

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



## ***June 2021 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 July 9, 2021.

# **Table of Contents**

- ♦ **Highlights**
  - *Operations Performance*
- ♦ **Reliability Performance Metrics**
  - *Alert State Declarations*
  - *Major Emergency State Declarations*
  - *IROL Exceedance Times*
  - *Balancing Area Control Performance*
  - *Reserve Activations*
  - *Disturbance Recovery Times*
  - *Load Forecasting Performance*
  - *Wind Forecasting Performance*
  - *Wind Performance and Curtailments*
  - *BTM Solar Performance*
  - *BTM Solar Forecasting Performance*
  - *Net Load Forecasting Performance*
  - *Lake Erie Circulation and ISO Schedules*
- ♦ **Broader Regional Market Performance Metrics**
  - *PAR Interconnection Congestion Coordination Monthly Value*
  - *PAR Interconnection Congestion Coordination Daily Value*
  - *Regional Generation Congestion Coordination Monthly Value*
  - *Regional Generation Congestion Coordination Daily Value*
  - *Regional RT Scheduling - PJM Monthly Value*
  - *Regional RT Scheduling - PJM Daily Value*
- ♦ **Market Performance Metrics**
  - *Monthly Statewide Uplift Components and Rate*
  - *RTM Congestion Residuals Monthly Trend*
  - *RTM Congestion Residuals Daily Costs*
  - *RTM Congestion Residuals Event Summary*
  - *RTM Congestion Residuals Cost Categories*
  - *DAM Congestion Residuals Monthly Trend*
  - *DAM Congestion Residuals Daily Costs*
  - *DAM Congestion Residuals Cost Categories*
  - *NYCA Unit Uplift Components Monthly Trend*
  - *NYCA Unit Uplift Components Daily Costs*
  - *Local Reliability Costs Monthly Trend & Commitment Hours*
  - *TCC Monthly Clearing Price with DAM Congestion*
  - *ICAP Spot Market Clearing Price*
  - *UCAP Awards*

## June 2021 Operations Performance Highlights

- Peak load of 30,919 MW occurred on 06/29/2021 HB 17
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 19 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- To reduce risks from COVID-19, the NYISO continues to take several actions to maintain critical business operations and protect the health and well-being of our employees and stakeholders.

The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

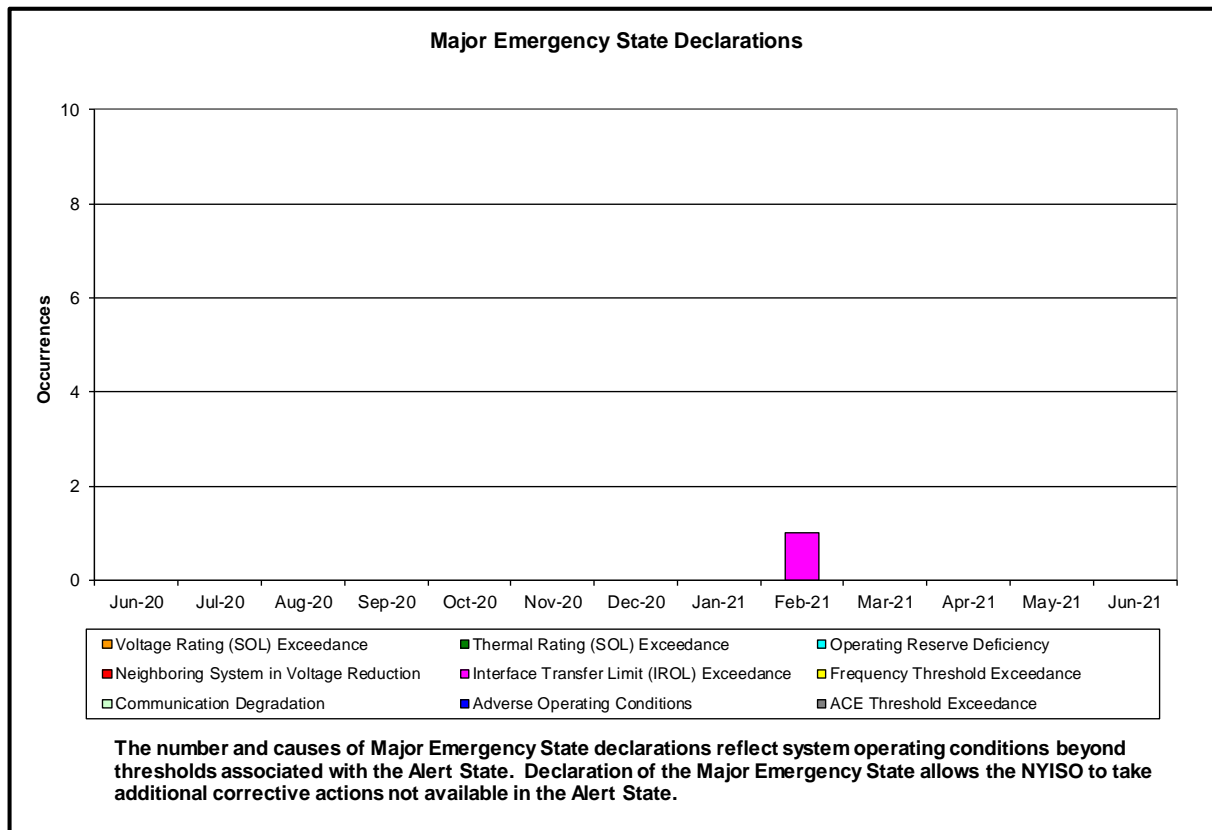
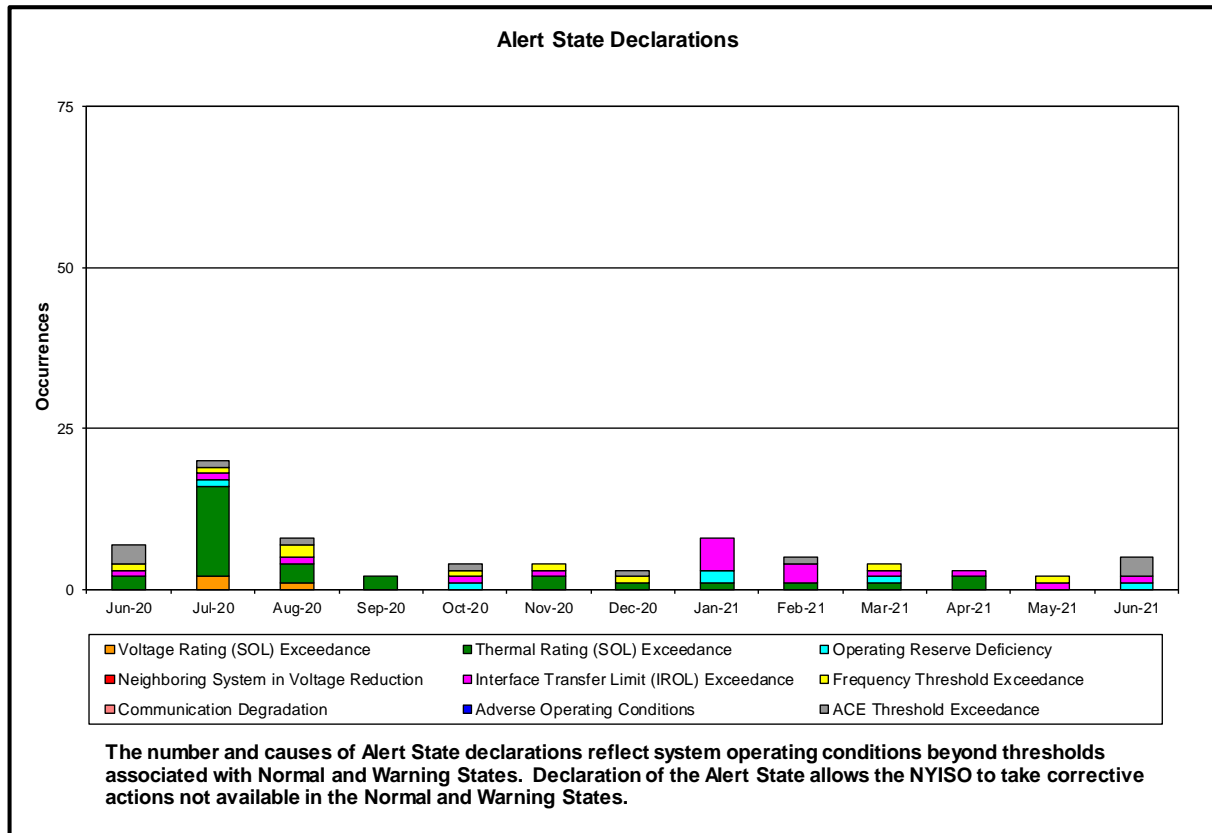
	Current Month Value (\$M)	Year-to-Date Value (\$M)
<b>NY Savings from PJM-NY Congestion Coordination</b>	\$0.04	\$11.20
<b>NY Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.09	\$1.15
<b>NY Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.33	(\$2.30)
<b>Total NY Savings</b>	<b>\$0.46</b>	<b>\$10.05</b>
<b>Regional Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.84	\$2.72
<b>Regional Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.16	(\$0.21)
<b>Total Regional Savings</b>	<b>\$0.99</b>	<b>\$2.51</b>

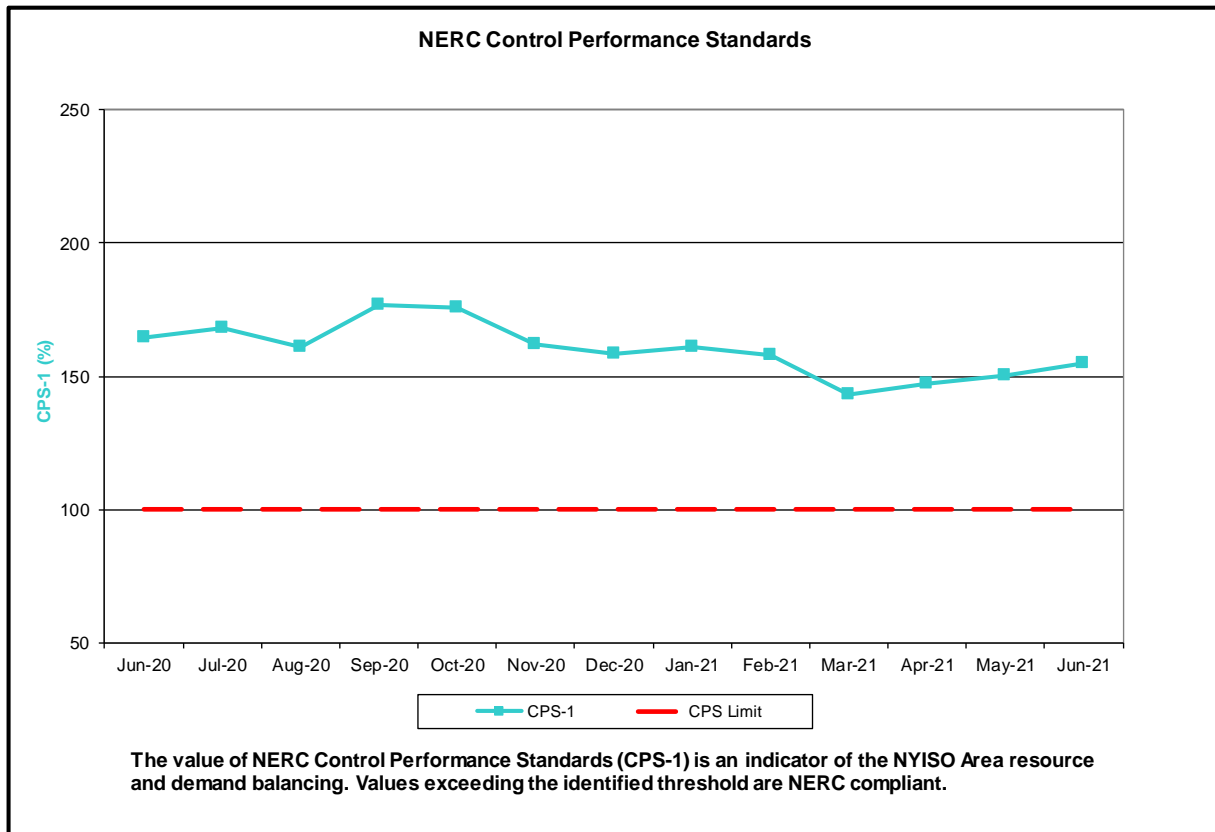
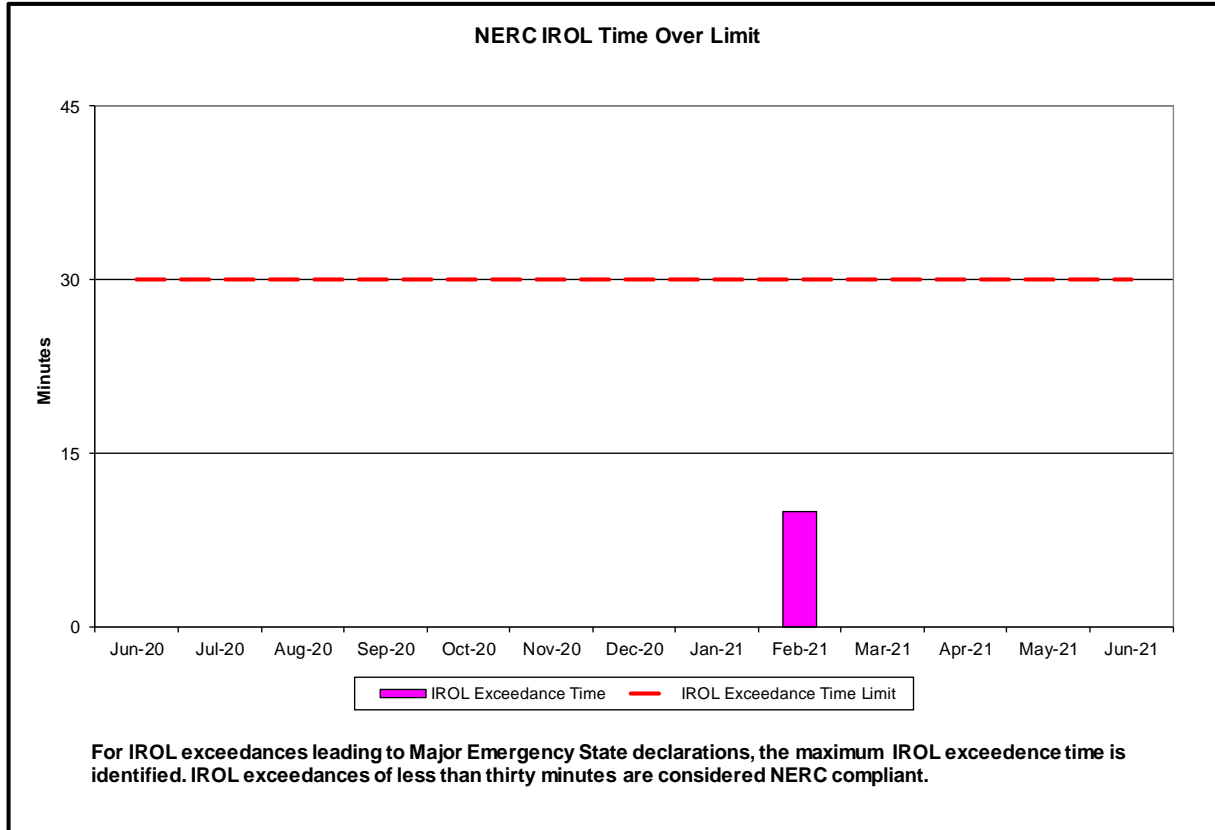
- Statewide uplift cost monthly average was (\$0.68)/MWh.
- The following table identifies the Monthly ICAP spot market prices and the price delta.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
July 2021 Spot Price	\$5.50	\$5.50	\$5.50	\$9.29
June 2021 Spot Price	\$5.32	\$5.32	\$5.32	\$9.34
Delta	\$0.18	\$0.18	\$0.18	(\$0.05)

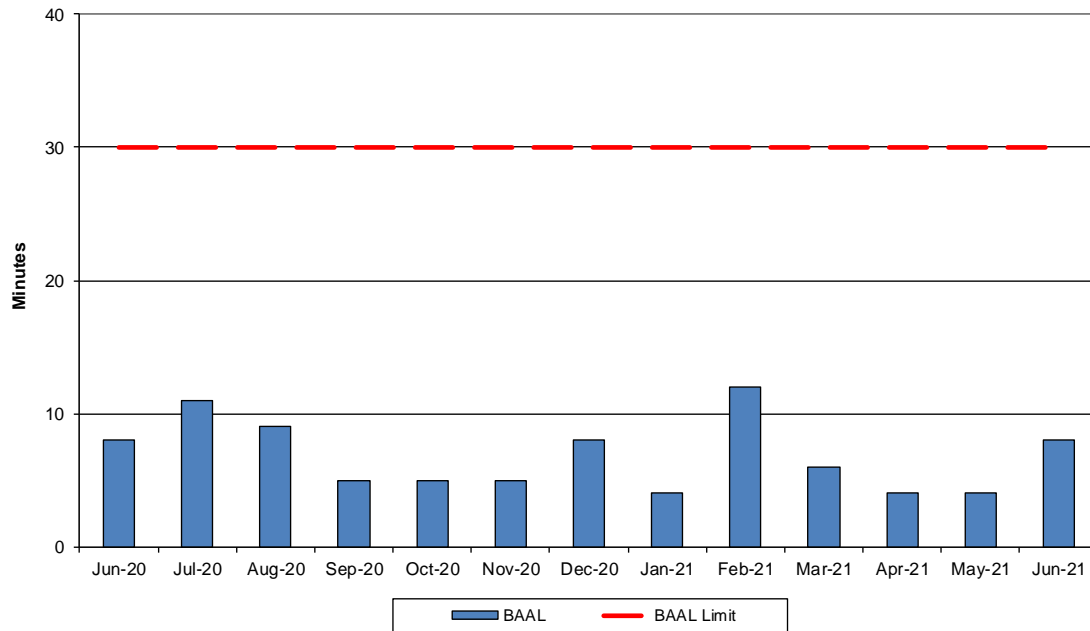
- NYCA, Lower Hudson Valley (GHJ), and New York City (NYC) localities experienced a \$0.18 clearing price increase due to an increase in unsold MWs in Rest-of-State (ROS).

## Reliability Performance Metrics



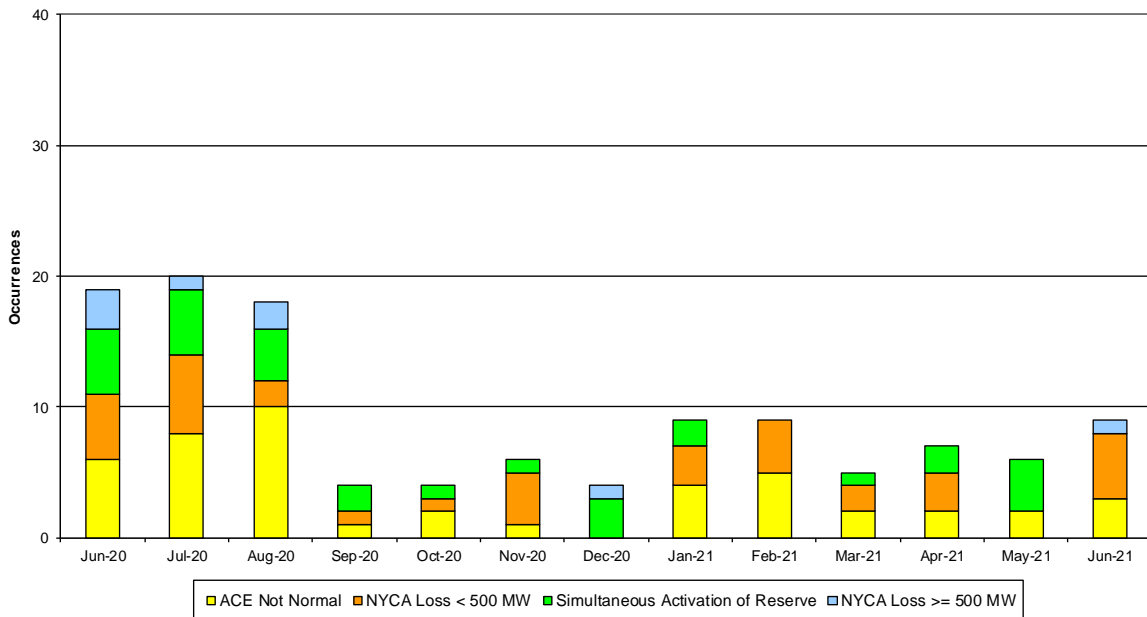


### NERC Balancing Authority ACE Limit Standard



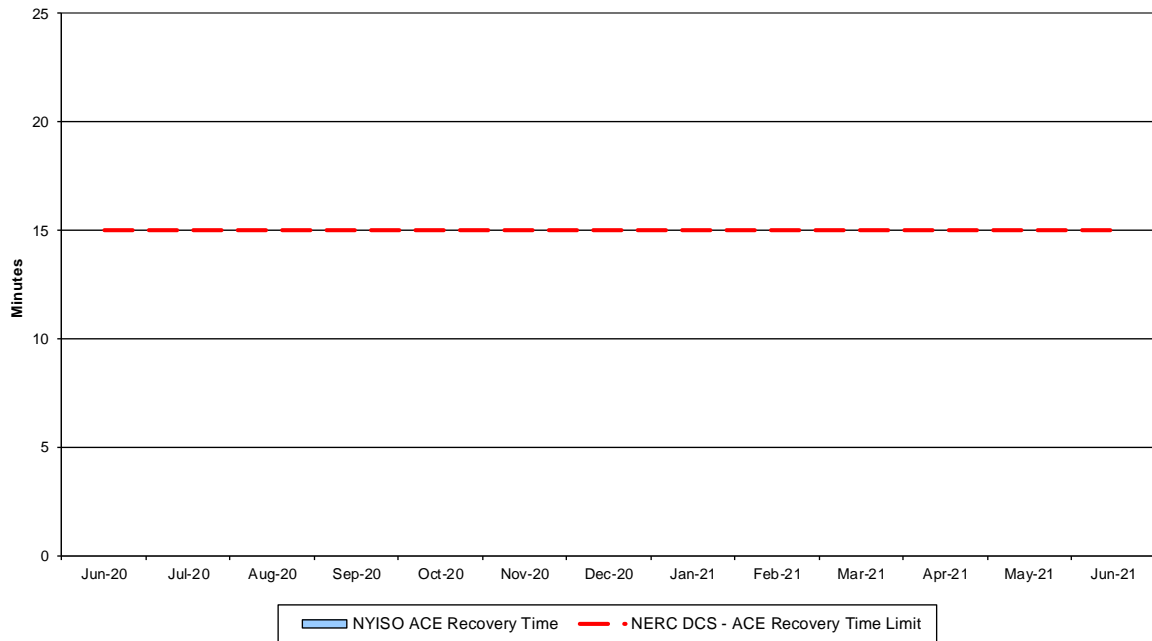
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

### Reserve Activations



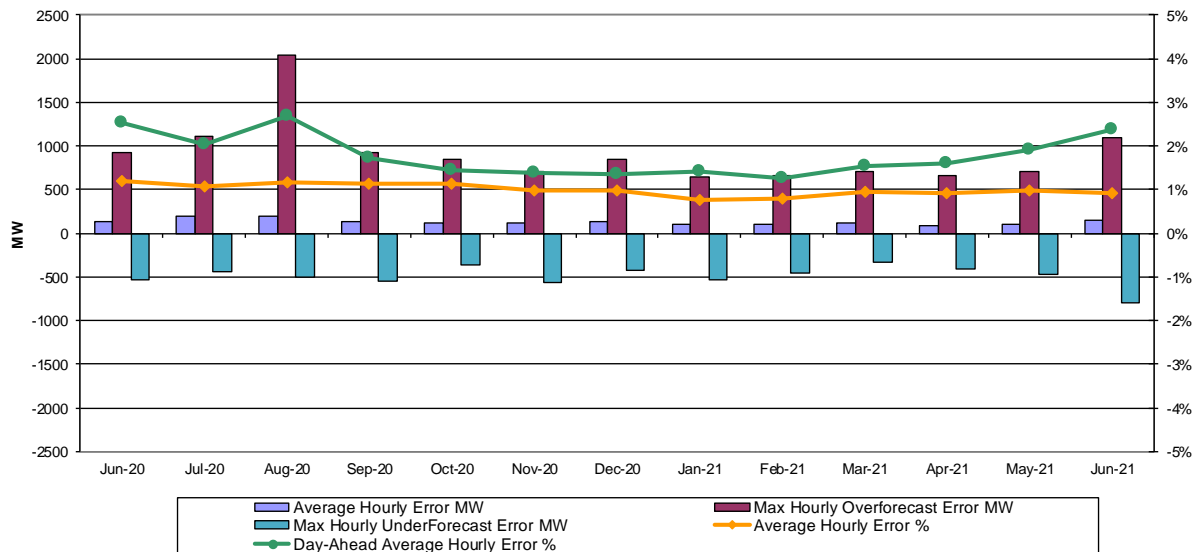
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

### 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

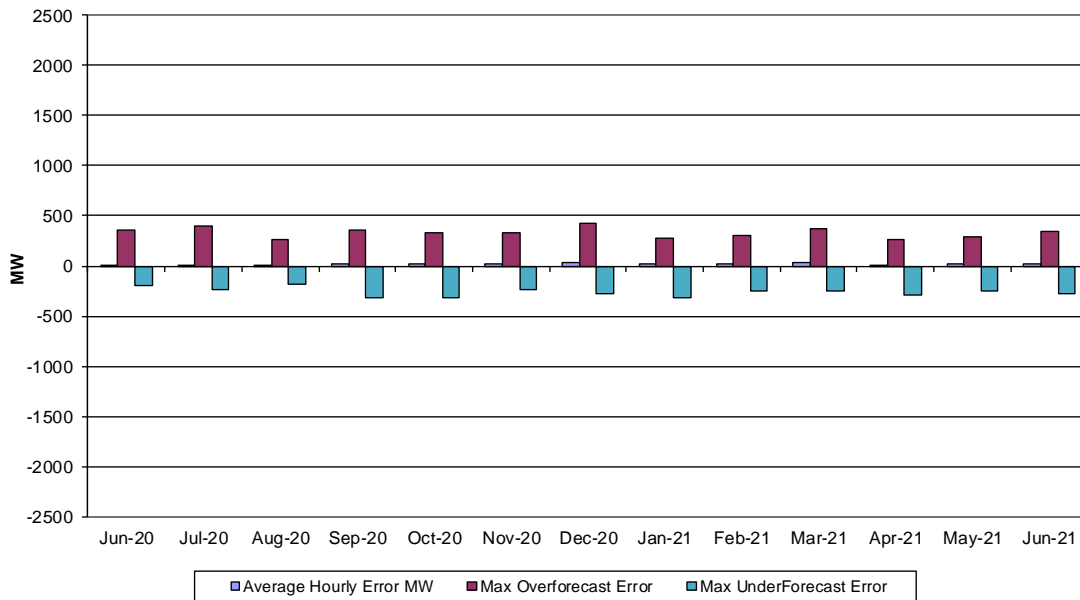


**Hourly Error MW** - Value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.

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

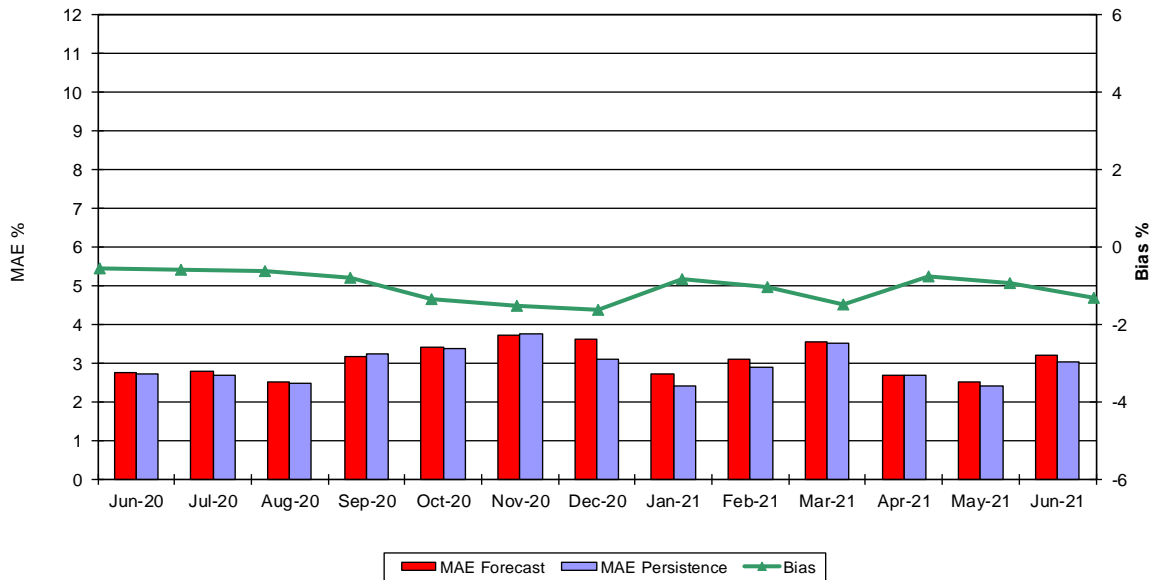
**Day-Ahead Average Hourly Error %** - Average across all hours of the month of the absolute value of the difference between actual load demand and the Day-Ahead forecast load demand, divided by the actual load demand.

### 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

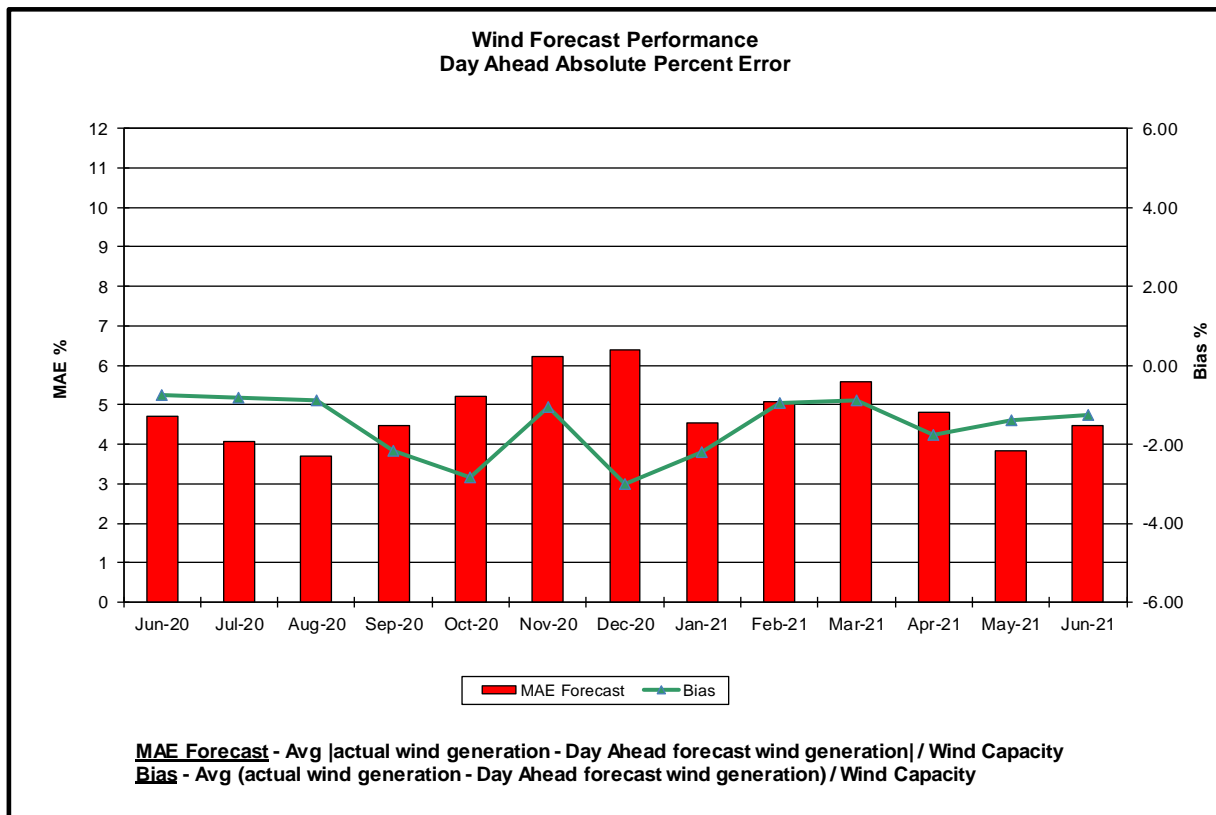
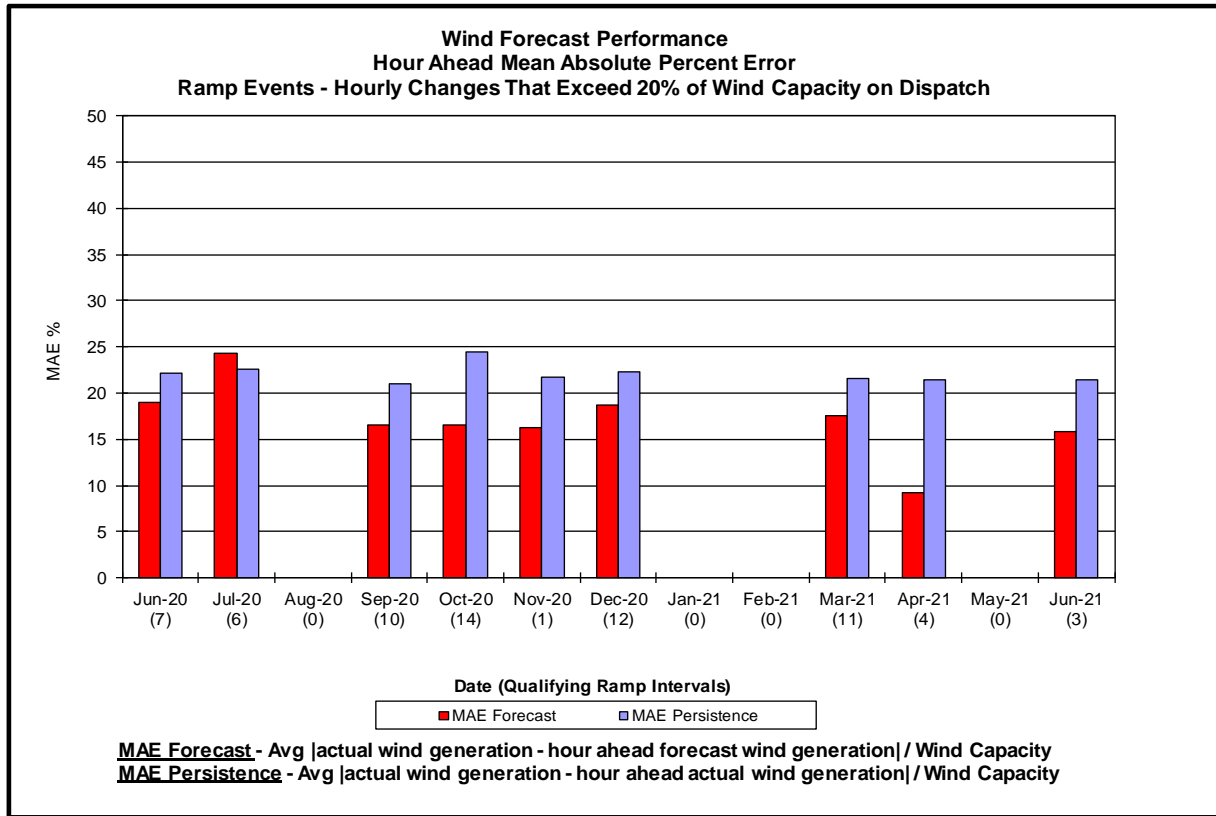


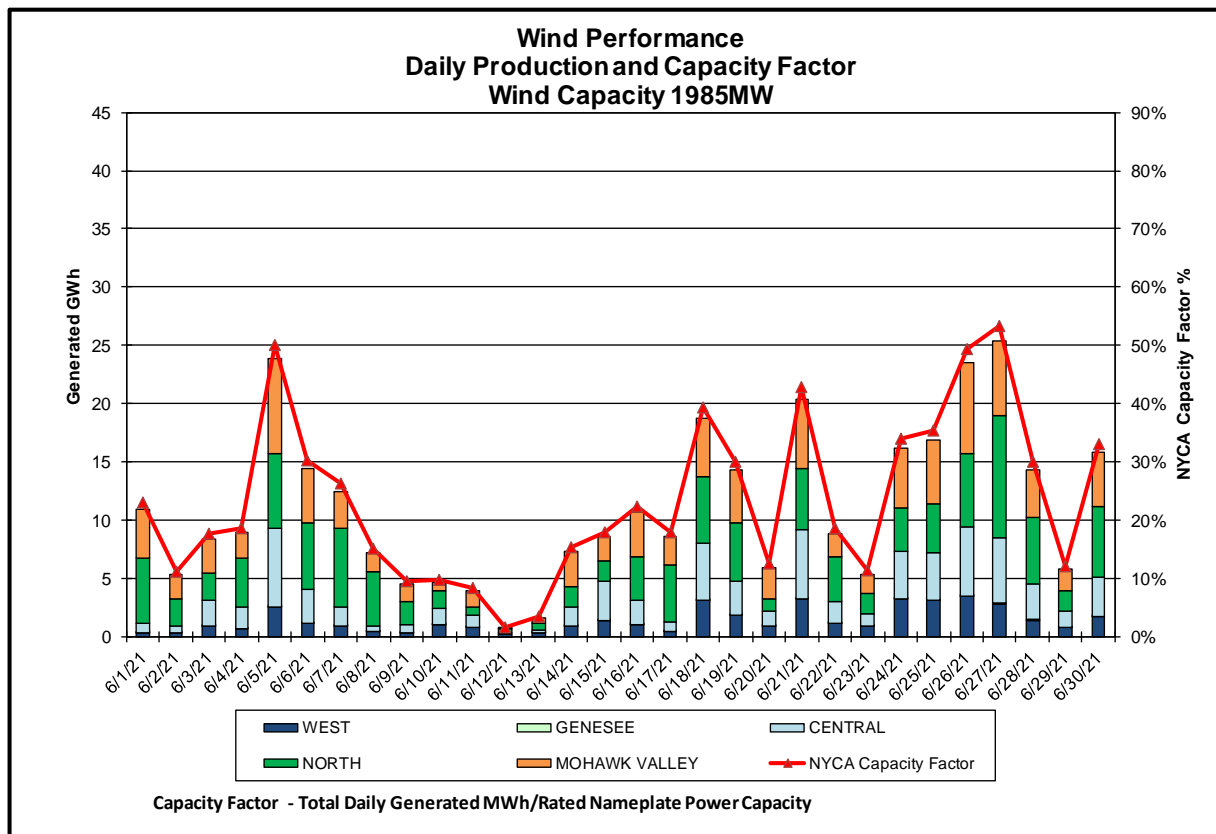
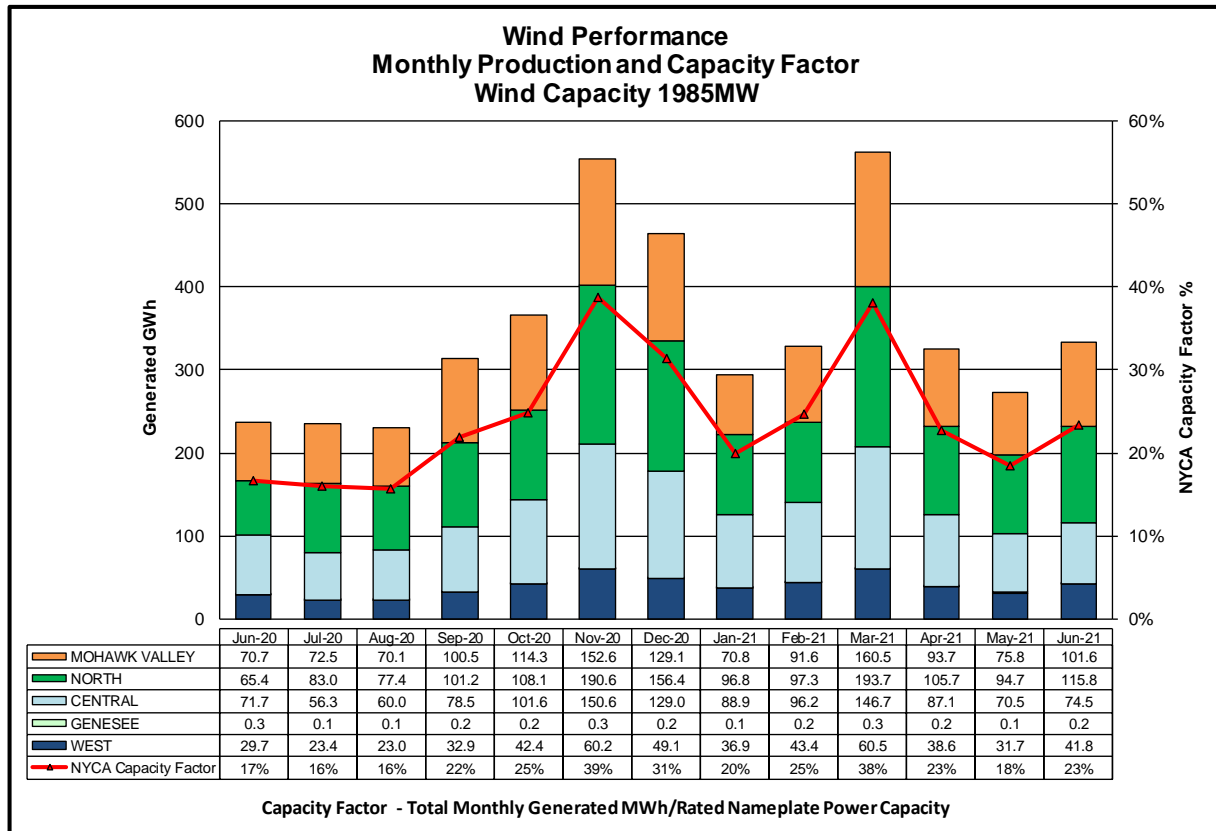
**MAE Forecast** - Avg [actual wind generation - hour ahead forecast wind generation] / Wind Capacity

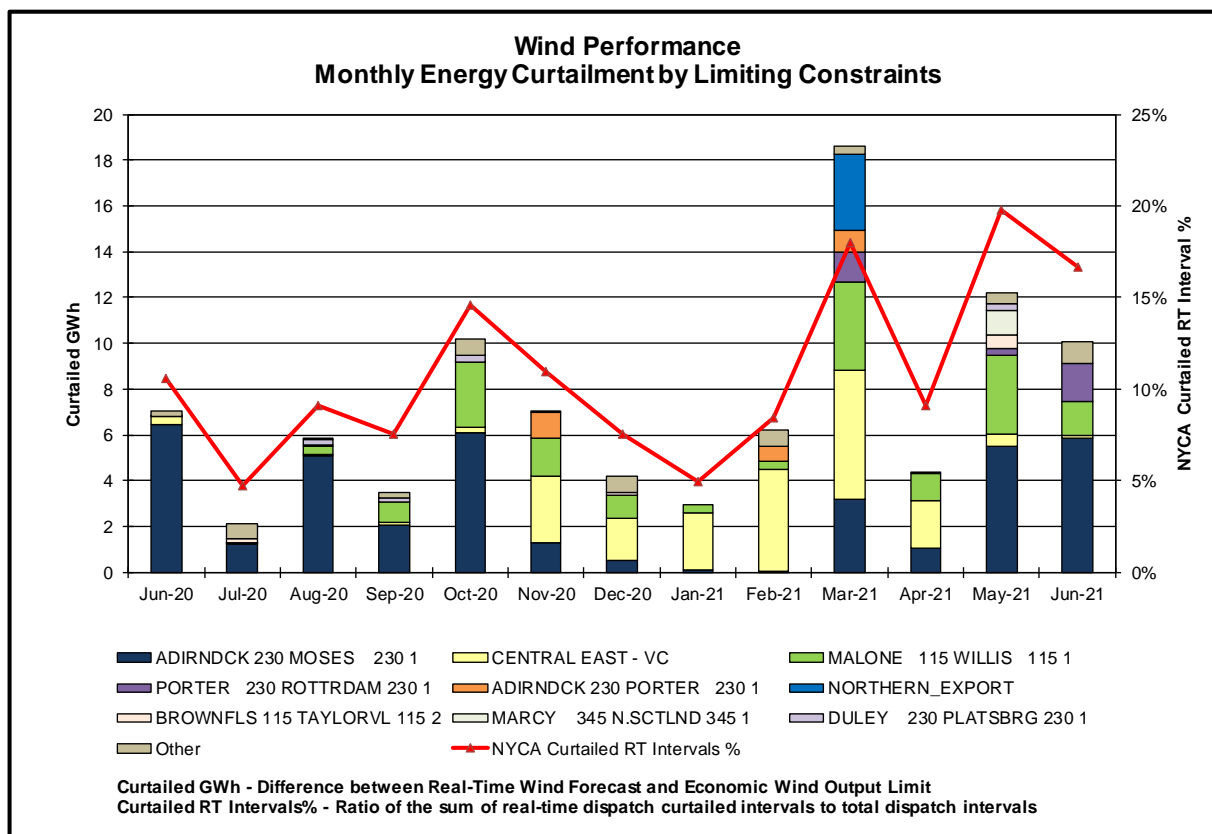
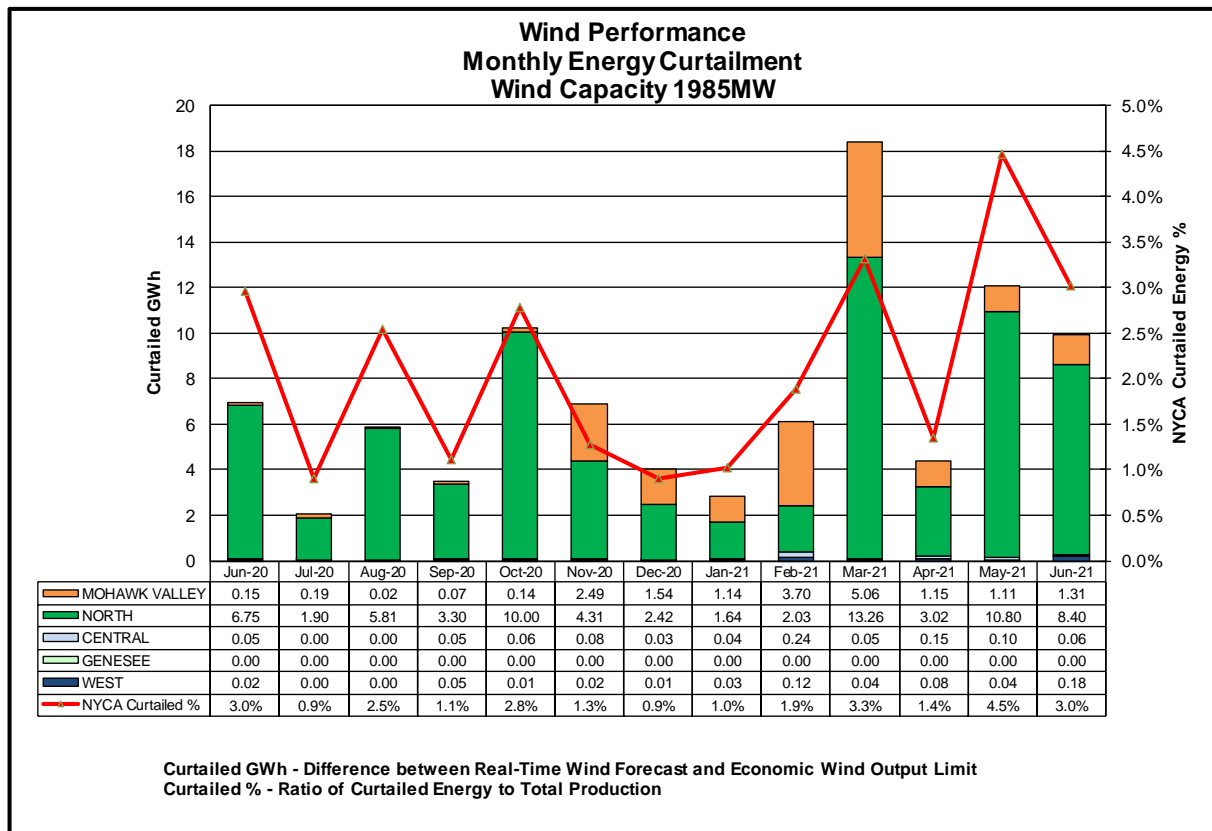
**MAE Persistence** - Avg [actual wind generation - hour ahead actual wind generation] / Wind Capacity

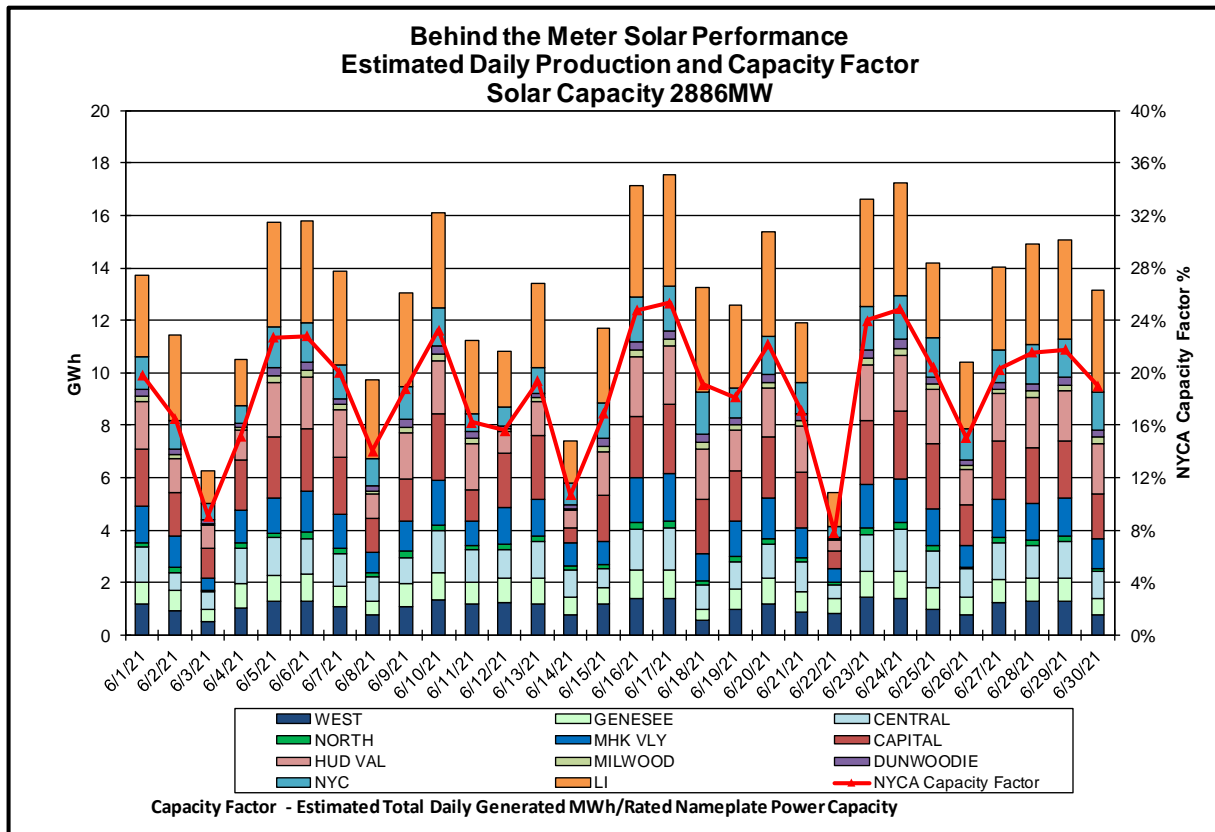
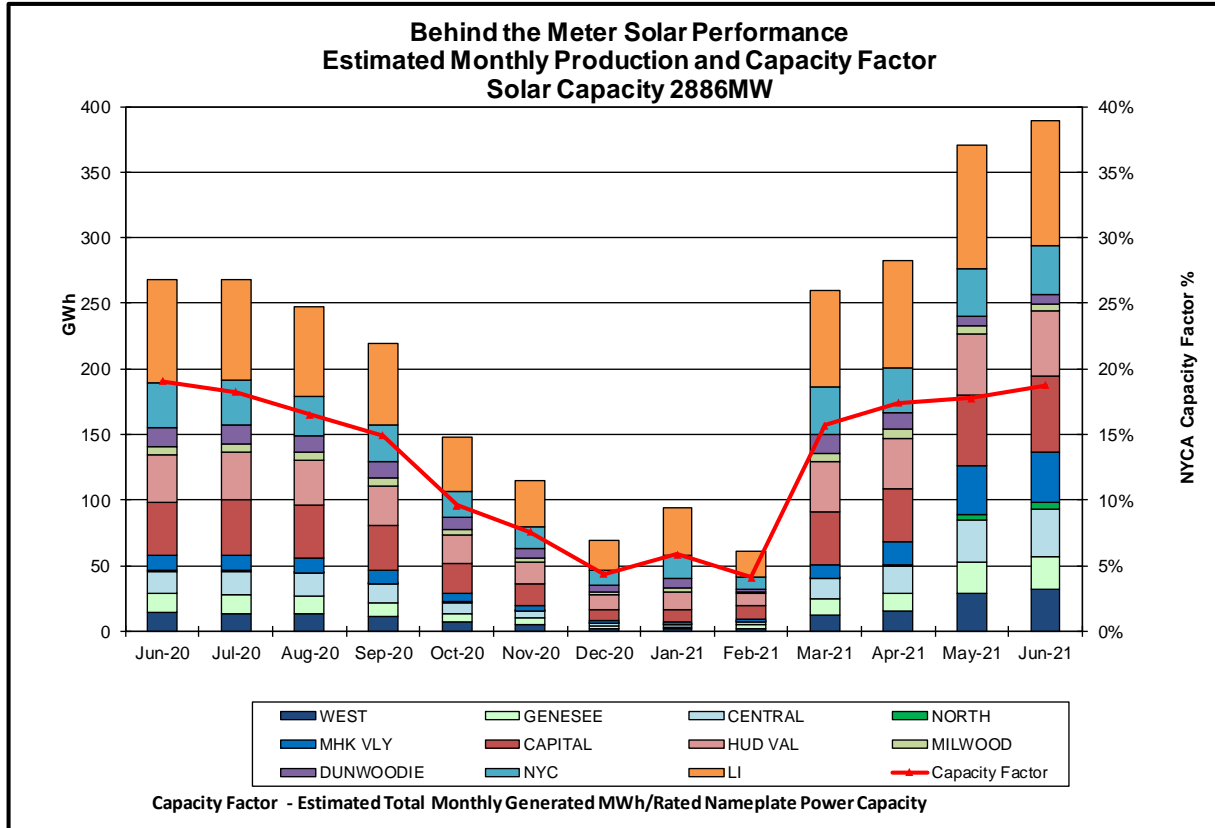
**Bias** - Avg (actual wind generation - hour ahead forecast wind generation) / Wind Capacity

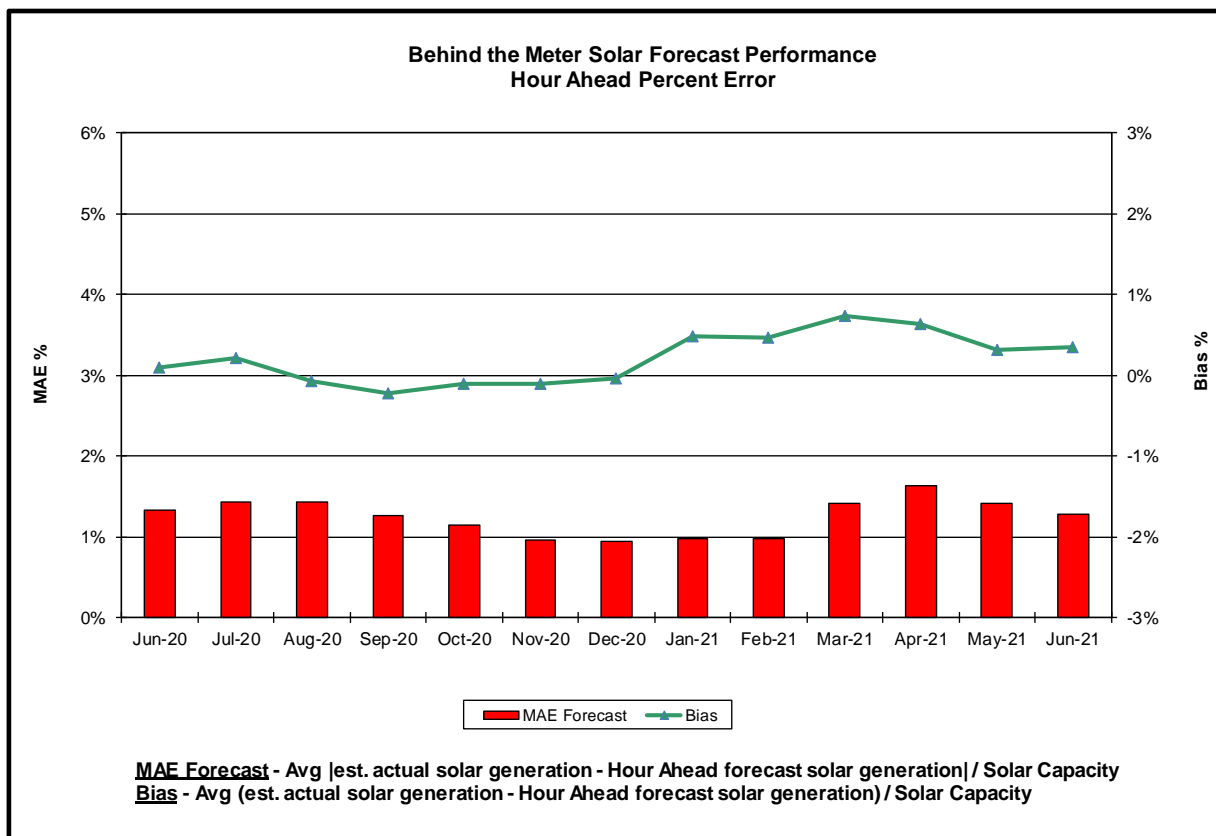
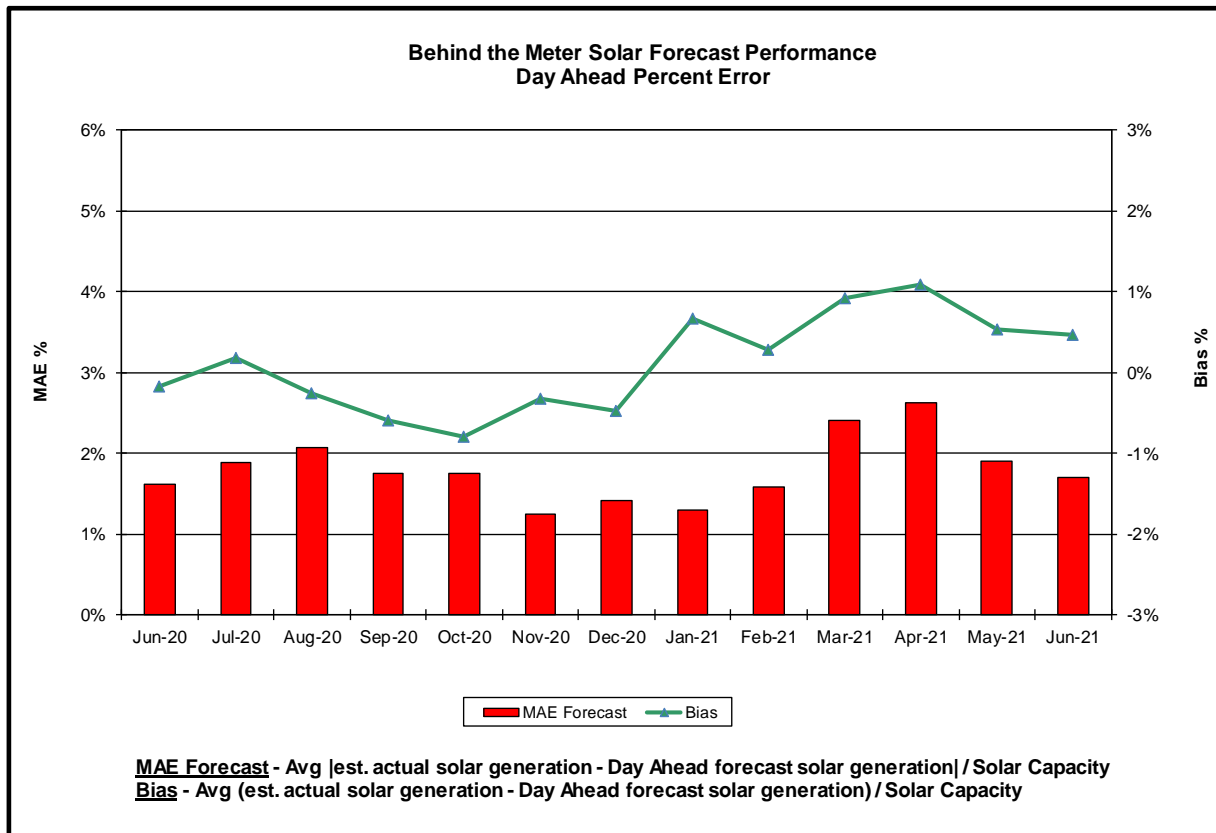


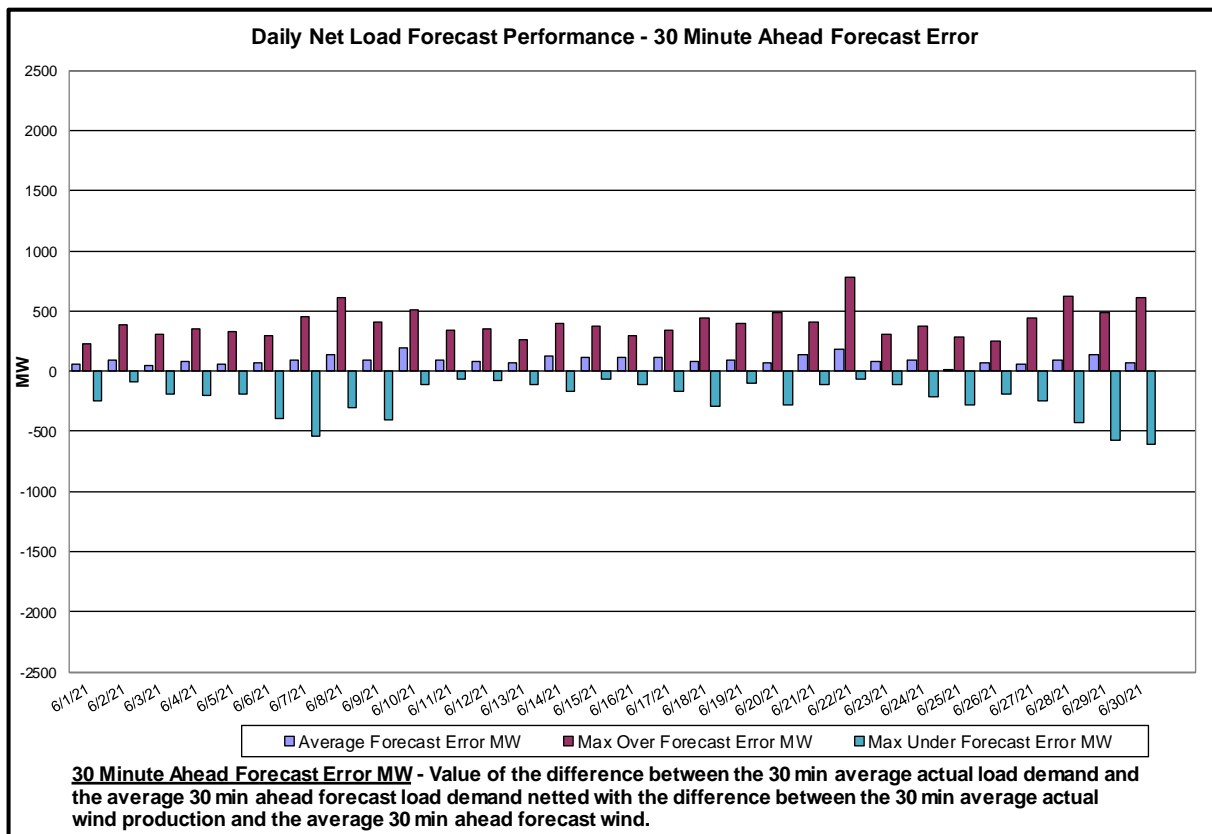
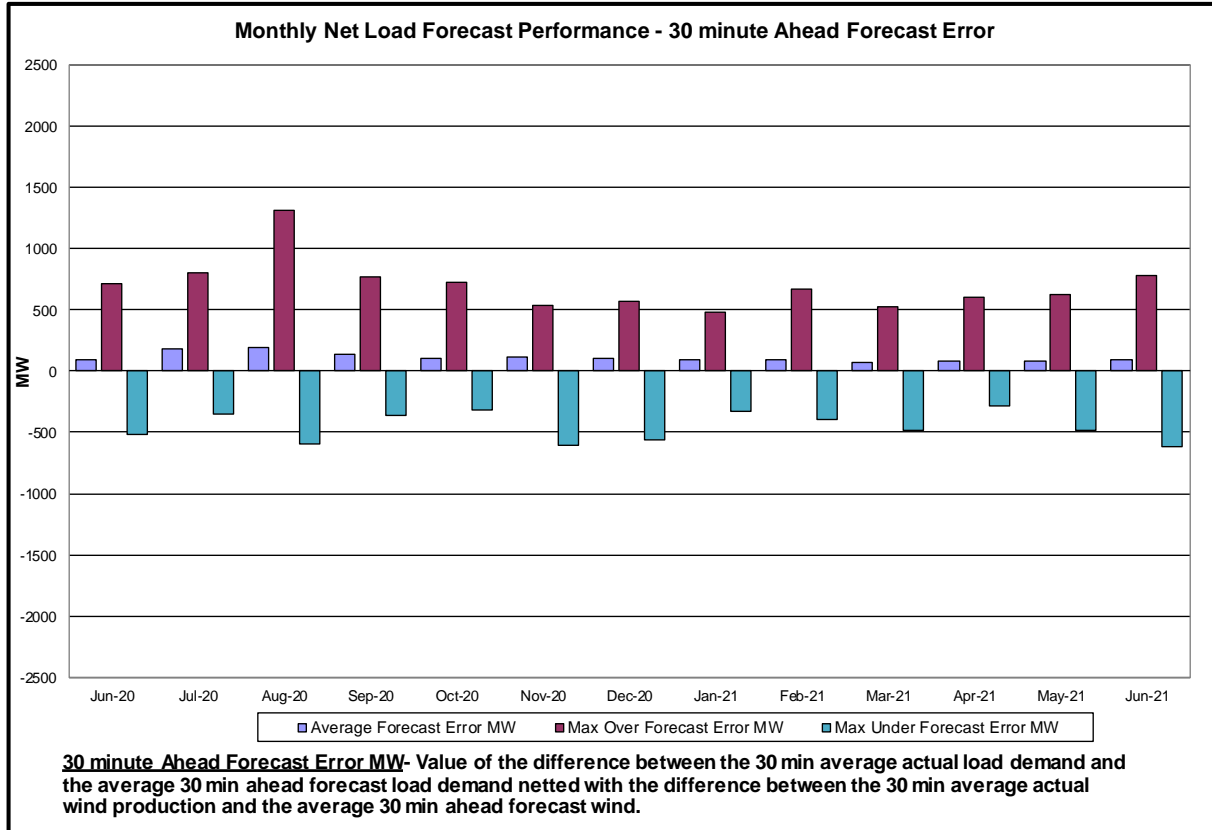


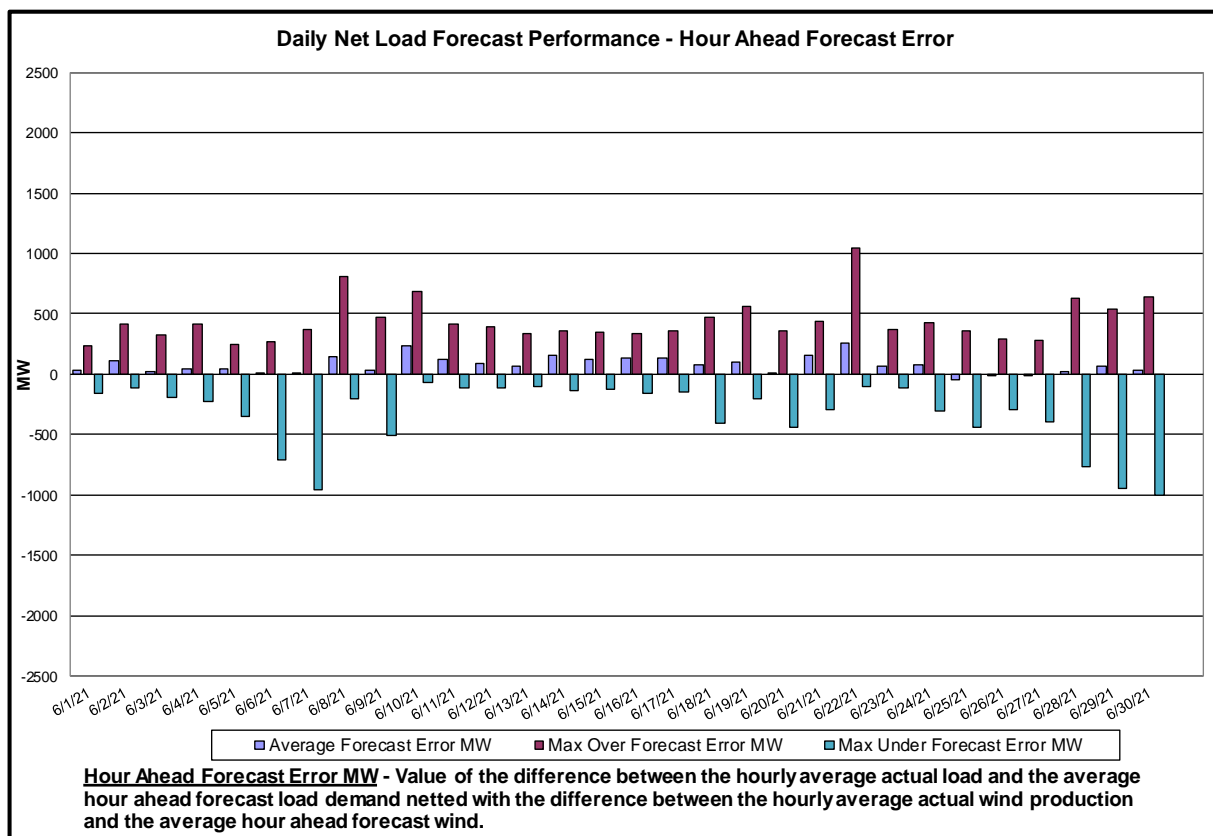
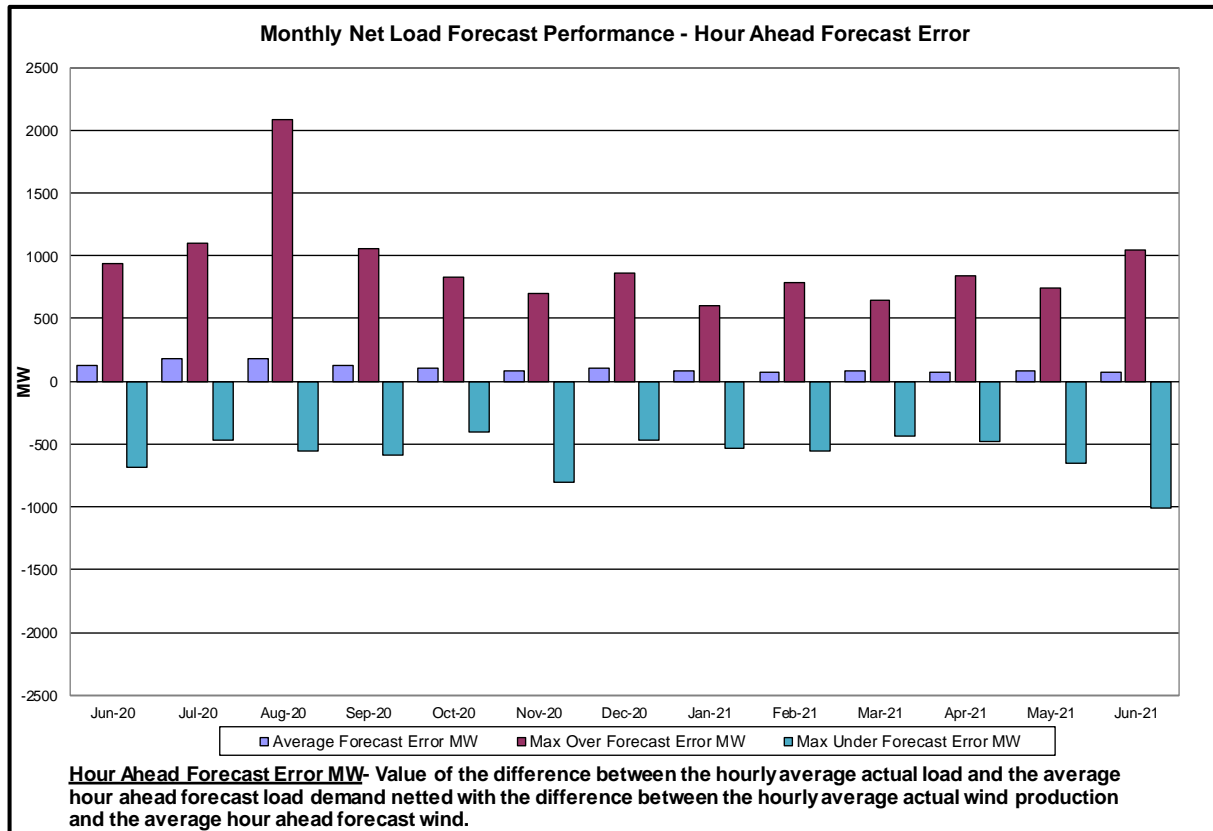


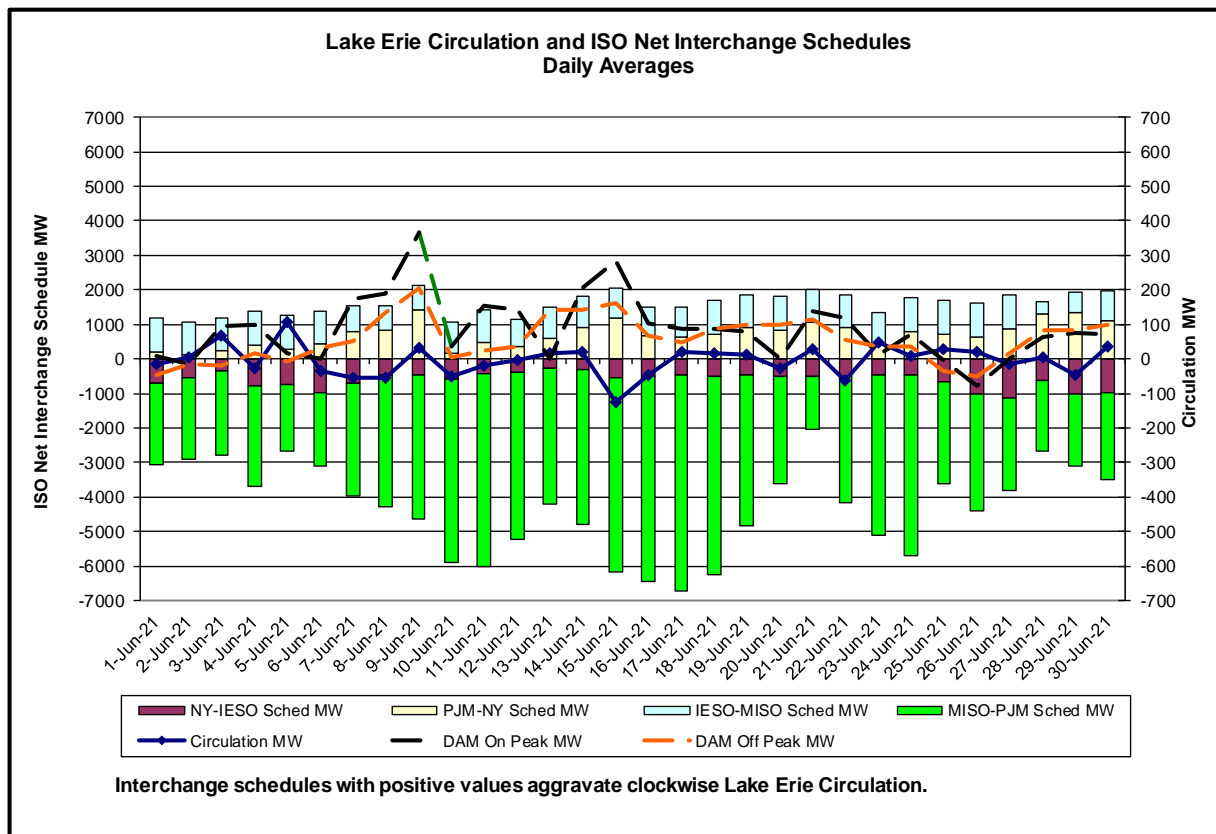
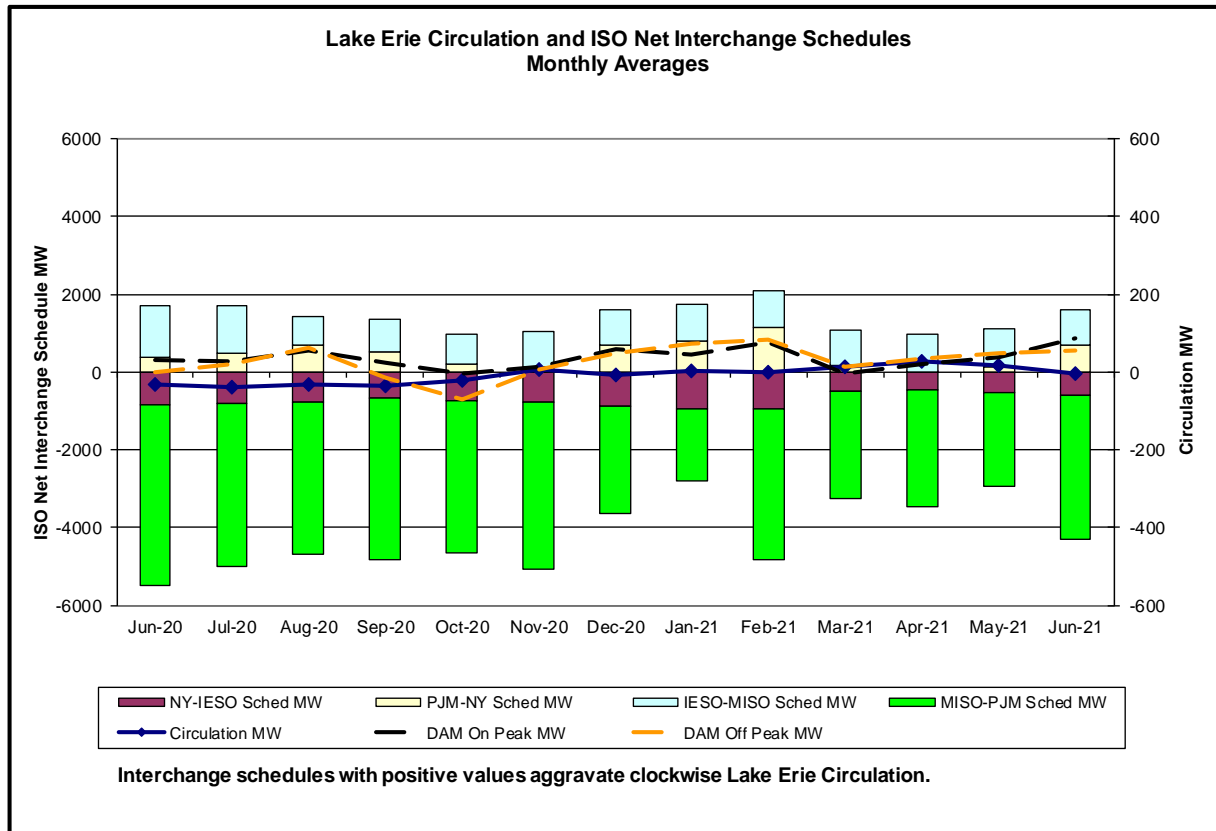






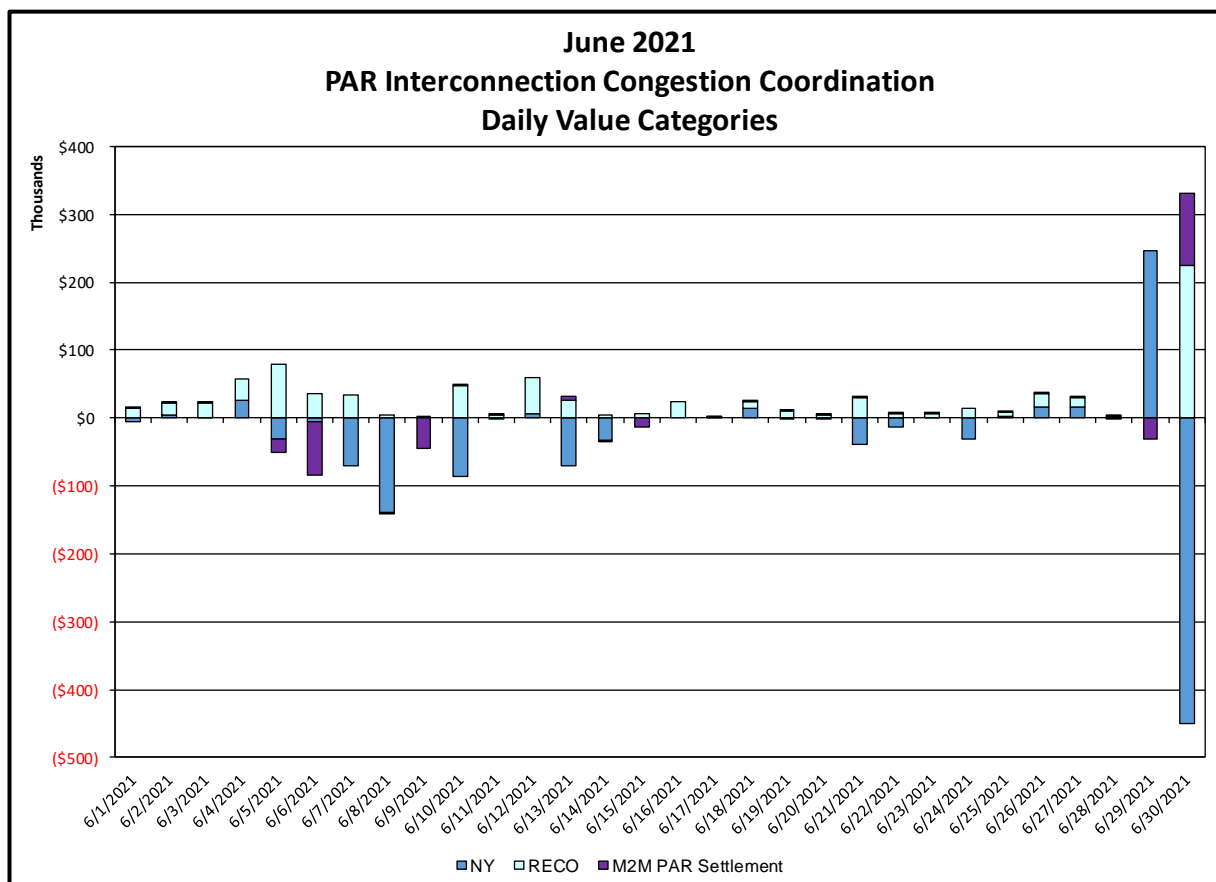
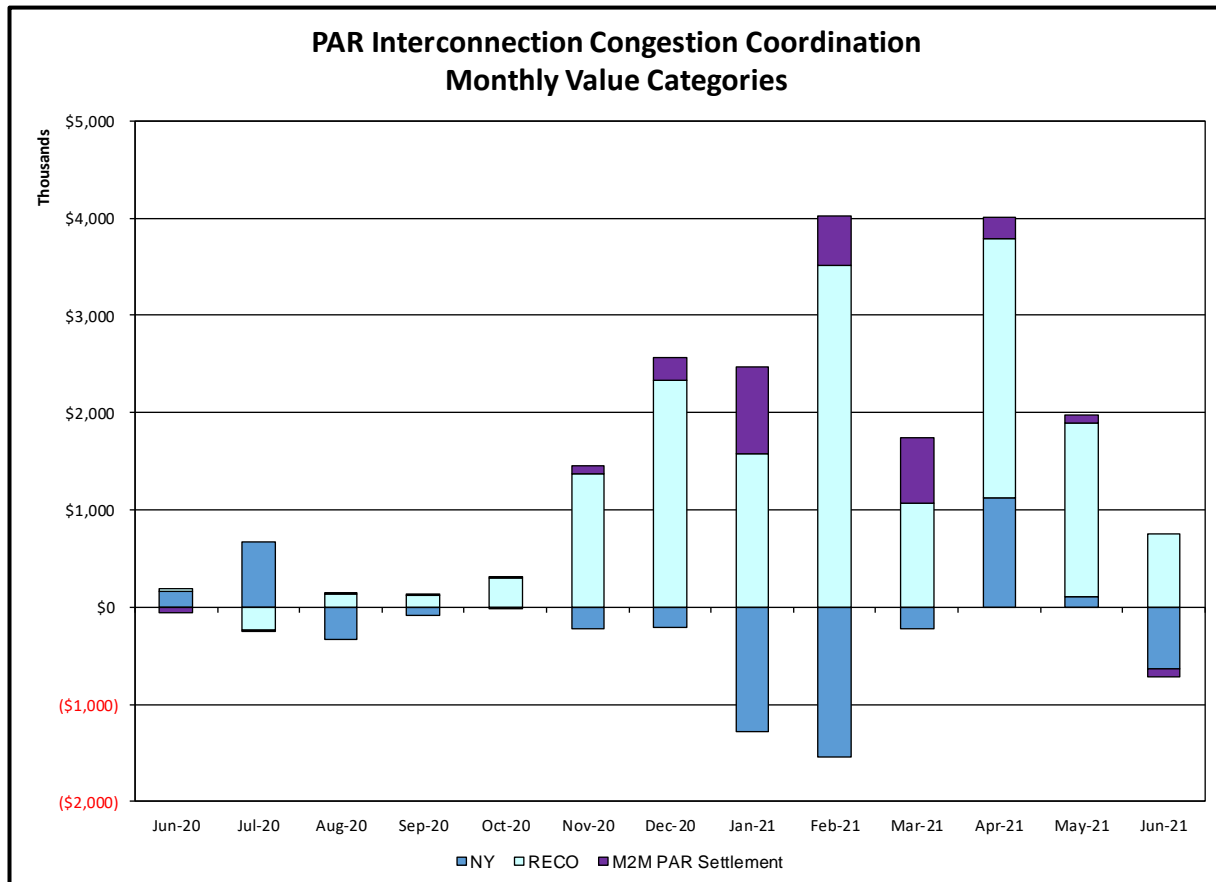






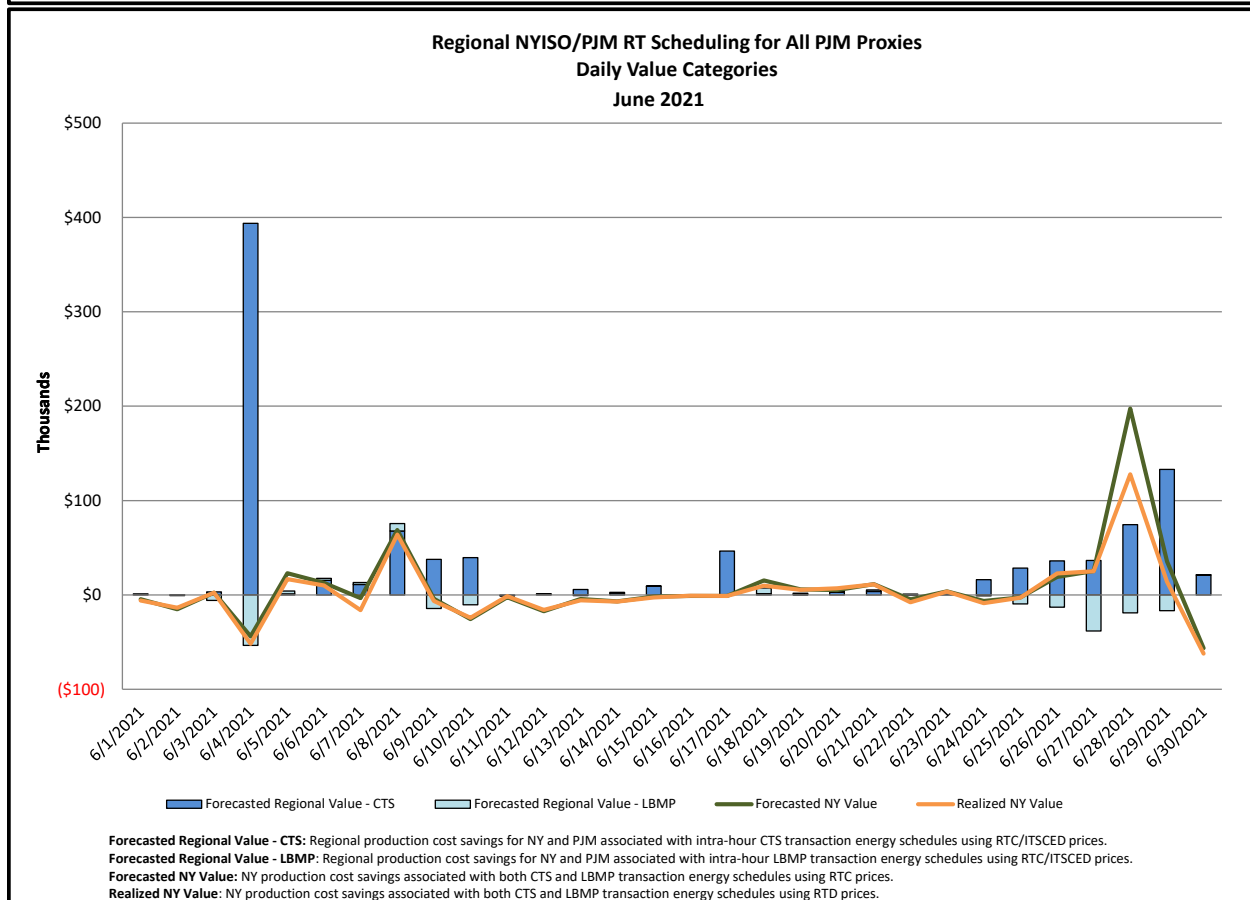
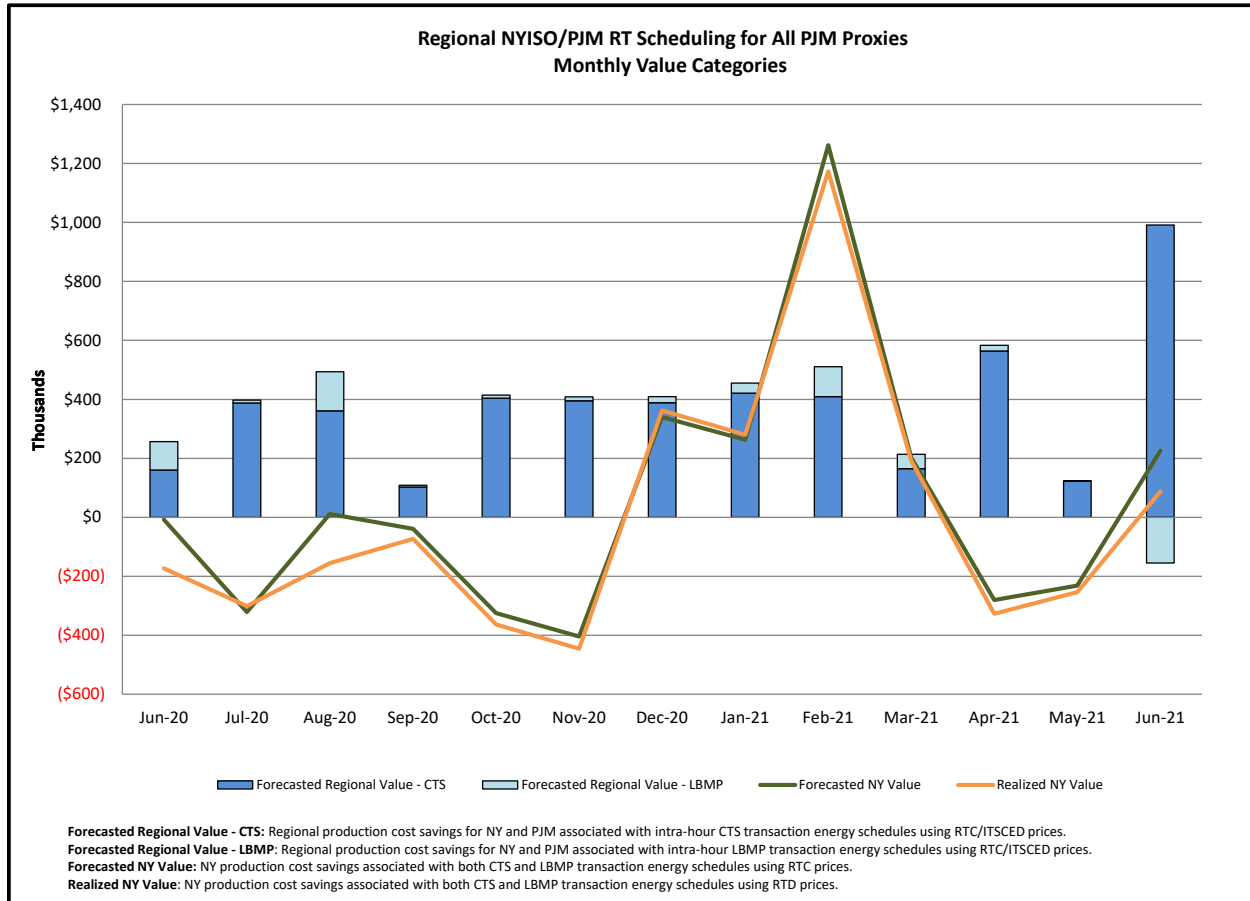


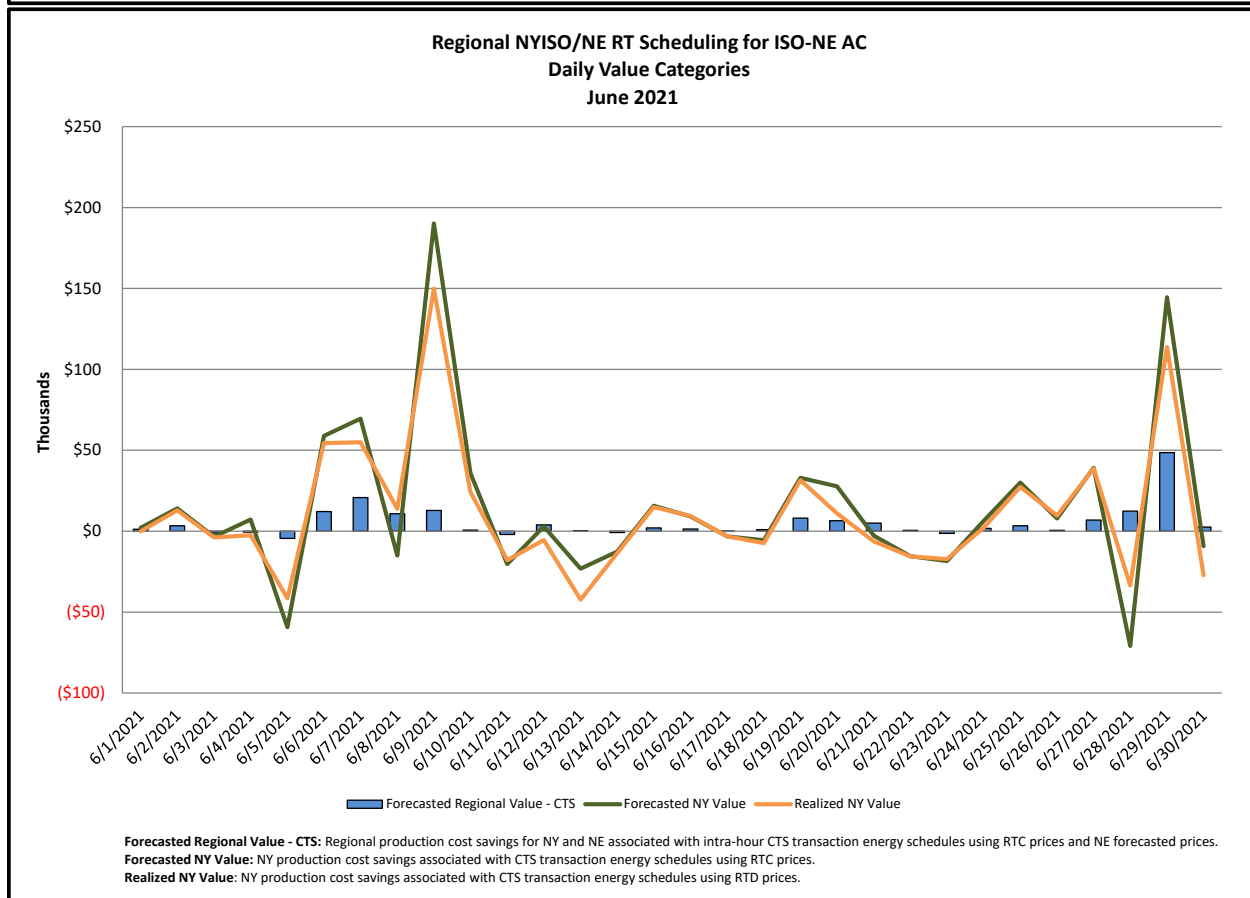
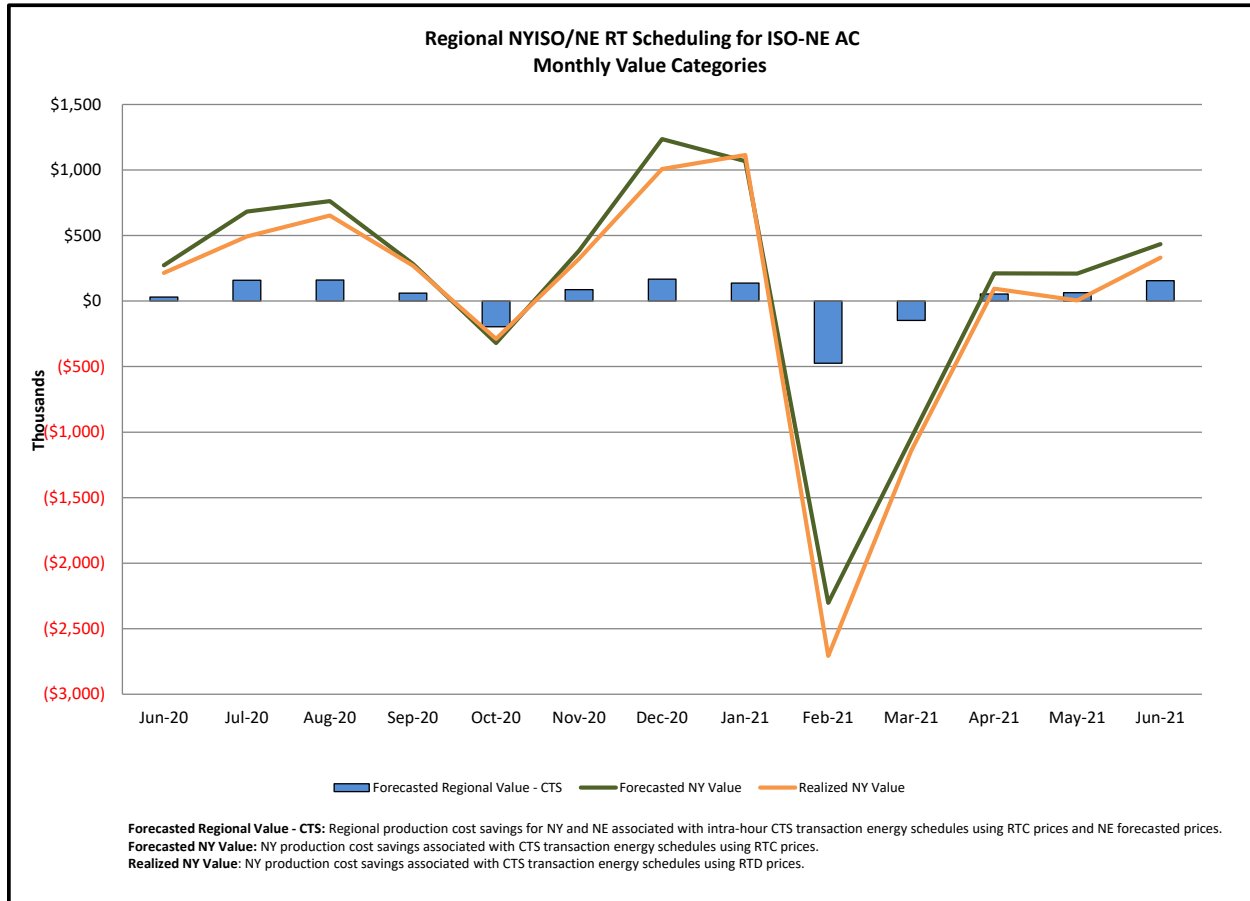
## Broader Regional Market Performance Metrics



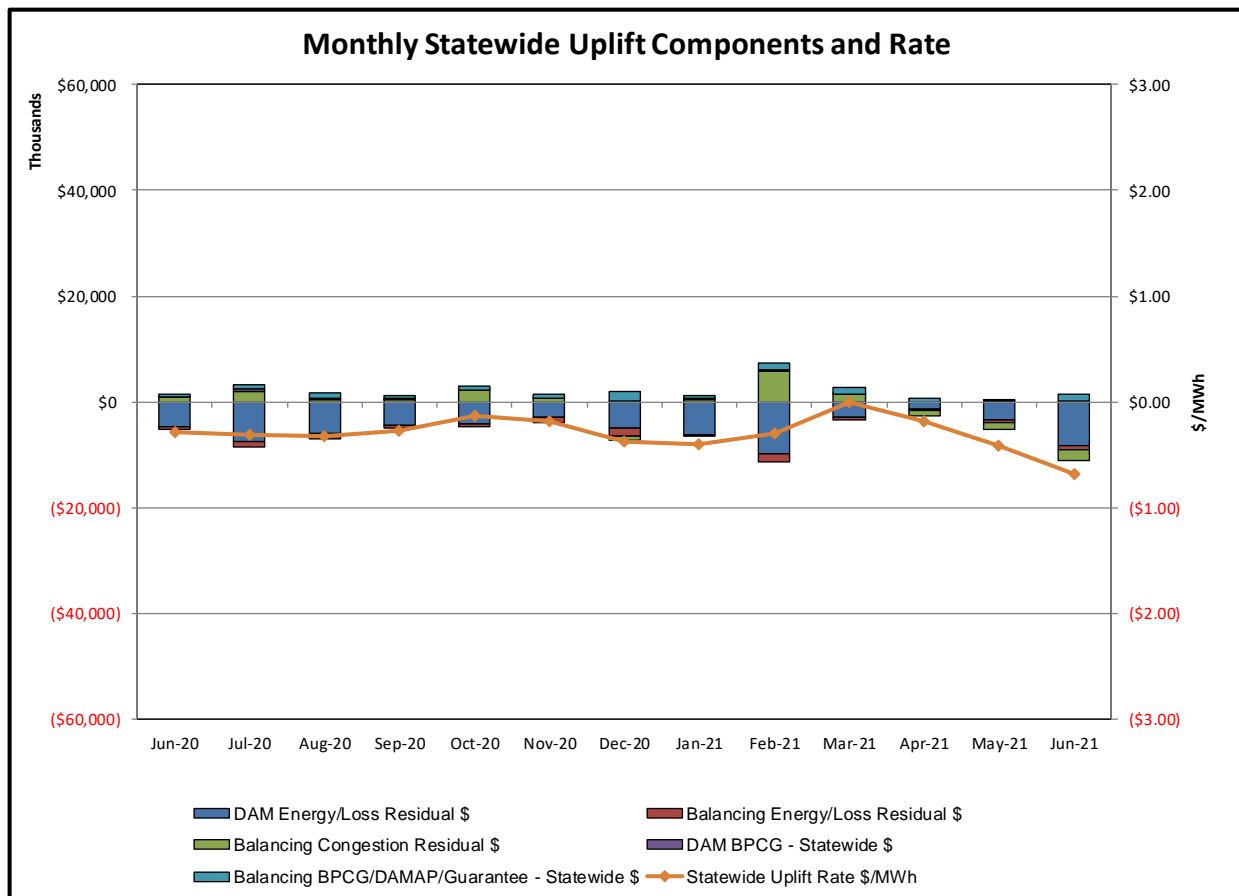
### PAR Interconnection Congestion Coordination

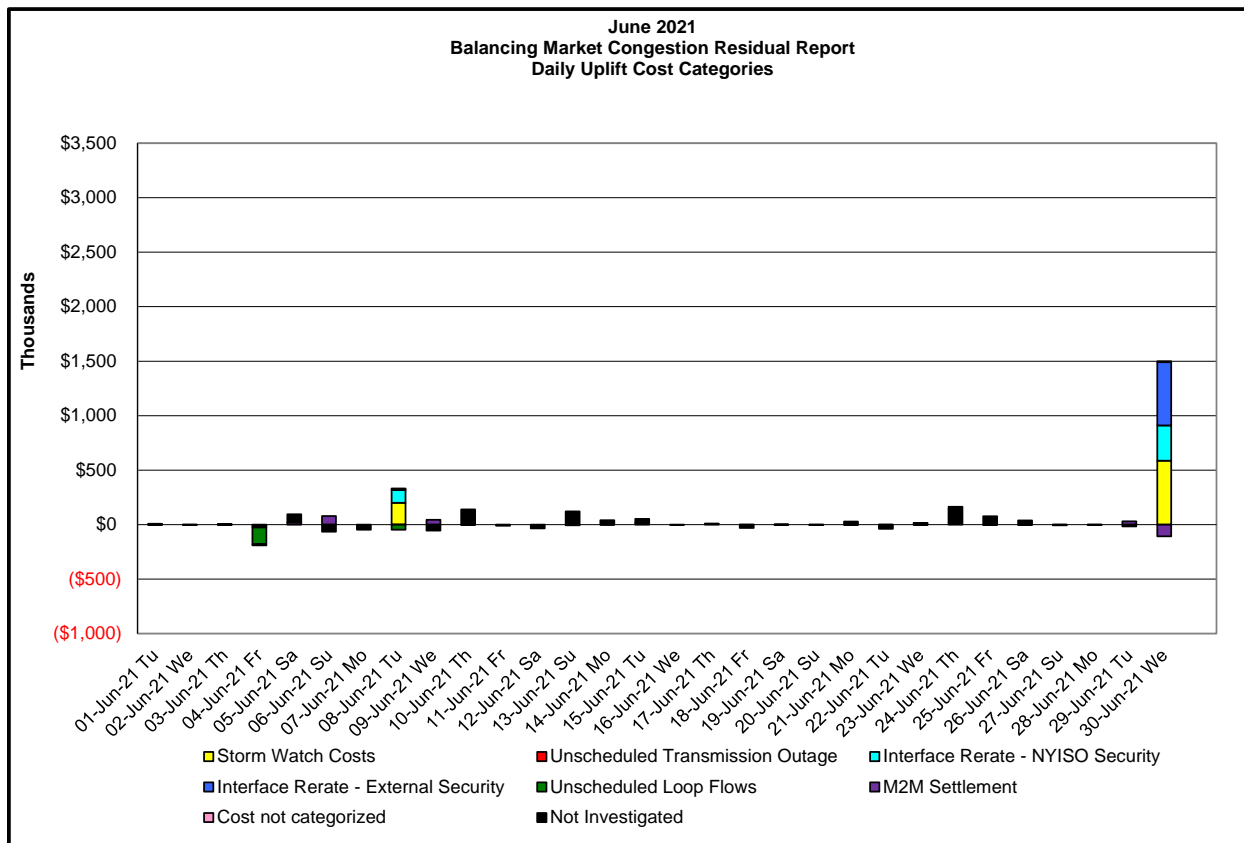
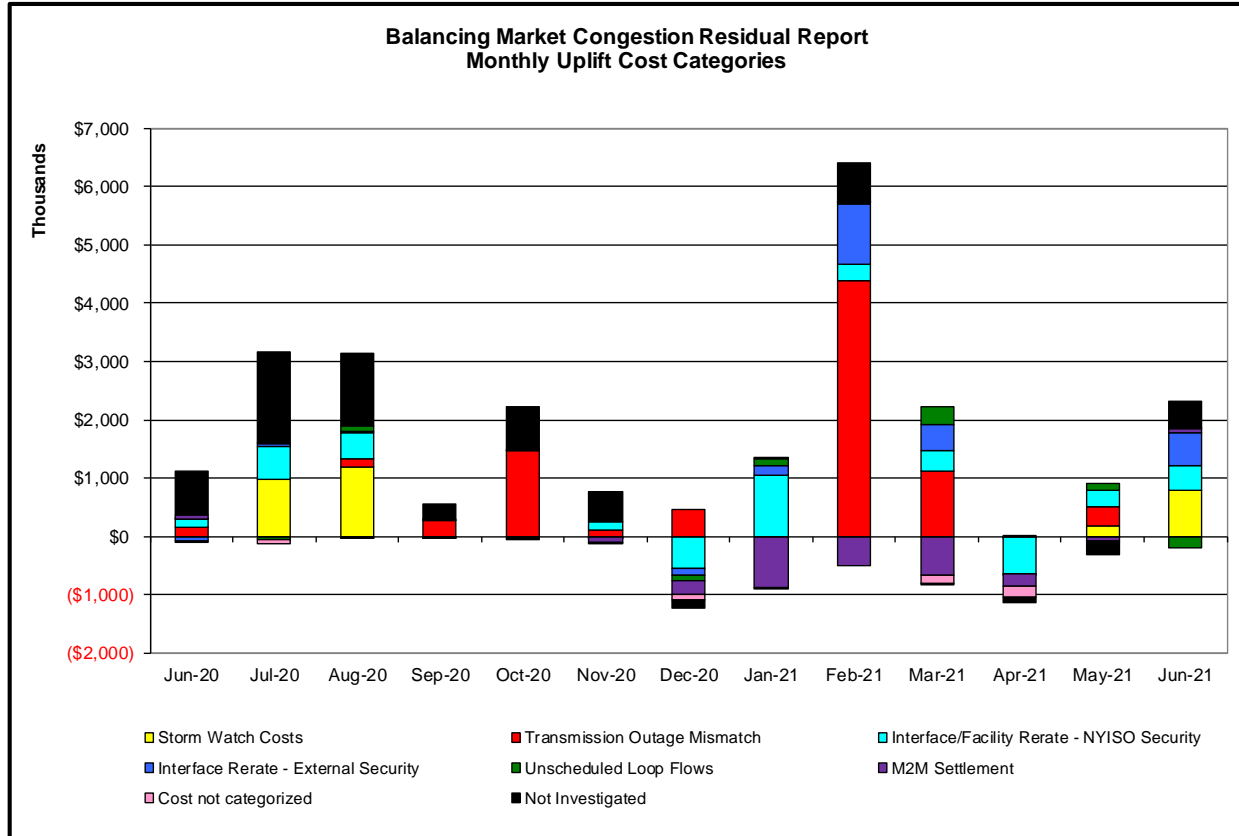
<u>Category</u>	<u>Description</u>
NY	Represents the value NY realizes from Market-to-Market PAR Coordination when experiencing congestion. This is the estimated savings to NY for additional deliveries into NY
RECO	Represents the value of PJM's obligation to deliver 80% of service to RECO load over Ramapo 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

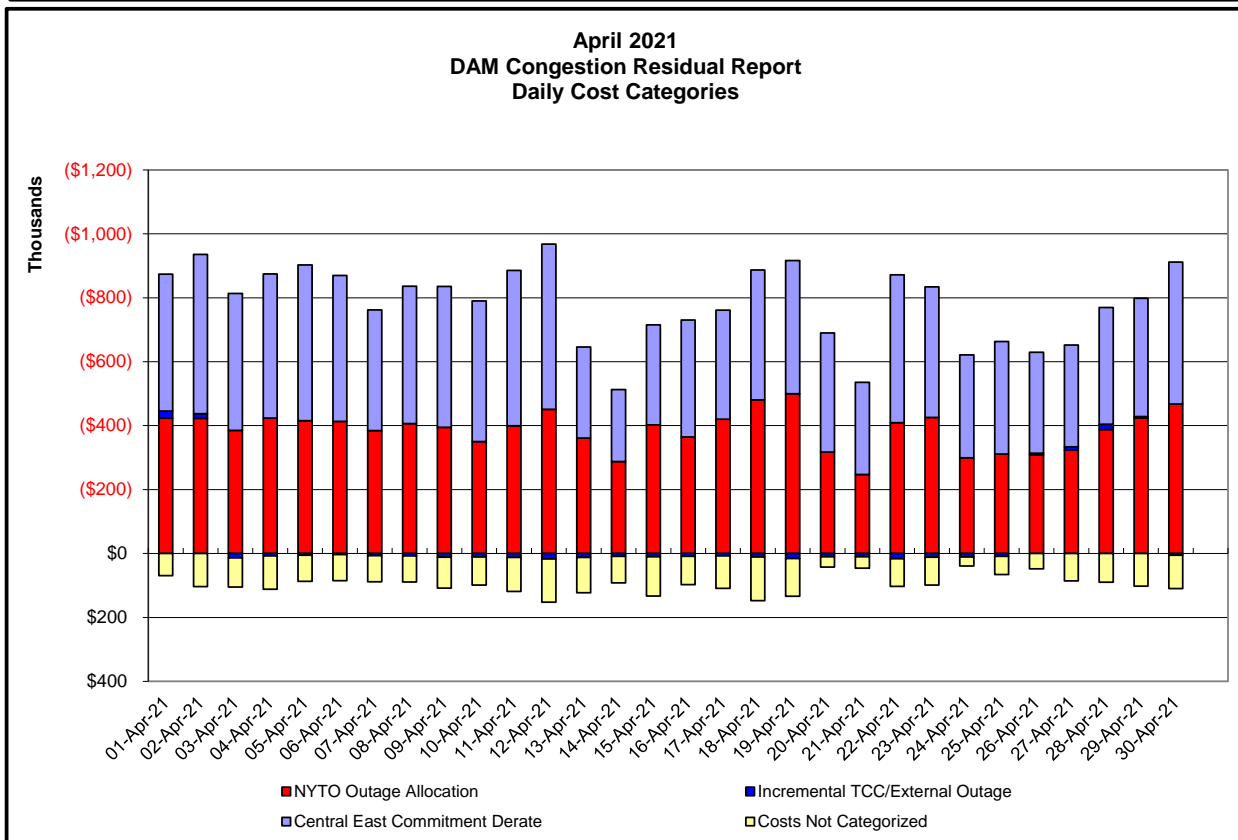
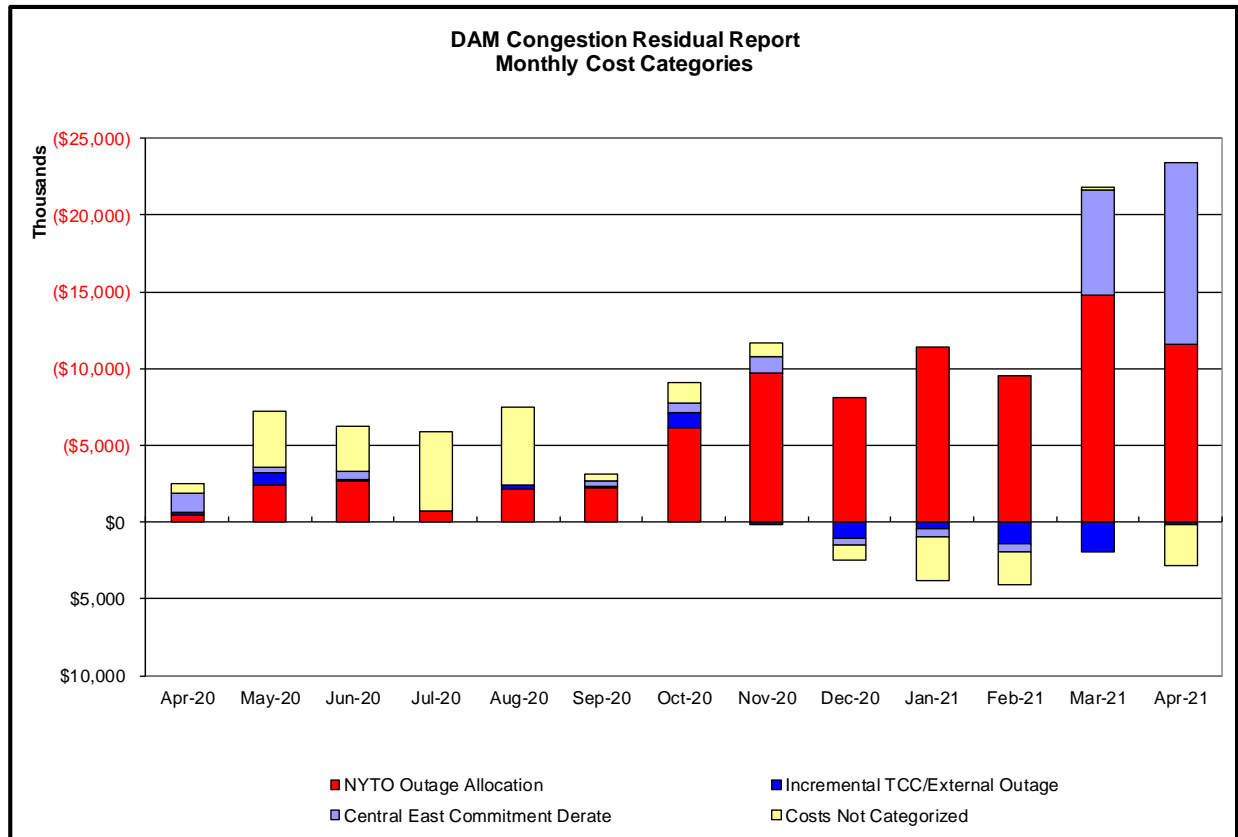




Day's investigated in June: 4, 8, 30			
Event	Date (yyyymmdd)	Hours	Description
	6/4/2021	23	Uprate Central East
	6/4/2021	16	PJM_AC DNI Ramp Limit
	6/4/2021	14-16	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	6/8/2021	14-18	Thunder Storm Alert, Buchanan North 345/138kV (Bank TA5)
	6/8/2021	14-17	Thunder Storm Alert, Chester-Shoemaker 138kV (#27)
	6/8/2021	17	NYCA DNI Ramp Limit
	6/8/2021	1, 16	Derate Adirondack-Moses 230kV (#MA1) for I/o SIN:MSU1&7040& HQ GN&LD PROXY
	6/8/2021	1, 14, 15, 18	Derate Porter-Rotterdam 230kV (#31) for I/o BUS:NSCTLD#77 14&2&93&BK2&C1&3
	6/8/2021	14-18, 22, 23	Derate Scriba-Volney 345kV (#20) I/o Scriba-Volney 345kV (#21)
	6/8/2021	9-11	Uprate East 179th Street-Hellgate 138kV (#15055)
	6/8/2021	7, 9, 10	Uprate Freshkills-Willowbrook 138kV (#29211)
	6/8/2021	11-13, 19	Uprate Freshkills-Willowbrook 138kV (#29212)
	6/8/2021	13, 19	Uprate Goethals-Gowanus 345kV (#25/#26)
	6/8/2021	9	Uprate Malone-Willis 115kV (#1-910) I/o ALCOA_PA-ALCOA 115 R8105
	6/8/2021	13, 20-23	HQ_CHAT-NY Scheduling Limit
	6/8/2021	14	NE_AC DNI Ramp Limit
	6/8/2021	11	IESO_AC DNI Ramp Limit
	6/8/2021	7-9	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	6/8/2021	13	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West
	6/30/2021	17-21	Thunder Storm Alert, Buchanan North 345/138kV (Bank TA5)
	6/30/2021	17-20	Thunder Storm Alert, Chester-Shoemaker 138kV (#27)
	6/30/2021	17-19	Thunder Storm Alert, Pleasant Valley-Leeds 345kV (#92)
	6/30/2021	16-22	Thunder Storm Alert, HQ Scheduling Limits, curtailment for North Zone TSA
	6/30/2021	13, 14, 16	Derate Dunwoodie-Dunwoodie South 345kV (#W73) I/o Sprainbrook-Dunwoodie South 138kV (#99942)
	6/30/2021	10-16	Derate Roseton-East Fishkill 345kV (#RFK305) I/o TWR: Y88 & Y94 & TA5
	6/30/2021	23	Derate Greenwood-Vernon 138kV (#31231) I/o TWR:GOETHALS 22 & 21
	6/30/2021	16	Derate Pleasant Valley-Leeds 345kV (#92) I/o Athens-Pleasant Valley 345kV (#91)
	6/30/2021	2, 4, 5, 6, 12-16	Derate Porter-Rotterdam 230kV (#31) for I/o TWR:EDIC EF24-40& 30
	6/30/2021	9	Uprate Freshkills-Willowbrook 138kV (#29211) Base Case
	6/30/2021	8, 9	Uprate Gowanus-Greenwood 138kV (#42231/#42232) Base Case
	6/30/2021	8	Uprate Gowanus-Greenwood 138kV (#42232) I/o TWR:GOETHALS 22 & 21
	6/30/2021	17, 20, 23	NYCA DNI Ramp Limit
	6/30/2021	23	HQ_CHAT DNI Ramp Limit
	6/30/2021	9, 16-18	NE_AC-NY Scheduling Limit

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

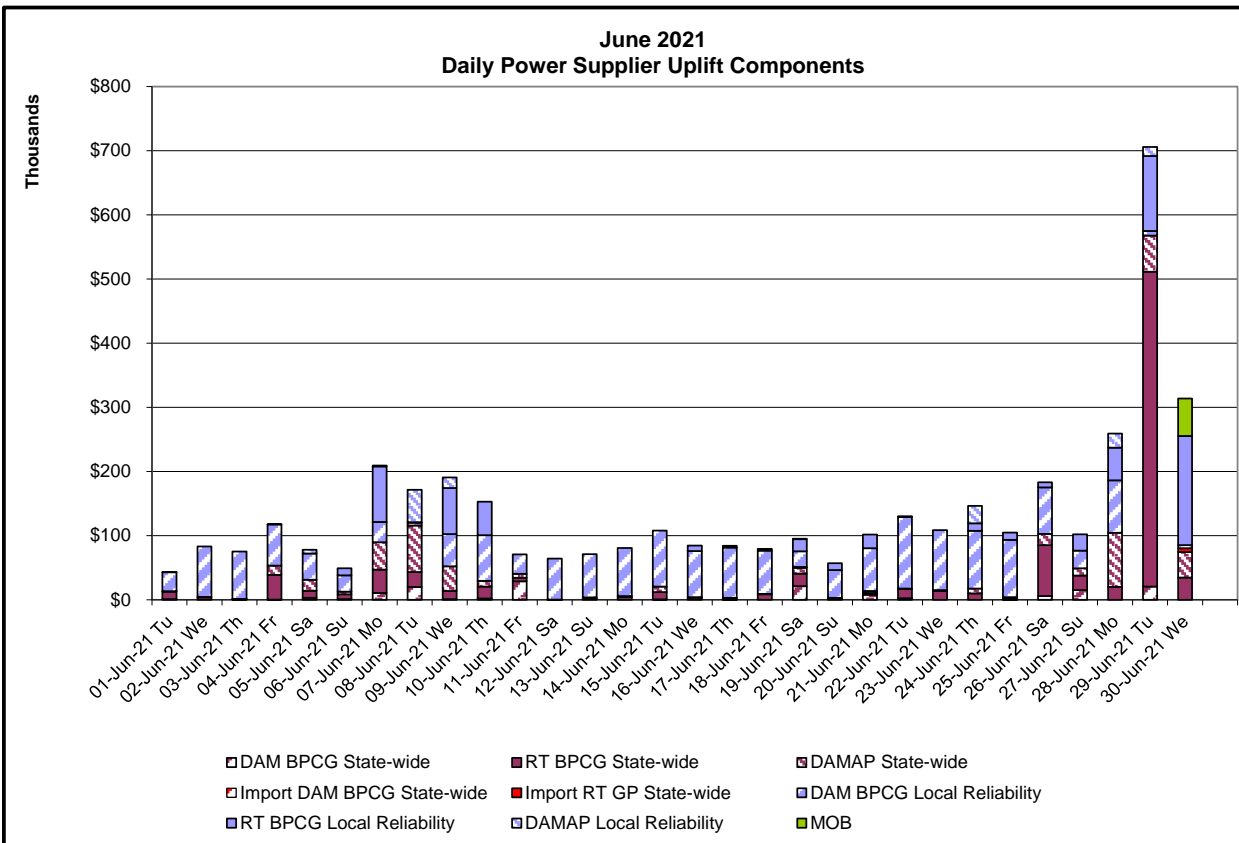
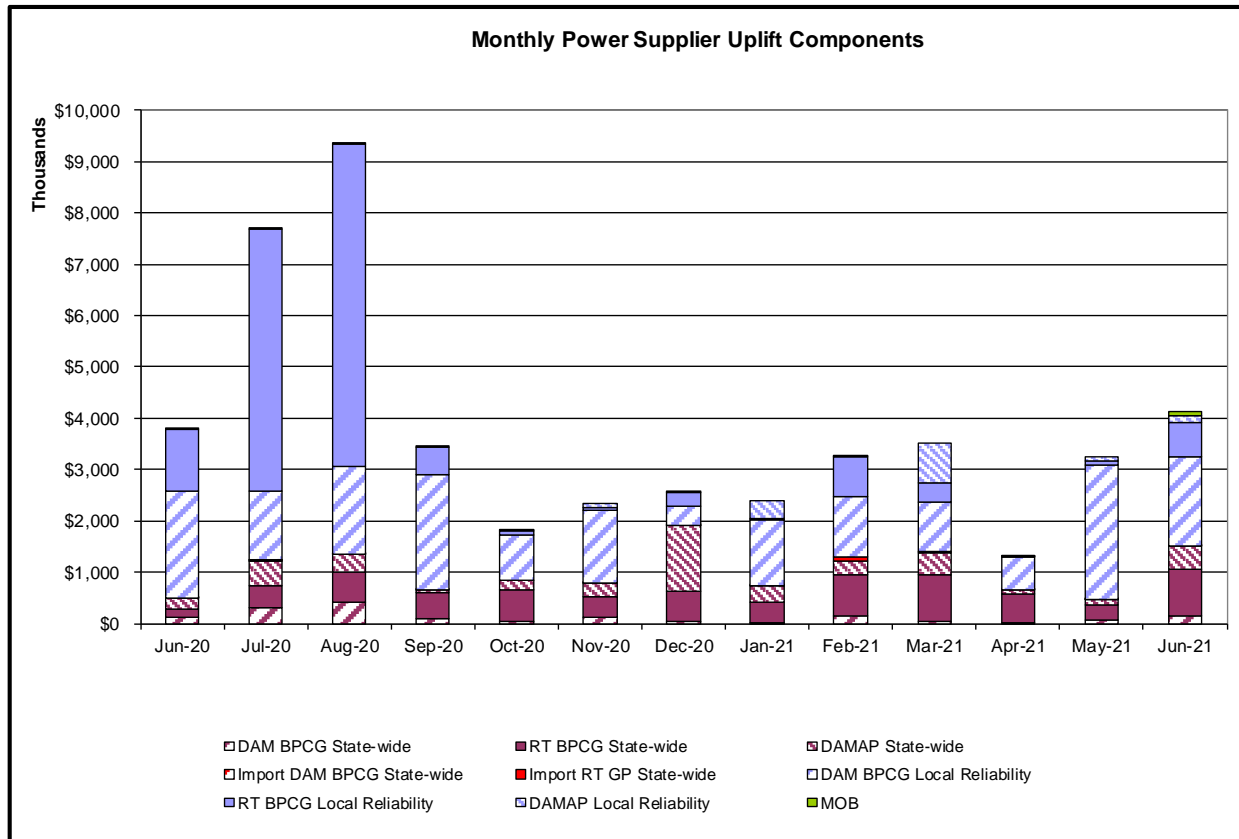
Category	Cost Assignment	Events Types	Event Examples
Storm Watch	Zone J	Thunderstorm Alert (TSA)	TSA Activations
Transmission Outage Mismatch	Market-wide	Changes in DAM to RTM transfers related to transmission outage mismatch	Forced Line Outage, Unit AVR Outages, Early Line Return from Outage
Interface/Facility 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			

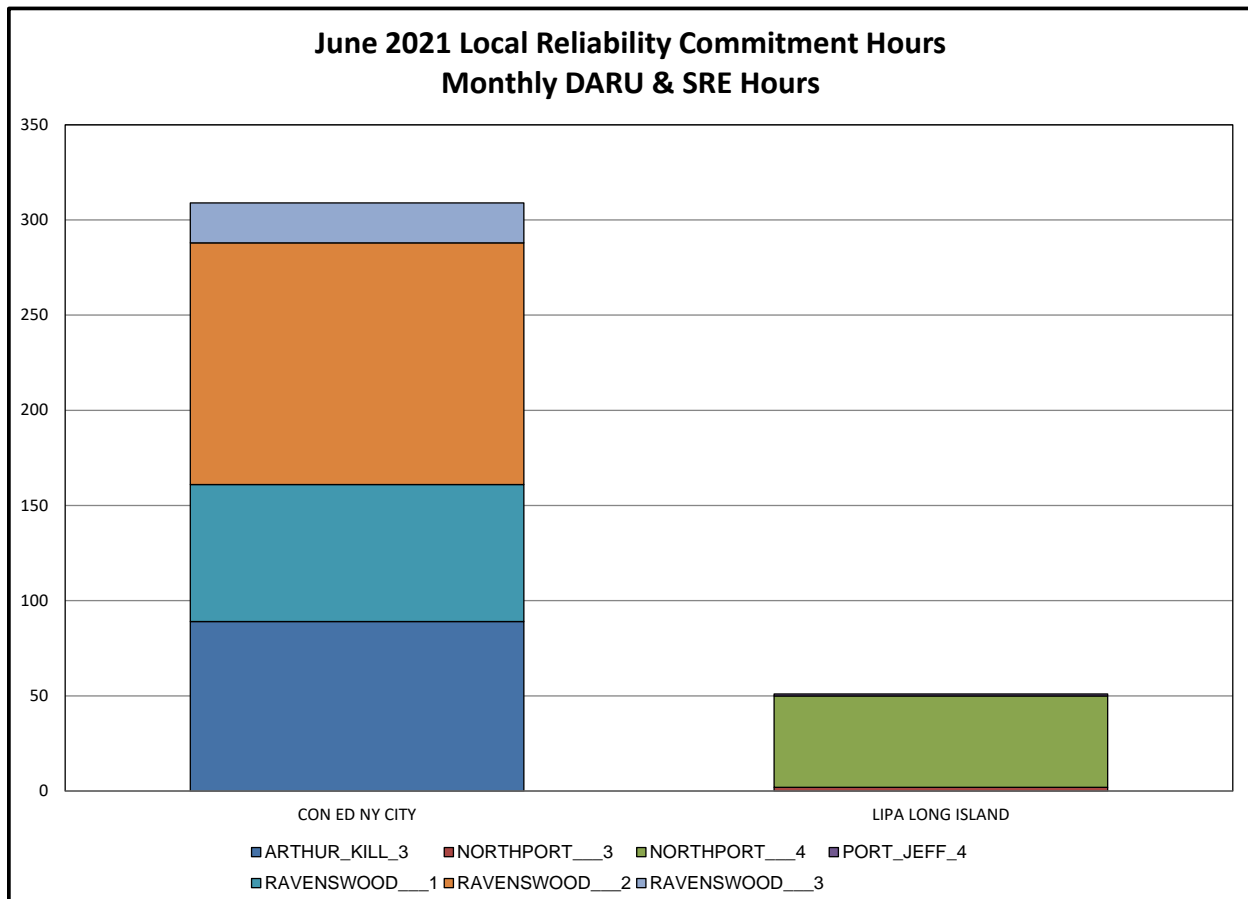
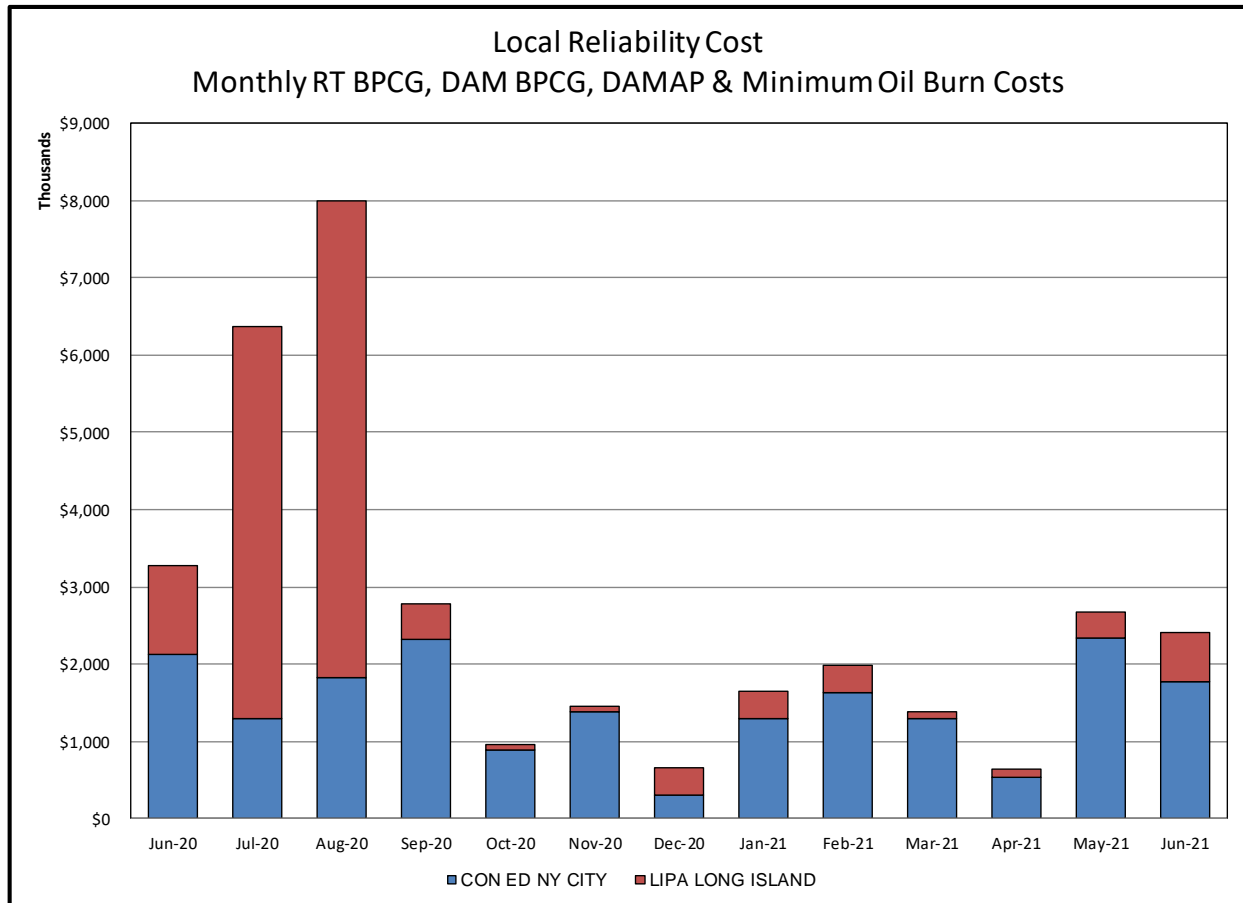


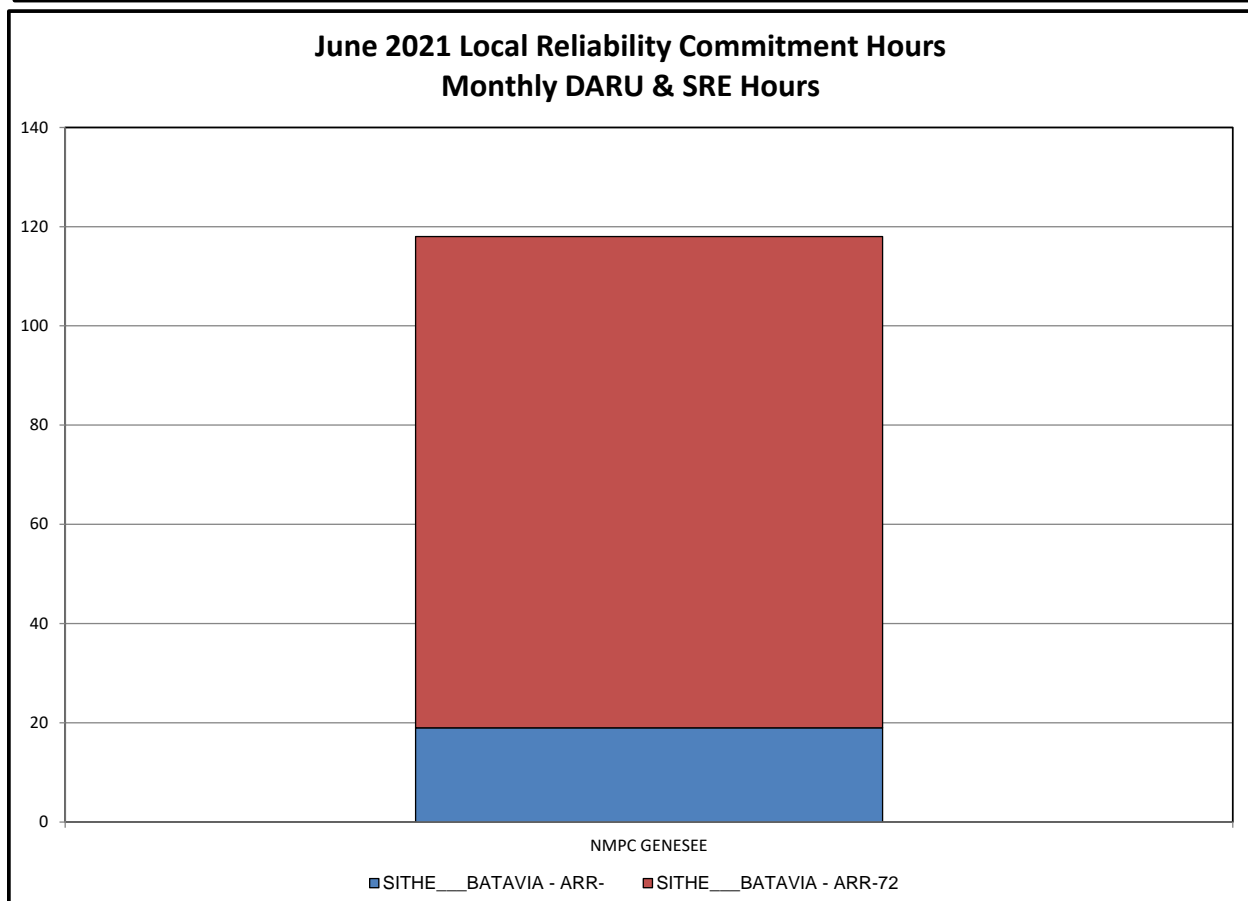
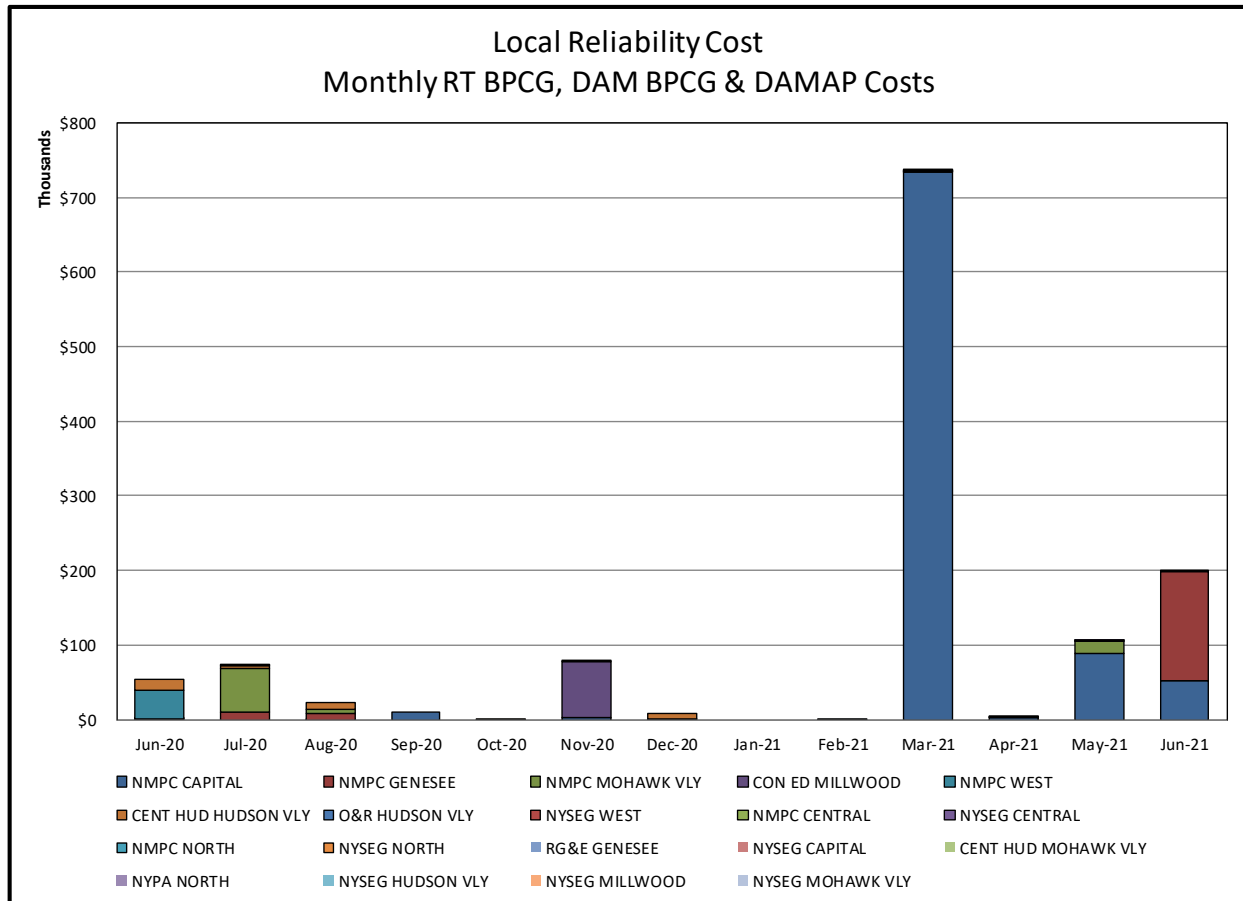


### Day-Ahead Market Congestion Residual Categories

<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.	

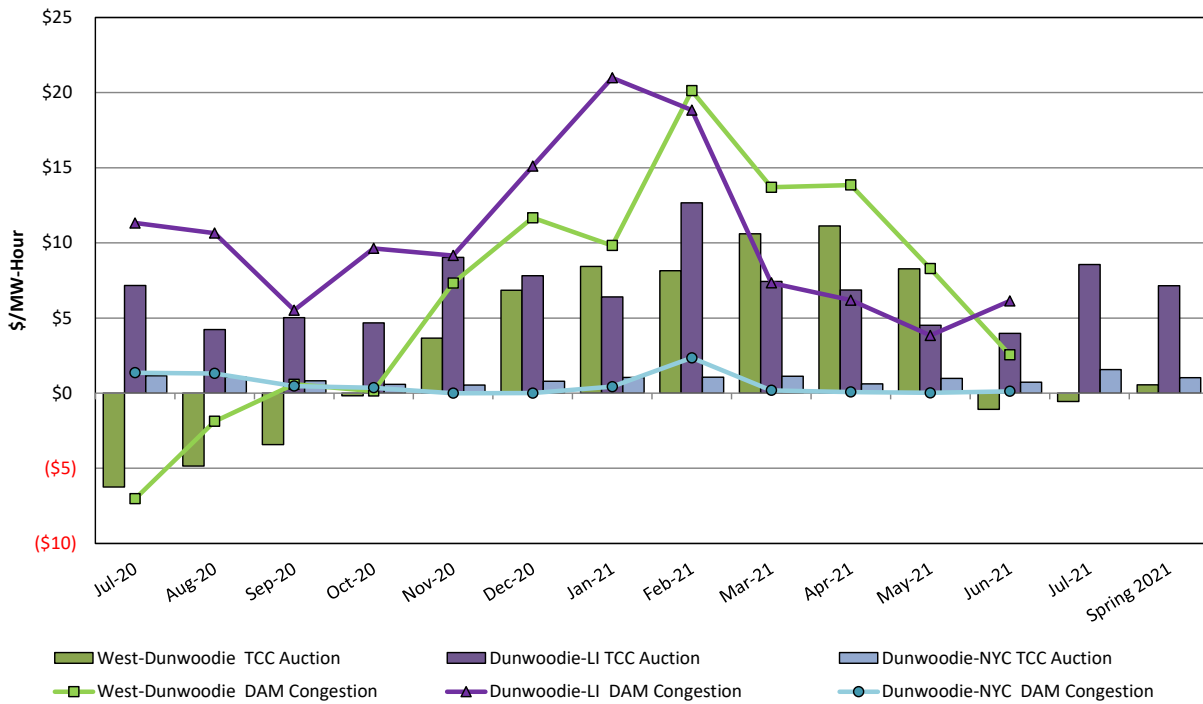






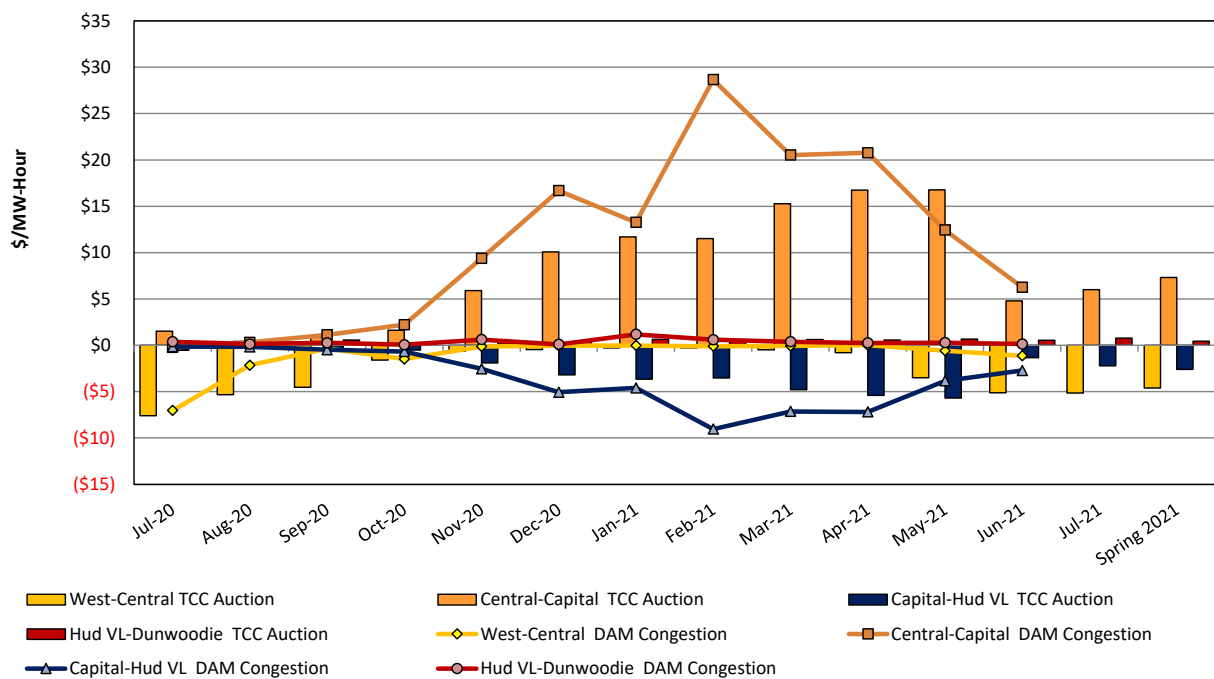
## TCC & Day Ahead Market Selected Internal Path Congestion

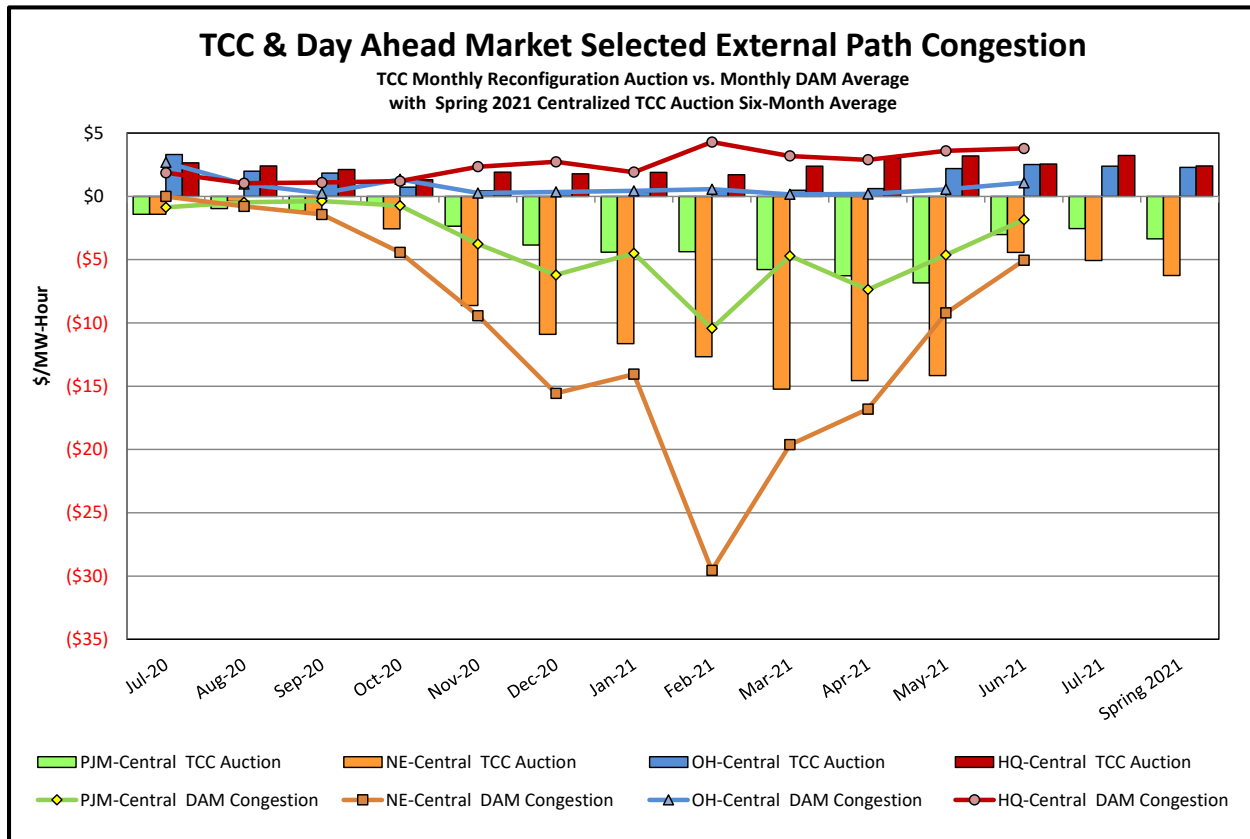
TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Spring 2021 Centralized TCC Auction Six-Month Average



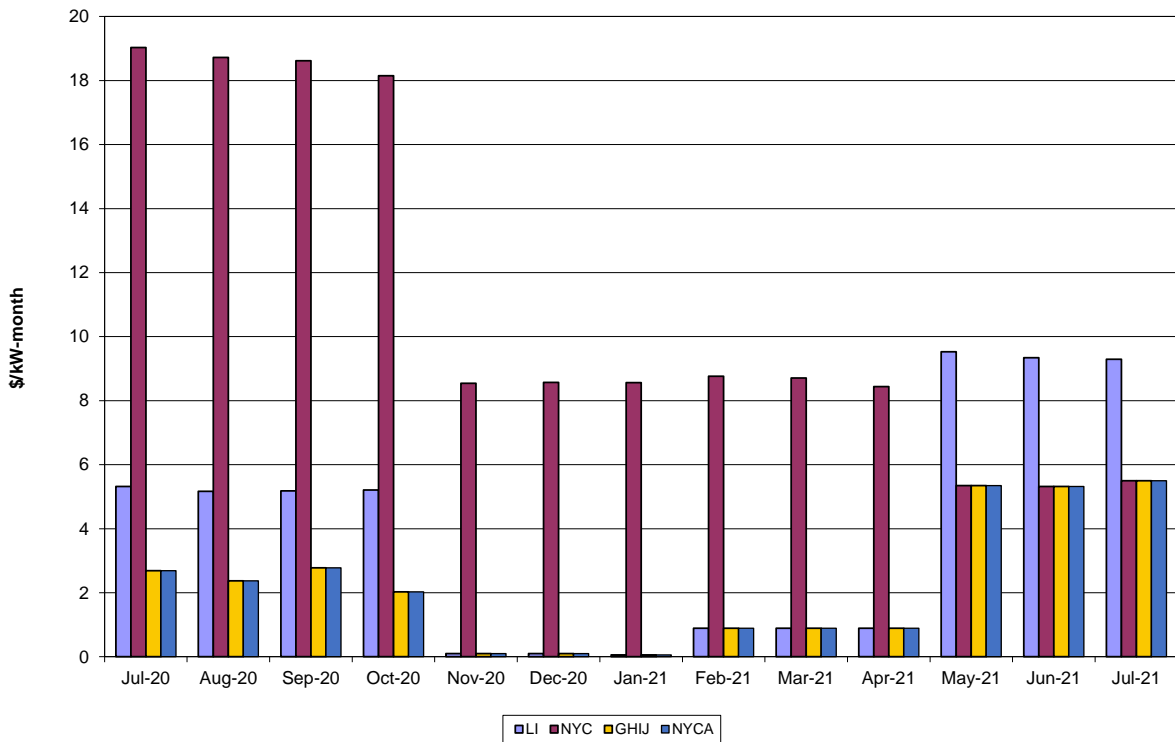
## TCC & Day Ahead Market West to Dunwoodie Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Spring 2021 Centralized TCC Auction Six-Month Average





ICAP Spot Market Clearing Price



UCAP Sales

