

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



## ***February 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 March 8, 2023.

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## February 2023 Operations Performance Highlights

- February 2023 peak load of 23,369 MW occurred on 02/03/2023 HB 18
- Winter 2022-2023 capability period peak load to date of 23,369 MW occurred on 02/03/2023 HB 18
- All-time winter capability period peak load of 25,738 MW occurred on 01/07/2014 HB 18
- 0.0 hours of Thunderstorm Alerts were declared
- 70.9 hours of NERC TLR level 3 curtailment

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)
2,424 MW	4,383 MW	114 MW	20 MW

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

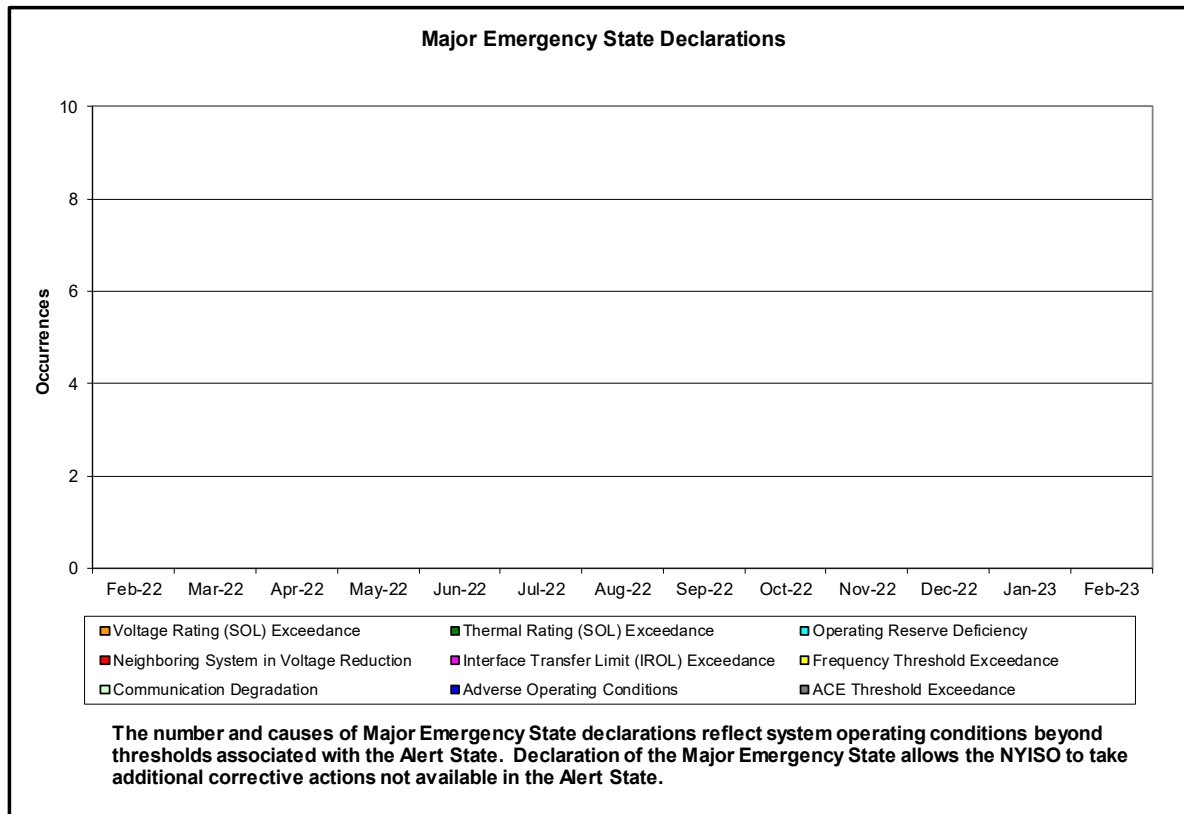
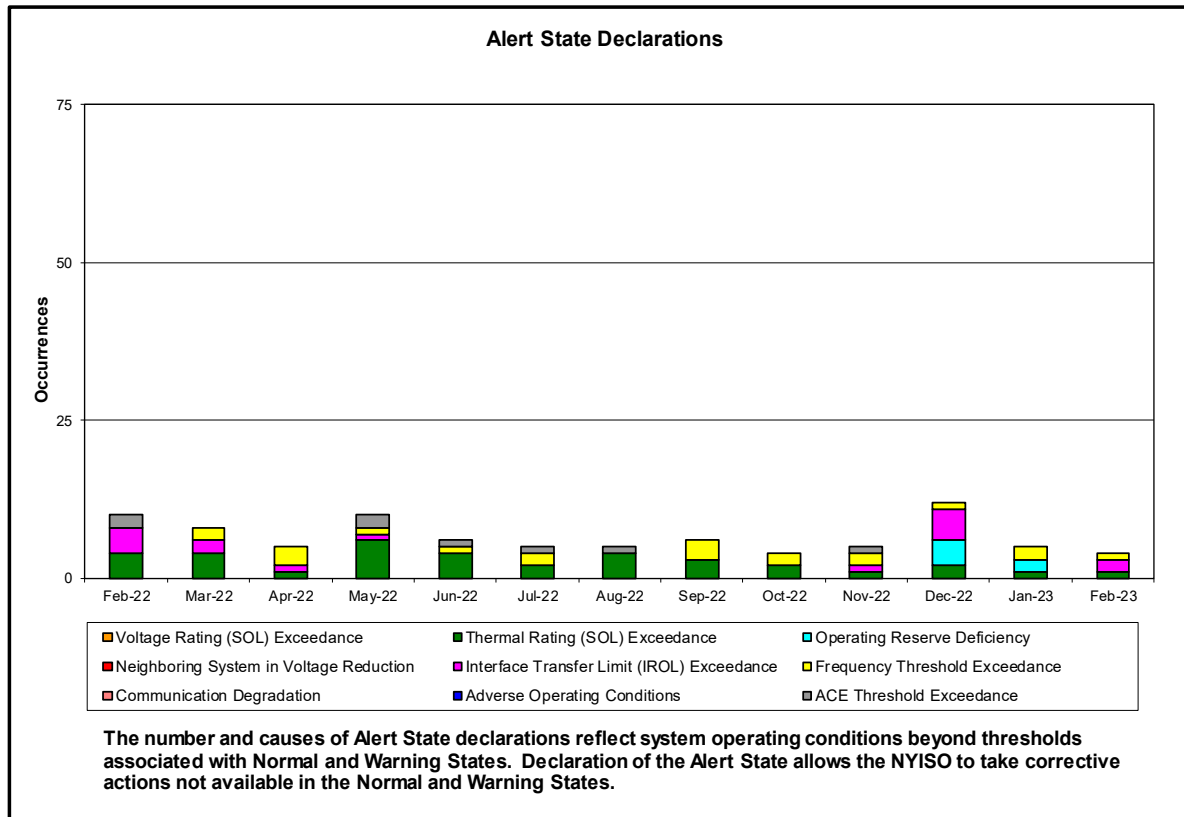
	Current Month Value (\$M)	Year-to-Date Value (\$M)
<b>NY Savings from PJM-NY Congestion Coordination</b>	\$3.72	\$5.16
<b>NY Savings from PJM-NY Coordinated Transaction Scheduling</b>	(\$0.21)	(\$0.31)
<b>NY Savings from NE-NY Coordinated Transaction Scheduling</b>	(\$0.63)	(\$0.99)
<b>Total NY Savings</b>	<b>\$2.88</b>	<b>\$3.86</b>
<b>Regional Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.31	\$0.63
<b>Regional Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.11	\$0.20
<b>Total Regional Savings</b>	<b>\$0.42</b>	<b>\$0.82</b>

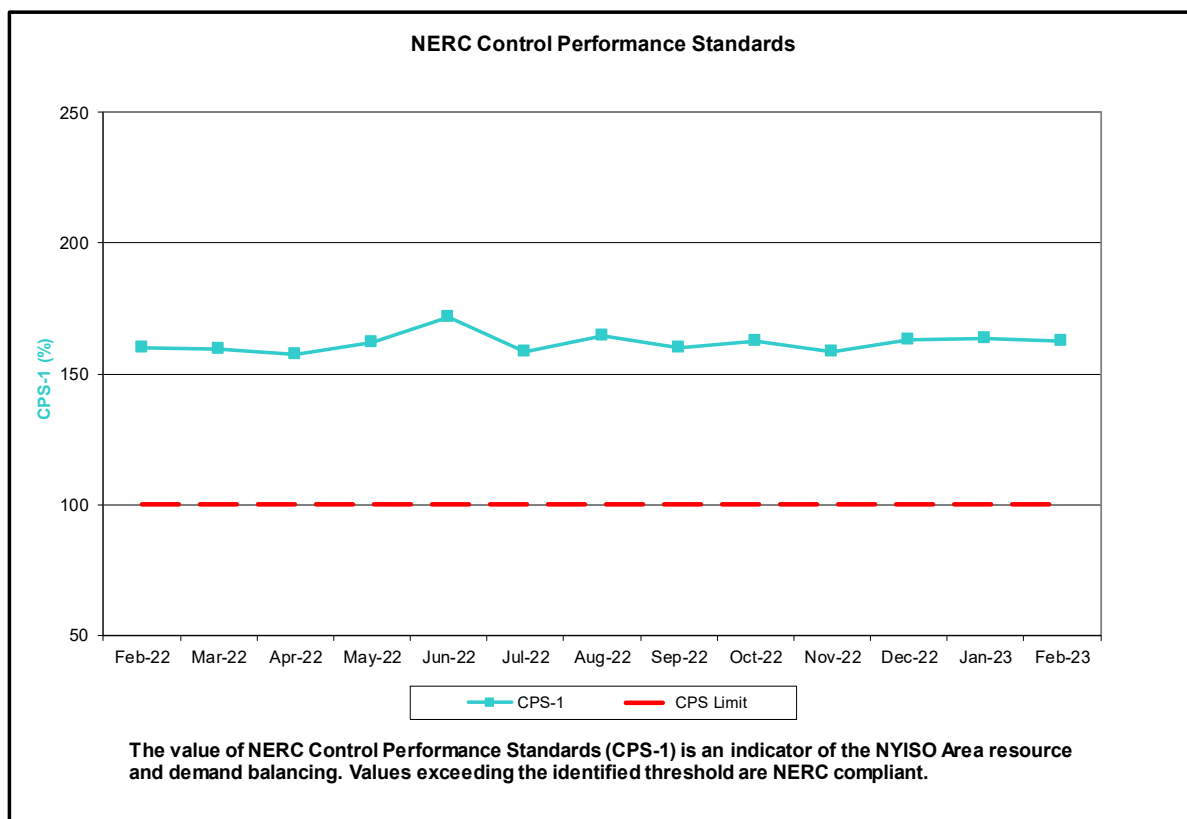
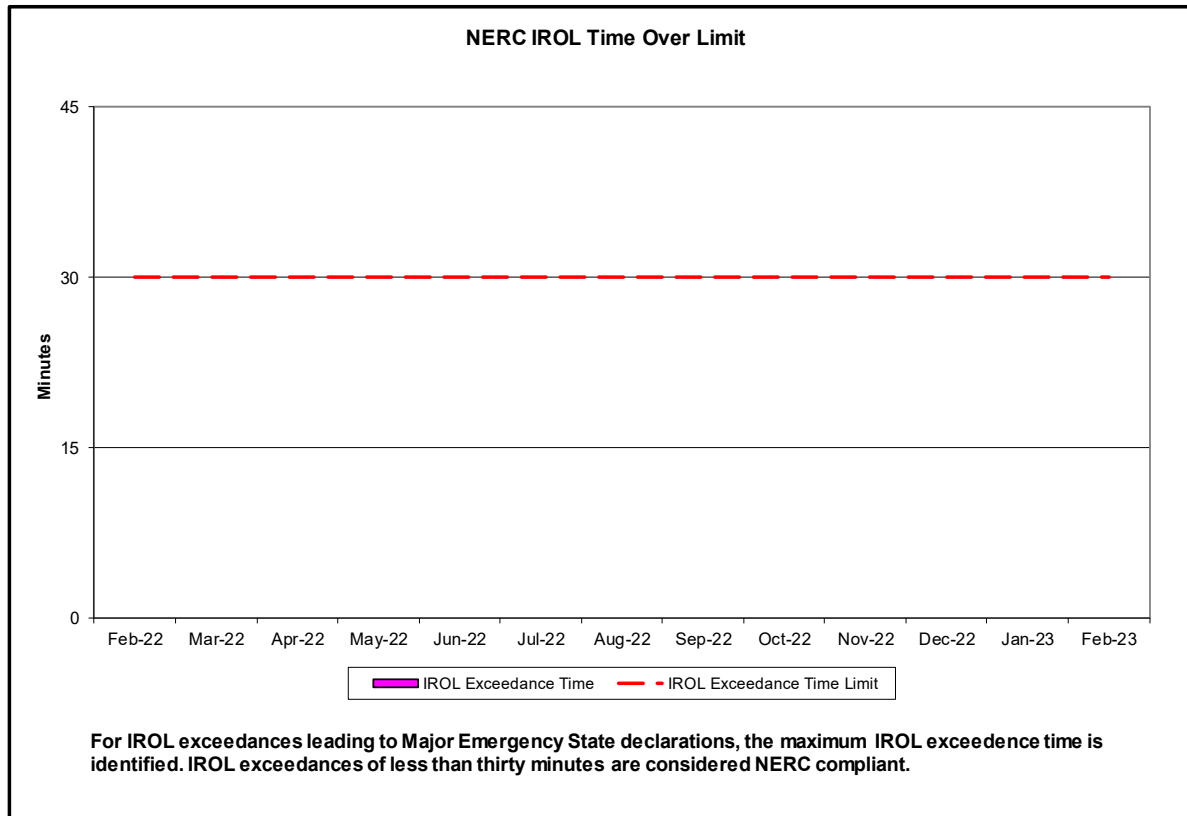
- Statewide uplift cost monthly average was (\$0.40)/MWh.
- The following table identifies the Monthly ICAP spot market prices and the price delta.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
February 2023 Spot Price	\$3.80	\$3.80	\$3.80	\$3.80
January 2023 Spot Price	\$4.39	\$4.39	\$4.39	\$4.39
Delta	(\$0.59)	(\$0.59)	(\$0.59)	(\$0.59)

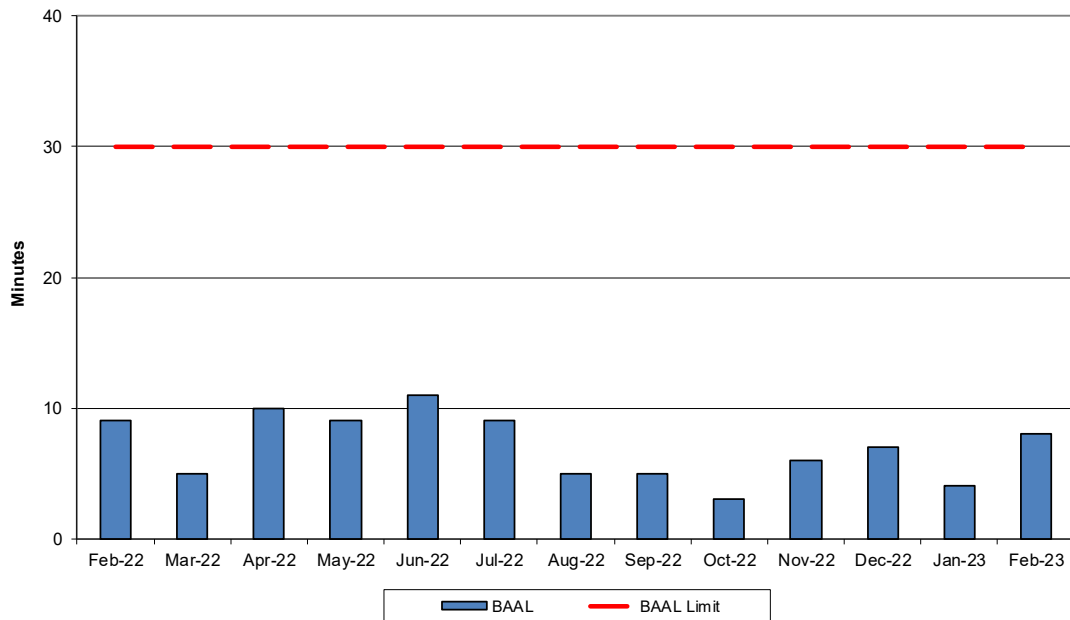
- Price decline in all zones was driven by a decline in unoffered MW

## Reliability Performance Metrics



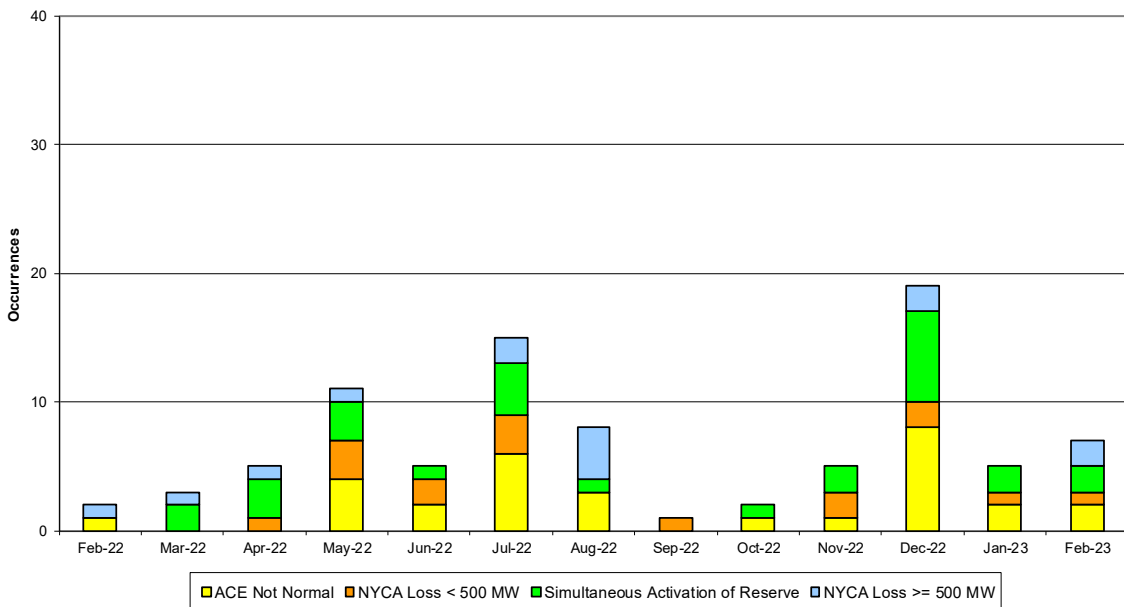


### NERC Balancing Authority ACE Limit Standard



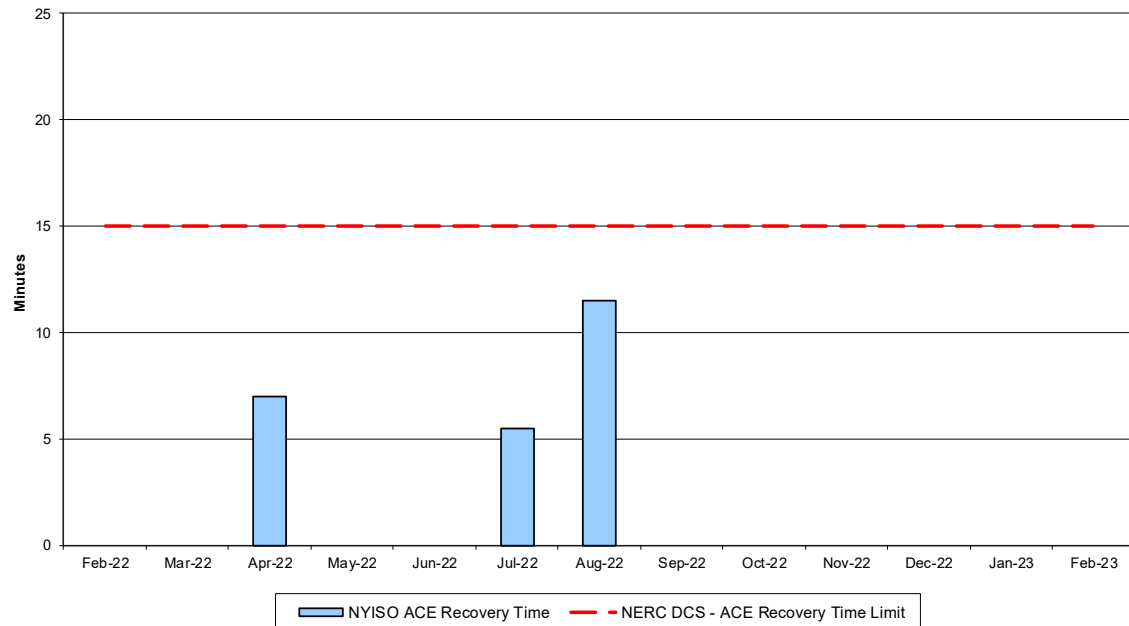
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

### Reserve Activations



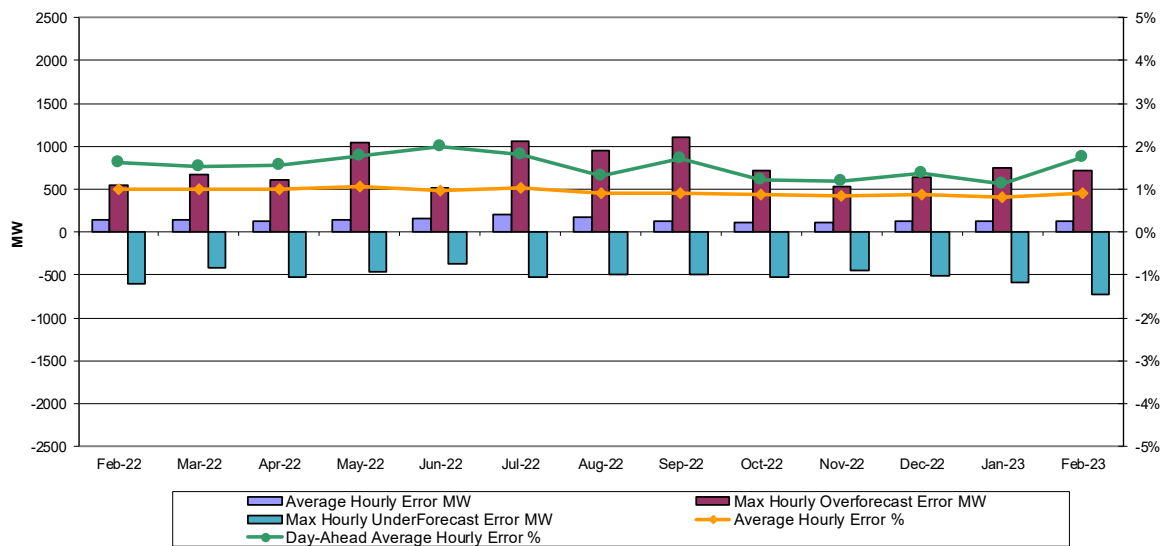
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

### DCS Event Time to ACE Recovery



For NYISO initiated NERC Reportable Disturbances, the maximum ACE recoverytime is identified. Recoverytimes of less than 15 minutes are considered NERC compliant.

### Load Forecast Performance

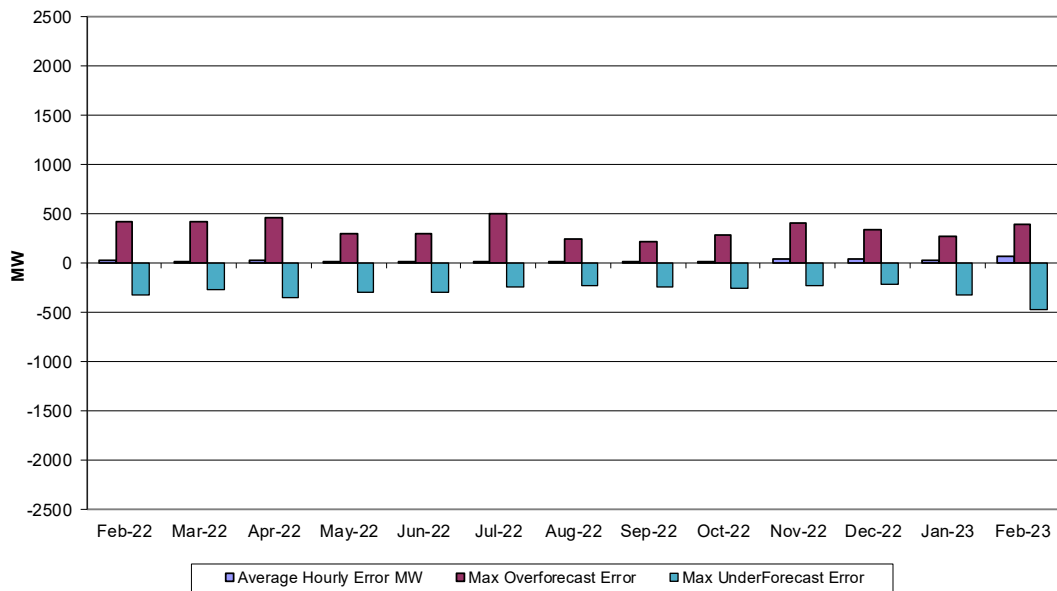


**Hourly Error MW** - Value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.

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

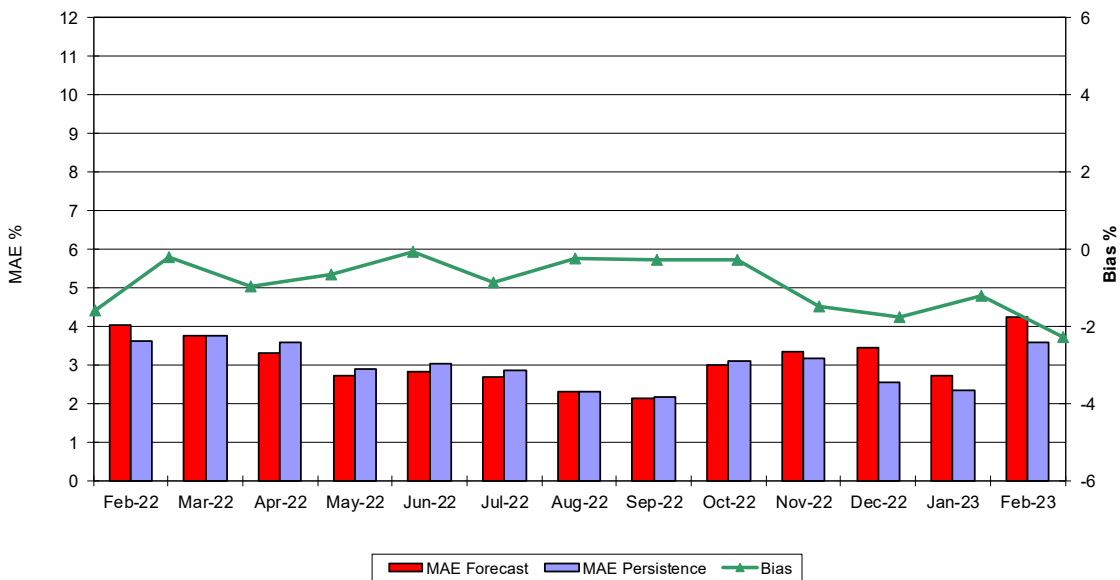
**Day-Ahead Average Hourly Error %** - Average across all hours of the month of the absolute value of the difference between actual load demand and the Day-Ahead forecast load demand, divided by the actual load demand.

### Wind Forecast Performance Hour Ahead MW Error



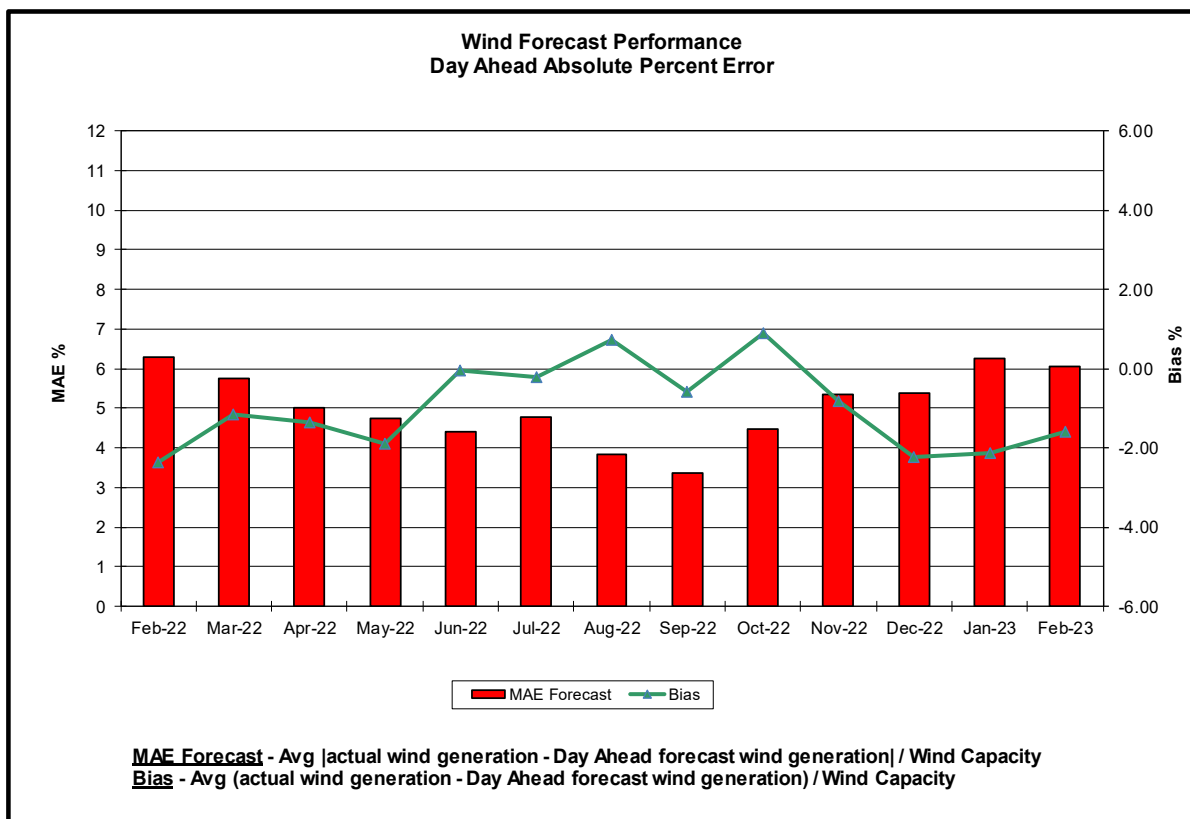
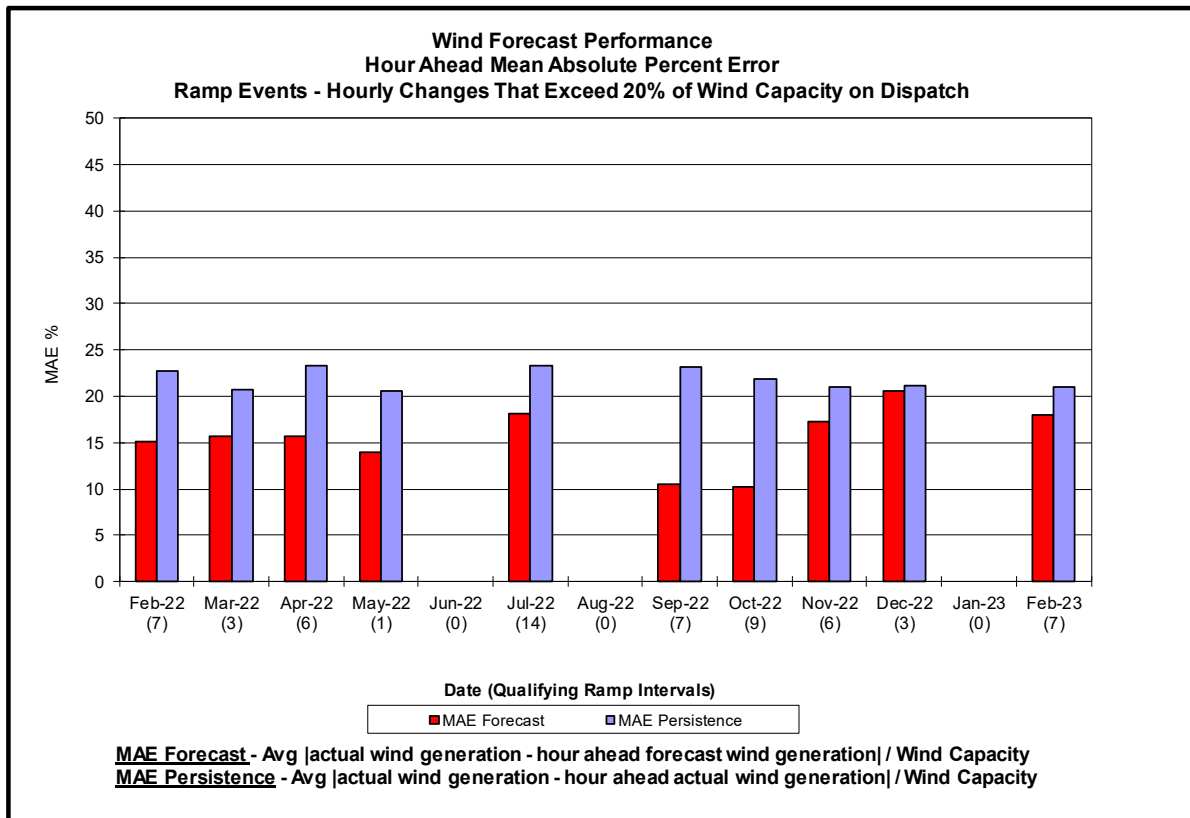
**Hourly Error MW** - Value of the difference between the hourly average actual wind generation and the average hour ahead forecast wind generation.

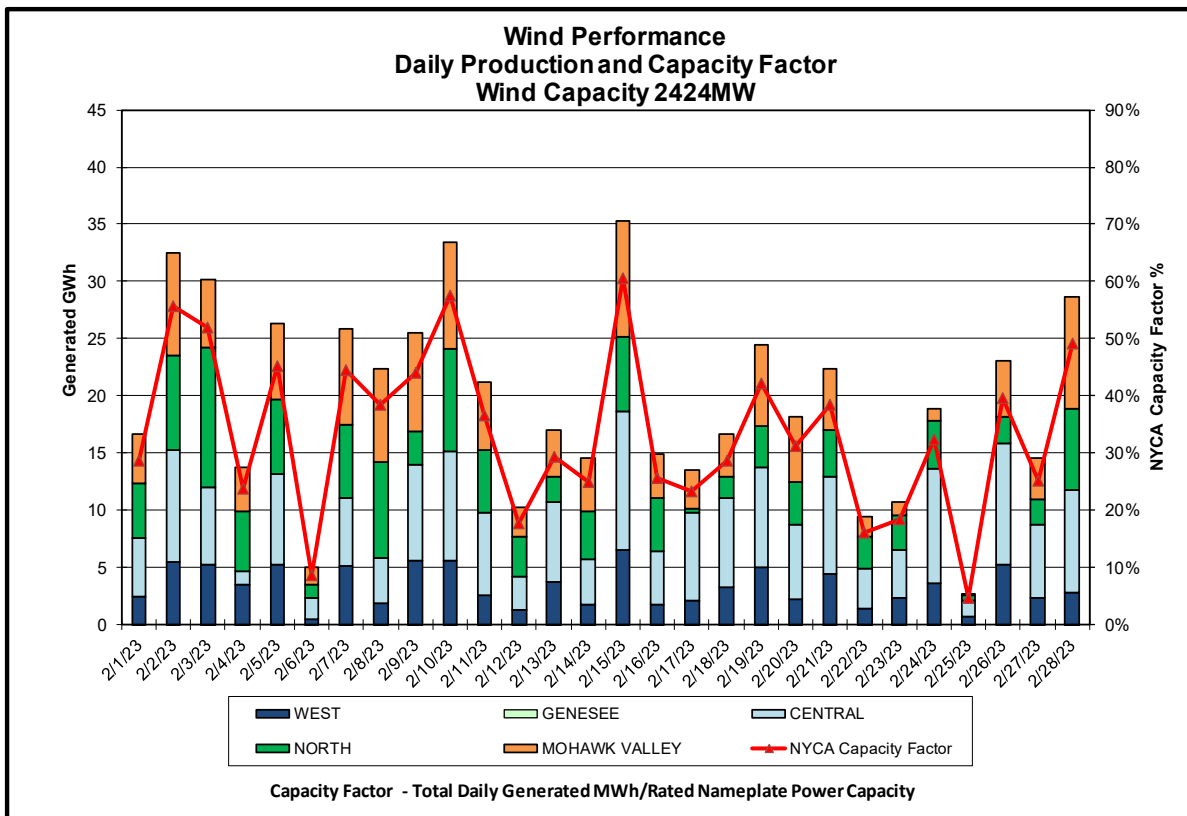
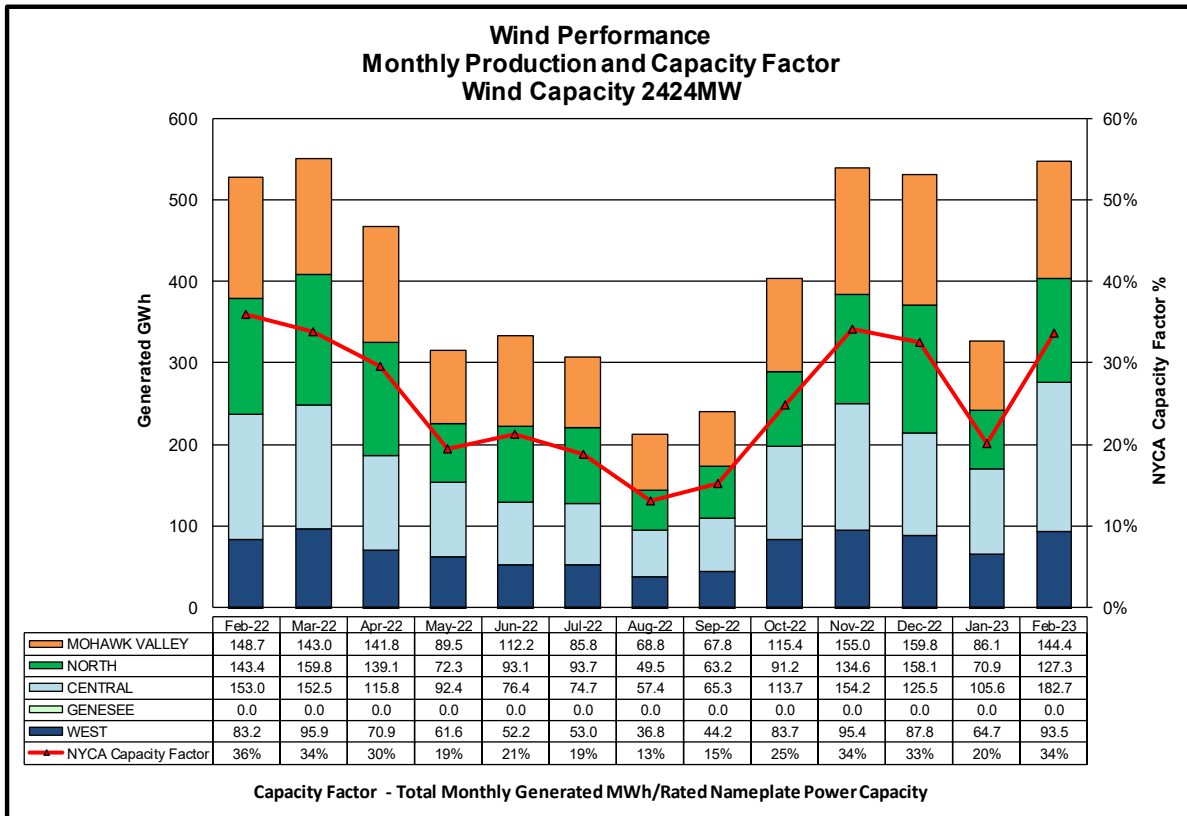
### Wind Forecast Performance Hour Ahead Percent Error

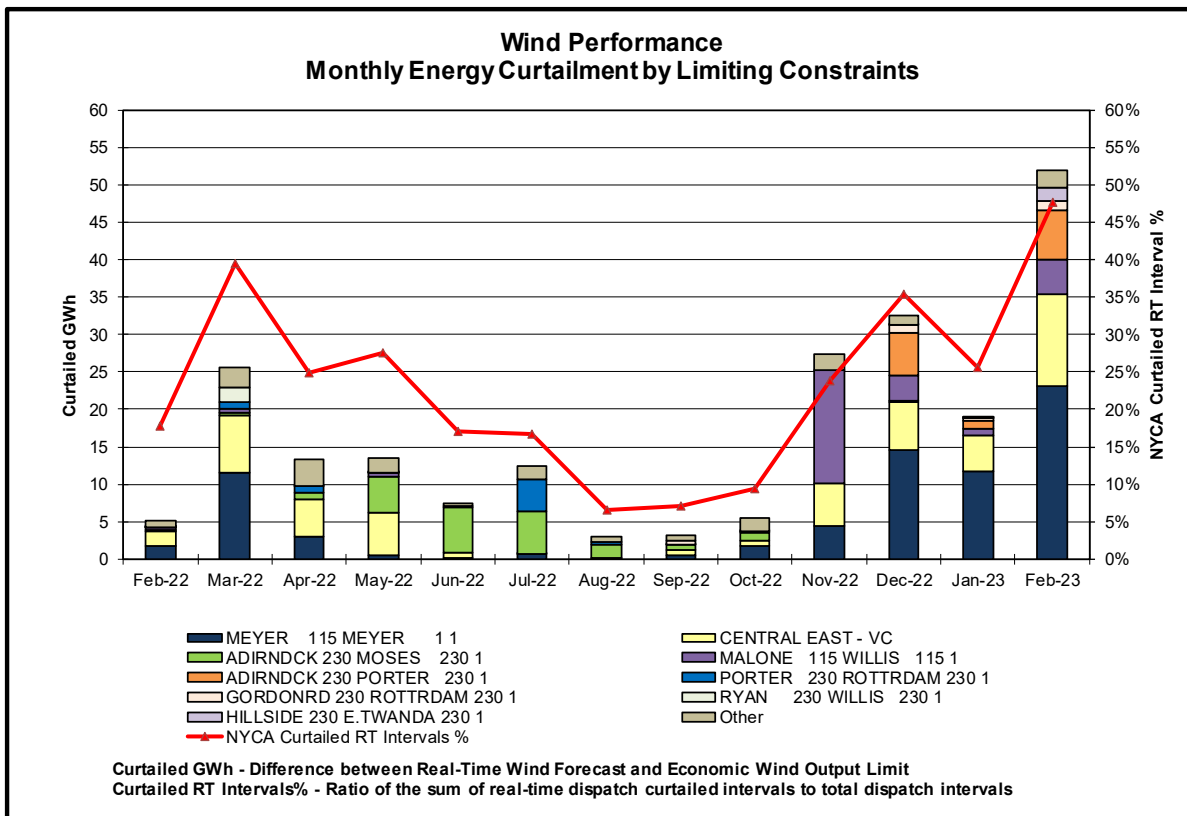
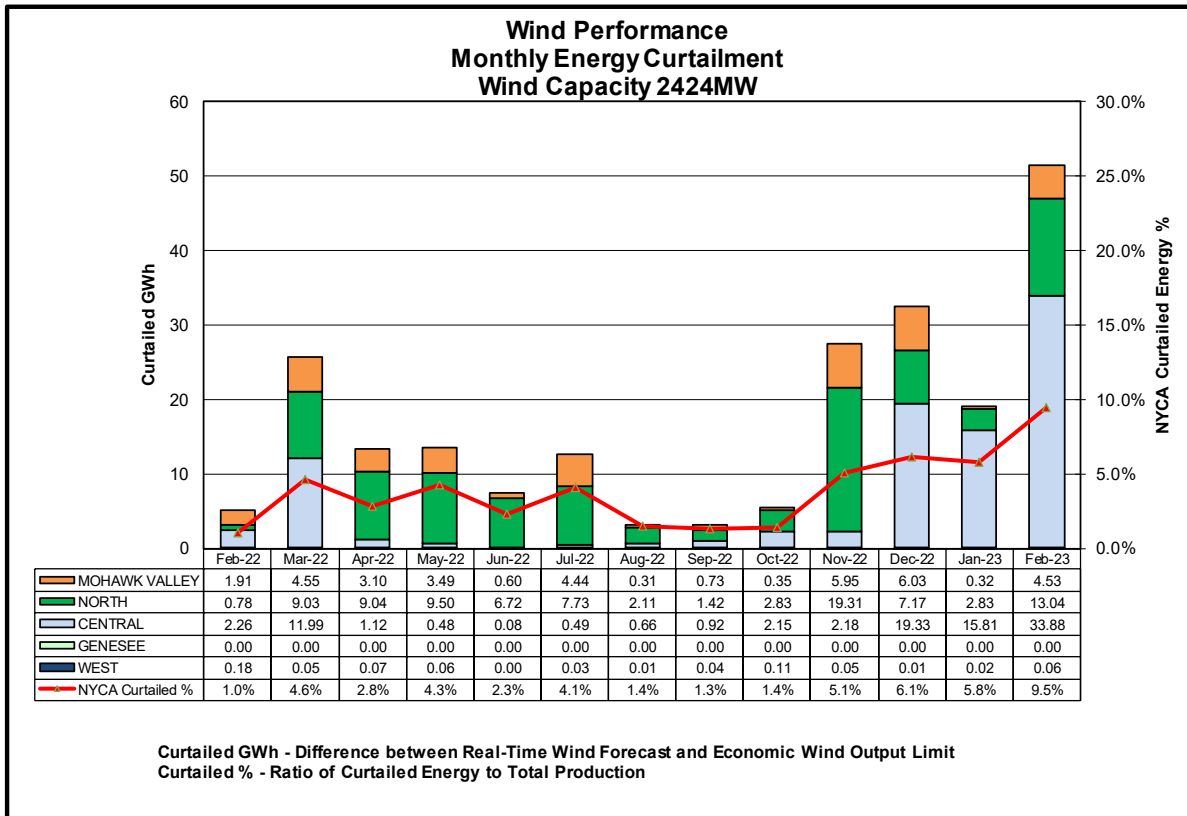


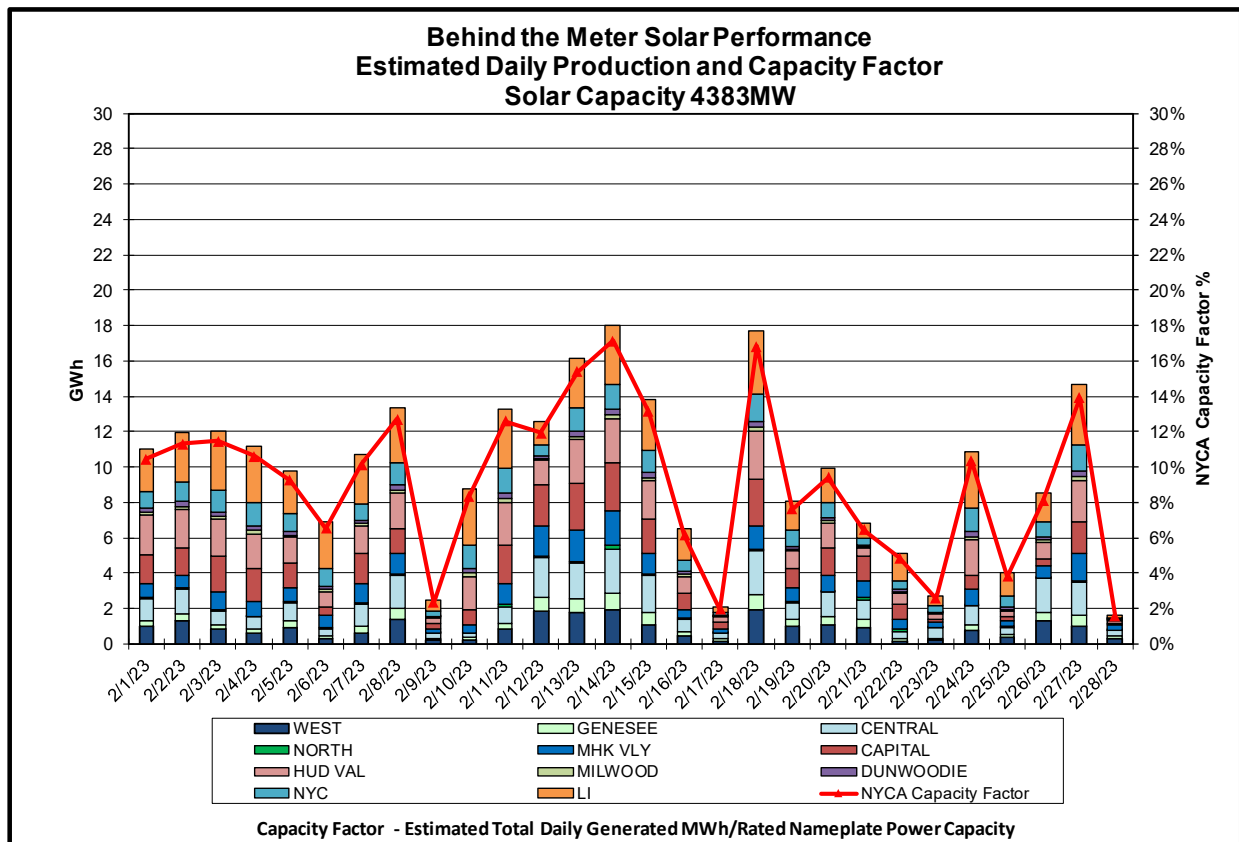
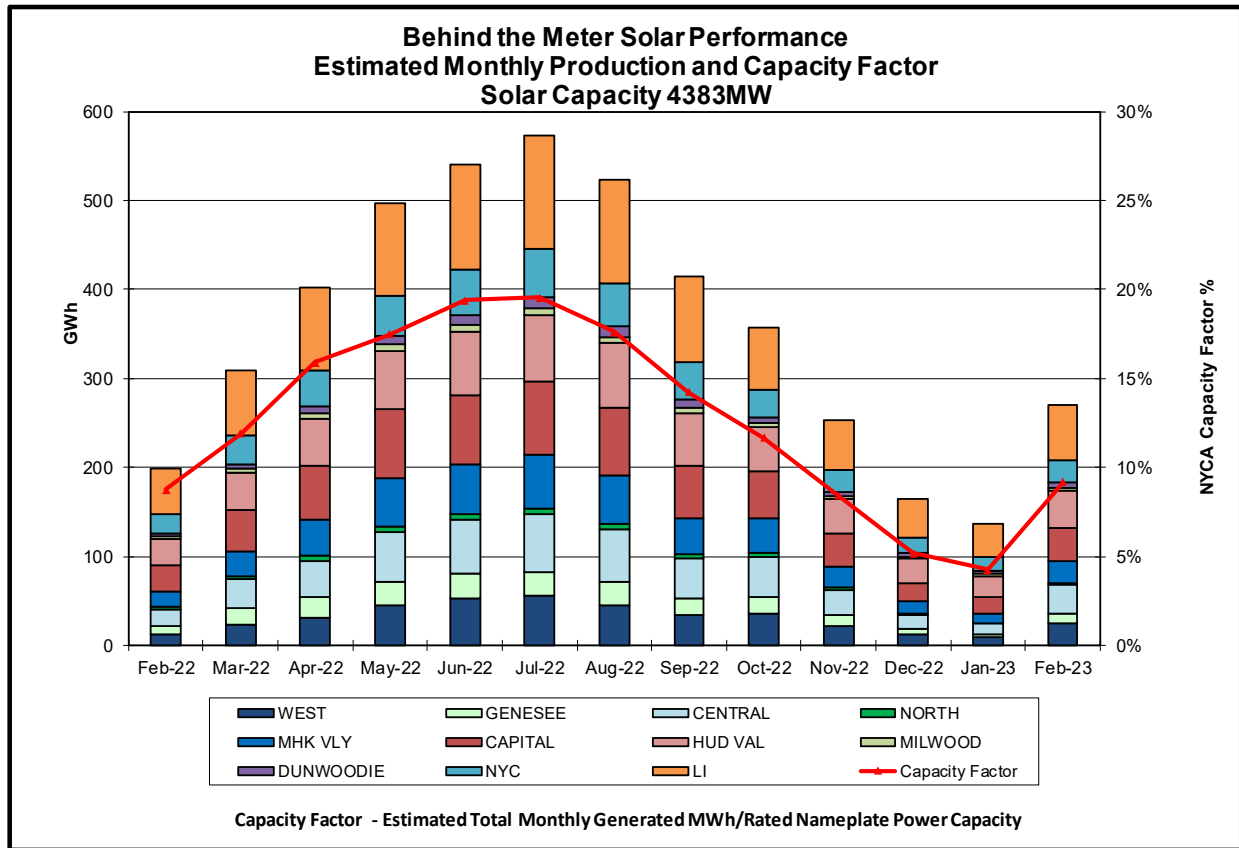
**MAE Forecast** - Avg |actual wind generation - hour ahead forecast wind generation| / Wind Capacity  
**MAE Persistence** - Avg |actual wind generation - hour ahead actual wind generation| / Wind Capacity  
**Bias** - Avg (actual wind generation - hour ahead forecast wind generation) / Wind Capacity

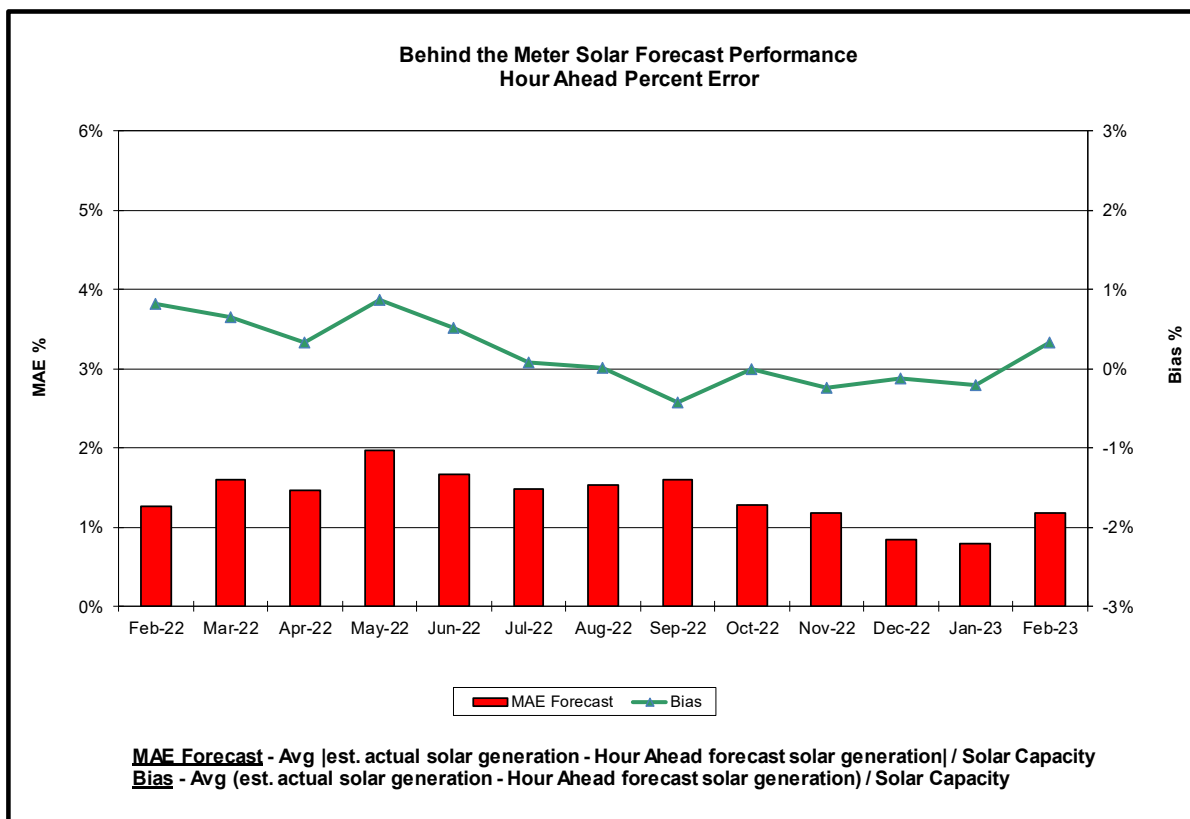
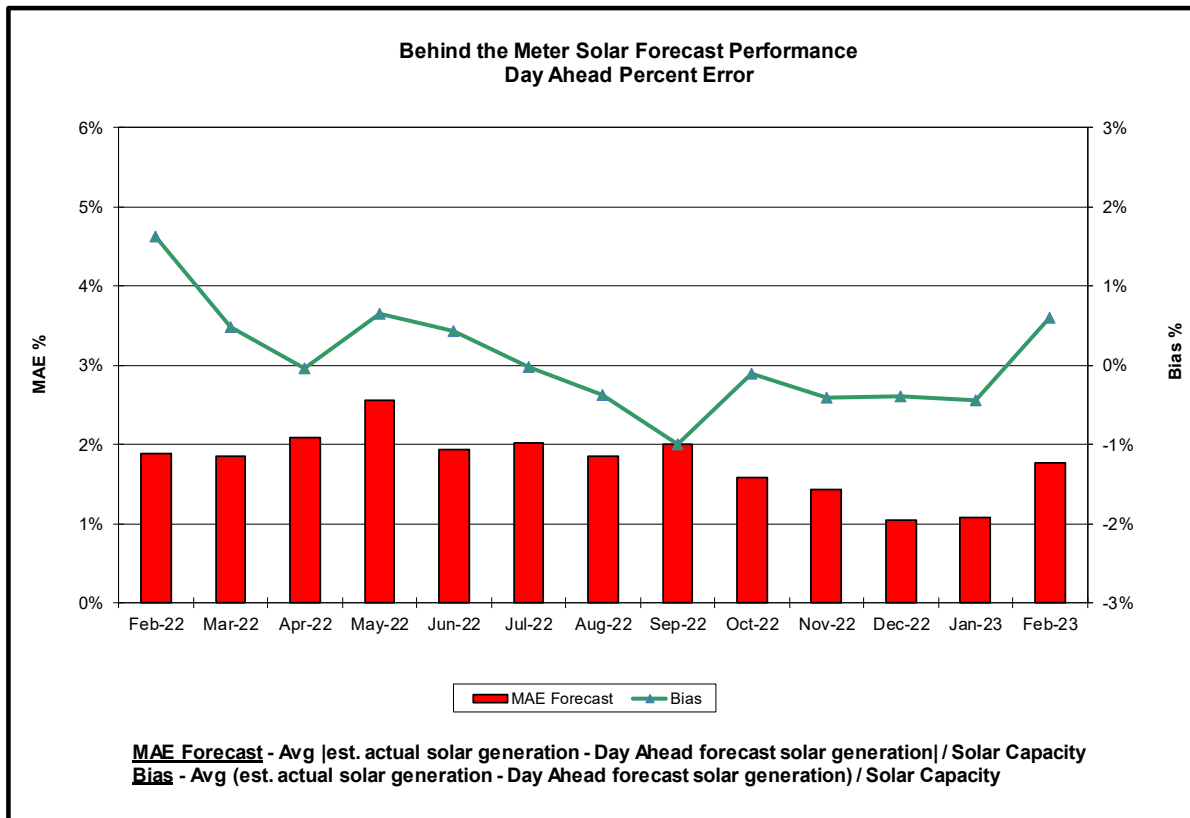


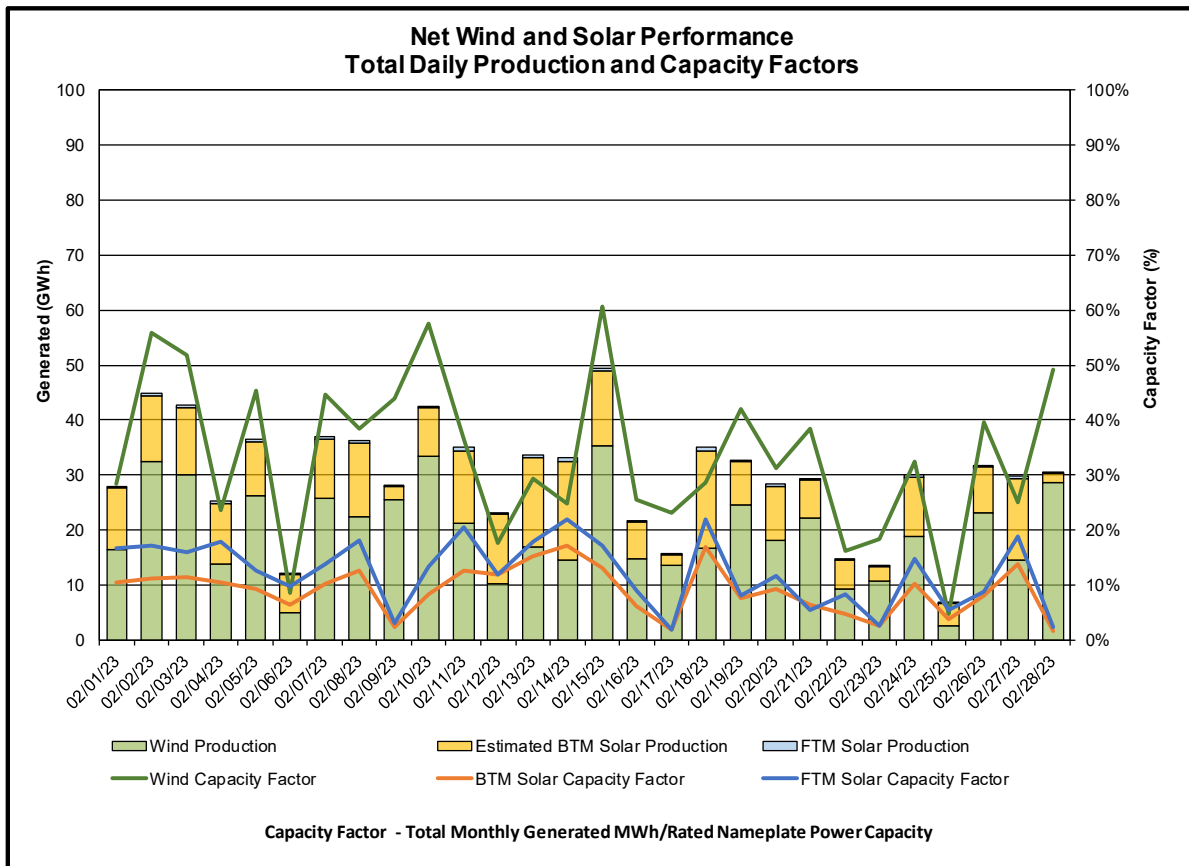
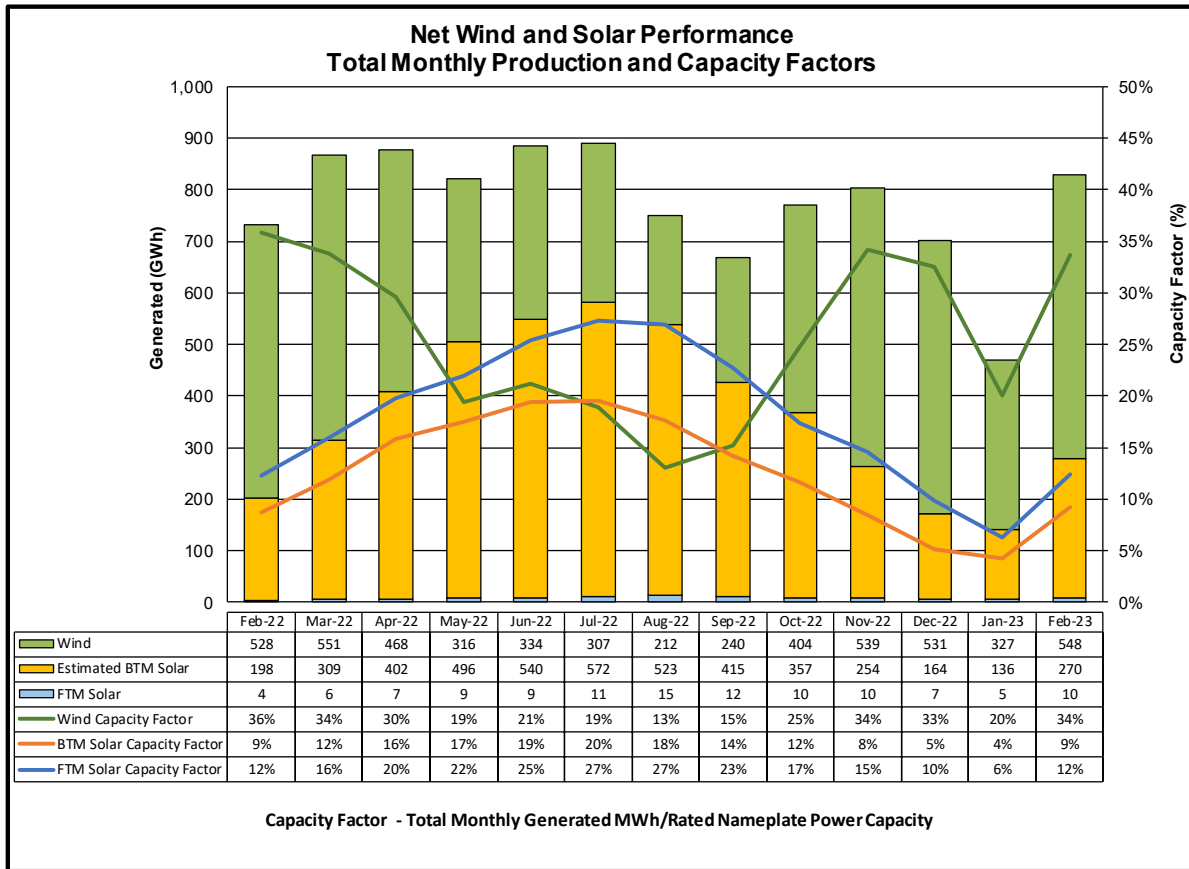


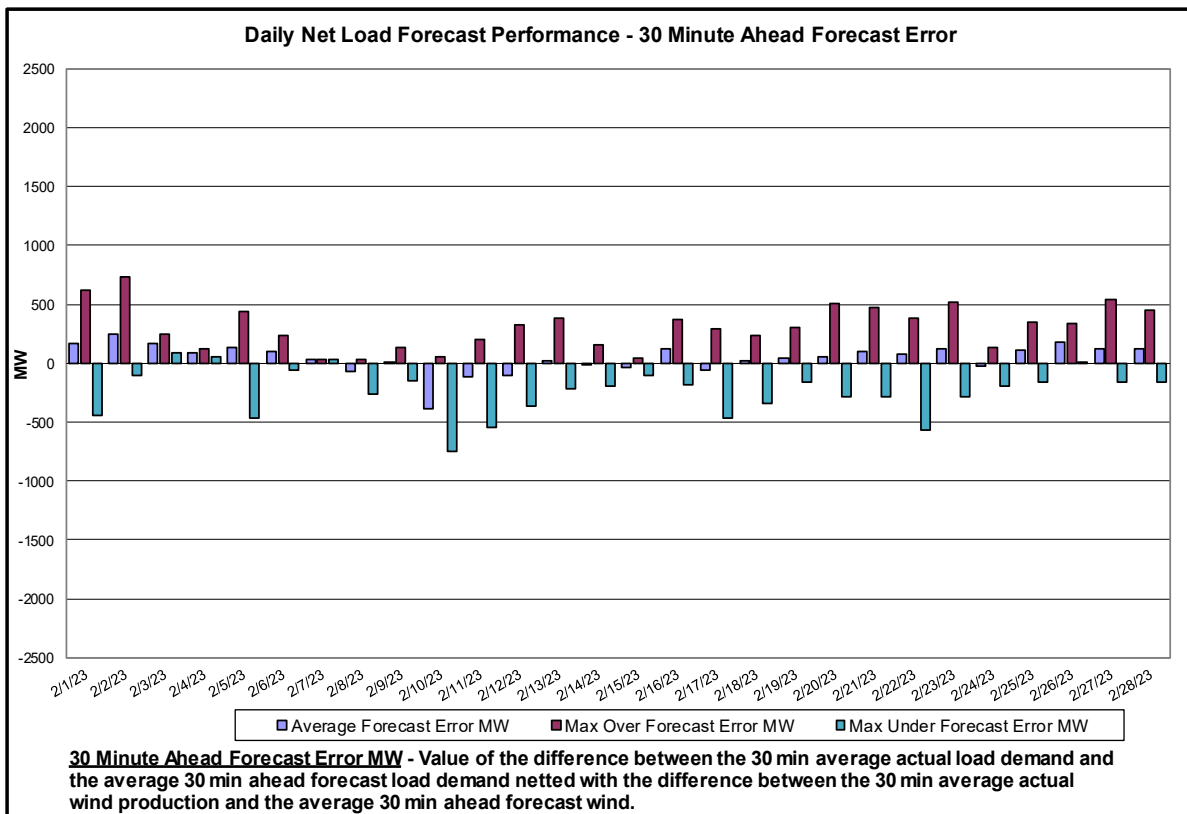
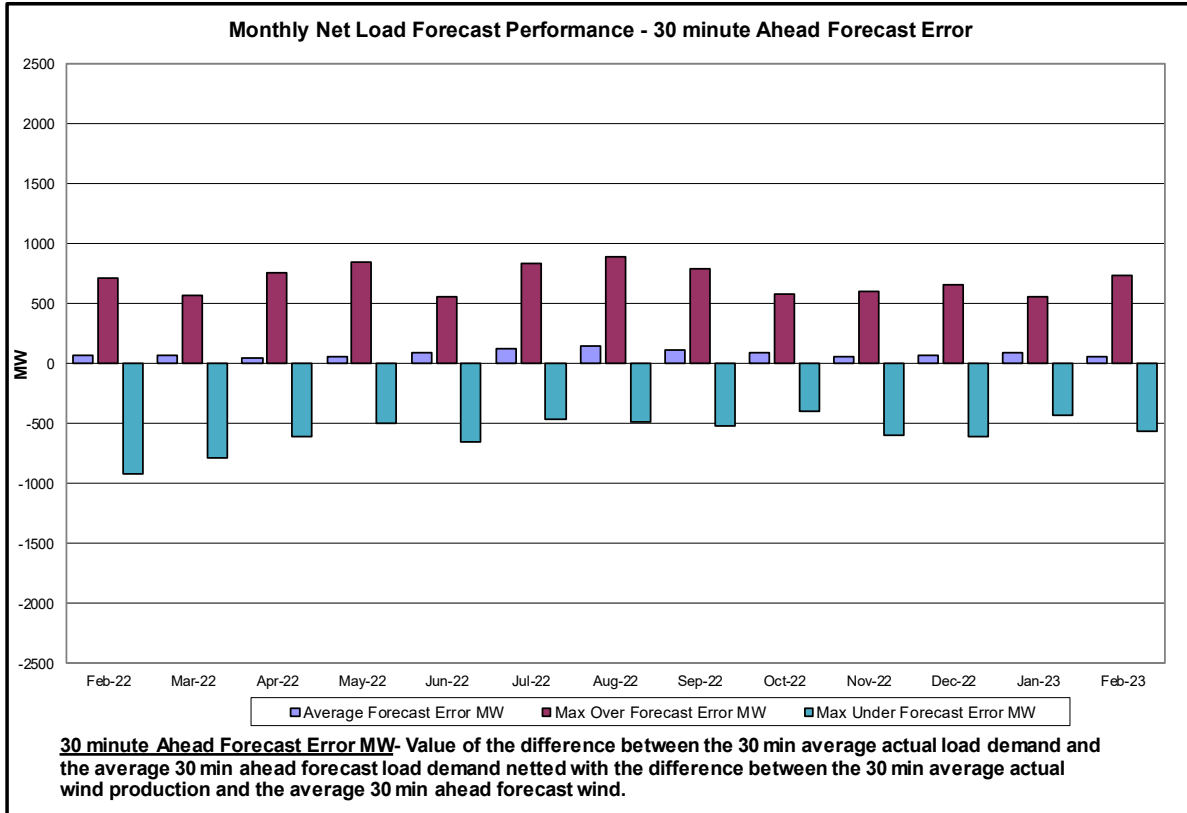


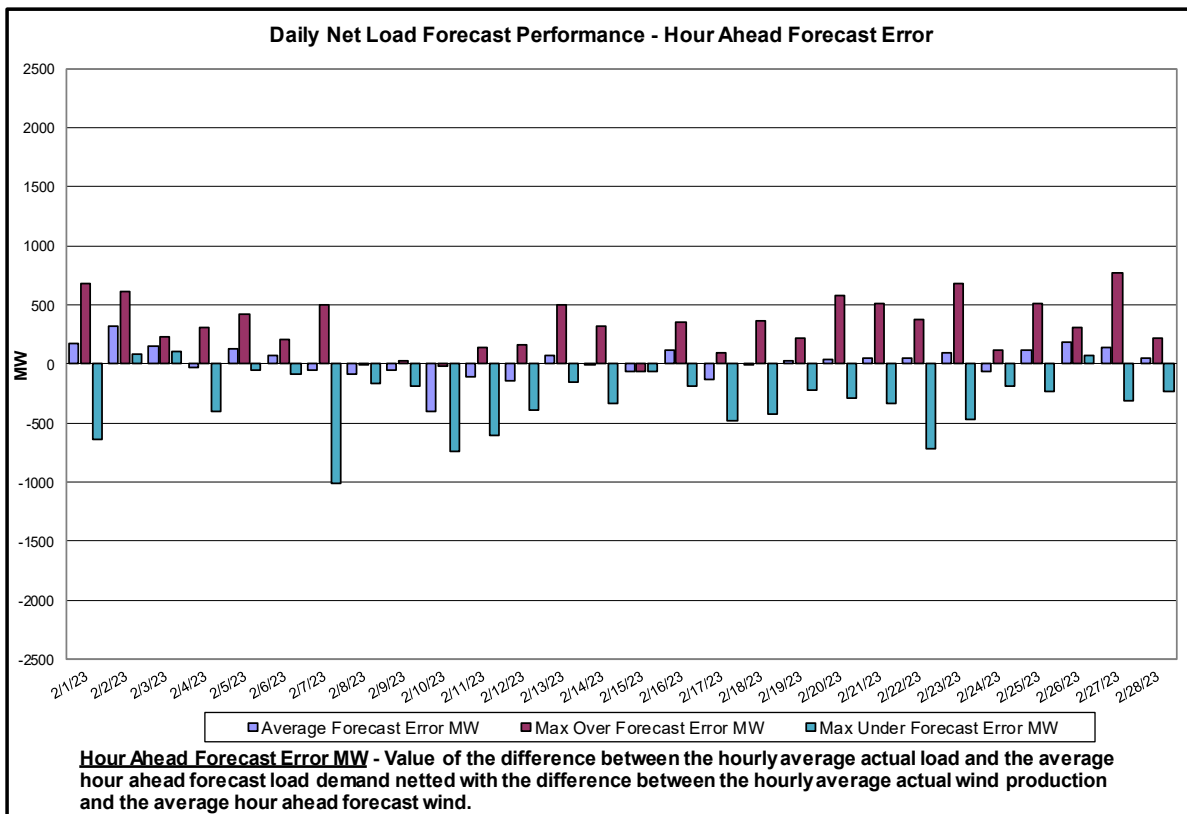
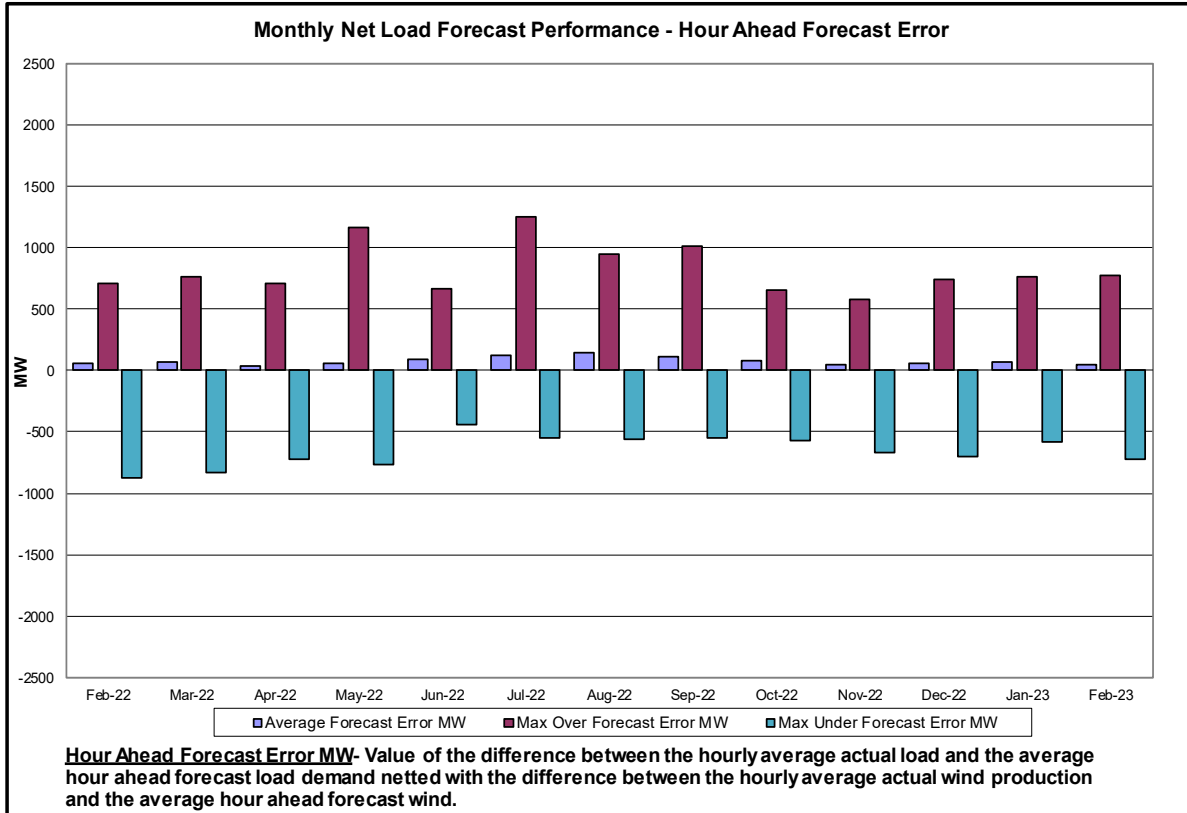




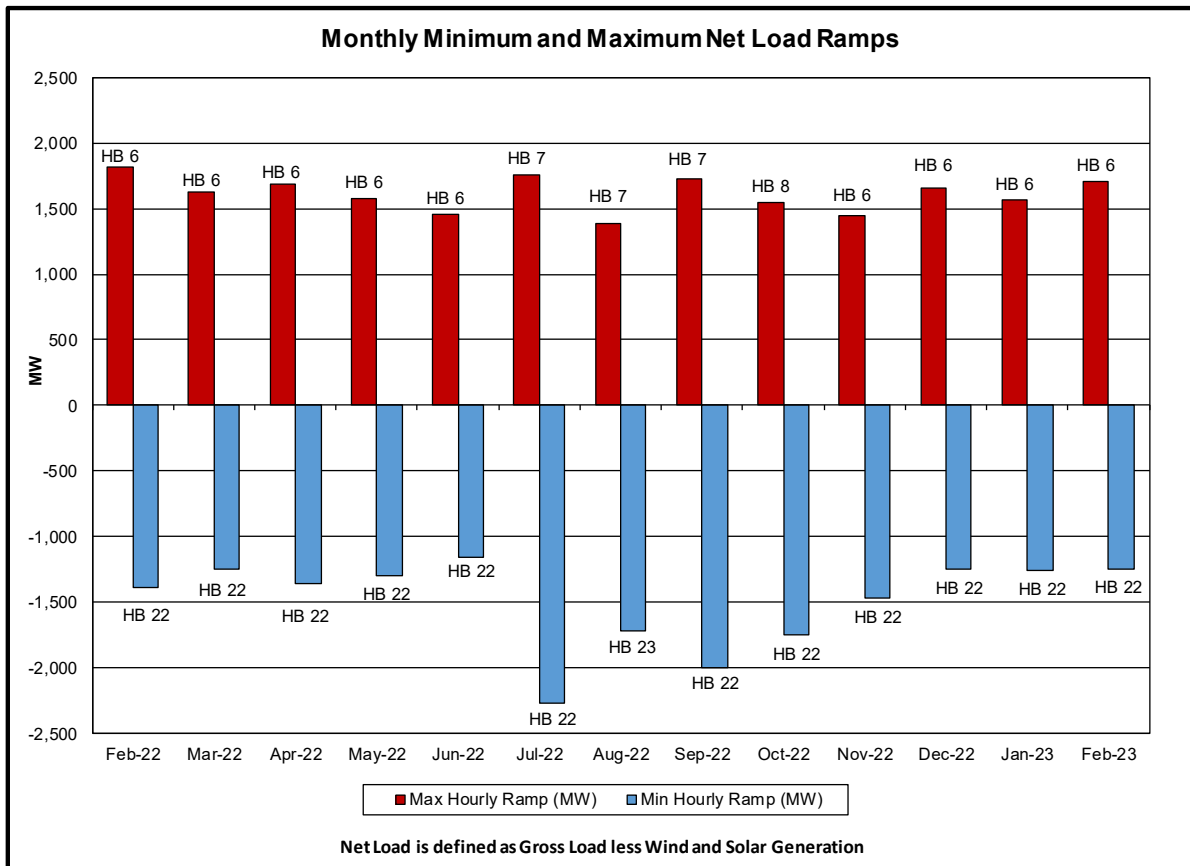
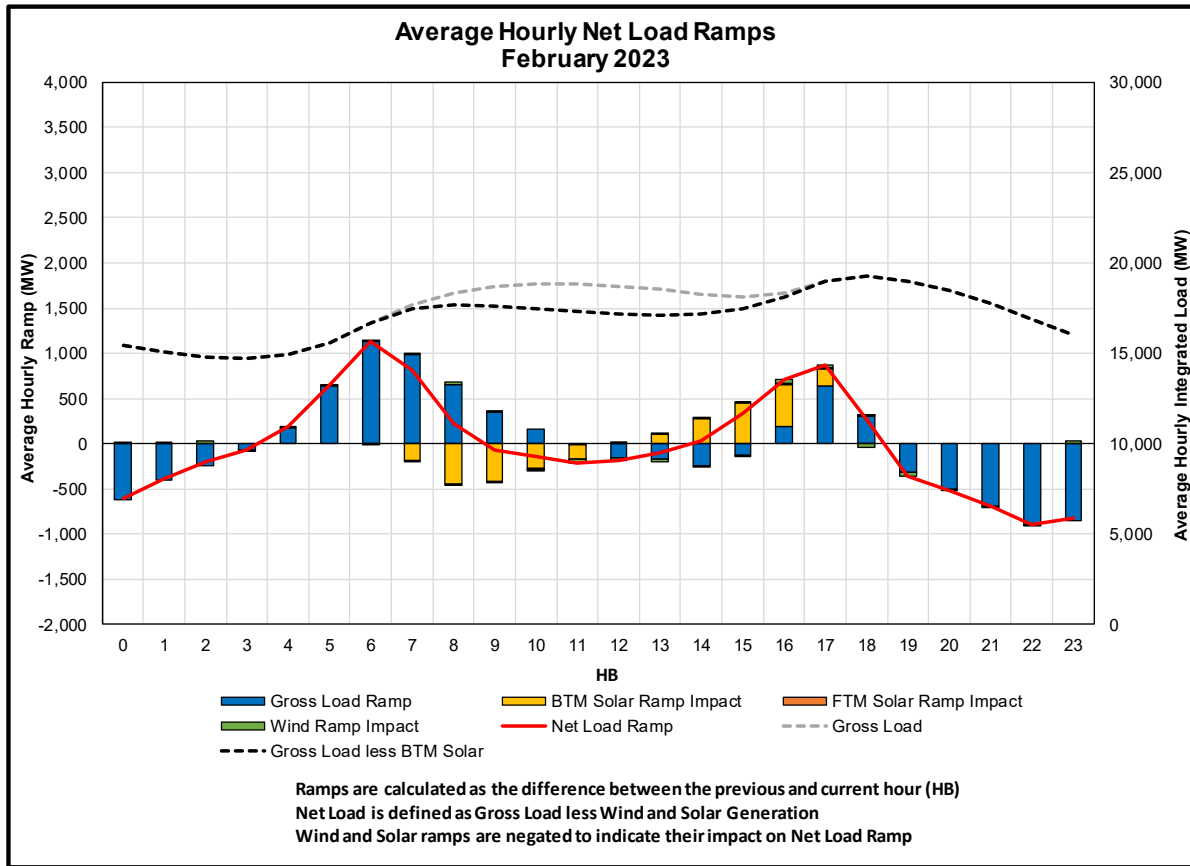




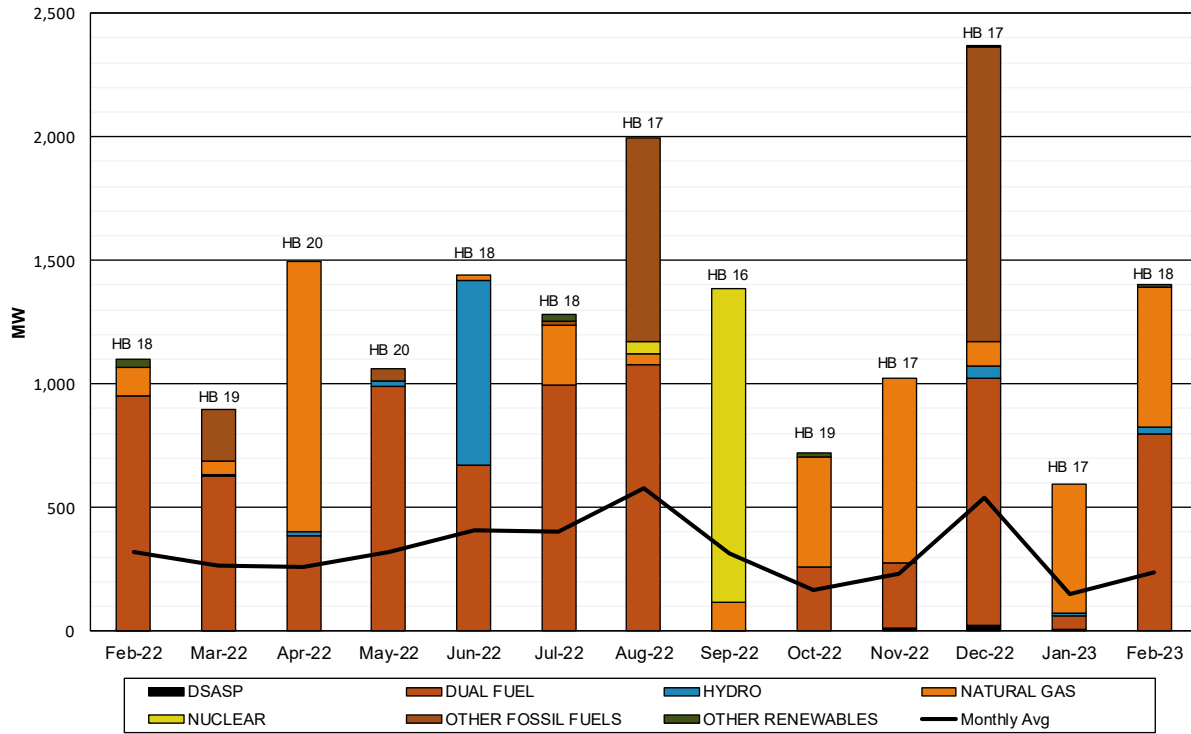








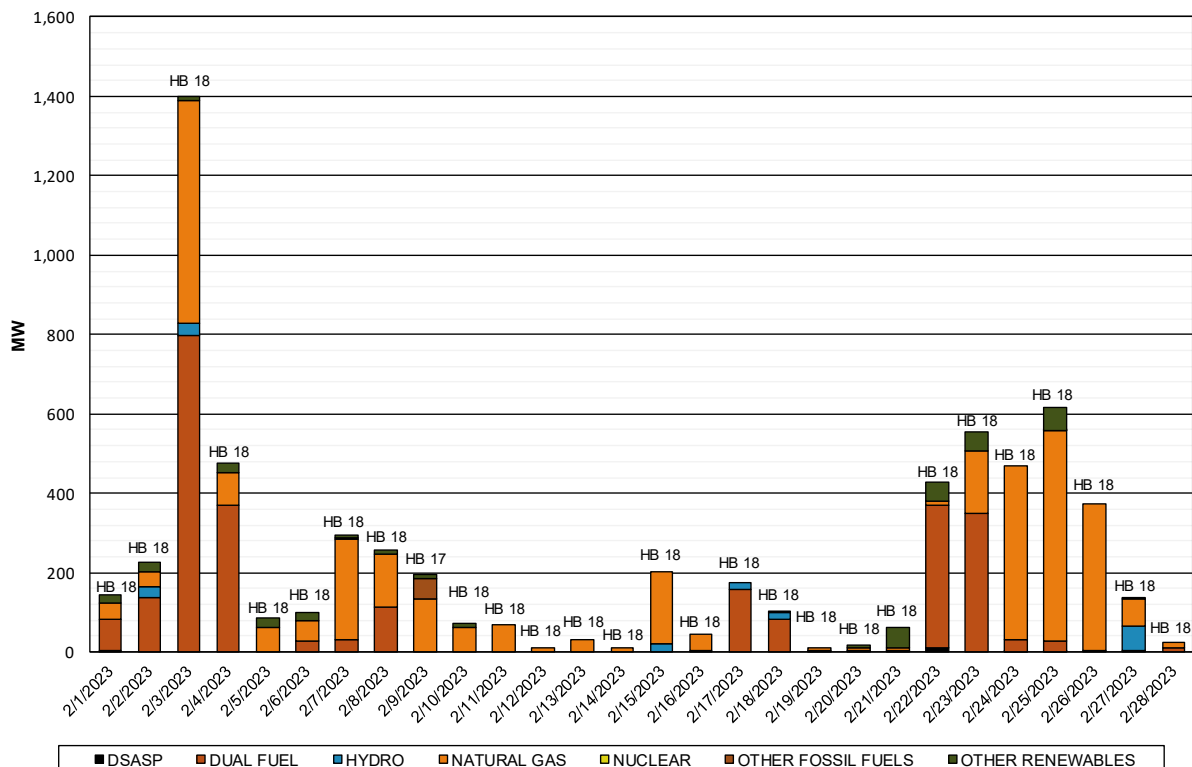
### Monthly Maximum Day-Ahead Market Capacity Unavailable In Real Time



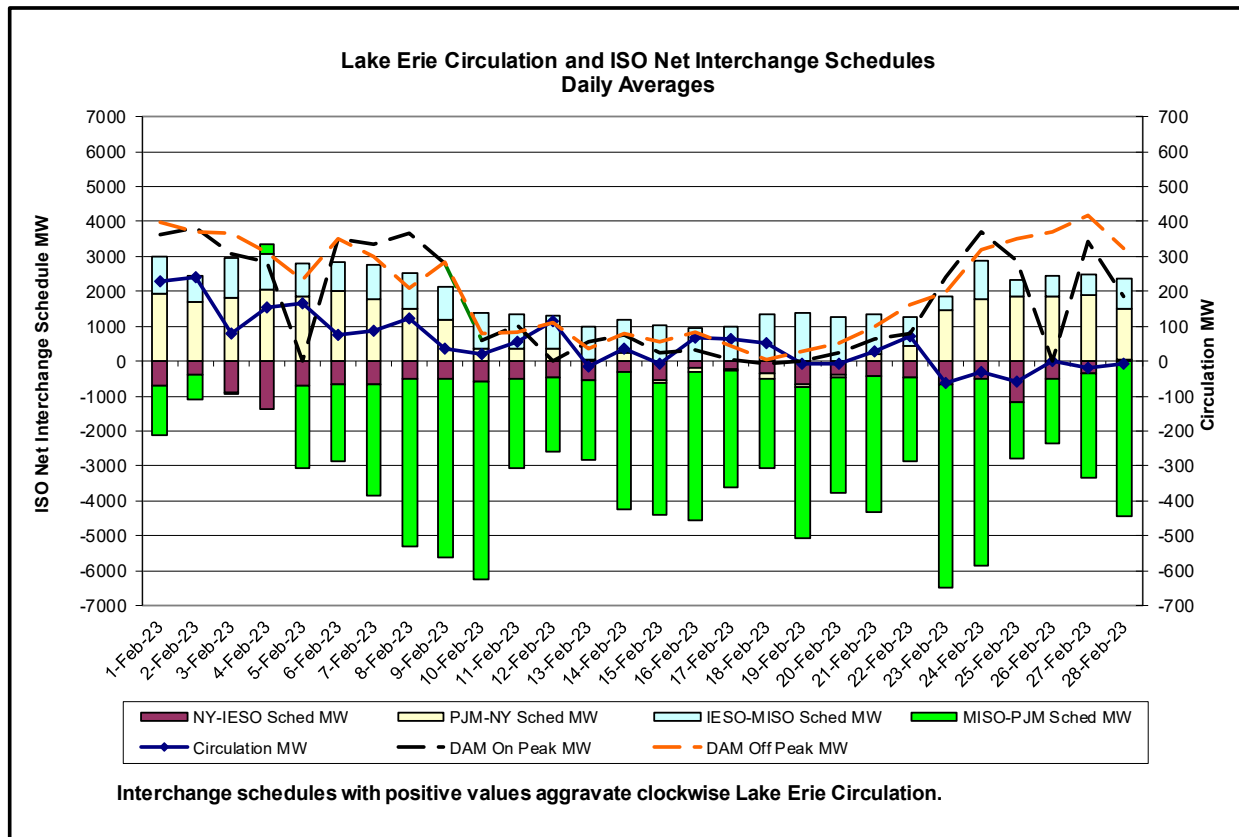
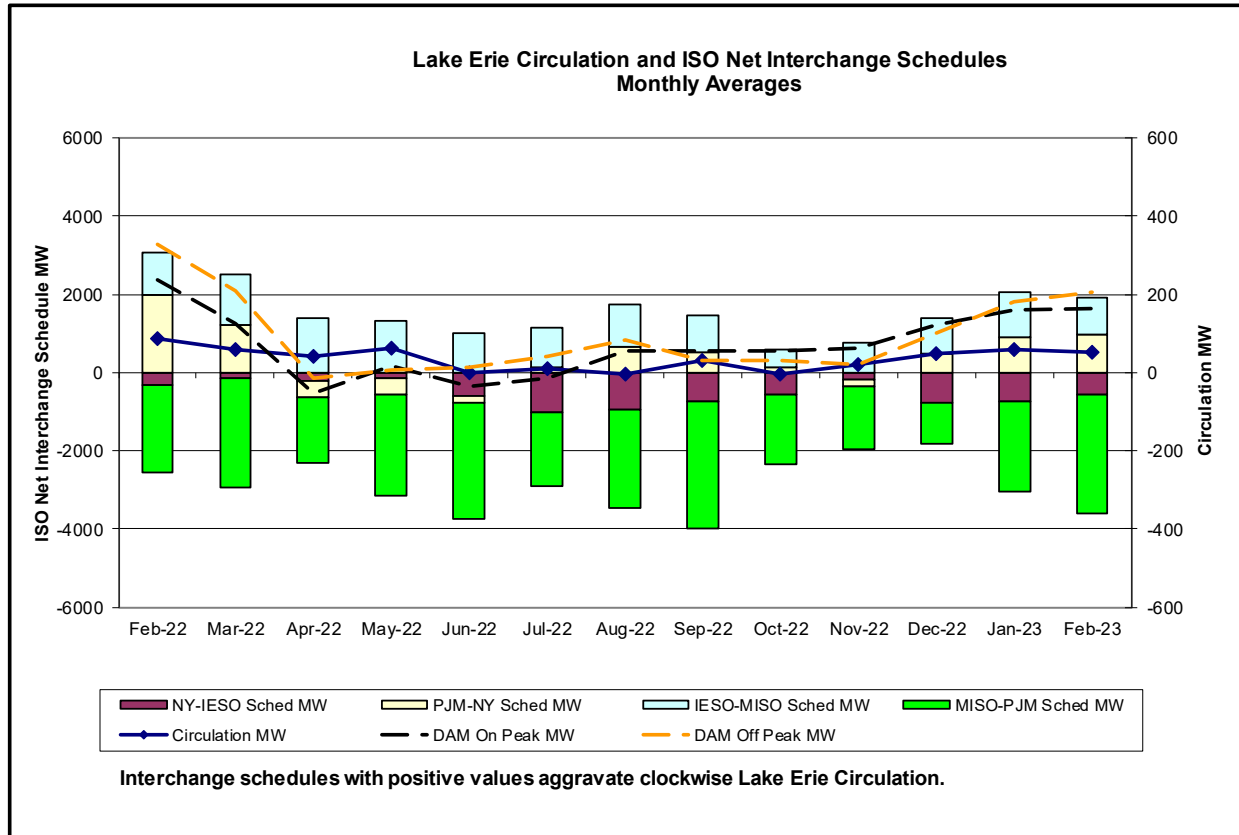
Unavailable Capacity is calculated as the difference of Day-Ahead Market (DAM) capacity relative to Real-Time (RT) capacity during RT peak load hour.

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

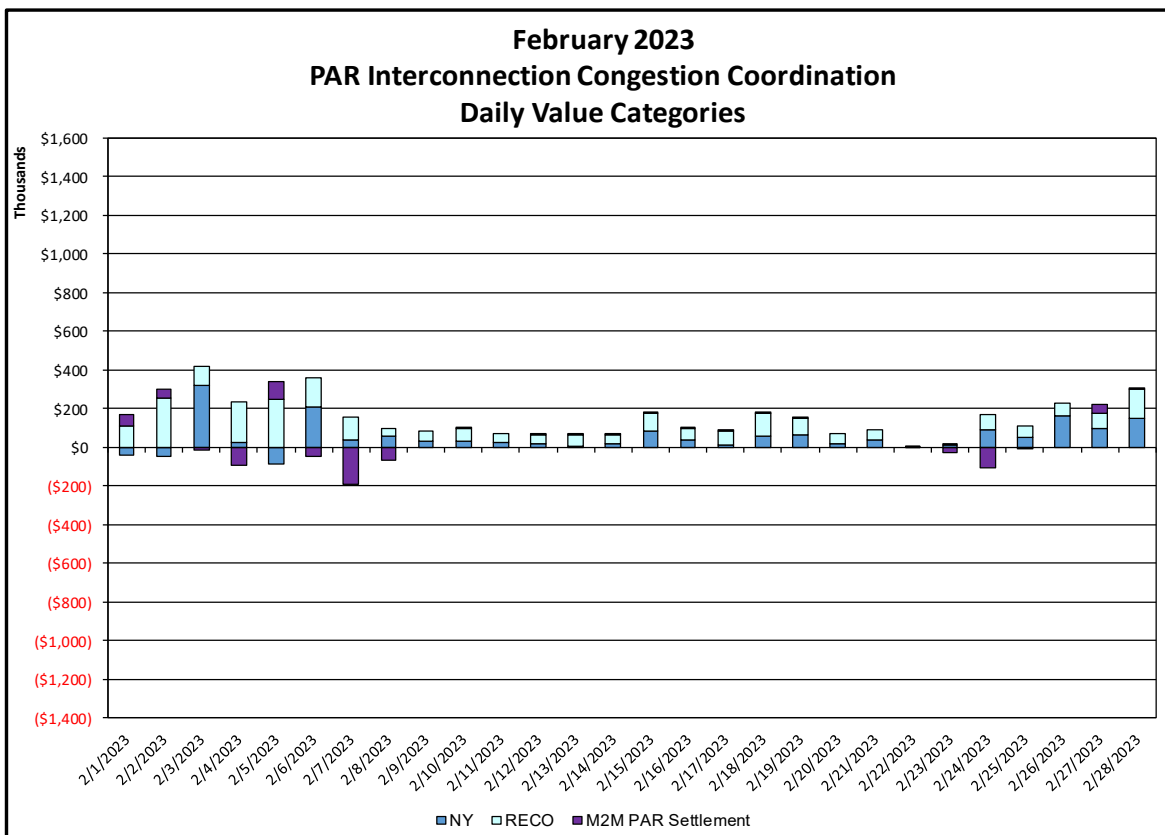
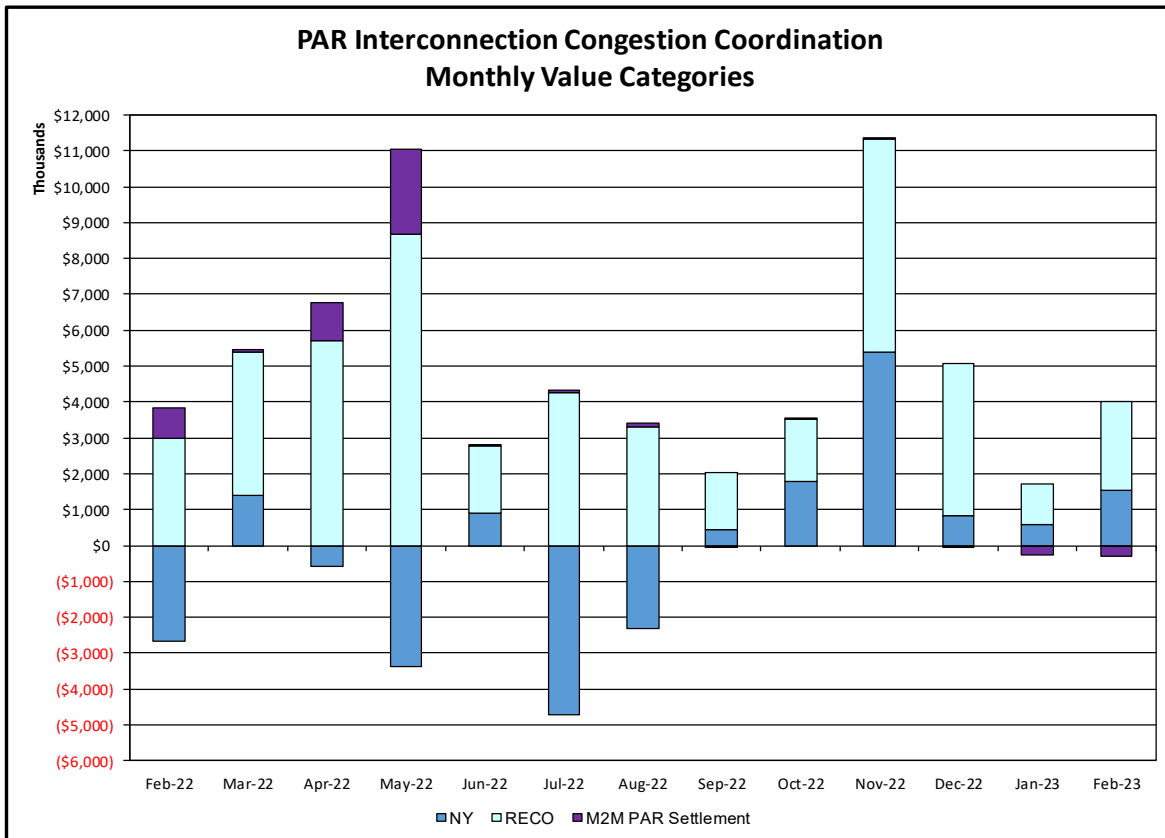
### Daily Day-Ahead Market Capacity Unavailable In Real Time



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

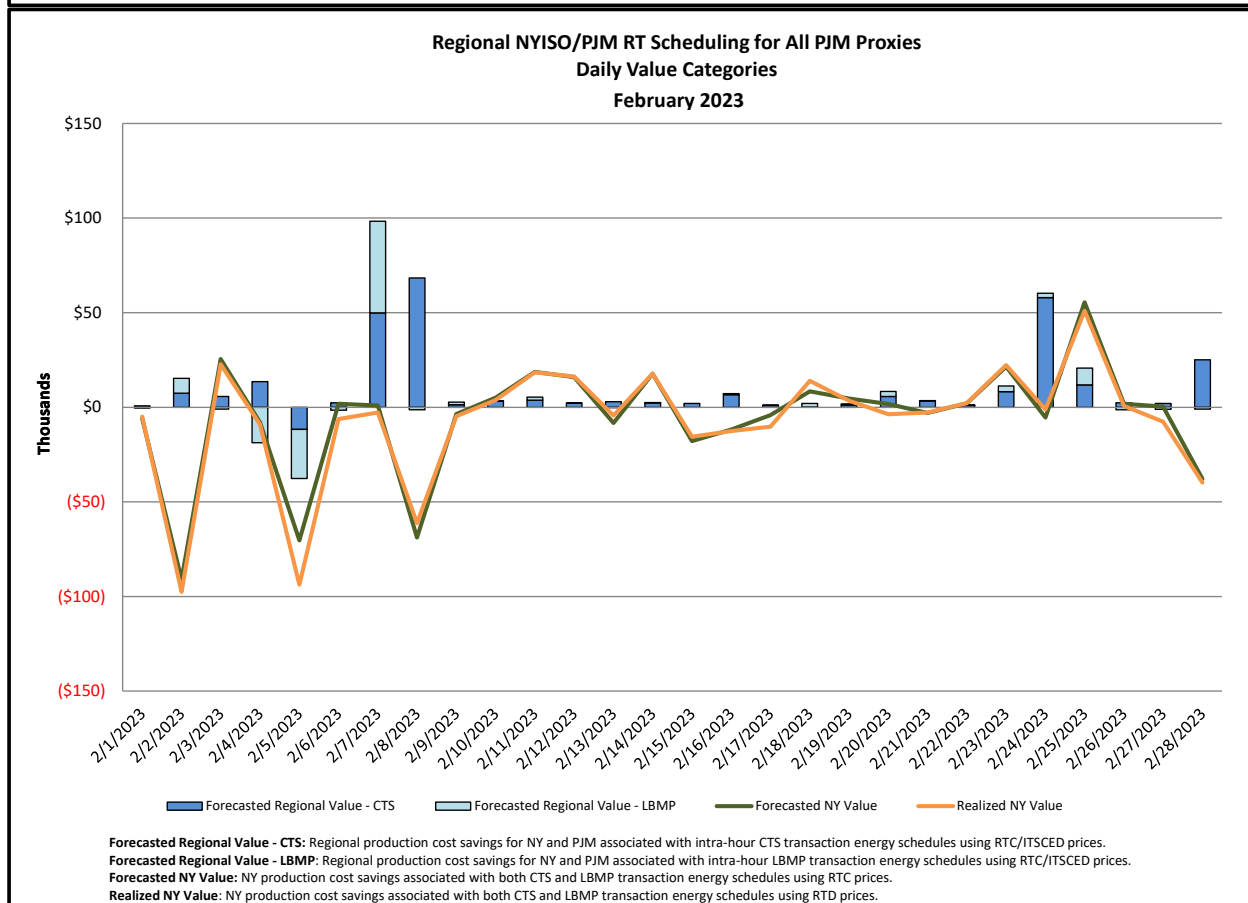
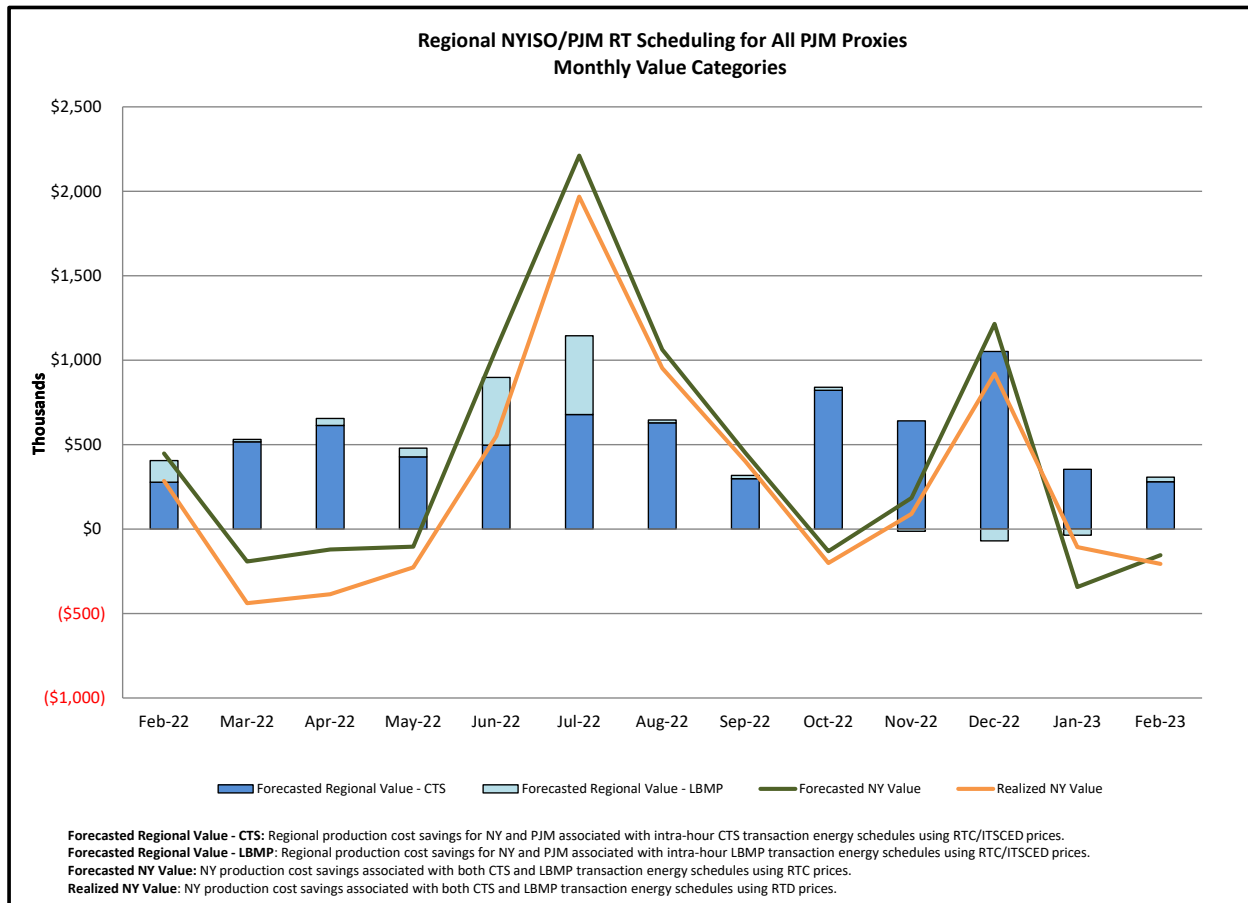


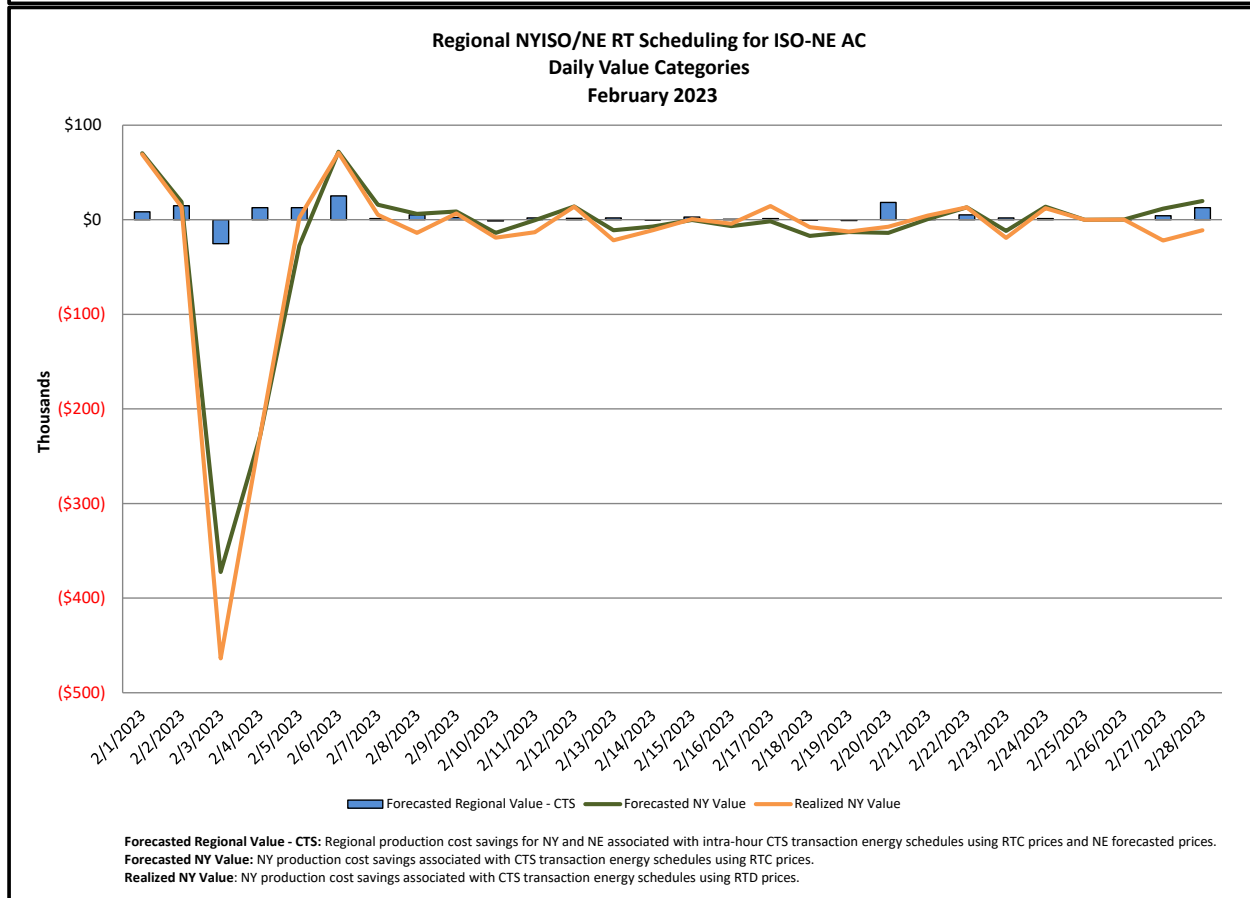
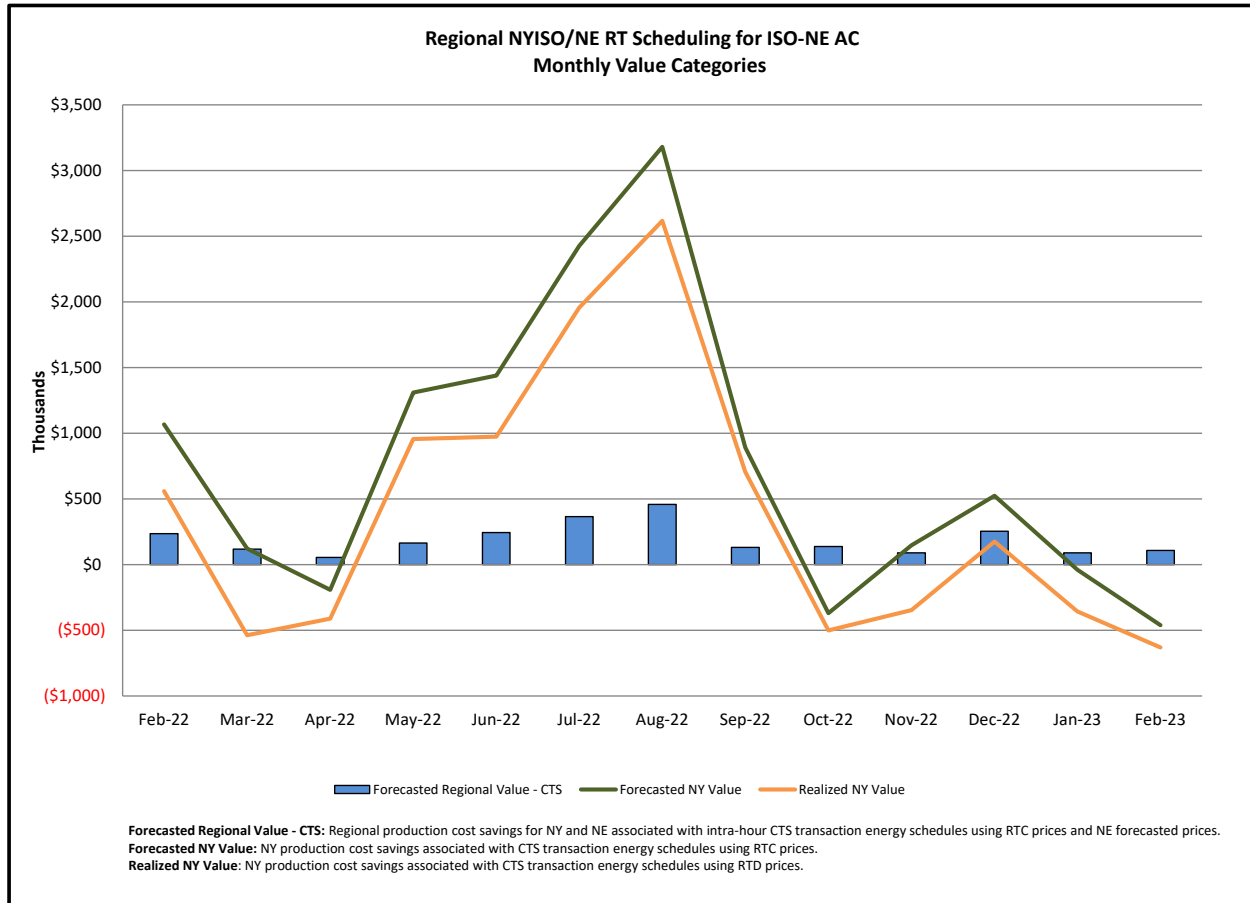
## Broader Regional Market Performance Metrics



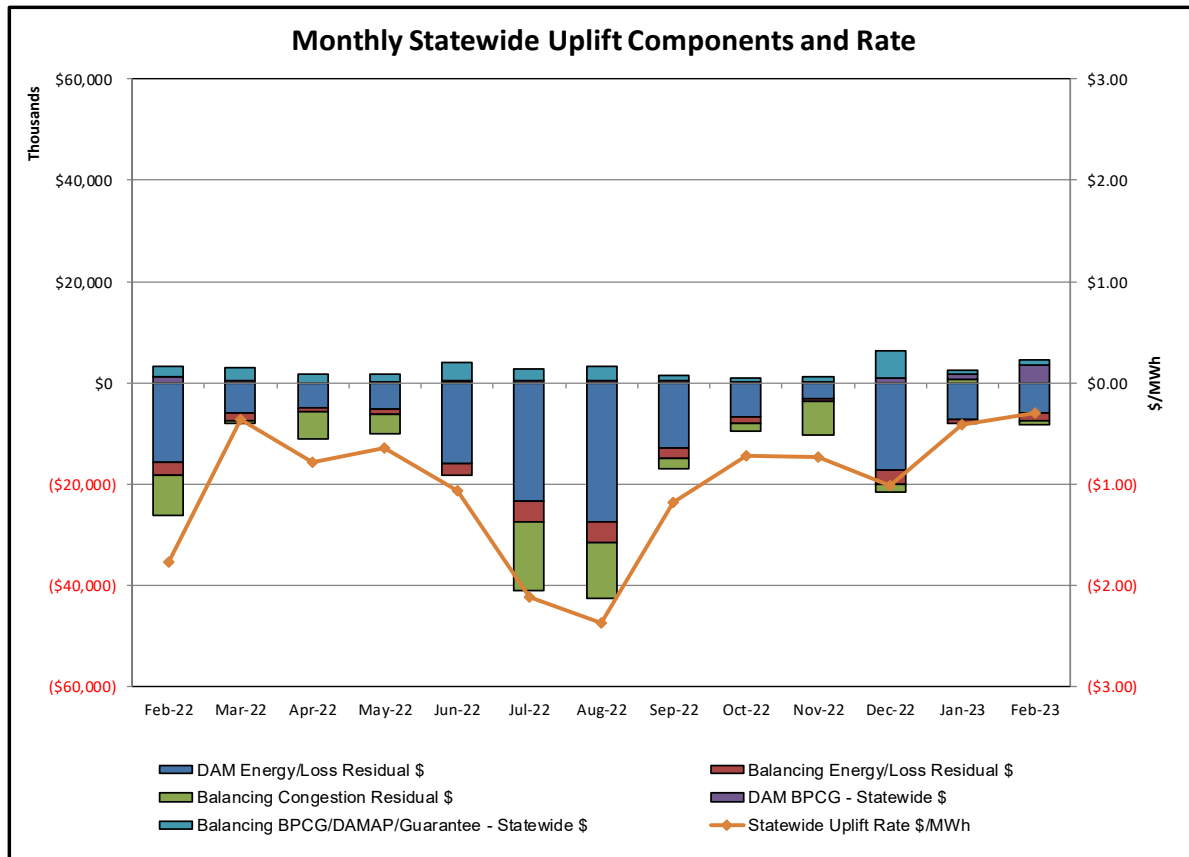
### PAR Interconnection Congestion Coordination

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

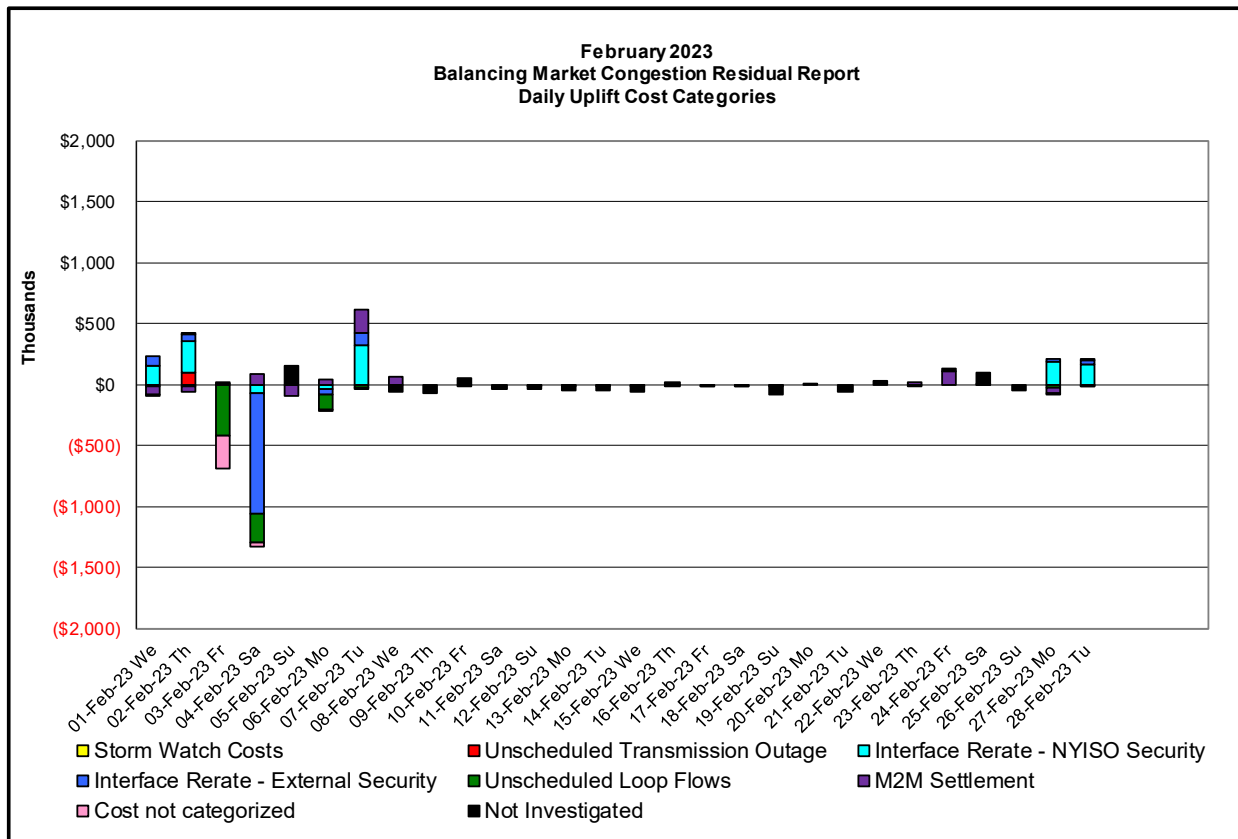
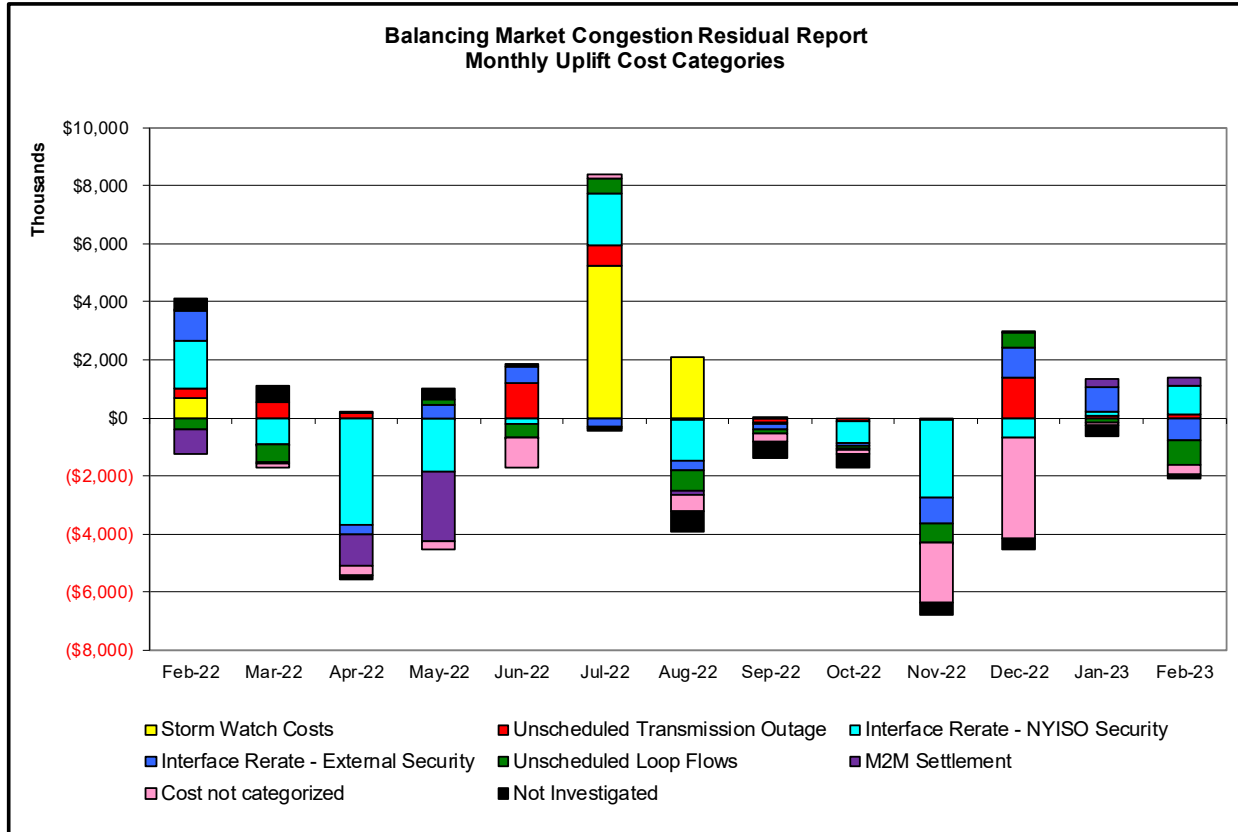




## Market Performance Metrics



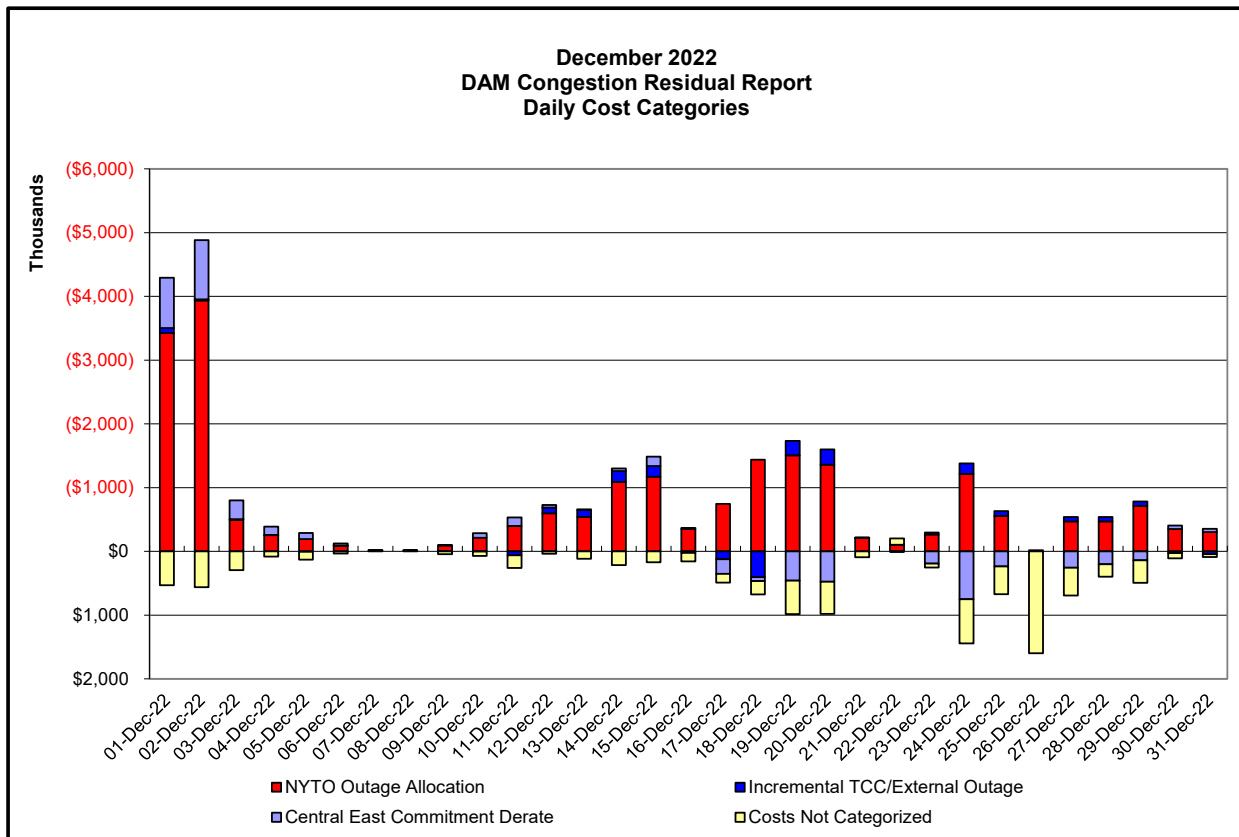
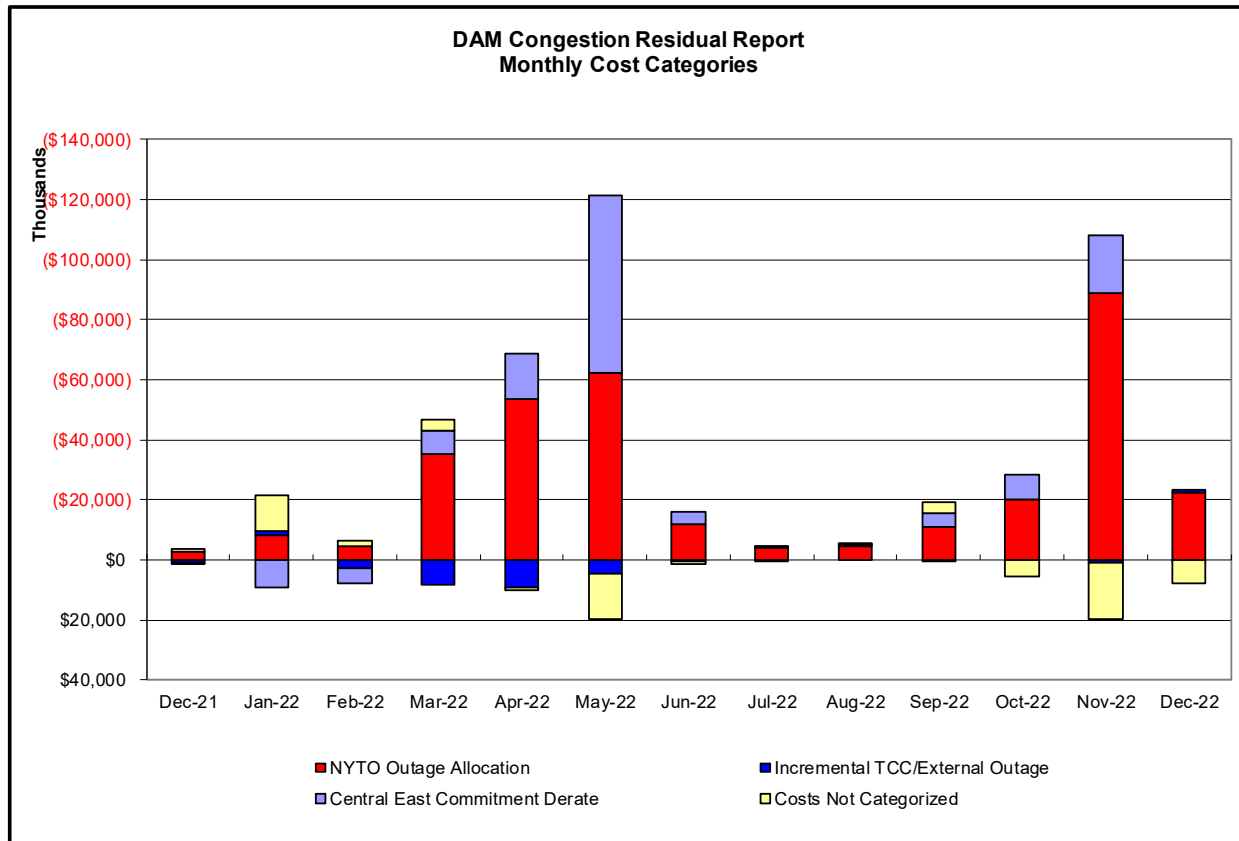




Day's investigated in February: 1,2,3,4,6,7,27,28		
Event	Description	February Dates
	Extended outage of Chase Lake-Porter 230kV (#11)	2
	Extended outage of Hurley Ave-Roseton 345kV (#303)	2
	Derate Adirondack-Porter 230kV (#12) I/o SIN:MSU1&7040& HQ GN&LD PROXY	2,7,28
	Derate Central East	1-3,6,7,27,28
	Derate Dunwoodie-Shore Road 345kV (#Y50)	7
	Derate Foxhills-Greenwood 138kV (#29232) I/o SCB:GOWANUS(2):41&42231&R4	6
	Derate Goethals-Gowanus 345kV (#26)	6
	Derate Greenbush-Regeneron 115kV (#9) I/o Seabrook	27,28
	Derate Malone-Willis 115kV (#1-910) I/o \$SCB WILLIS 2202 W/ 2108 O/S	2
	Derate Malone-Willis 115kV (#1-910) I/o TWR:MOSES MW2 & MAL4	1,7
	Derate Meyer 230/115 kV (#BK4S)	7
	Derate Scriba-Volney 345kV (#20) I/o Scriba-Volney 345kV (#21)	27
	NYCA DNI Ramp Limit	1,2,4,6,7,28
	Uprate Central East	1,3,6
	Uprate East 13th St.-Farragut 345kV (#46) I/o SCB:DUNW(5):W75&71	1
	Uprate Goethals-Gowanus 345kV (#25)	6
	Uprate Goethals-Gowanus 345kV (#26)	6,27
	HQ_CHAT Scheduling Limit	4
	NE_AC - NY Scheduling Limit	4,6,27,28
	NE_AC ACTIVE DNI Ramp Limit	1,2,4,27,28
	NE_NNC1385 - NY Scheduling Limit	4,6,7
	PJM_AC ACTIVE DNI Ramp Limit	2,28
	PJM_AC-NY Scheduling Limit	4,7,27,28
	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East	1-4,6,7,27,28
	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West	1-4,6,7,28

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

Category	Cost Assignment	Events Types	Event Examples
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	
<b>Monthly Balancing Market Congestion Report Assumptions/Notes</b>			
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.	

