	\$45.10	\$26.00	\$35.08	\$26.73	\$29.76	\$34.04	\$34.99	\$24.79	\$21.17	\$20.46
<b><u>REAL TIME LBMP</u></b>												
Price *	\$48.51	\$98.83	\$44.38	\$25.46	\$30.39	\$23.96	\$27.71	\$31.54	\$34.82	\$25.50	\$21.33	\$20.75
Standard Deviation	\$25.99	\$52.53	\$29.07	\$12.66	\$31.69	\$31.14	\$23.42	\$26.51	\$34.85	\$12.56	\$18.76	\$19.00
Load Weighted Price **	\$50.18	\$101.34	\$46.10	\$26.28	\$32.52	\$26.86	\$30.50	\$34.05	\$38.48	\$26.29	\$22.47	\$21.86
Average Daily Energy Sendout/Month GWh	462	481	436	387	409	450	512	511	473	389	396	408

\* Average zonal load weighted prices.

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

### NYISO Monthly Average Internal LBMPs 2015- 2016

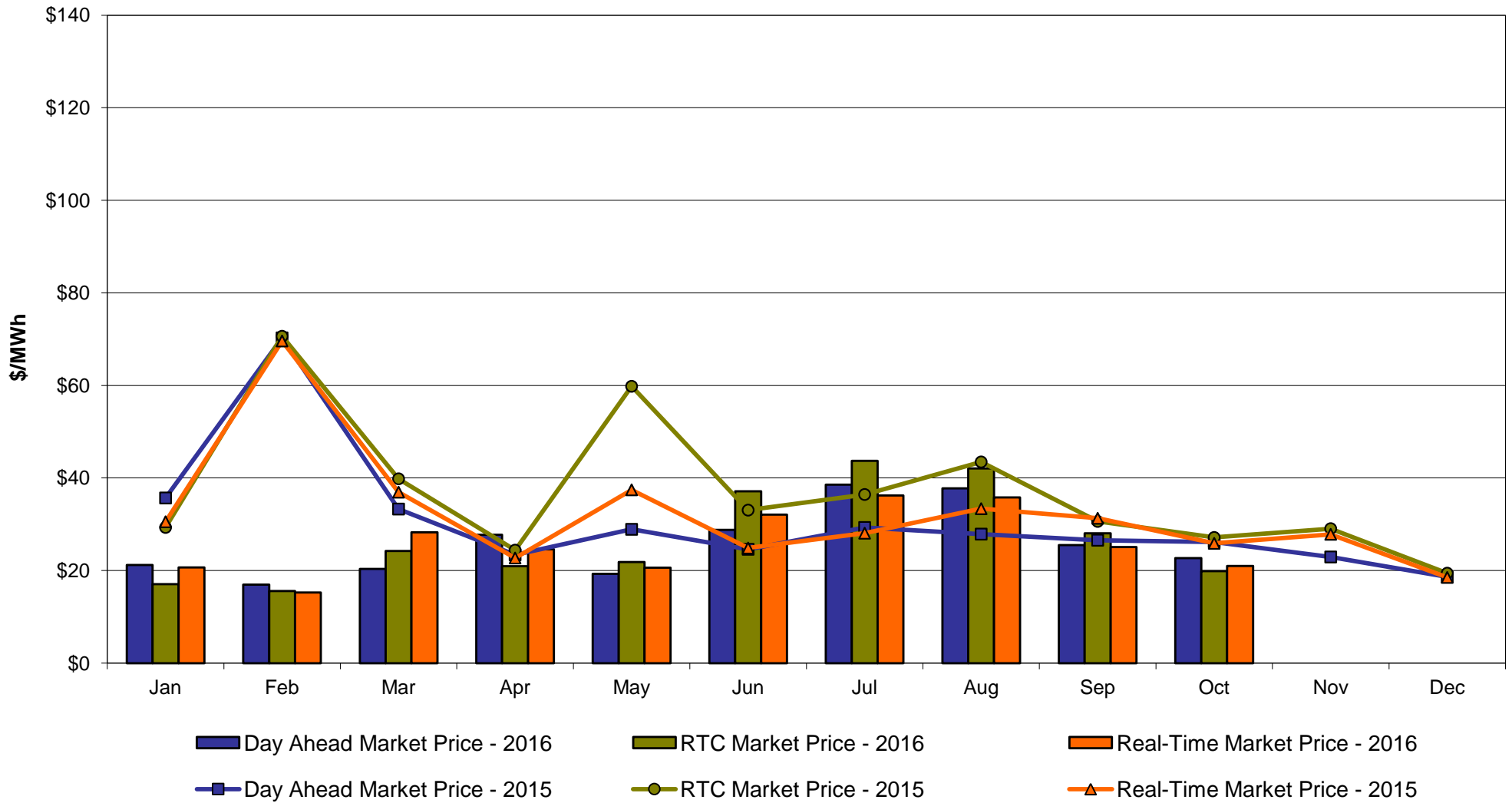


**October 2016 Zonal LBMP Statistics for NYISO (\$/MWh)**

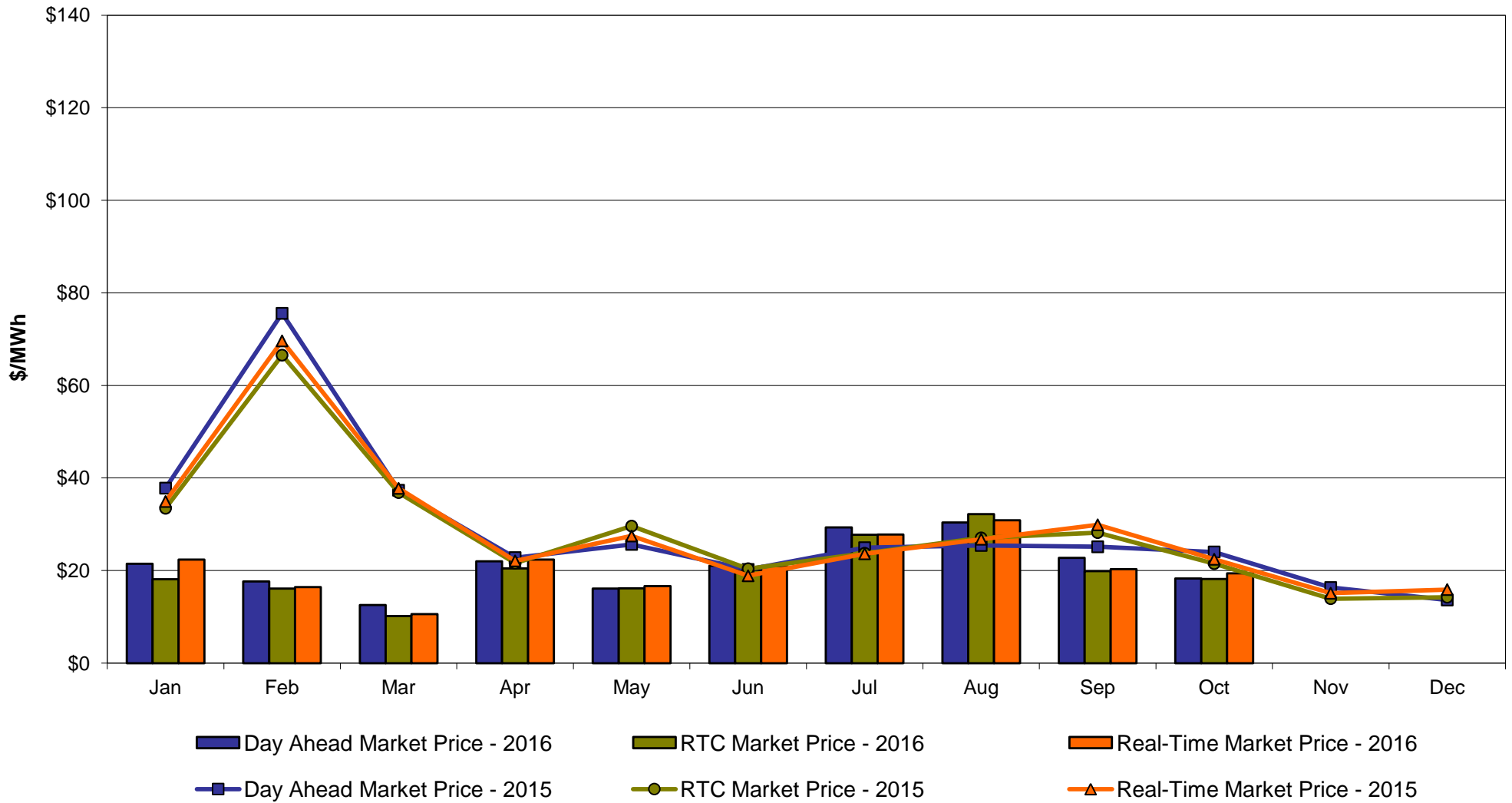
	<u>WEST Zone A</u>	<u>GENESEE Zone B</u>	<u>NORTH Zone D</u>	<u>CENTRAL Zone C</u>	<u>MOHAWK VALLEY Zone E</u>	<u>CAPITAL Zone F</u>	<u>HUDSON VALLEY Zone G</u>	<u>MILLWOOD Zone H</u>	<u>DUNWOODIE Zone I</u>	<u>NEW YORK CITY Zone J</u>	<u>LONG ISLAND Zone K</u>
<b>DAY AHEAD LBMP</b>											
Unweighted Price *	22.67	17.49	10.88	18.27	18.07	20.33	20.59	20.71	20.71	20.84	23.09
Standard Deviation	13.78	6.78	6.43	7.41	7.00	6.56	7.07	7.12	7.13	7.17	9.19
<b>RTC LBMP</b>											
Unweighted Price *	19.88	17.49	14.02	18.18	18.27	19.86	19.94	19.98	19.94	20.03	22.79
Standard Deviation	18.04	8.11	11.55	8.58	8.66	8.34	8.56	8.57	8.55	8.56	14.28
<b>REAL TIME LBMP</b>											
Unweighted Price *	21.00	18.66	14.26	19.39	19.50	21.14	21.26	21.29	21.26	21.45	23.21
Standard Deviation	18.49	11.29	16.37	11.79	12.06	11.78	12.15	12.17	12.13	12.33	16.34
	<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 *	15.36	11.67	11.67	20.24	21.63	23.07	22.48	22.49	20.78	20.81	10.76
Standard Deviation	5.48	5.79	5.79	7.62	7.81	9.28	8.90	8.79	7.14	7.16	6.45
<b>RTC LBMP</b>											
Unweighted Price *	16.43	13.71	13.71	20.03	23.04	22.51	22.32	21.92	19.95	20.06	14.10
Standard Deviation	8.12	12.26	12.26	9.47	12.06	13.63	13.53	12.64	8.61	8.64	11.73
<b>REAL TIME LBMP</b>											
Unweighted Price *	17.90	14.09	14.09	21.33	22.86	23.23	22.98	22.79	21.41	21.49	12.99
Standard Deviation	12.74	17.15	17.15	12.47	12.96	16.63	16.45	16.13	12.39	12.43	16.16

\* Straight LBMP averages

**West Zone A  
Monthly Average LBMP Prices 2015 - 2016**

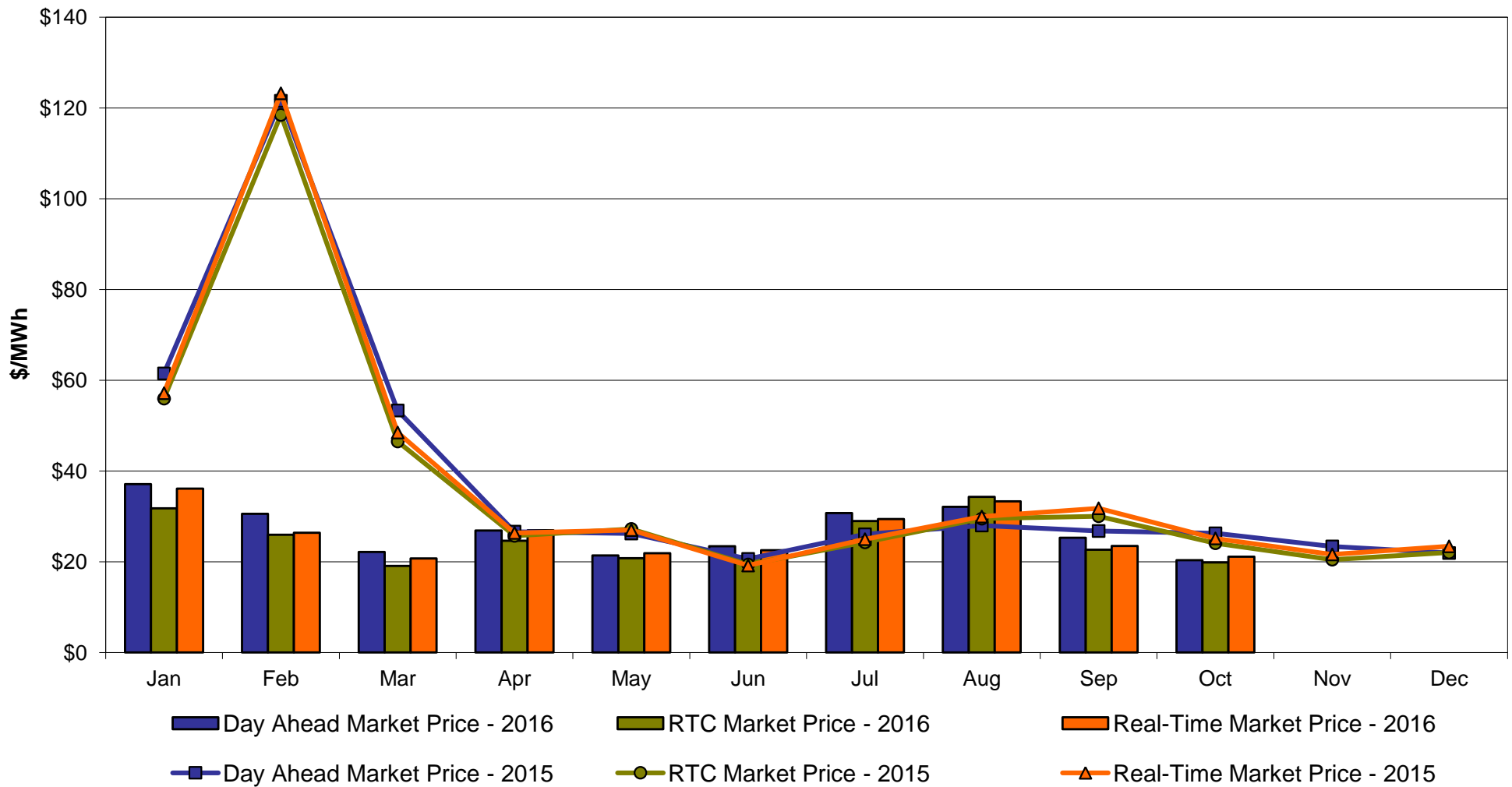


**Central Zone C  
Monthly Average LBMP Prices 2015 - 2016**

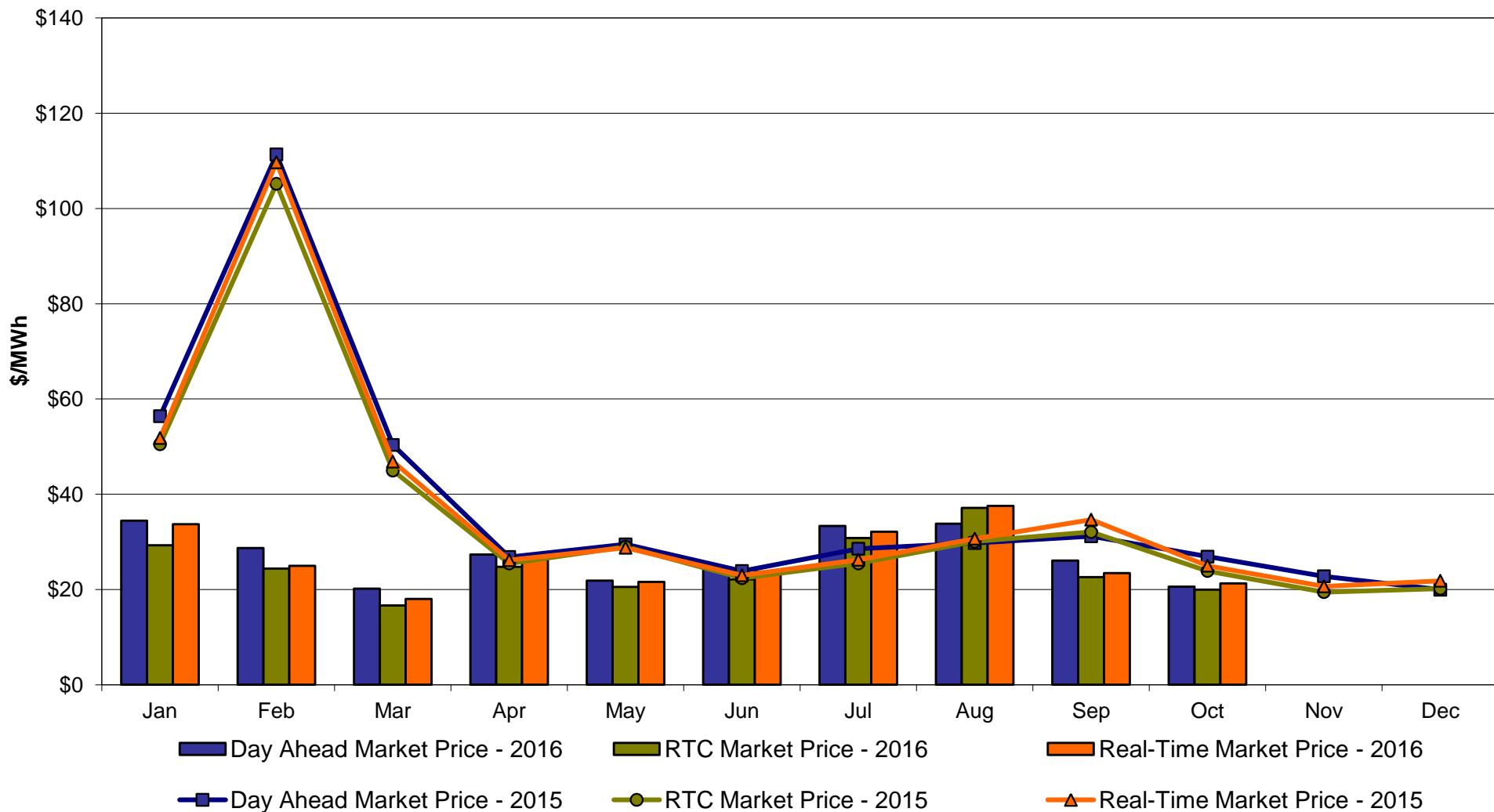




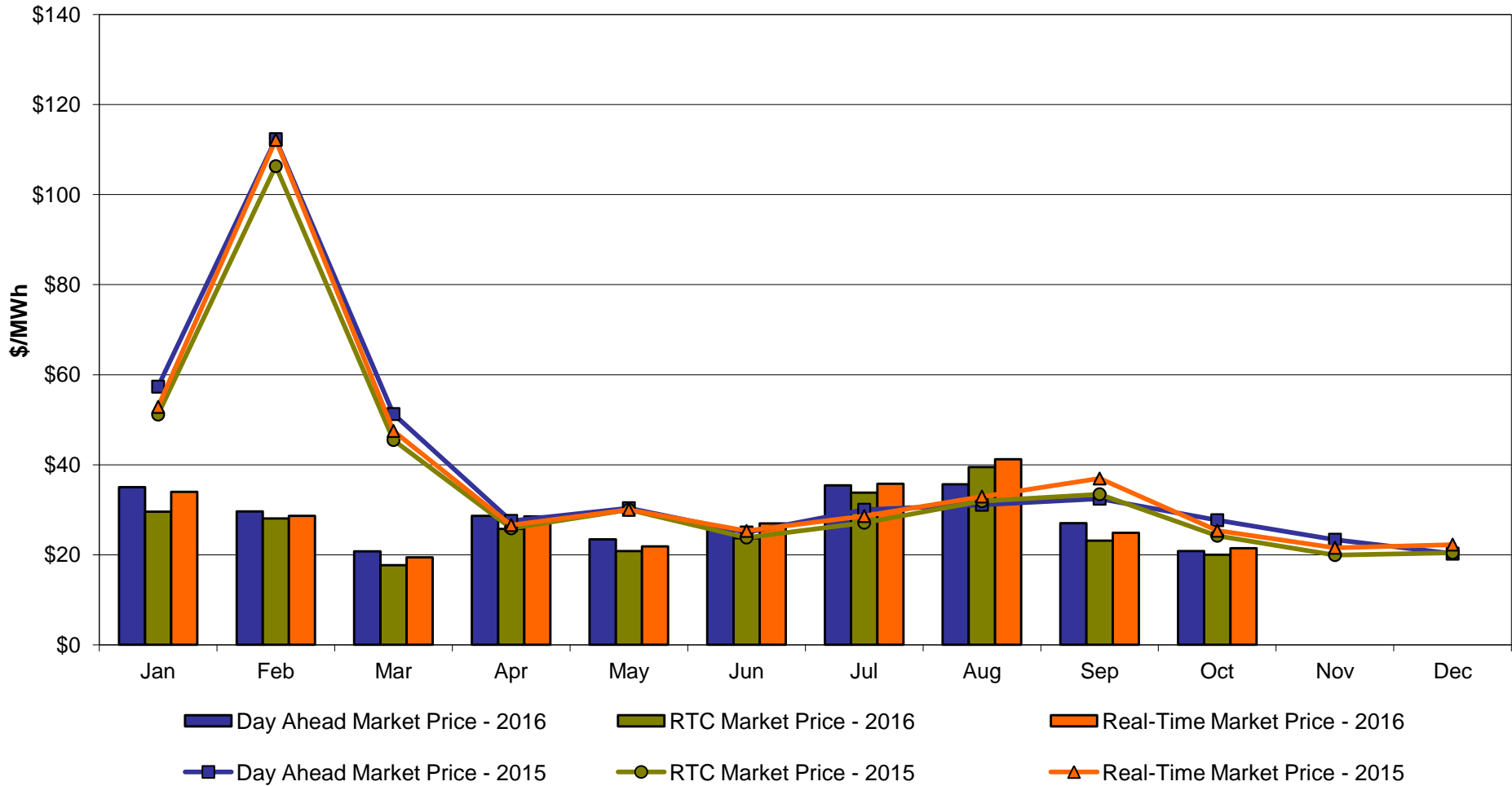
### Capital Zone F Monthly Average LBMP Prices 2015 - 2016



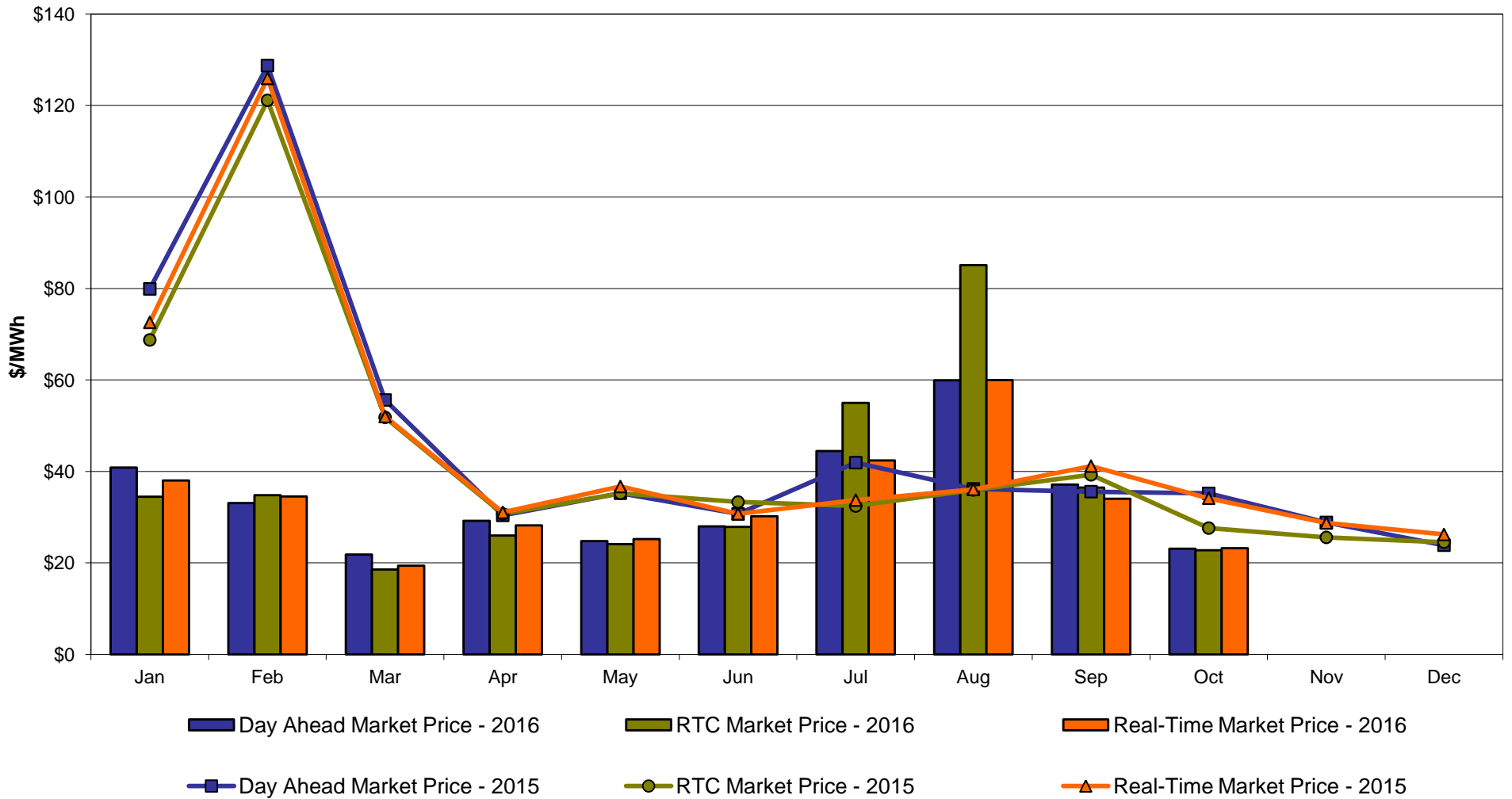
### Hudson Valley Zone G Monthly Average LBMP Prices 2015 - 2016



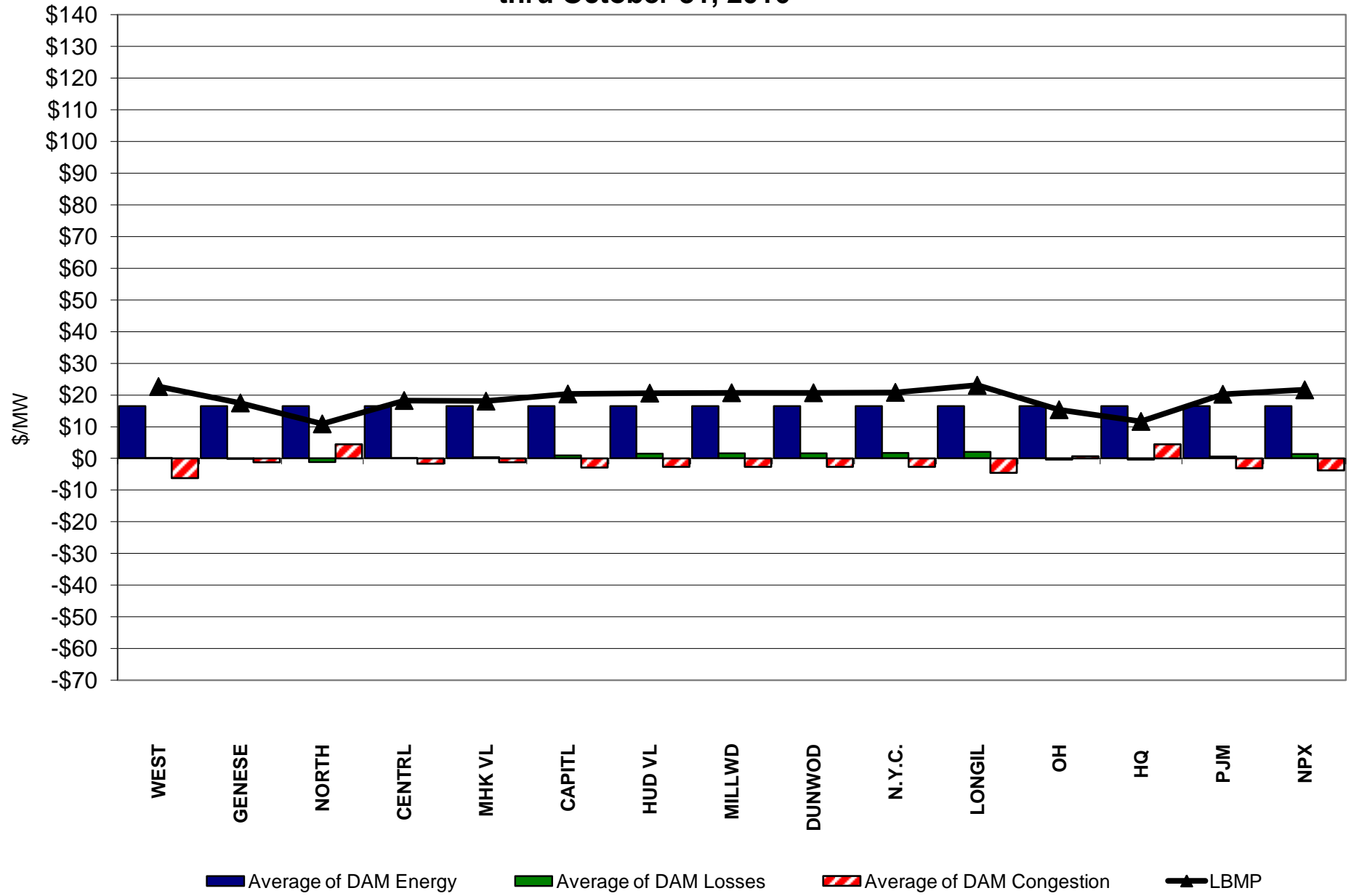
## NYC Zone J Monthly Average LBMP Prices 2015 - 2016



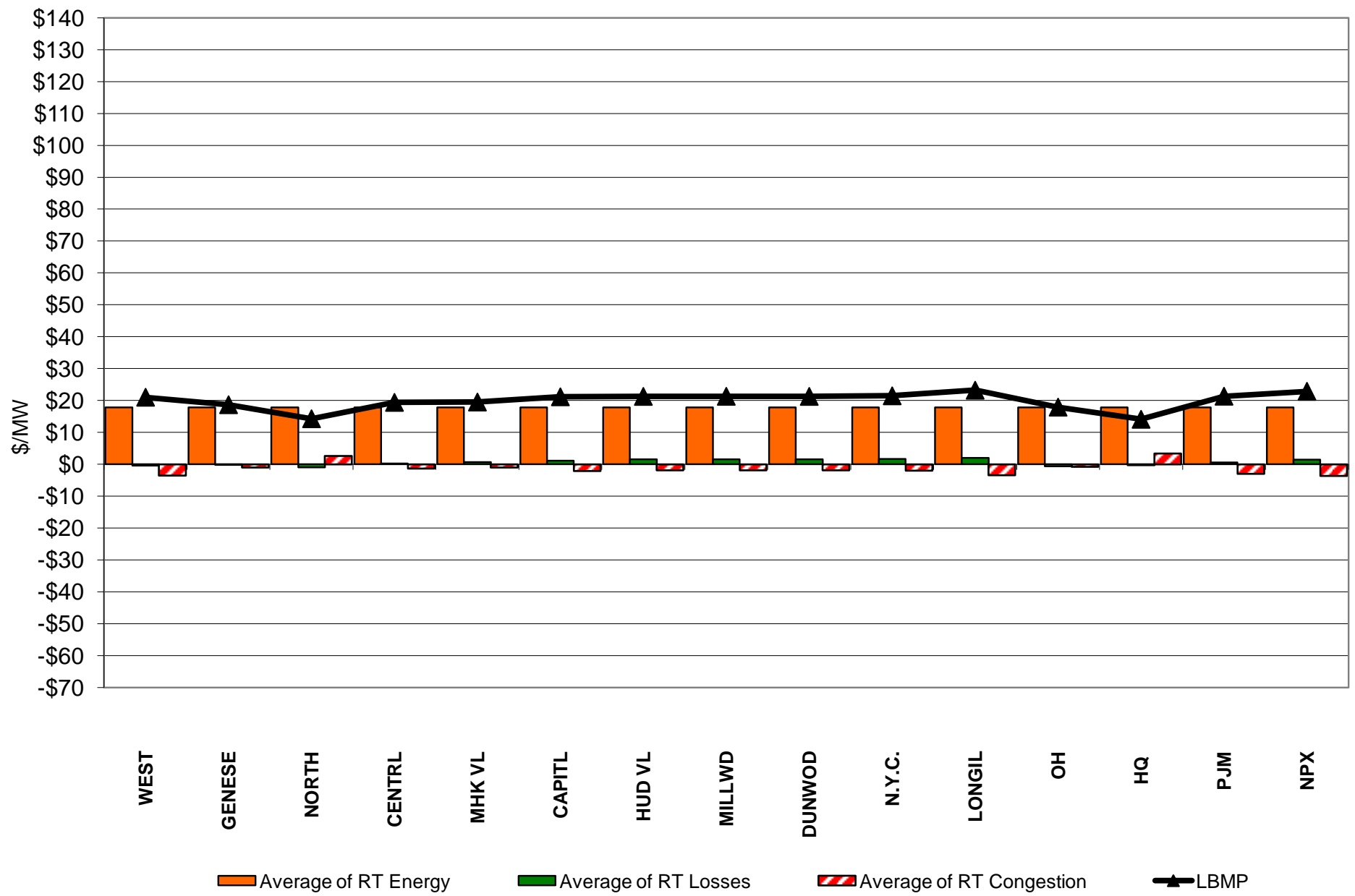
## Long Island Zone K Monthly Average LBMP Prices 2015 - 2016



**DAM Zonal Unweighted Monthly Average LBMP Components  
thru October 31, 2016**

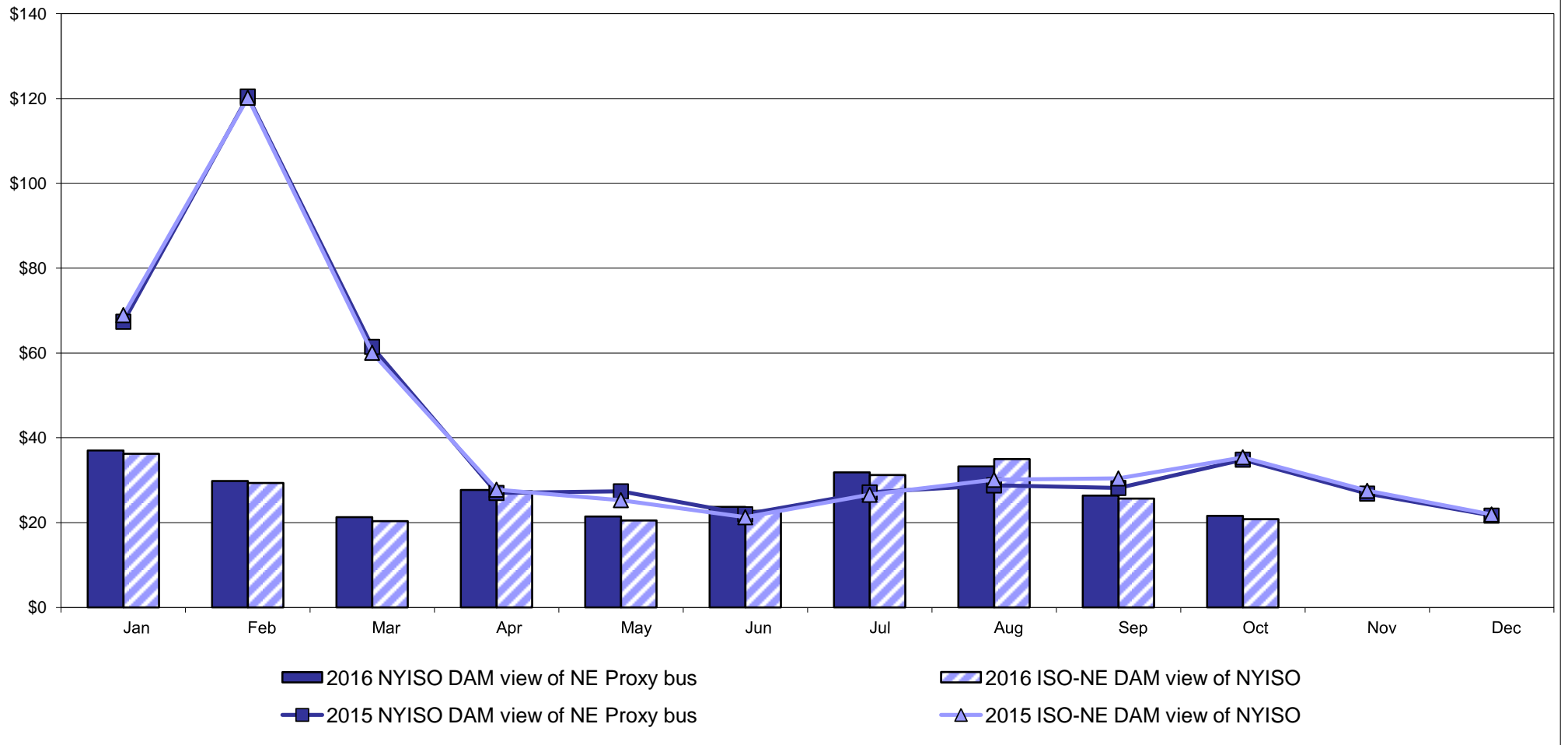


**RT Zonal Unweighted Monthly Average LBMP Components  
thru October 31, 2016**

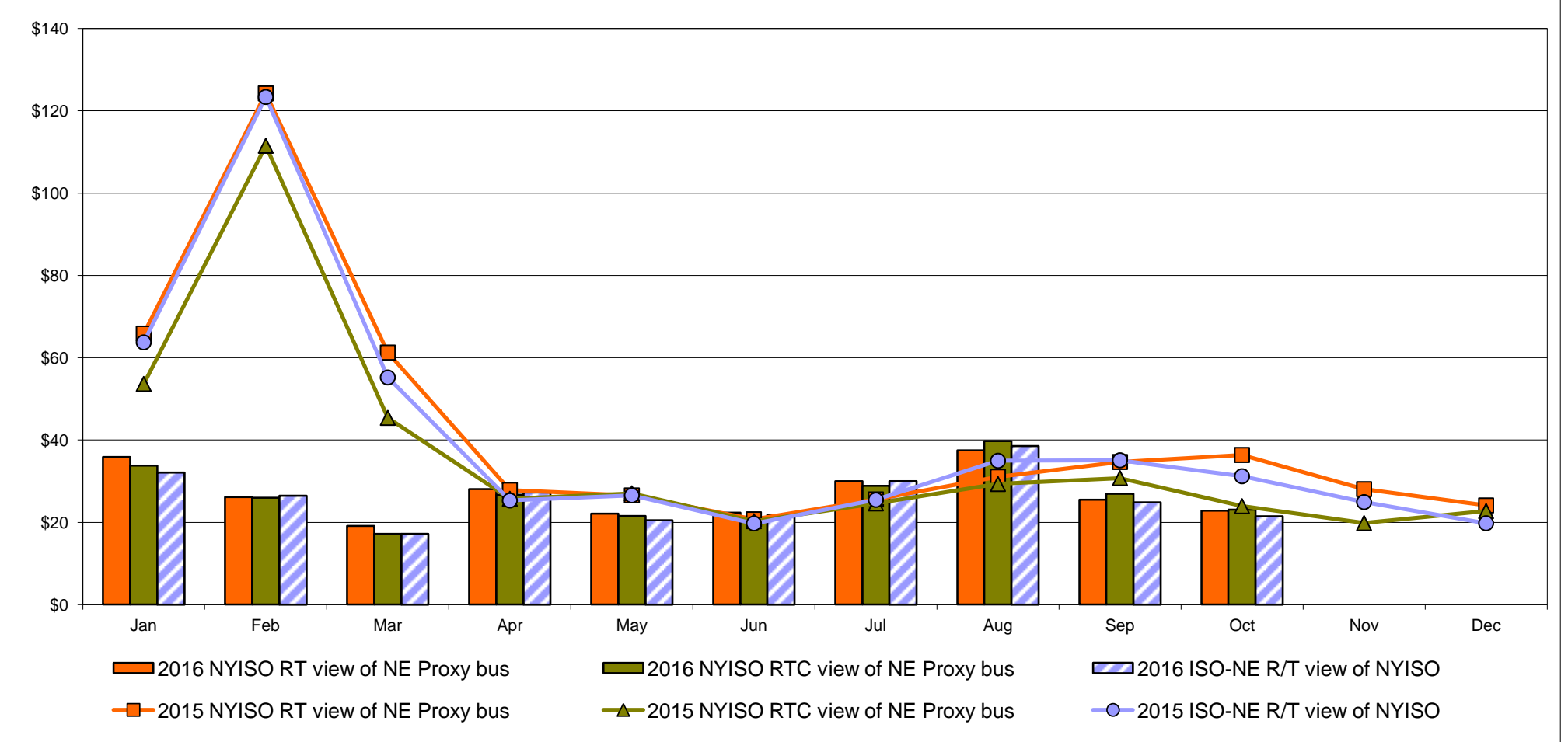


# External Comparison ISO-New England

## Day Ahead Market External Zone Comparison: ISO-NE (\$/MWh)

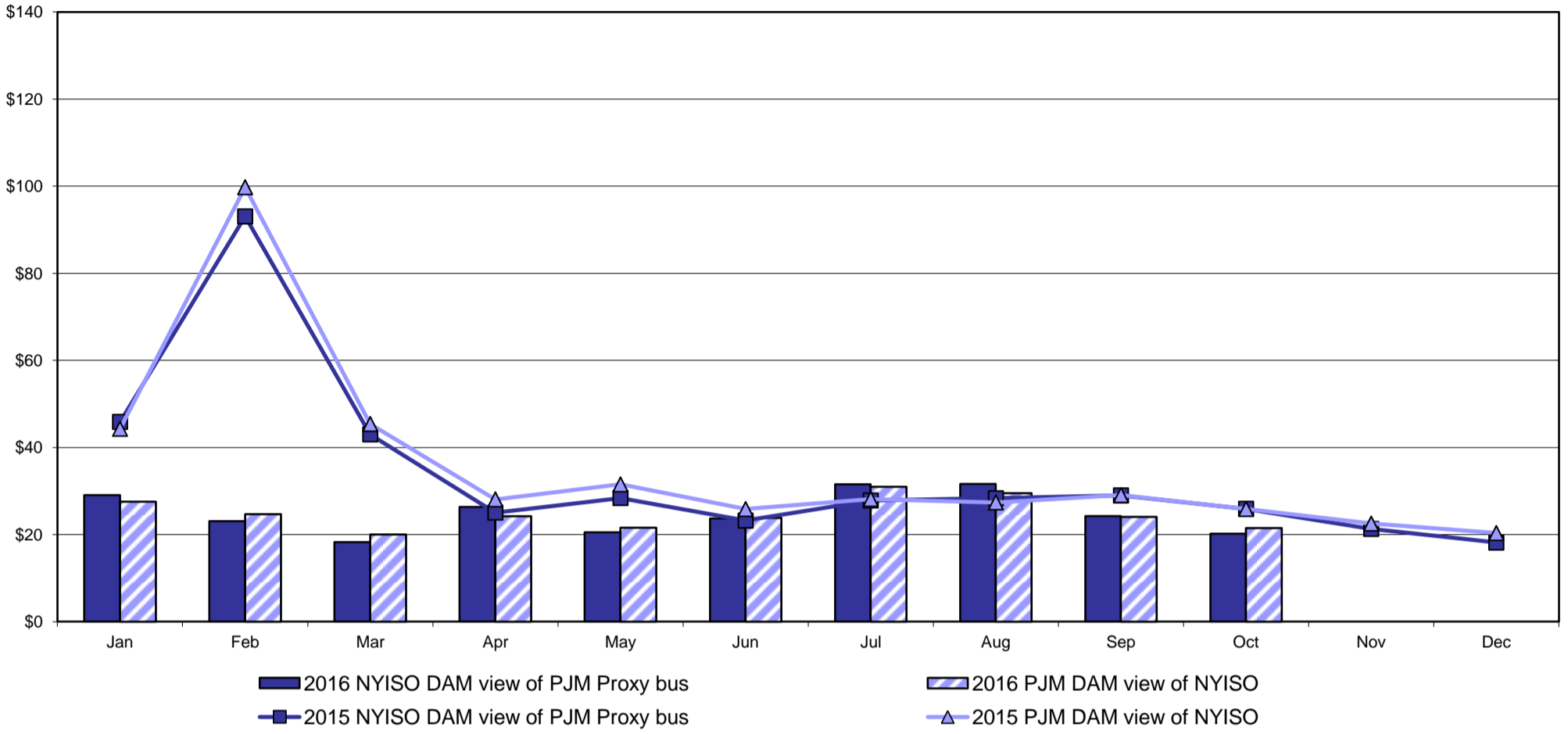


## Real Time Market External Zone Comparison: ISO-NE (\$/MWh)

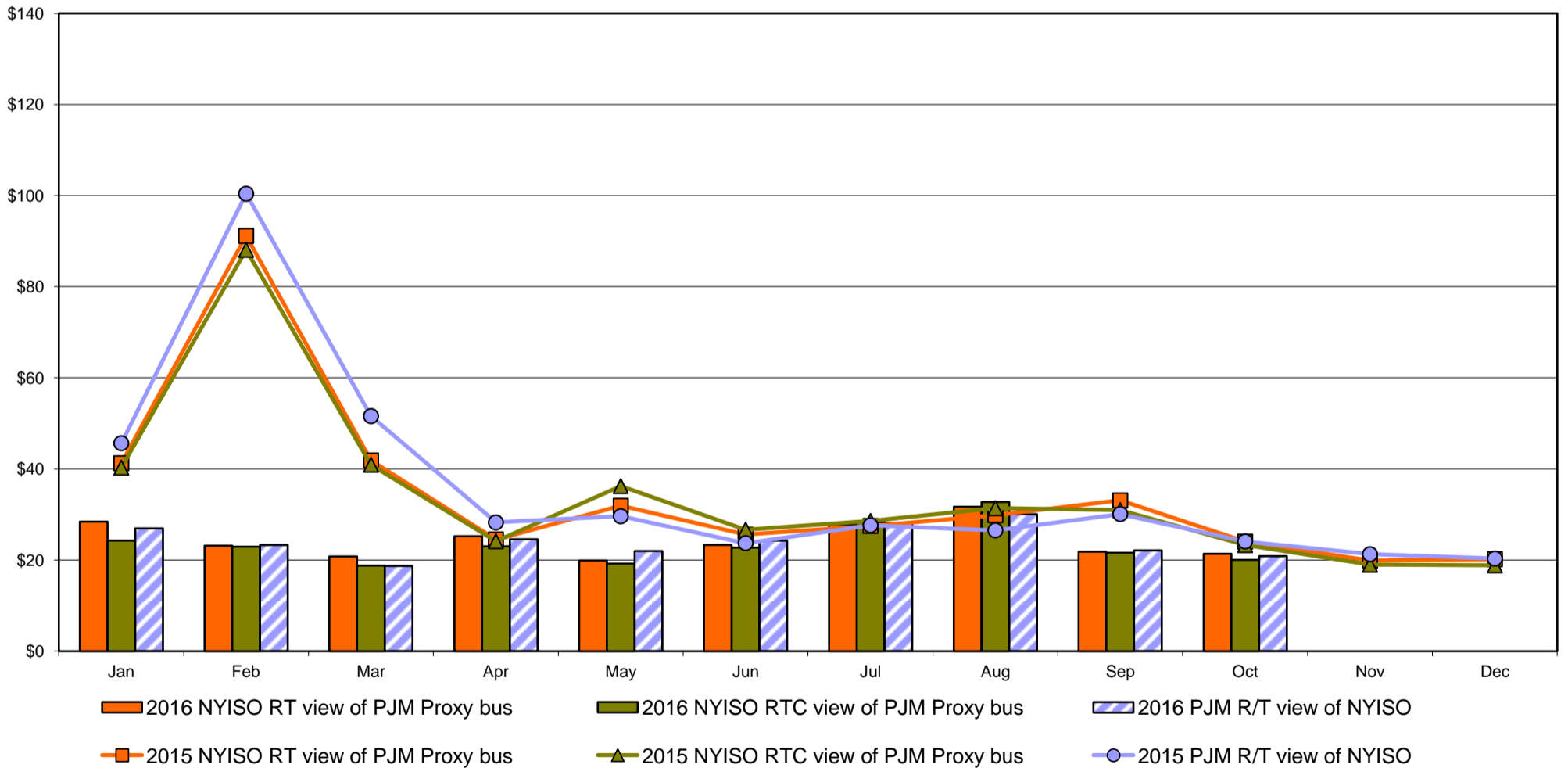


# External Comparison PJM

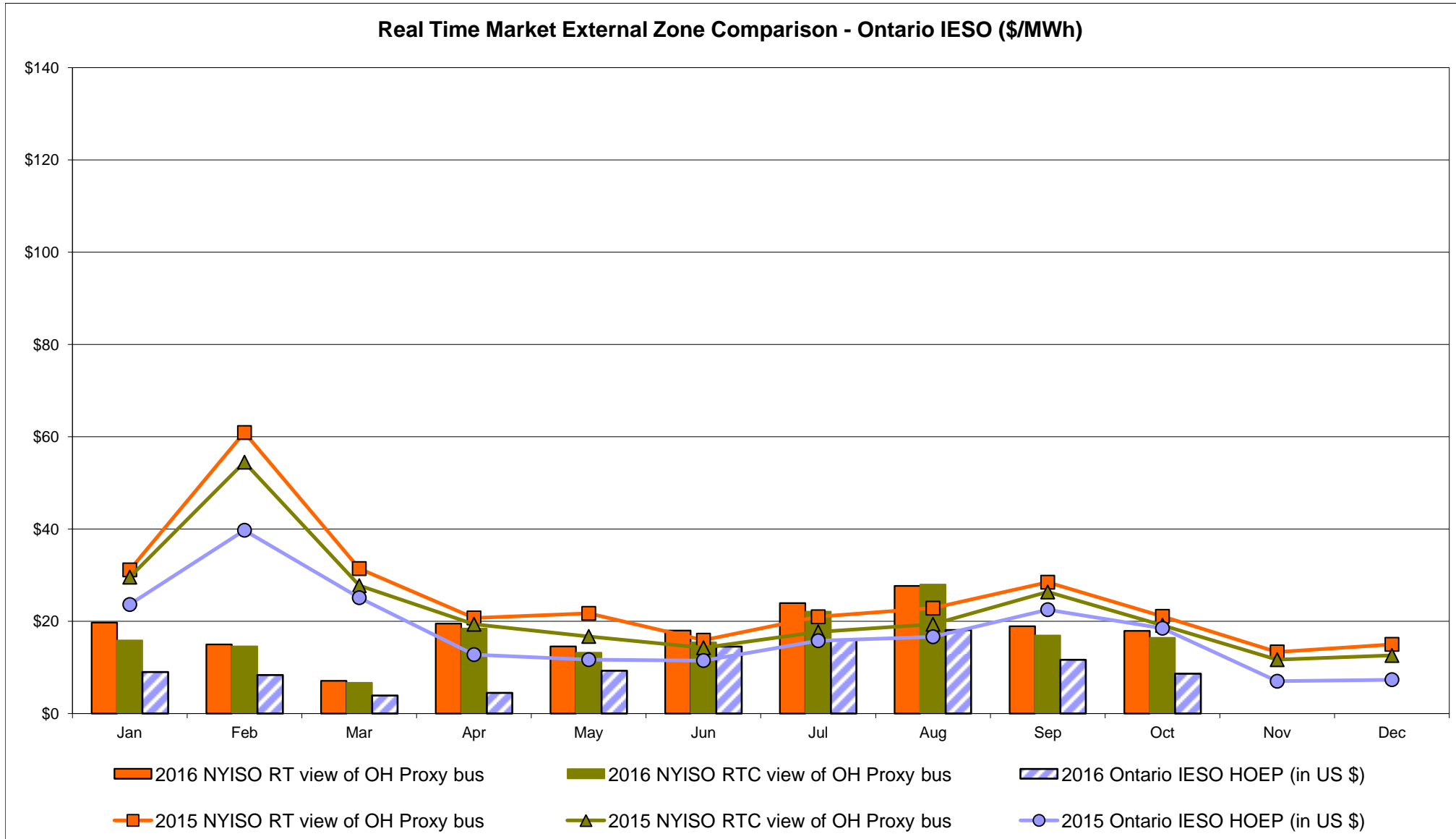
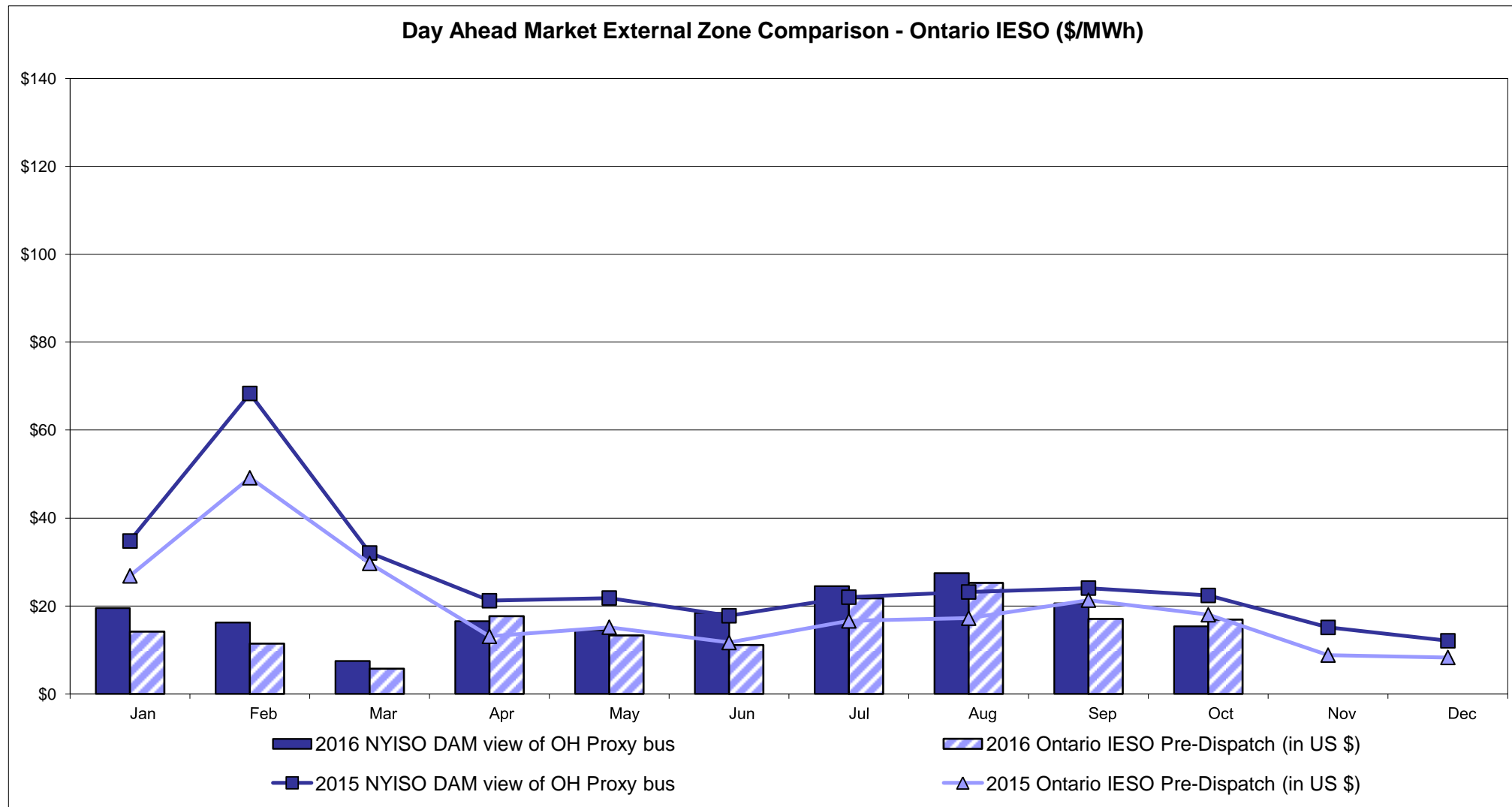
## Day Ahead Market External Zone Comparison - PJM (\$/MWh)



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



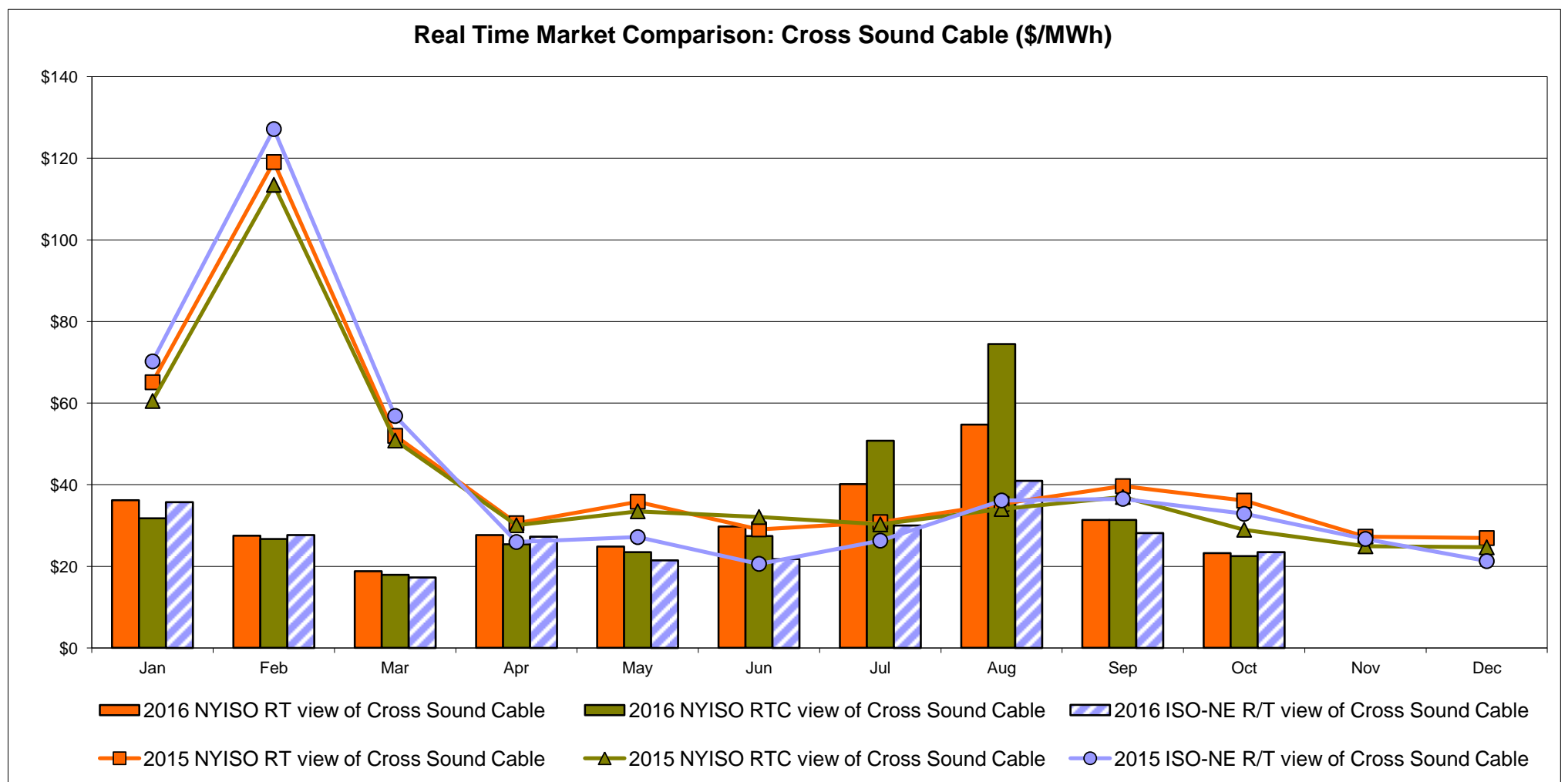
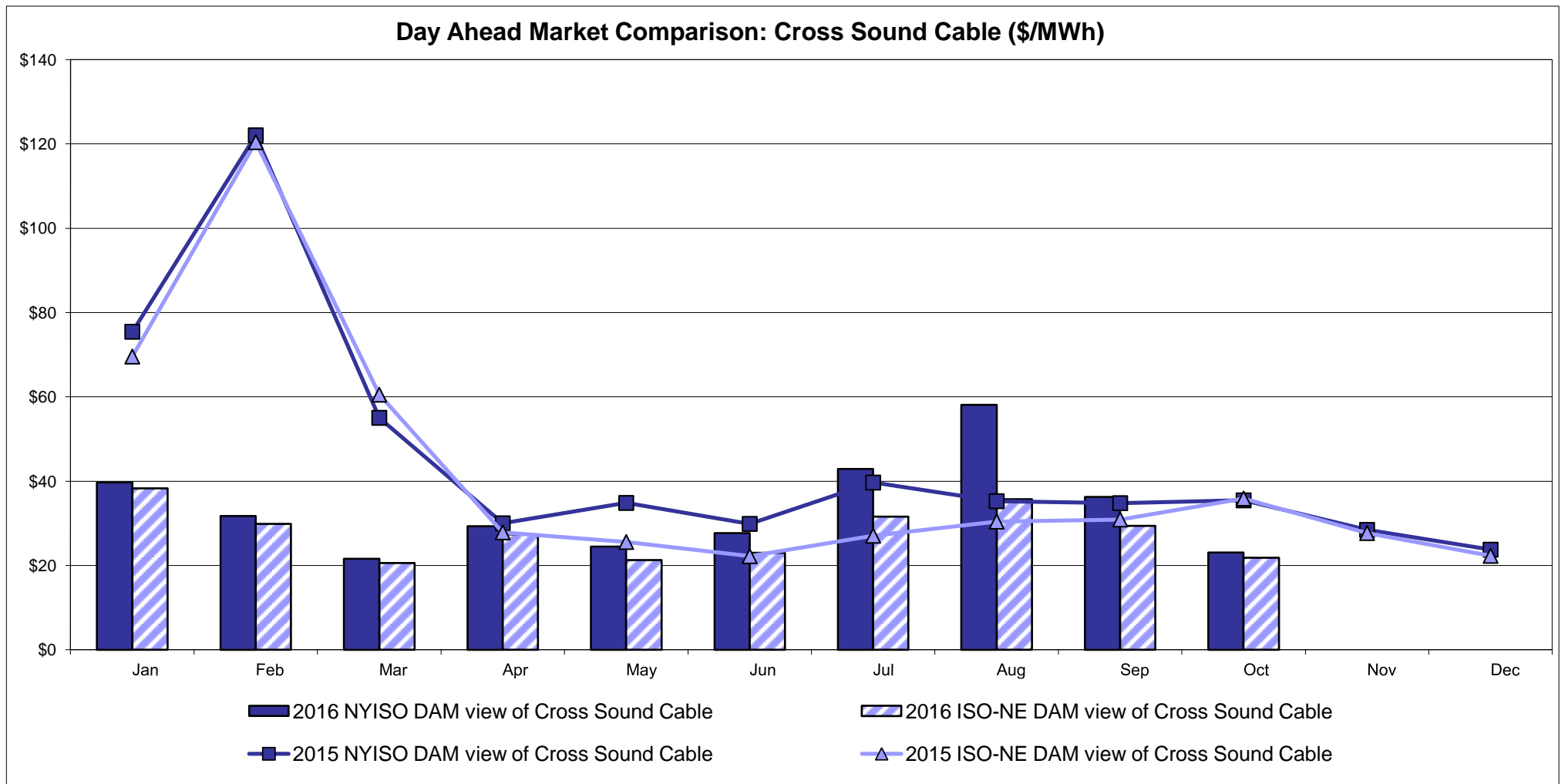
# External Comparison Ontario IESO



Notes: Exchange factor used for October 2016 was 0.755401118 to US  
 HOEP: Hourly Ontario Energy Price  
 Pre-Dispatch: Projected Energy Price



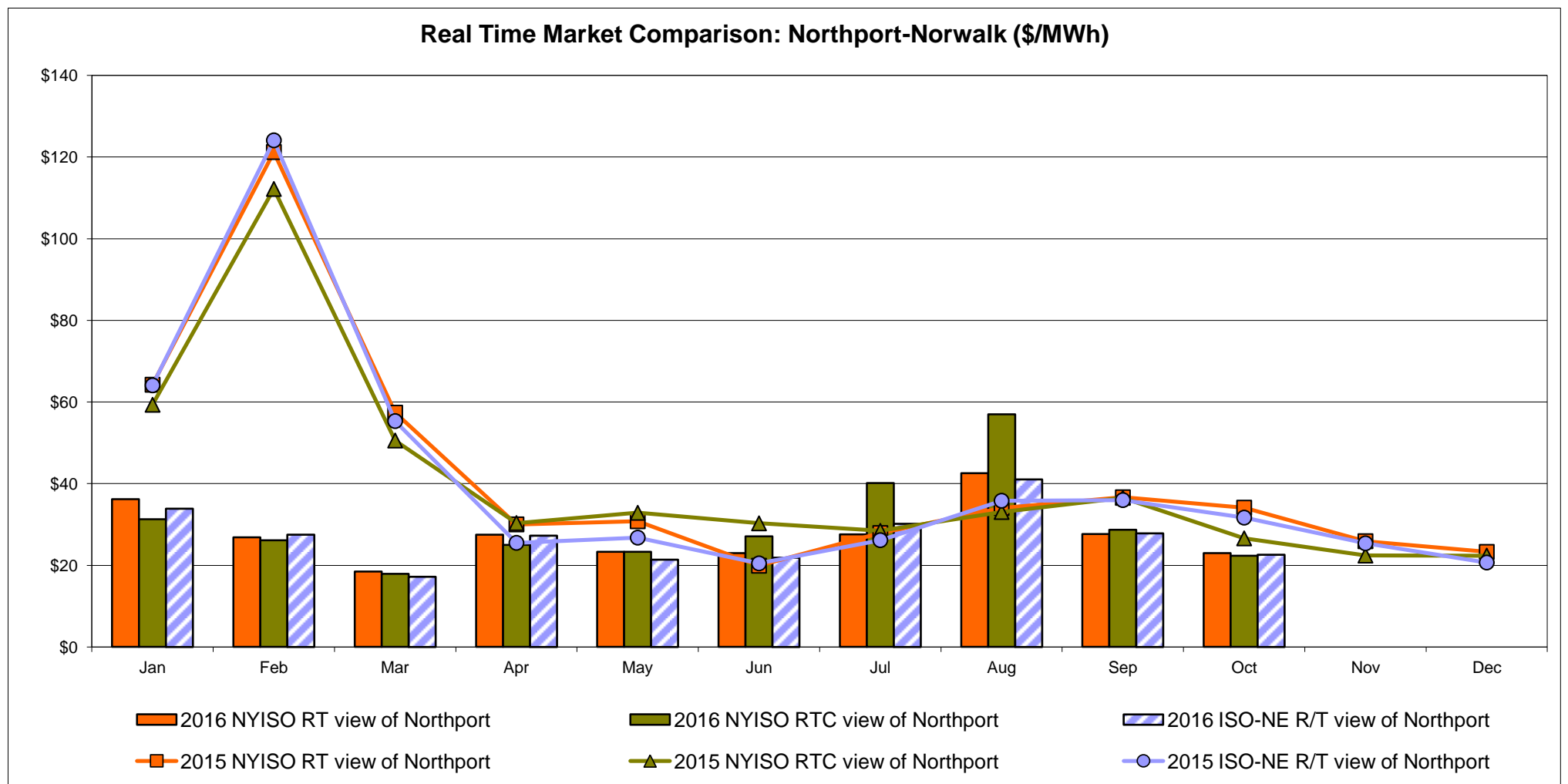
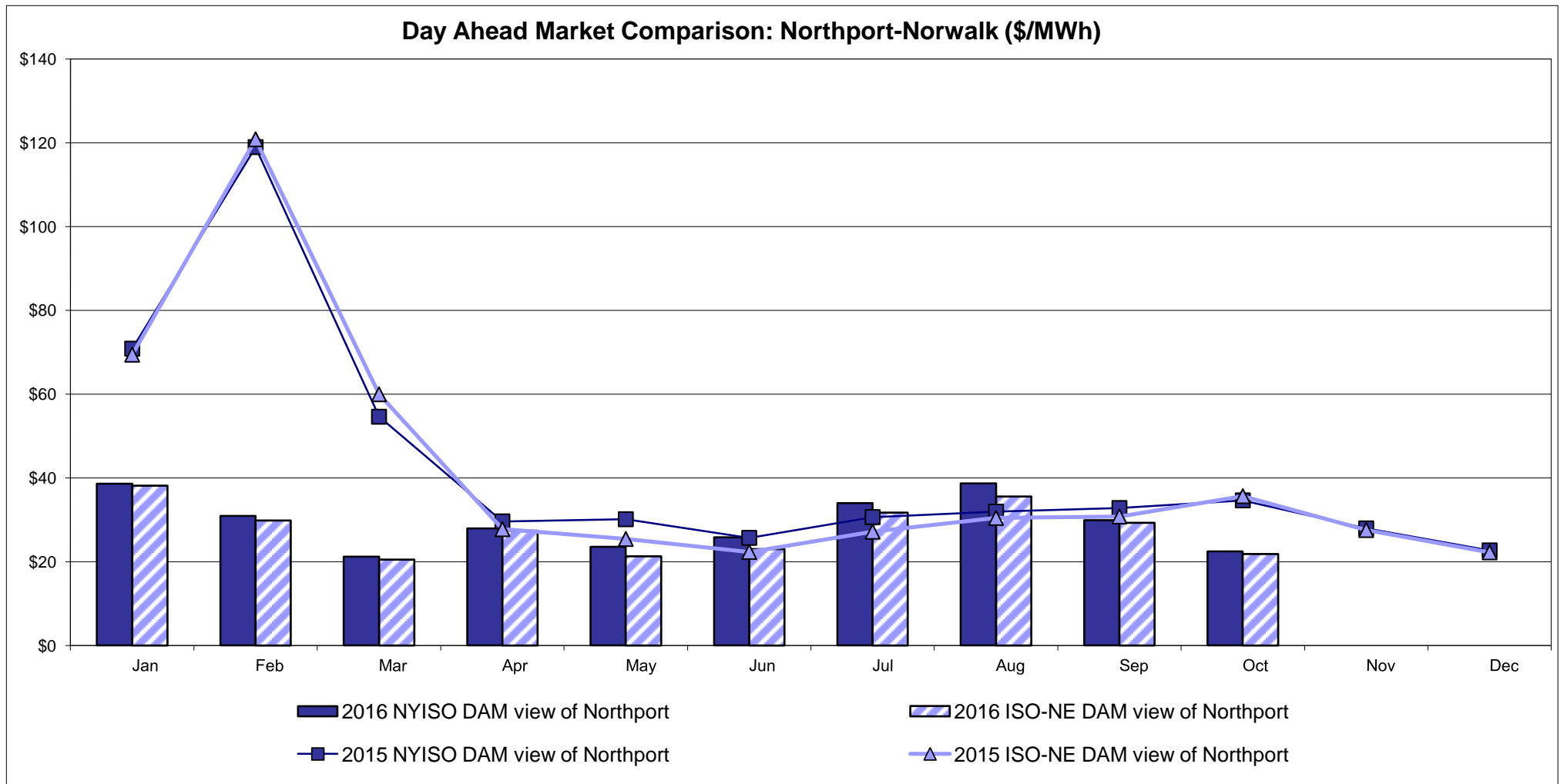
# External Controllable Line: Cross Sound Cable (New England)



**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.

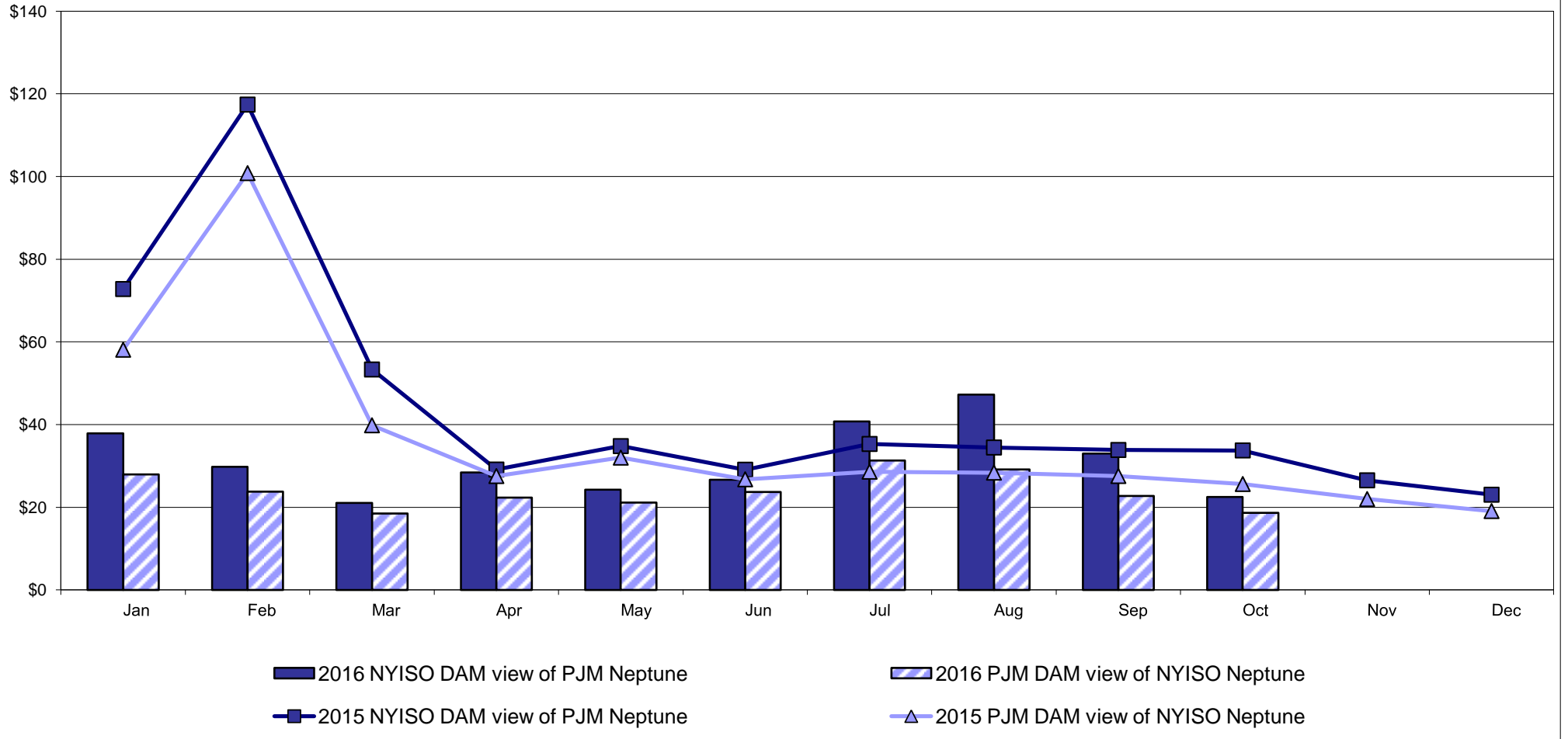
# External Controllable Line: Northport - Norwalk (New England)



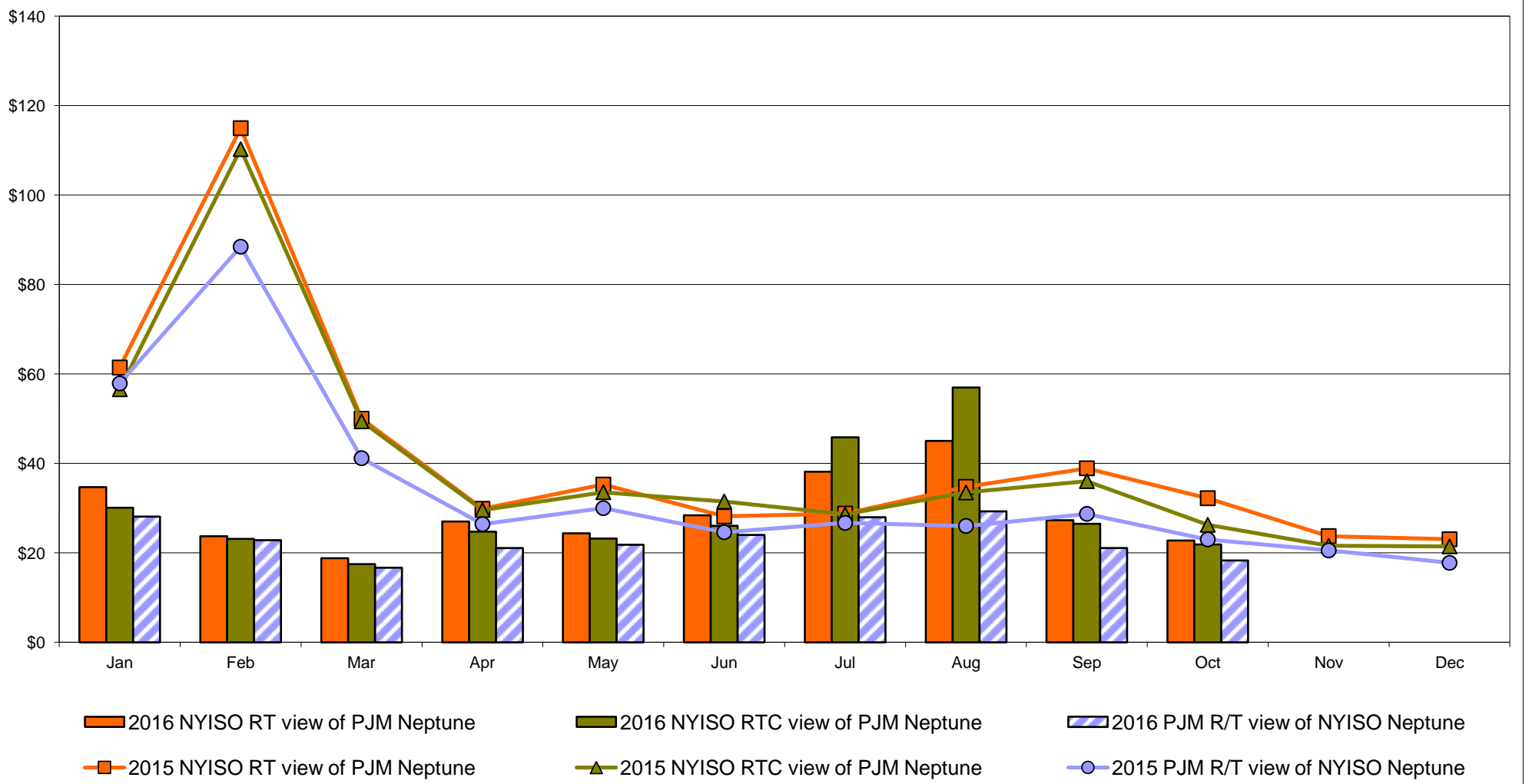
Note:  
 ISO-NE Forecast is an advisory posting @ 18:00 day before.  
 The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.  
 The DAM and R/T prices at the 1385 interface are used for NYISO.

# External Controllable Line: Neptune (PJM)

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

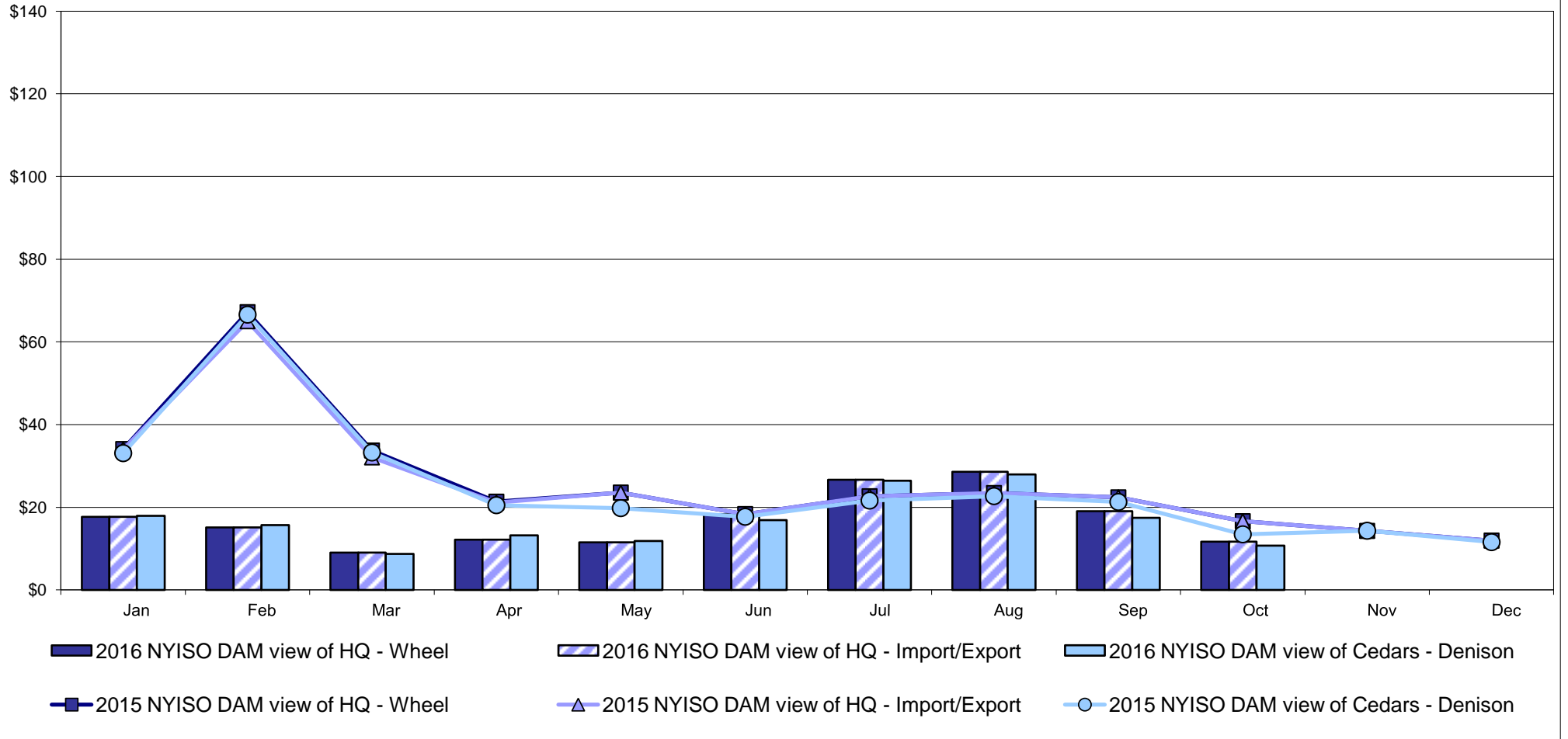


## Real Time Market Comparison: Neptune (\$/MWh)

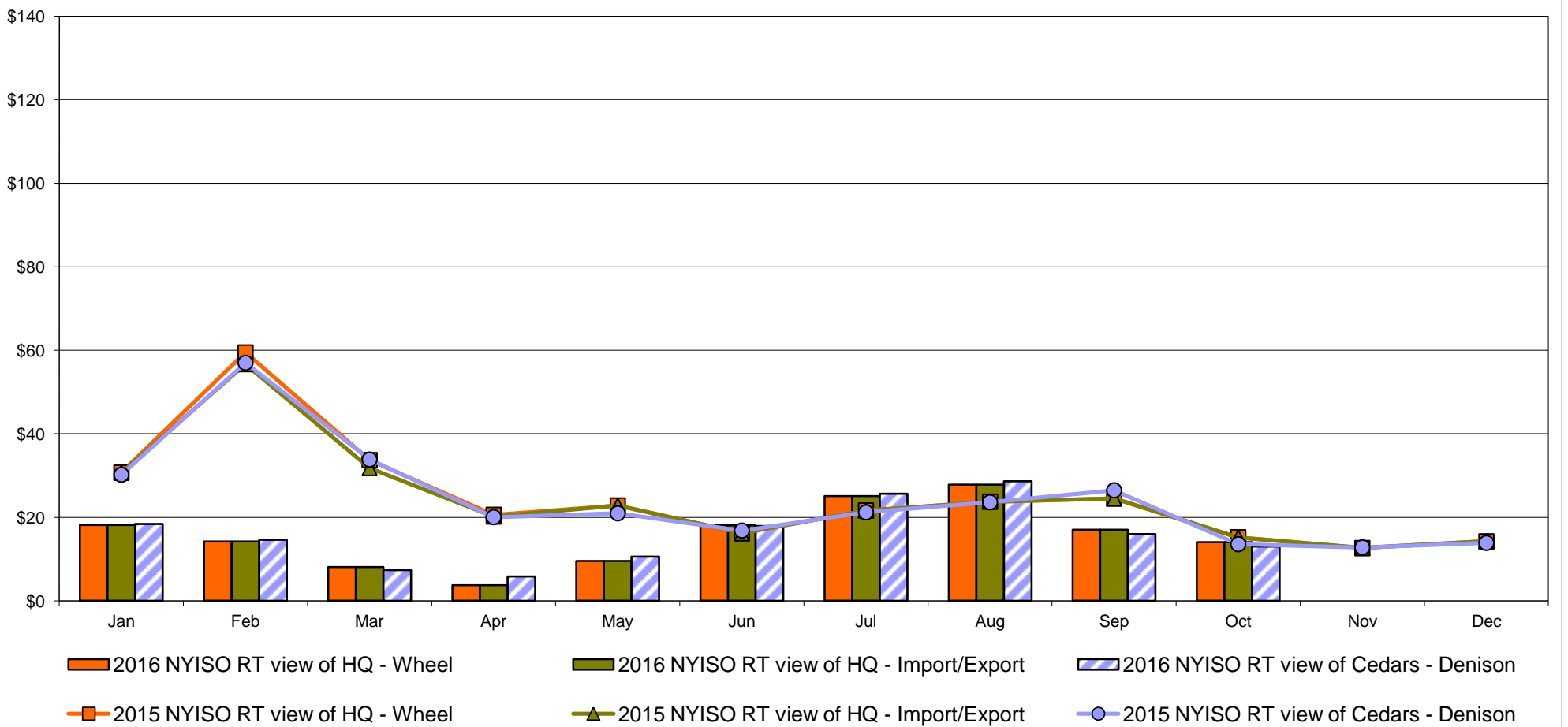


# External Comparison Hydro-Quebec

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

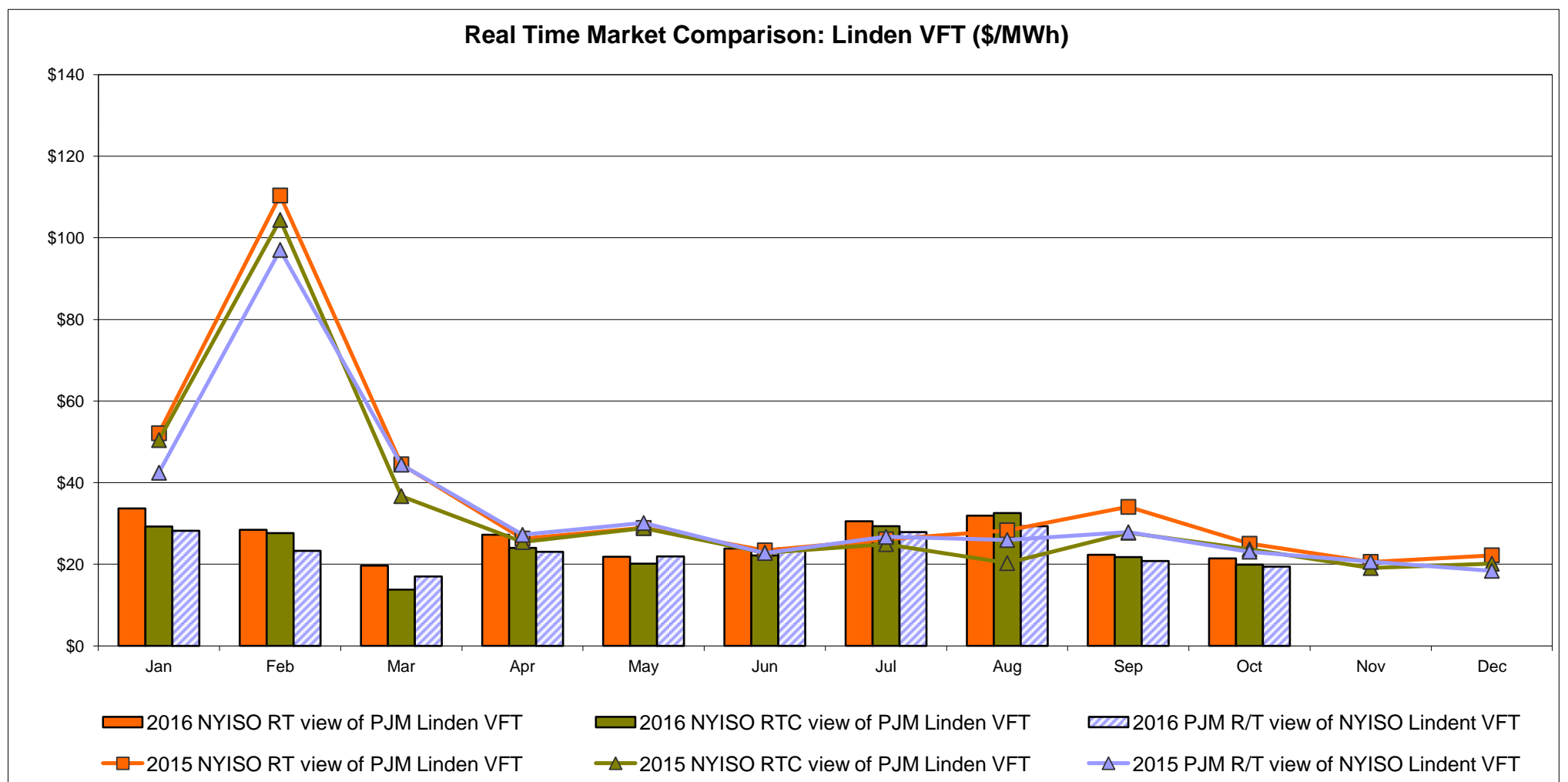
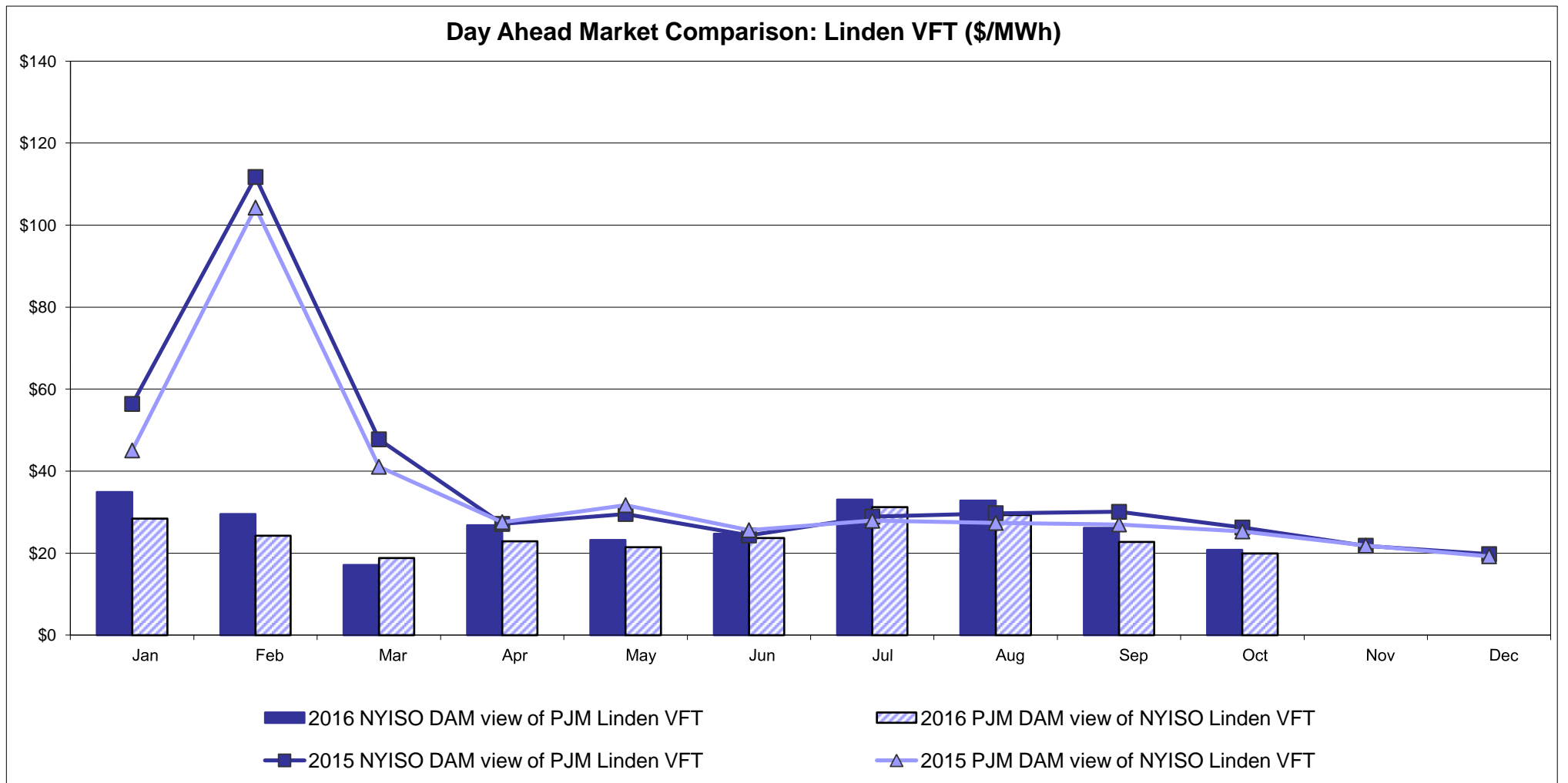


## Real Time Market External Zone Comparison - HQ (\$/MWh)

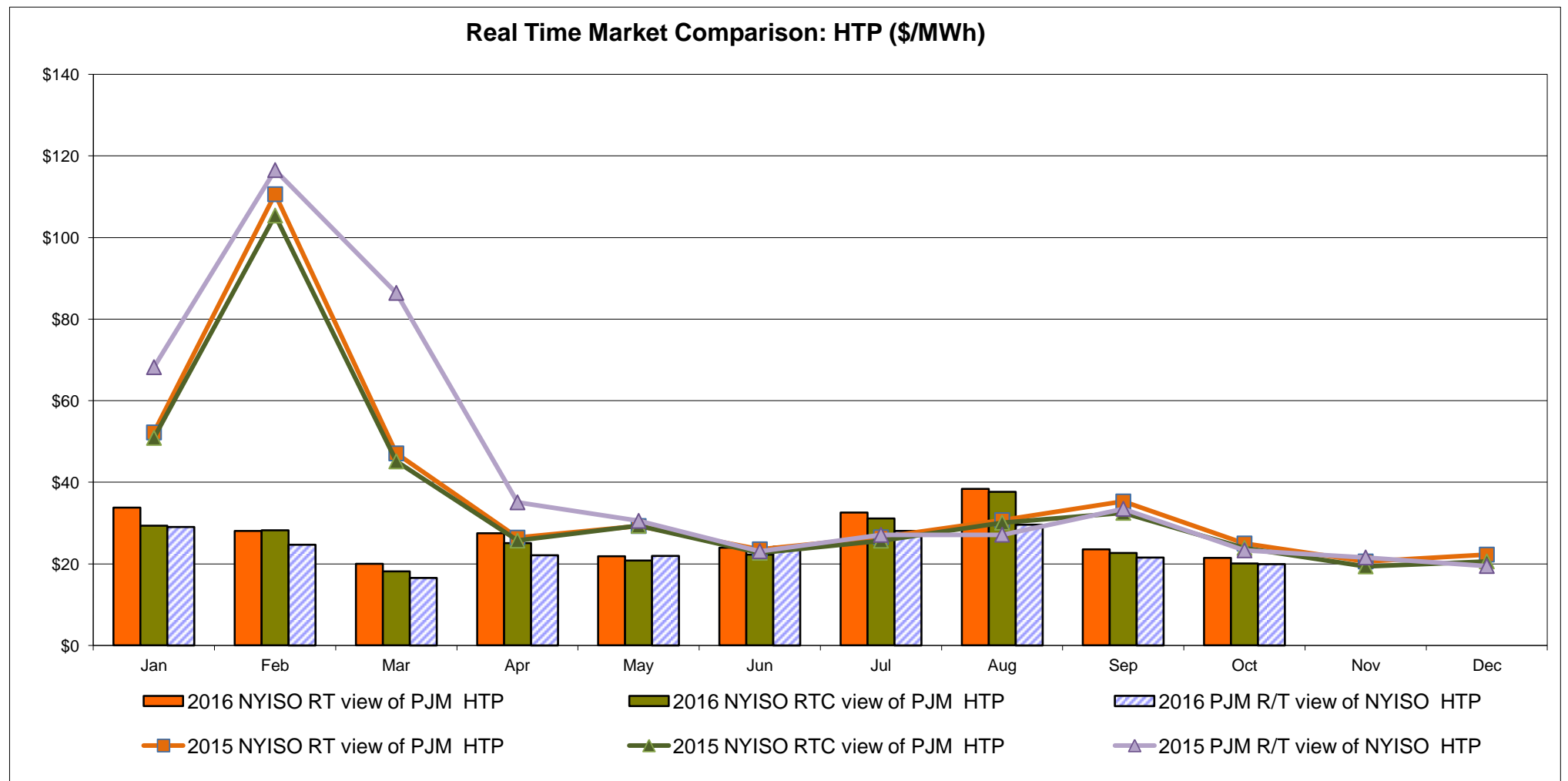
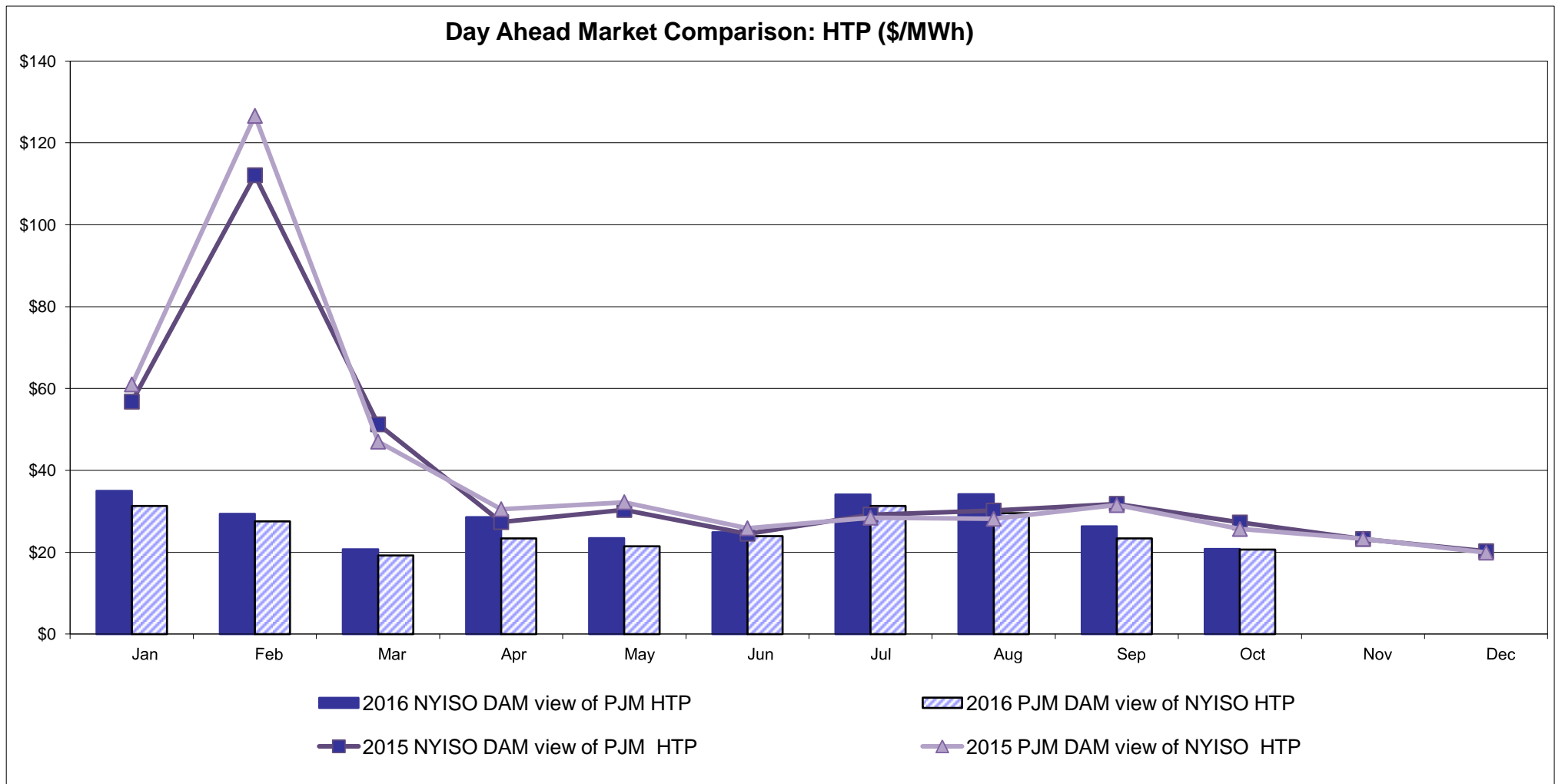


Note:  
Hydro-Quebec Prices are unavailable.

## External Controllable Line: Linden VFT (PJM)



## External Controllable Line: Hudson (PJM)

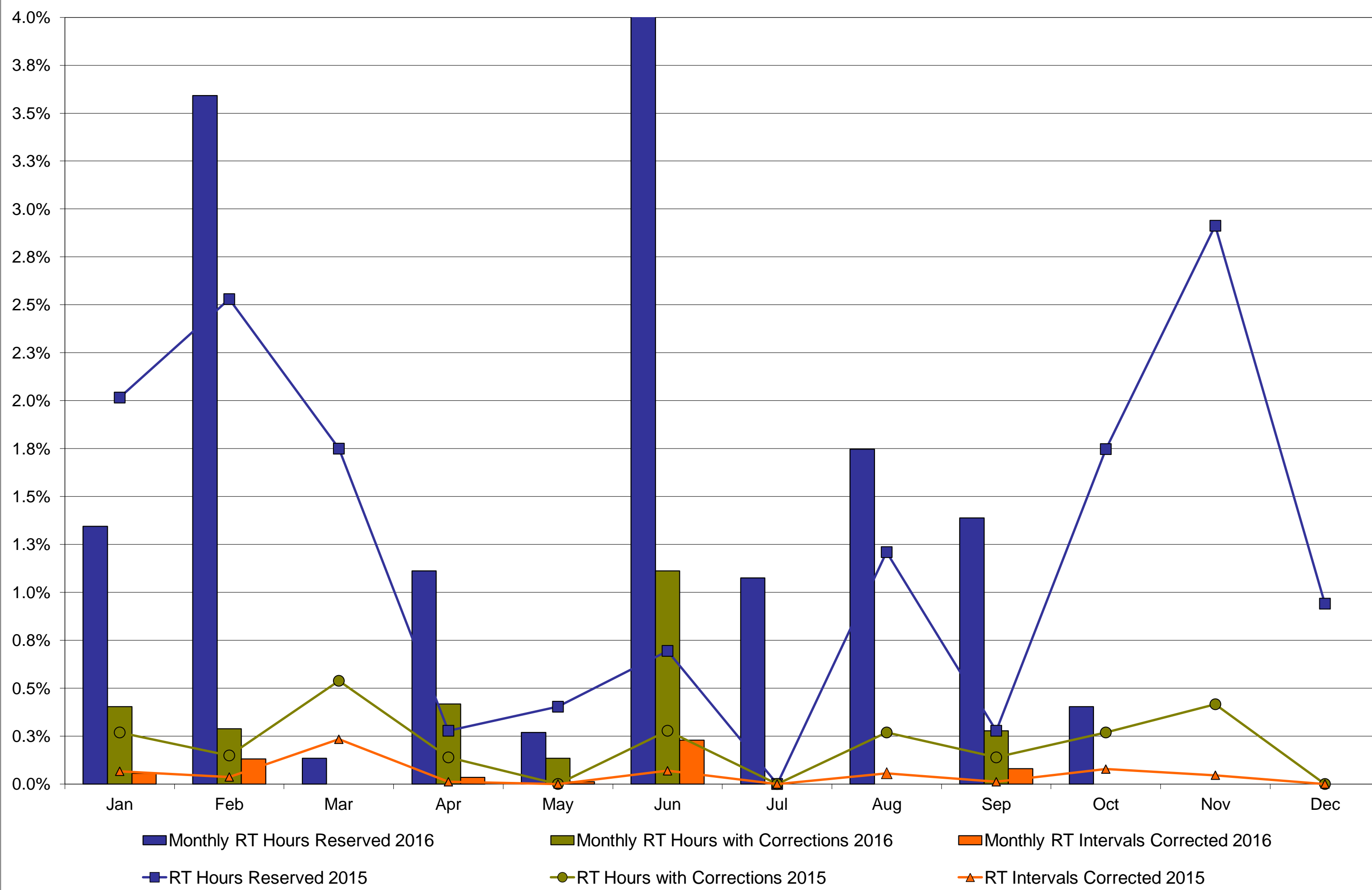


### NYISO Real Time Price Correction Statistics

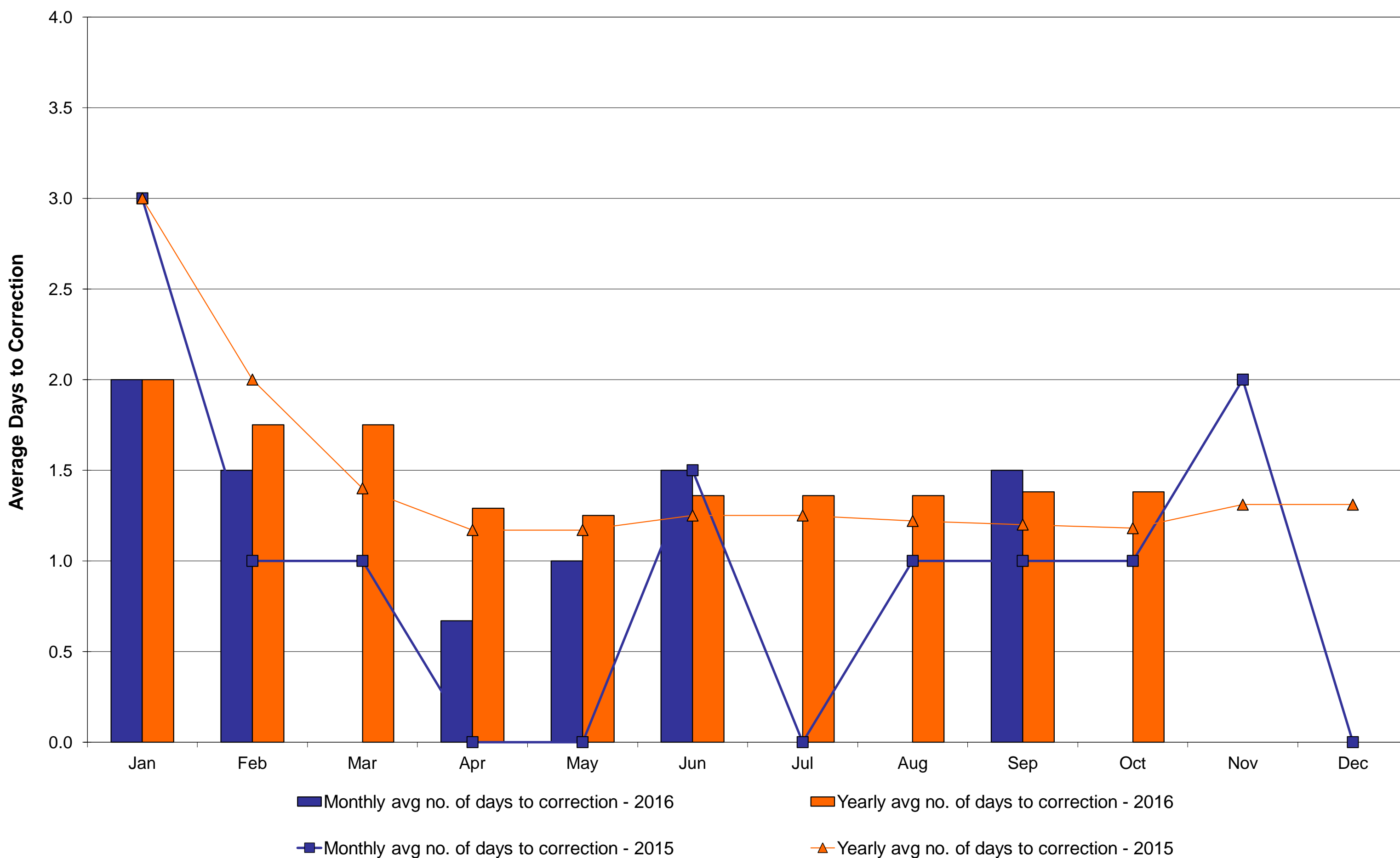
2016		January	February	March	April	May	June	July	August	September	October	November	December
<b>Hour Corrections</b>													
Number of hours with corrections	in the month	3	2	0	3	1	8	0	0	2	0		
Number of hours	in the month	744	696	743	720	744	720	744	744	720	744		
% of hours with corrections	in the month	0.40%	0.29%	0.00%	0.42%	0.13%	1.11%	0.00%	0.00%	0.28%	0.00%		
% of hours with corrections	year-to-date	0.40%	0.35%	0.23%	0.28%	0.25%	0.39%	0.33%	0.29%	0.29%	0.26%		
<b>Interval Corrections</b>													
Number of intervals corrected	in the month	5	11	0	3	1	20	0	0	7	0		
Number of intervals	in the month	9,000	8,440	8,995	8,724	8,987	8,725	9,038	9,048	8,713	8,960		
% of intervals corrected	in the month	0.06%	0.13%	0.00%	0.03%	0.01%	0.23%	0.00%	0.00%	0.08%	0.00%		
% of intervals corrected	year-to-date	0.06%	0.09%	0.06%	0.05%	0.05%	0.08%	0.06%	0.06%	0.06%	0.05%		
<b>Hours Reserved</b>													
Number of hours reserved	in the month	10	25	1	8	2	32	8	13	10	3		
Number of hours	in the month	744	696	743	720	744	720	744	744	720	744		
% of hours reserved	in the month	1.34%	3.59%	0.13%	1.11%	0.27%	4.44%	1.08%	1.75%	1.39%	0.40%		
% of hours reserved	year-to-date	1.34%	2.43%	1.65%	1.52%	1.26%	1.79%	1.68%	1.69%	1.66%	1.53%		
<b>Days to Correction *</b>													
Avg. number of days to correction	in the month	2.00	1.50	0.00	0.67	1.00	1.50	0.00	0.00	1.50	0.00		
Avg. number of days to correction	year-to-date	2.00	1.75	1.75	1.29	1.25	1.36	1.36	1.36	1.38	1.38		
<b>Days Without Corrections</b>													
Days without corrections	in the month	29	27	31	27	30	24	31	31	28	31		
Days without corrections	year-to-date	29	56	87	114	144	168	199	230	258	289		
2015		January	February	March	April	May	June	July	August	September	October	November	December
<b>Hour Corrections</b>													
Number of hours with corrections	in the month	2	1	4	1	0	2	0	2	1	2	3	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%	0.15%	0.54%	0.14%	0.00%	0.28%	0.00%	0.27%	0.14%	0.27%	0.42%	0.00%
% of hours with corrections	year-to-date	0.27%	0.21%	0.32%	0.28%	0.22%	0.23%	0.20%	0.21%	0.20%	0.21%	0.22%	0.21%
<b>Interval Corrections</b>													
Number of intervals corrected	in the month	6	3	21	1	0	6	0	5	1	7	4	0
Number of intervals	in the month	9,066	8,231	9,005	8,696	9,032	8,731	9,025	8,987	8,728	9,008	8,743	8,975
% of intervals corrected	in the month	0.07%	0.04%	0.23%	0.01%	0.00%	0.07%	0.00%	0.06%	0.01%	0.08%	0.05%	0.00%
% of intervals corrected	year-to-date	0.07%	0.05%	0.11%	0.09%	0.07%	0.07%	0.06%	0.06%	0.05%	0.06%	0.06%	0.05%
<b>Hours Reserved</b>													
Number of hours reserved	in the month	15	17	13	2	3	5	0	9	2	13	21	7
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744	721	744
% of hours reserved	in the month	2.02%	2.53%	1.75%	0.28%	0.40%	0.69%	0.00%	1.21%	0.28%	1.75%	2.91%	0.94%
% of hours reserved	year-to-date	2.02%	2.26%	2.08%	1.63%	1.38%	1.27%	1.08%	1.10%	1.01%	1.08%	1.25%	1.22%
<b>Days to Correction *</b>													
Avg. number of days to correction	in the month	3.00	1.00	1.00	0.00	0.00	1.50	0.00	1.00	1.00	1.00	2.00	0.00
Avg. number of days to correction	year-to-date	3.00	2.00	1.40	1.17	1.17	1.25	1.25	1.22	1.20	1.18	1.31	1.31
<b>Days Without Corrections</b>													
Days without corrections	in the month	30	27	28	29	31	28	31	30	29	30	28	31
Days without corrections	year-to-date	30	57	85	114	145	173	204	234	263	293	321	352

\* Calendar days from reservation date.

### Percentage of Real-Time Corrections



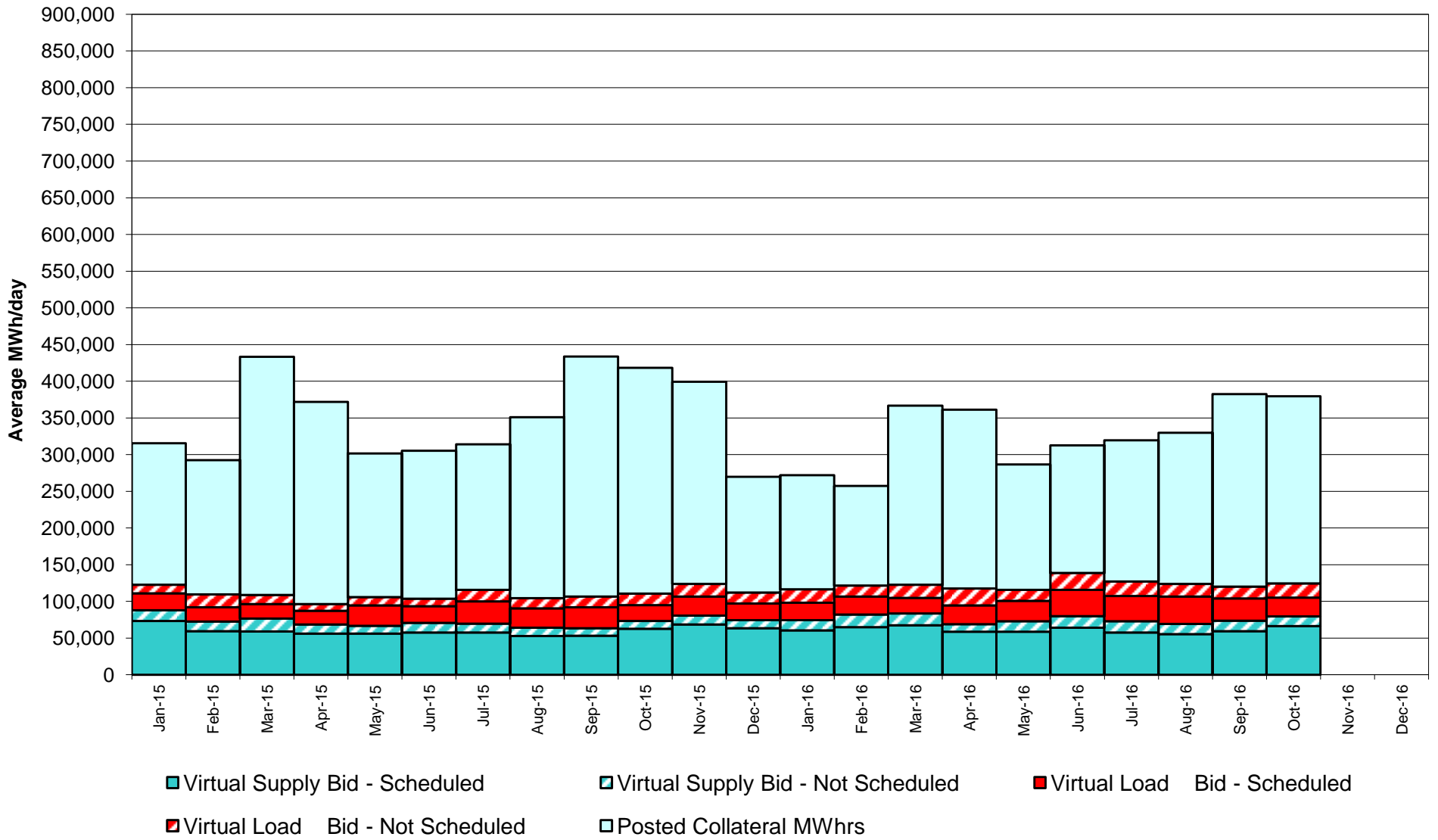
### Annual average time period for making Price Corrections (from reservation date) \*



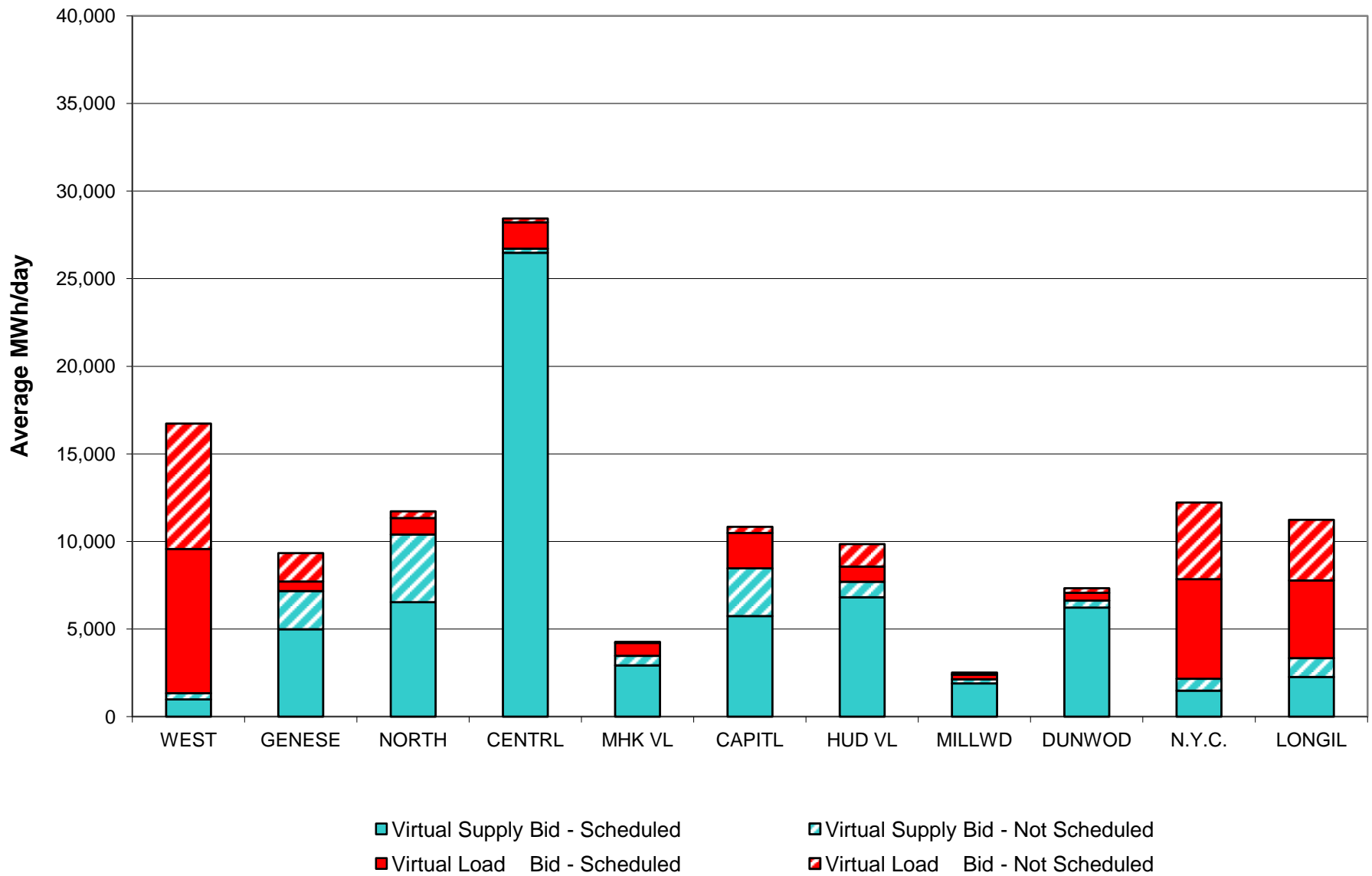
\* Calendar days from reservation date.



## NYISO Virtual Trading Average MWh per day



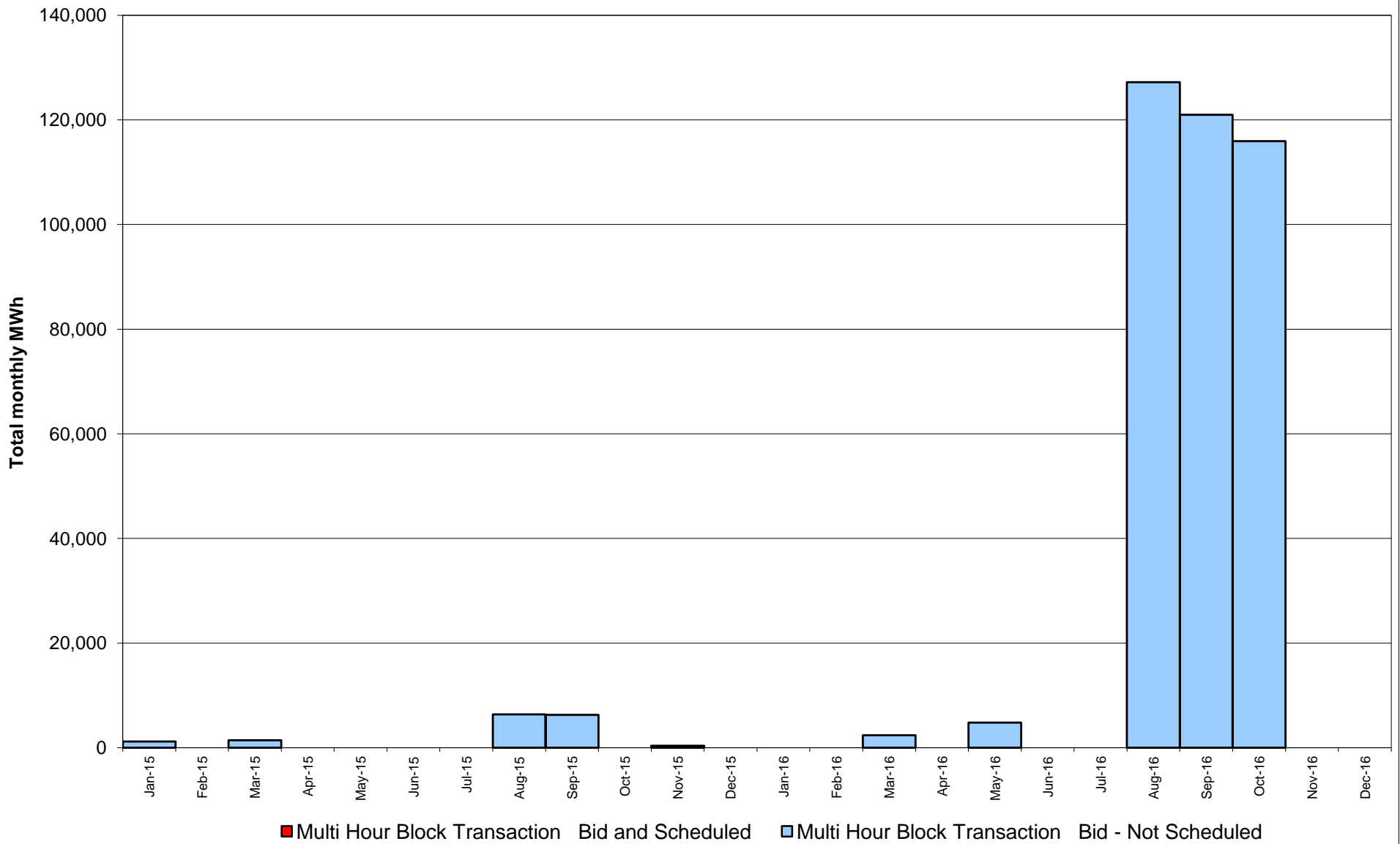
### Virtual Load and Supply Zonal Statistics through October 31, 2016



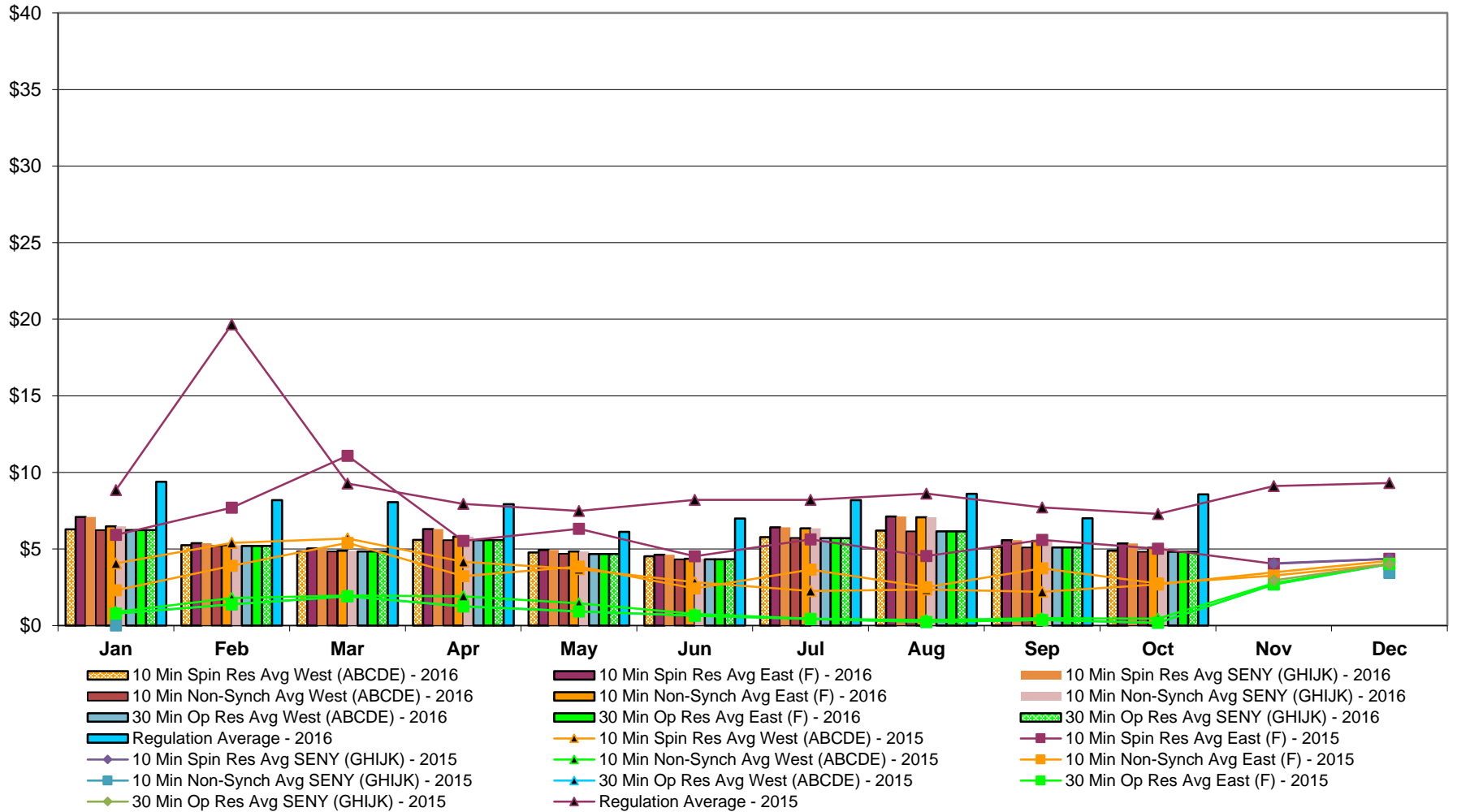
**Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2016**

		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-16	8,416	4,440	2,862	419	<b>MHK VL</b>	Jan-16	463	92	2,024	146	<b>DUNWOD</b>	Jan-16	402	216	3,262	61			
	Feb-16	7,967	3,554	2,706	521		Feb-16	544	80	2,329	611		Feb-16	803	185	3,555	269			
	Mar-16	7,947	7,233	2,564	720		Mar-16	440	49	2,695	931		Mar-16	460	100	4,207	304			
	Apr-16	11,544	10,793	1,645	263		Apr-16	735	55	2,236	317		Apr-16	277	48	4,840	190			
	May-16	8,896	4,966	2,511	678		May-16	673	33	2,036	588		May-16	660	435	6,261	431			
	Jun-16	13,365	10,864	1,364	609		Jun-16	605	139	2,887	447		Jun-16	996	208	4,433	347			
	Jul-16	8,357	6,943	2,167	612		Jul-16	830	123	3,170	244		Jul-16	1,953	578	4,363	313			
	Aug-16	9,364	5,185	1,663	391		Aug-16	1,071	52	2,517	144		Aug-16	2,194	450	5,201	174			
	Sep-16	8,425	4,437	717	386		Sep-16	913	68	2,453	345		Sep-16	1,617	1,167	4,907	386			
	Oct-16	8,237	7,148	979	361		Oct-16	723	71	2,931	548		Oct-16	434	274	6,221	404			
	Nov-16						Nov-16						Nov-16							
	Dec-16						Dec-16						Dec-16							
<b>GENESE</b>	Jan-16	1,030	638	3,868	2,421	<b>CAPITL</b>	Jan-16	2,195	1,472	4,568	3,470	<b>N.Y.C.</b>	Jan-16	2,862	4,976	2,531	648			
	Feb-16	795	923	3,461	3,707		Feb-16	1,593	684	5,140	3,581		Feb-16	3,281	4,752	2,390	403			
	Mar-16	824	1,113	5,340	3,764		Mar-16	960	238	5,023	2,071		Mar-16	1,838	4,229	1,239	748			
	Apr-16	448	1,398	6,028	1,718		Apr-16	1,410	198	6,433	1,645		Apr-16	3,263	4,302	1,221	336			
	May-16	411	125	3,793	2,664		May-16	1,885	251	5,843	2,876		May-16	4,517	3,352	1,425	472			
	Jun-16	501	323	4,945	2,340		Jun-16	959	119	6,428	4,625		Jun-16	7,465	3,847	930	245			
	Jul-16	615	312	3,785	2,492		Jul-16	1,152	271	5,755	3,969		Jul-16	10,899	3,980	692	341			
	Aug-16	576	80	3,626	2,944		Aug-16	964	274	5,085	3,917		Aug-16	12,696	3,433	599	363			
	Sep-16	533	355	5,036	2,580		Sep-16	1,426	271	4,145	2,965		Sep-16	9,145	3,857	1,003	539			
	Oct-16	539	1,627	4,989	2,181		Oct-16	2,017	357	5,744	2,720		Oct-16	5,688	4,372	1,480	685			
	Nov-16						Nov-16						Nov-16							
	Dec-16						Dec-16						Dec-16							
<b>NORTH</b>	Jan-16	274	312	7,038	3,010	<b>HUD VL</b>	Jan-16	1,036	1,609	6,763	2,202	<b>LONGIL</b>	Jan-16	6,153	3,761	700	985			
	Feb-16	499	215	7,169	3,894		Feb-16	1,008	1,135	9,550	3,078		Feb-16	6,539	3,211	814	869			
	Mar-16	338	107	6,127	4,874		Mar-16	964	510	10,835	1,568		Mar-16	6,305	3,906	1,090	411			
	Apr-16	666	332	8,237	3,363		Apr-16	821	1,176	9,231	1,566		Apr-16	5,087	4,696	1,511	215			
	May-16	556	157	6,029	4,034		May-16	1,488	911	6,686	1,490		May-16	5,837	4,419	1,331	431			
	Jun-16	519	445	7,892	4,126		Jun-16	1,392	1,684	7,583	1,398		Jun-16	7,178	4,811	1,377	786			
	Jul-16	517	310	5,791	3,043		Jul-16	1,699	1,290	5,809	2,344		Jul-16	5,383	5,288	1,195	1,215			
	Aug-16	630	314	6,066	2,521		Aug-16	2,064	1,663	4,961	1,948		Aug-16	4,823	5,354	1,395	1,259			
	Sep-16	602	270	7,162	3,455		Sep-16	1,120	932	6,164	1,529		Sep-16	4,604	4,432	1,590	1,159			
	Oct-16	943	386	6,540	3,851		Oct-16	880	1,278	6,814	879		Oct-16	4,439	3,457	2,264	1,076			
	Nov-16						Nov-16						Nov-16							
	Dec-16						Dec-16						Dec-16							
<b>CENTRL</b>	Jan-16	954	502	25,792	259	<b>MILLWD</b>	Jan-16	304	114	1,211	60	<b>NYISO</b>	Jan-16	24,086	18,132	60,619	13,680			
	Feb-16	975	212	26,176	301		Feb-16	403	145	1,477	100		Feb-16	24,407	15,096	64,766	17,335			
	Mar-16	1,076	70	26,818	564		Mar-16	182	60	1,462	239		Mar-16	21,332	17,615	67,399	16,195			
	Apr-16	1,124	159	15,555	284		Apr-16	186	26	1,913	101		Apr-16	25,563	23,182	58,849	9,998			
	May-16	2,369	250	21,046	367		May-16	471	121	1,743	264		May-16	27,763	15,021	58,704	14,296			
	Jun-16	2,285	469	23,910	277		Jun-16	489	121	2,582	449		Jun-16	35,754	23,031	64,331	15,648			
	Jul-16	2,117	385	22,271	529		Jul-16	868	103	2,732	238		Jul-16	34,388	19,583	57,728	15,341			
	Aug-16	1,984	204	21,918	187		Aug-16	894	234	2,267	104		Aug-16	37,261	17,244	55,297	13,952			
	Sep-16	1,645	75	24,400	529		Sep-16	580	219	1,955	121		Sep-16	30,611	16,083	59,531	13,992			
	Oct-16	1,496	219	26,480	238		Oct-16	271	117	1,889	239		Oct-16	25,667	19,305	66,329	13,182			
	Nov-16						Nov-16						Nov-16							
	Dec-16						Dec-16						Dec-16							

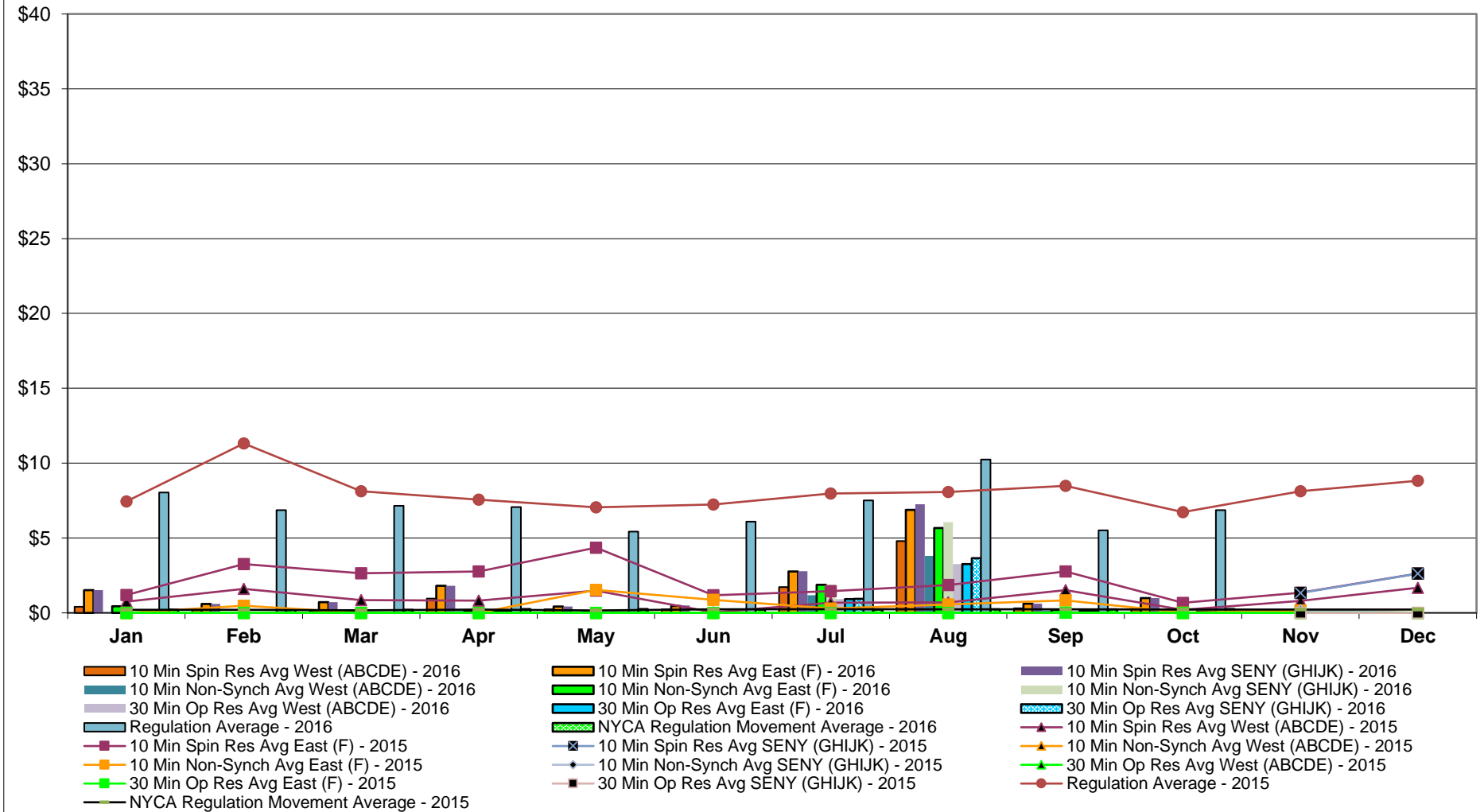
## NYISO Multi Hour Block Transactions Monthly Total MWh



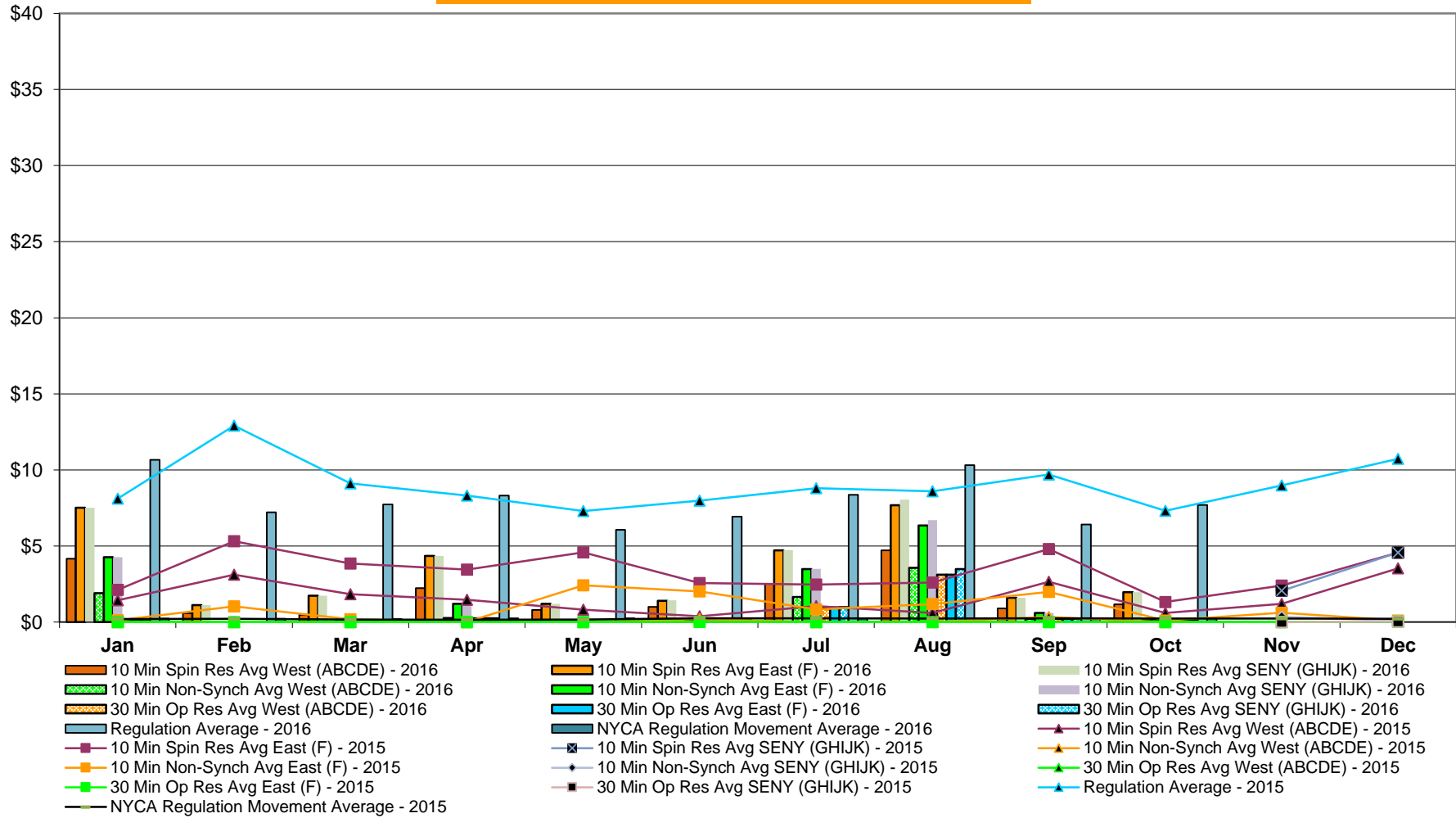
### NYISO Monthly Average Ancillary Service Prices Day Ahead Market 2015 - 2016



## NYISO Monthly Average Ancillary Service Prices RTC Market 2015 - 2016



### NYISO Monthly Average Ancillary Service Prices Real Time Market 2015 - 2016

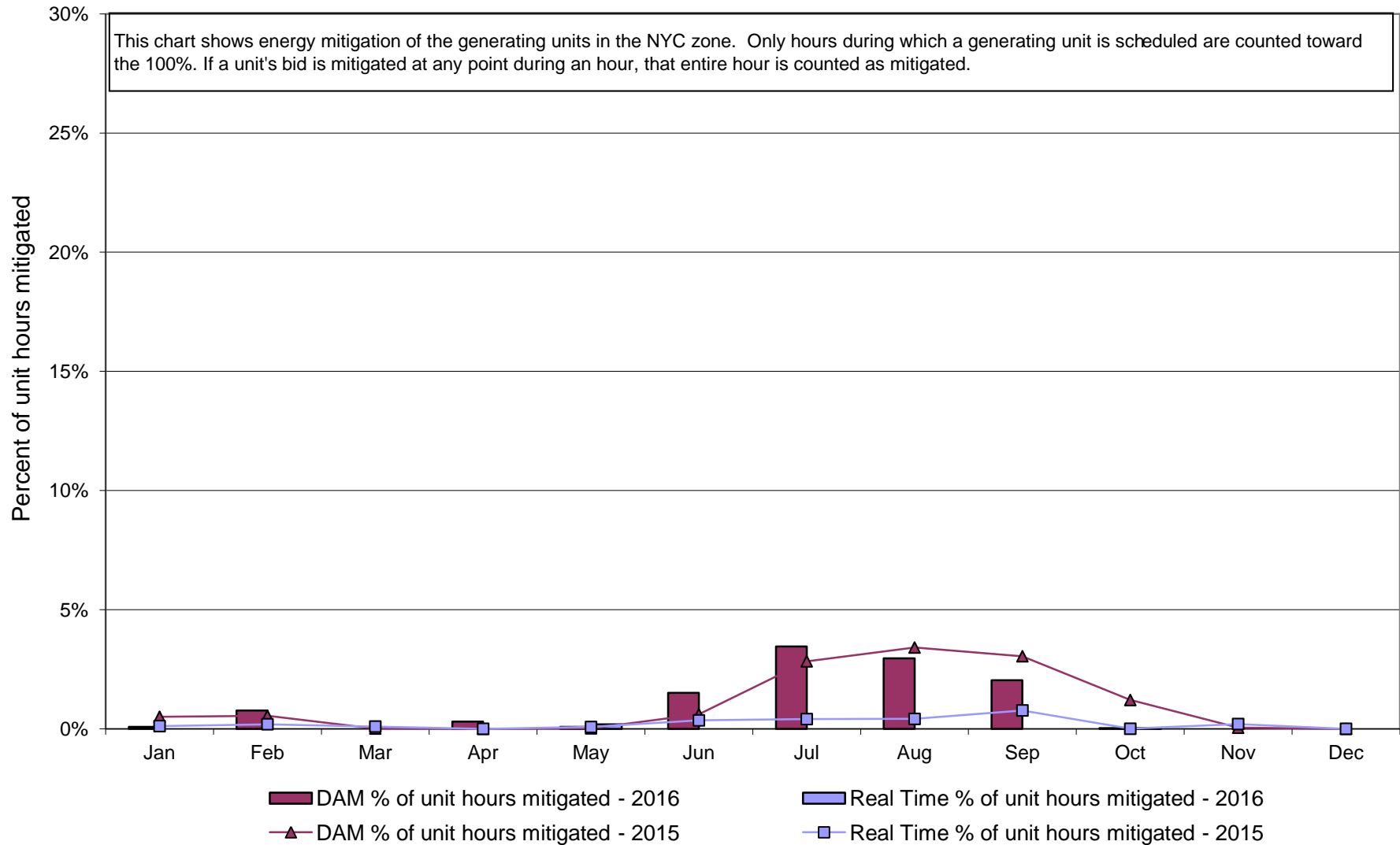


## NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH)

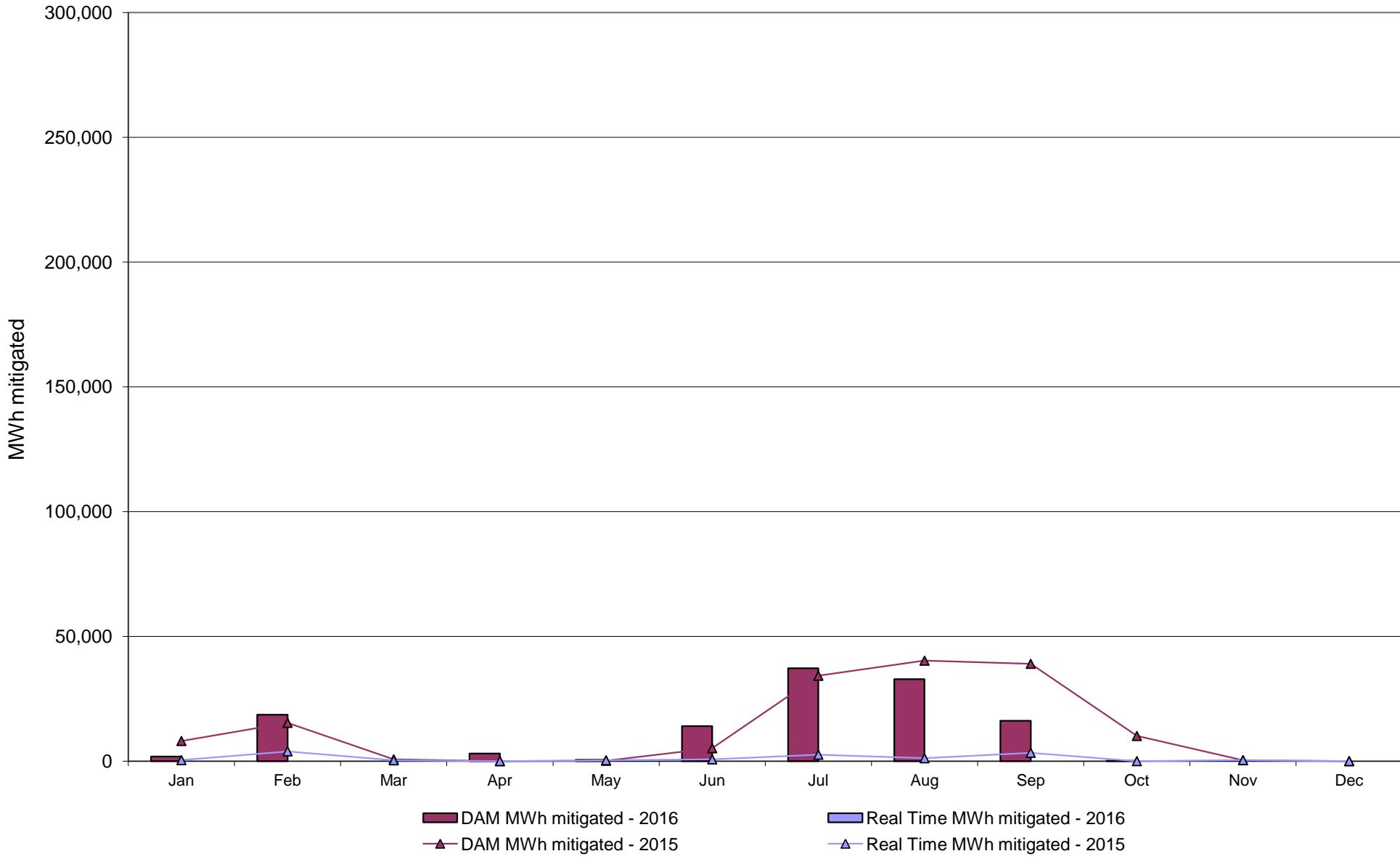
2016	January	February	March	April	May	June	July	August	September	October	November	December
<b>Day Ahead Market</b>												
10 Min Spin SENY (GHIJK)	7.09	5.38	5.04	6.31	4.93	4.62	6.41	7.12	5.57	5.37		
10 Min Spin East (F)	7.09	5.38	5.04	6.31	4.93	4.62	6.41	7.12	5.57	5.37		
10 Min Spin West (ABCDE)	6.28	5.25	4.84	5.60	4.77	4.52	5.78	6.20	5.14	4.89		
10 Min Non Synch SENY (GHIJK)	6.47	5.25	4.88	5.80	4.83	4.36	6.34	7.07	5.52	5.09		
10 Min Non Synch East (F)	6.47	5.25	4.88	5.80	4.83	4.36	6.34	7.07	5.52	5.09		
10 Min Non Synch West (ABCDE)	6.23	5.20	4.84	5.58	4.68	4.32	5.72	6.15	5.10	4.82		
30 Min SENY (GHIJK)	6.23	5.20	4.84	5.58	4.67	4.32	5.70	6.15	5.10	4.82		
30 Min East (F)	6.23	5.20	4.84	5.58	4.67	4.32	5.70	6.15	5.10	4.82		
30 Min West (ABCDE)	6.23	5.20	4.84	5.58	4.67	4.32	5.70	6.15	5.10	4.82		
Regulation	9.39	8.19	8.05	7.93	6.11	7.00	8.19	8.61	7.00	8.57		
<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		
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		
10 Min Spin West (ABCDE)	0.42	0.26	0.08	0.95	0.23	0.24	1.72	4.80	0.30	0.29		
10 Min Non Synch SENY (GHIJK)	0.45	0.00	0.17	0.14	0.05	0.05	1.89	6.06	0.21	0.09		
10 Min Non Synch East (F)	0.45	0.00	0.17	0.14	0.05	0.02	1.87	5.67	0.21	0.09		
10 Min Non Synch West (ABCDE)	0.04	0.00	0.00	0.14	0.04	0.02	1.18	3.80	0.16	0.08		
30 Min SENY (GHIJK)	0.01	0.00	0.00	0.14	0.04	0.04	0.94	3.65	0.15	0.08		
30 Min East (F)	0.01	0.00	0.00	0.14	0.04	0.02	0.93	3.27	0.15	0.08		
30 Min West (ABCDE)	0.01	0.00	0.00	0.14	0.04	0.02	0.93	3.27	0.15	0.08		
Regulation	8.04	6.86	7.15	7.07	5.43	6.09	7.51	10.25	5.52	6.86		
NYCA Regulation Movement	0.23	0.21	0.20	0.25	0.25	0.23	0.23	0.24	0.24	0.26		
<b>Real Time Market</b>												
10 Min Spin SENY (GHIJK)	7.51	1.12	1.73	4.34	1.19	1.43	4.73	8.04	1.59	1.96		
10 Min Spin East (F)	7.51	1.12	1.73	4.34	1.19	1.40	4.72	7.68	1.59	1.96		
10 Min Spin West (ABCDE)	4.17	0.58	0.48	2.23	0.79	1.00	2.51	4.72	0.90	1.16		
10 Min Non Synch SENY (GHIJK)	4.26	0.00	0.22	1.20	0.06	0.15	3.49	6.70	0.59	0.18		
10 Min Non Synch East (F)	4.26	0.00	0.22	1.20	0.06	0.11	3.48	6.34	0.59	0.18		
10 Min Non Synch West (ABCDE)	1.89	0.00	0.00	0.26	0.03	0.04	1.65	3.56	0.21	0.11		
30 Min SENY (GHIJK)	0.06	0.00	0.00	0.25	0.03	0.07	0.98	3.48	0.21	0.11		
30 Min East (F)	0.06	0.00	0.00	0.25	0.03	0.04	0.97	3.12	0.21	0.11		
30 Min West (ABCDE)	0.06	0.00	0.00	0.25	0.03	0.04	0.97	3.12	0.21	0.11		
Regulation	10.66	7.21	7.73	8.30	6.06	6.92	8.37	10.31	6.42	7.70		
NYCA Regulation Movement	0.23	0.22	0.20	0.25	0.25	0.23	0.23	0.24	0.24	0.26		
<b>2015</b>												
<b>Day Ahead Market</b>												
10 Min Spin SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.06	4.36
10 Min Spin East (F)	5.92	7.69	11.09	5.53	6.31	4.53	5.62	4.54	5.60	5.02	4.03	4.36
10 Min Spin West (ABCDE)	4.07	5.40	5.68	4.16	3.69	2.84	2.26	2.36	2.20	2.68	3.47	4.22
10 Min Non Synch SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.44	4.03
10 Min Non Synch East (F)	2.30	3.89	5.40	3.22	3.84	2.42	3.66	2.51	3.74	2.75	3.27	4.03
10 Min Non Synch West (ABCDE)	0.90	1.79	1.97	1.91	1.45	0.77	0.45	0.36	0.49	0.45	2.77	4.02
30 Min SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.95	4.02
30 Min East (F)	0.77	1.38	1.91	1.26	0.93	0.64	0.43	0.24	0.37	0.18	2.69	4.02
30 Min West (ABCDE)	0.77	1.38	1.91	1.26	0.93	0.64	0.43	0.24	0.37	0.18	2.69	4.02
Regulation	8.84	19.65	9.27	7.94	7.48	8.20	8.20	8.61	7.71	7.29	9.10	9.30
<b>RTC Market</b>												
10 Min Spin SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.33	2.62
10 Min Spin East (F)	1.20	3.27	2.64	2.77	4.36	1.18	1.44	1.86	2.76	0.67	1.35	2.62
10 Min Spin West (ABCDE)	0.74	1.61	0.86	0.81	1.48	0.04	0.69	0.70	1.53	0.20	0.81	1.68
10 Min Non Synch SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.17	0.01
10 Min Non Synch East (F)	0.01	0.48	0.01	0.00	1.54	0.87	0.28	0.57	0.84	0.01	0.16	0.01
10 Min Non Synch West (ABCDE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
30 Min SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00
30 Min East (F)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
30 Min West (ABCDE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
Regulation	7.45	11.32	8.13	7.56	7.06	7.24	7.97	8.07	8.49	6.73	8.12	8.83
NYCA Regulation Movement	0.21	0.21	0.16	0.22	0.16	0.24	0.25	0.23	0.24	0.23	0.22	0.22
<b>Real Time Market</b>												
10 Min Spin SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.06	4.57
10 Min Spin East (F)	2.12	5.31	3.84	3.44	4.59	2.56	2.47	2.59	4.79	1.32	2.40	4.57
10 Min Spin West (ABCDE)	1.44	3.11	1.83	1.46	0.81	0.38	1.04	0.59	2.65	0.59	1.20	3.53
10 Min Non Synch SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.35	0.09
10 Min Non Synch East (F)	0.12	1.03	0.17	0.01	2.41	2.01	0.83	1.19	1.97	0.09	0.61	0.09
10 Min Non Synch West (ABCDE)	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.02	0.33	0.00	0.00	0.05
30 Min SENY (GHIJK)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.03
30 Min East (F)	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03
30 Min West (ABCDE)	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03
Regulation	8.12	12.91	9.11	8.32	7.30	7.97	8.80	8.60	9.69	7.32	8.98	10.73
NYCA Regulation Movement	0.20	0.21	0.17	0.15	0.16	0.24	0.24	0.24	0.24	0.23	0.22	0.21



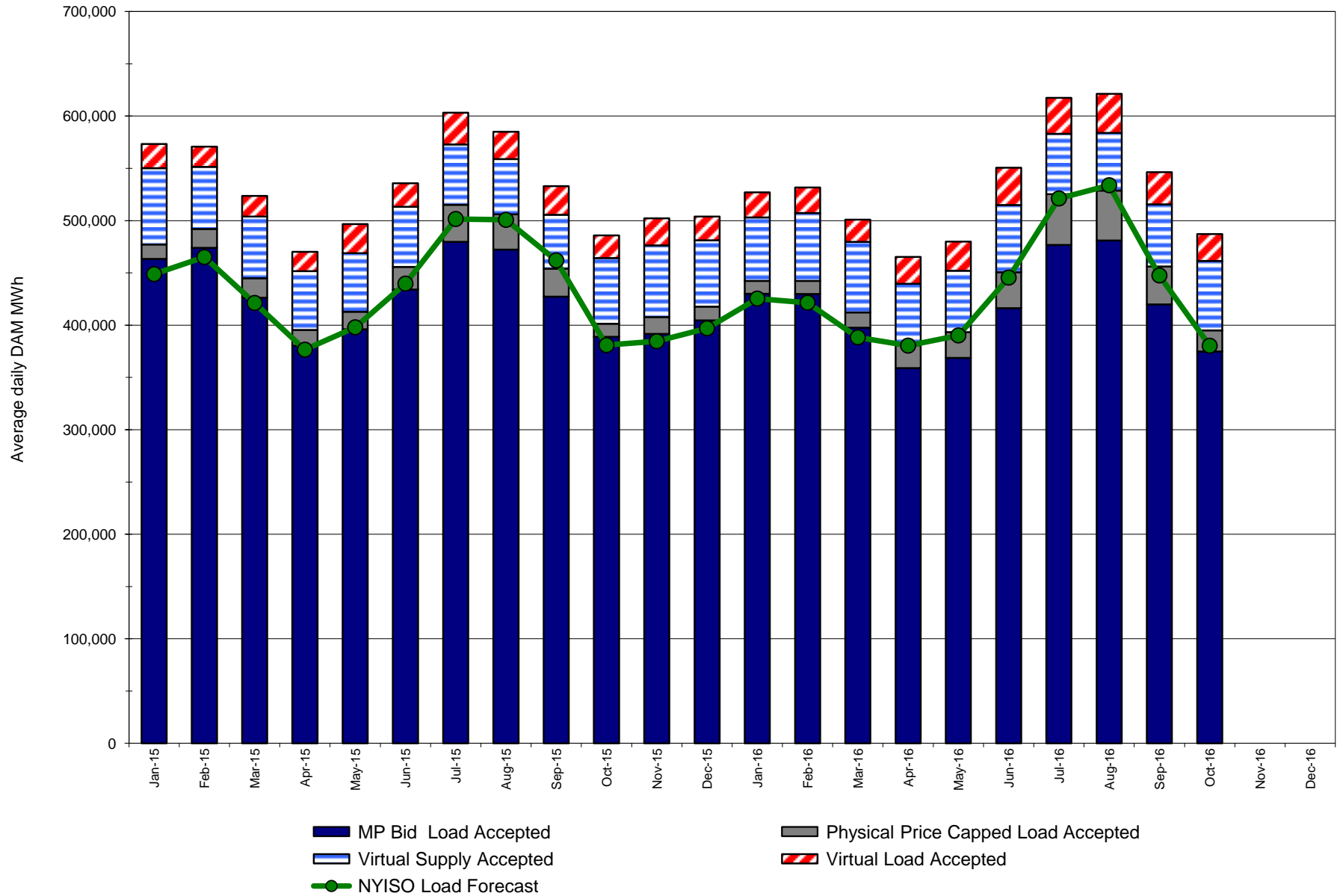
## NYISO In City Energy Mitigation - AMP (NYC Zone) 2015 - 2016 Percentage of committed unit-hours mitigated



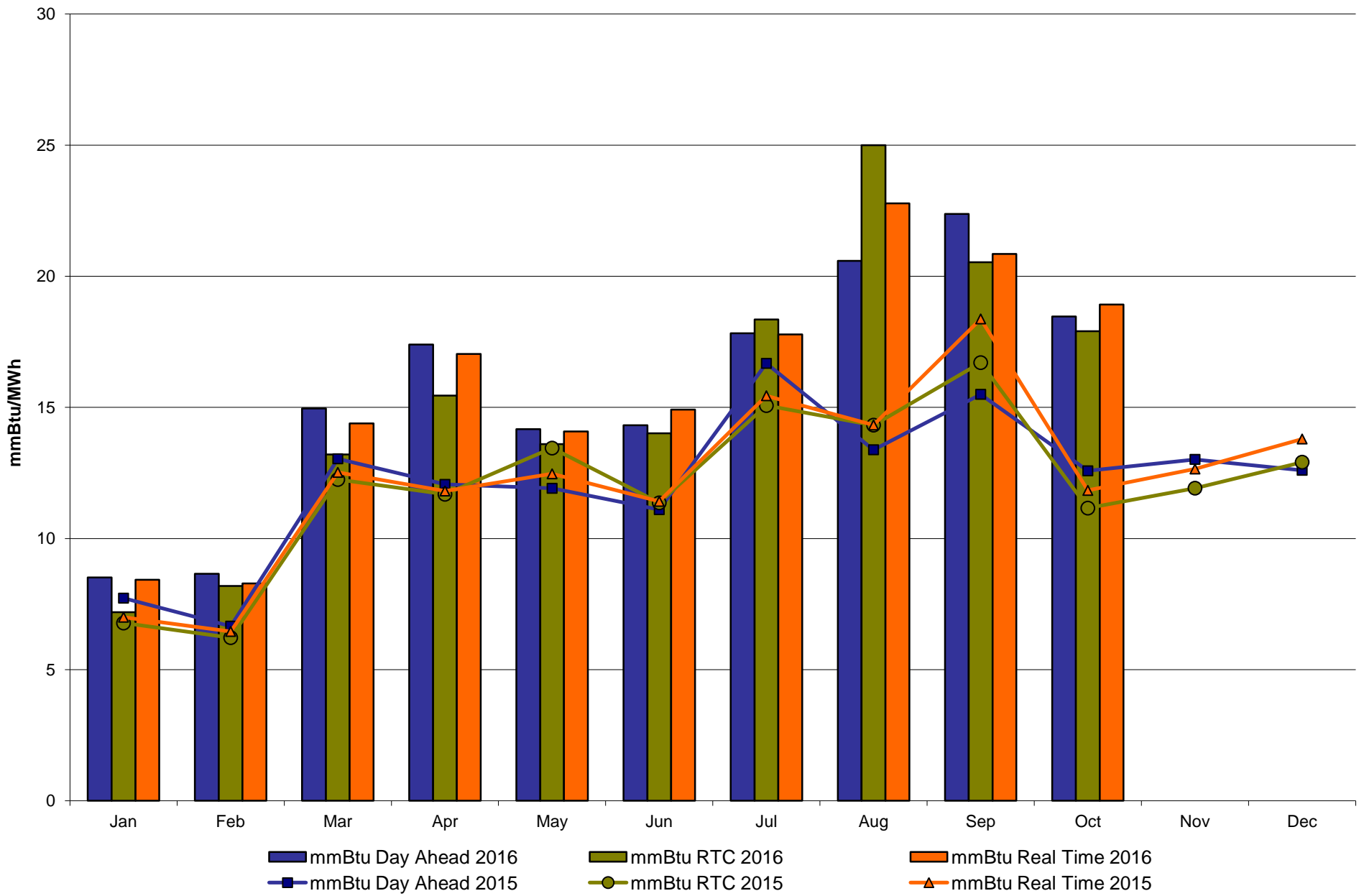
**NYISO In City Energy Mitigation (NYC Zone) 2015 - 2016**  
**Monthly megawatt hours mitigated**



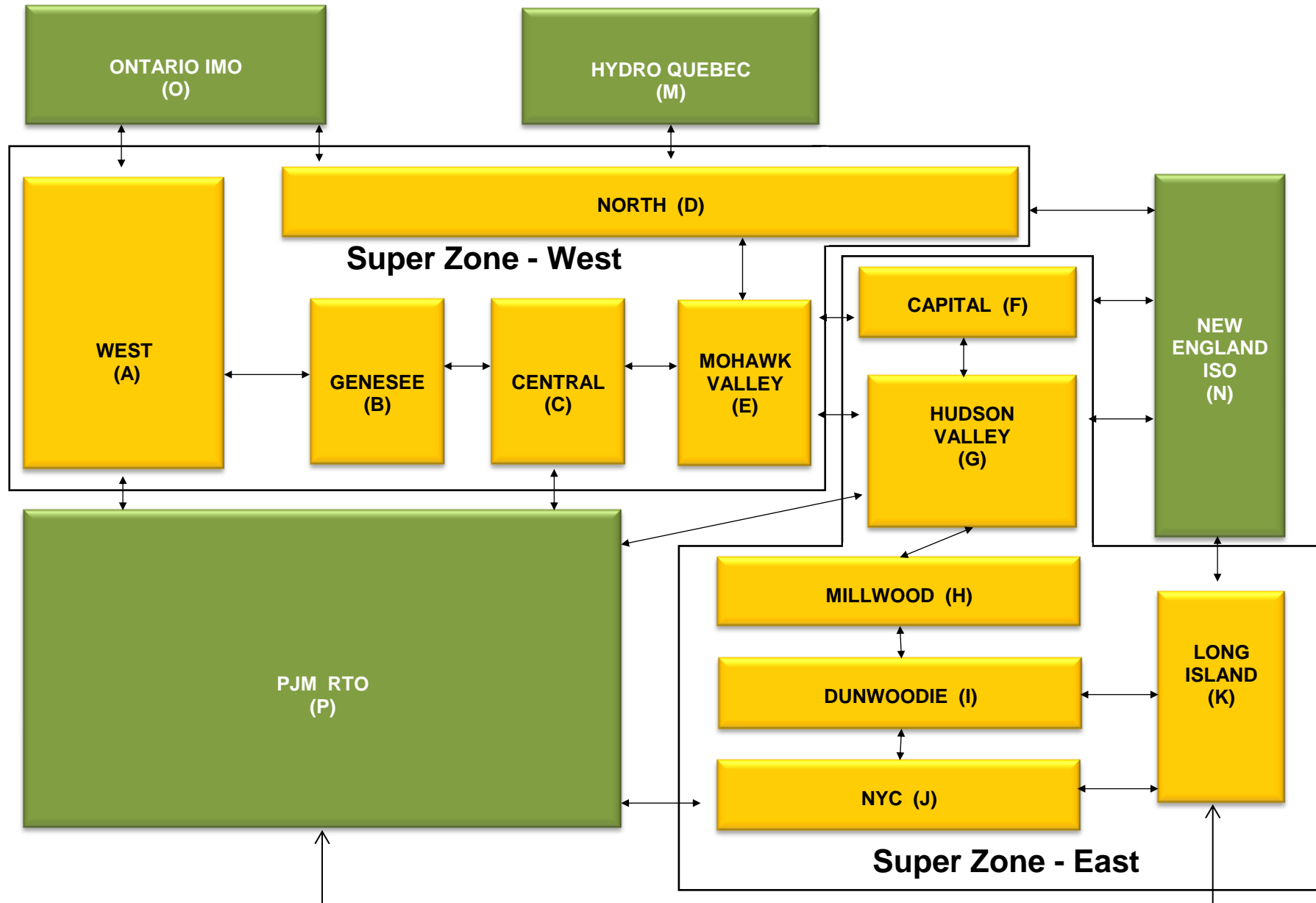
### NYISO Average Daily DAM Load Bid Summary



# Monthly Implied Heat Rate 2015-2016



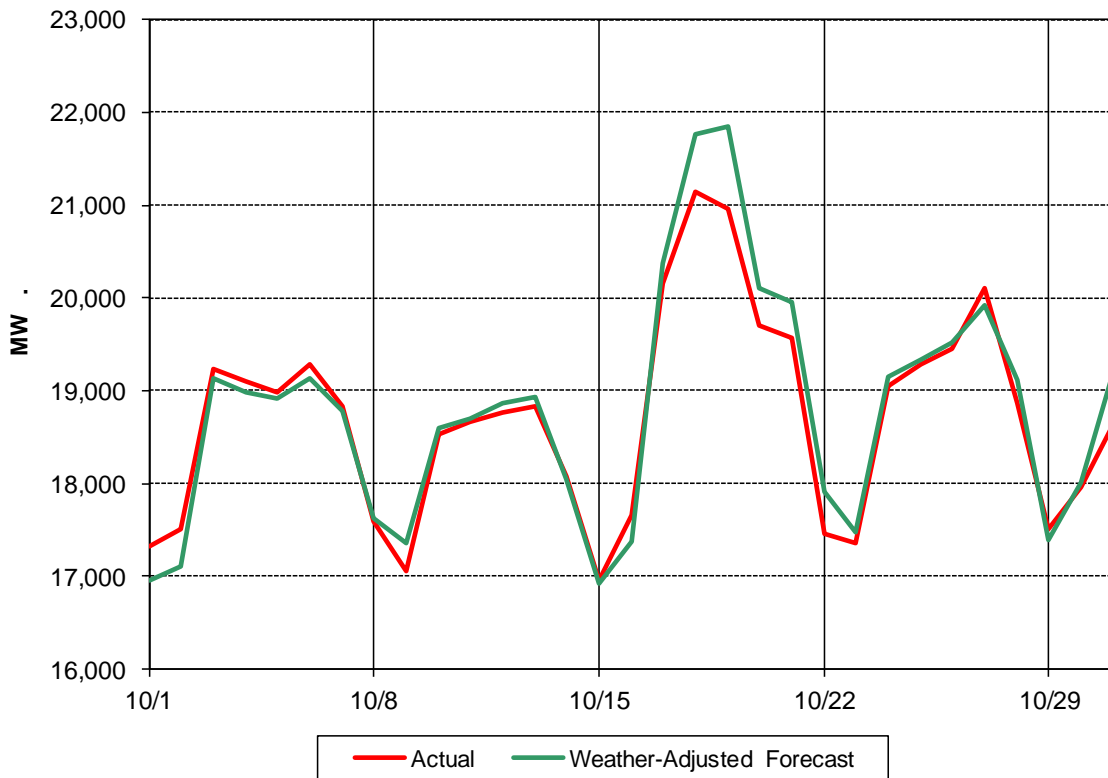
# NYISO LBMP ZONES



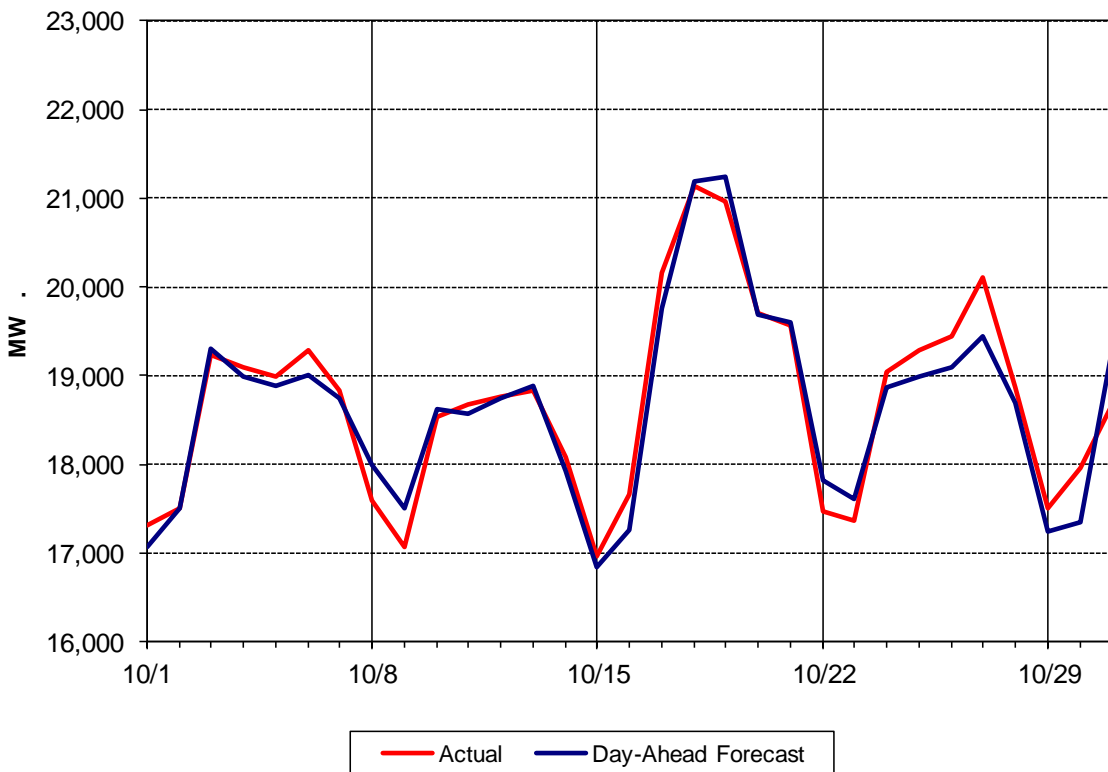
**Billing Codes for Chart C**

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

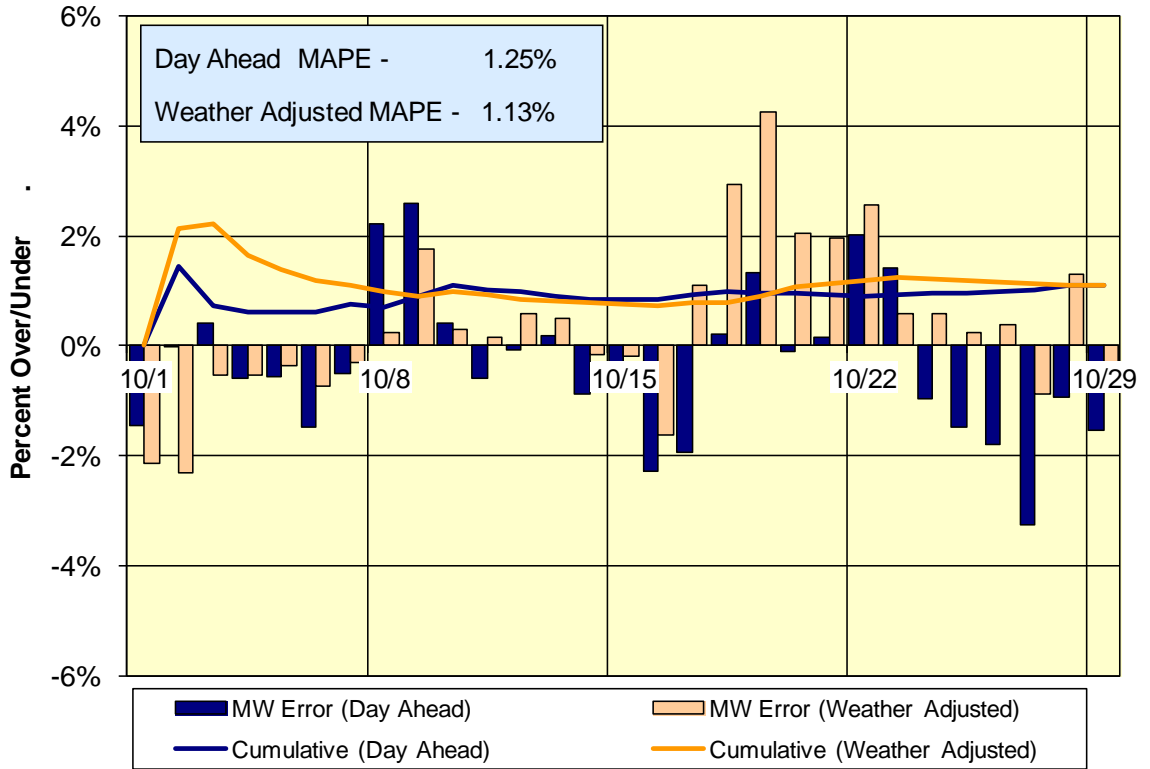
**NYISO Daily Peak Load - October 2016  
Actual vs. Weather-Adjusted Forecast**



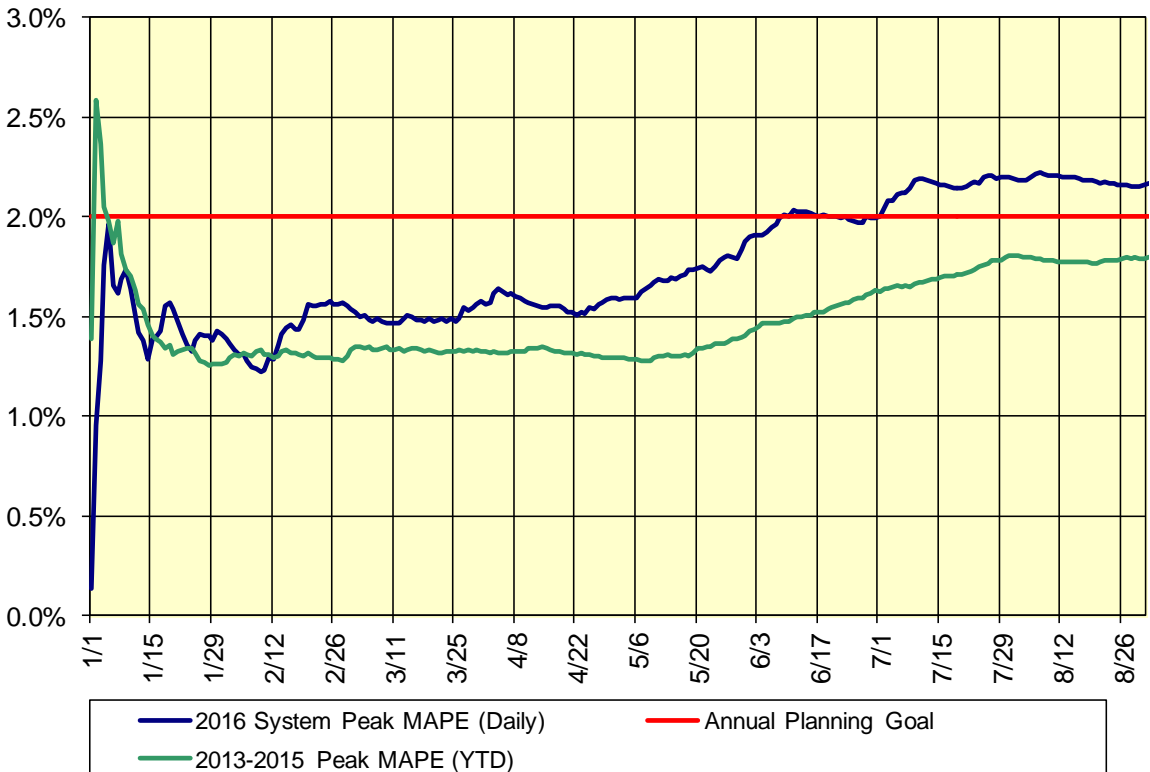
**NYISO Daily Peak Load - October 2016  
Actual vs. Forecast**



### Day Ahead Peak Forecast - October 2016 Percent Error - Actual & Weather Adjusted



### Day-Ahead Forecast Accuracy - Cumulative Performance 2016 Year-to-Date





## Summary Description of Regulatory Filings, Investigations, Rulemakings and Related Orders in NYISO Matters – October 2016

Filing Date	Filing Summary	Docket	Order Date	Order Summary
10/03/2016	NYISO filing re: response to post-technical conference questions concerning competitive transmission development	AD16-18-000		
10/03/2016	NYISO filing on behalf of the Eastern Interconnection Planning Collaborative re: response to post-technical conference questions on Panel No. 4: Interregional Planning Coordination Issues	AD16-18-000		
10/12/2016	NYISO filing of an answer to third party comments re: NYISO's request for deferral of one element of ISO-NE's proposed Forward Capacity Market Enhancements	ER16-2451-000 AD16-26-000	10/18/2016	FERC Order accepted ISO-NE tariff revisions and directed NYISO to file an informational report by 11/04/2016 addressing its progress in preparing any tariff revisions
10/12/2016	NYISO compliance filing re: Order Nos. 827 and 828 concerning revisions to the <i>pro forma</i> Large Generator Interconnection Agreement and the Small Generator Interconnection Agreement	RM16-1-000 RM16-8-000 ER17-61-000		
10/14/2016	NYISO confidential filing to the PSC re: a three-month report concerning Reliability Commitment Data	PSC Matter No. 10-02007		
10/19/2016	NYISO filing of an answer re: certain third party protests of its 09/13/2016 Order No. 1000 compliance filing	ER13-102-011		
10/19/2016	NYISO filing of a waiver request re: Section 2.4 of the 1993 PARs Facilities Agreement to settle certain amounts associated with the Ramapo PARs that are charged to TOs in the PJM region	ER17-144-000		
10/21/2016	NYISO filing re: third quarter 2016 Electric Quarterly Report	ER02-2001-000		
10/24/2016	NYISO and NYTOs joint filing re: conditional request for rehearing of Opinion No. 550 rendered in ER11-1844-001 and -002 concerning cost recovery of ITC PARs	ER11-1844-004		
10/26/2016	NYISO and NYTOs joint filing re: motion to withdraw the conditional request for rehearing of Opinion No. 550	ER11-1844-004		
10/28/2016	NYISO filing re: late filed motion to intervene in the NextEra Energy Transmission New York formula rate proceeding	ER16-2719-000		

10/28/2016	NYISO filing with the NYPSC re: the AC Transmission Public Policy Transmission Need Viability and Sufficiency Assessment	PSC Case No. 14-E-0454, <i>et.al.</i>		
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