

Market Operations Report

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SENIOR VICE PRESIDENT – MARKET STRUCTURES, NYISO

Business Issues Committee Meeting

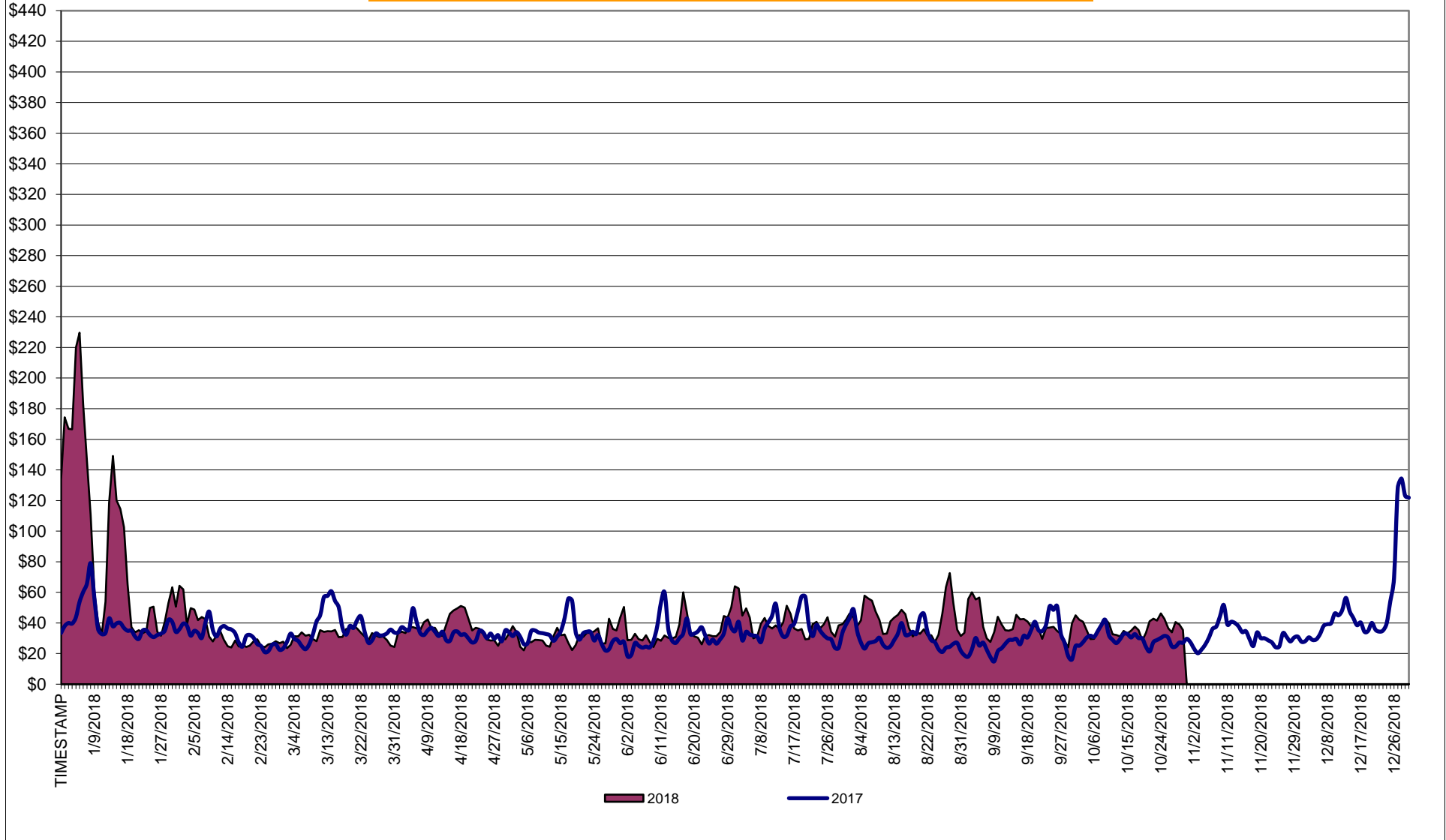
November 14, 2018, Rensselaer, NY

Market Performance Highlights

October 2018

- LBMP for October is \$35.85/MWh; lower than \$38.70/MWh in September 2018 and higher than \$28.35/MWh in October 2017.
 - Day Ahead and Real Time Load Weighted LBMPs are lower compared to September.
- October 2018 average year-to-date monthly cost of \$45.03/MWh is a 29% increase from \$34.89/MWh in October 2017.
- Average daily sendout is 399 GWh/day in October; lower than 458 GWh/day in September 2018 and higher than 398 GWh/day in October 2017.
- Natural gas prices and distillate prices were higher compared to the previous month.
 - Natural Gas (Transco Z6 NY) was \$2.91/MMBtu, up from \$2.75/MMBtu in September.
 - Natural gas prices are up 23.2% year-over-year.
 - Jet Kerosene Gulf Coast was \$16.65/MMBtu, up from \$16.21/MMBtu in September.
 - Ultra Low Sulfur No.2 Diesel NY Harbor was \$16.66/MMBtu, up from \$16.08/MMBtu in September.
 - Distillate prices are up 32.4% year-over-year.
- Uplift per MWh is lower compared to the previous month.
 - Uplift (not including NYISO cost of operations) is (\$0.30)/MWh; lower than (\$0.11)/MWh in September.
 - Local Reliability Share is \$0.27/MWh, lower than \$0.37/MWh in September.
 - Statewide Share is (\$0.56)/MWh, lower than (\$0.48)/MWh in September.
 - TSA \$ per NYC MWh is \$0.75/MWh.
 - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are lower than September.

Daily NYISO Average Cost/MWh (Energy & Ancillary Services)*
2017 Annual Average \$36.56/MWh
October 2017 YTD Average \$34.98/MWh
October 2018 YTD Average \$45.03/MWh



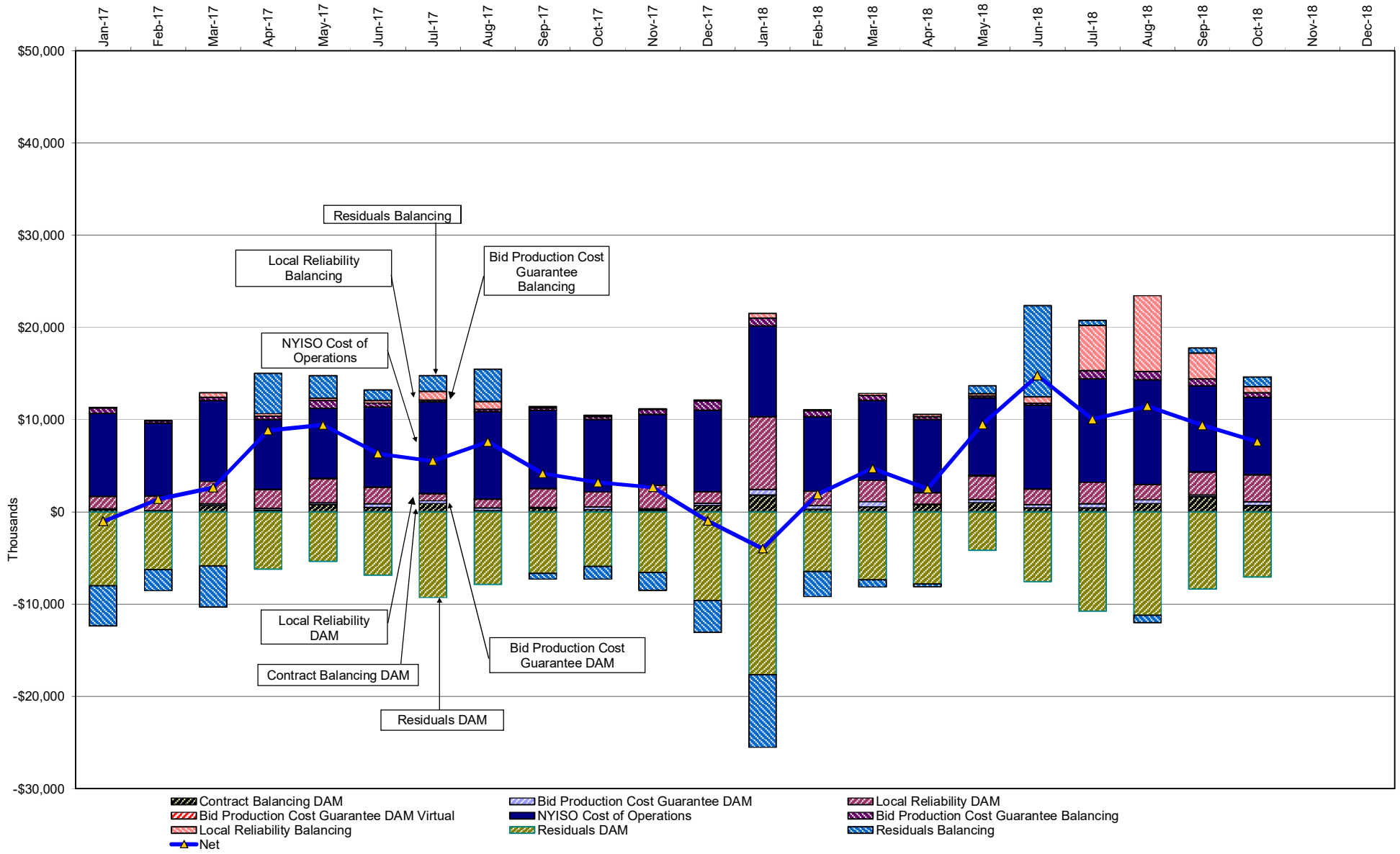
* Excludes ICAP payments.

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

2018	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
LBMP	99.55	33.83	29.91	35.00	28.78	32.53	39.58	42.56	38.70	35.85		
NTAC	0.71	0.58	0.88	1.09	0.88	1.00	0.93	0.72	0.40	0.36		
Reserve	0.92	0.65	0.64	0.81	0.68	0.57	0.49	0.51	0.52	0.80		
Regulation	0.15	0.15	0.16	0.12	0.14	0.16	0.09	0.09	0.09	0.16		
NYISO Cost of Operations	0.65	0.65	0.66	0.65	0.66	0.67	0.67	0.66	0.66	0.63		
FERC Fee Recovery	0.08	0.10	0.09	0.10	0.09	0.09	0.06	0.06	0.08	0.09		
Uplift	(0.92)	(0.50)	(0.31)	(0.45)	0.05	0.30	(0.13)	(0.02)	(0.11)	(0.30)		
Uplift: Local Reliability Share	0.59	0.14	0.19	0.12	0.22	0.18	0.44	0.59	0.37	0.27		
Uplift: Statewide Share	(1.52)	(0.64)	(0.51)	(0.57)	(0.17)	0.12	(0.57)	(0.61)	(0.48)	(0.56)		
Voltage Support and Black Start	0.40	0.41	0.42	0.41	0.42	0.42	0.42	0.42	0.42	0.40		
Avg Monthly Cost	101.54	35.87	32.45	37.74	31.70	35.73	42.12	45.01	40.76	38.00		
Avg YTD Cost	101.54	72.85	60.06	54.82	50.20	47.70	46.64	46.37	45.75	45.03		
TSA \$ per NYC MWh	0.00	0.00	0.04	0.00	0.08	0.39	0.21	0.14	0.33	0.75		
2017	<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
Avg Monthly Cost	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
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NYISO Dollar Flows - Uplift - OATT Schedule 1 components - Data through October 31, 2018



NYISO Markets Transactions

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

2017	January	February	March	April	May	June	July	August	September	October	November	December
Day Ahead Market MWh	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%
Balancing Energy Market MWh	-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%
Transactions Summary												
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%
Market Share of Total Load												
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>
<u>DAY AHEAD LBMP</u>												
Price *	\$83.53	\$30.37	\$27.37	\$32.40	\$25.97	\$28.41	\$35.73	\$38.00	\$33.28	\$33.27		
Standard Deviation	\$58.94	\$12.38	\$6.34	\$9.06	\$9.22	\$11.42	\$15.25	\$16.51	\$12.01	\$9.24		
Load Weighted Price **	\$88.42	\$31.44	\$27.95	\$33.14	\$27.26	\$30.27	\$38.14	\$40.64	\$35.33	\$34.33		
<u>RTC LBMP</u>												
Price *	\$81.65	\$27.73	\$25.99	\$30.80	\$25.40	\$26.06	\$34.65	\$38.13	\$39.52	\$30.92		
Standard Deviation	\$60.83	\$11.96	\$8.99	\$14.30	\$20.37	\$12.78	\$17.44	\$20.05	\$61.50	\$13.43		
Load Weighted Price **	\$85.85	\$28.54	\$26.46	\$31.47	\$27.08	\$27.35	\$36.93	\$40.40	\$43.83	\$31.55		
<u>REAL TIME LBMP</u>												
Price *	\$87.94	\$28.50	\$26.49	\$34.53	\$25.57	\$26.31	\$34.34	\$38.07	\$38.15	\$33.88		
Standard Deviation	\$87.41	\$17.36	\$12.25	\$26.57	\$23.49	\$24.34	\$18.44	\$27.21	\$46.81	\$37.42		
Load Weighted Price **	\$93.59	\$29.49	\$27.09	\$35.72	\$27.47	\$28.38	\$36.84	\$40.87	\$42.87	\$34.94		
Average Daily Energy Sendout/Month GWh	463	426	413	390	397	445	529	537	458	399		

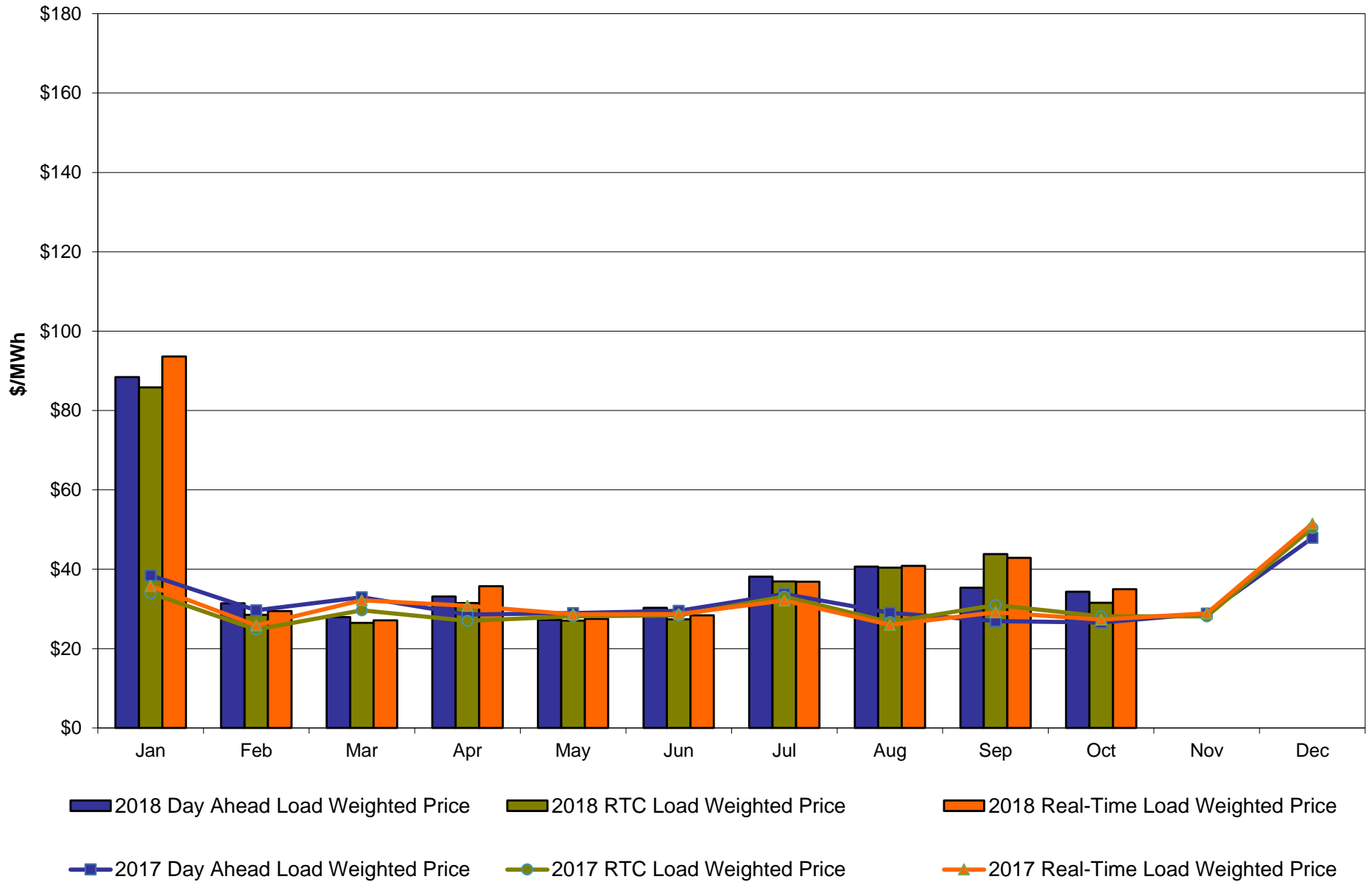
NYISO Markets 2017 Energy Statistics

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

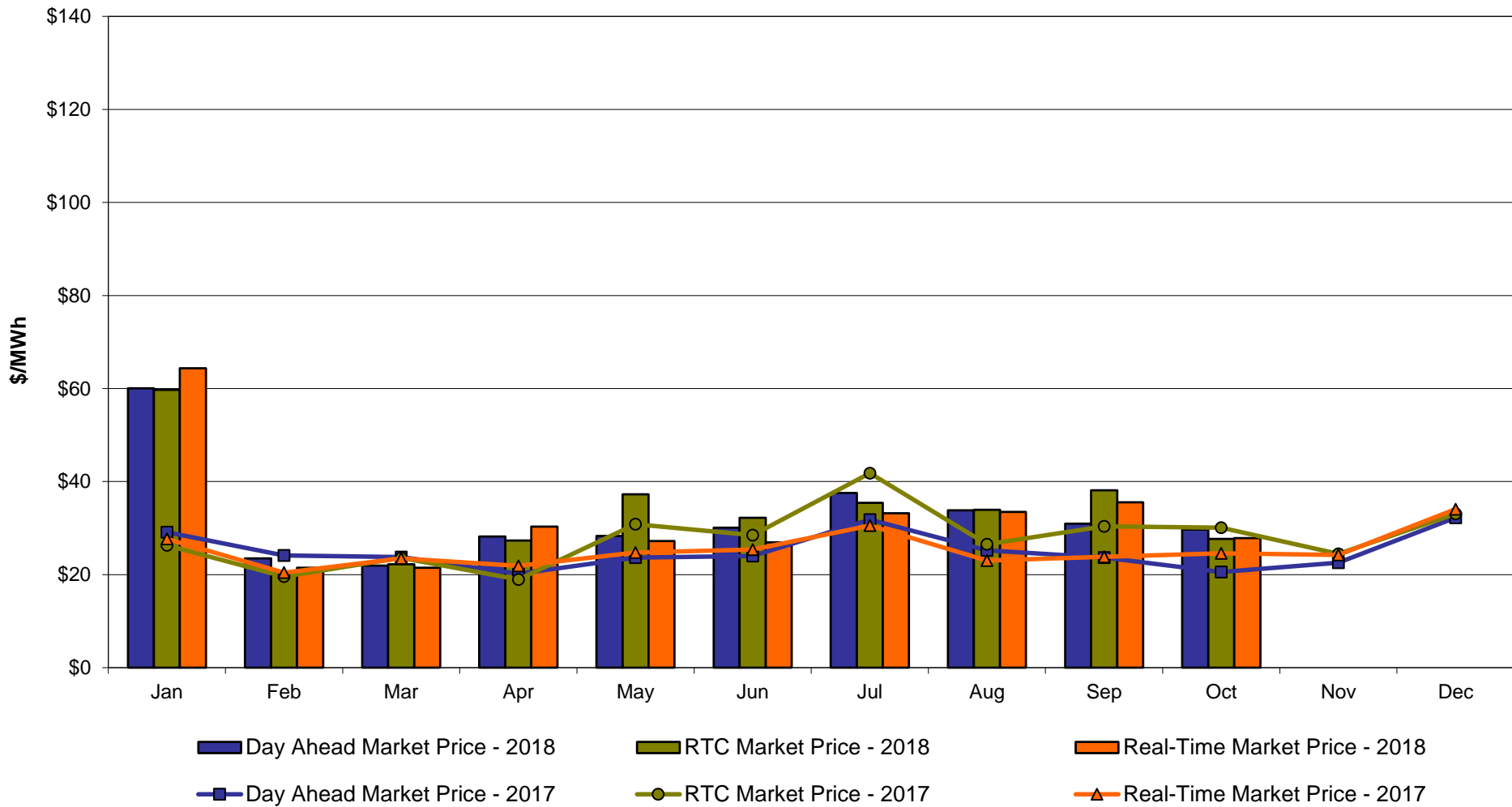


October 2018 Zonal LBMP Statistics for NYISO (\$/MWh)

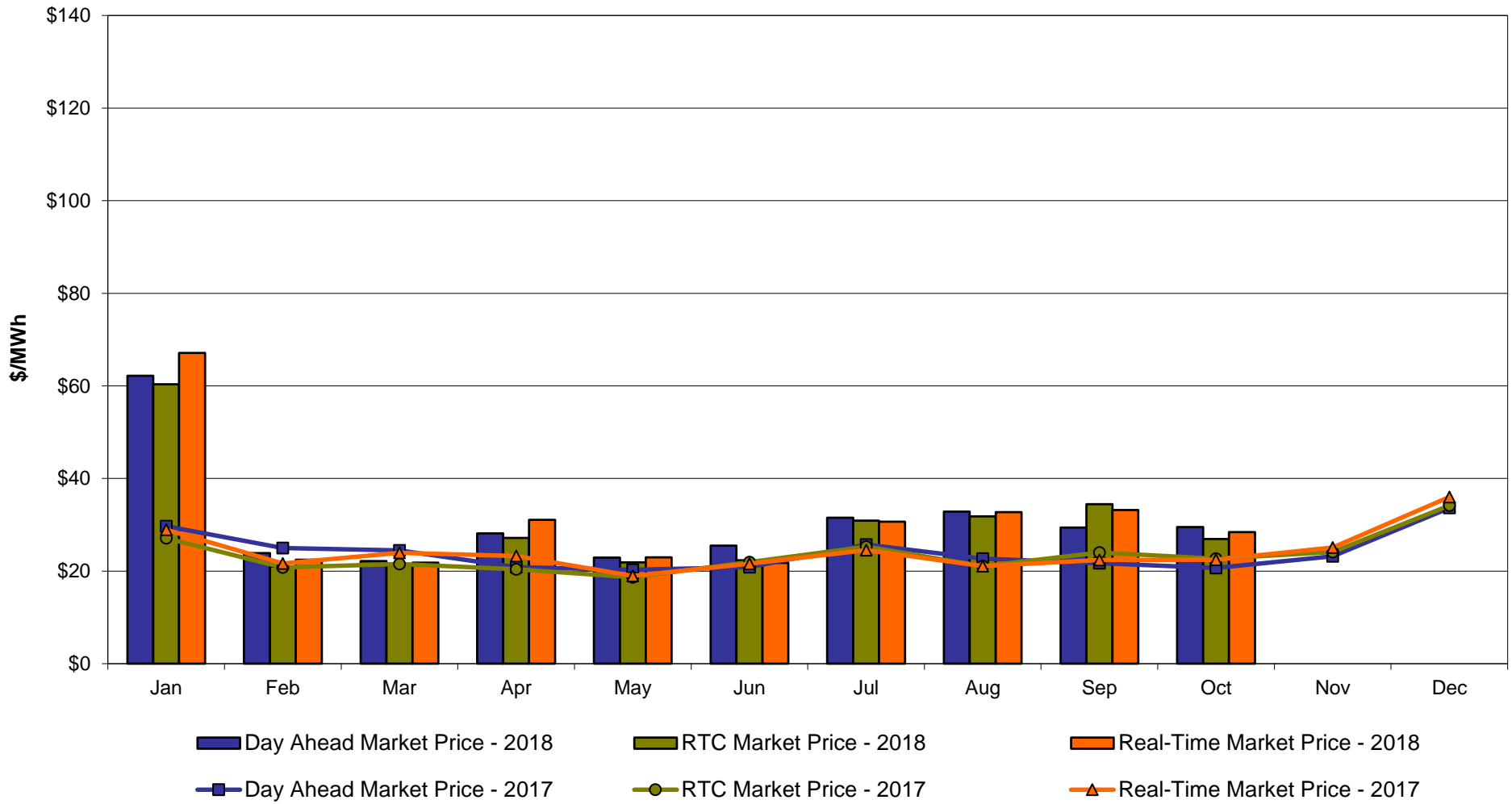
	<u>WEST Zone A</u>	<u>GENESEE Zone B</u>	<u>NORTH Zone D</u>	<u>CENTRAL Zone C</u>	<u>MOHAWK VALLEY Zone E</u>	<u>CAPITAL Zone F</u>	<u>HUDSON VALLEY Zone G</u>	<u>MILLWOOD Zone H</u>	<u>DUNWOODIE Zone I</u>	<u>NEW YORK CITY Zone J</u>	<u>LONG ISLAND Zone K</u>
DAY AHEAD LBMP											
Unweighted Price *	29.66	28.80	17.82	29.50	29.07	34.11	33.41	33.74	33.80	34.70	41.80
Standard Deviation	10.52	9.71	8.29	9.85	9.76	8.13	8.62	8.74	8.80	9.19	11.86
RTC LBMP											
Unweighted Price *	27.67	26.16	18.77	26.92	26.83	31.85	30.42	31.40	31.87	32.40	38.74
Standard Deviation	18.97	13.62	16.59	13.72	13.74	12.24	12.71	12.31	14.15	15.43	27.85
REAL TIME LBMP											
Unweighted Price *	27.84	27.88	19.59	28.45	28.37	35.13	32.25	34.74	35.95	37.30	41.14
Standard Deviation	31.10	31.28	32.26	31.43	31.62	38.37	33.79	38.57	48.50	48.11	49.06
	<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>
DAY AHEAD LBMP											
Unweighted Price *	25.19	24.37	24.37	30.99	36.06	40.86	39.36	37.43	34.18	34.41	17.27
Standard Deviation	8.59	10.16	10.16	8.86	8.70	11.09	9.55	9.78	8.99	9.12	7.99
RTC LBMP											
Unweighted Price *	24.74	23.83	23.83	27.52	34.74	37.54	37.21	34.64	28.60	32.68	19.72
Standard Deviation	9.81	12.18	12.18	10.93	11.96	25.86	25.75	16.88	36.74	11.07	17.01
REAL TIME LBMP											
Unweighted Price *	26.56	24.76	24.76	28.00	36.68	40.59	39.84	38.08	22.03	37.36	20.65
Standard Deviation	30.45	28.91	28.91	29.63	35.36	49.06	48.88	44.69	86.01	45.41	32.68

* Straight LBMP averages

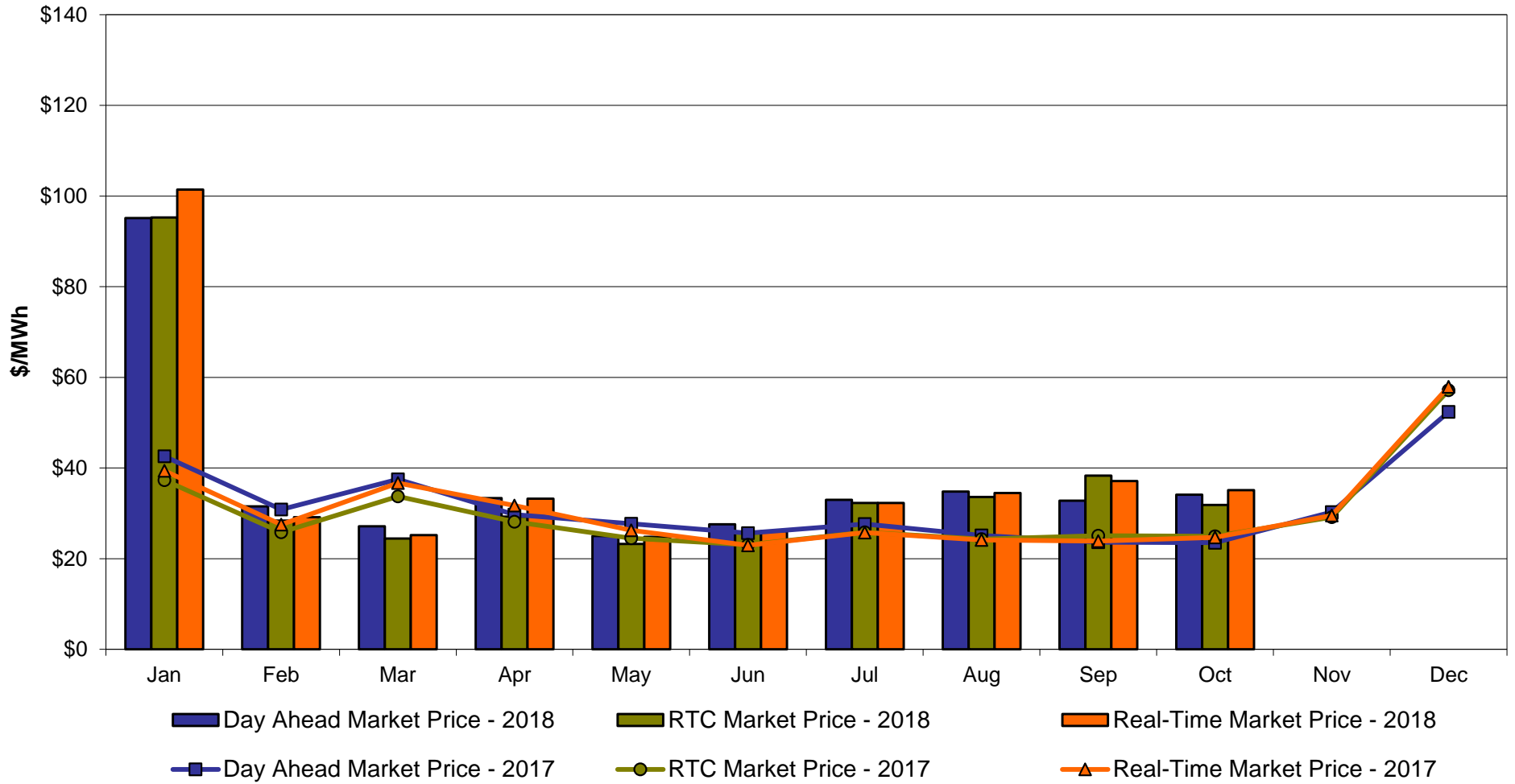
**West Zone A
Monthly Average LBMP Prices 2017 - 2018**



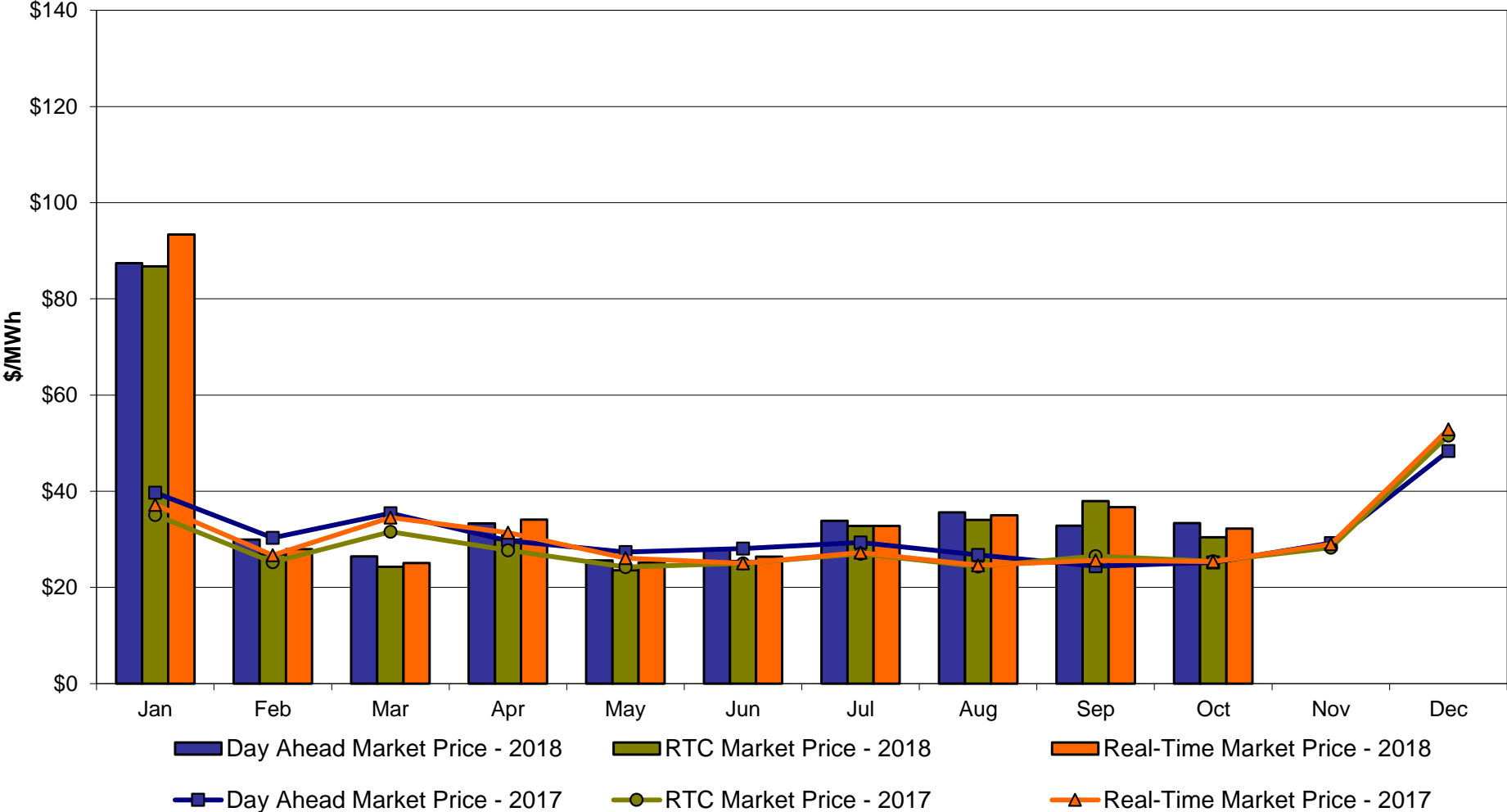
**Central Zone C
Monthly Average LBMP Prices 2017 - 2018**



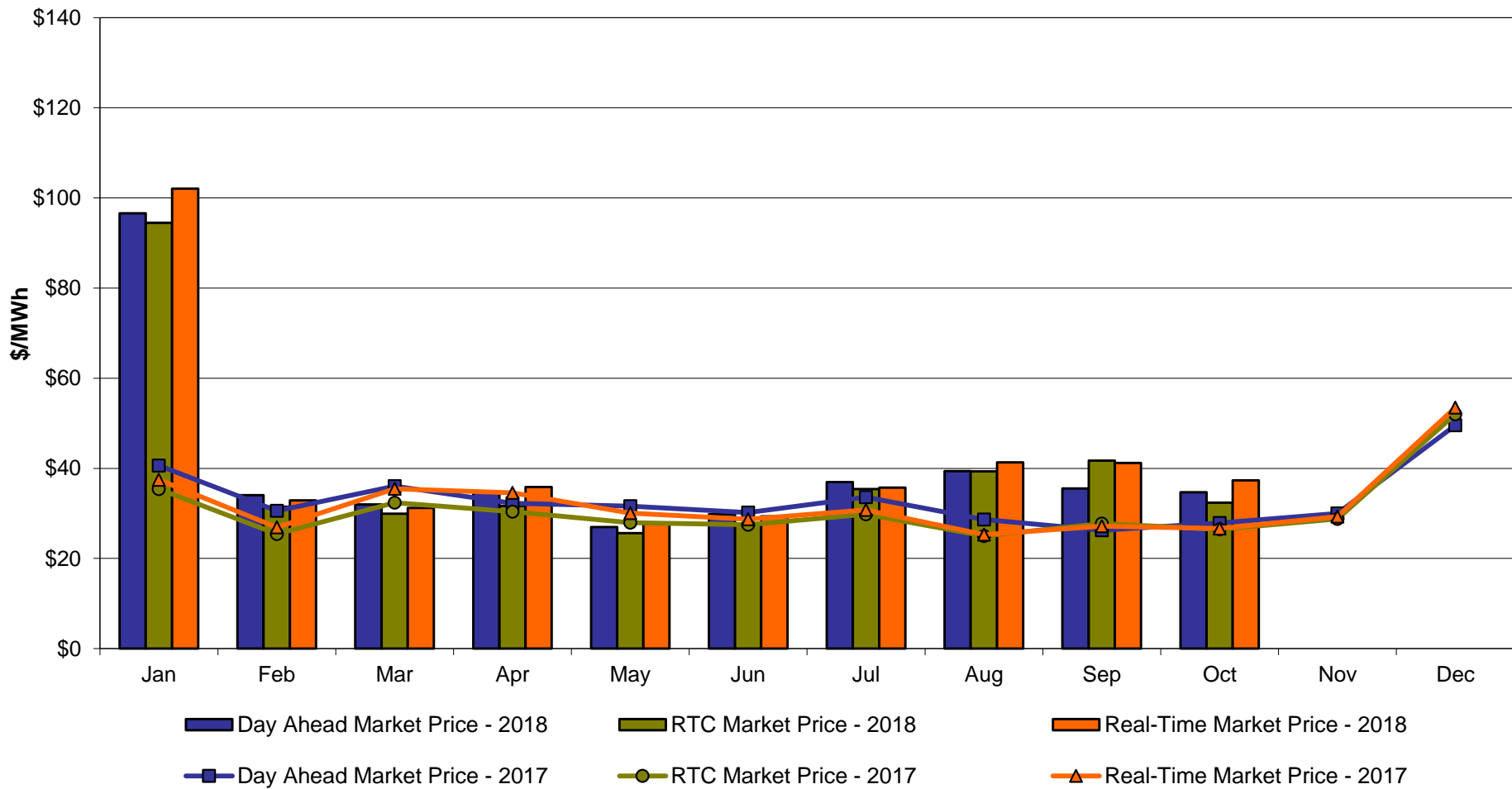
Capital Zone F Monthly Average LBMP Prices 2017 - 2018



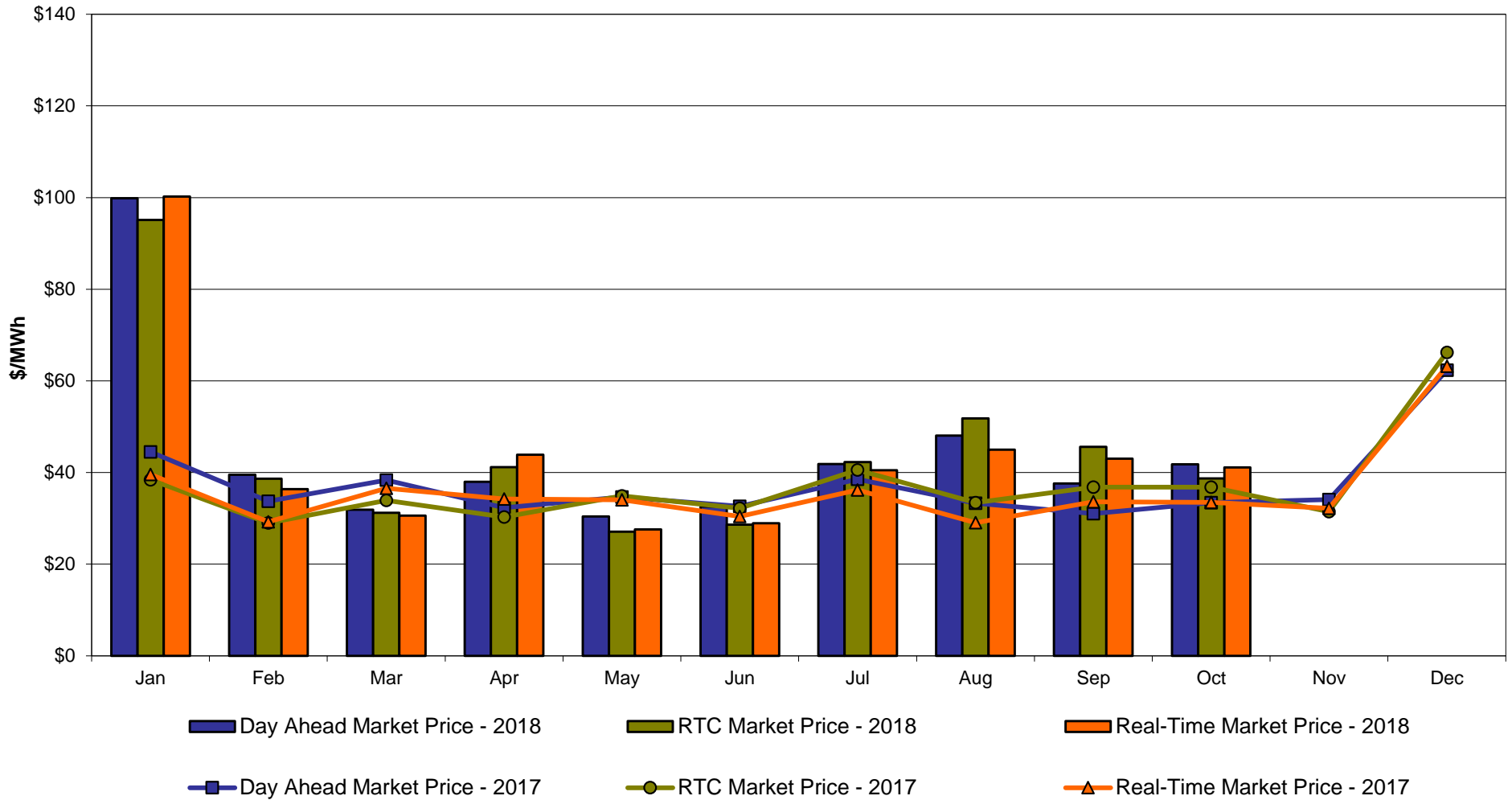
Hudson Valley Zone G Monthly Average LBMP Prices 2017 - 2018



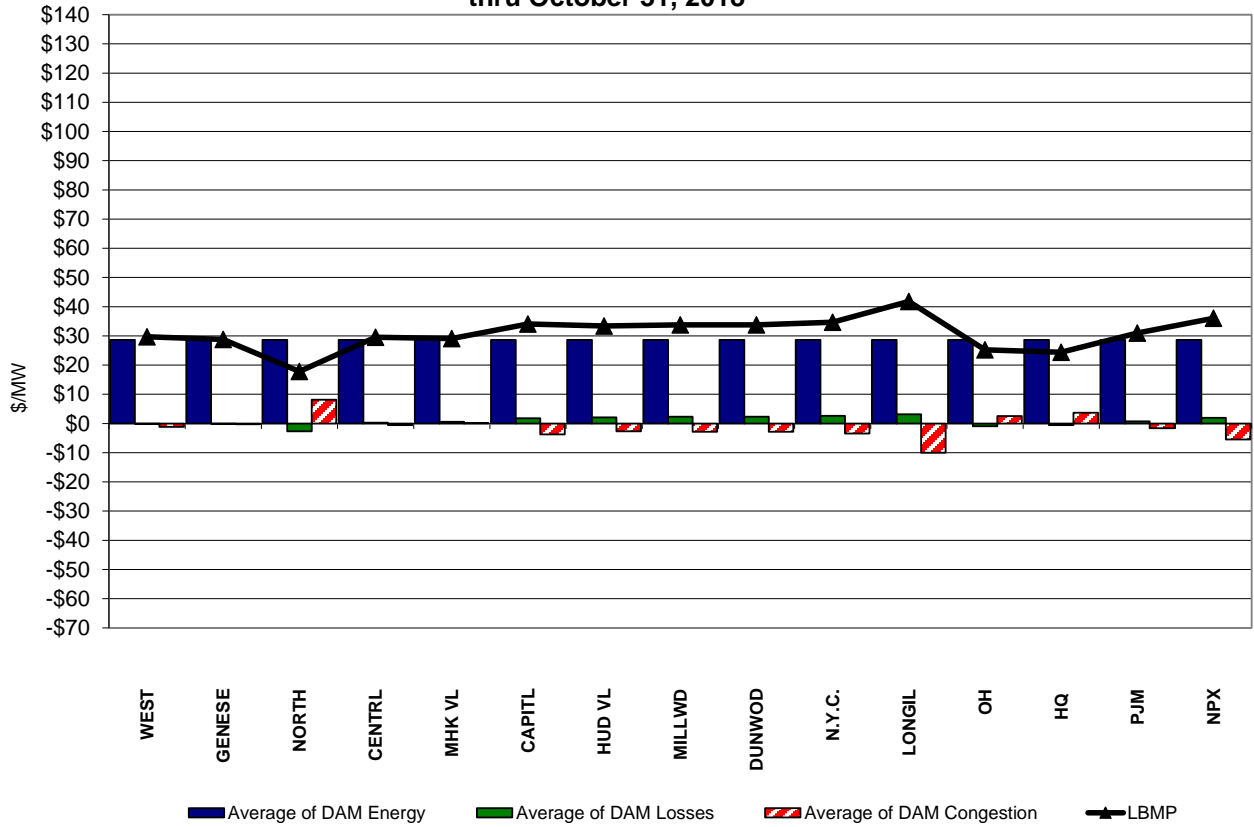
NYC Zone J Monthly Average LBMP Prices 2017 - 2018



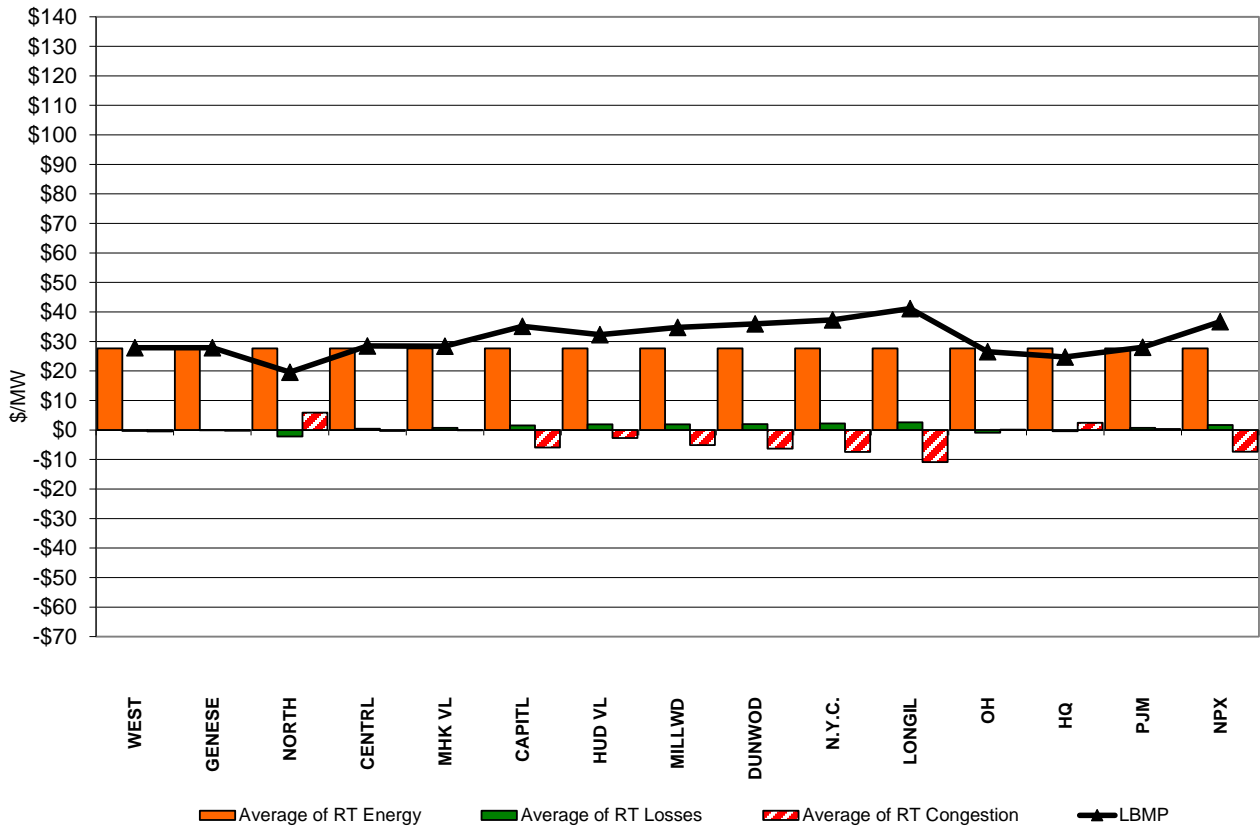
Long Island Zone K Monthly Average LBMP Prices 2017 - 2018



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

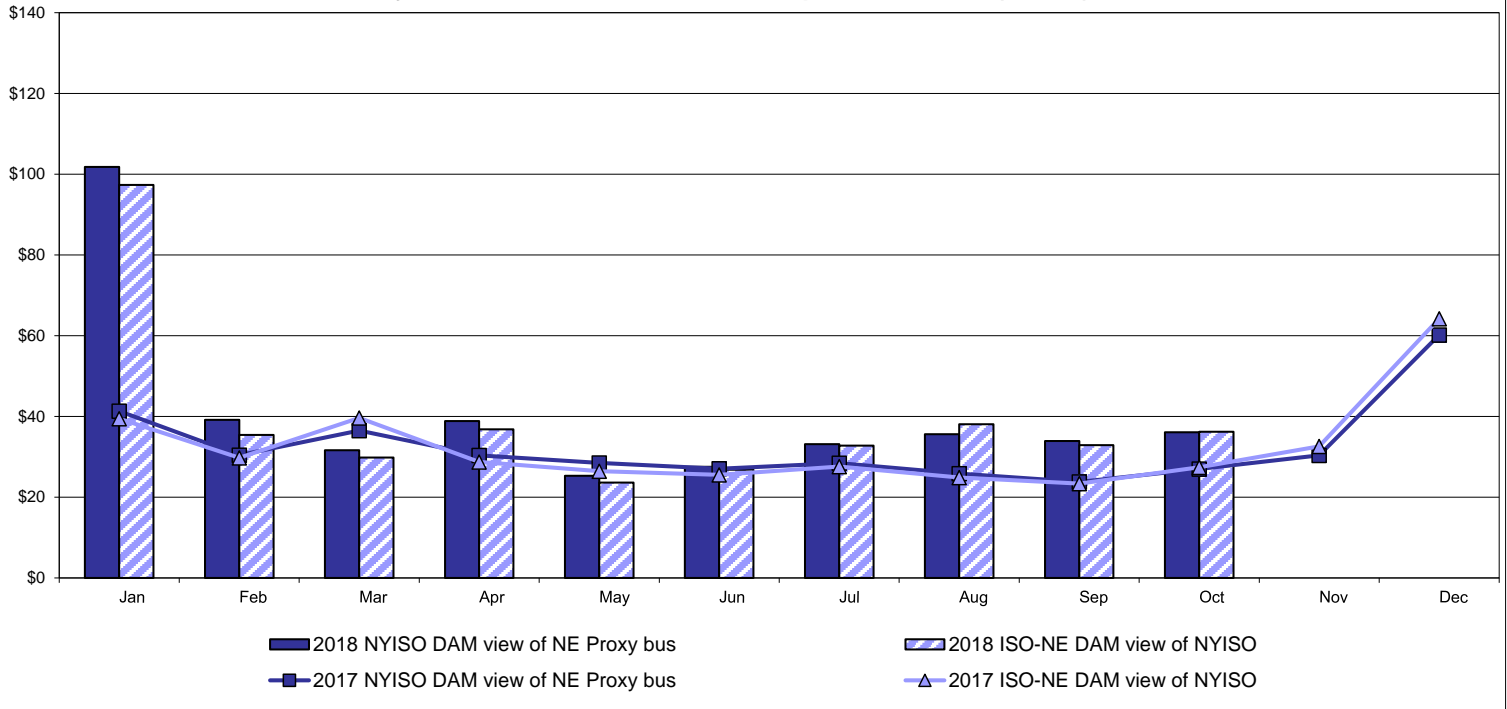


**RT Zonal Unweighted Monthly Average LBMP Components
thru October 31, 2018**

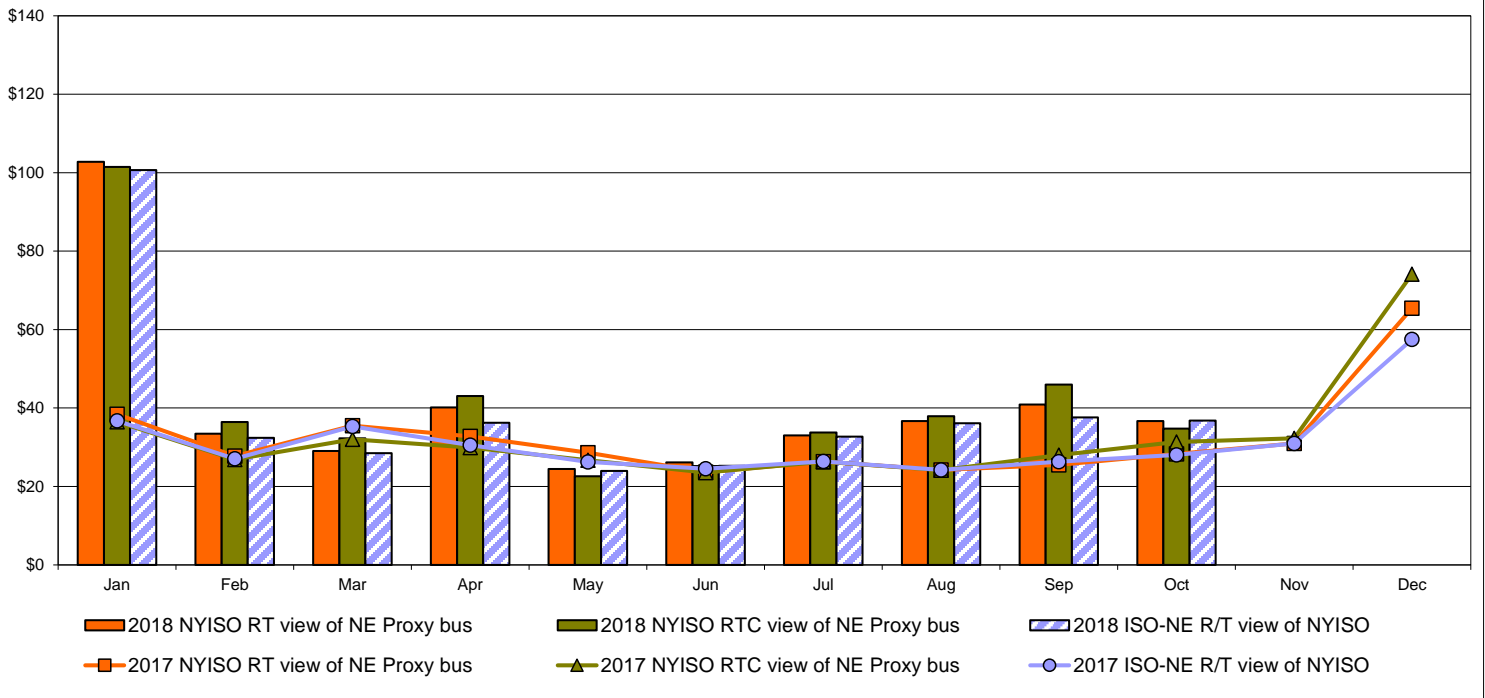


External Comparison ISO-New England

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

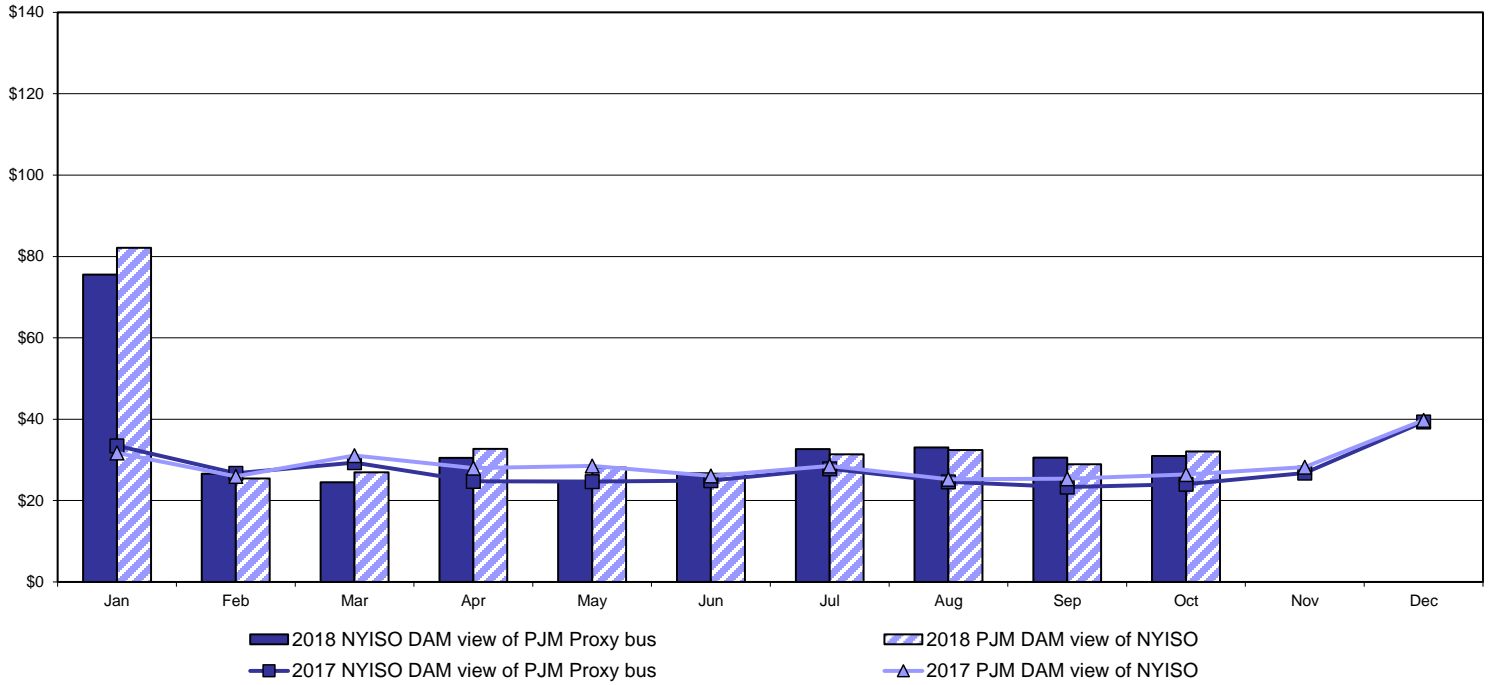


Real Time Market External Zone Comparison: ISO-NE (\$/MWh)

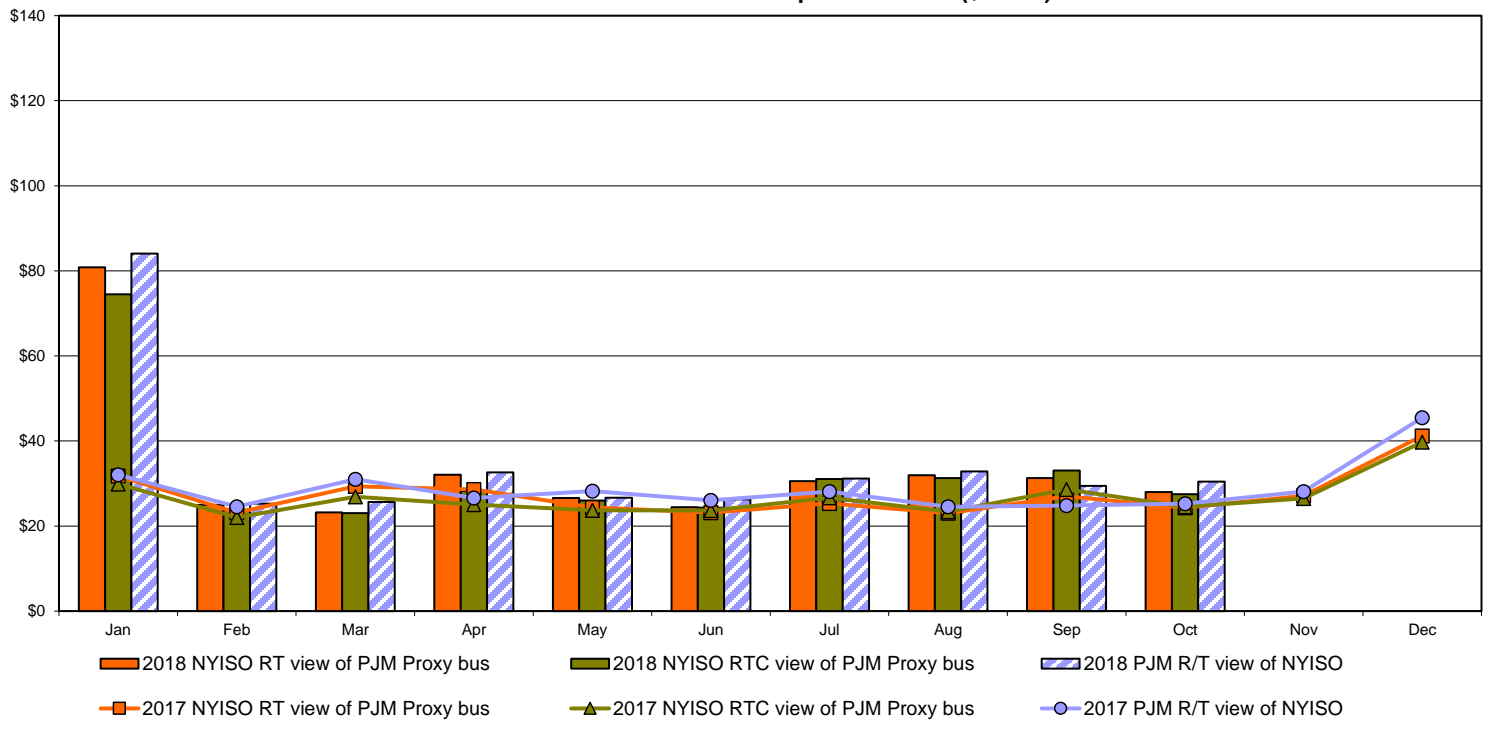


External Comparison PJM

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

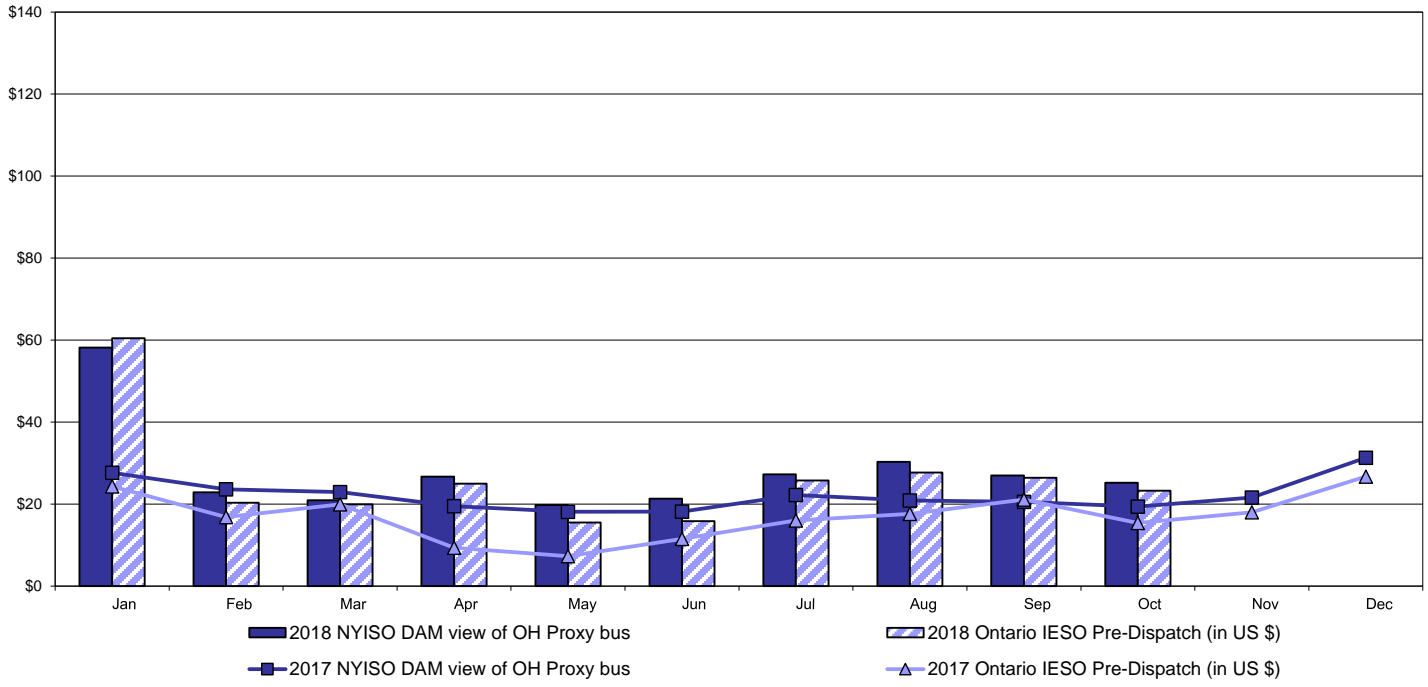


Real Time Market External Zone Comparison - PJM (\$/MWh)

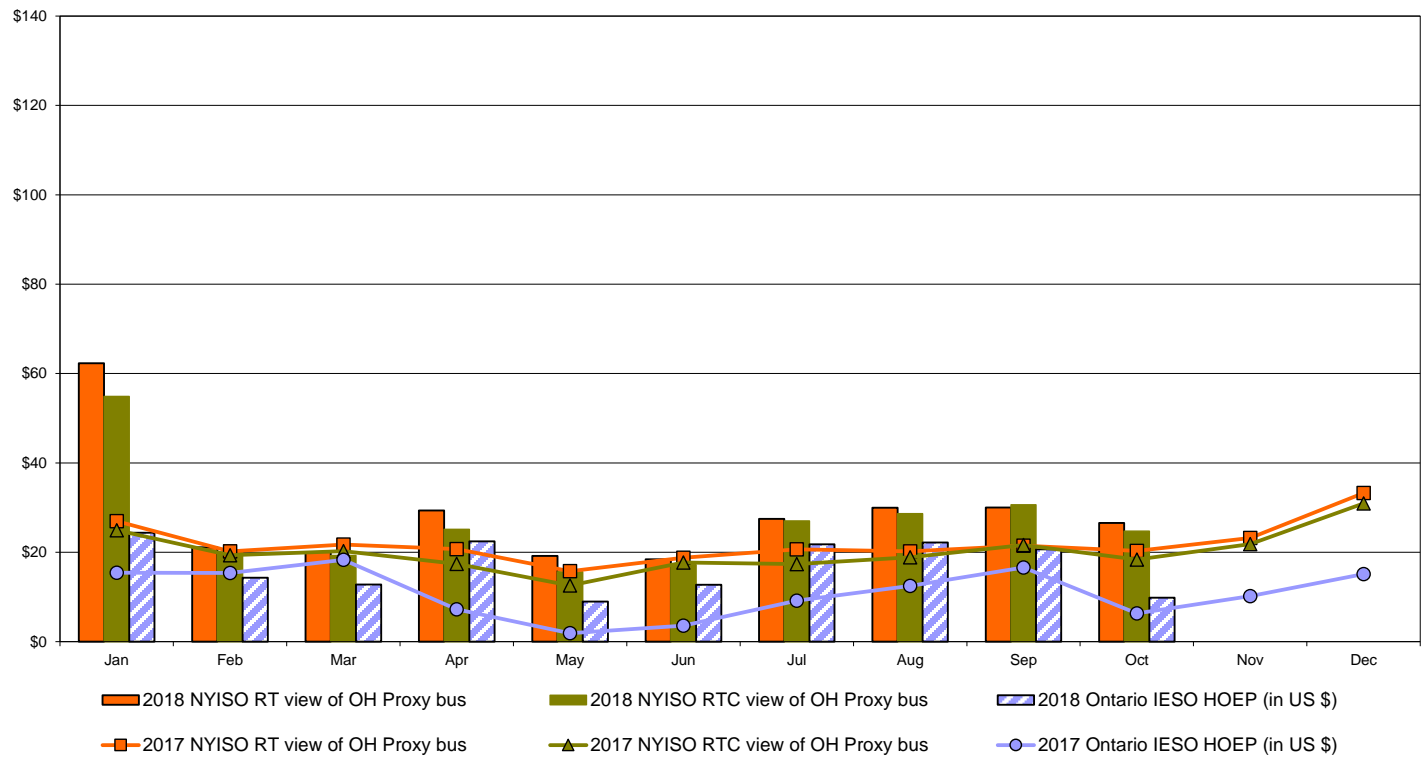


External Comparison Ontario IESO

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

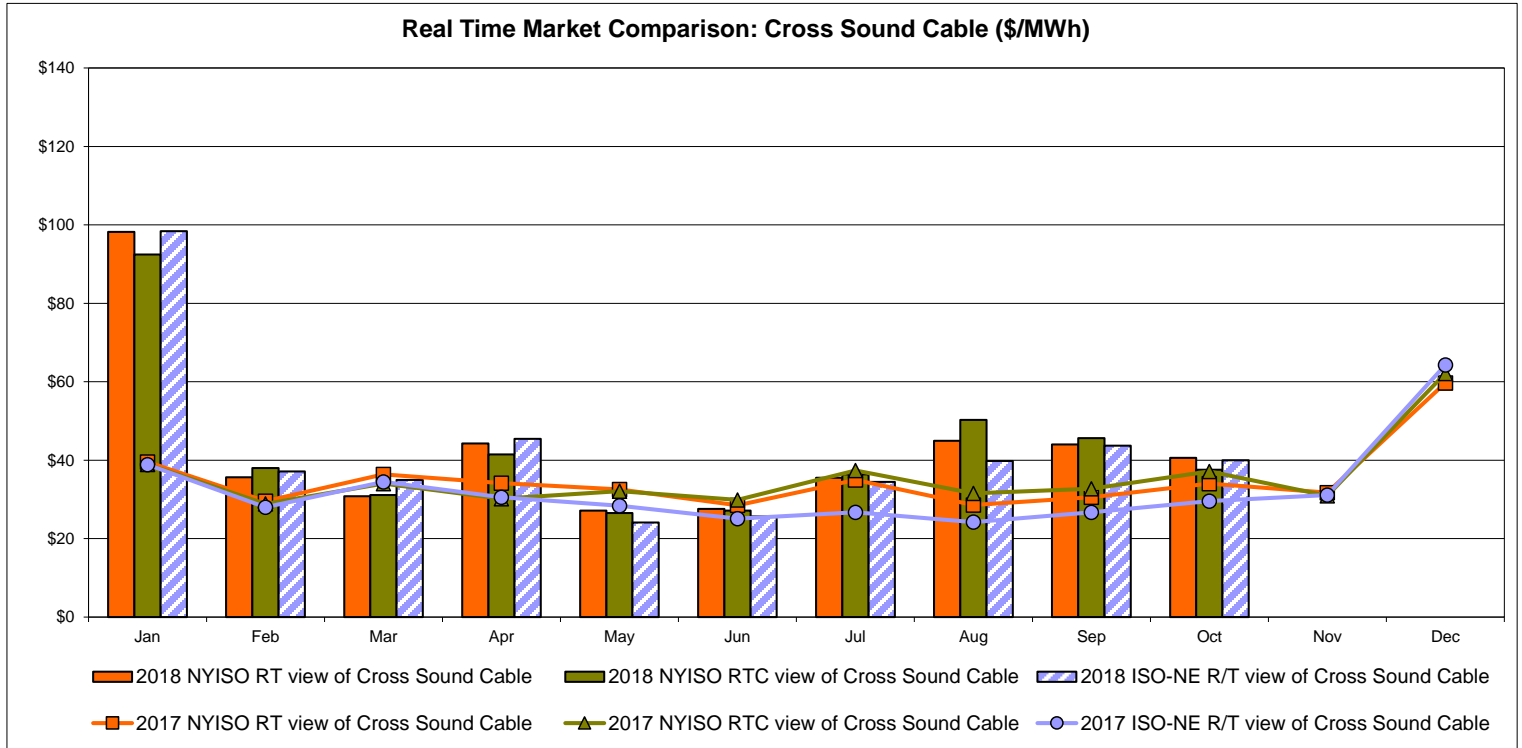
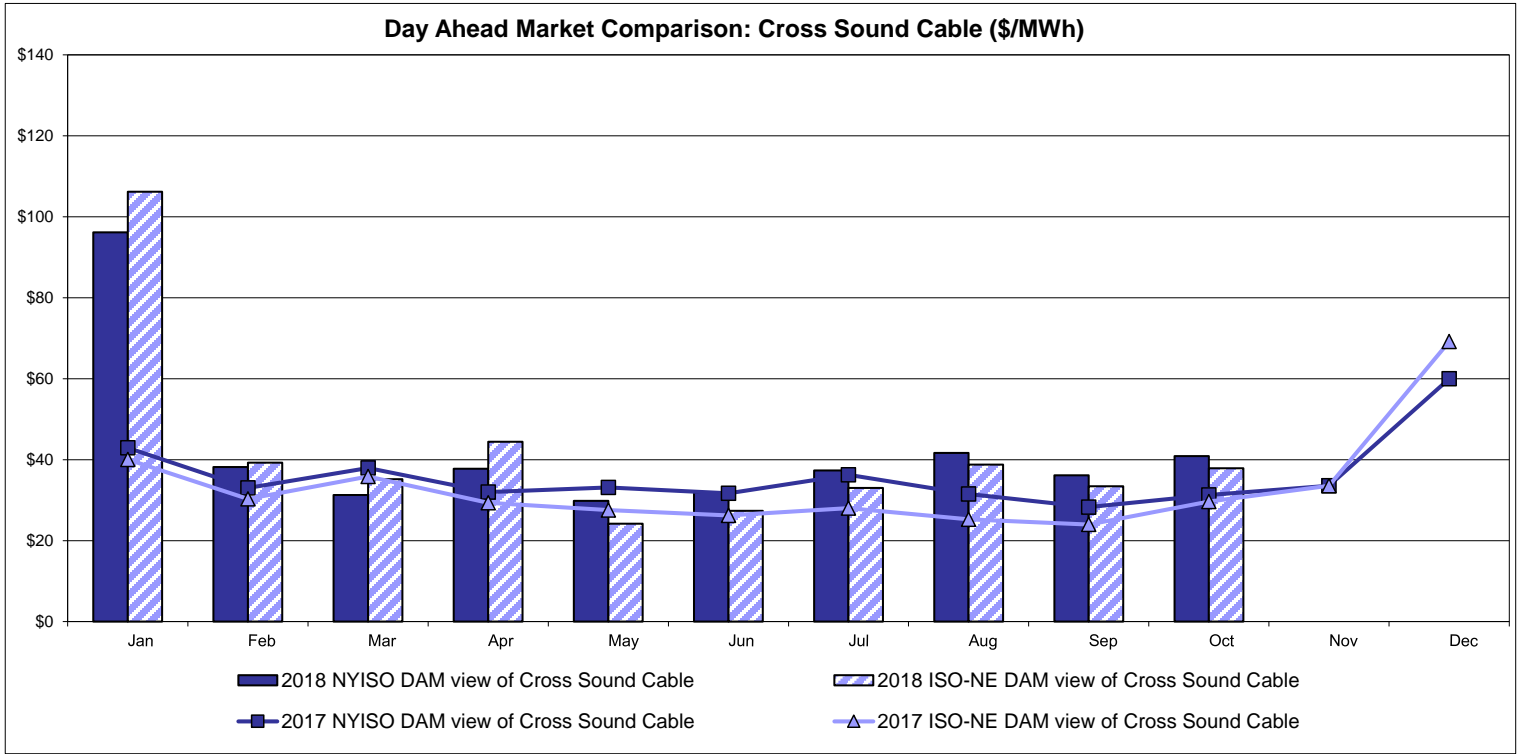


Real Time Market External Zone Comparison - Ontario IESO (\$/MWh)



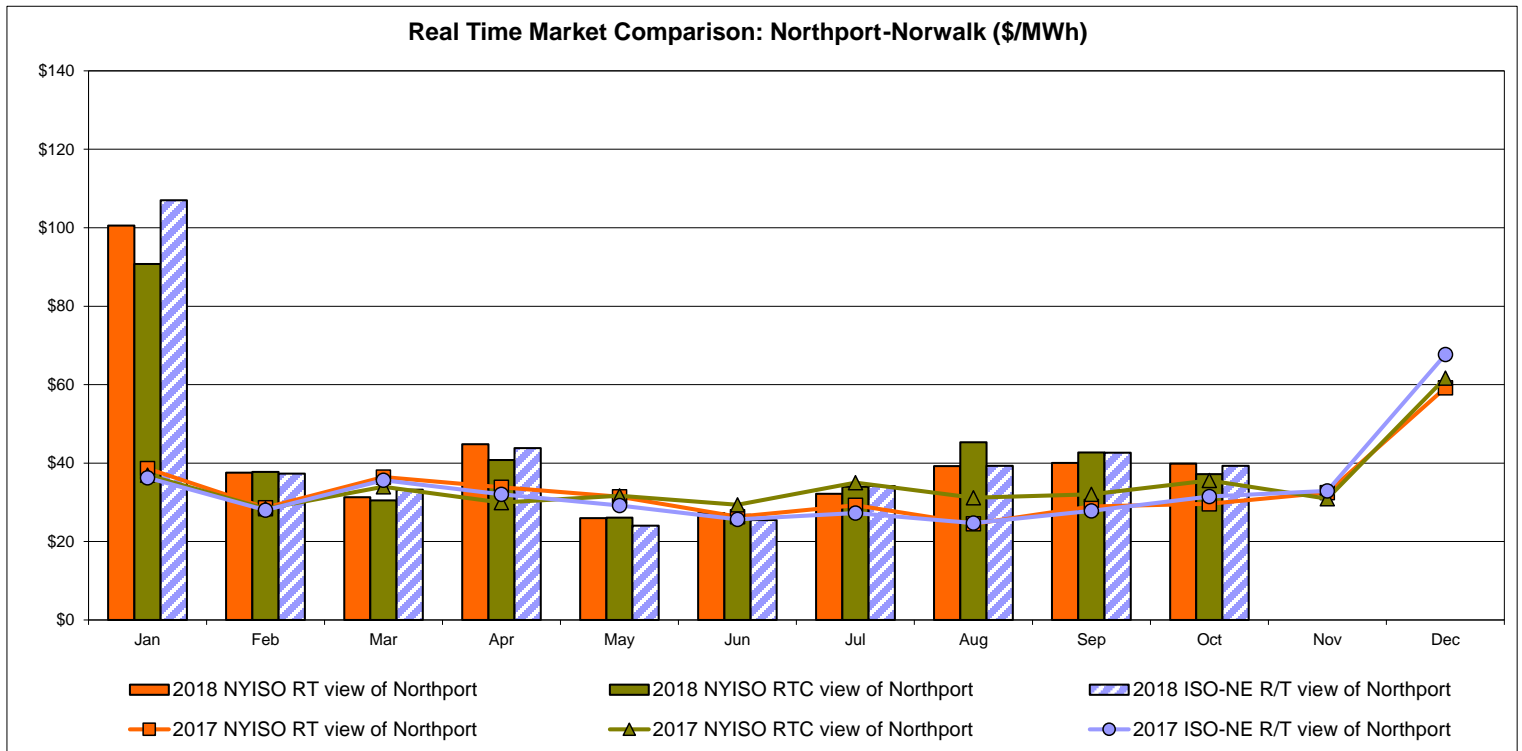
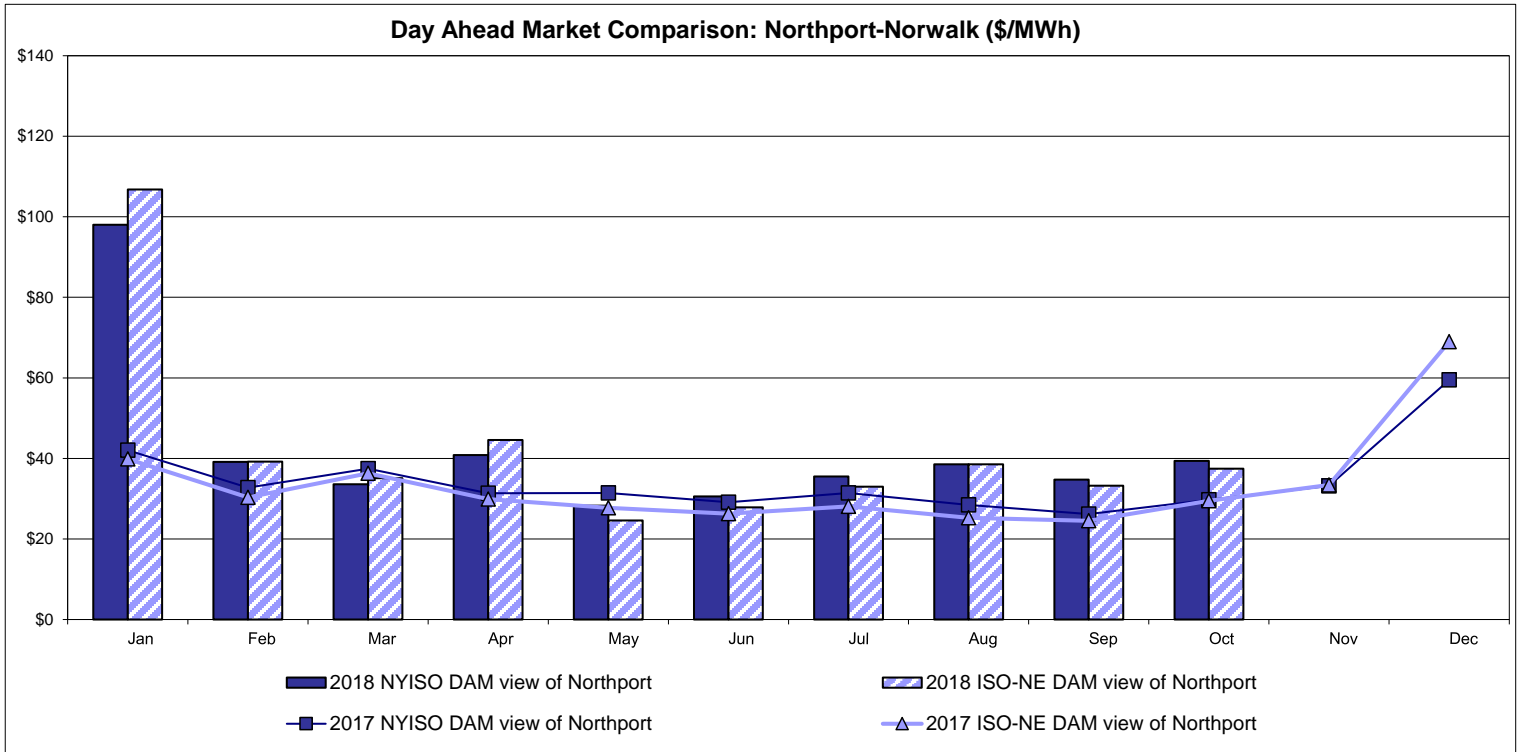
Notes: Exchange factor used for October 2018 was 0.768994155644417 to US
 HOEP: Hourly Ontario Energy Price
 Pre-Dispatch: Projected Energy Price

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.

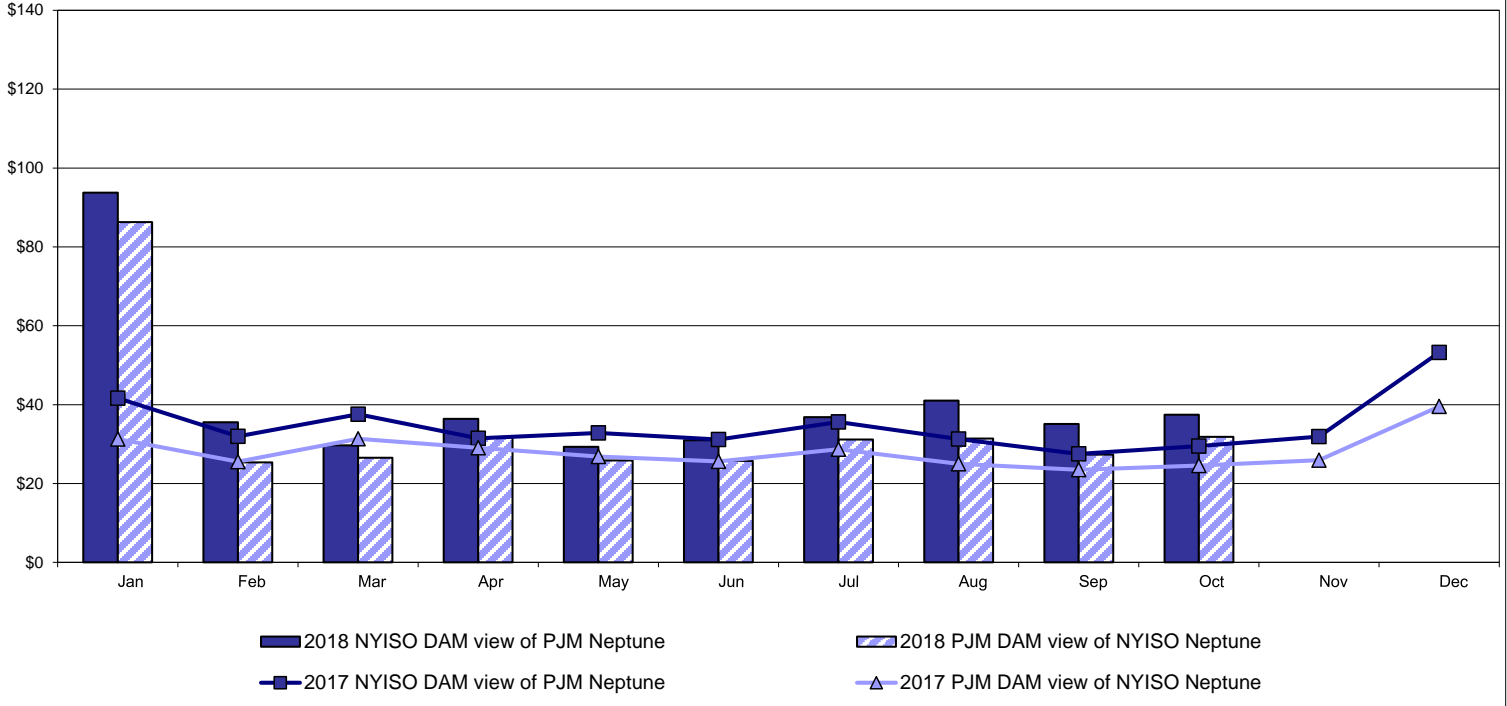
External Controllable Line: Northport - Norwalk (New England)



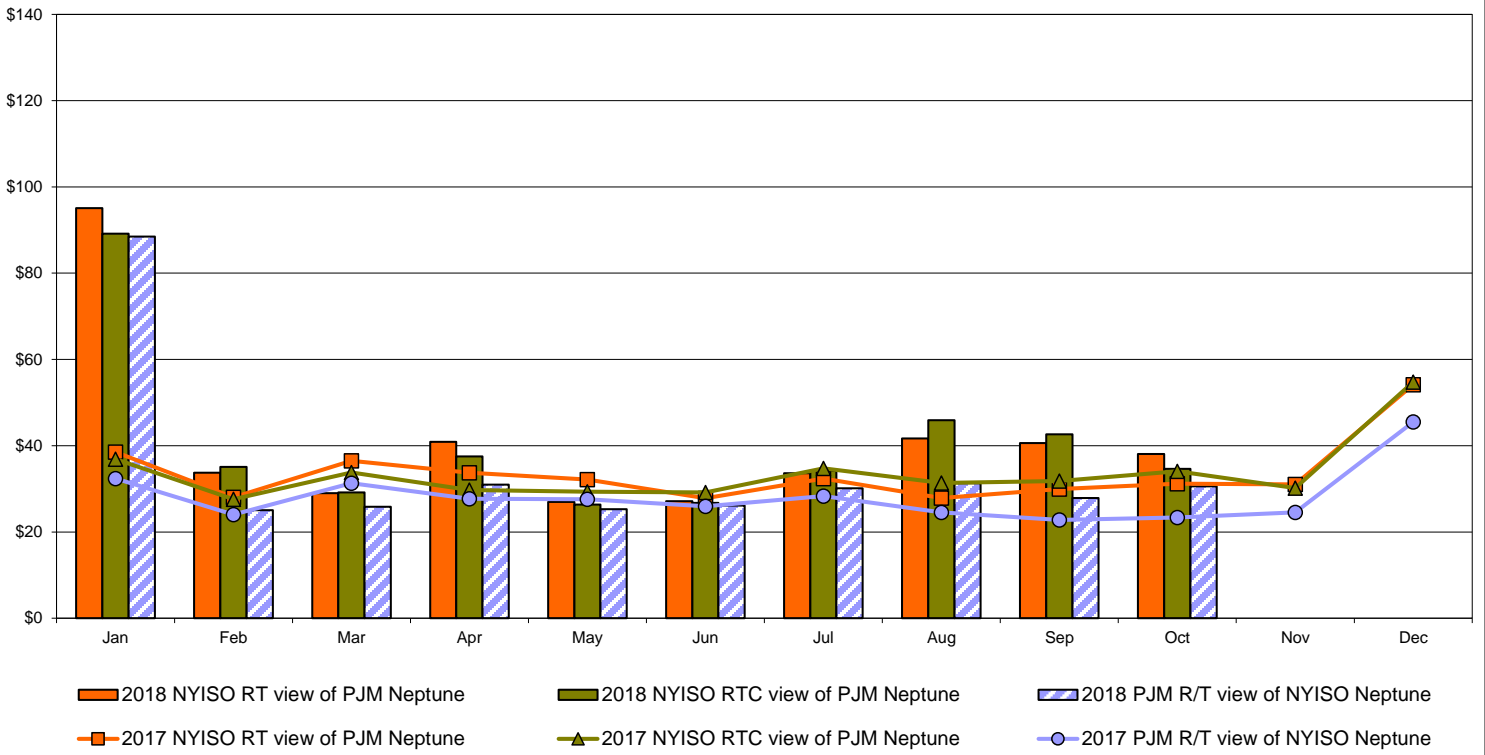
Note:
 ISO-NE Forecast is an advisory posting @ 18:00 day before.
 The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.
 The DAM and R/T prices at the 1385 interface are used for NYISO.

External Controllable Line: Neptune (PJM)

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

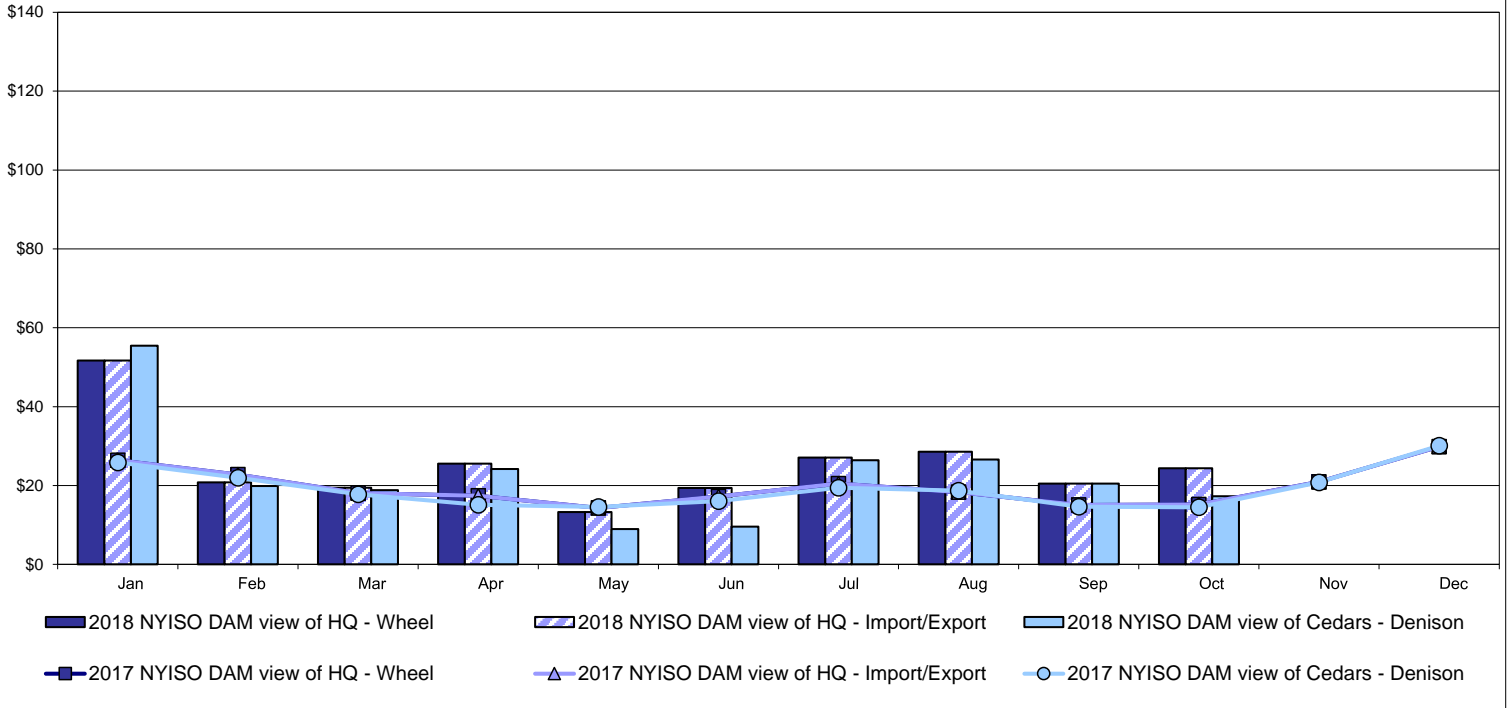


Real Time Market Comparison: Neptune (\$/MWh)

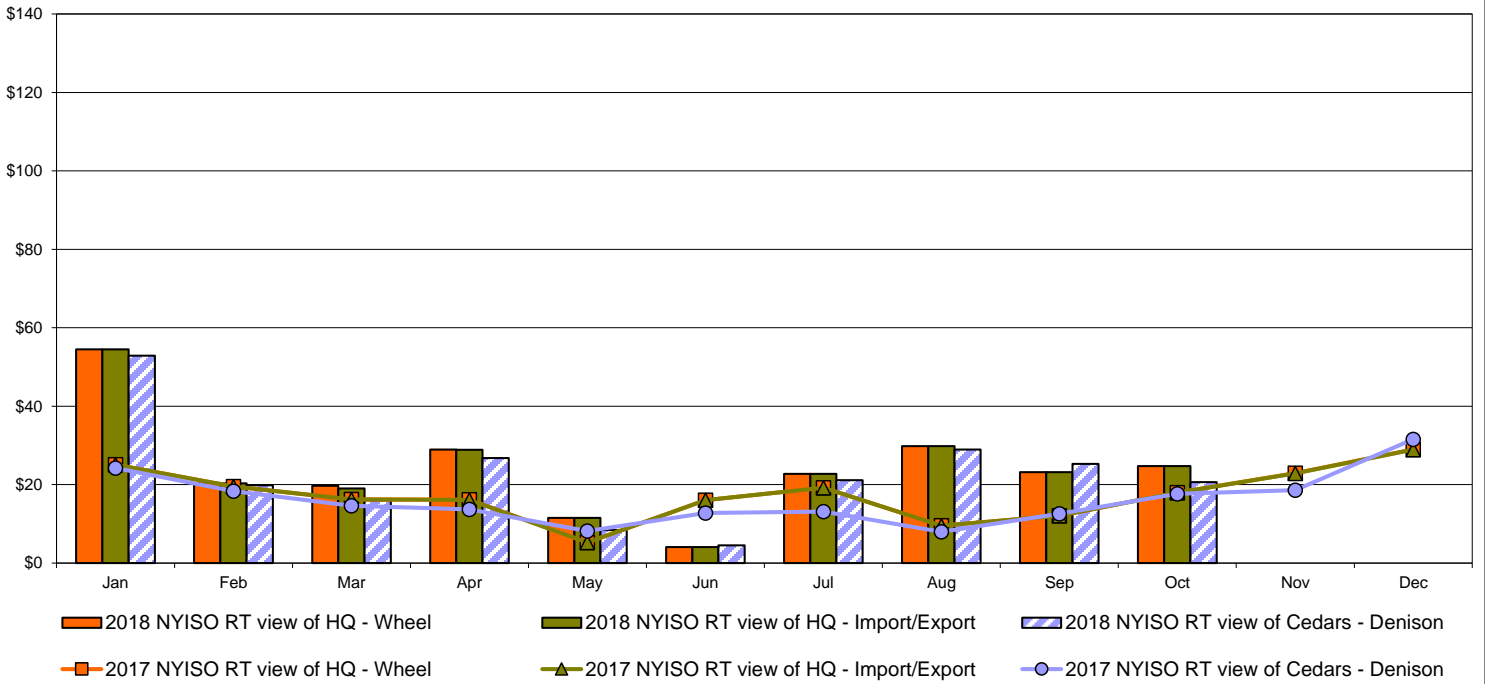


External Comparison Hydro-Quebec

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

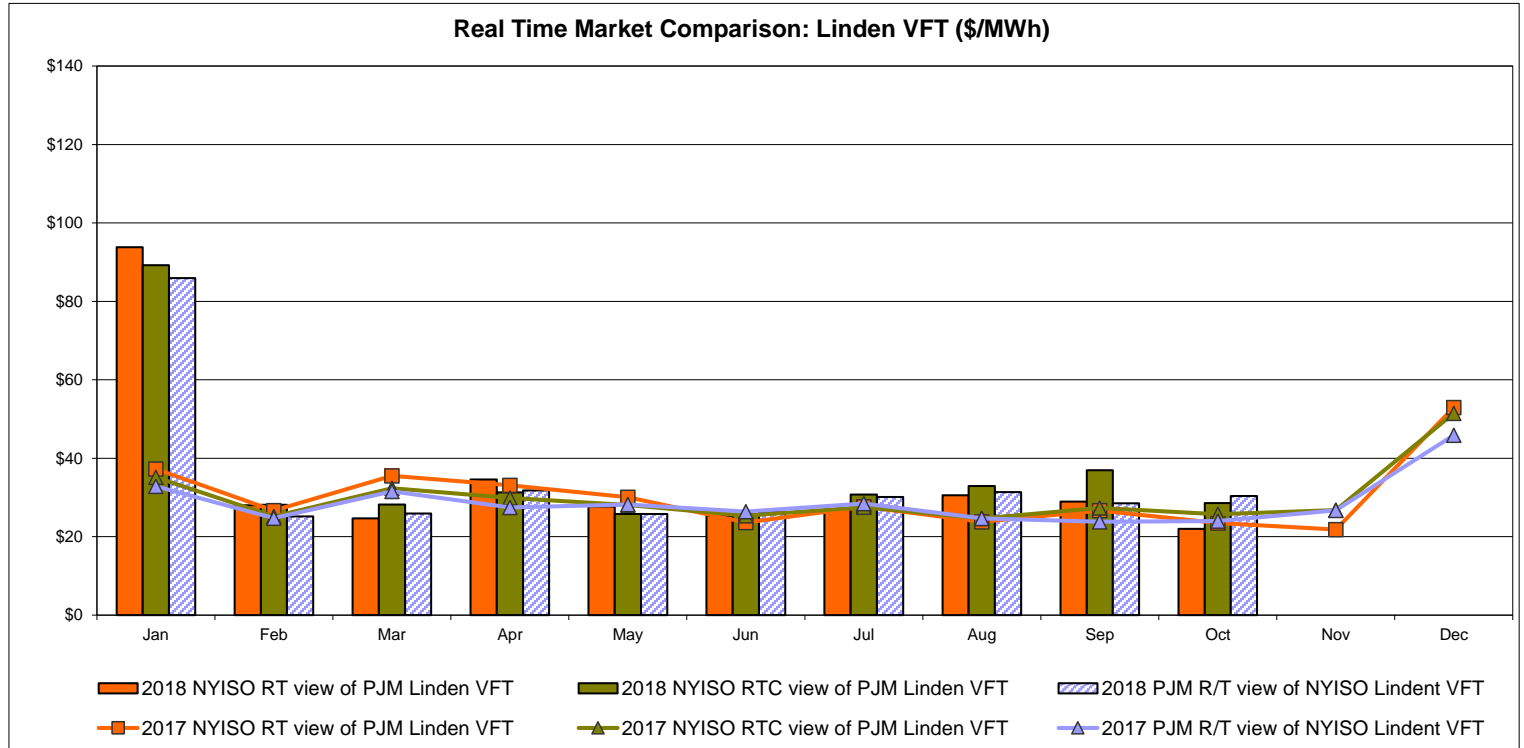
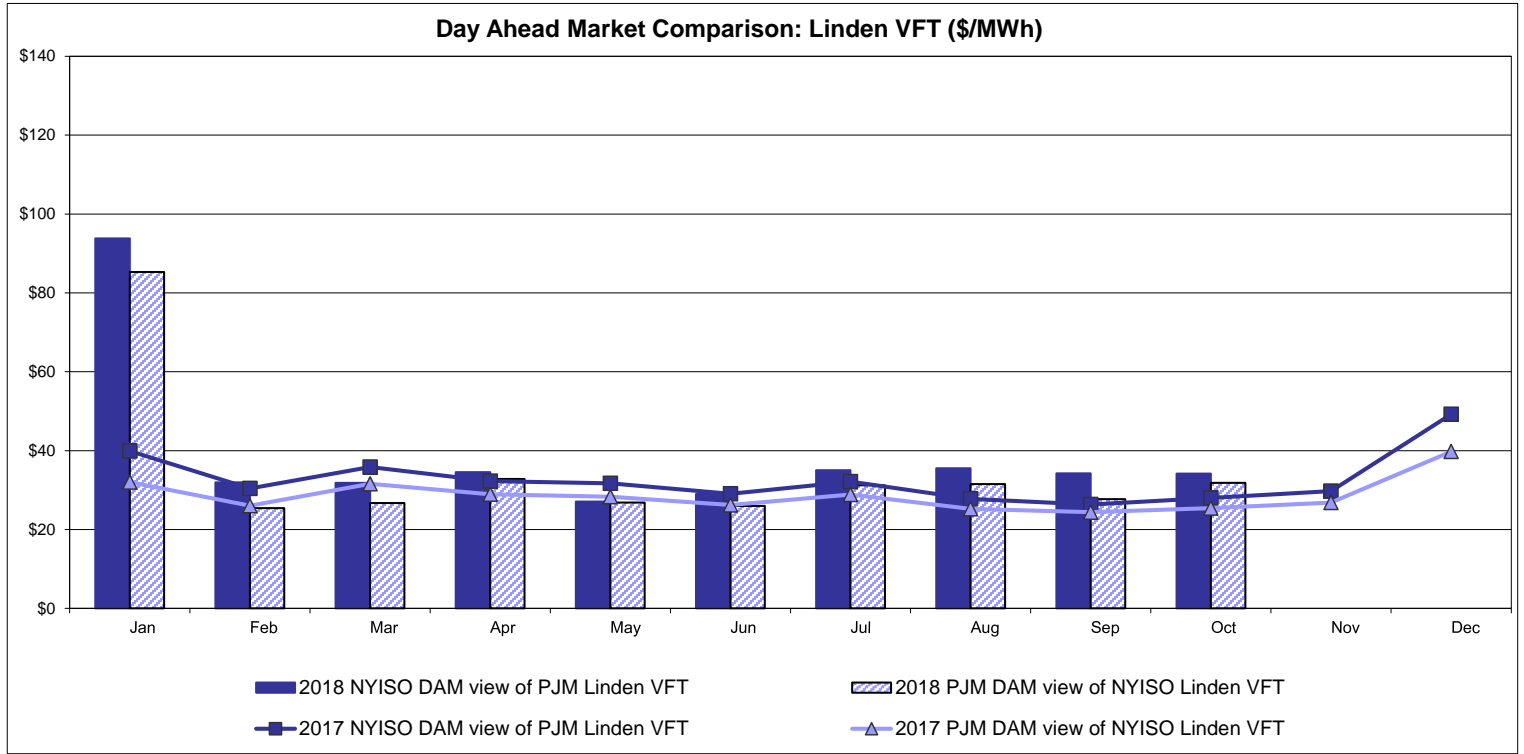


Real Time Market External Zone Comparison - HQ (\$/MWh)

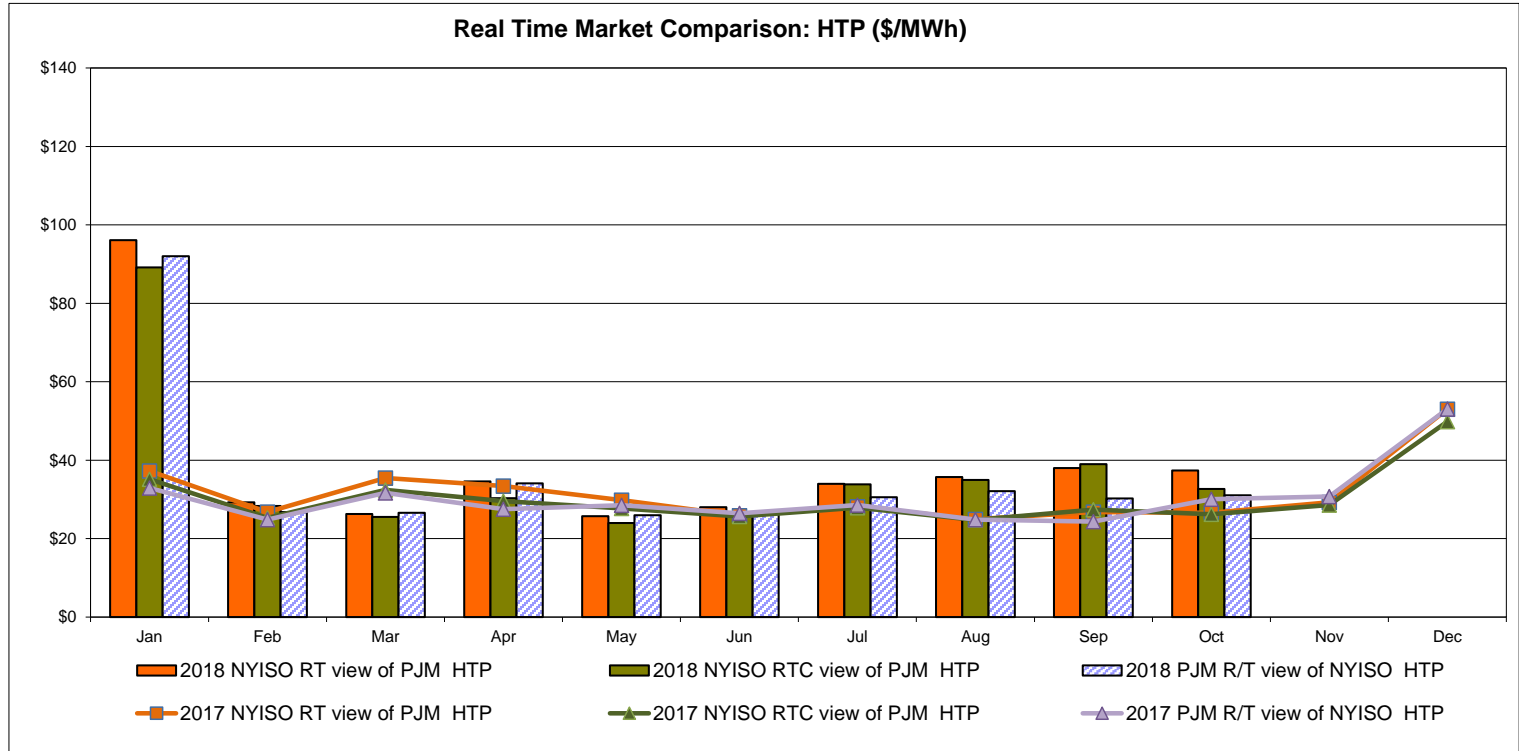
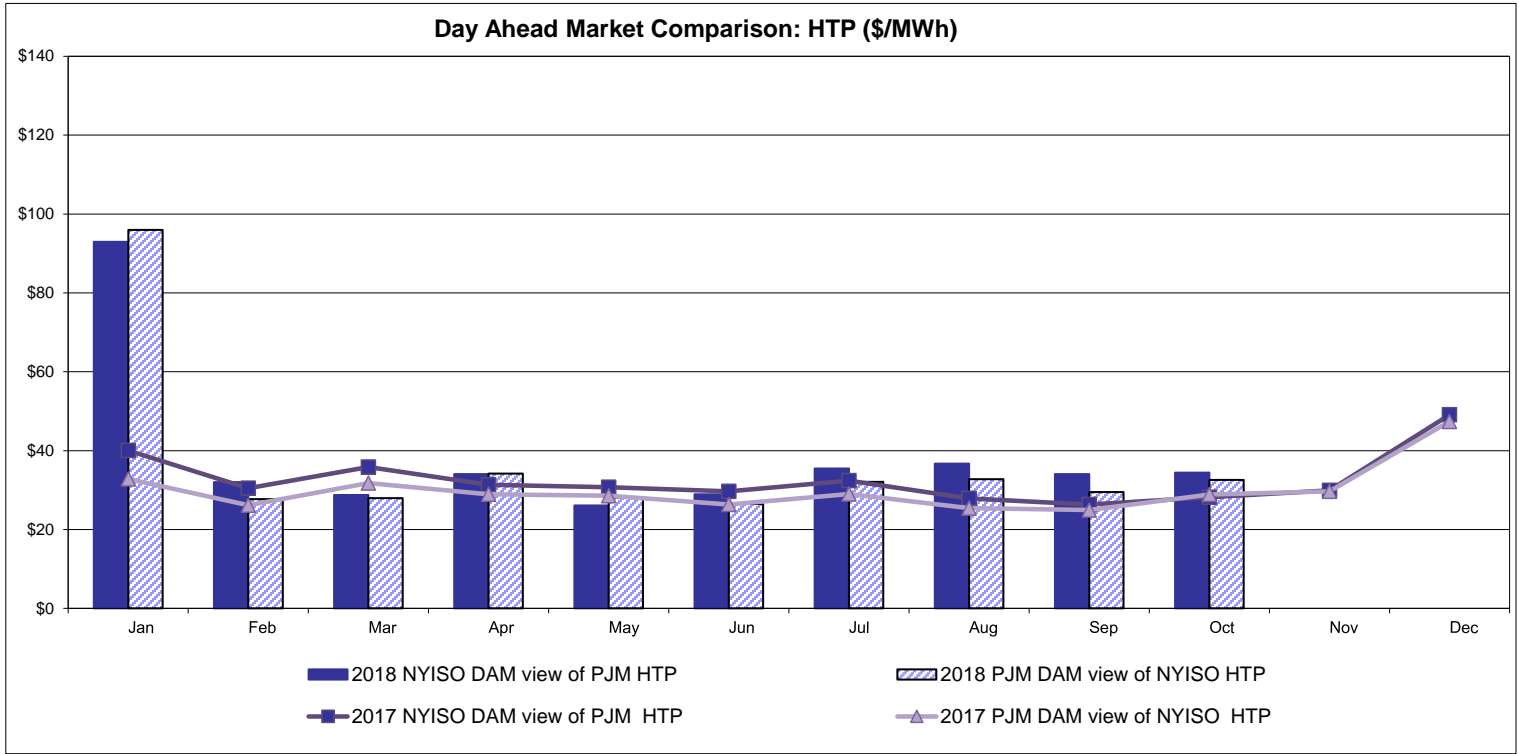


Note:
Hydro-Quebec Prices are unavailable.

External Controllable Line: Linden VFT (PJM)



External Controllable Line: Hudson (PJM)

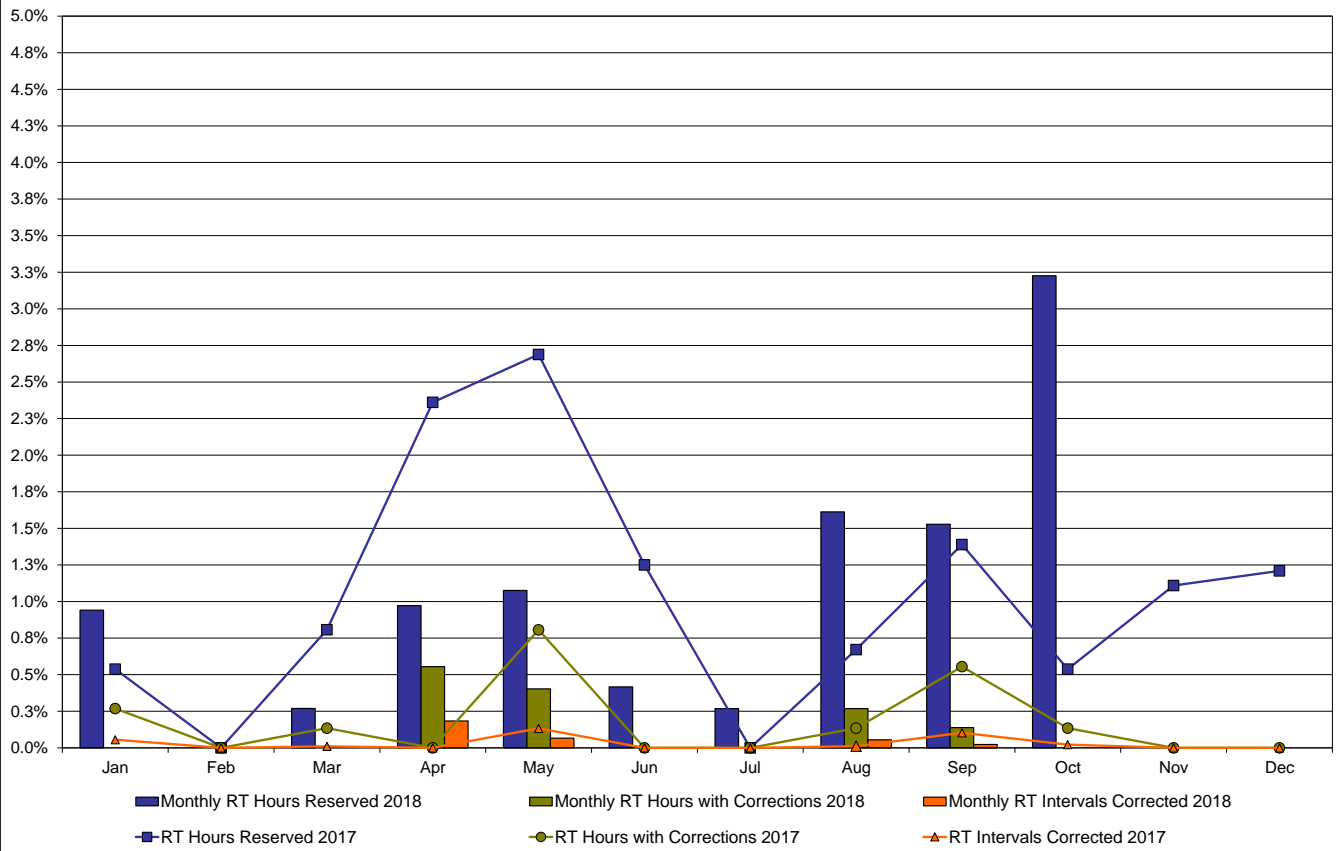


NYISO Real Time Price Correction Statistics

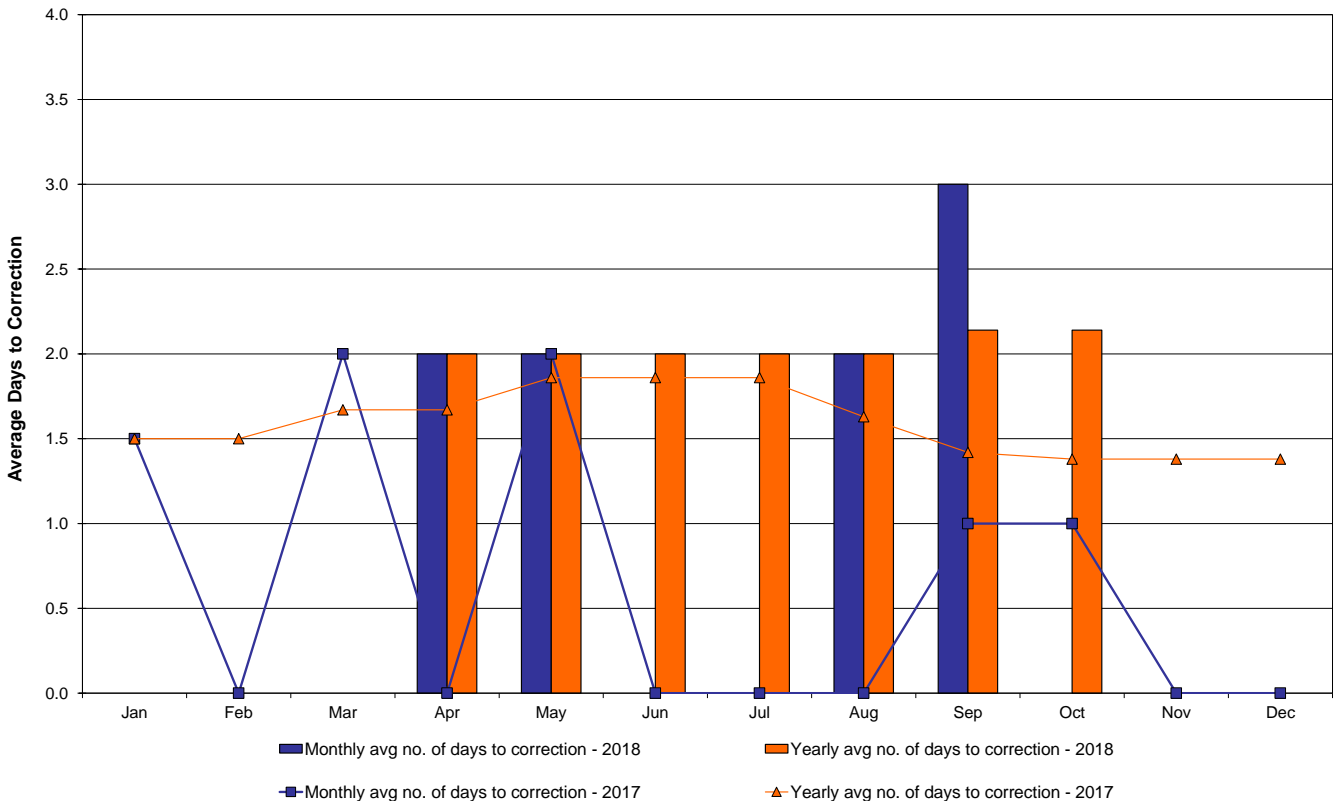
2018		January	February	March	April	May	June	July	August	September	October	November	December
Hour Corrections													
Number of hours with corrections	in the month	0	0	0	4	3	0	0	2	1	0		
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744		
% of hours with corrections	in the month	0.00%	0.00%	0.00%	0.56%	0.40%	0.00%	0.00%	0.27%	0.14%	0.00%		
% of hours with corrections	year-to-date	0.00%	0.00%	0.00%	0.14%	0.19%	0.16%	0.14%	0.15%	0.15%	0.14%		
Interval Corrections													
Number of intervals corrected	in the month	0	0	0	16	6	0	0	5	2	0		
Number of intervals	in the month	9,021	8,112	9,002	8,717	9,033	8,723	9,021	9,071	8,723	8,990		
% of intervals corrected	in the month	0.00%	0.00%	0.00%	0.18%	0.07%	0.00%	0.00%	0.06%	0.02%	0.00%		
% of intervals corrected	year-to-date	0.00%	0.00%	0.00%	0.05%	0.05%	0.04%	0.04%	0.04%	0.04%	0.03%		
Hours Reserved													
Number of hours reserved	in the month	7	0	2	7	8	3	2	12	11	24		
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744		
% of hours reserved	in the month	0.94%	0.00%	0.27%	0.97%	1.08%	0.42%	0.27%	1.61%	1.53%	3.23%		
% of hours reserved	year-to-date	0.94%	0.49%	0.42%	0.56%	0.66%	0.62%	0.57%	0.70%	0.79%	1.04%		
Days to Correction *													
Avg. number of days to correction	in the month	0.00	0.00	0.00	2.00	2.00	0.00	0.00	2.00	3.00	0.00		
Avg. number of days to correction	year-to-date	0.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.14	2.14		
Days Without Corrections													
Days without corrections	in the month	31	28	31	28	28	30	31	30	29	31		
Days without corrections	year-to-date	31	59	90	118	146	176	207	237	266	297		
2017		January	February	March	April	May	June	July	August	September	October	November	December
Hour Corrections													
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%
Interval Corrections													
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%
Hours Reserved													
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%
Days to Correction *													
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
Days Without Corrections													
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; for June 2018 forward, business days from market date

Percentage of Real-Time Corrections

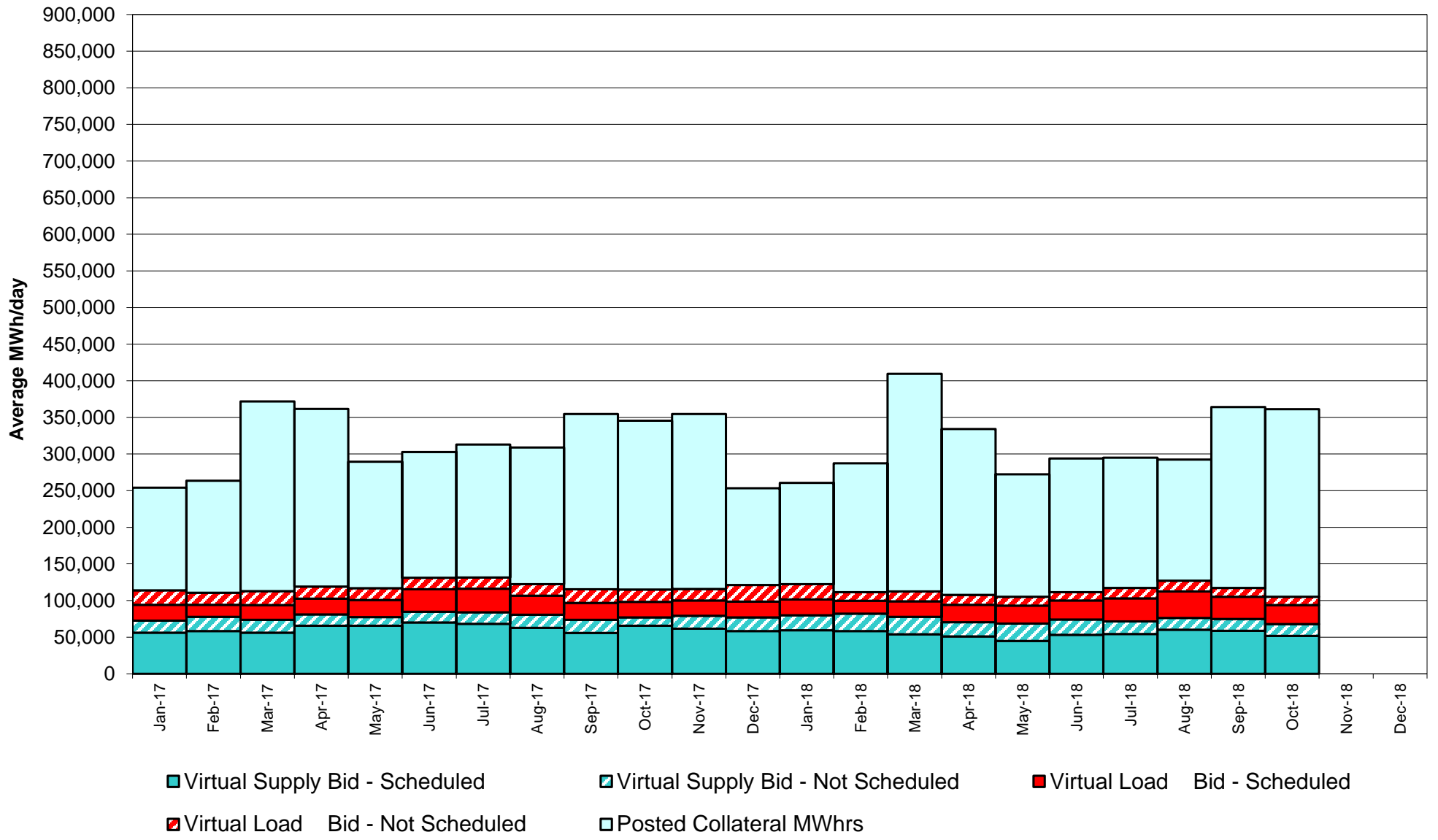


Annual average time period for making Price Corrections (from reservation date) *

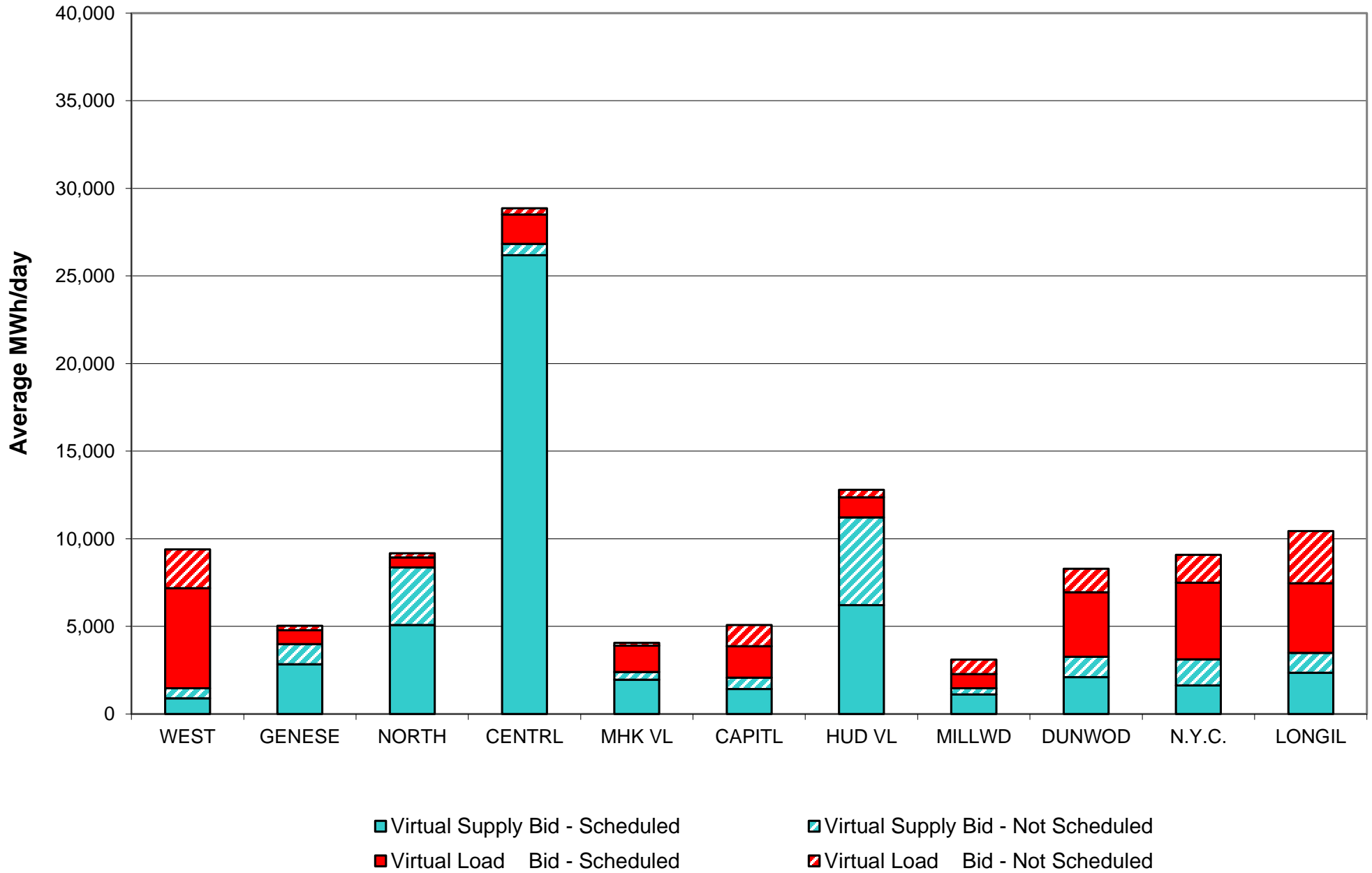


*Calendar days from reservation date; for June 2018 forward, business days from market date

NYISO Virtual Trading Average MWh per day



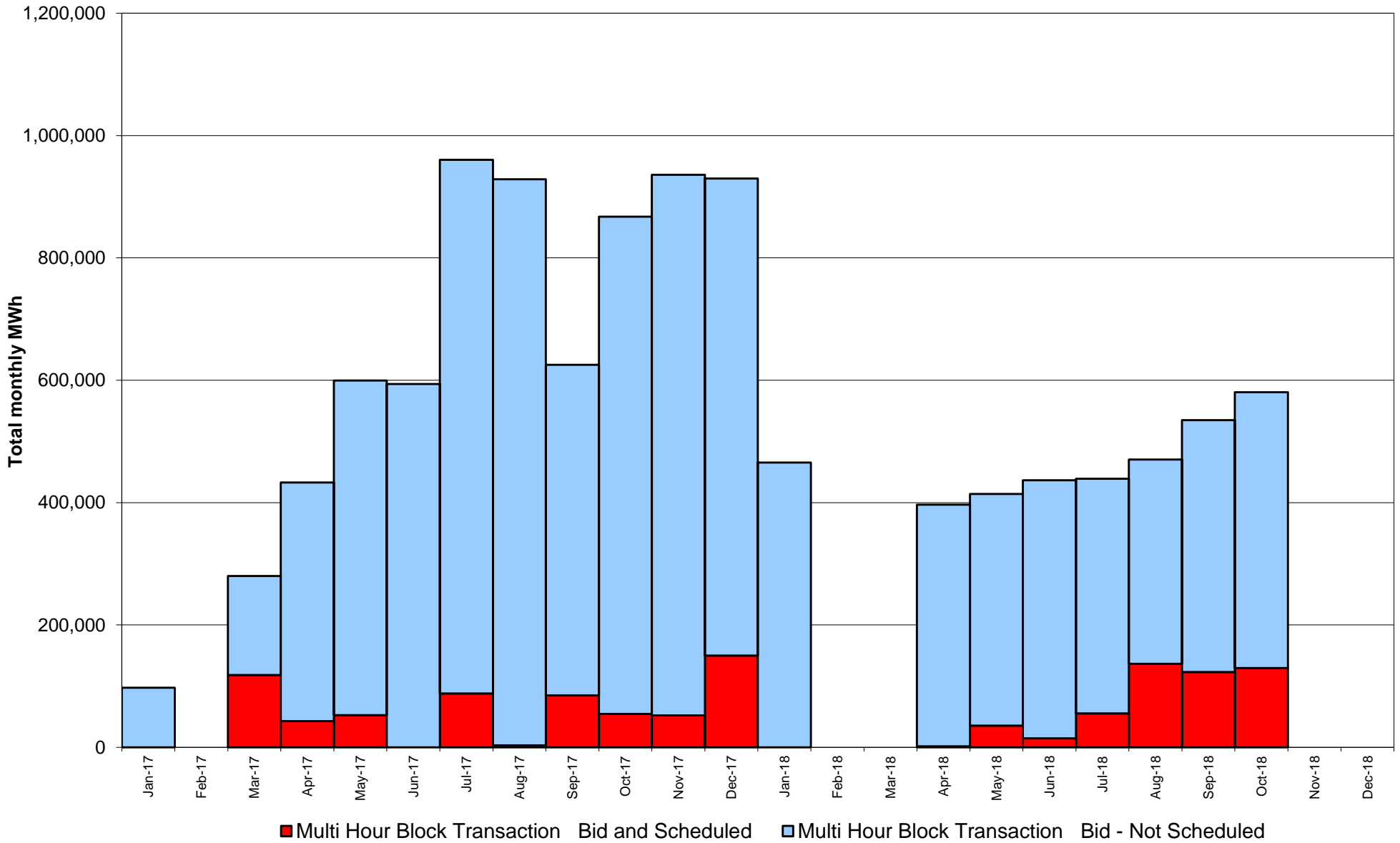
Virtual Load and Supply Zonal Statistics through October 31, 2018



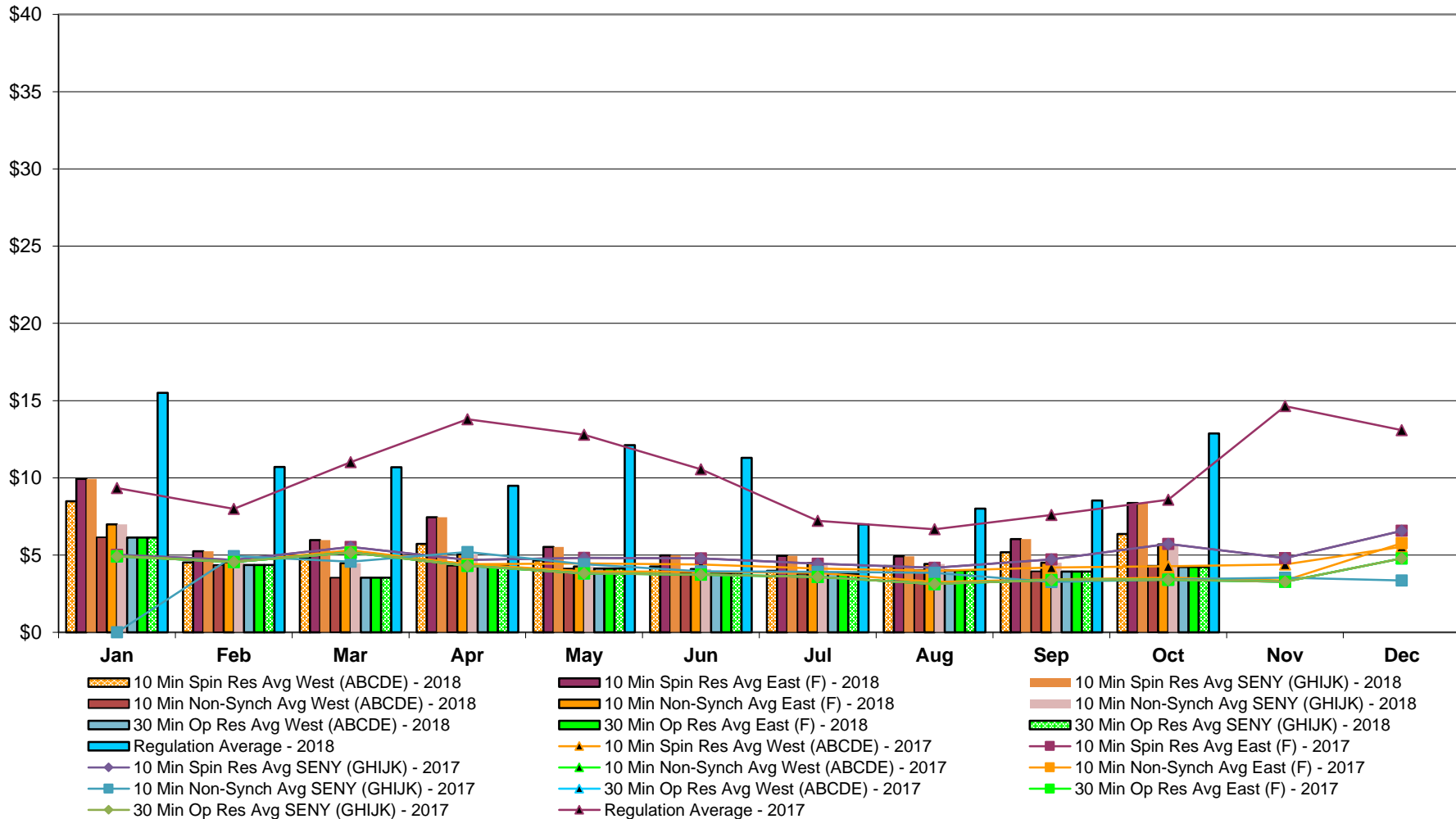
Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2018

		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
WEST	Jan-18	4,761	4,241	1,938	427	MHK VL	Jan-18	763	456	2,040	266	DUNWOD	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	7,003	4,102	760	681		Jun-18	440	100	3,697	603		Jun-18	2,261	258	2,023	515
	Jul-18	6,144	4,151	894	795		Jul-18	740	152	3,340	393		Jul-18	3,884	685	2,764	566
	Aug-18	7,058	3,301	1,826	720		Aug-18	714	253	3,007	293		Aug-18	4,756	1,343	2,720	997
	Sep-18	7,300	3,587	869	527		Sep-18	863	185	2,513	411		Sep-18	2,694	742	3,280	448
	Oct-18	5,715	2,202	894	580		Oct-18	1,510	162	1,958	434		Oct-18	3,682	1,342	2,108	1,157
	Nov-18						Nov-18						Nov-18				
	Dec-18						Dec-18						Dec-18				
	GENESE	Jan-18	554	310	3,772		2,739	CAPITL	Jan-18	2,291	1,751		1,887	2,212	N.Y.C.	Jan-18	4,302
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		389	100	2,222	563	Jun-18	812		112	1,818	1,336	Jun-18	6,786	2,924		2,210	1,888
Jul-18		476	123	2,913	1,062	Jul-18	869		219	2,818	1,381	Jul-18	9,126	3,514		3,011	1,420
Aug-18		535	269	2,994	1,264	Aug-18	1,361		242	3,509	1,578	Aug-18	11,778	3,421		2,802	1,494
Sep-18		684	294	3,261	716	Sep-18	1,328		373	1,878	1,521	Sep-18	6,762	1,754		2,029	1,501
Oct-18		796	241	2,836	1,158	Oct-18	1,800		1,204	1,418	659	Oct-18	4,376	1,599		1,635	1,479
Nov-18						Nov-18						Nov-18					
Dec-18						Dec-18						Dec-18					
NORTH		Jan-18	274	282	8,259	3,265	HUD VL		Jan-18	1,562	1,285	5,029	7,218	LONGIL		Jan-18	3,335
	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	514	317	5,178	3,657	Jun-18		1,408	573	4,144	8,407	Jun-18	4,621		2,235	1,618	2,440
	Jul-18	428	423	5,684	2,542	Jul-18		2,796	550	3,087	5,200	Jul-18	4,610		3,179	1,278	2,775
	Aug-18	578	340	5,639	2,650	Aug-18		2,088	476	7,039	4,344	Aug-18	4,112		3,156	3,475	1,715
	Sep-18	815	247	6,331	4,123	Sep-18		1,364	576	6,306	4,253	Sep-18	4,881		3,205	3,104	1,556
	Oct-18	578	237	5,077	3,287	Oct-18		1,156	429	6,205	5,009	Oct-18	3,972		2,986	2,353	1,135
	Nov-18					Nov-18						Nov-18					
	Dec-18					Dec-18						Dec-18					
	CENTRL	Jan-18	983	434	28,975	647		MILLWD	Jan-18	923	988	2,033	757		NYISO	Jan-18	21,542
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		730	164	28,504	501	Jun-18	938		302	1,223	234	Jun-18	25,903	11,189		53,397	20,825
Jul-18		1,093	273	27,687	534	Jul-18	1,193		1,051	940	358	Jul-18	31,359	14,319		54,416	17,027
Aug-18		1,911	408	26,279	566	Aug-18	1,112		1,580	916	520	Aug-18	36,003	14,790		60,205	16,141
Sep-18		2,648	356	28,114	671	Sep-18	912		813	1,087	403	Sep-18	30,252	12,132		58,770	16,130
Oct-18		1,682	358	26,189	642	Oct-18	803		832	1,115	357	Oct-18	26,069	11,590		51,789	15,896
Nov-18						Nov-18						Nov-18					
Dec-18						Dec-18						Dec-18					

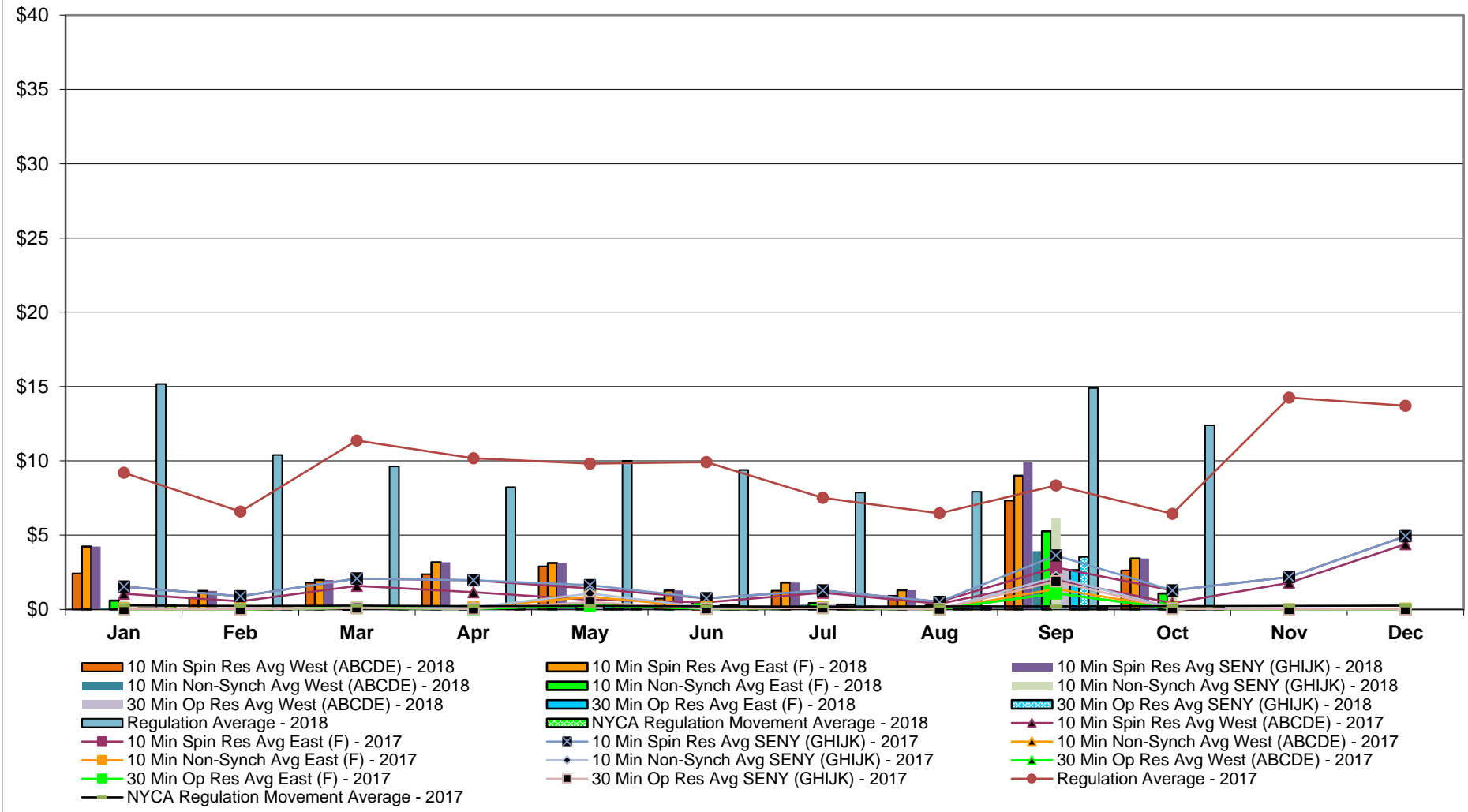
NYISO Multi Hour Block Transactions Monthly Total MWh



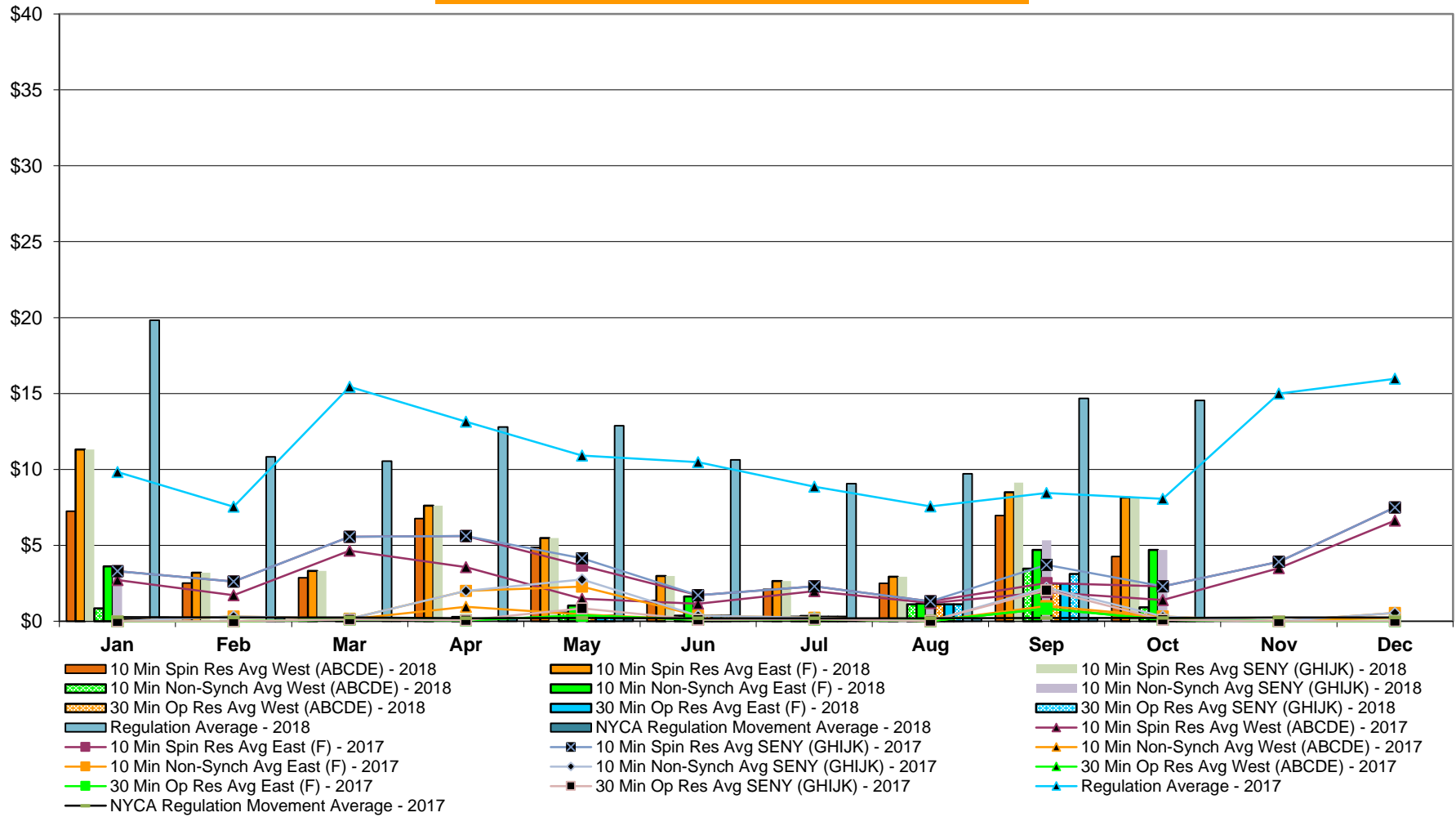
NYISO Monthly Average Ancillary Service Prices Day Ahead Market 2017 - 2018



NYISO Monthly Average Ancillary Service Prices RTC Market 2017 - 2018



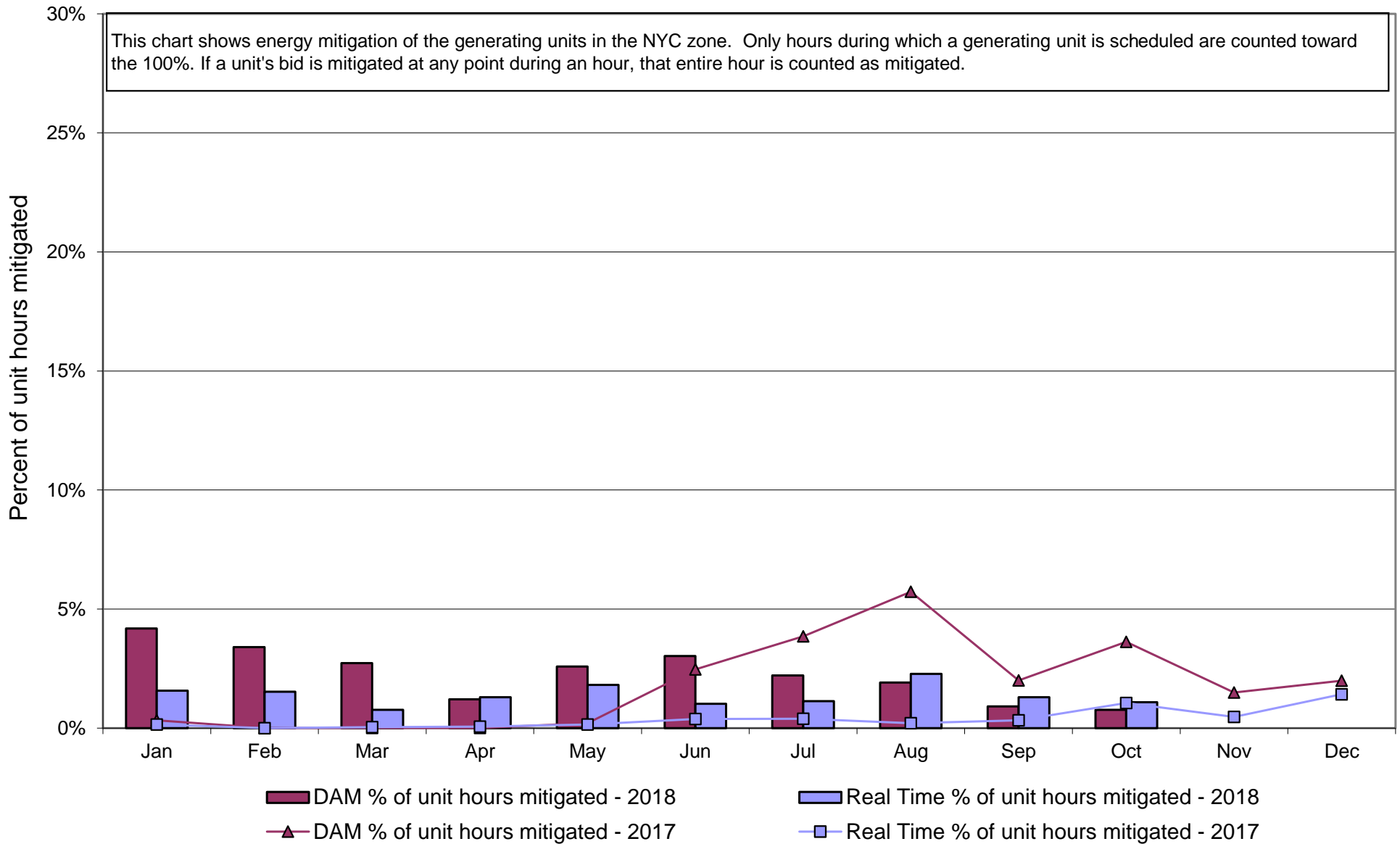
NYISO Monthly Average Ancillary Service Prices Real Time Market 2017 - 2018



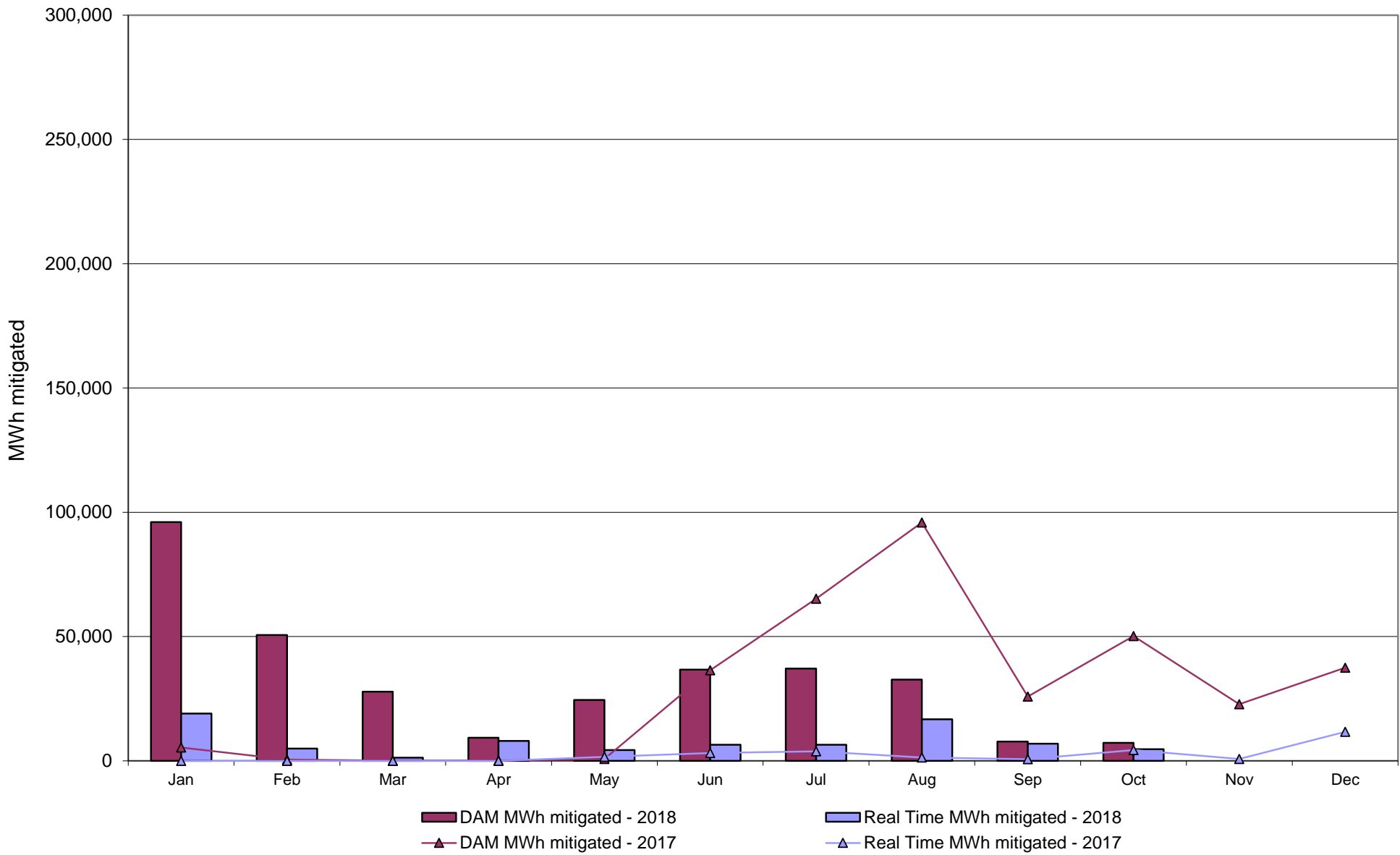
NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH)

<u>2018</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>
Day Ahead Market												
10 Min Spin SENEY (GHIJK)	9.93	5.24	5.97	7.45	5.52	4.98	4.95	4.91	6.04	8.37		
10 Min Spin East (F)	9.93	5.24	5.97	7.45	5.52	4.98	4.95	4.91	6.04	8.37		
10 Min Spin West (ABCDE)	8.49	4.53	4.78	5.73	4.65	4.26	3.98	4.30	5.18	6.36		
10 Min Non Synch SENEY (GHIJK)	6.99	4.54	4.48	5.05	4.26	4.09	4.49	4.43	4.51	5.69		
10 Min Non Synch East (F)	6.99	4.54	4.48	5.05	4.26	4.09	4.49	4.43	4.51	5.69		
10 Min Non Synch West (ABCDE)	6.15	4.36	3.54	4.31	4.13	3.85	3.80	4.03	3.95	4.31		
30 Min SENEY (GHIJK)	6.14	4.36	3.54	4.31	4.13	3.85	3.79	4.02	3.94	4.22		
30 Min East (F)	6.14	4.36	3.54	4.31	4.13	3.85	3.79	4.02	3.94	4.22		
30 Min West (ABCDE)	6.14	4.36	3.54	4.31	4.13	3.85	3.79	4.02	3.94	4.22		
Regulation	15.51	10.70	10.68	9.49	12.11	11.30	6.99	8.00	8.54	12.88		
RTC Market												
10 Min Spin SENEY (GHIJK)	4.23	1.24	1.98	3.17	3.13	1.28	1.81	1.29	9.90	3.43		
10 Min Spin East (F)	4.23	1.24	1.98	3.17	3.13	1.28	1.81	1.29	9.90	3.43		
10 Min Spin West (ABCDE)	2.43	0.82	1.79	2.38	2.91	0.74	1.27	0.93	7.33	2.63		
10 Min Non Synch SENEY (GHIJK)	0.59	0.03	0.01	0.22	0.42	0.49	0.42	0.27	6.14	1.07		
10 Min Non Synch East (F)	0.59	0.03	0.01	0.22	0.42	0.49	0.42	0.27	5.25	1.07		
10 Min Non Synch West (ABCDE)	0.08	0.02	0.00	0.00	0.33	0.27	0.33	0.25	3.92	0.38		
30 Min SENEY (GHIJK)	0.08	0.02	0.00	0.00	0.32	0.27	0.33	0.25	3.55	0.11		
30 Min East (F)	0.08	0.02	0.00	0.00	0.32	0.27	0.33	0.25	2.65	0.11		
30 Min West (ABCDE)	0.08	0.02	0.00	0.00	0.32	0.27	0.33	0.25	2.65	0.11		
Regulation	15.17	10.40	9.63	8.22	10.01	9.39	7.87	7.92	14.90	12.40		
NYCA Regulation Movement	0.26	0.21	0.20	0.22	0.19	0.16	0.19	0.19	0.20	0.21		
Real Time Market												
10 Min Spin SENEY (GHIJK)	11.31	3.19	3.31	7.62	5.48	2.98	2.65	2.93	9.13	8.14		
10 Min Spin East (F)	11.31	3.19	3.31	7.62	5.48	2.98	2.65	2.93	8.50	8.14		
10 Min Spin West (ABCDE)	7.24	2.52	2.86	6.77	4.86	1.37	2.10	2.50	6.96	4.26		
10 Min Non Synch SENEY (GHIJK)	3.61	0.01	0.19	0.28	1.03	1.63	0.35	1.16	5.33	4.70		
10 Min Non Synch East (F)	3.61	0.01	0.19	0.28	1.03	1.63	0.35	1.16	4.70	4.70		
10 Min Non Synch West (ABCDE)	0.85	0.00	0.00	0.00	0.57	0.37	0.29	1.12	3.47	0.92		
30 Min SENEY (GHIJK)	0.13	0.00	0.00	0.00	0.37	0.37	0.29	1.12	3.11	0.06		
30 Min East (F)	0.13	0.00	0.00	0.00	0.37	0.37	0.29	1.12	2.48	0.06		
30 Min West (ABCDE)	0.13	0.00	0.00	0.00	0.37	0.37	0.29	1.12	2.48	0.06		
Regulation	19.82	10.82	10.54	12.80	12.88	10.62	9.06	9.71	14.67	14.54		
NYCA Regulation Movement	0.24	0.21	0.20	0.21	0.17	0.15	0.18	0.18	0.20	0.21		
2017												
Day Ahead Market												
10 Min Spin SENEY (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 SENEY (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 SENEY (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
RTC Market												
10 Min Spin SENEY (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 SENEY (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 SENEY (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
Real Time Market												
10 Min Spin SENEY (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 SENEY (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 SENEY (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

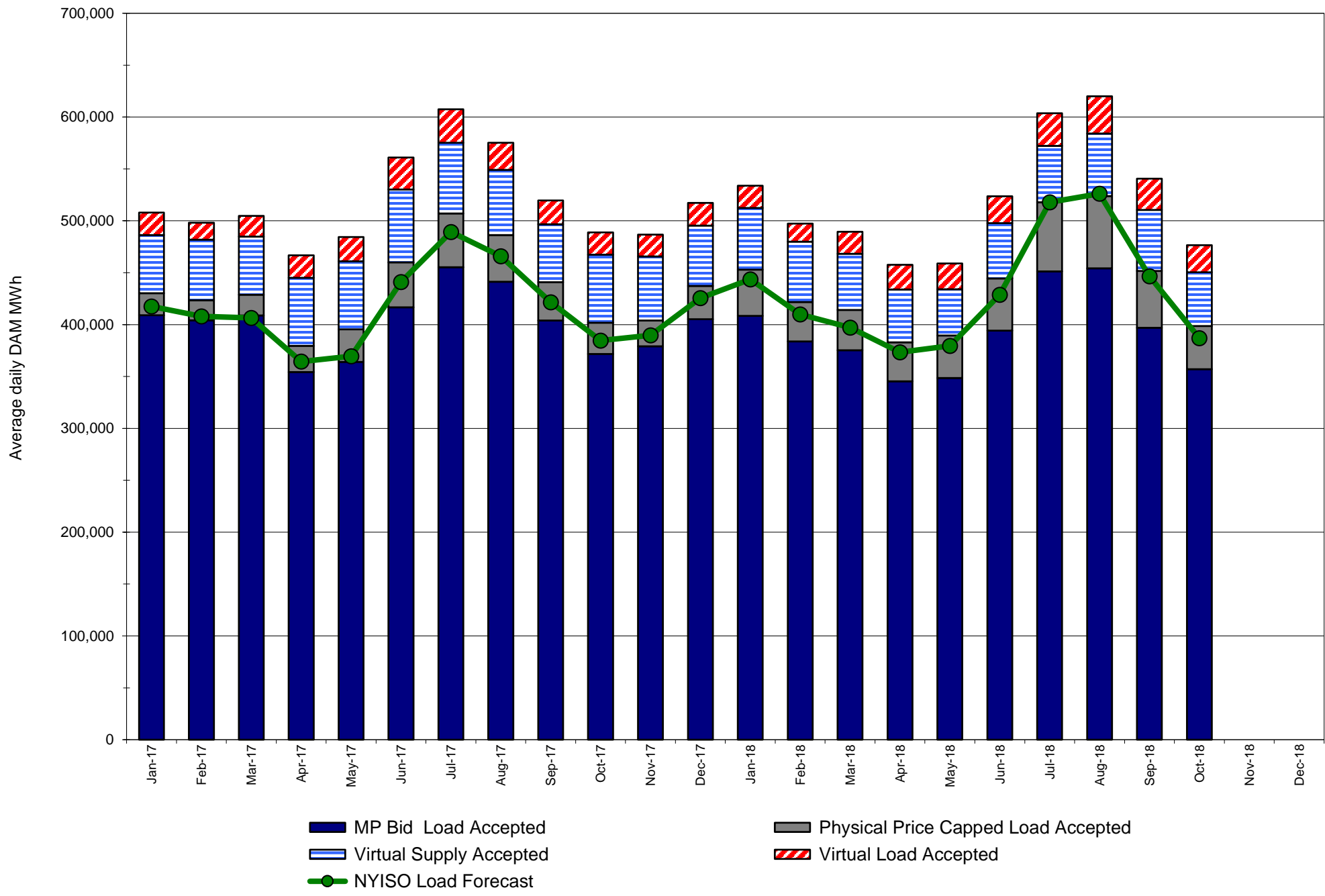
NYISO In City Energy Mitigation - AMP (NYC Zone) 2017 - 2018 Percentage of committed unit-hours mitigated



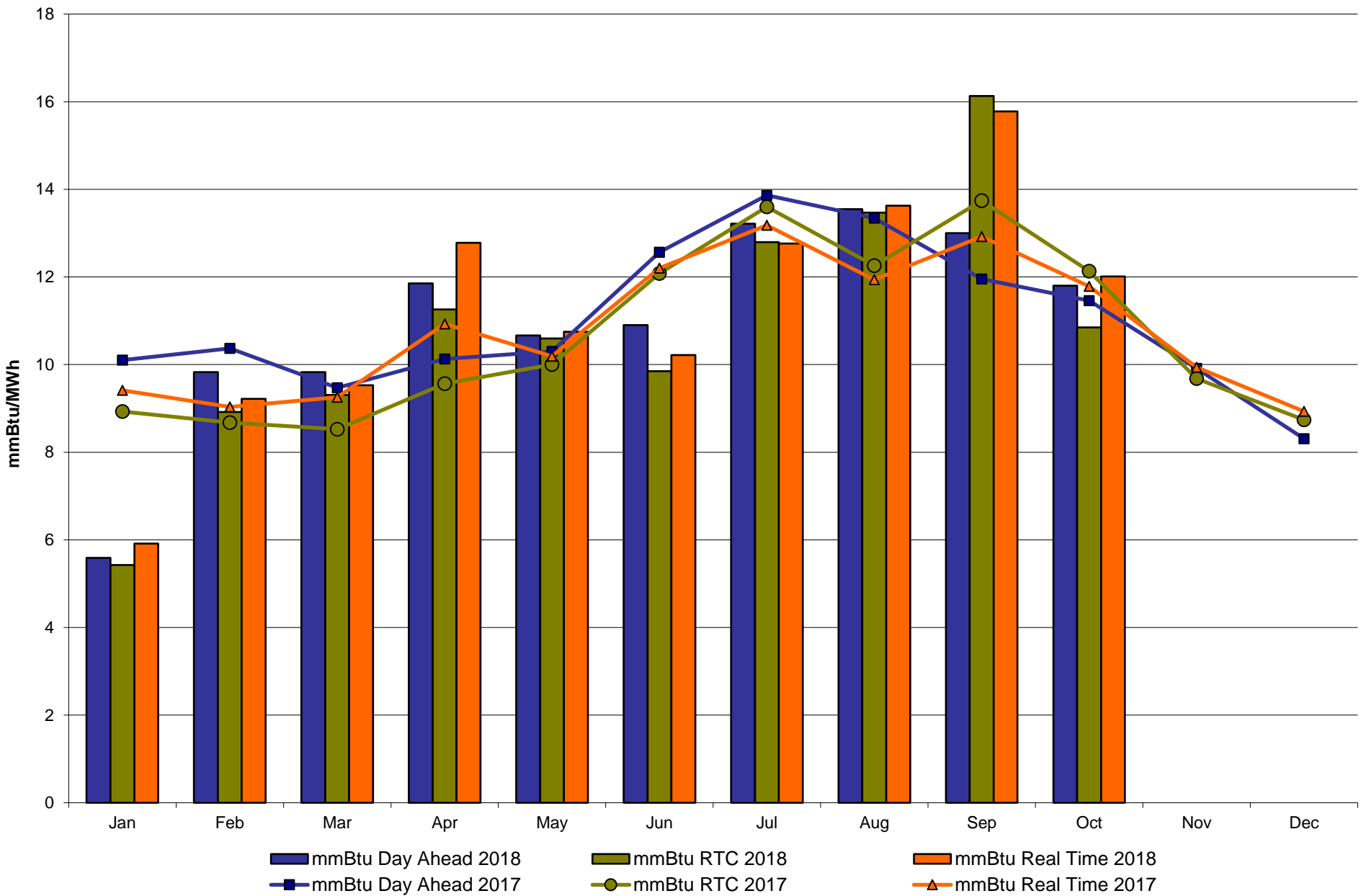
NYISO In City Energy Mitigation (NYC Zone) 2017 - 2018
Monthly megawatt hours mitigated



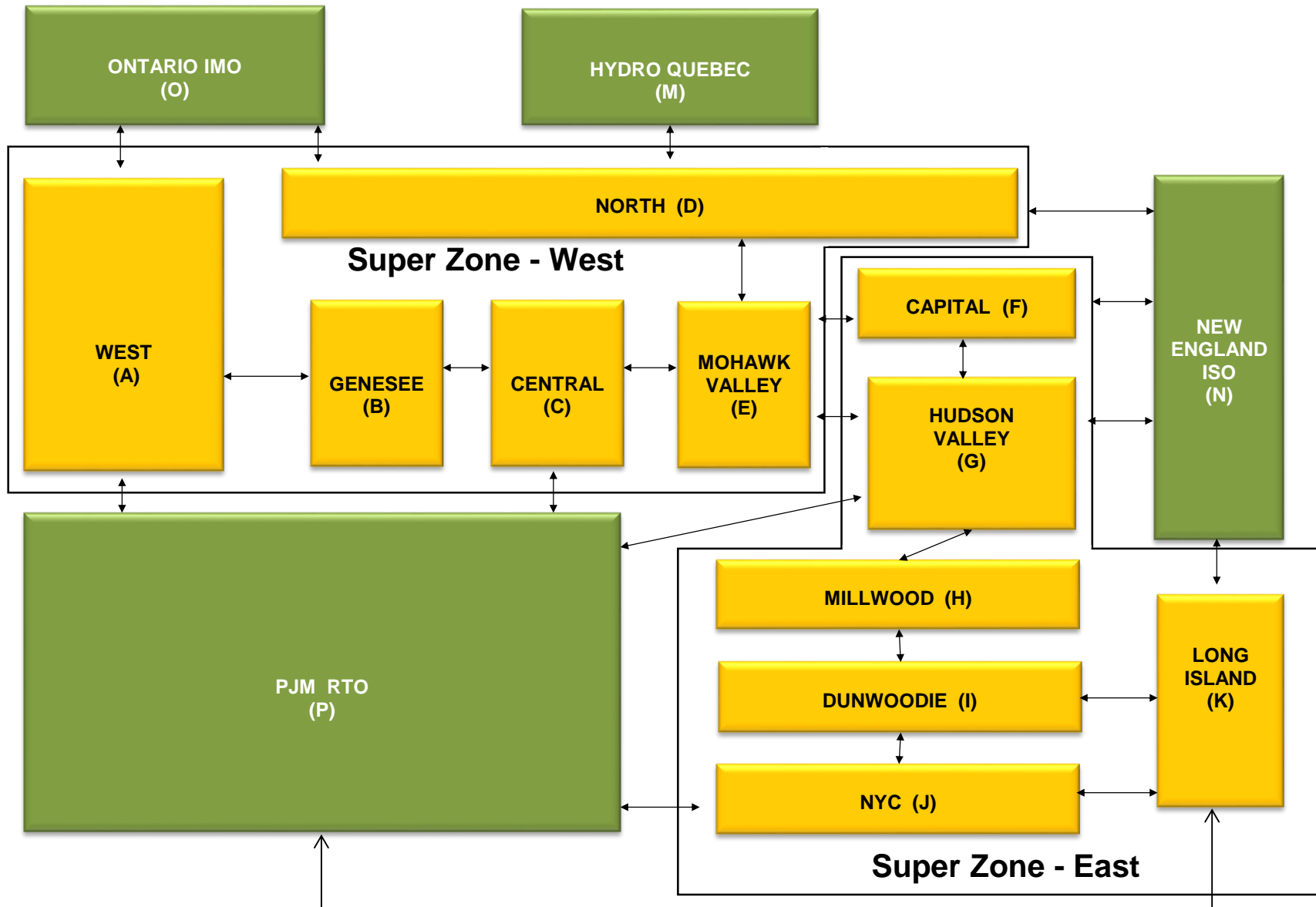
NYISO Average Daily DAM Load Bid Summary



Monthly Implied Heat Rate 2017-2018



NYISO LBMP ZONES



Billing Codes for Chart C

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

The Mission of the New York Independent System Operator is to:

- Serve the public interest and
- Provide benefit to stakeholders by
 - Maintaining and enhancing regional reliability
 - Operating open, fair and competitive wholesale electricity markets
 - Planning the power system for the future
 - Providing factual information to policy makers, stakeholders and investors in the power system



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