

Operations Performance Metrics Monthly Report



October 2023 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, 2023.

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October 2023 Operations Performance Highlights

Monthly Peak Load	Monthly Minimum Load	Summer 2023 Peak	All-time Summer Peak
10/04/2023 HB 17 21,735 MW	10/08/2023 HB 04 11,890 MW	09/06/2023 HB 17 30,206 MW	07/19/2013 HB 16 33,956 MW

- 0.0 hours of Thunderstorm Alerts were declared
- 0.0 hours of NERC TLR level 3 curtailment
- Required regulatory work on Con Edison natural gas LDC system resulted in the need to run Astoria load pocket generation on liquid fuel for electric system reliability. While this work was coordinated to minimize the duration, it resulted in higher uplift than typical for October.
- An annular solar eclipse occurred on Saturday October 14th. Minimal impacts were observed due to significant obscuration from cloud cover. The estimated impact on BTM solar production over the peak of the eclipse was roughly 100MW.

Installed Wind, Solar and Energy Storage Resource Nameplate Values:

Land-Based Wind	Behind-the-Meter Solar	Front-of-the-Meter Solar	Energy Storage Resource (ESR)
2,521 MW	4,959 MW	174 MW	63 MW

Estimated production cost savings associated with the Broader Regional Market initiatives:

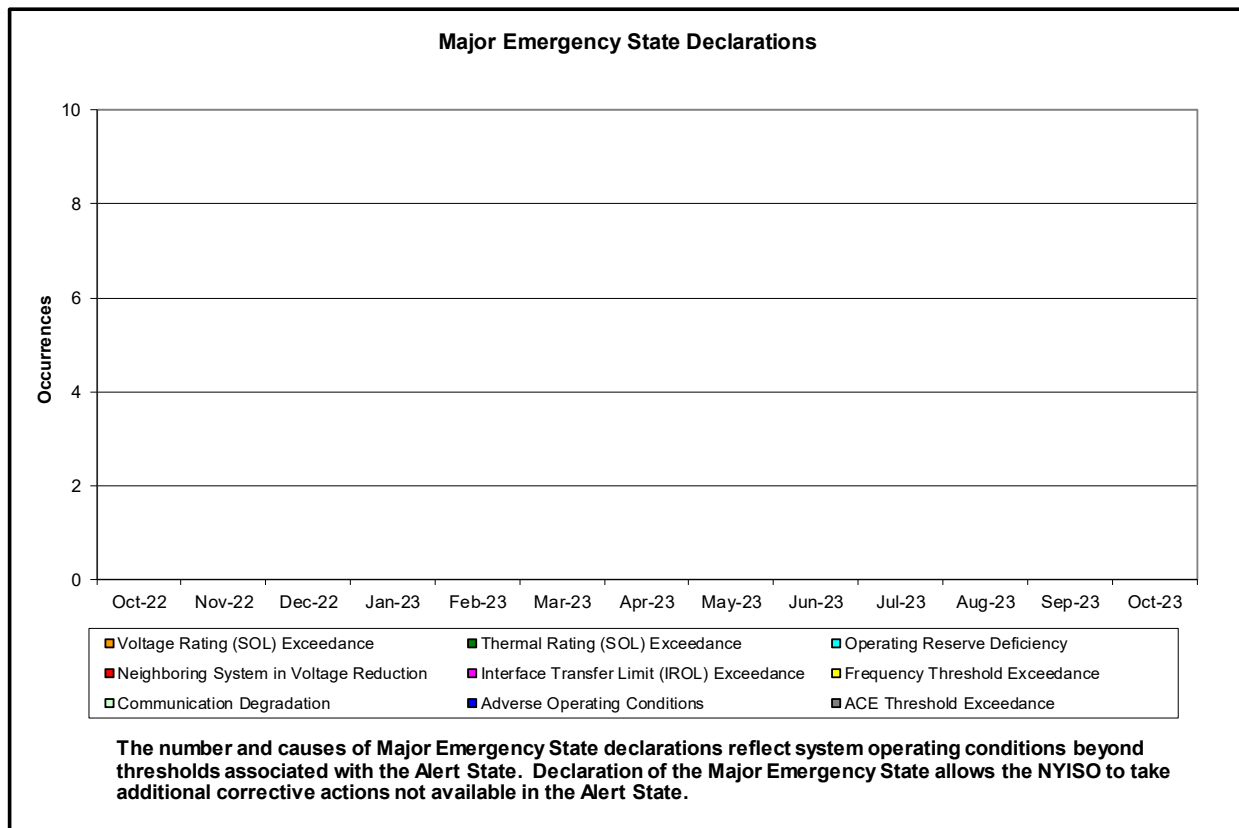
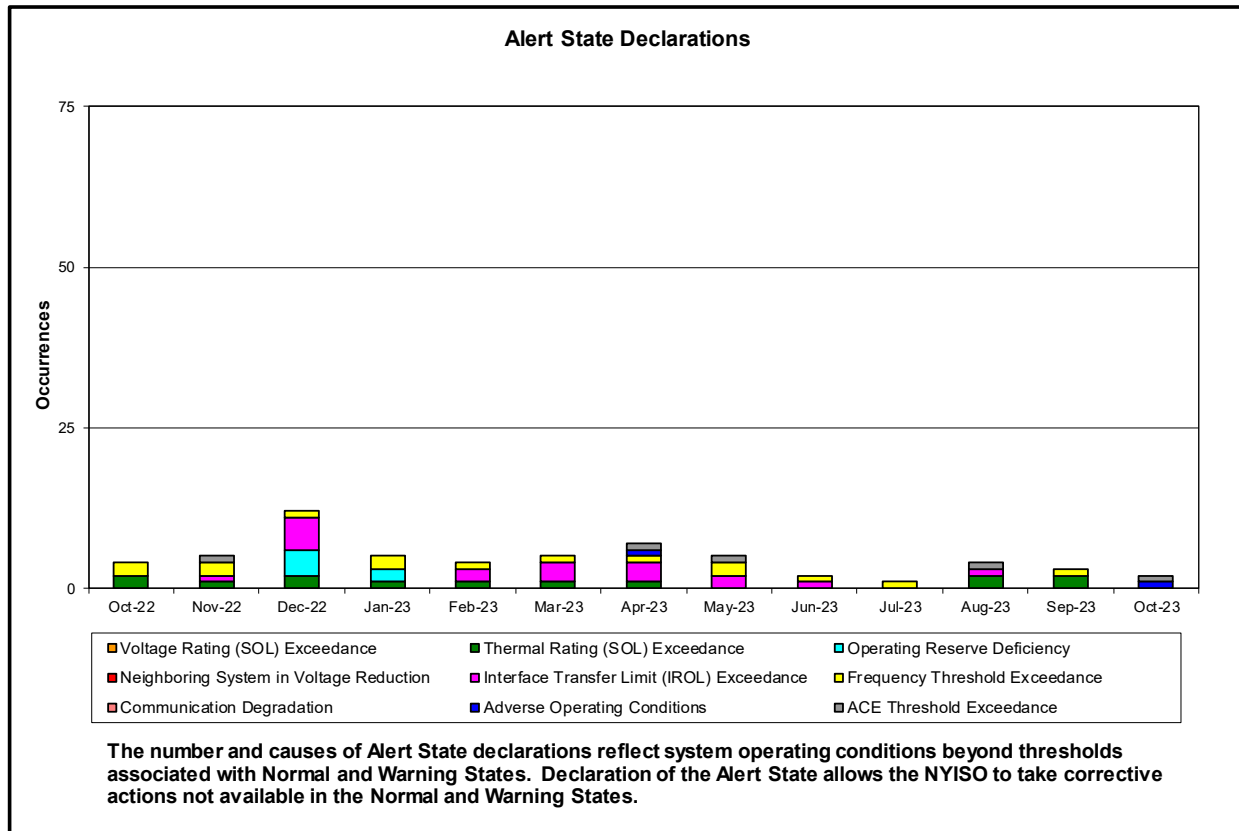
	Current Month Value (\$M)	Year-to-Date Value (\$M)
NY Savings from PJM-NY Congestion Coordination	\$0.16	\$10.19
NY Savings from PJM-NY Coordinated Transaction Scheduling	(\$0.15)	(\$1.52)
NY Savings from NE-NY Coordinated Transaction Scheduling	\$0.07	(\$1.32)
Total NY Savings	\$0.08	\$7.35
Regional Savings from PJM-NY Coordinated Transaction Scheduling	\$1.14	\$6.46
Regional Savings from NE-NY Coordinated Transaction Scheduling	\$0.11	\$1.01
Total Regional Savings	\$1.25	\$7.47

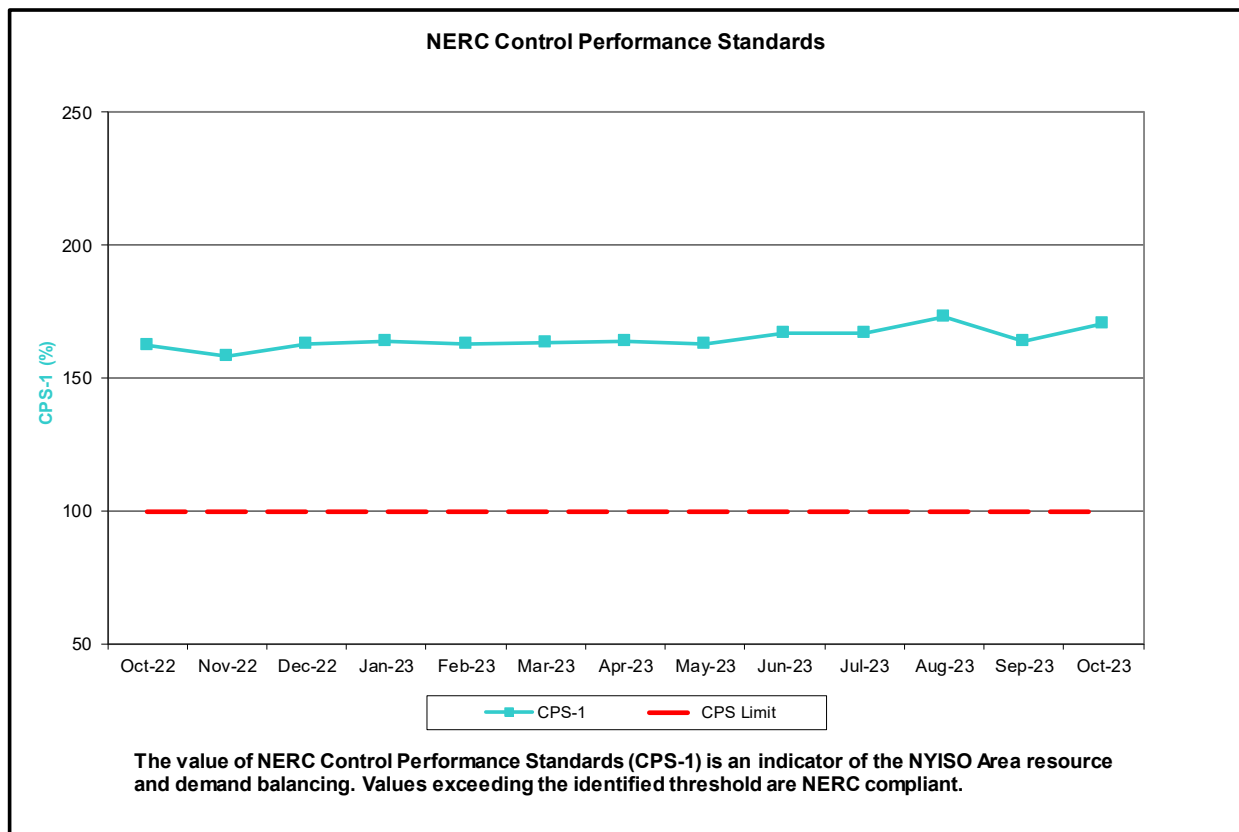
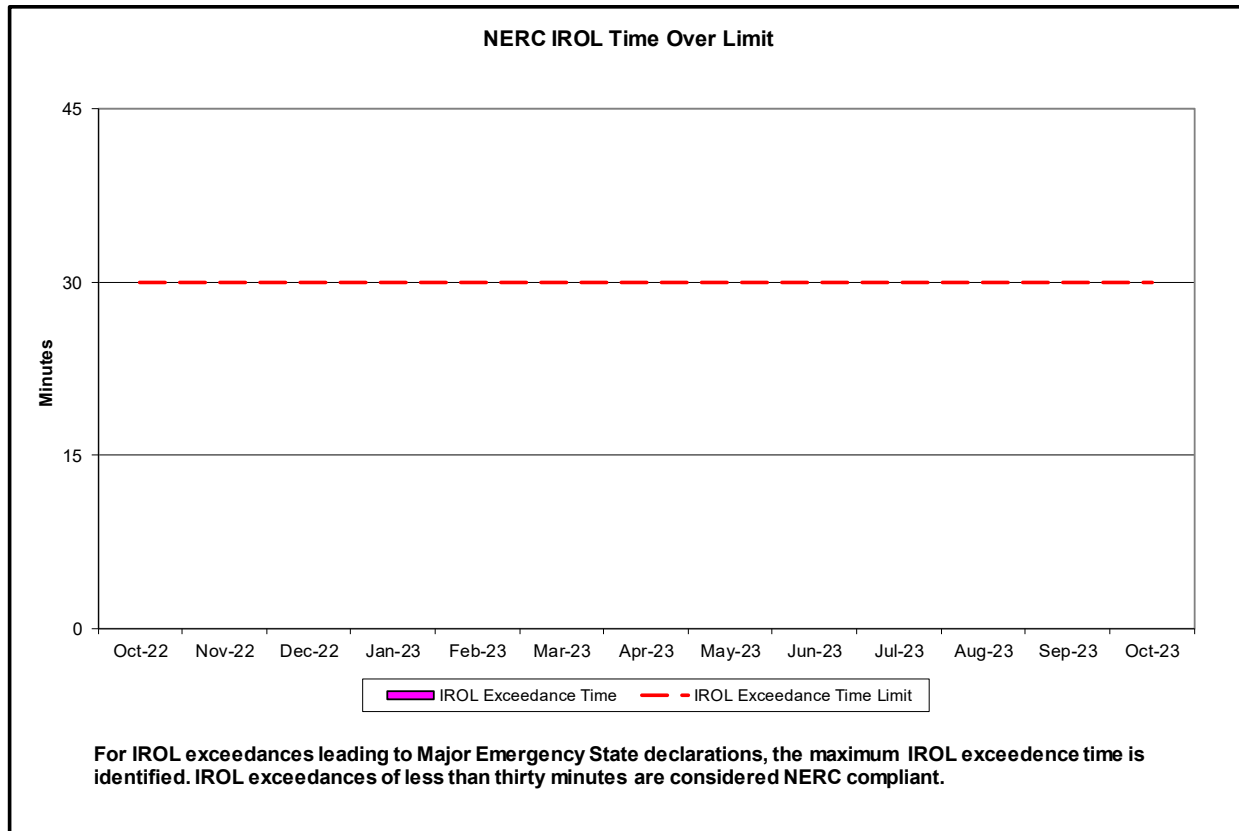
- Statewide uplift cost monthly average was (\$0.09)/MWh.
- The following table identifies the Monthly ICAP spot market prices and the price delta.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
November 2023 Spot Price	\$0.95	\$1.28	\$12.83	\$0.95
April 2023 Spot Price	\$1.10	\$1.10	\$1.10	\$1.10
Delta	(\$0.15)	\$0.18	\$11.73	(\$0.15)

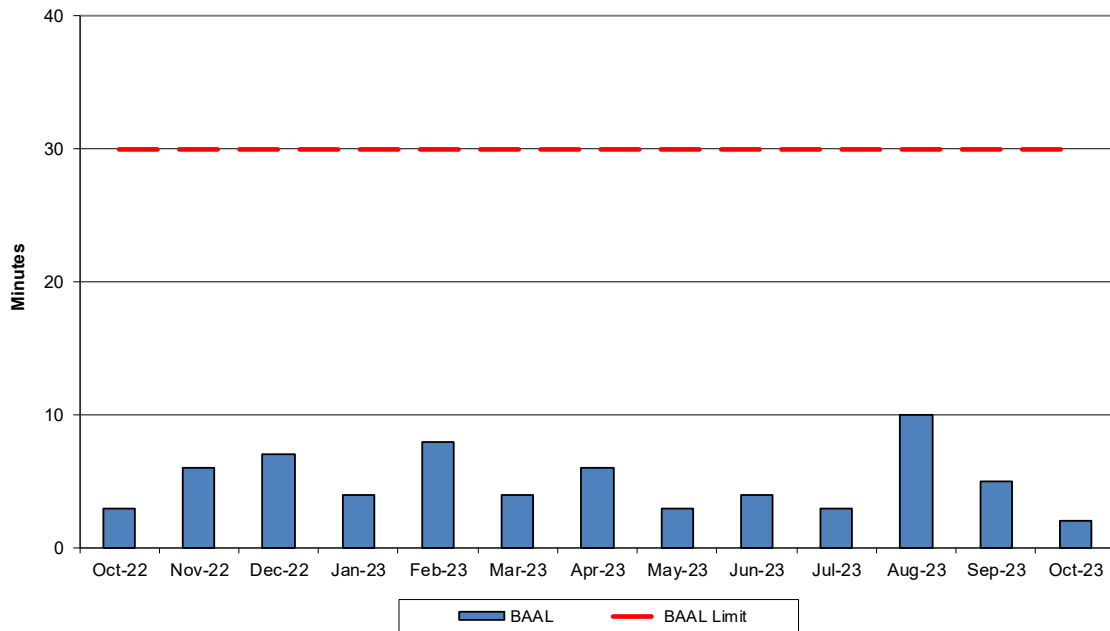
- Price changes from April 2023 to November 2023 are driven by changes in supply as well as Capability Year inputs such as demand curve parameters, Locational Capacity Requirements, the Installed Reserve Margin and the load forecast.

Reliability Performance Metrics



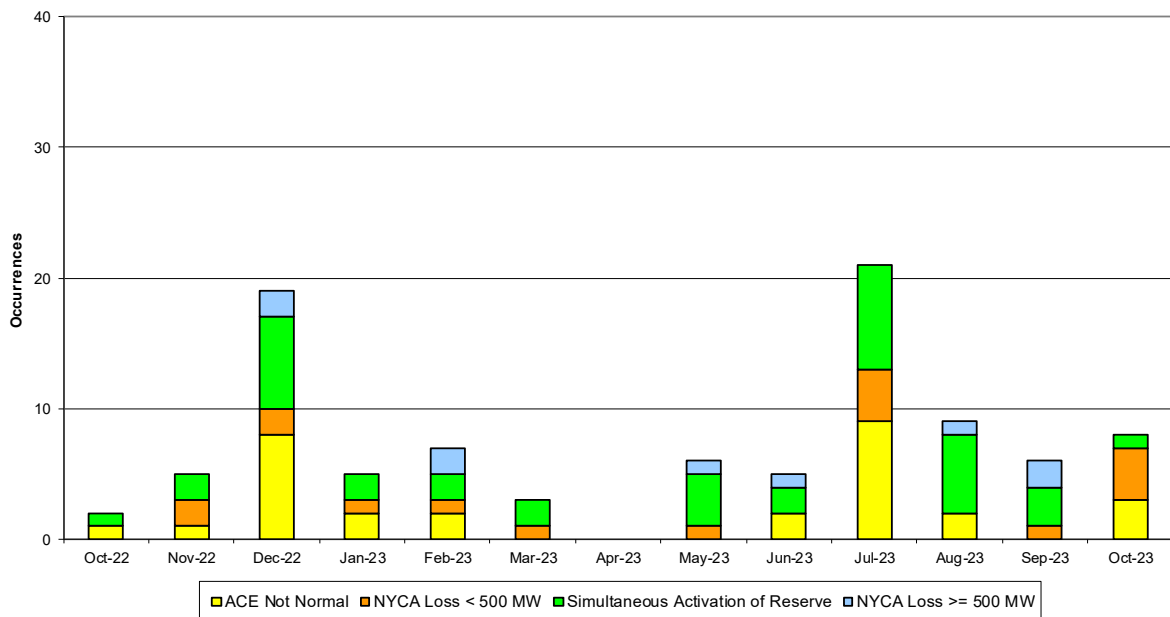


NERC Balancing Authority ACE Limit Standard



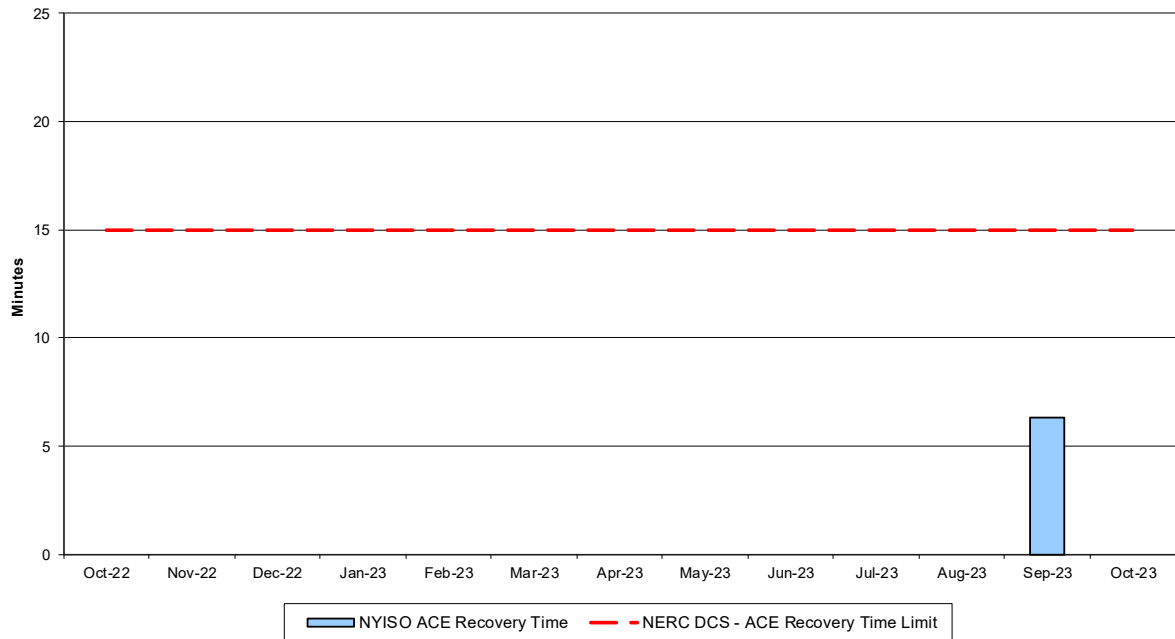
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

Reserve Activations



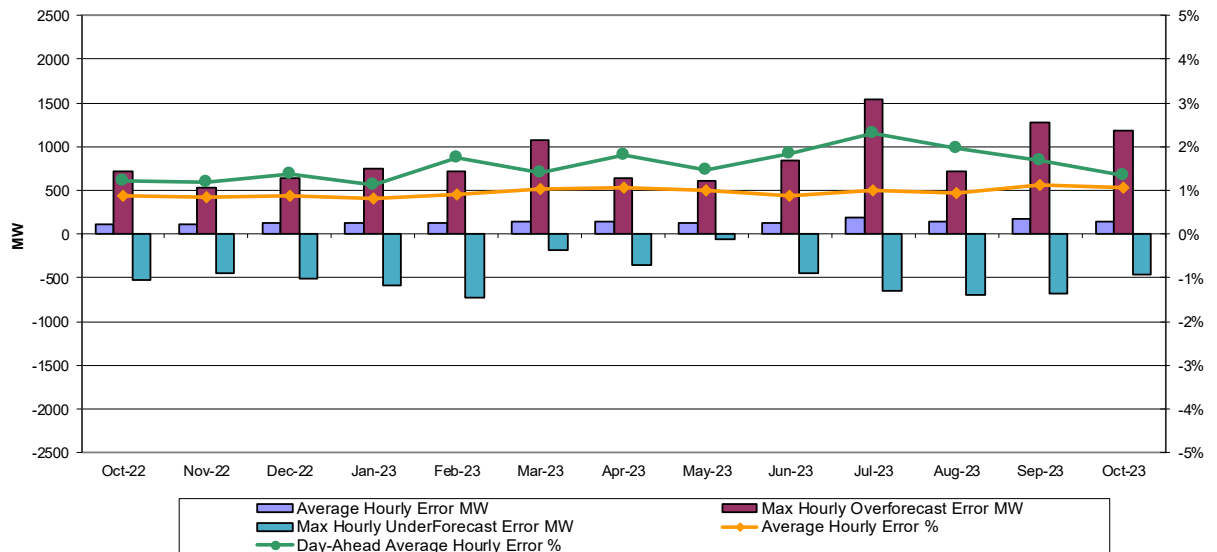
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

DCS Event Time to ACE Recovery



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

Load Forecast Performance

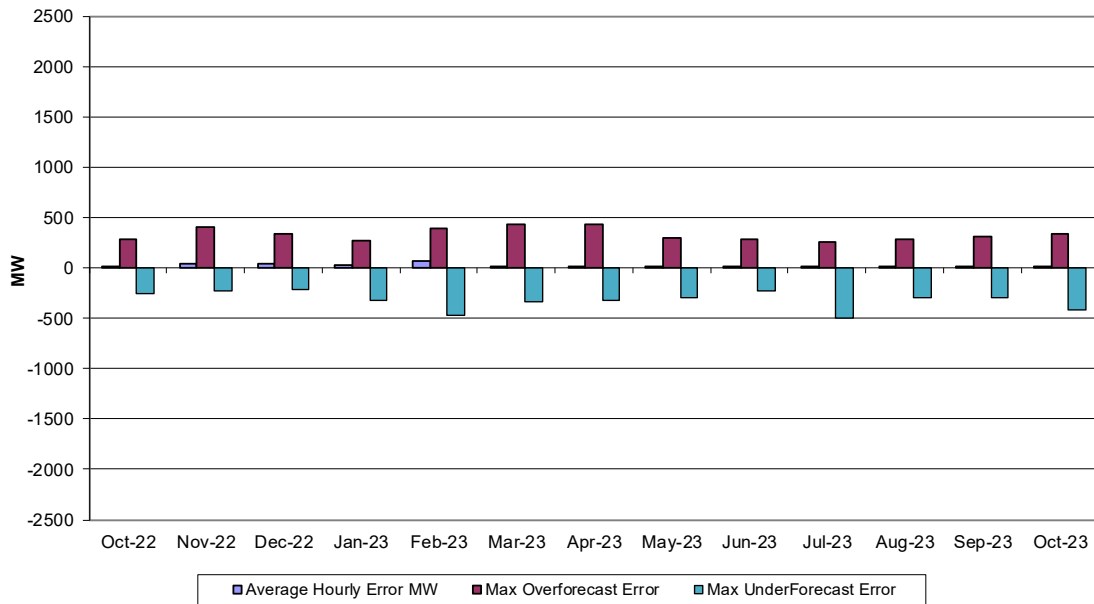


Hourly Error MW - Value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.

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

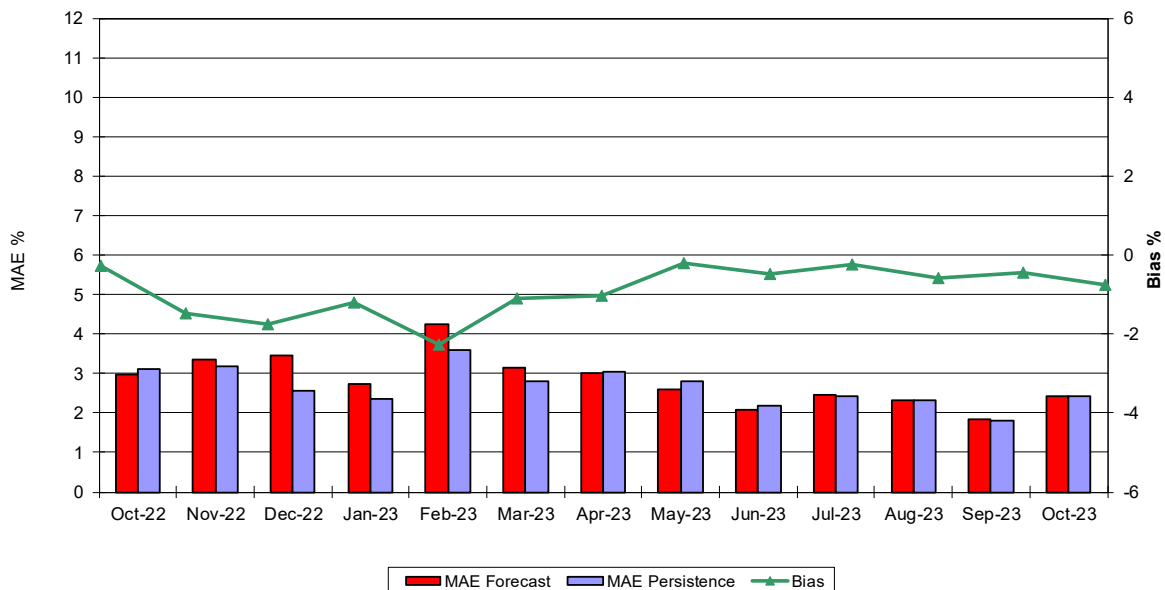
Day-Ahead Average Hourly Error % - Average across all hours of the month of the absolute value of the difference between actual load demand and the Day-Ahead forecast load demand, divided by the actual load demand.

Wind Forecast Performance Hour Ahead MW Error

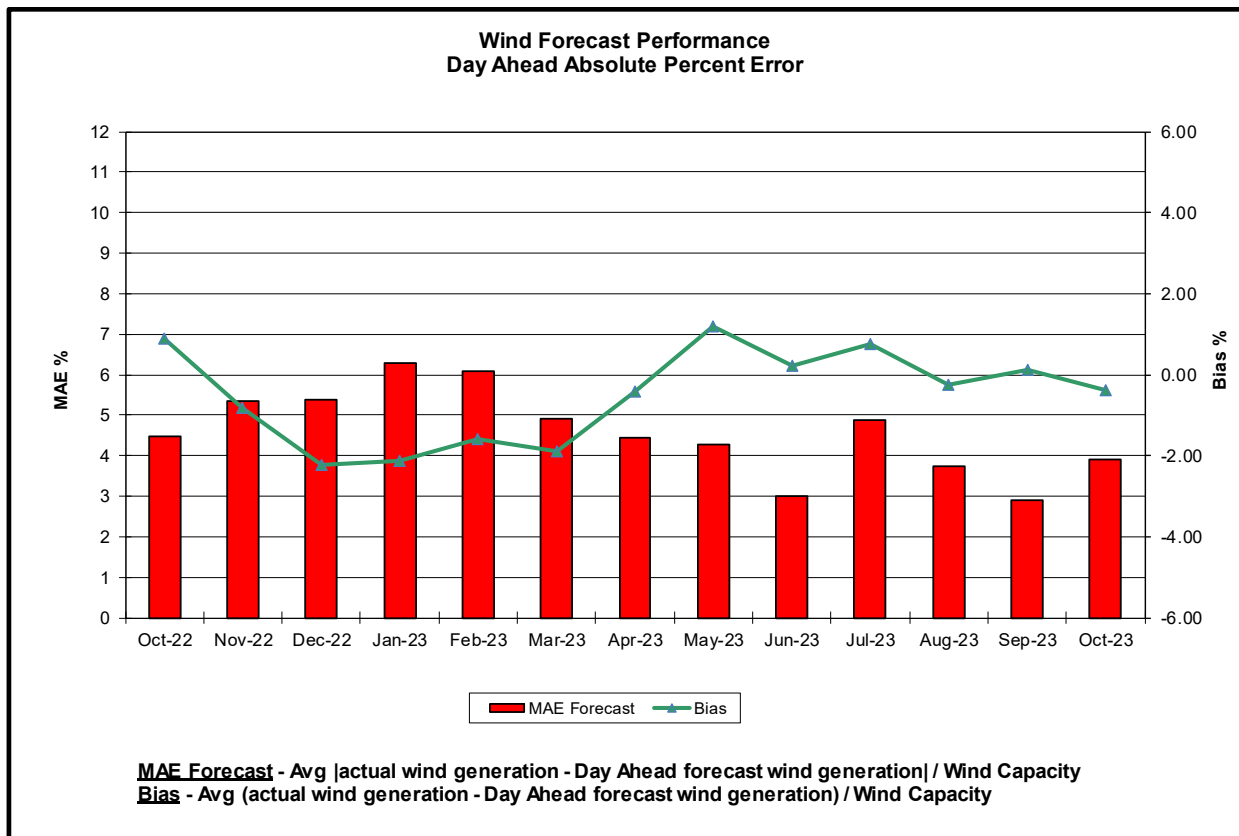
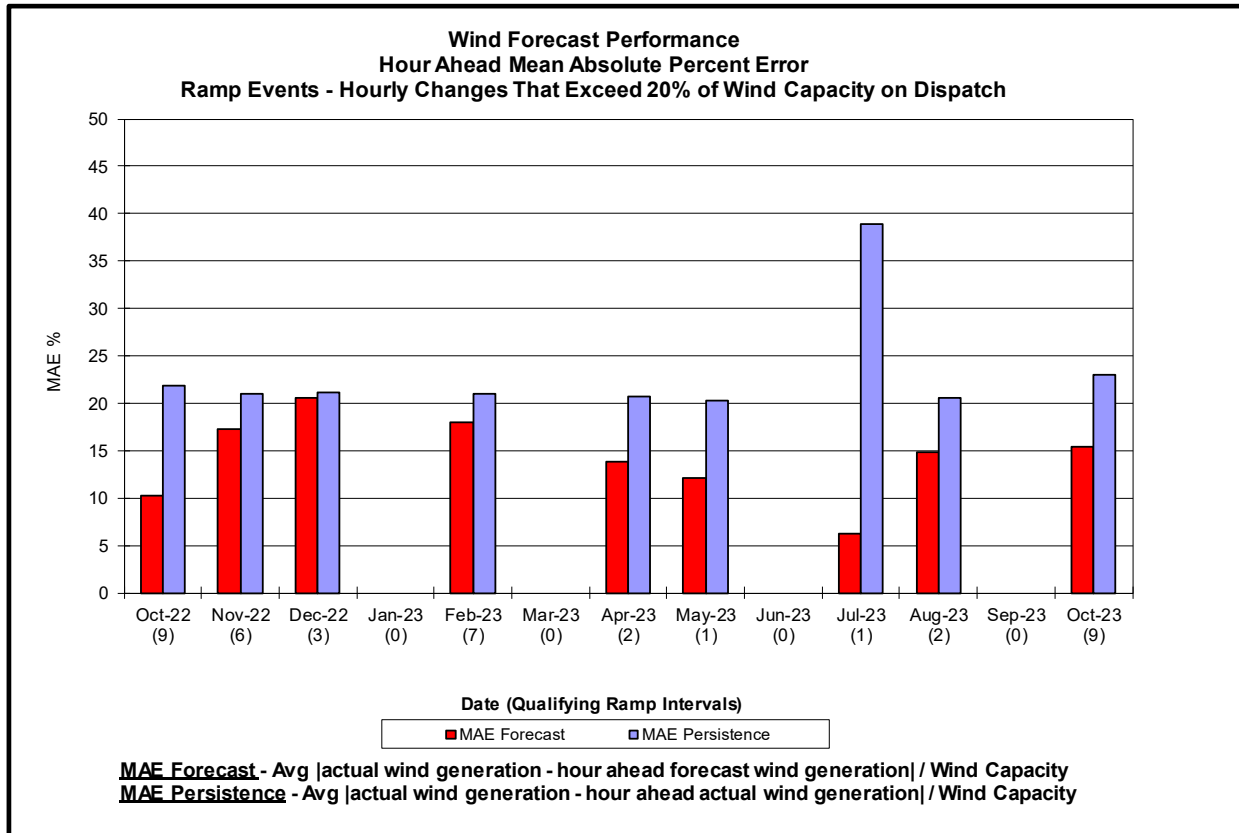


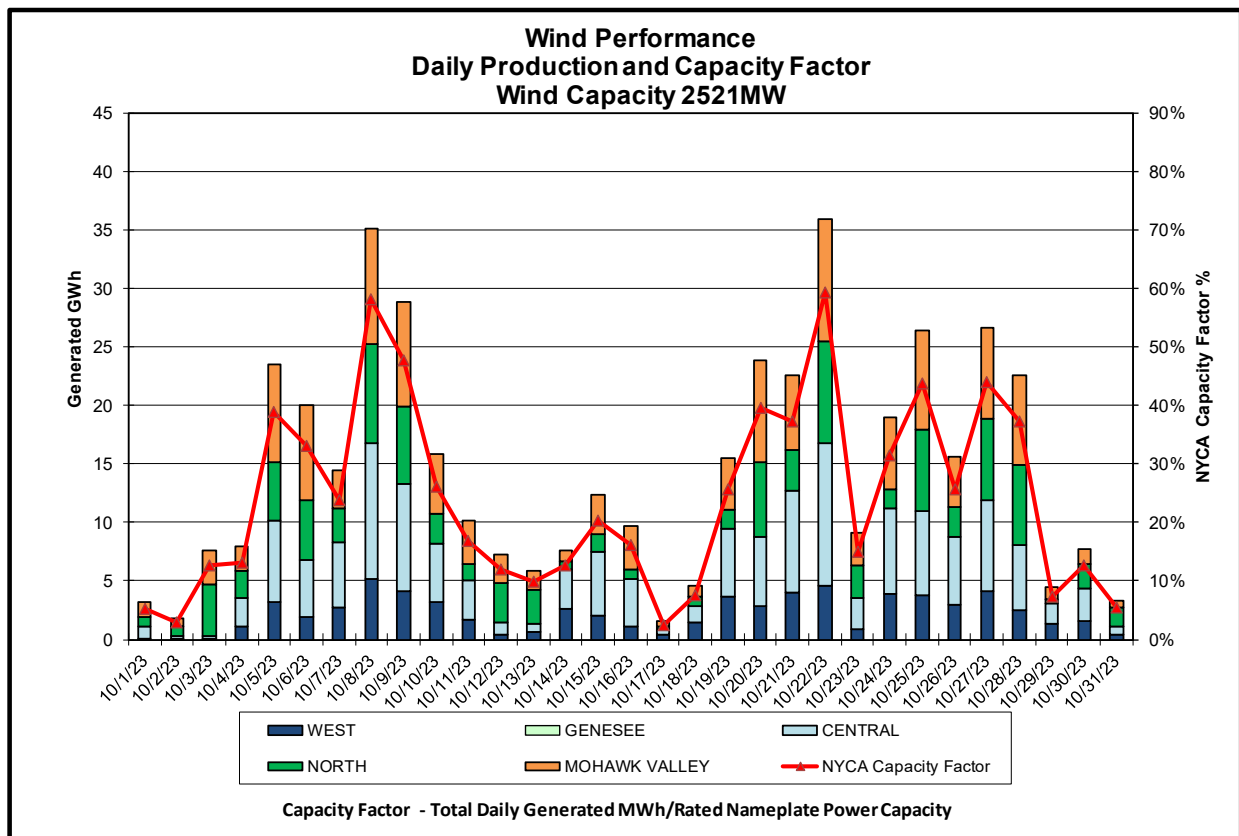
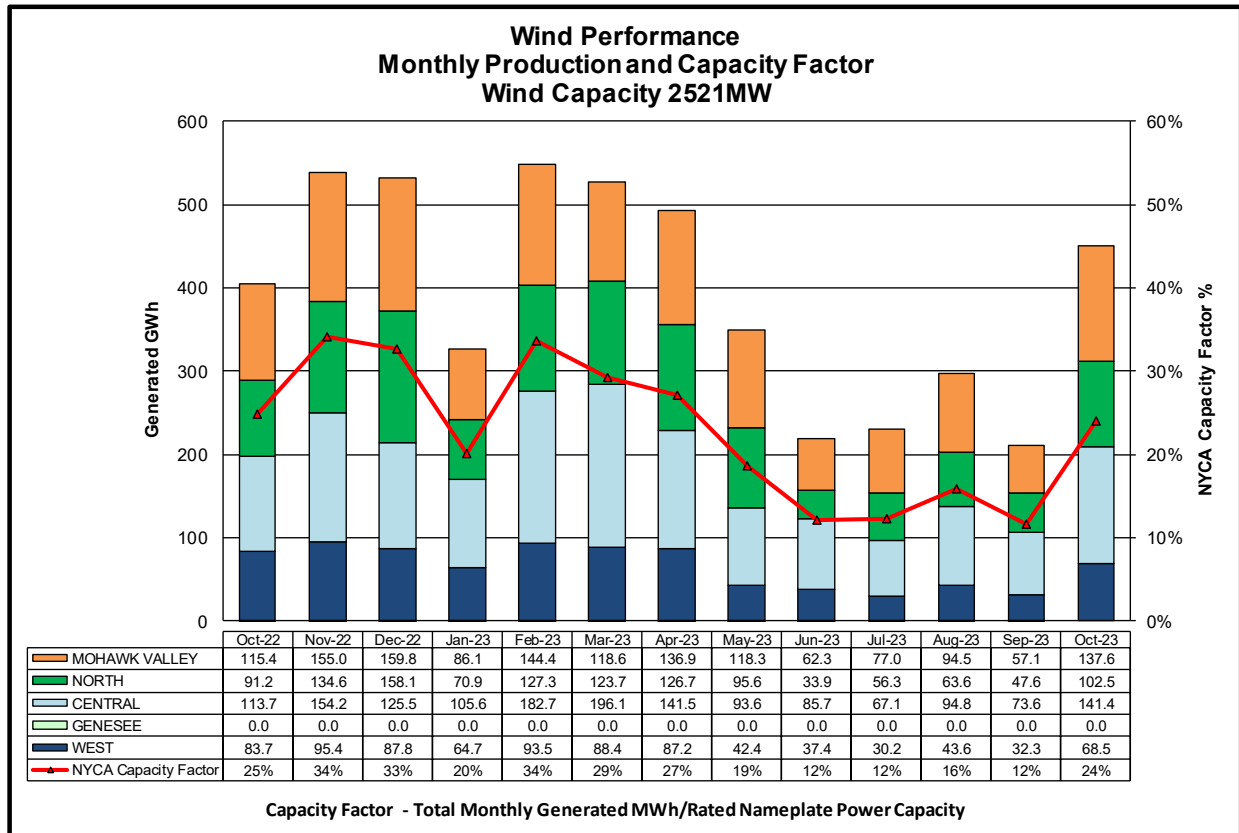
Hourly Error MW - Value of the difference between the hourly average actual wind generation and the average hour ahead forecast wind generation.

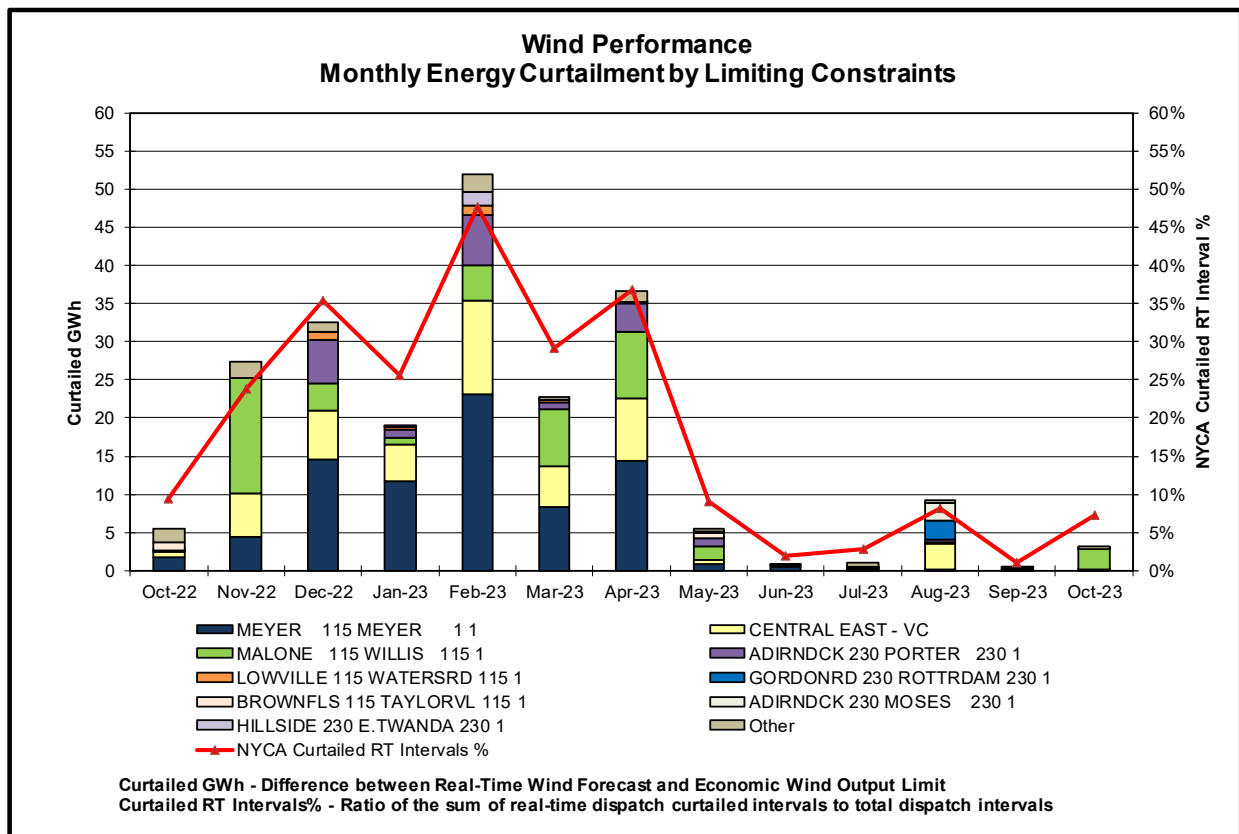
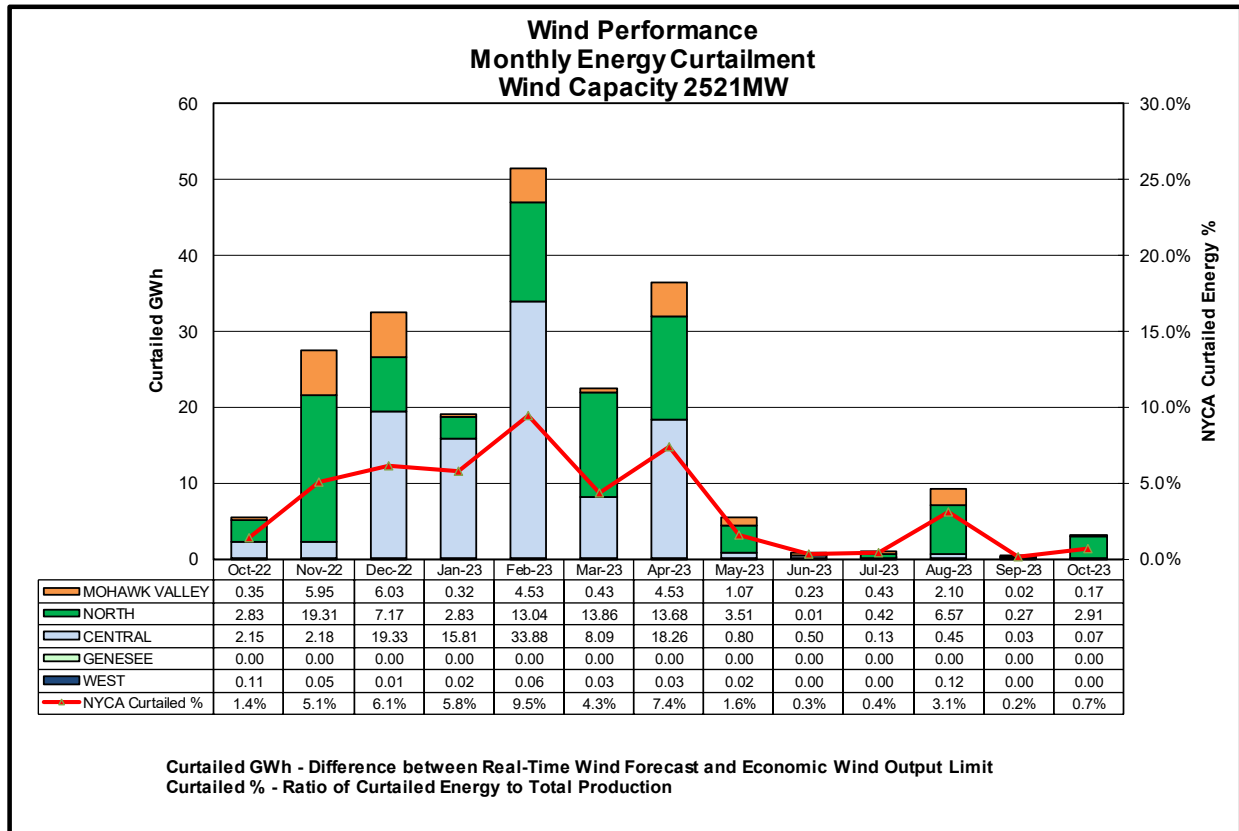
Wind Forecast Performance Hour Ahead Percent Error

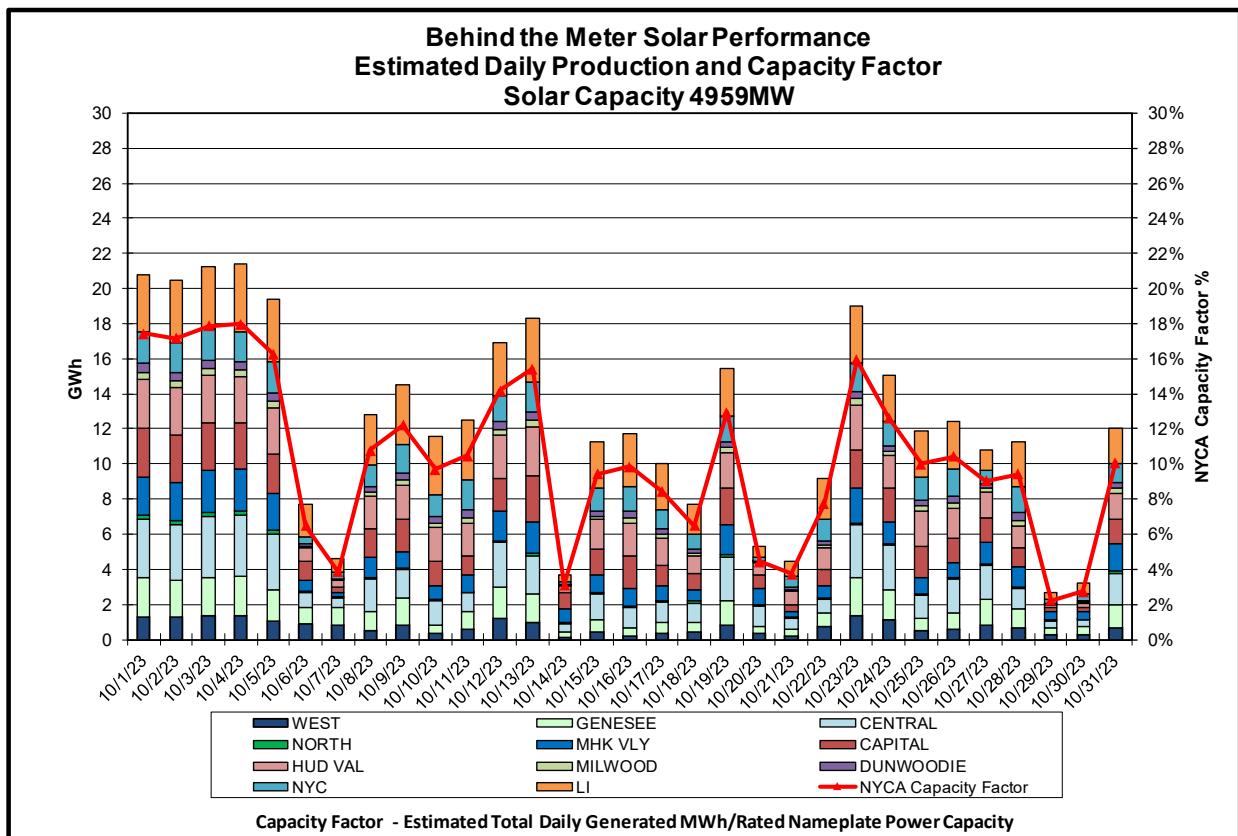
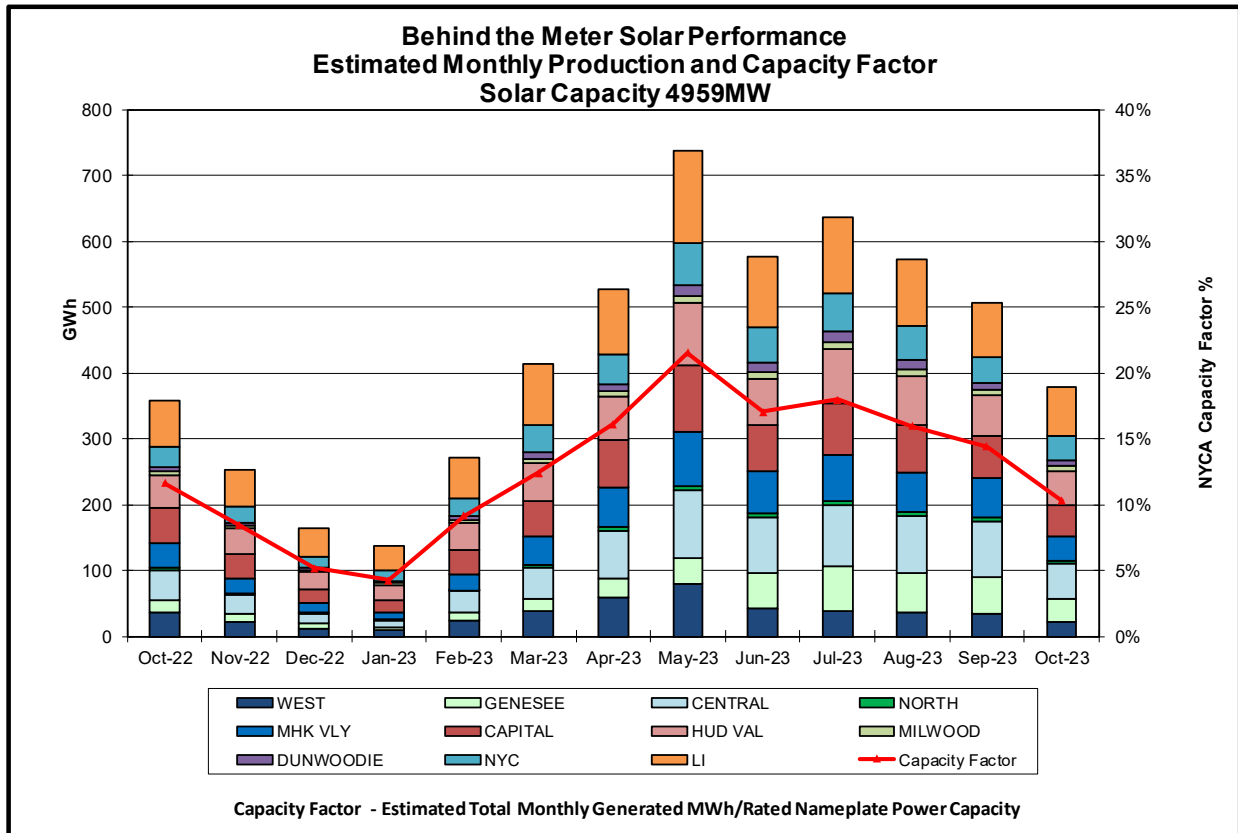


MAE Forecast - Avg |actual wind generation - hour ahead forecast wind generation| / Wind Capacity
MAE Persistence - Avg |actual wind generation - hour ahead actual wind generation| / Wind Capacity
Bias - Avg (actual wind generation - hour ahead forecast wind generation) / Wind Capacity

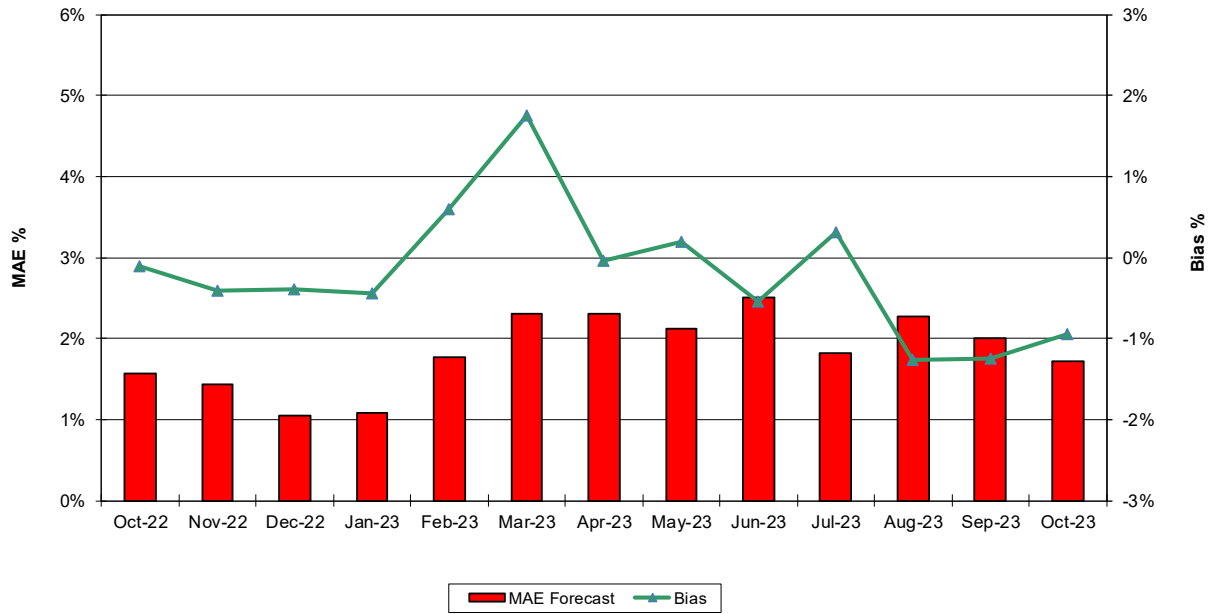






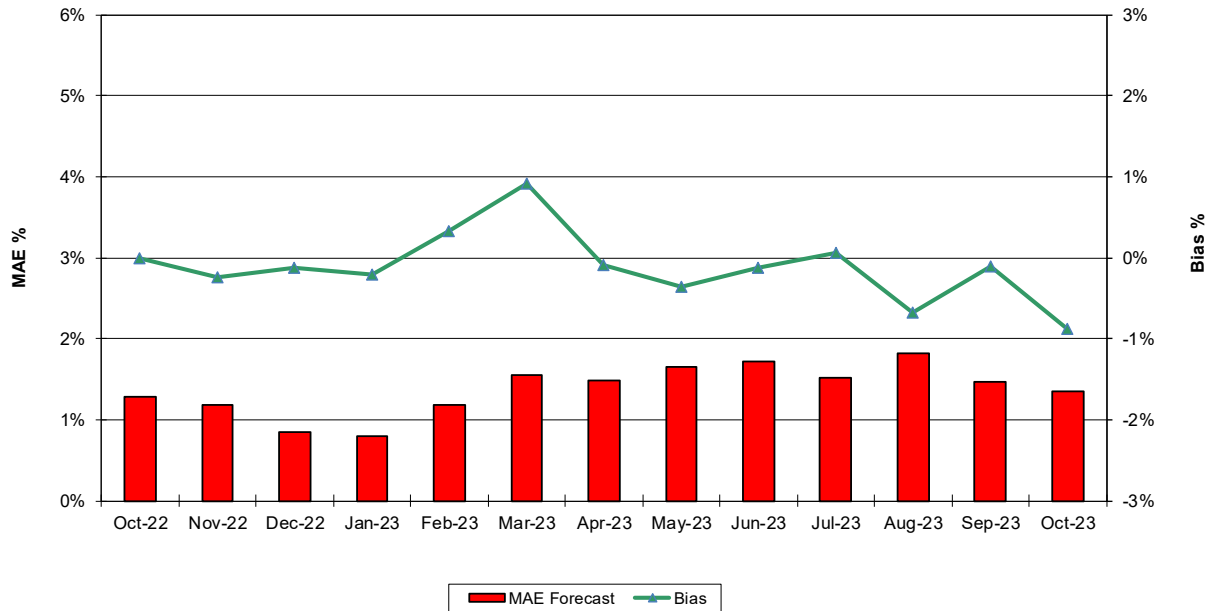


Behind the Meter Solar Forecast Performance Day Ahead Percent Error



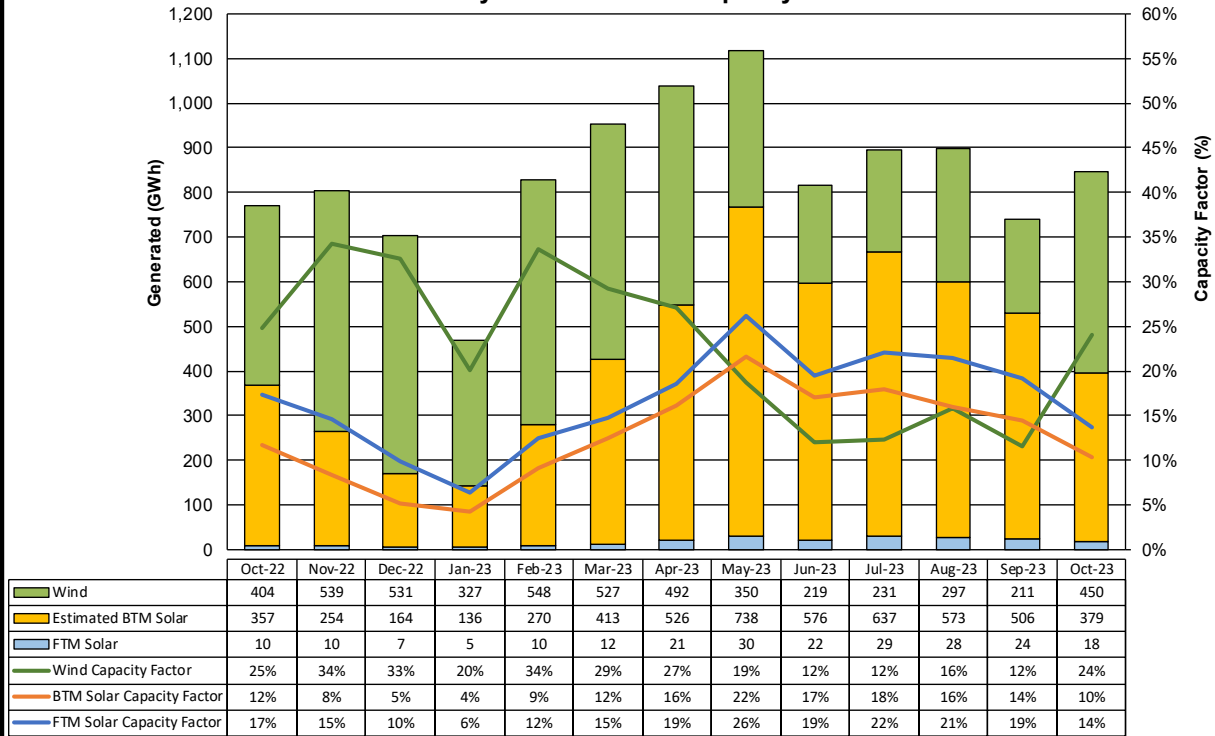
MAE Forecast - Avg |est. actual solar generation - Day Ahead forecast solar generation| / Solar Capacity
Bias - Avg (est. actual solar generation - Day Ahead forecast solar generation) / Solar Capacity

Behind the Meter Solar Forecast Performance Hour Ahead Percent Error



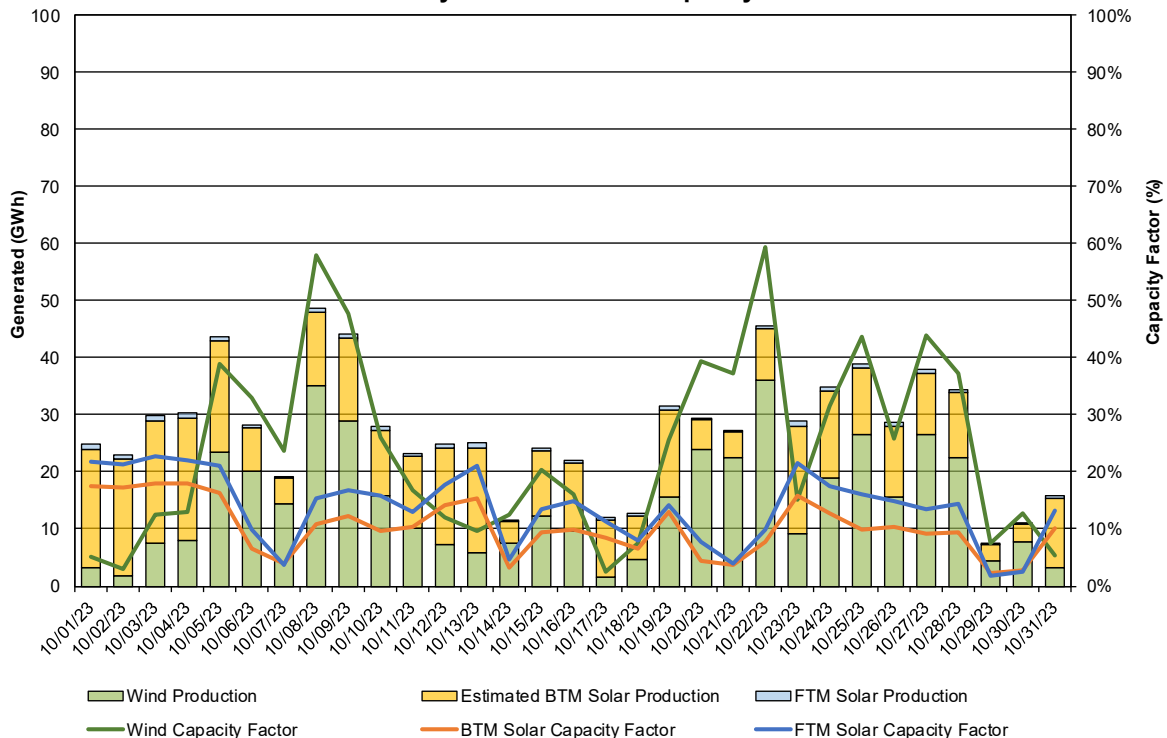
MAE Forecast - Avg |est. actual solar generation - Hour Ahead forecast solar generation| / Solar Capacity
Bias - Avg (est. actual solar generation - Hour Ahead forecast solar generation) / Solar Capacity

Net Wind and Solar Performance Total Monthly Production and Capacity Factors

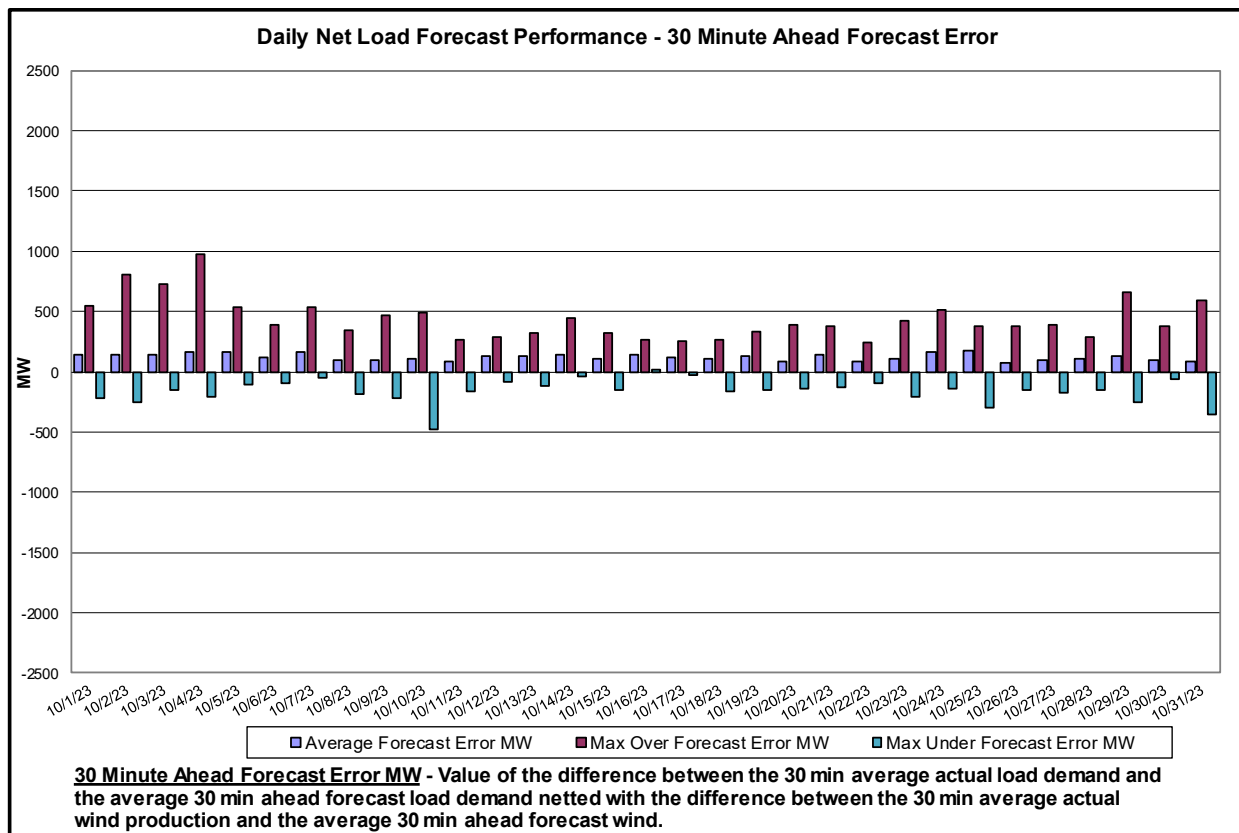
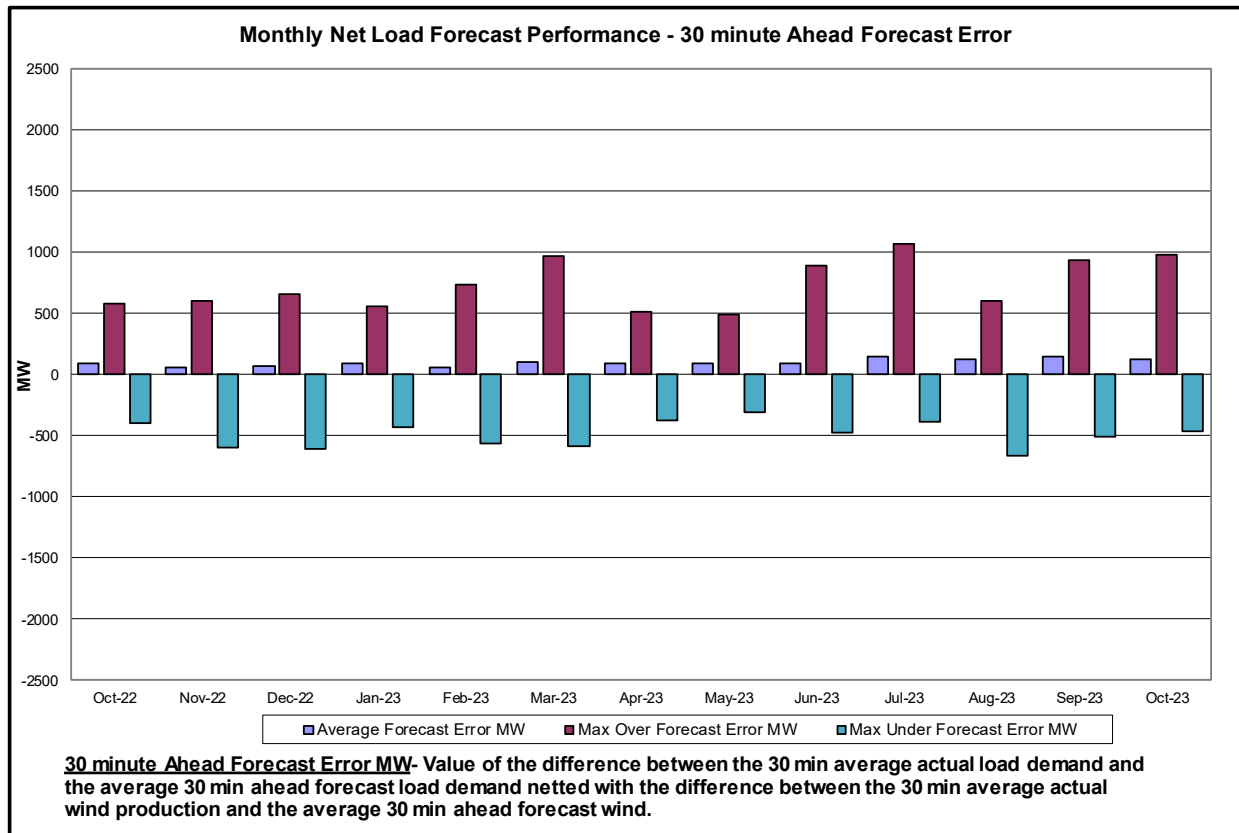


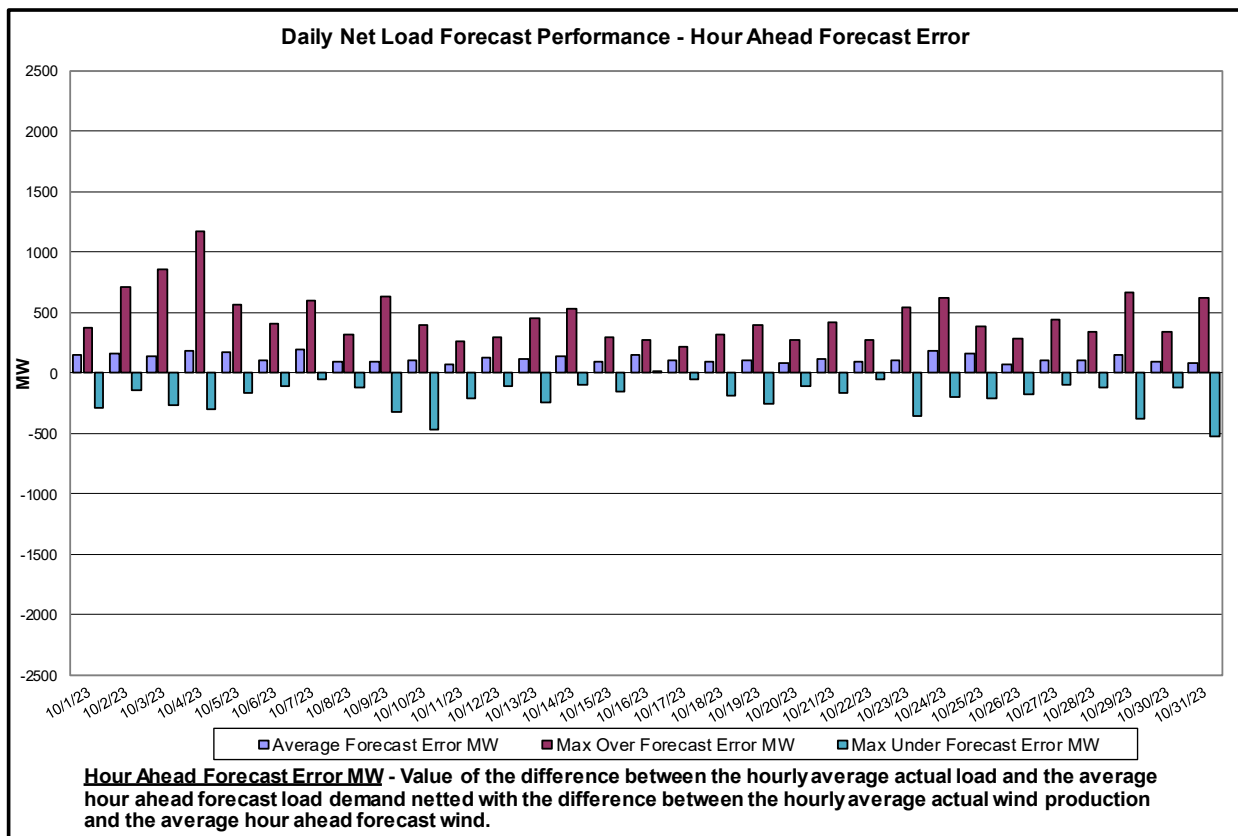
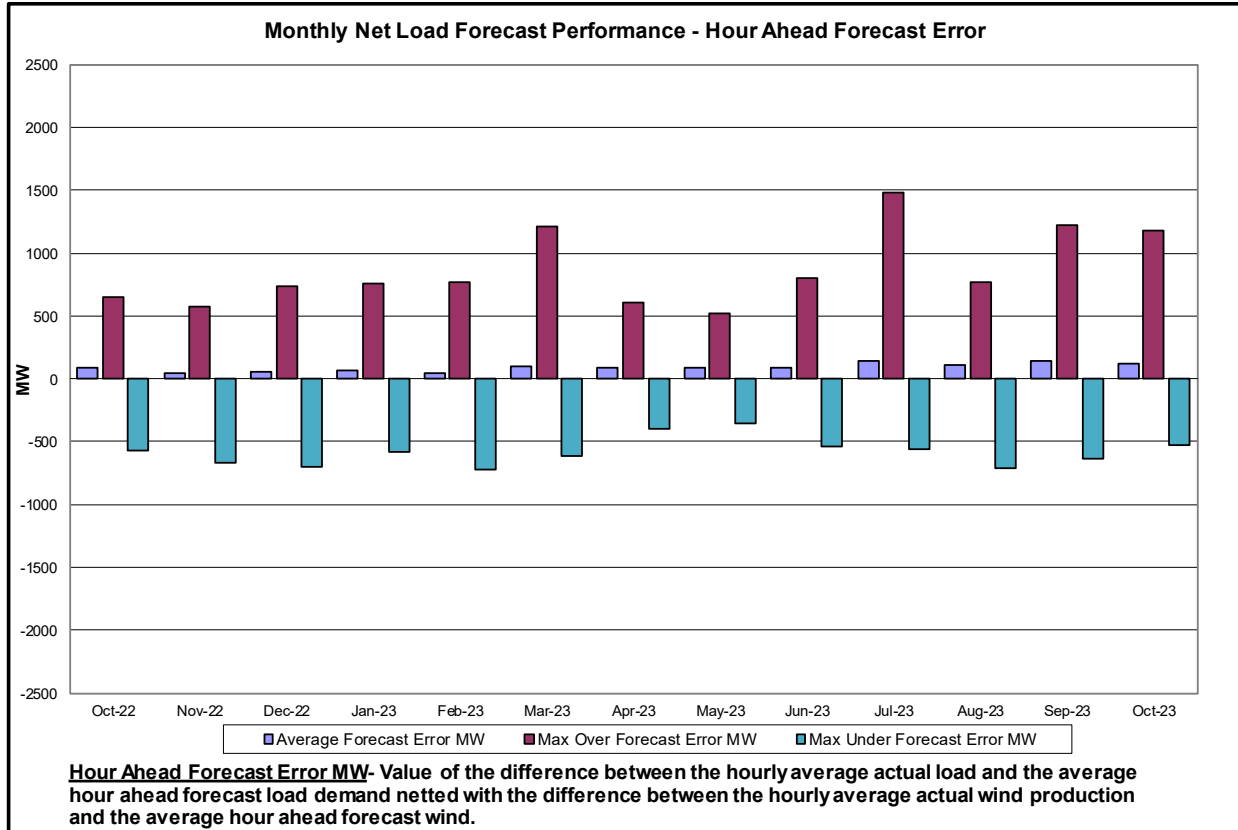
Capacity Factor - Total Monthly Generated MWh/Rated Nameplate Power Capacity

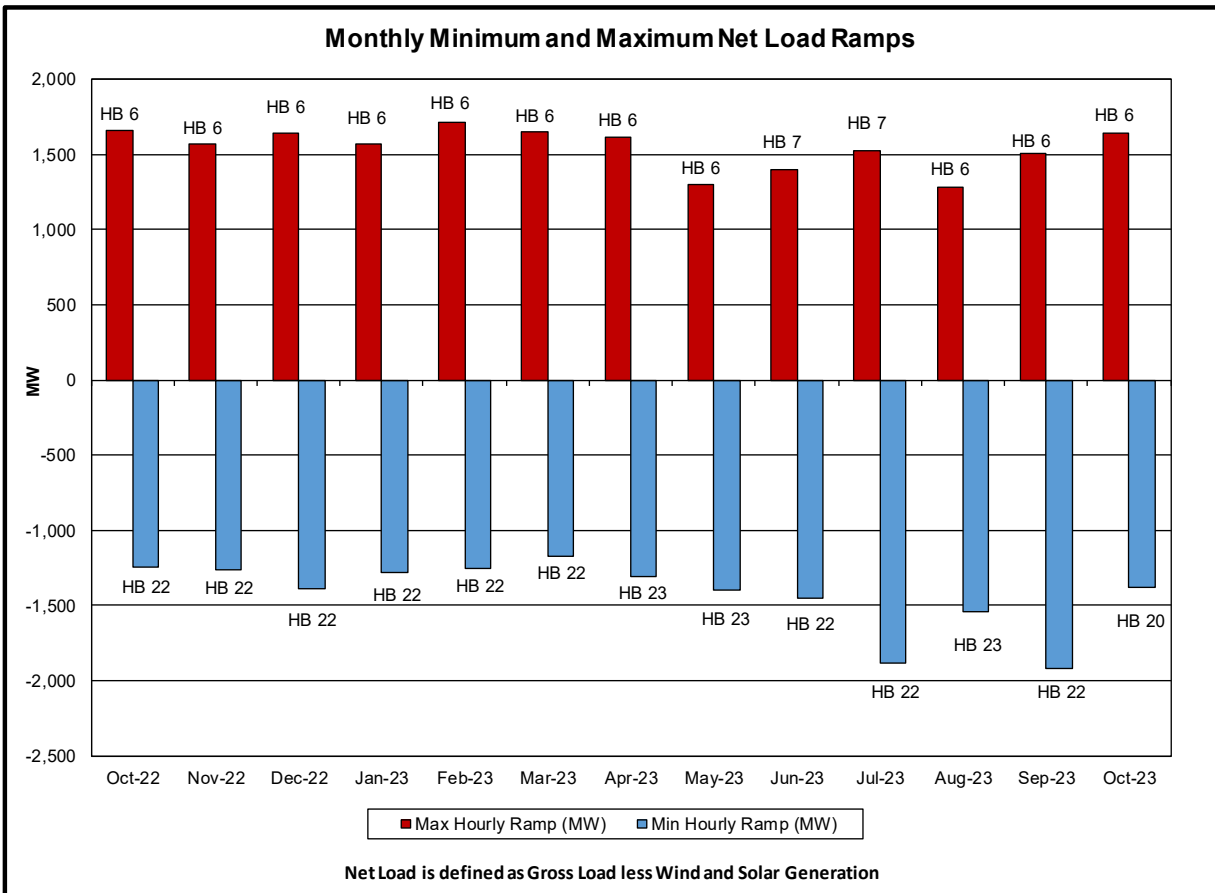
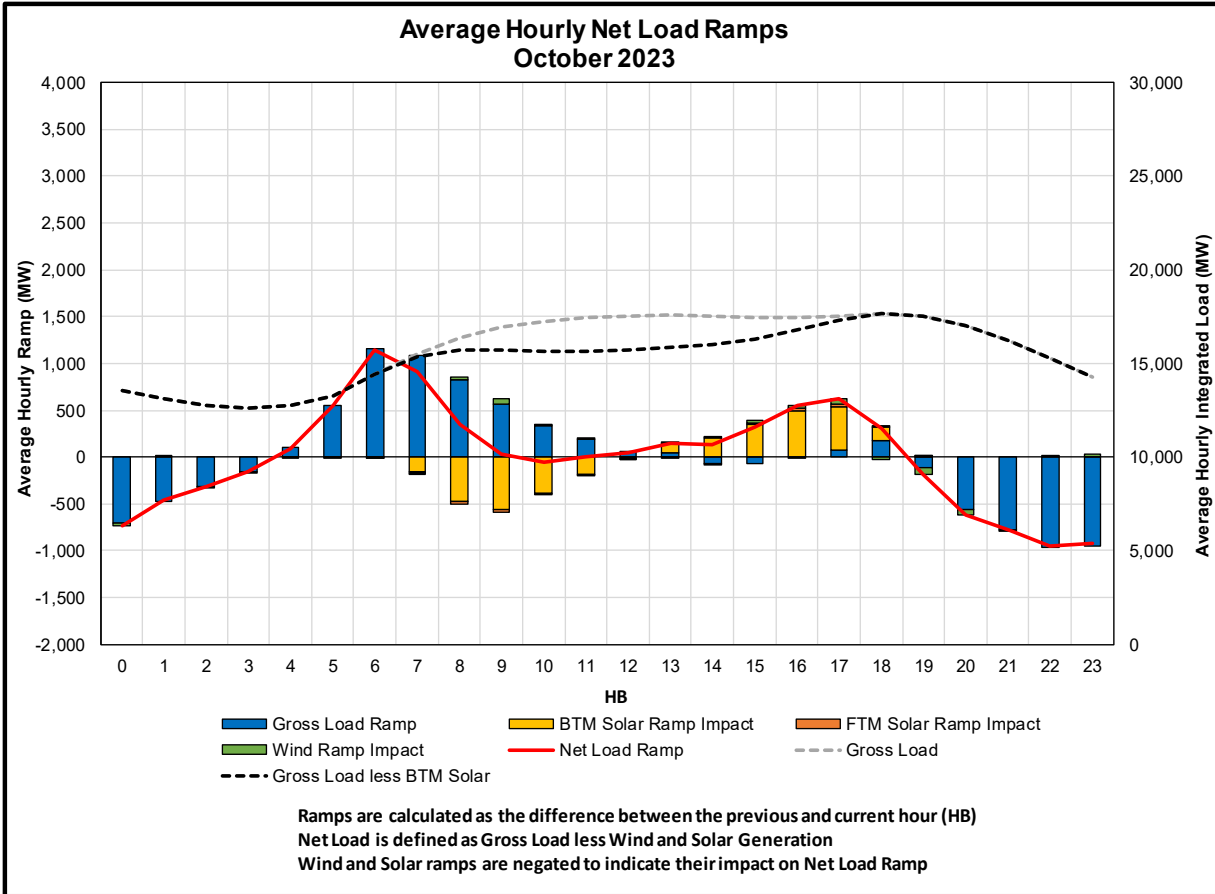
Net Wind and Solar Performance Total Daily Production and Capacity Factors



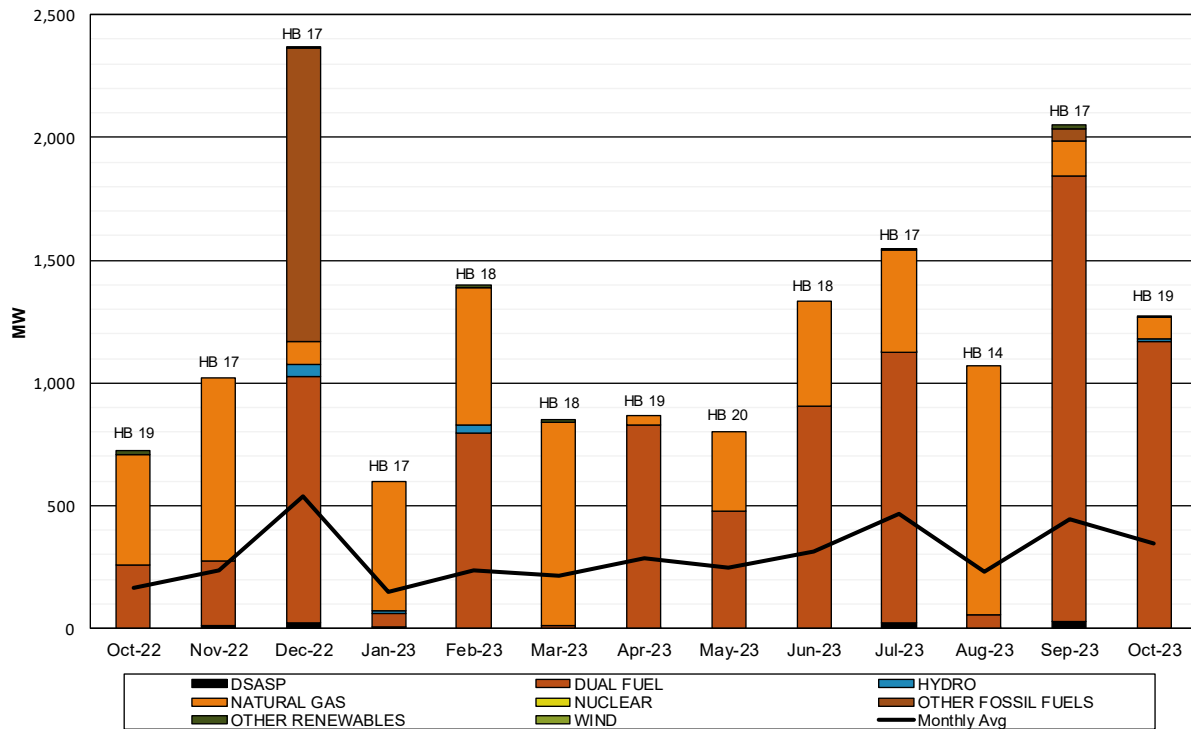
Capacity Factor - Total Daily Generated MWh/Rated Nameplate Power Capacity







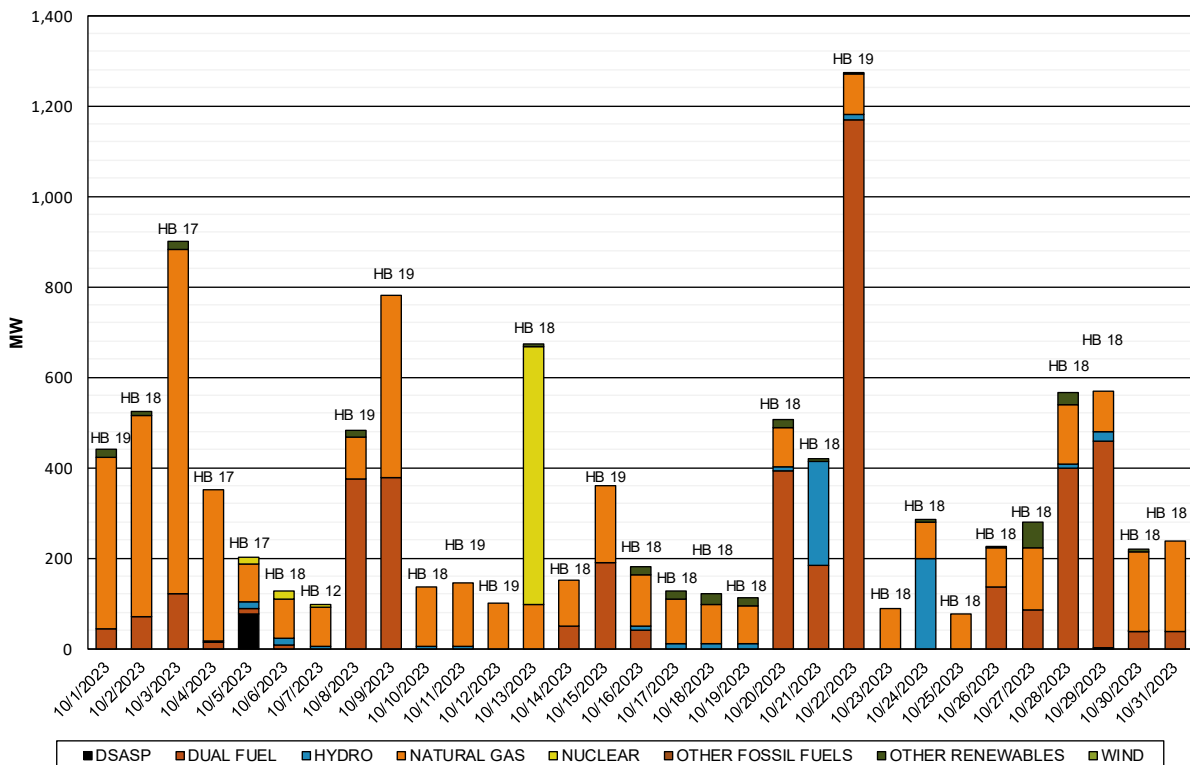
Monthly Maximum Day-Ahead Market Capacity Unavailable In Real Time



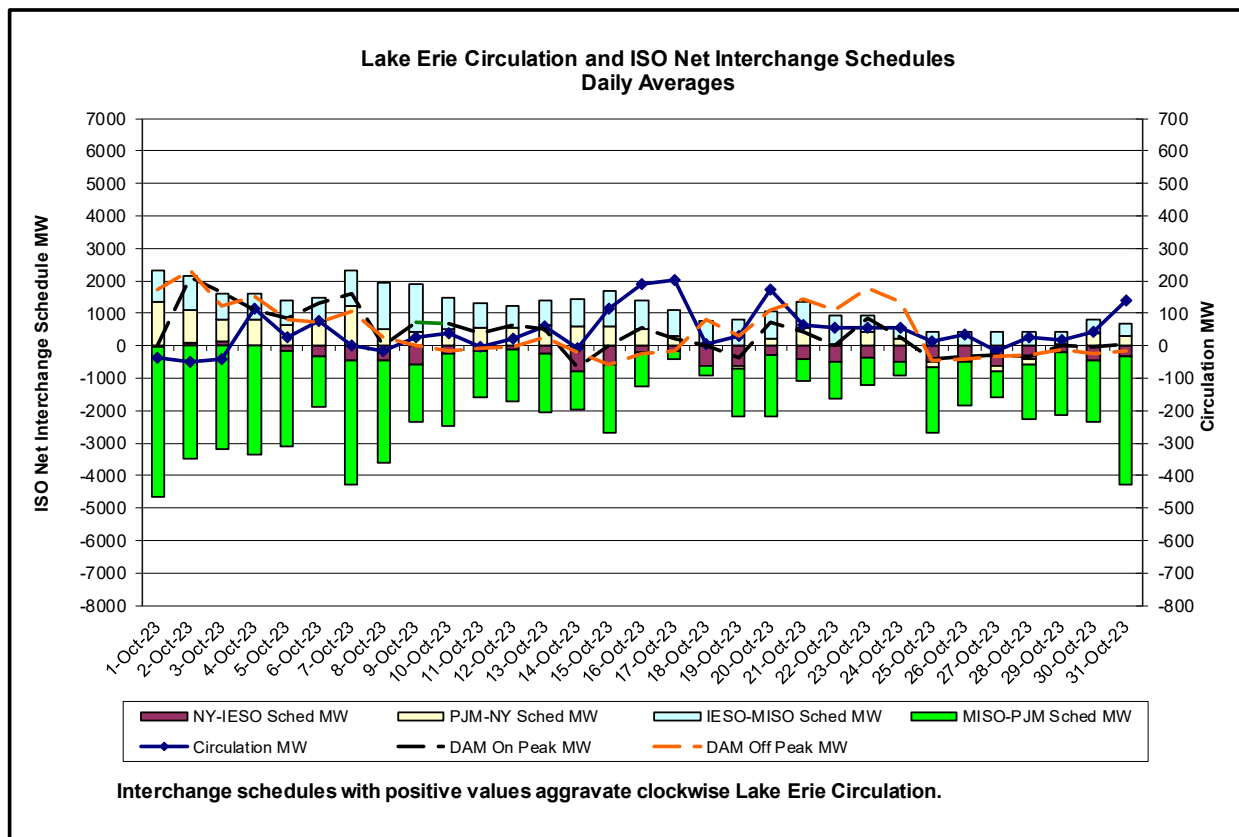
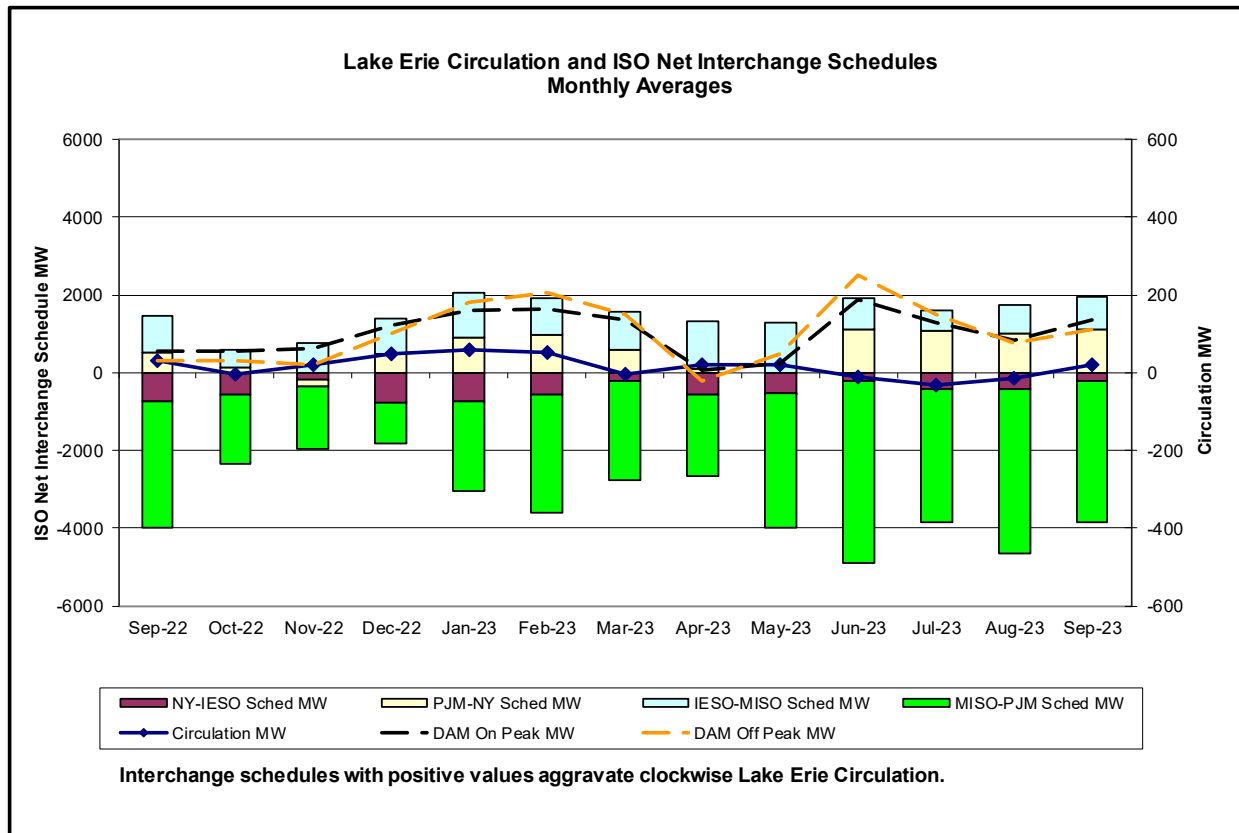
Unavailable Capacity is calculated as the difference of Day-Ahead Market (DAM) capacity relative to Real-Time (RT) capacity during RT peak load hour.

The Monthly Maximum is the day with the largest observed deficit during RT peak load hour.

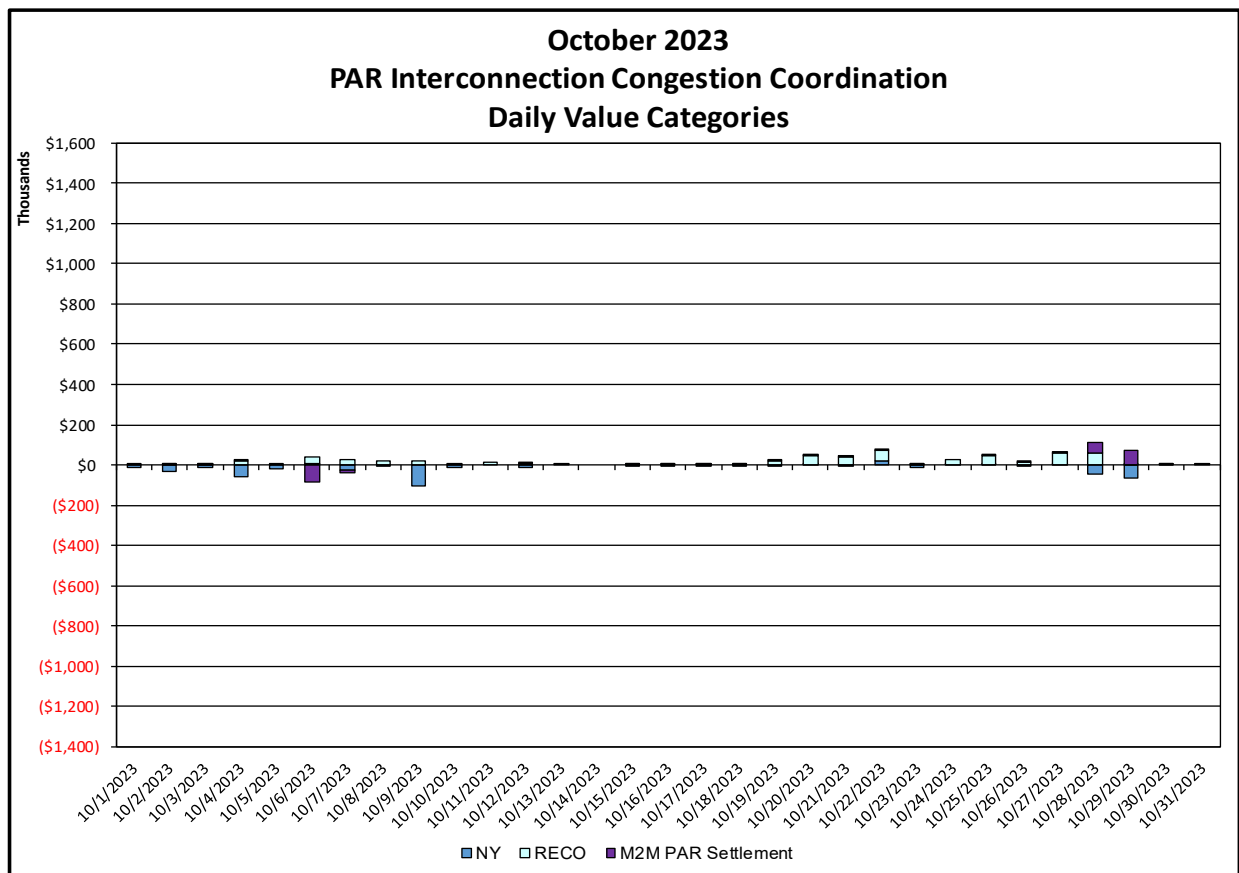
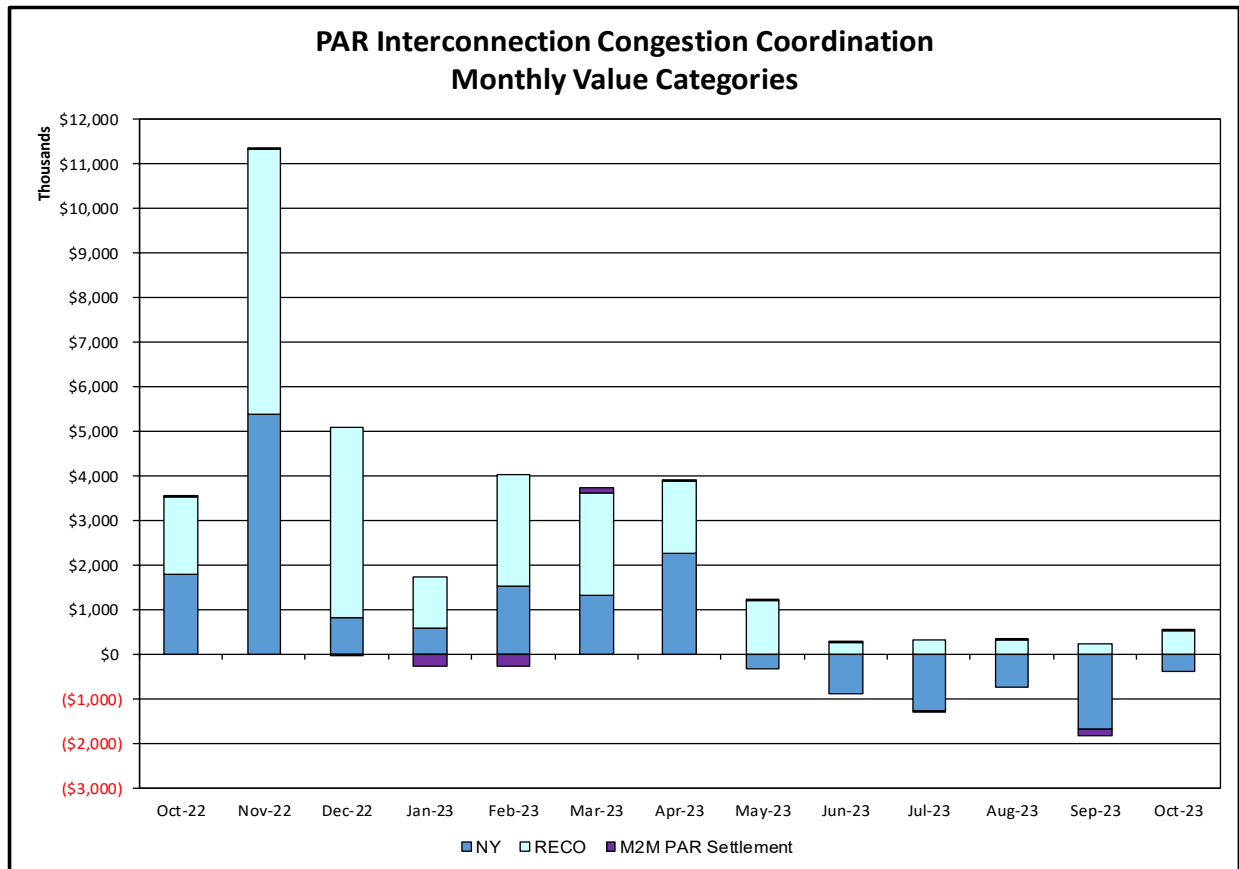
Daily Day-Ahead Market Capacity Unavailable In Real Time



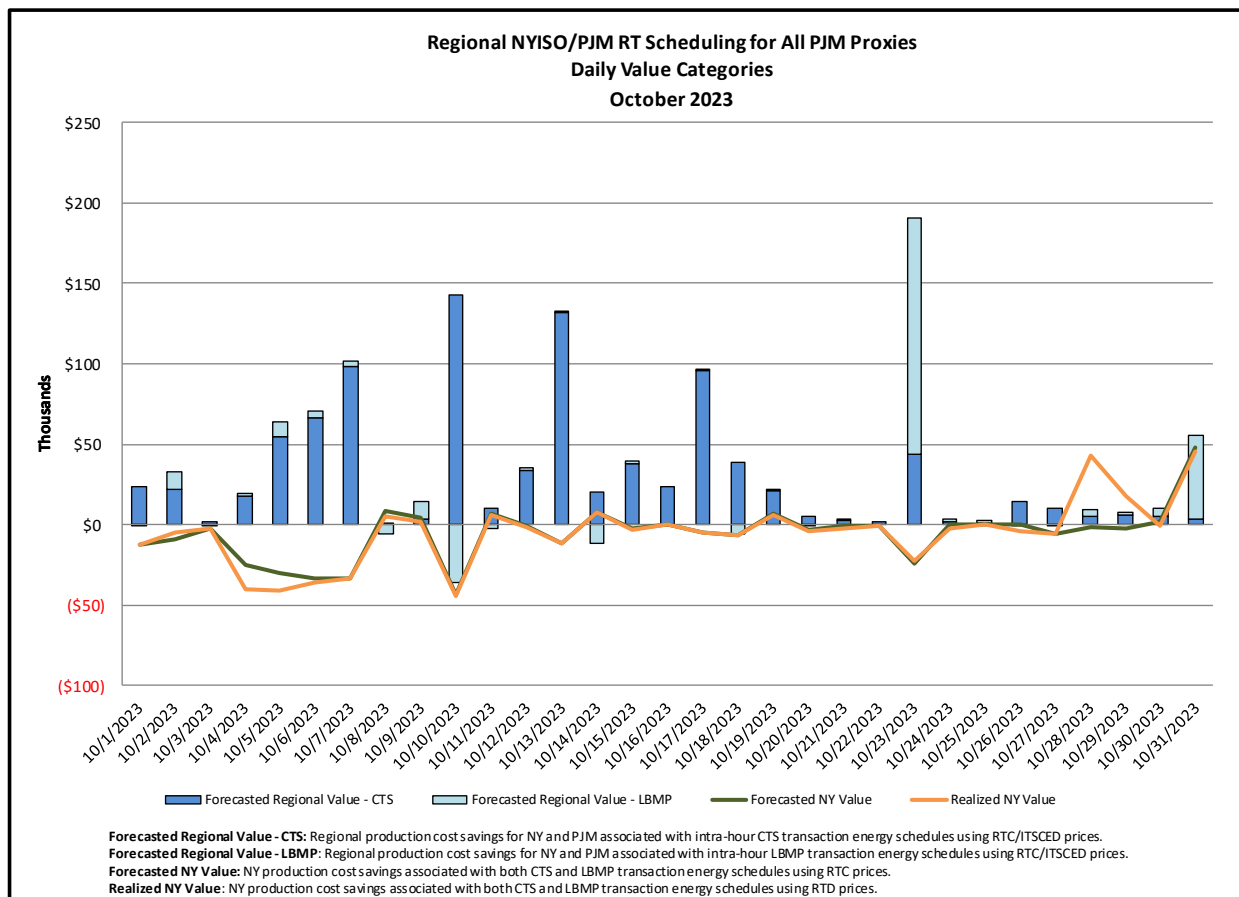
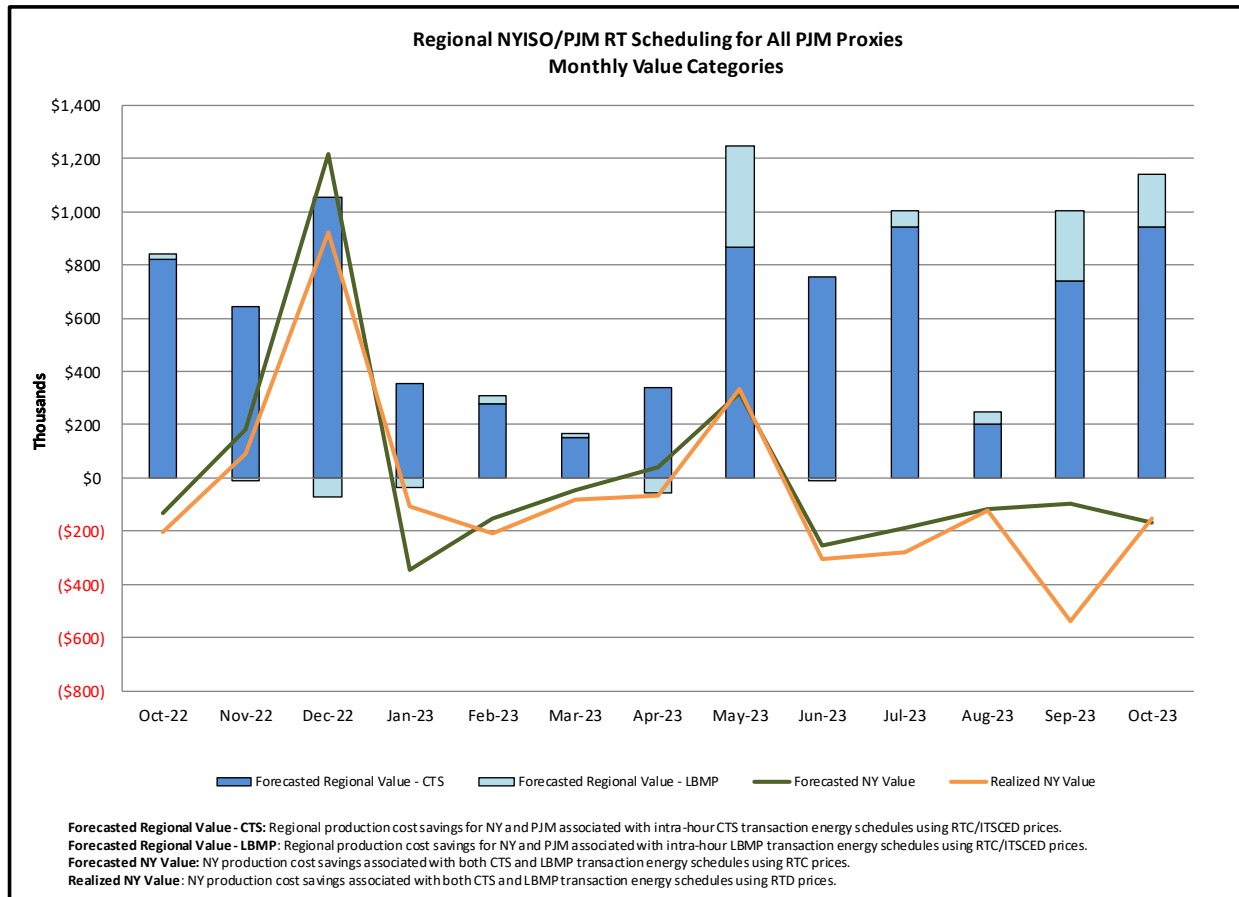
Unavailable Capacity is calculated as the difference of Day-Ahead Market (DAM) capacity relative to Real-Time (RT) capacity during RT peak load hour.

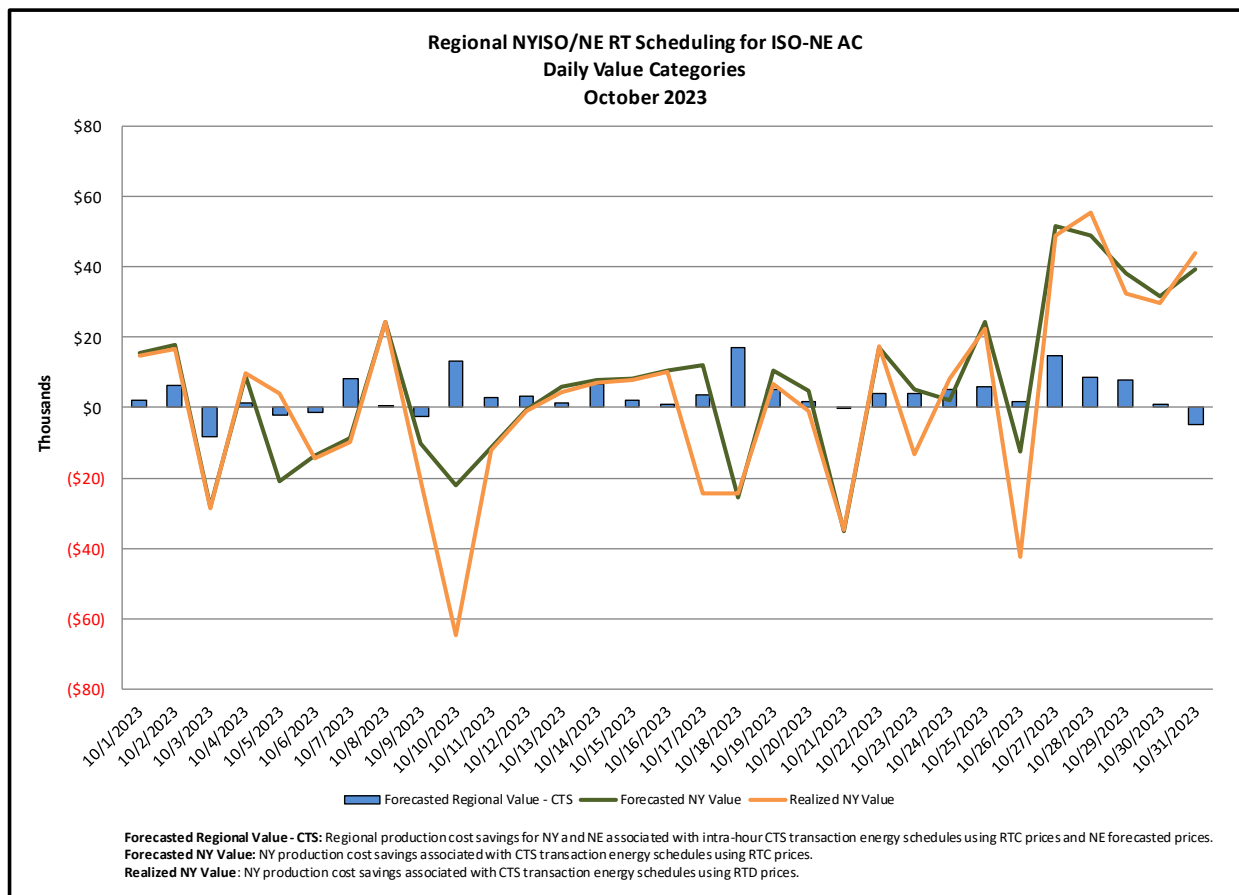
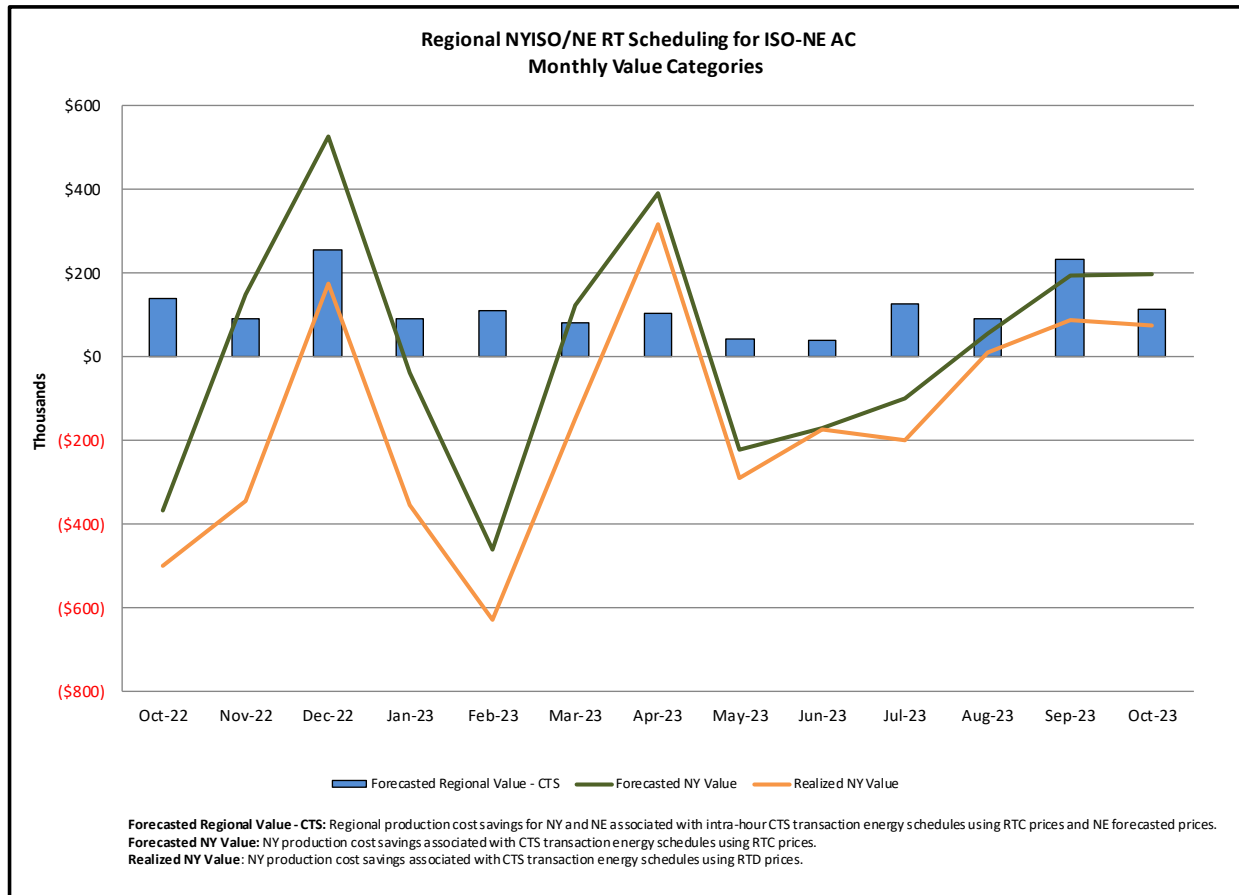


Broader Regional Market Performance Metrics

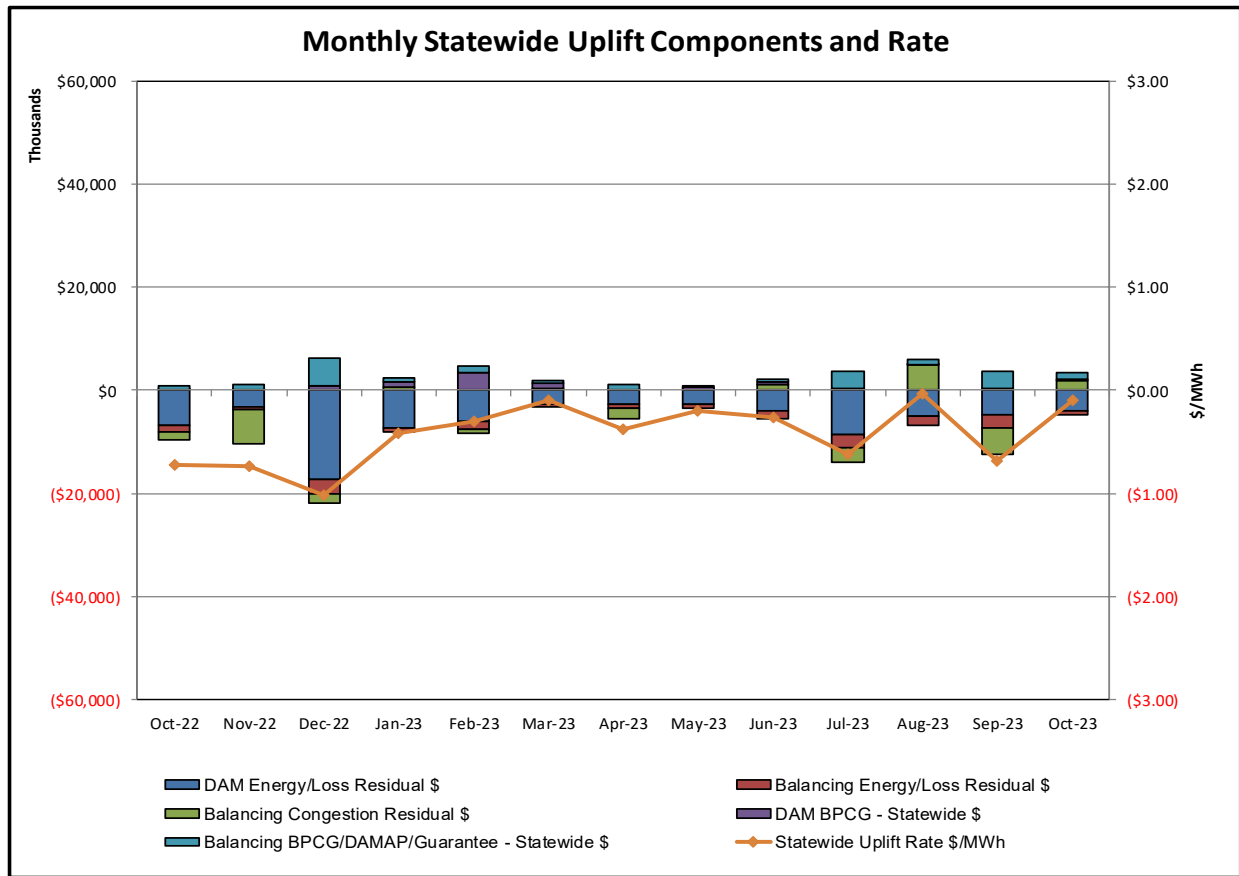


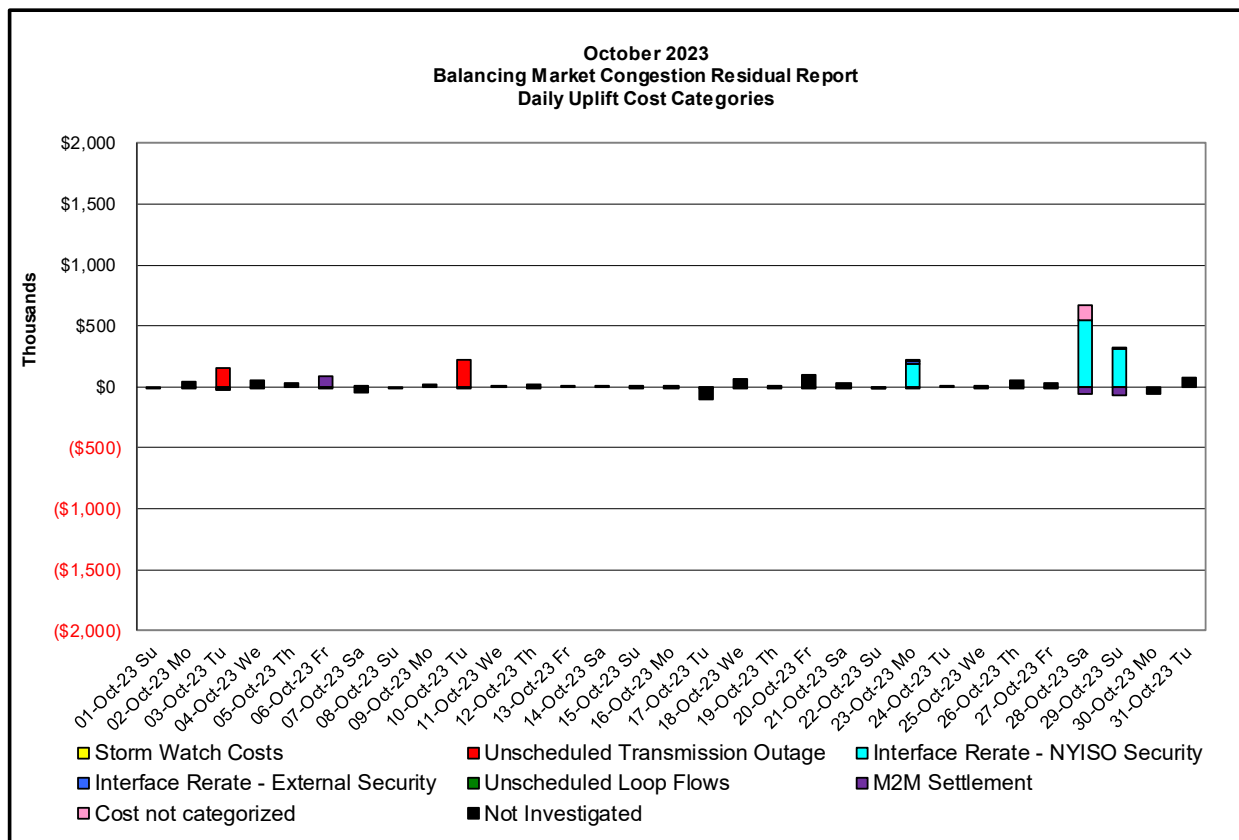
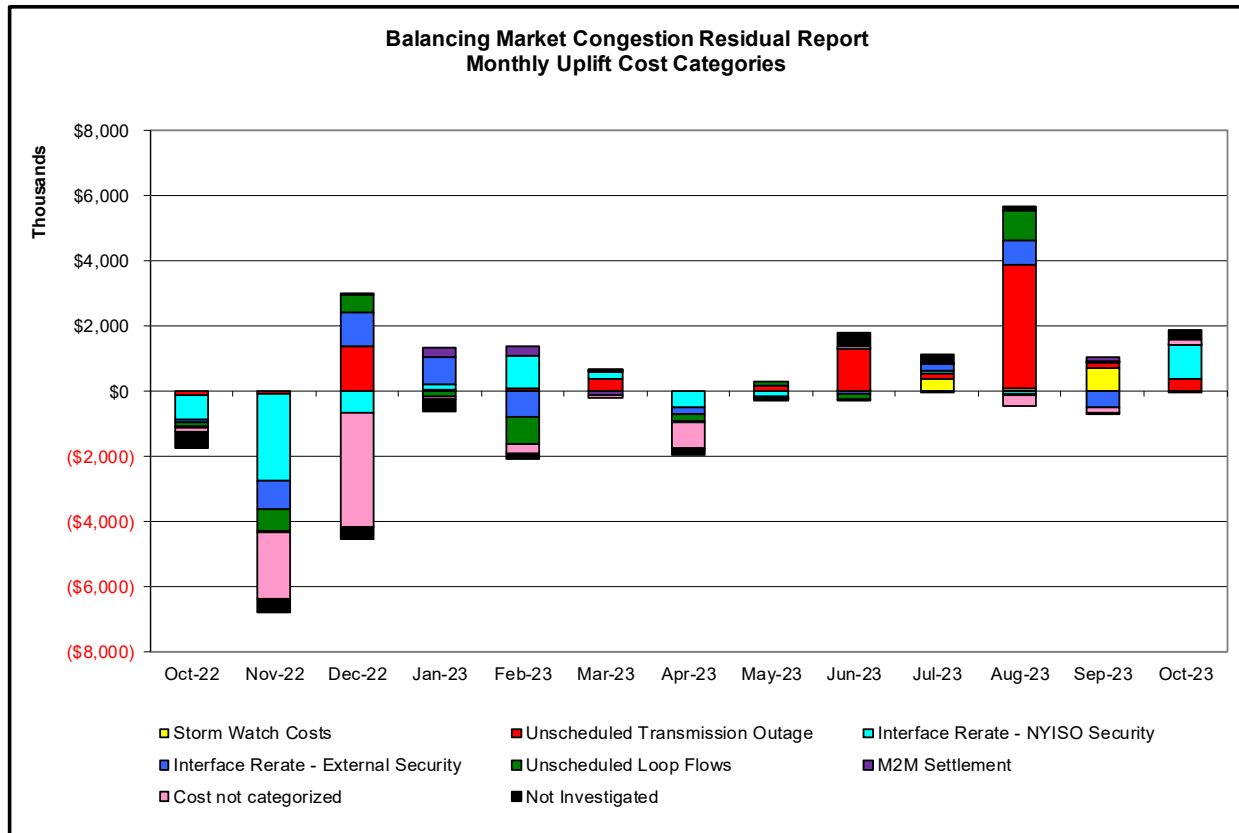
<u>PAR Interconnection Congestion Coordination</u>	
<u>Category</u>	<u>Description</u>
NY	Represents the value NY realizes from Market-to-Market PAR Coordination when experiencing congestion. This is the estimated savings to NY for additional deliveries into NY
RECO	Represents the value of PJM's obligation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





Market Performance Metrics





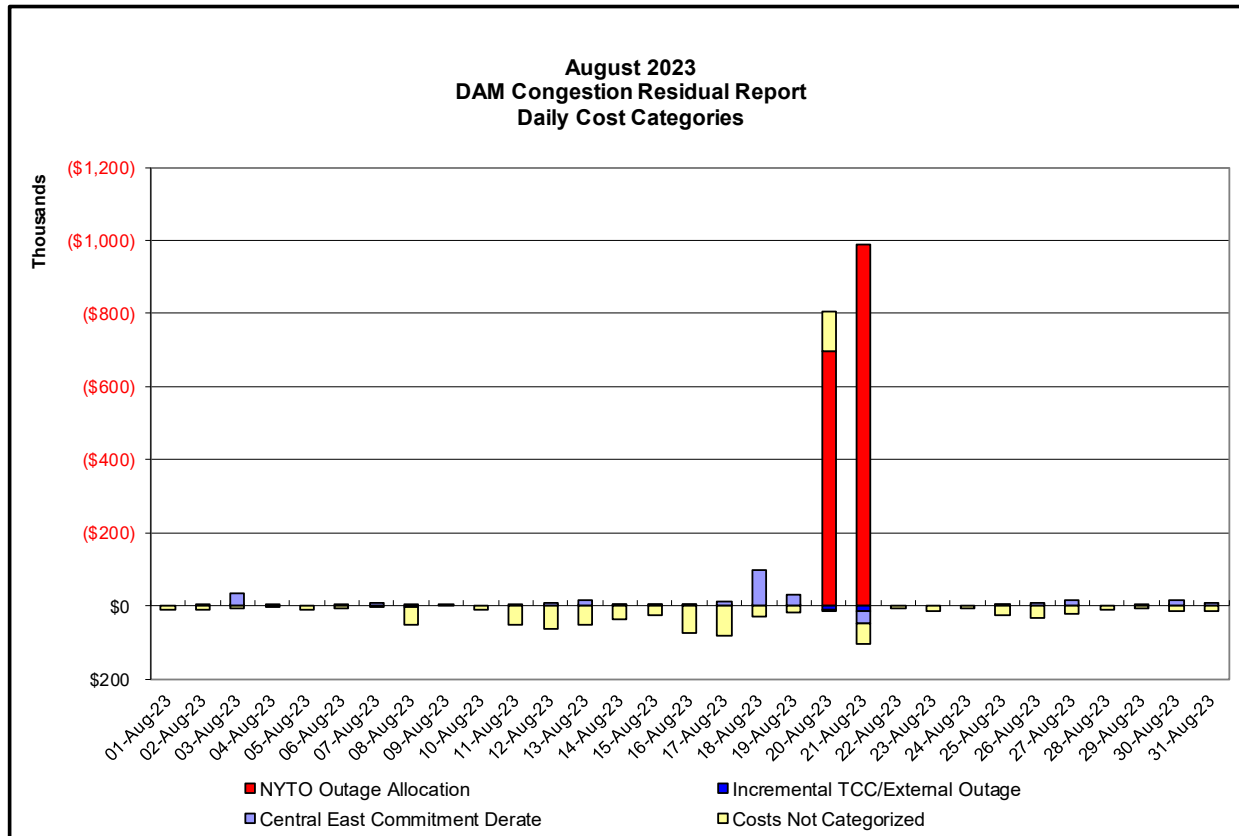
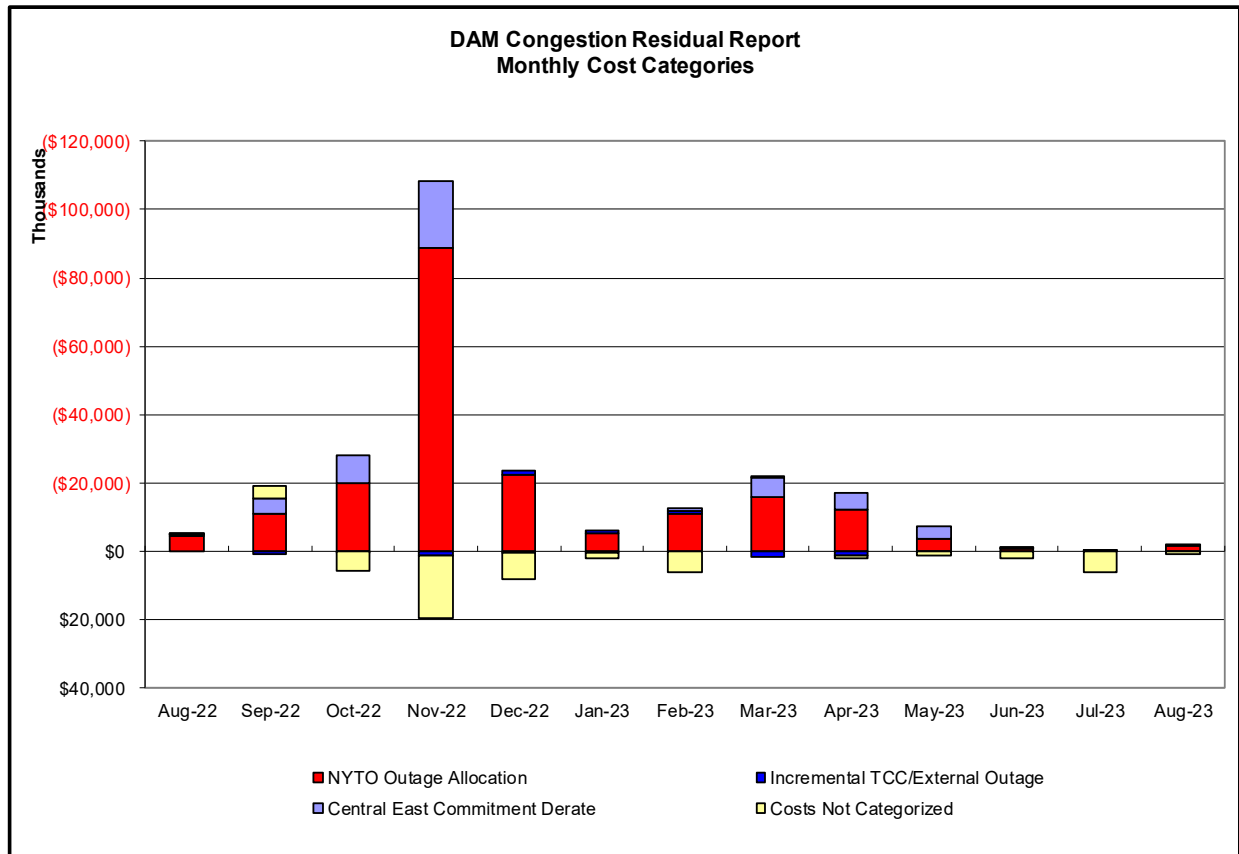
Day's investigated in October: 3,10,23,28,29			
Event	Date (yyyymmdd)	Hours	Description
	10/3/2023	15,19	Forced Outage Dunwoodie-Shore Road 345kV (#Y50)
	10/3/2023	12	Uprate East 179th St-Hellgate 138kV (#15055)
	10/3/2023	12	Uprate Freshkills-Willowbrook 138kV (#29212)
	10/3/2023	12	Uprate Gowanus-Greenwood 138kV (#42231)
	10/3/2023	12	Uprate Motthaven-Dunwoodie 345kV (#72)
	10/3/2023	12	Uprate Rainey-Vernon 138kV (#36311)
	10/10/2023	8-10	Forced Outage Nine Mile-Clay 345kV (#8)
	10/10/2023	16	Uprate Foxhills-Greenwood 138kV (#29232) I/o SCB:GOWANUS(14):42&42232&R14
	10/10/2023	16	Uprate Gowanus-Greenwood 138kV (#42231)
	10/23/2023	8	NYCA DNI Ramp Limit
	10/23/2023	0-5,7,8	Derate Deposit-IndianHead 69kV (#675) I/o TWR:HOLBROOK 880 & 882
	10/23/2023	18	Uprate Foxhills-Greenwood 138kV (#29232) I/o TWR:GOETHALS 22 & 21
	10/23/2023	18	NE AC ACTIVE DNI Ramp Limit
	10/23/2023	8	NE AC-NY Scheduling Limit
	10/28/2023	23	NYCA DNI Ramp Limit
	10/28/2023	23	Derate Mott Haven-Dunwoodie 345kV (#71)
	10/28/2023	23	Derate Sprainbrook-West 49th Street 345kV (#M51)
	10/28/2023	23	Derate Sprainbrook-West 49th Street 345kV (#M52)
	10/29/2023	0,1	Derate Mott Haven-Dunwoodie 345kV (#71)
	10/29/2023	0	Derate Mott Haven-Dunwoodie 345kV (#72)
	10/29/2023	0	Derate Sprainbrook-West 49th Street 345kV (#M51)
	10/29/2023	0	Derate Sprainbrook-West 49th Street 345kV (#M52)
	10/29/2023	9	Derate Sprainbrook/Dunwoodie South

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

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

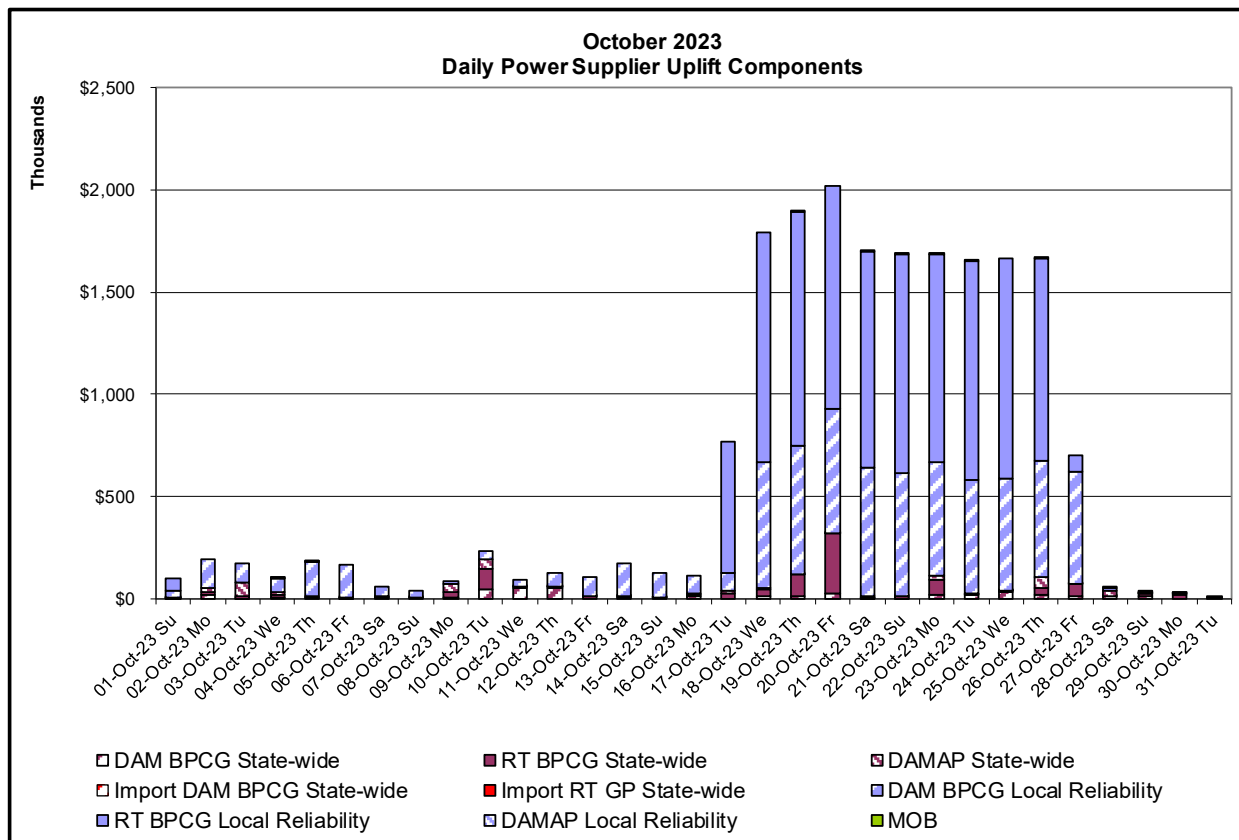
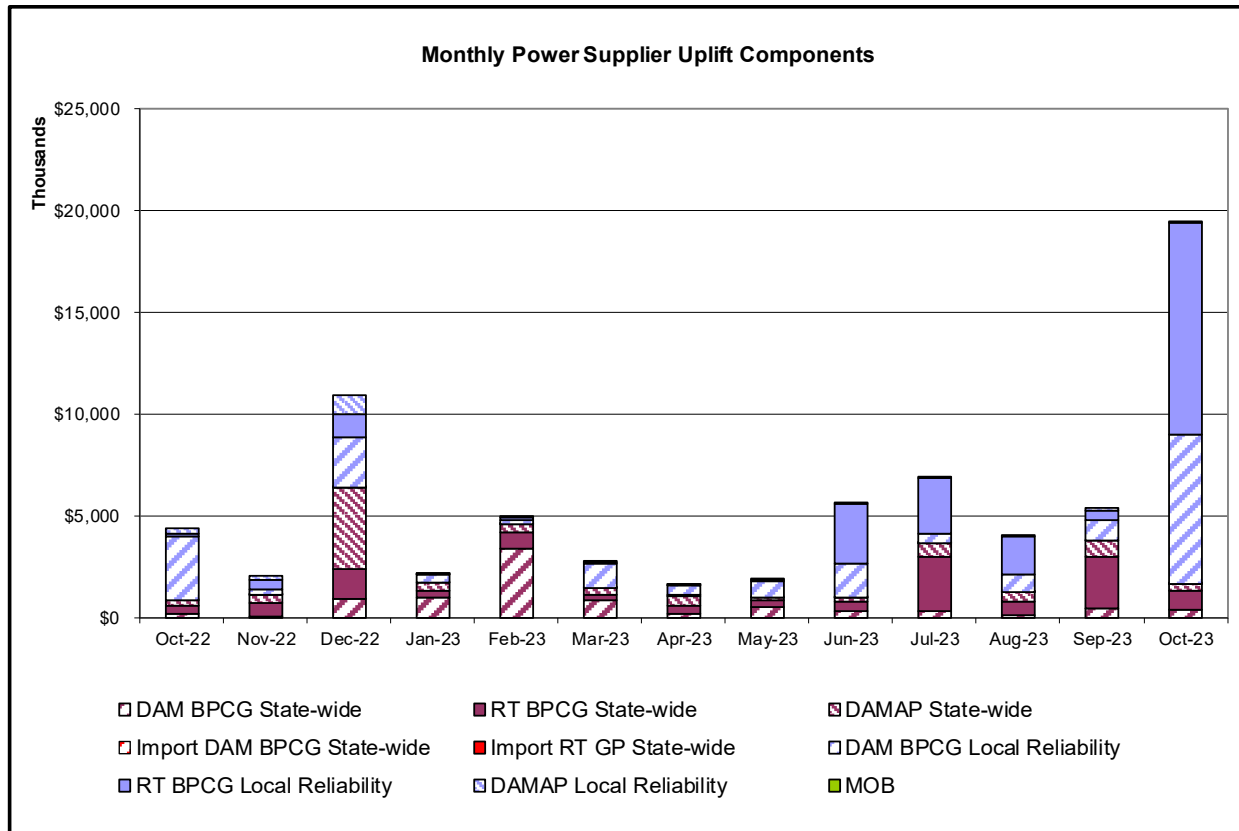
Monthly Balancing Market Congestion Report Assumptions/Notes

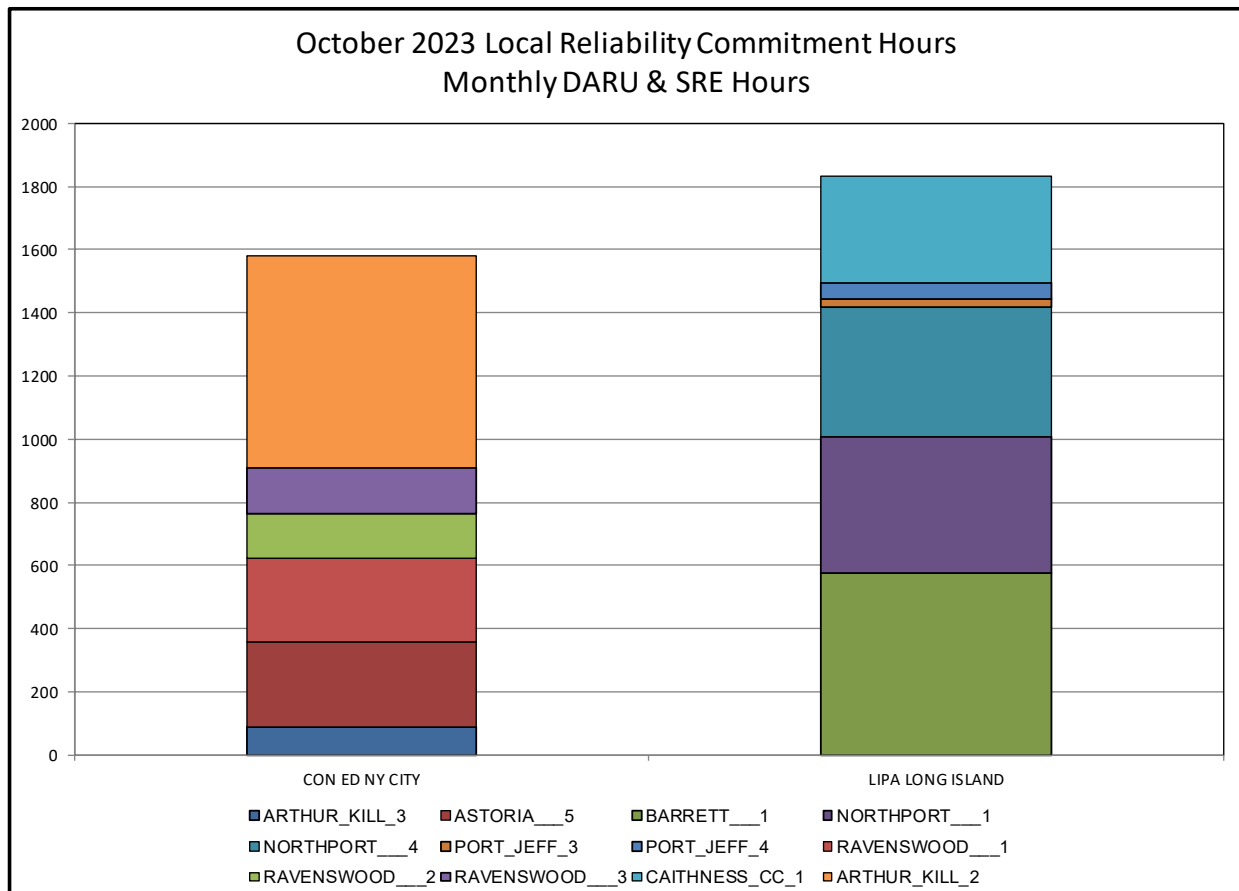
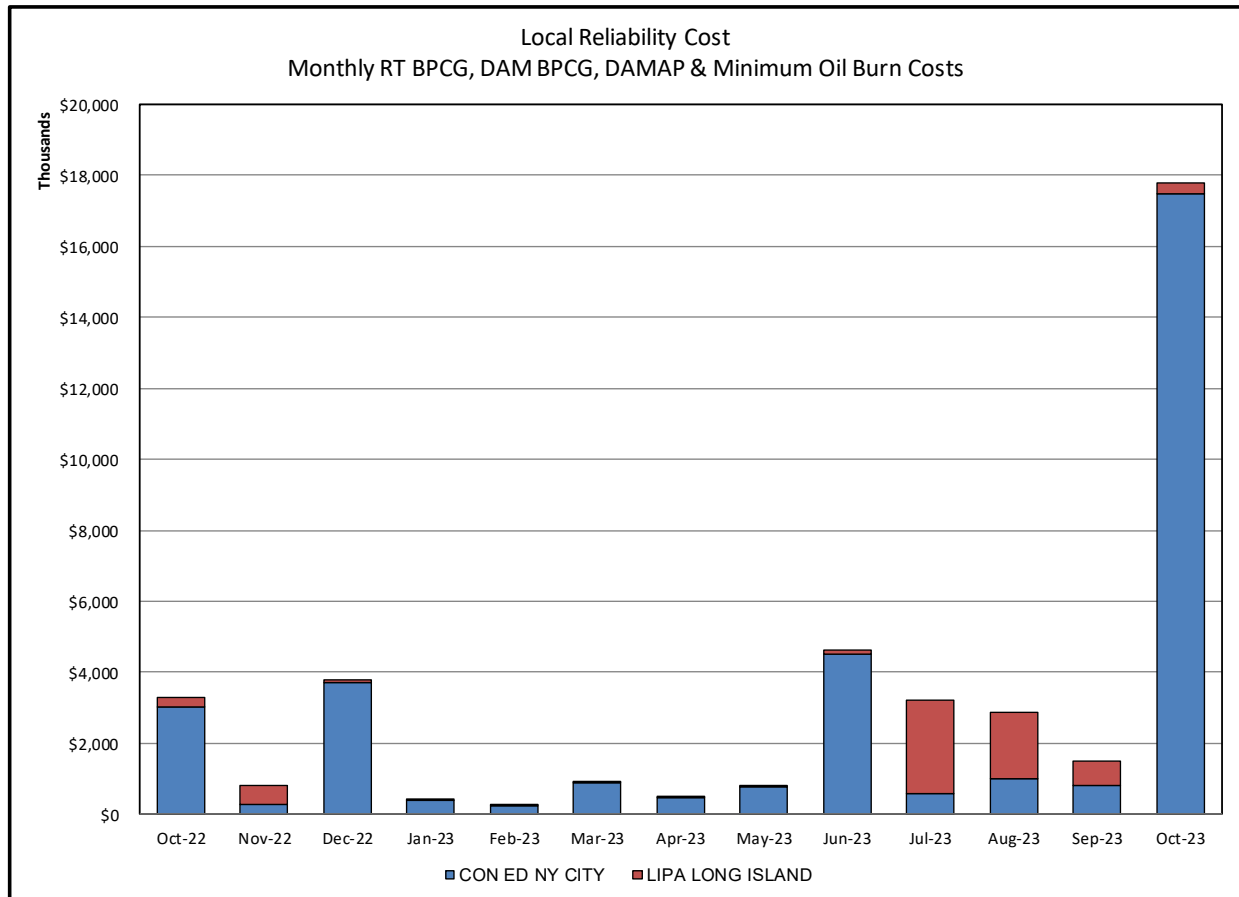
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

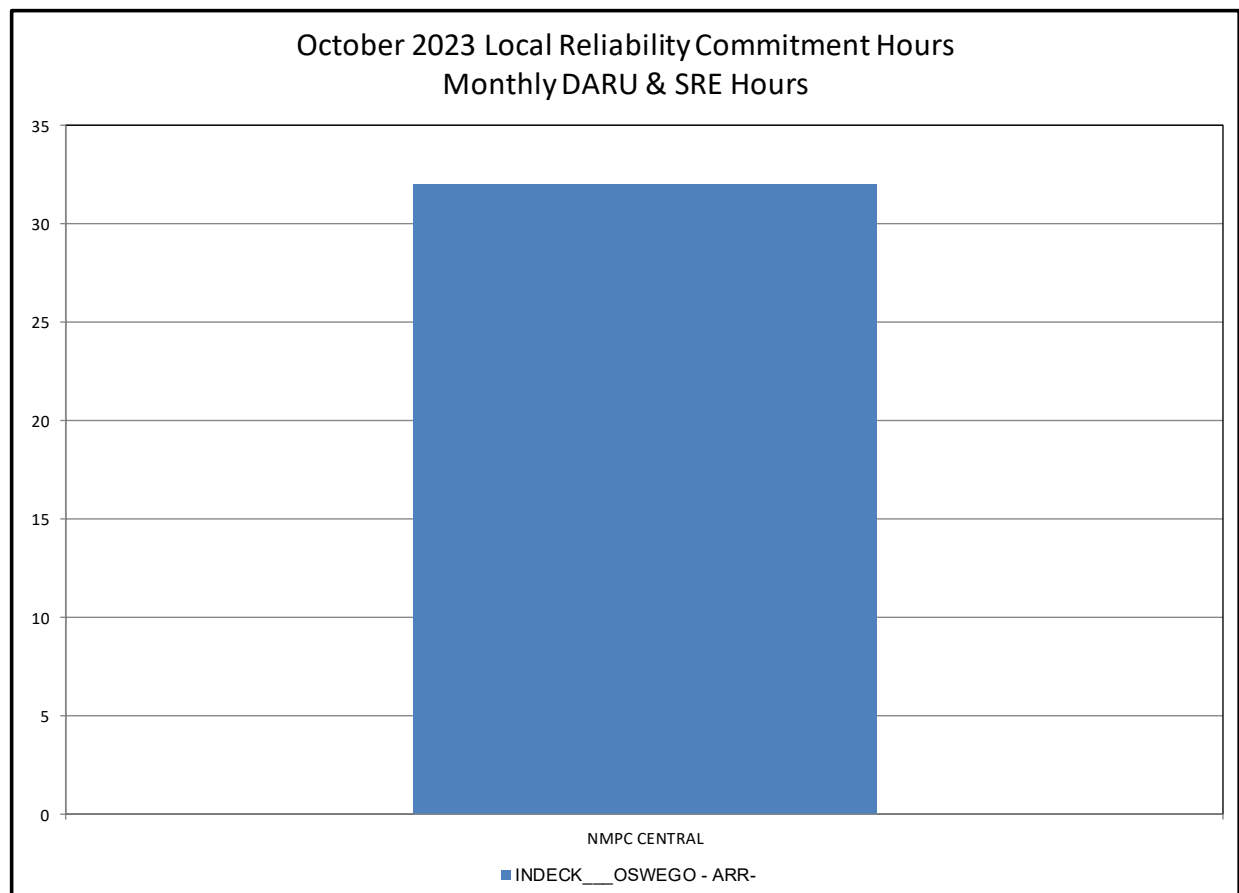
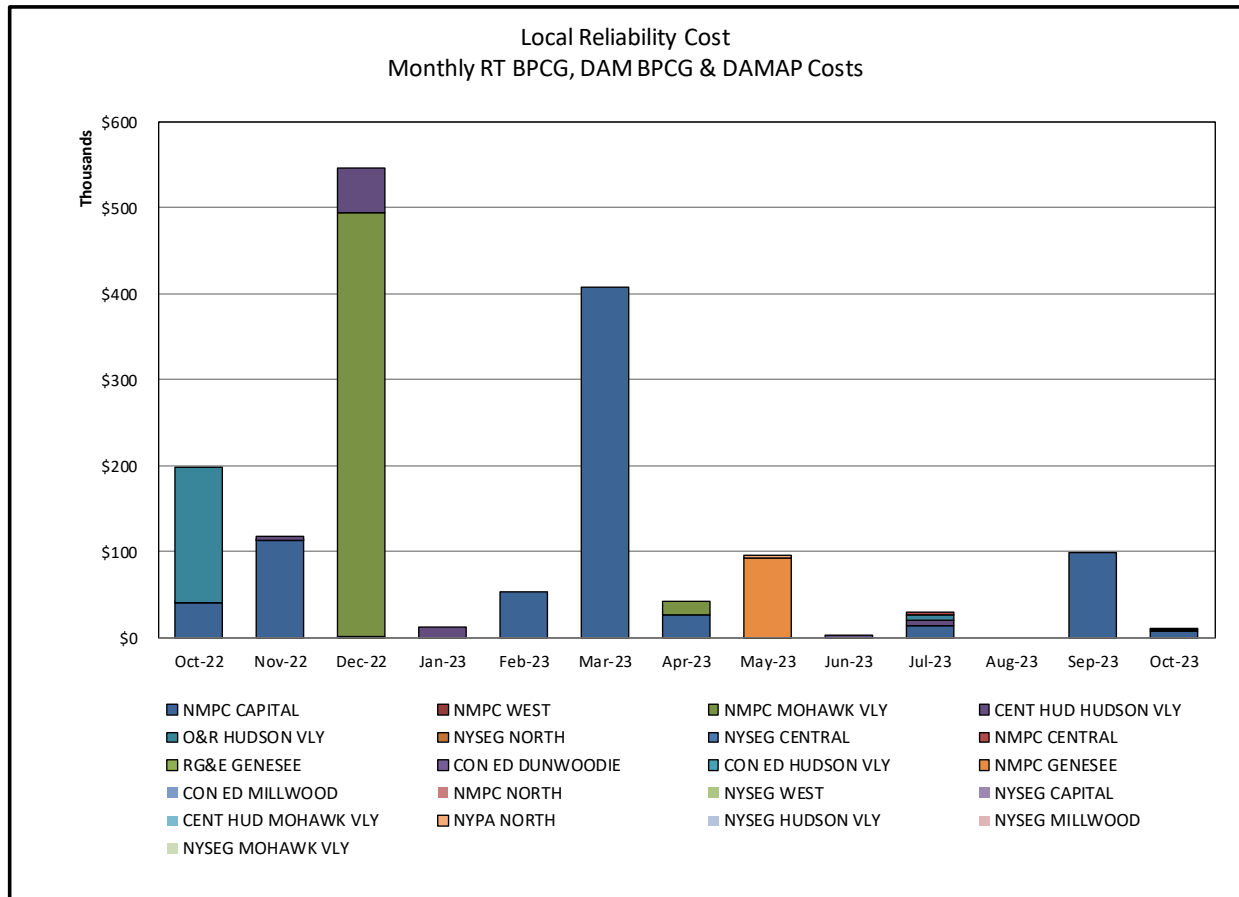


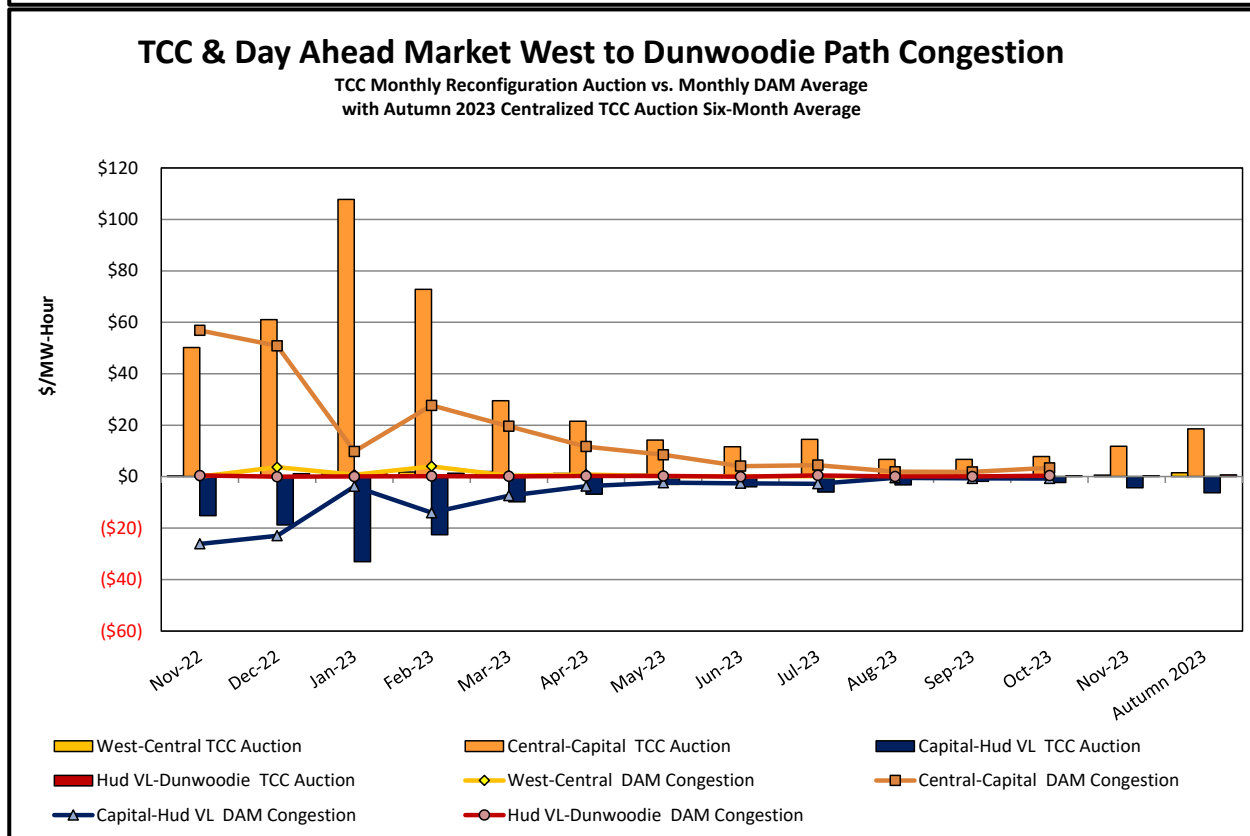
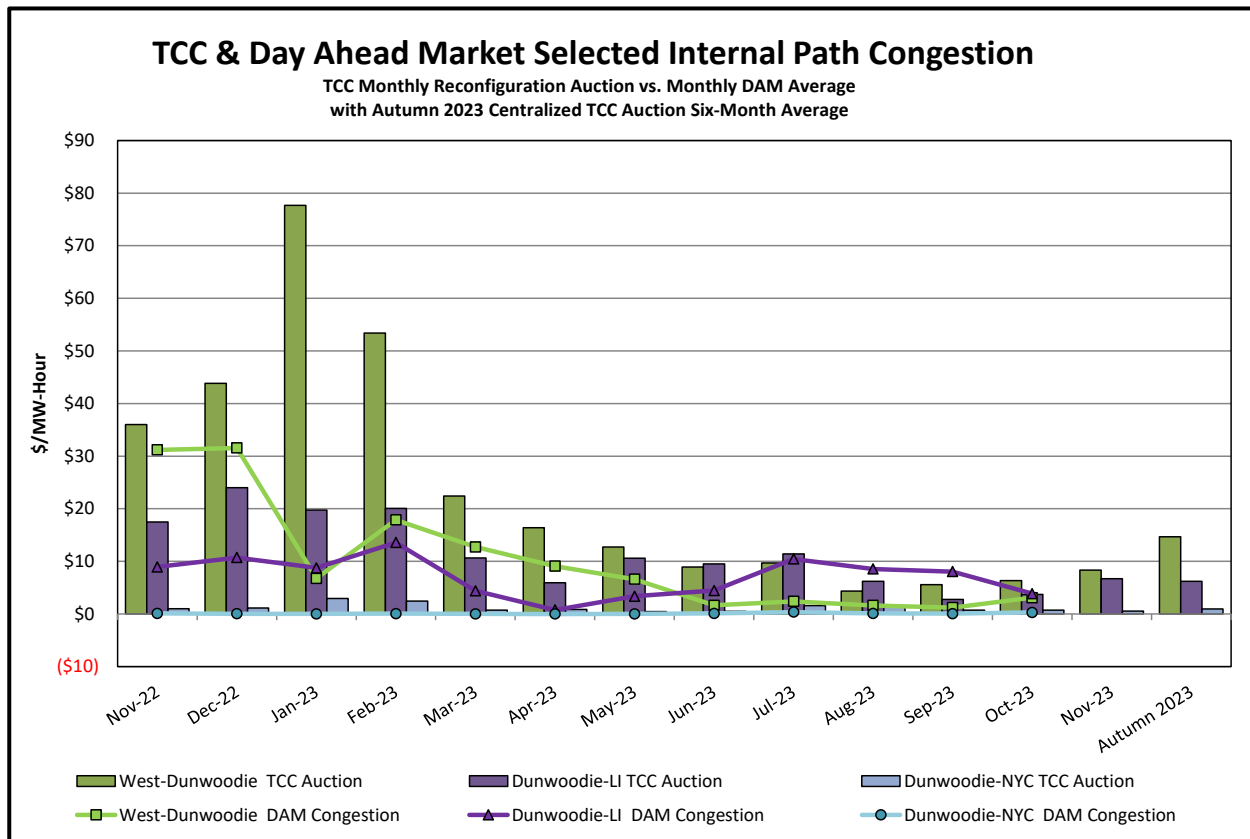
Day-Ahead Market Congestion Residual Categories

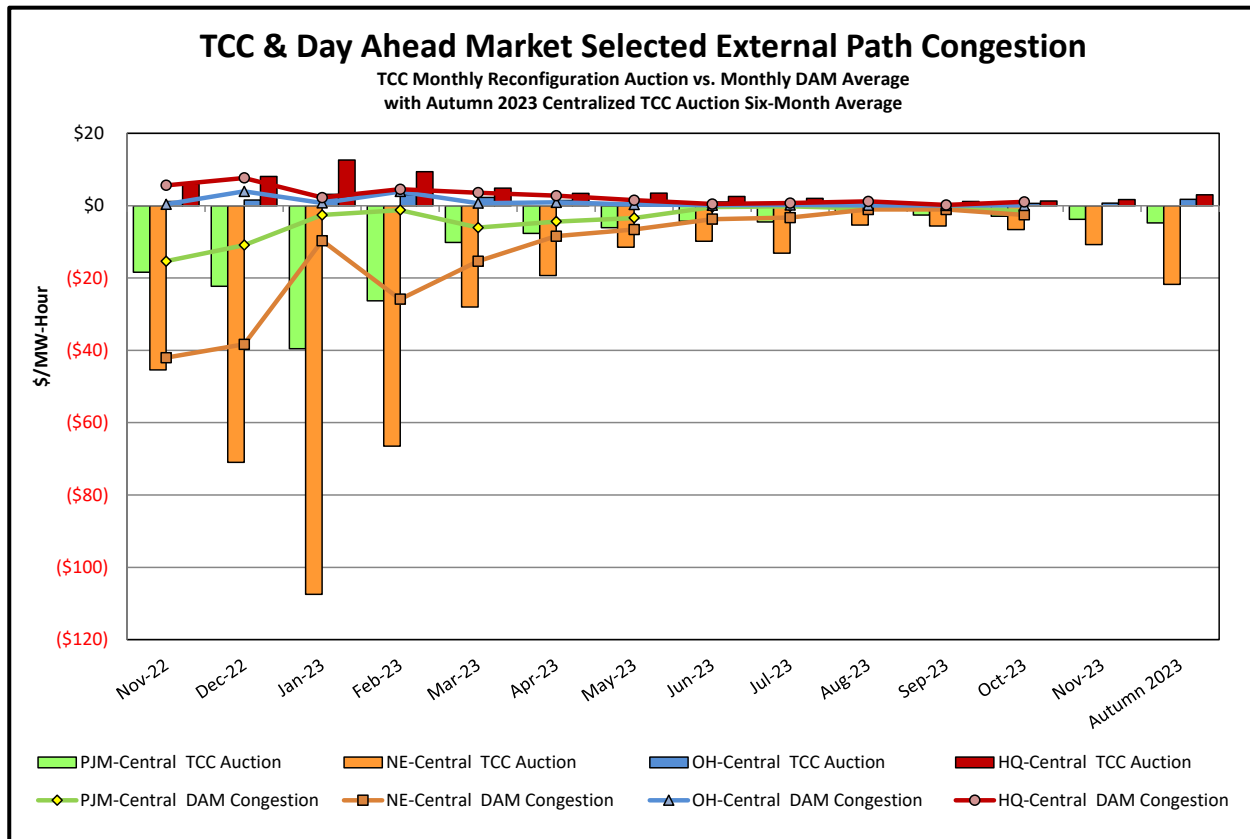
<u>Category</u>	<u>Cost Assignment</u>	<u>Events Types</u>	<u>Event Examples</u>
NYTO Outage Allocation	Responsible TO	Direct allocation to NYTO's responsible for transmission equipment status change.	DAM scheduled outage for equipment modeled in-service for the TCC Auction.
Incremental TCC/External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



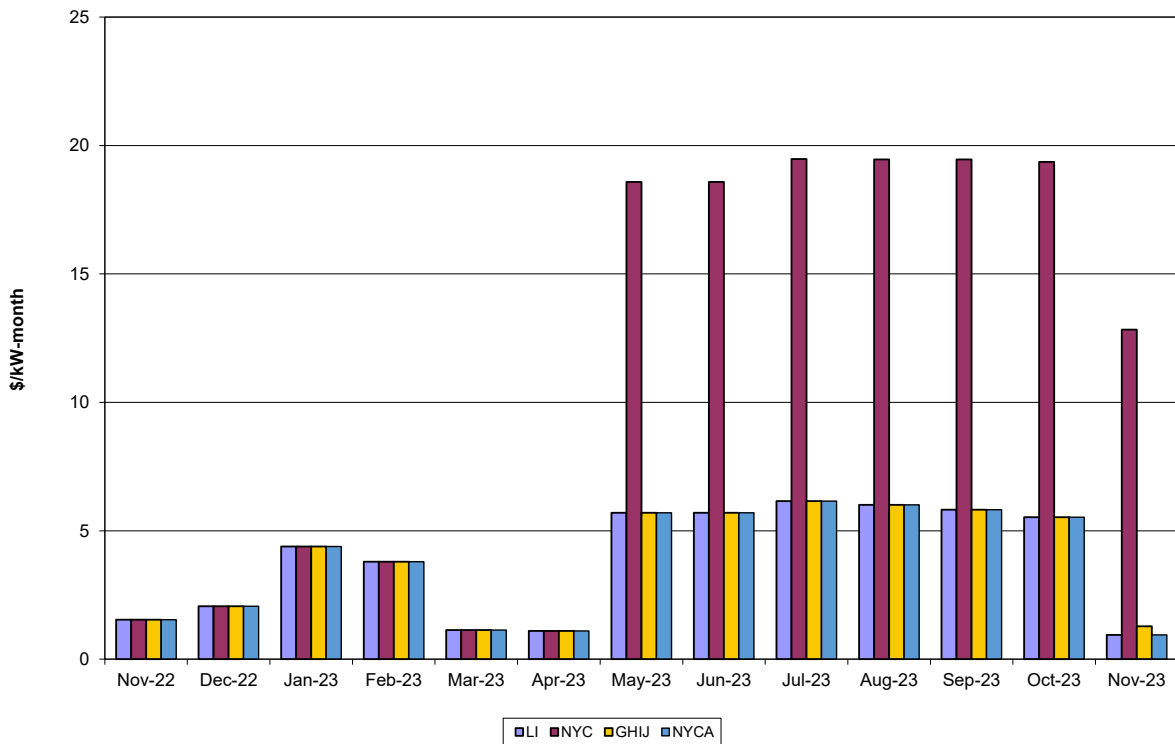








ICAP Spot Market Clearing Price



UCAP Sales

