

Operations Performance Metrics Monthly Report



April 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 May 8, 2023.

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April 2023 Operations Performance Highlights

| Monthly Peak Load | Monthly Minimum Load | Winter 2022-2023 Peak | All-time Winter Peak |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 04/14/2023 HB 17 18,915 MW | 04/09/2023 HB 14 11,742 MW | 02/03/2023 HB 18 23,369 MW | 01/07/2014 HB 18 25,738 MW |

- 24.7 hours of Thunderstorm Alerts were declared
- 17.3 hours of NERC TLR level 3 curtailment
- NYISO began securing Reynolds Rd-Alps 345kV (#1), East Stolle Rd-Stolle Rd 345kV (#28) and Linden-Goethals 230kV (#A2253) facilities in the Real-Time Market on 04/19/2023 and in the Day-Ahead Market execution occurring on 04/20/2023 for the 04/21/2023 market day.
- The Knickerbocker 345kV and Princetown 345kV substations associated with AC Transmission Public Policy Segment A were placed in-service on 04/20/2023 and 04/28/2023 respectively.

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) |
|-----------------|------------------------|--------------------------|-------------------------------|
| 2,528 MW | 4,528 MW | 154 MW | 20 MW |

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

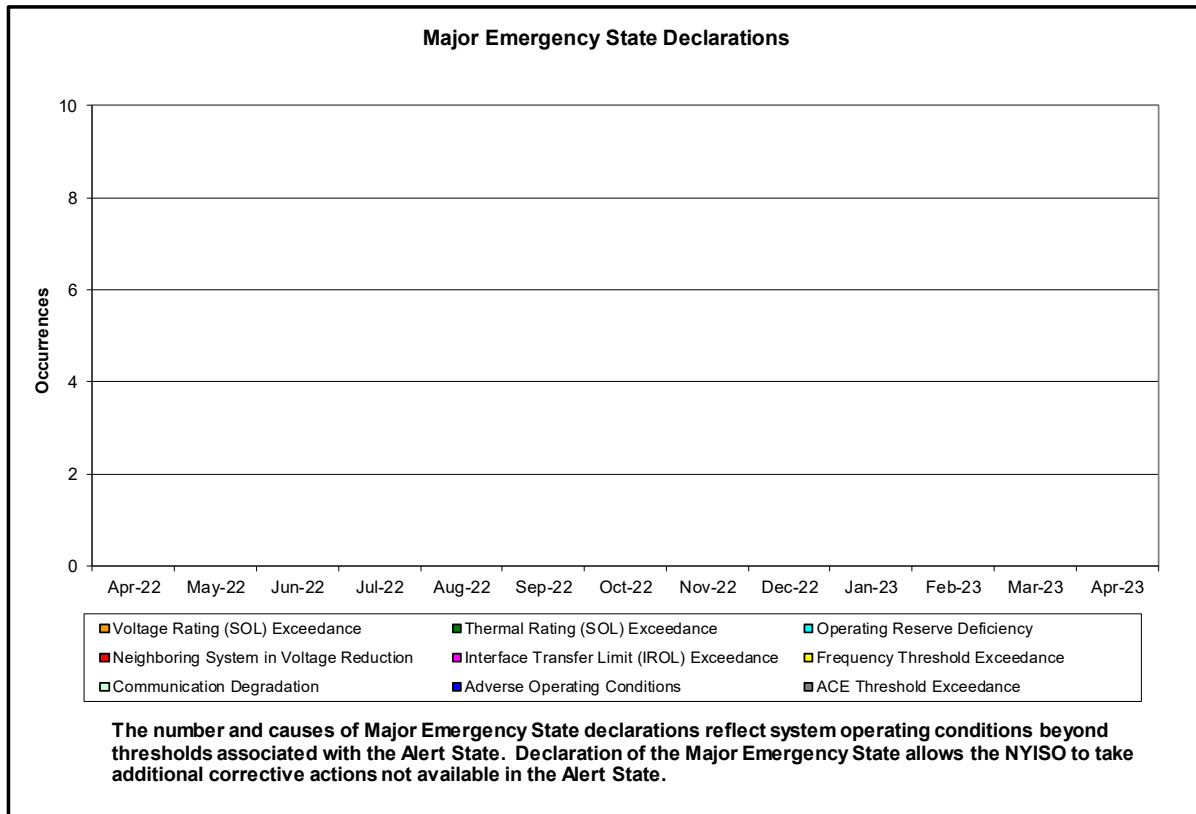
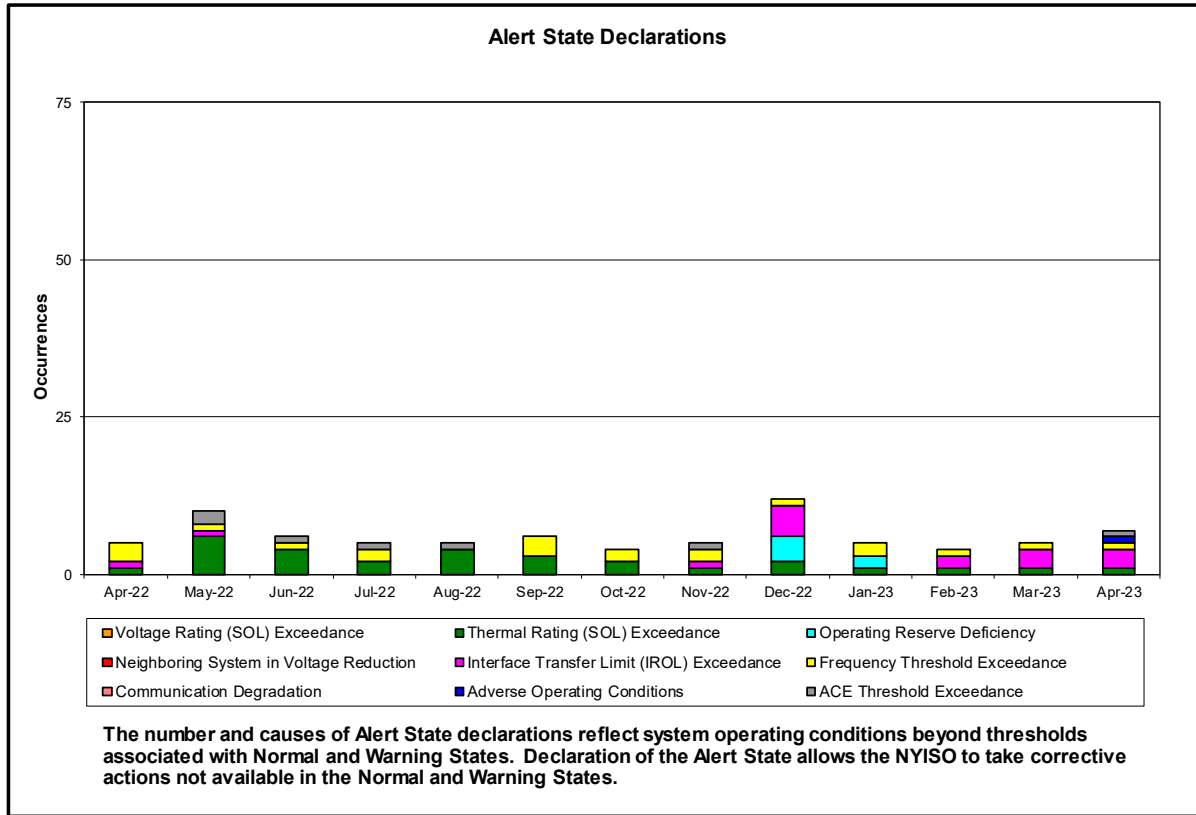
| | Current Month Value (\$M) | Year-to-Date Value (\$M) |
|--|---------------------------|--------------------------|
| NY Savings from PJM-NY Congestion Coordination | \$3.89 | \$12.77 |
| NY Savings from PJM-NY Coordinated Transaction Scheduling | (\$0.06) | (\$0.46) |
| NY Savings from NE-NY Coordinated Transaction Scheduling | \$0.32 | (\$0.82) |
| Total NY Savings | \$4.15 | \$11.49 |
| Regional Savings from PJM-NY Coordinated Transaction Scheduling | \$0.28 | \$1.08 |
| Regional Savings from NE-NY Coordinated Transaction Scheduling | \$0.10 | \$0.38 |
| Total Regional Savings | \$0.38 | \$1.46 |

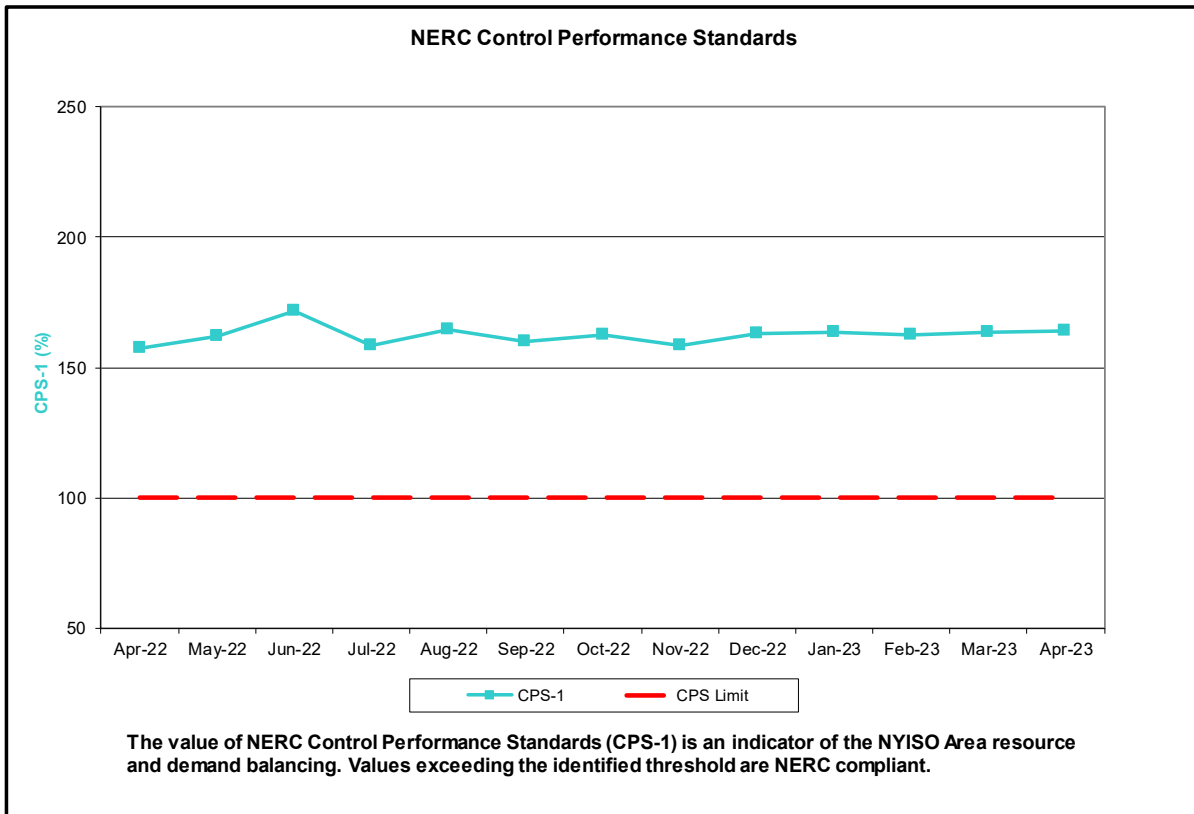
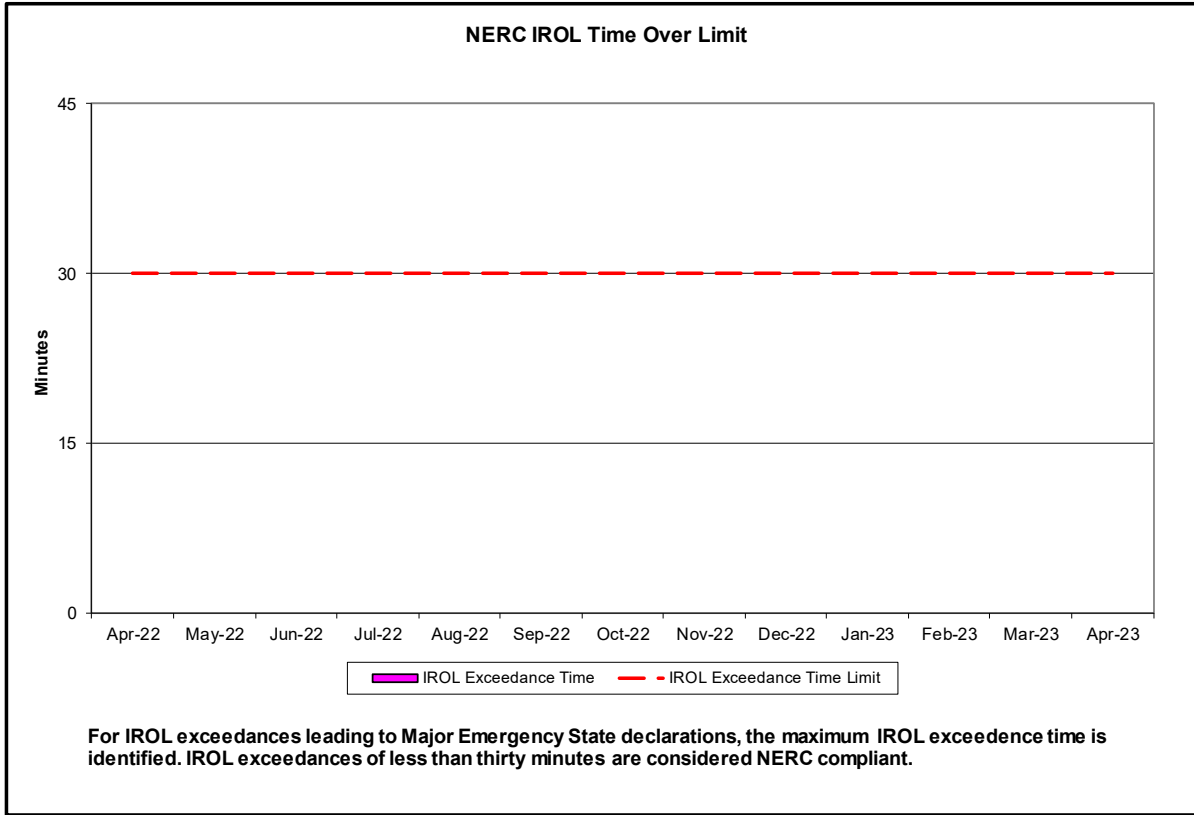
- Statewide uplift cost monthly average was (\$0.38)/MWh.
- The following table identifies the Monthly ICAP spot market prices and the price delta.

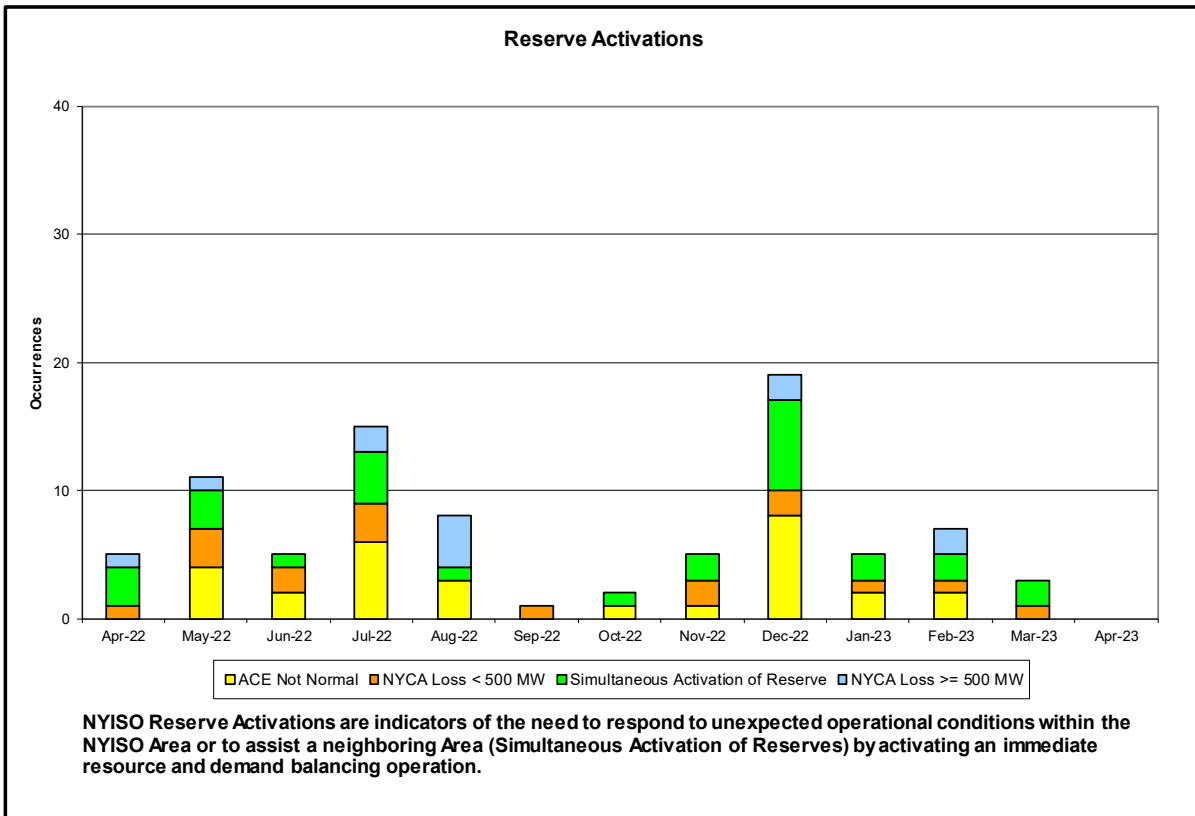
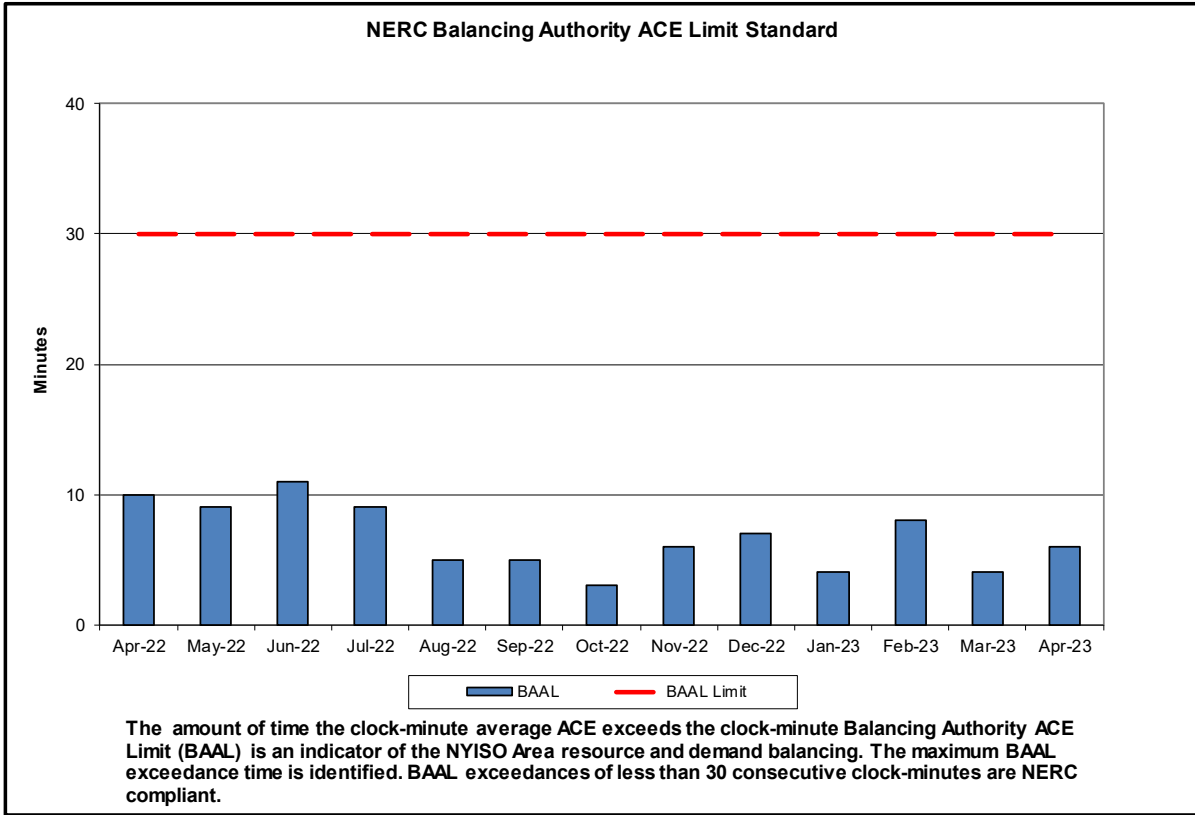
| Spot Auction Price Results | NYCA | Lower Hudson Valley Zones | New York City Zone | Long Island Zone |
|----------------------------|--------|---------------------------|--------------------|------------------|
| May 2023 Spot Price | \$5.70 | \$5.70 | \$18.58 | \$5.70 |
| October 2022 Spot Price | \$2.92 | \$3.18 | \$3.27 | \$6.48 |
| Delta | \$2.78 | \$2.52 | \$15.31 | (\$0.78) |

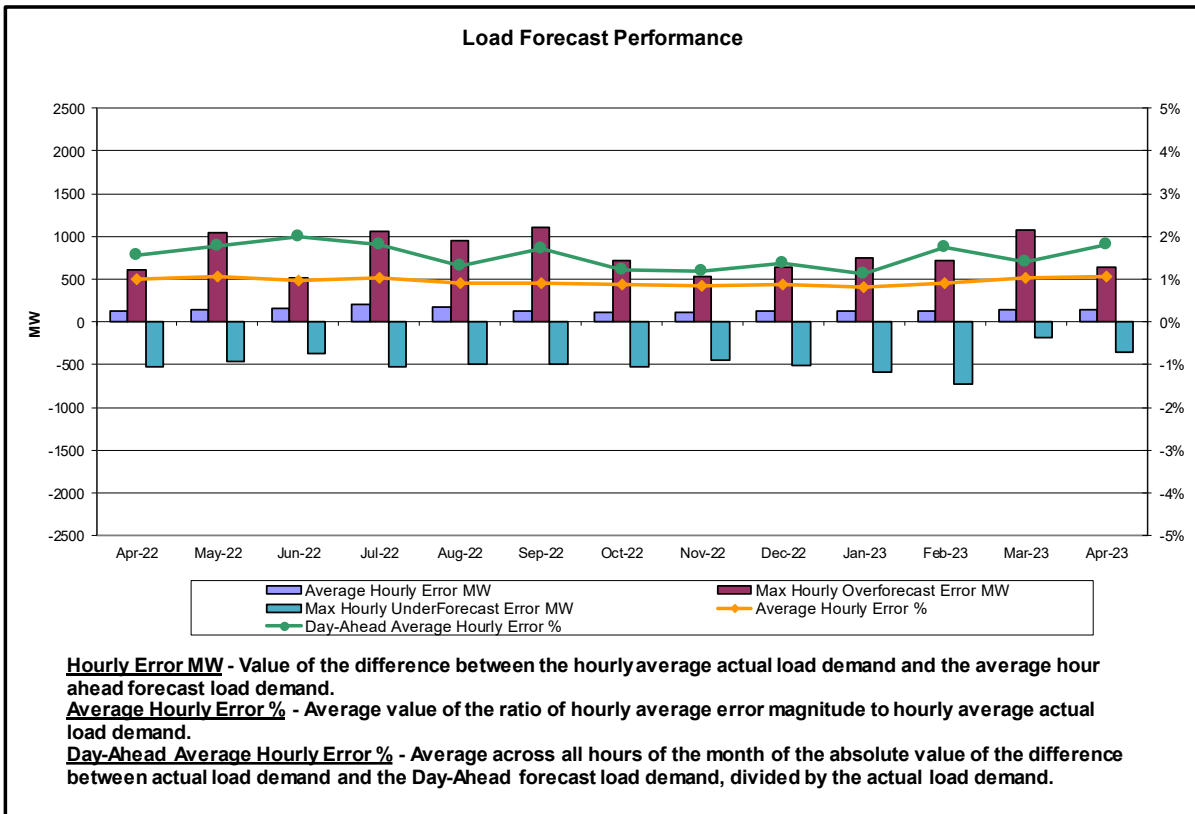
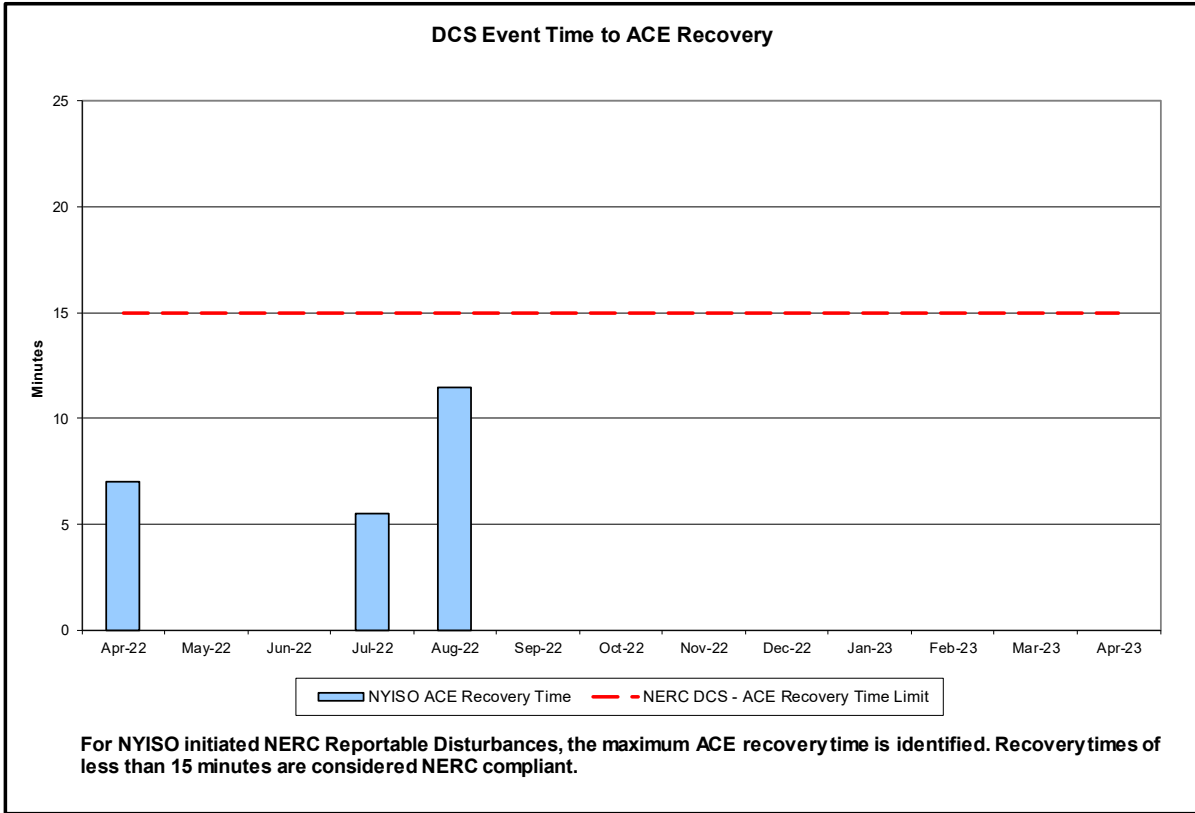
- The price in LI decreased due an increase in generation UCAP. The price in NYC and G-J increased due to a decrease in generation UCAP. The price in NYCA increased due to a decrease in imports and generation UCAP.

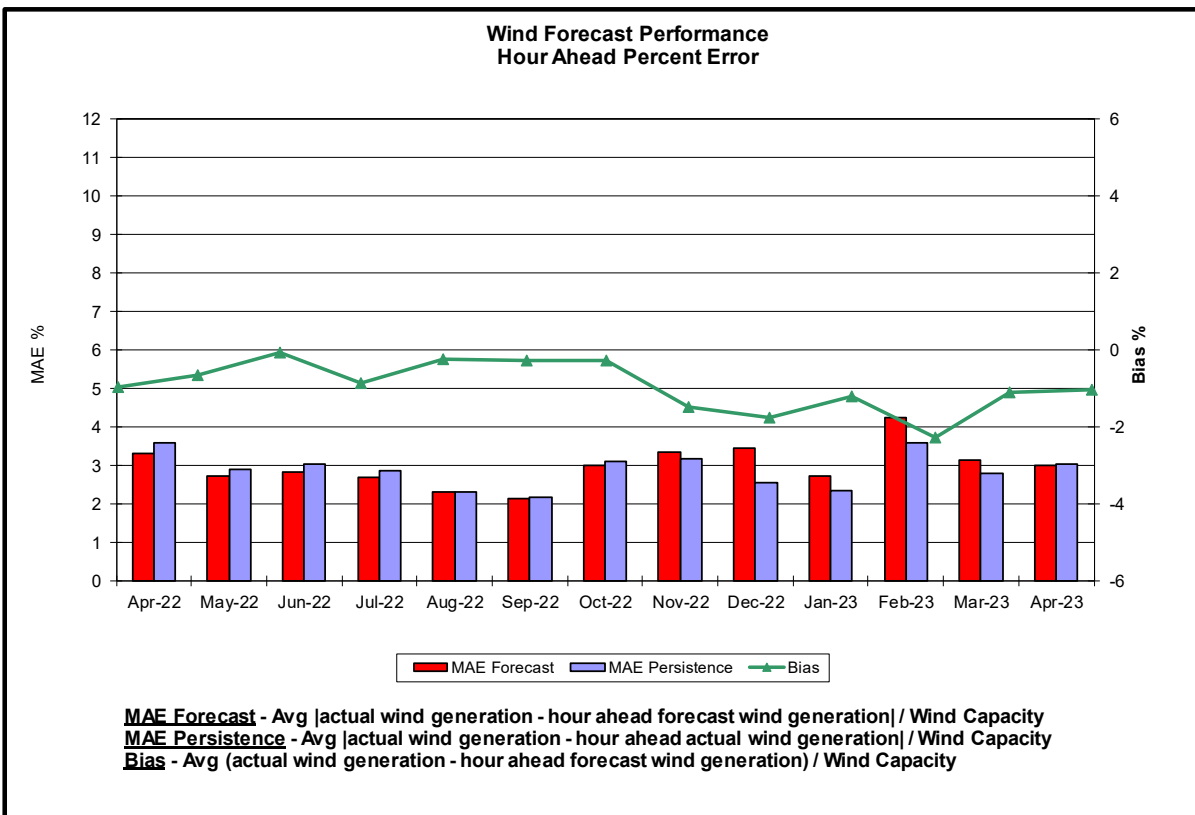
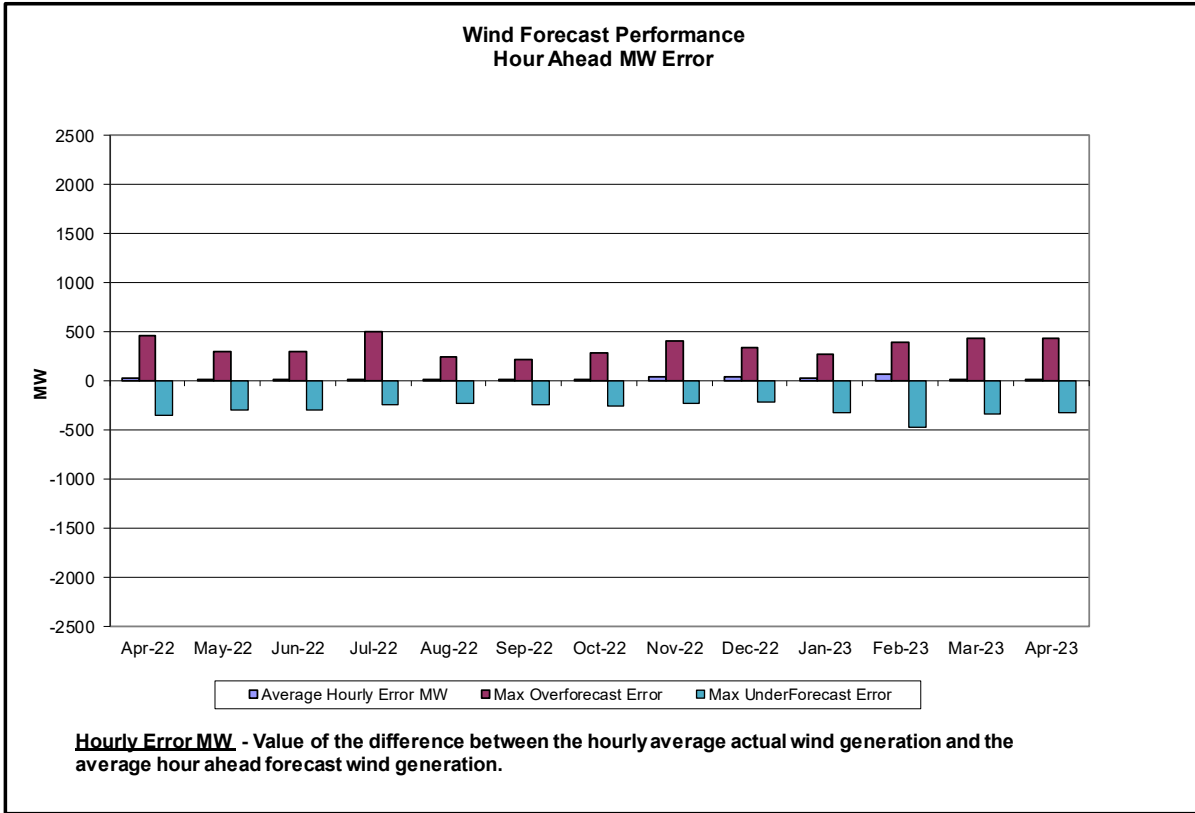
Reliability Performance Metrics

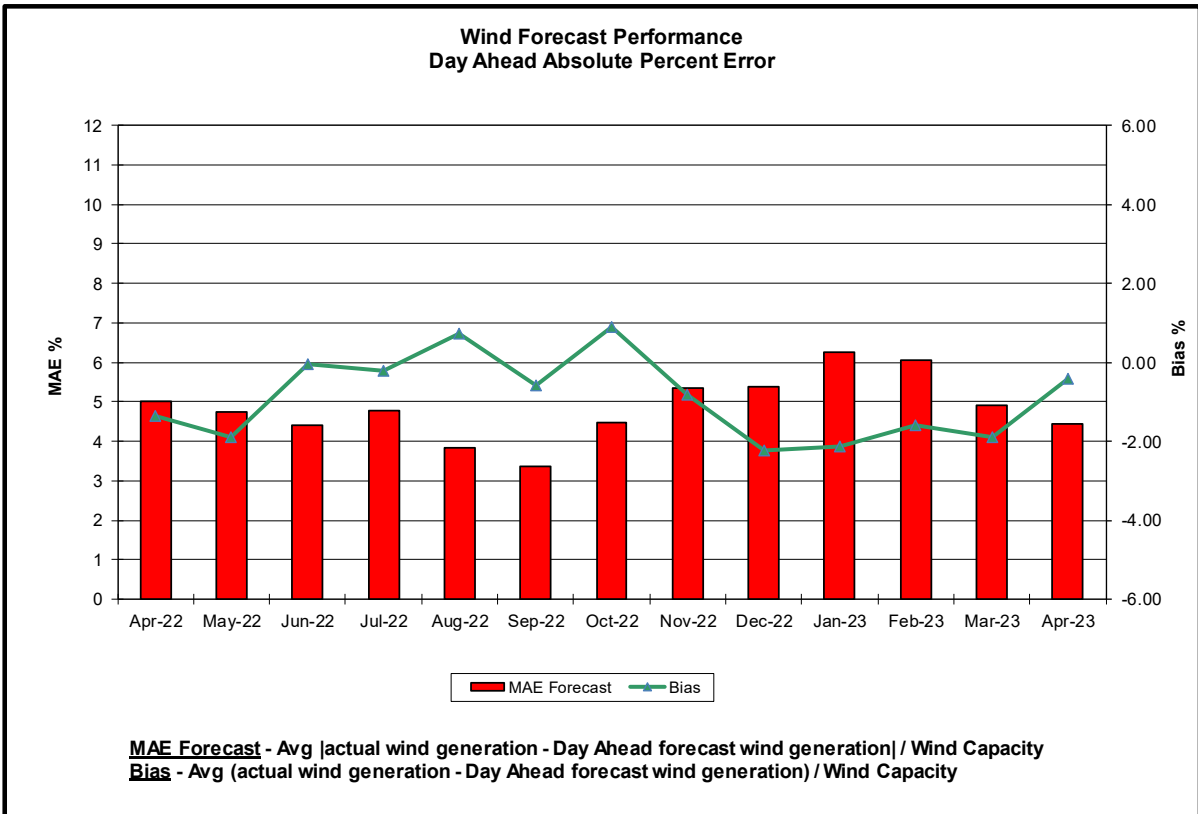
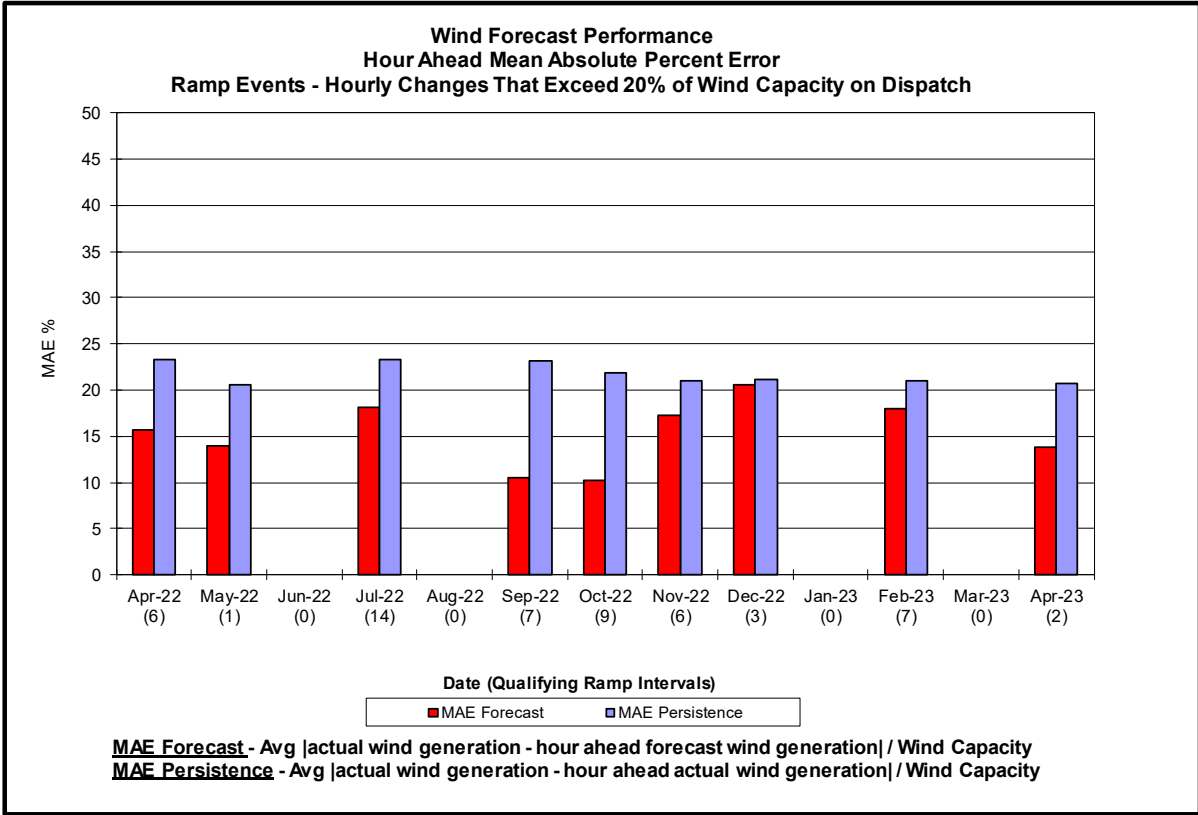


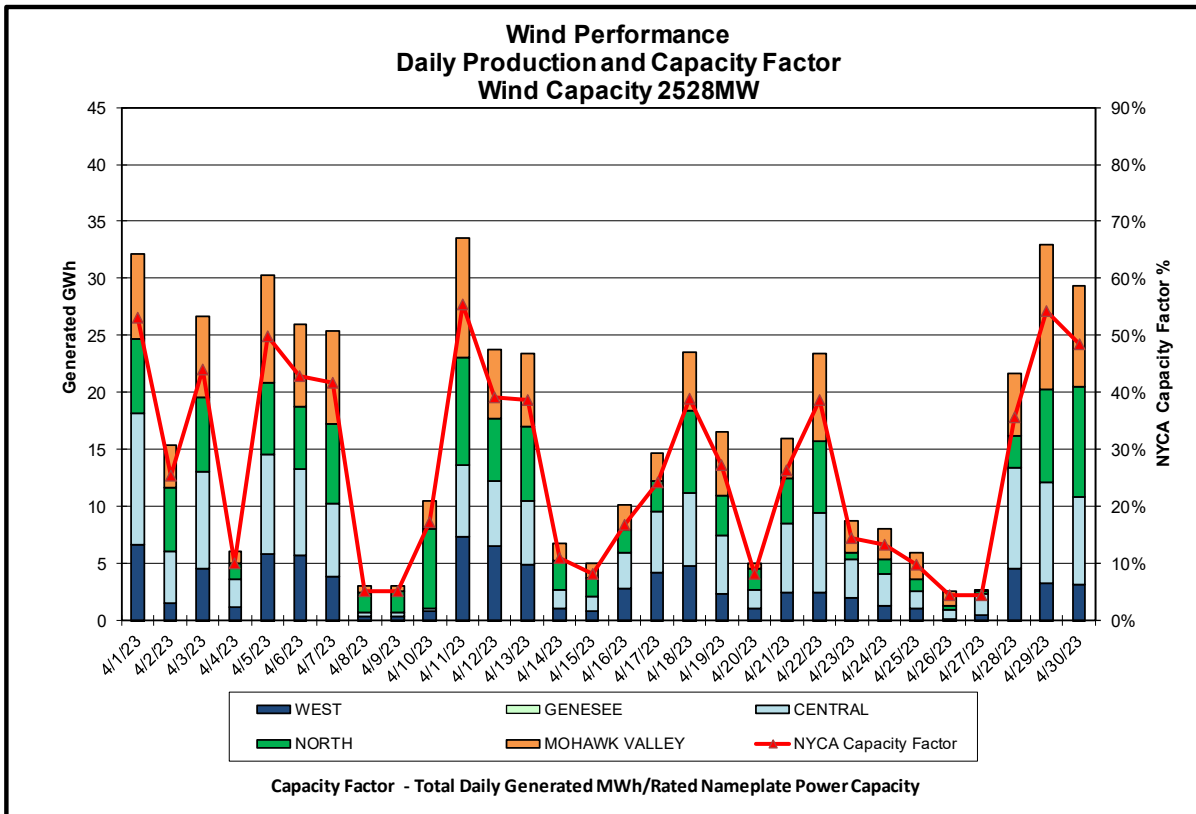
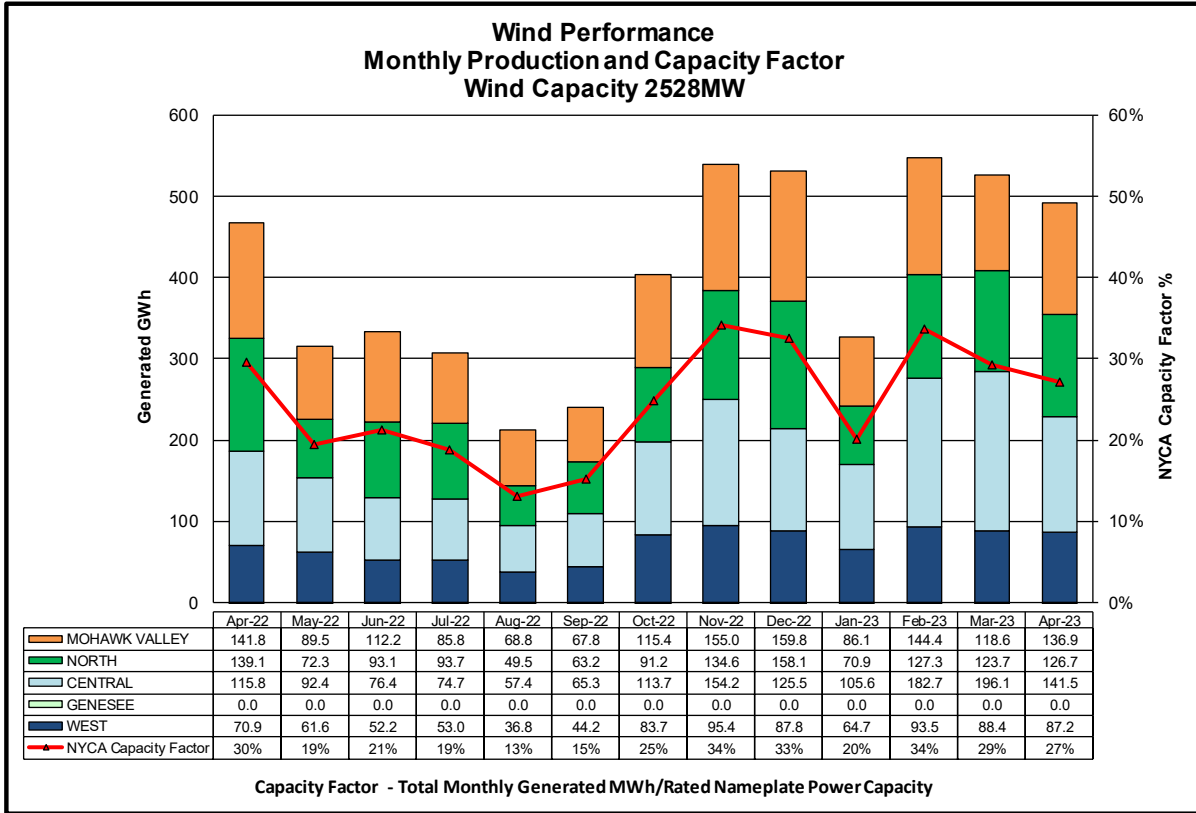


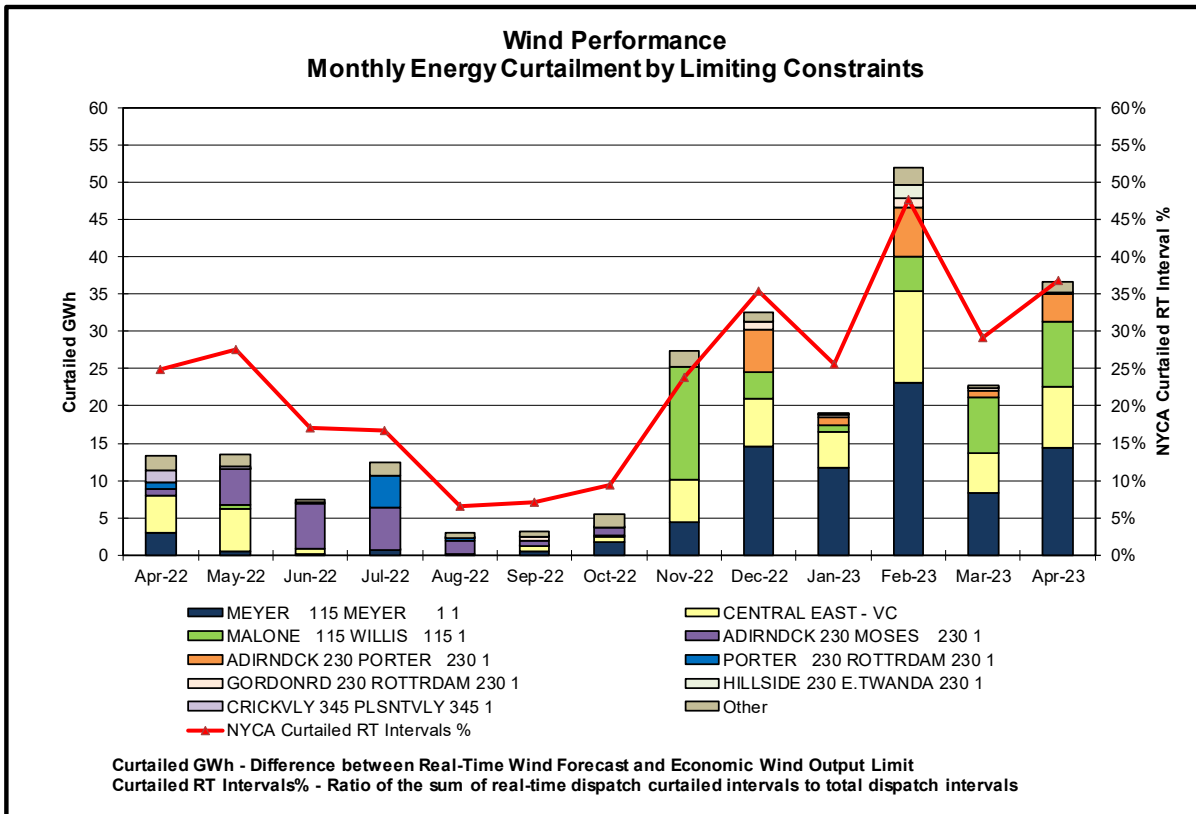
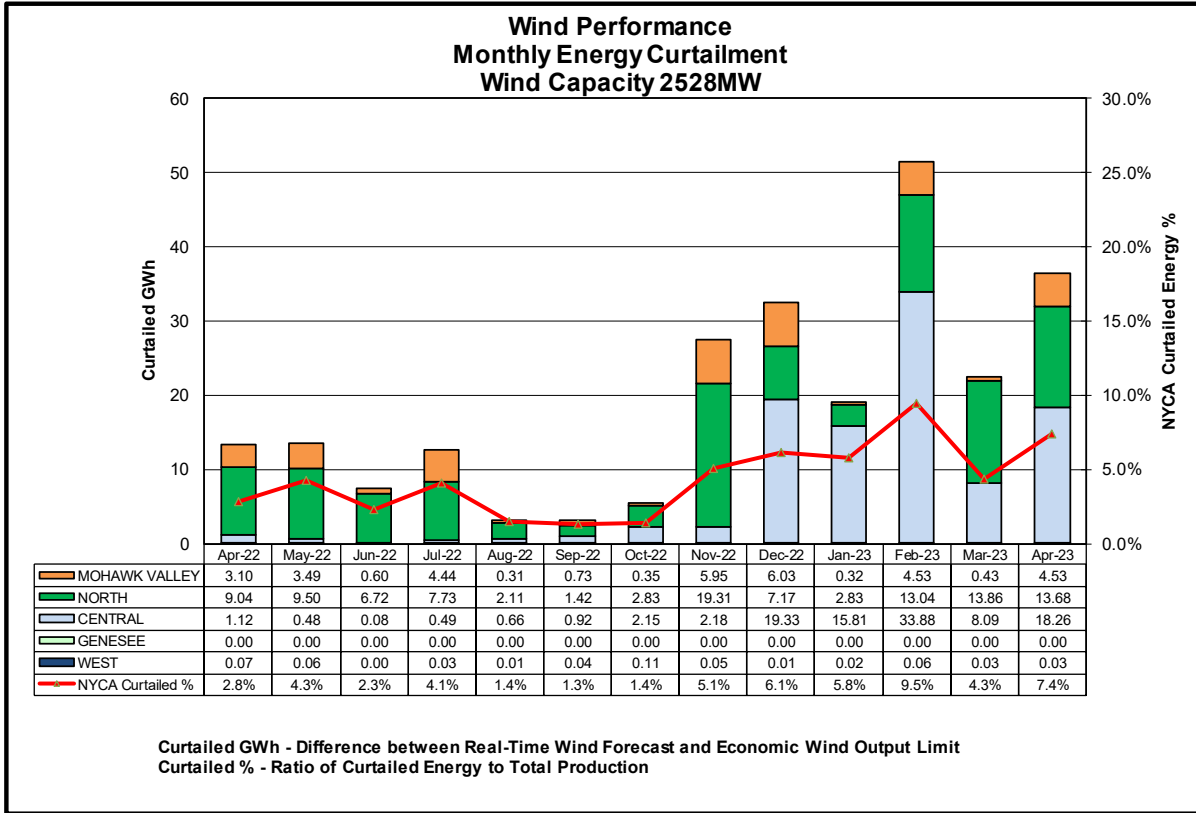


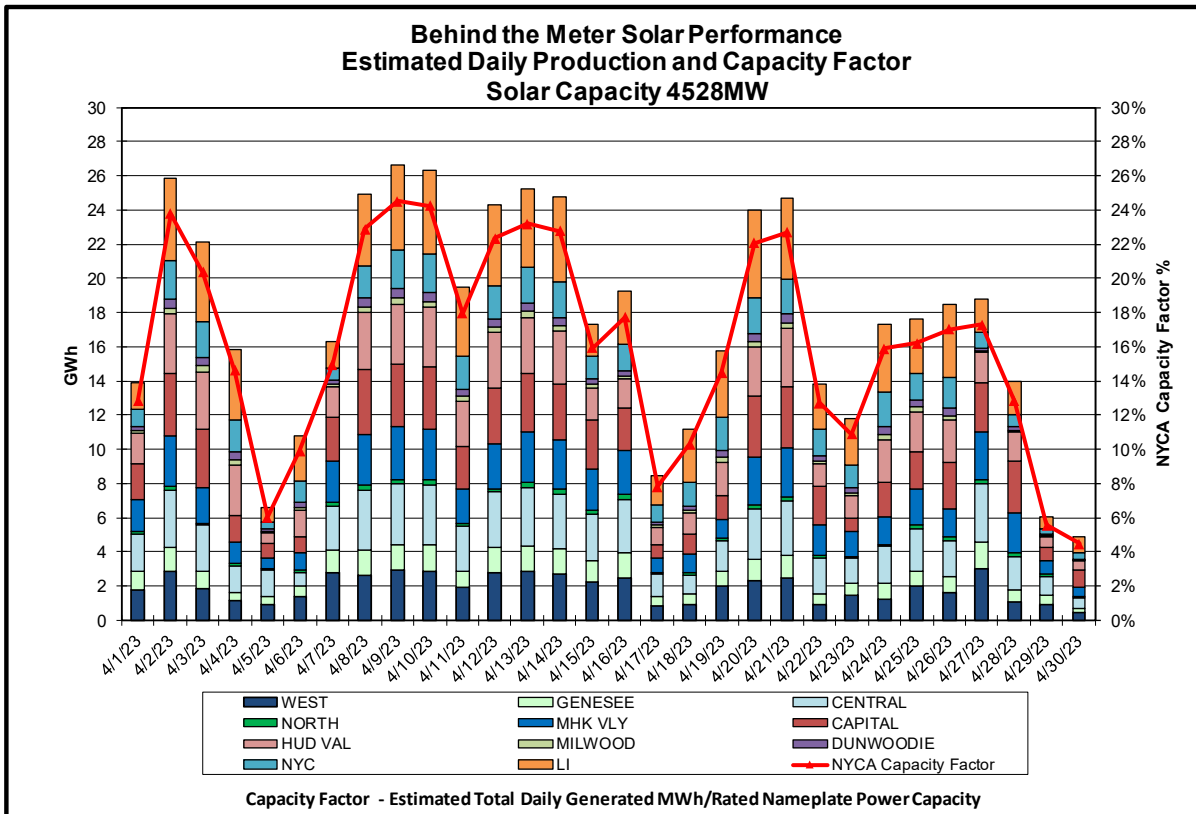
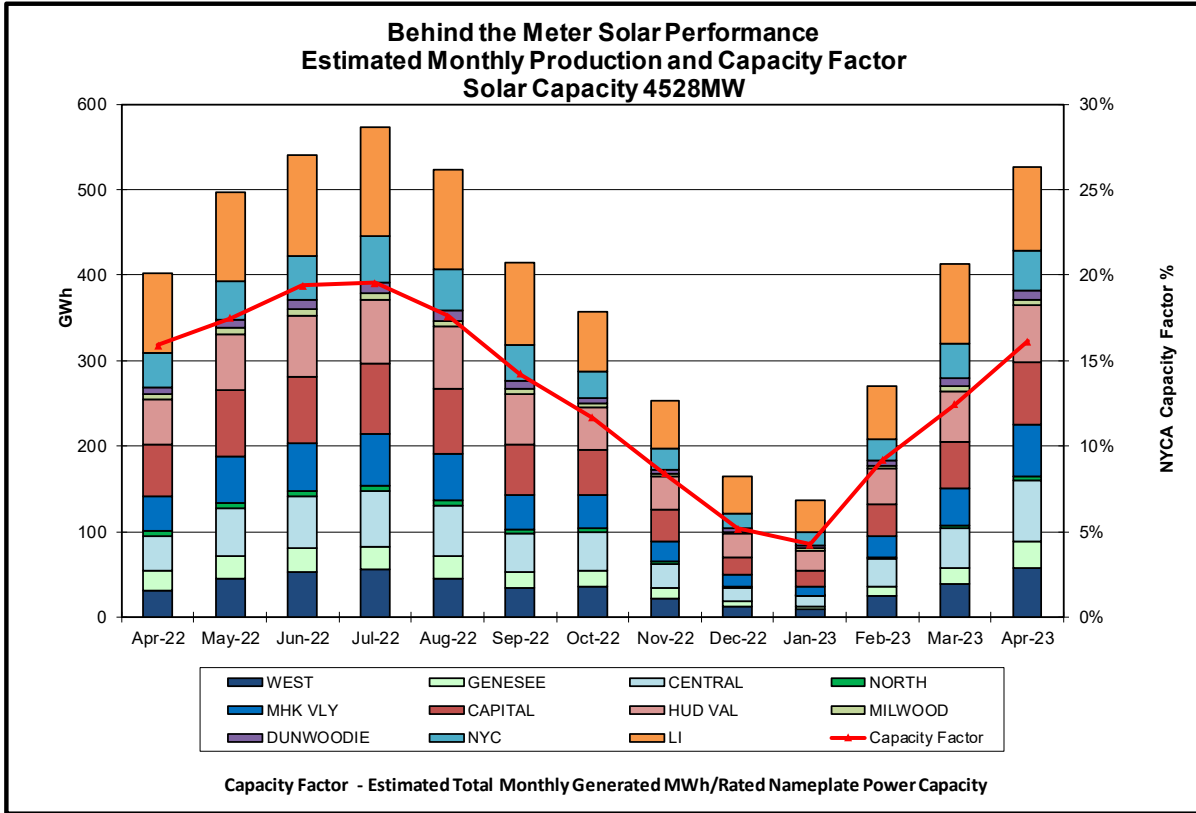


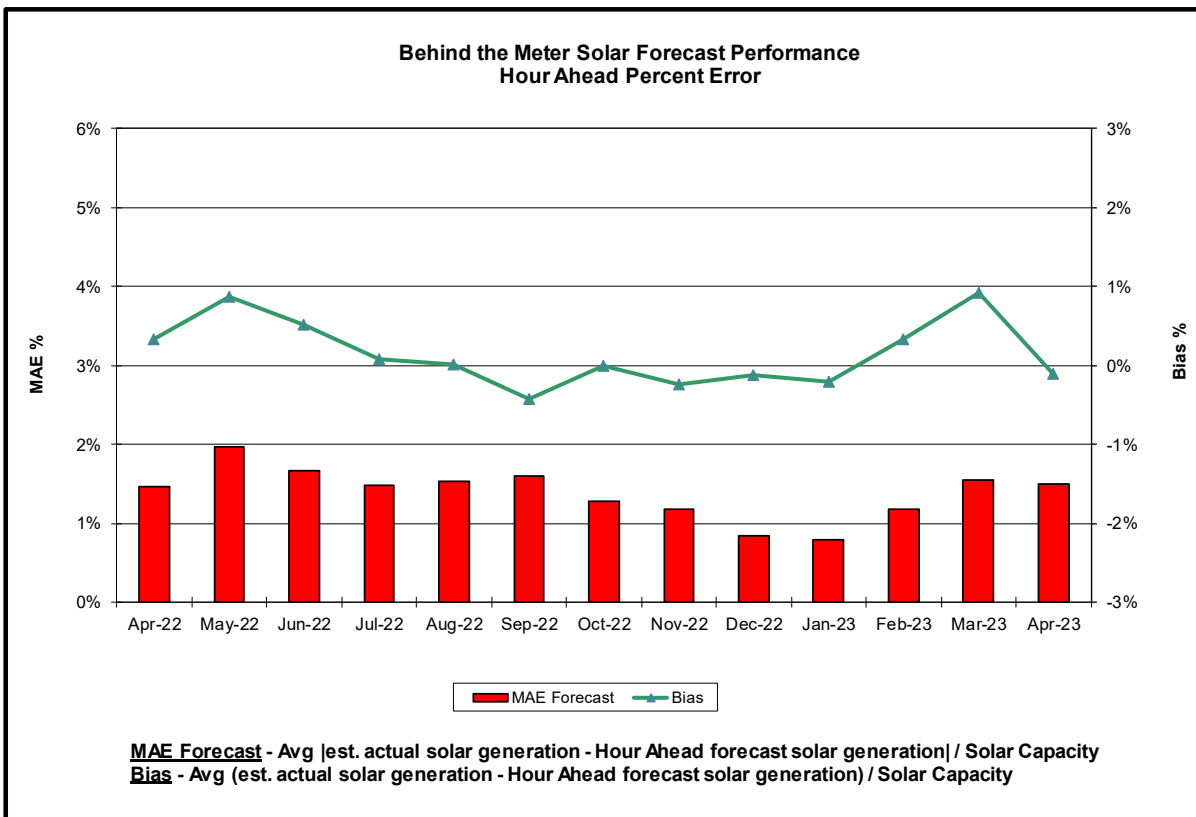
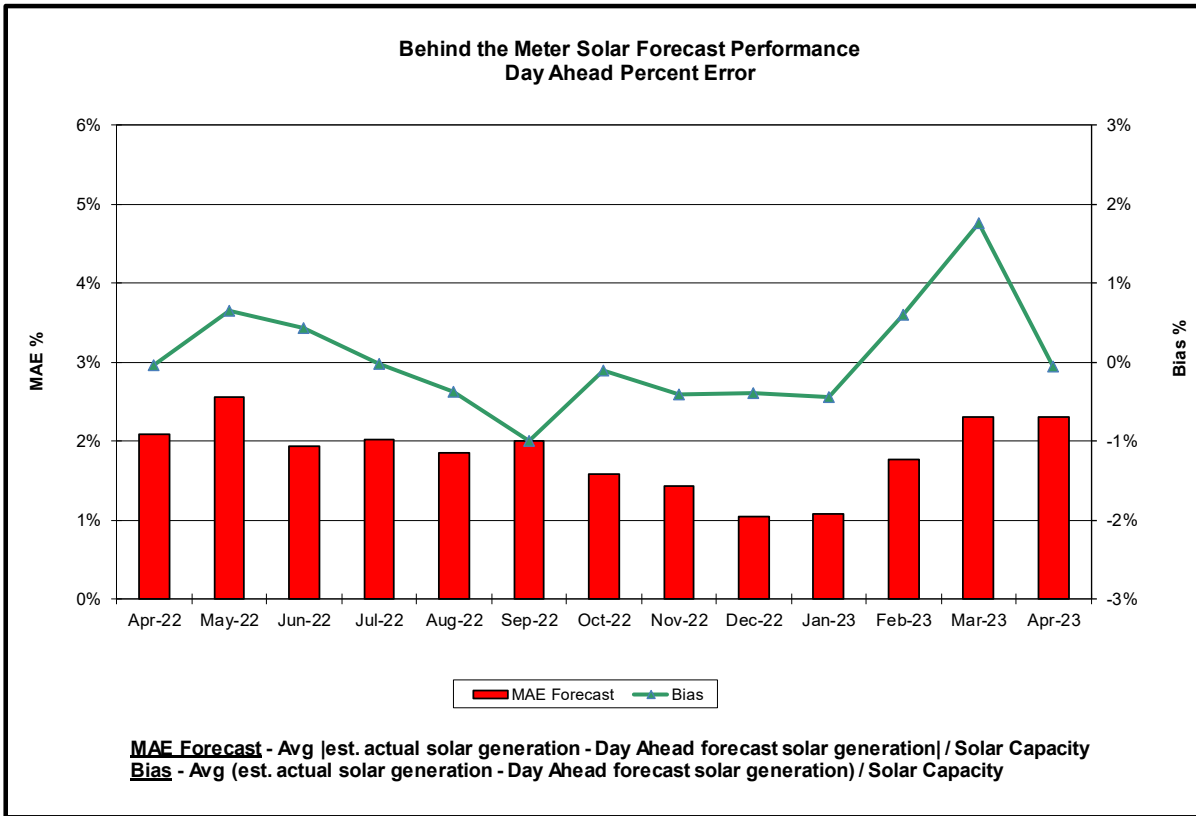


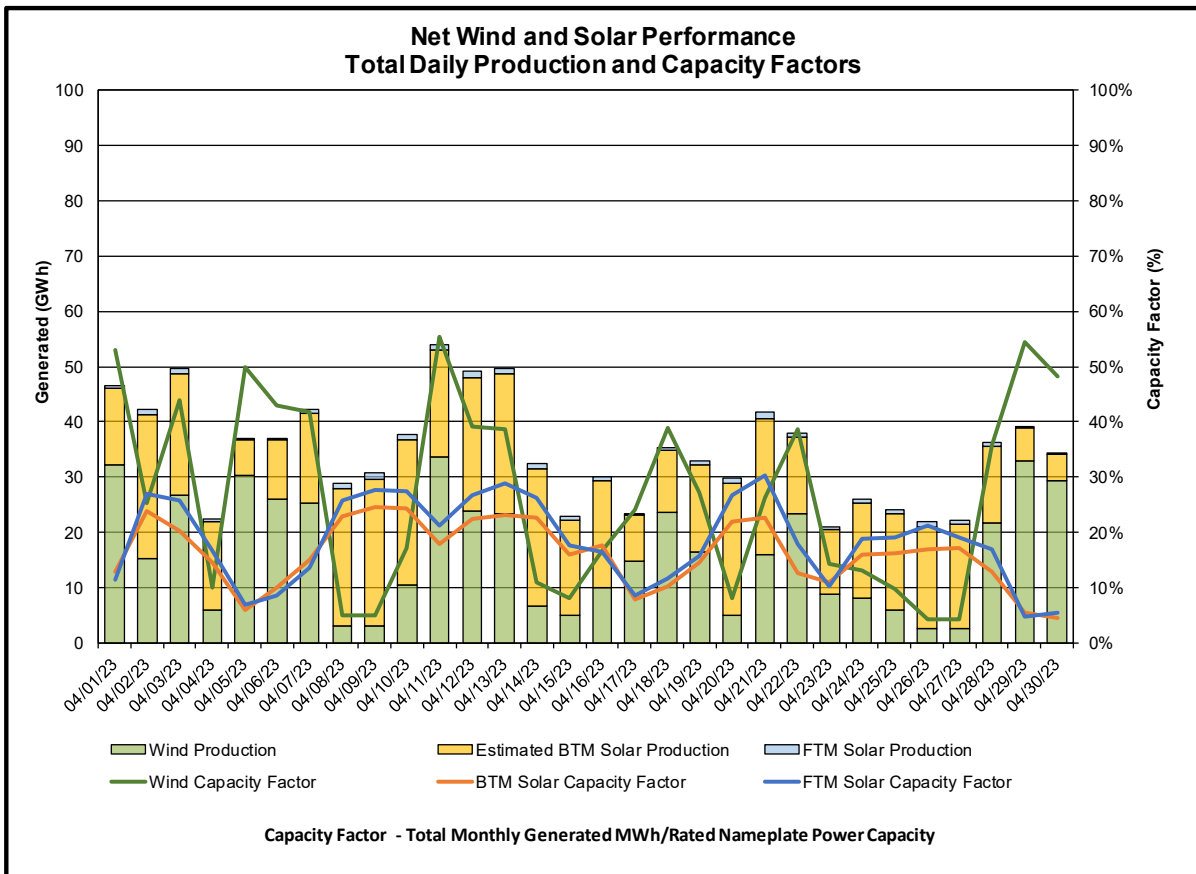
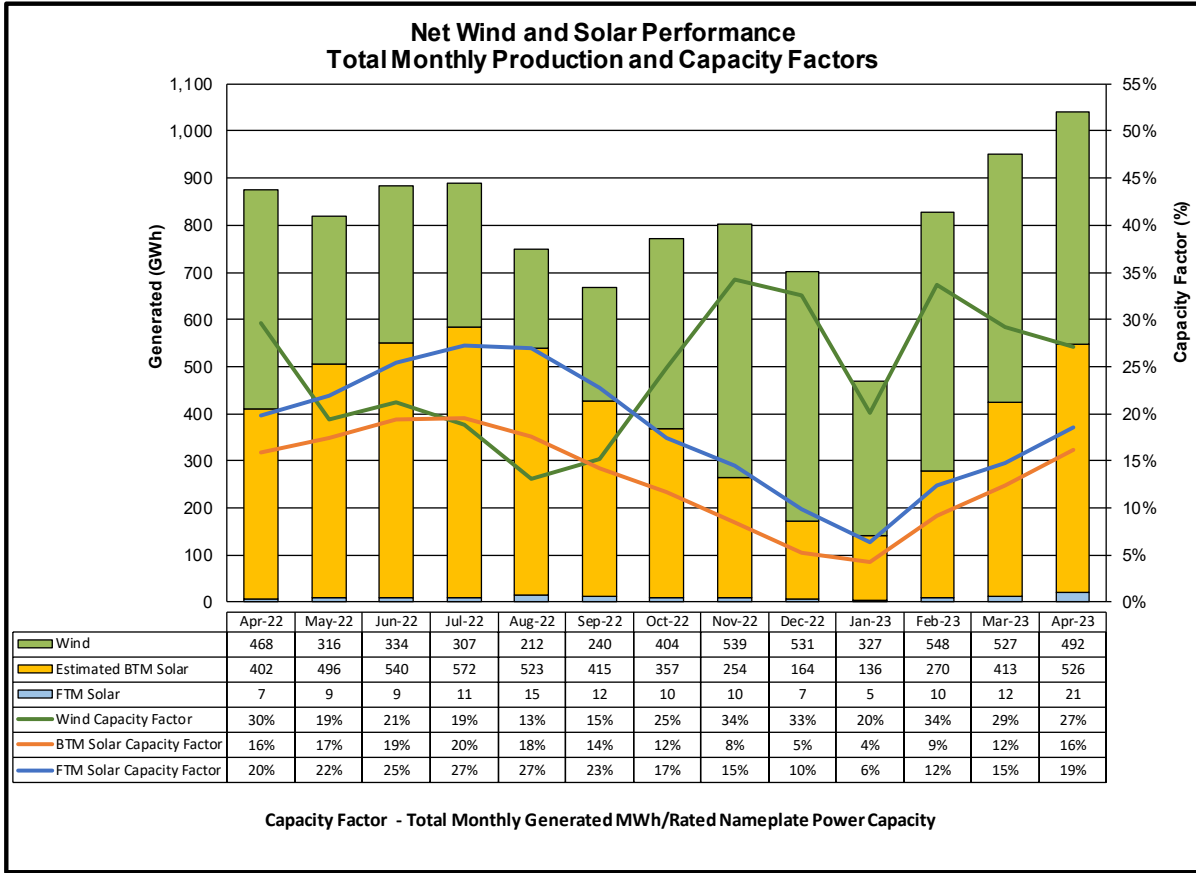


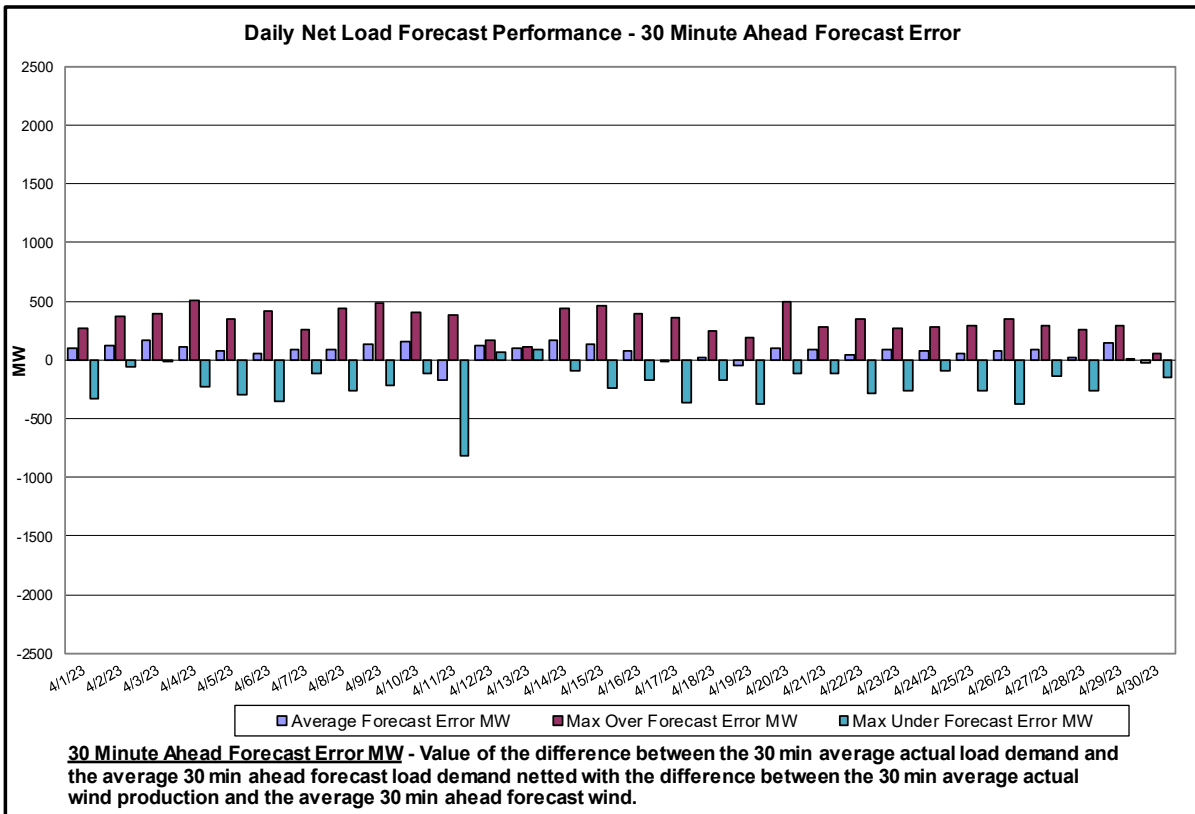
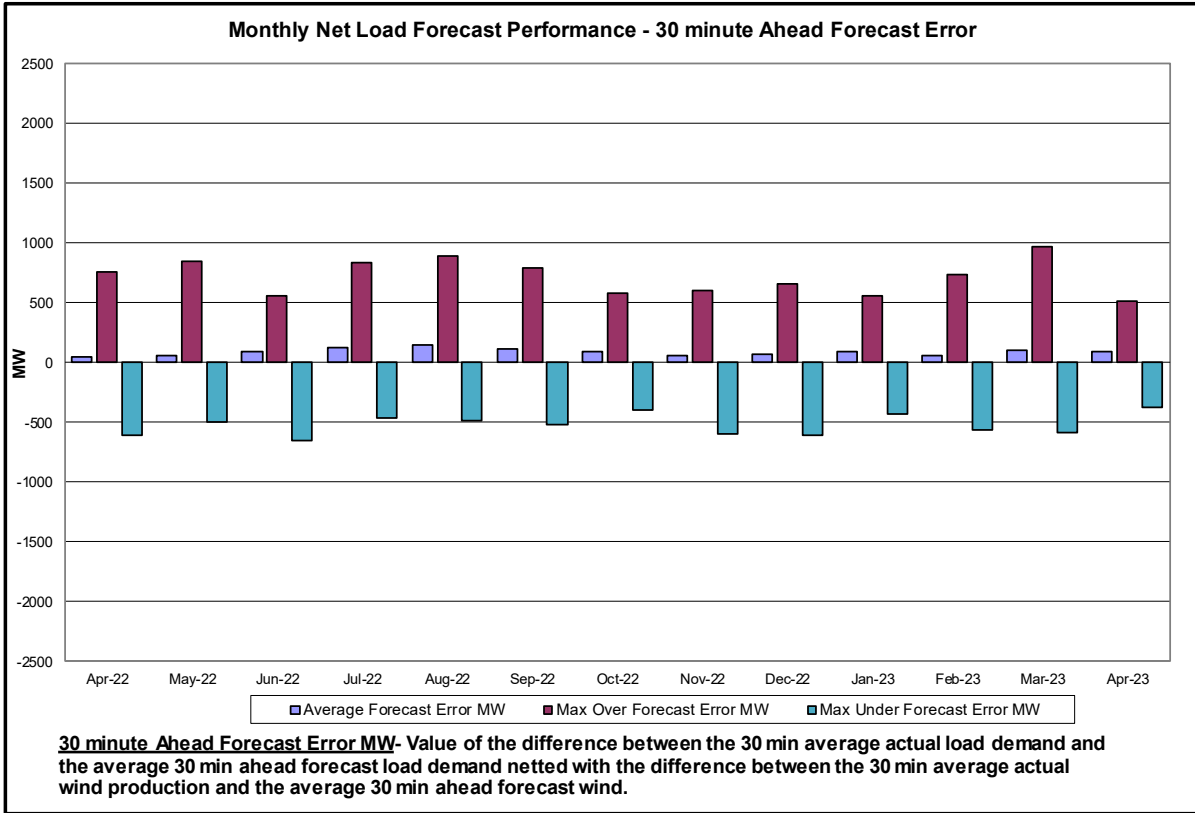


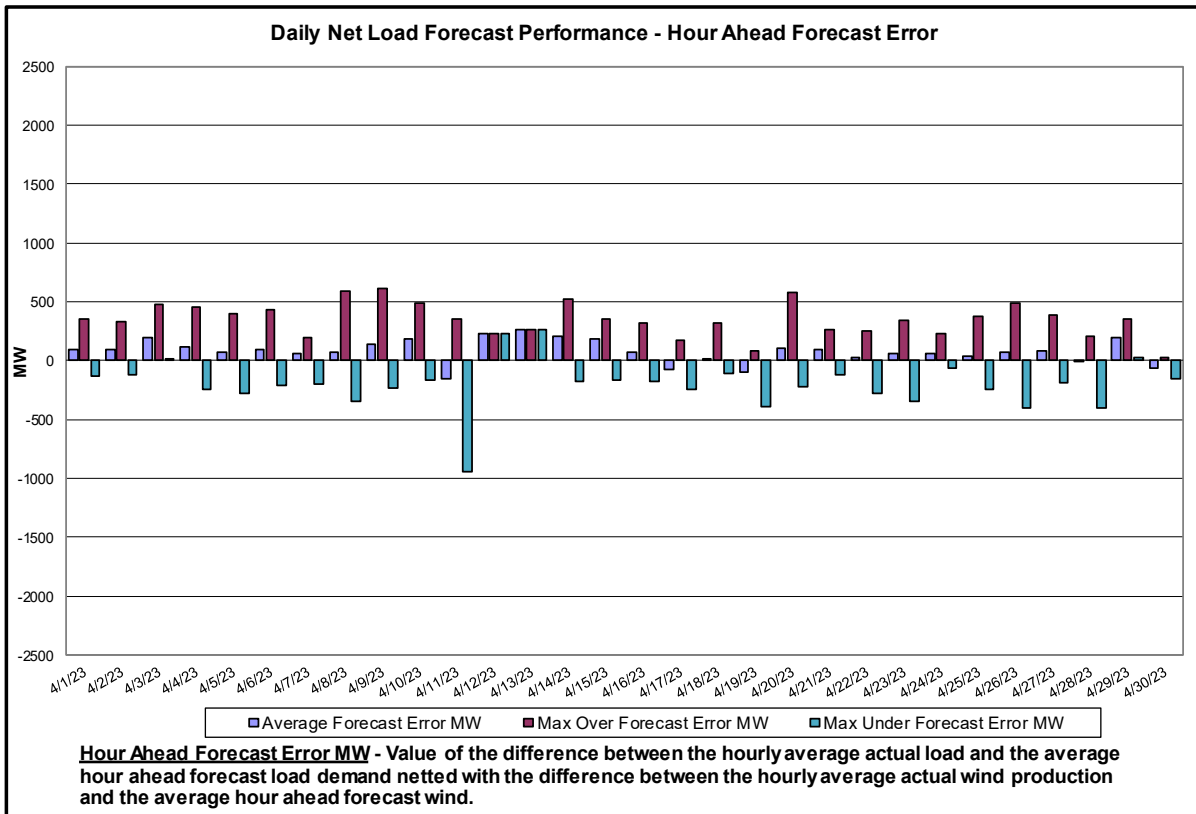
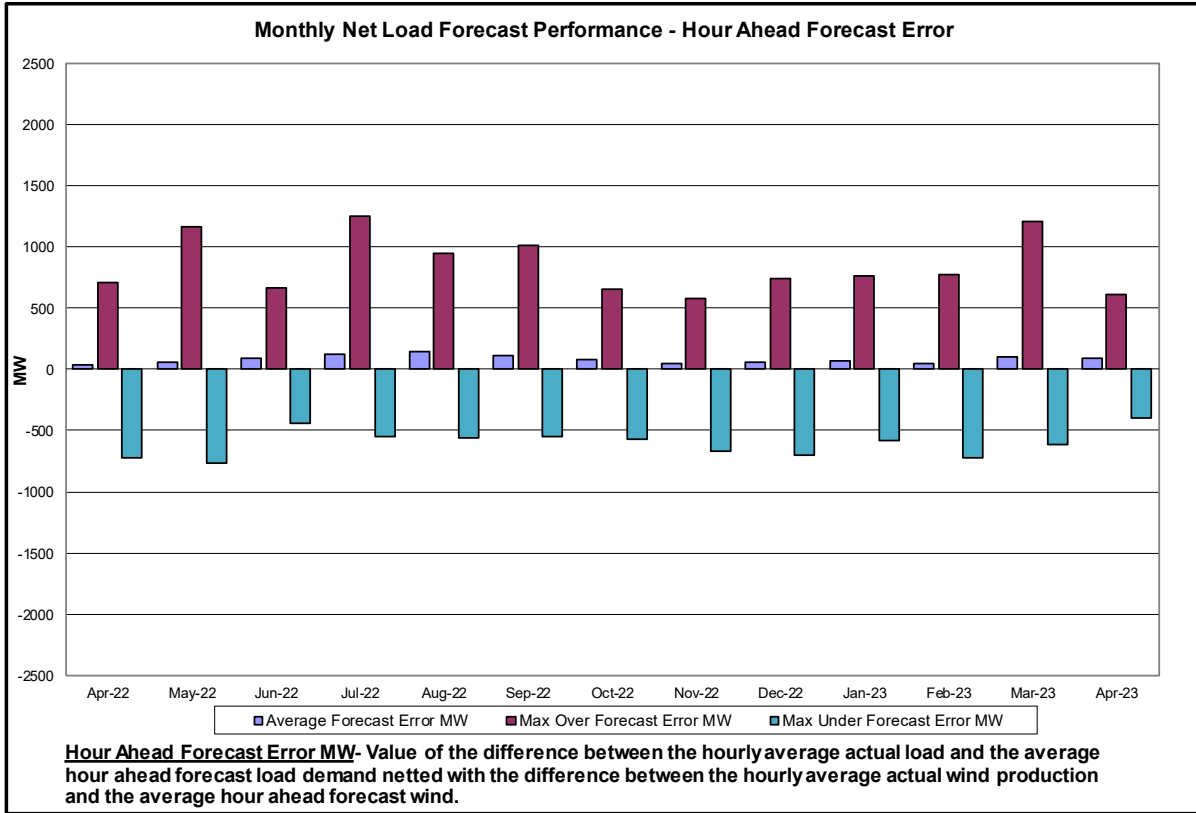


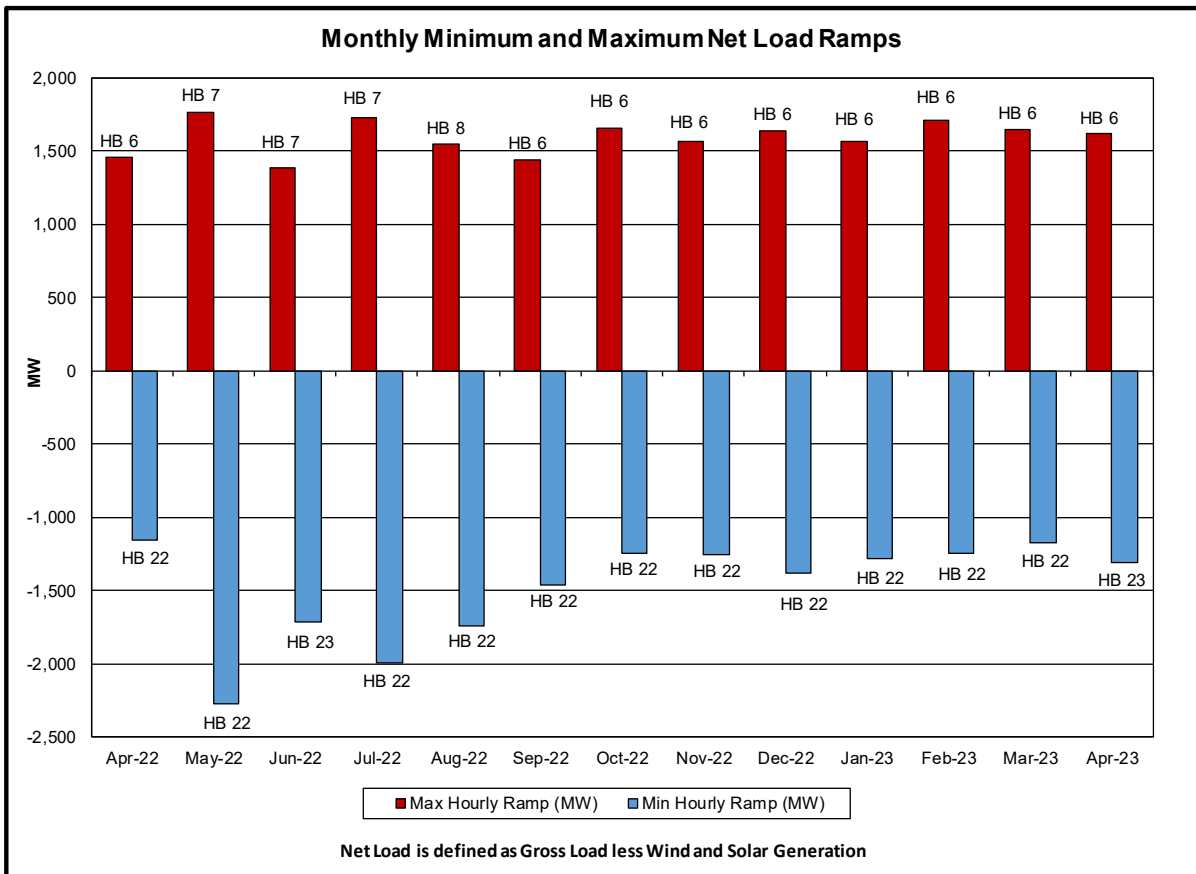
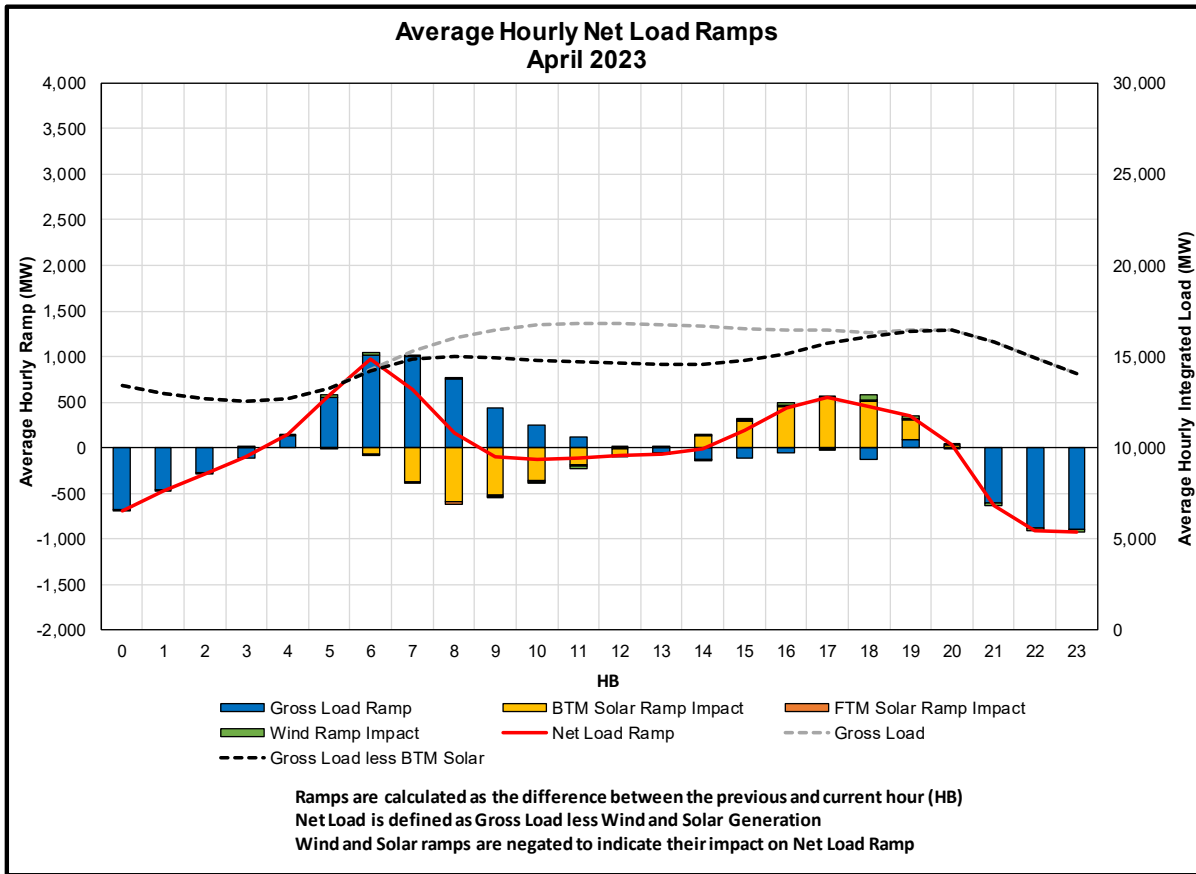




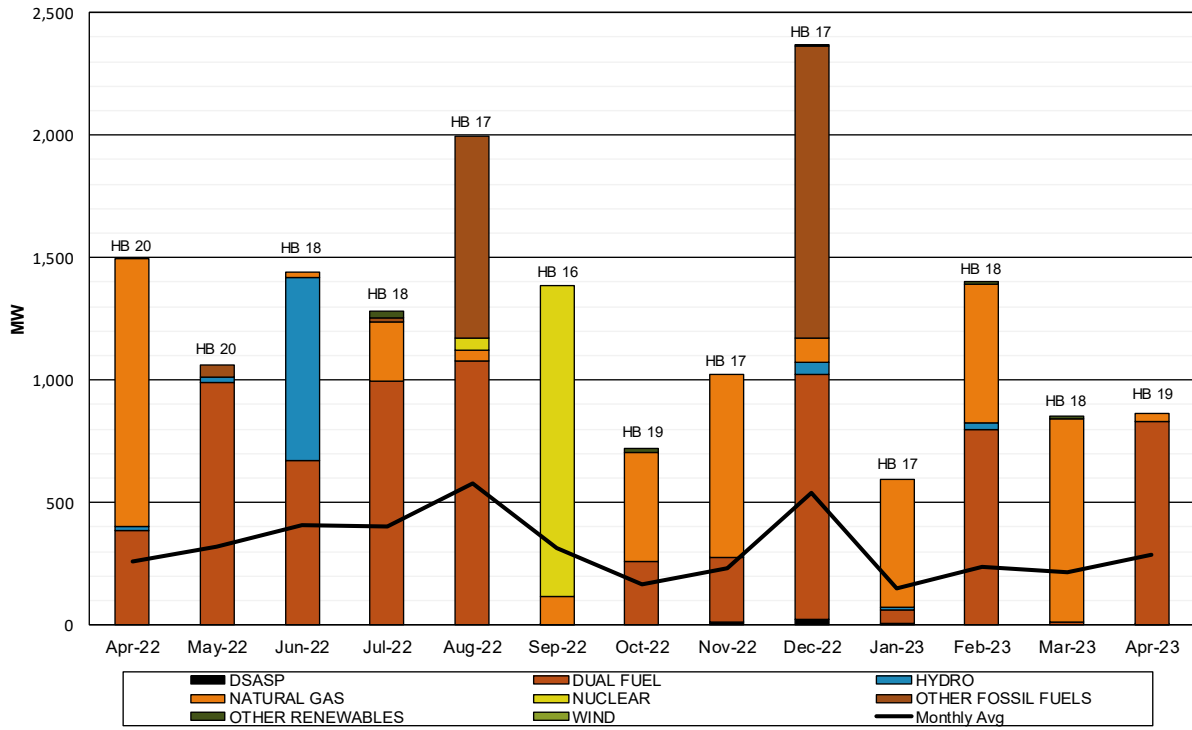








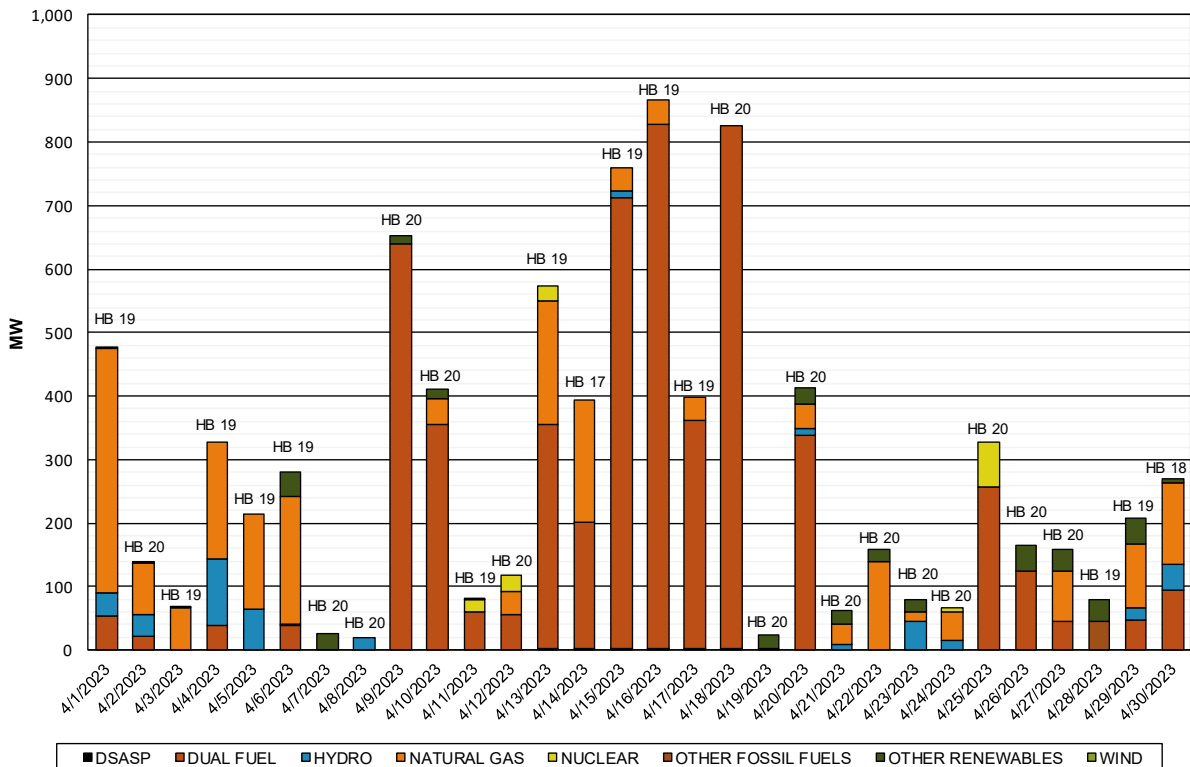
Monthly Maximum Day-Ahead Market Capacity Unavailable In Real Time



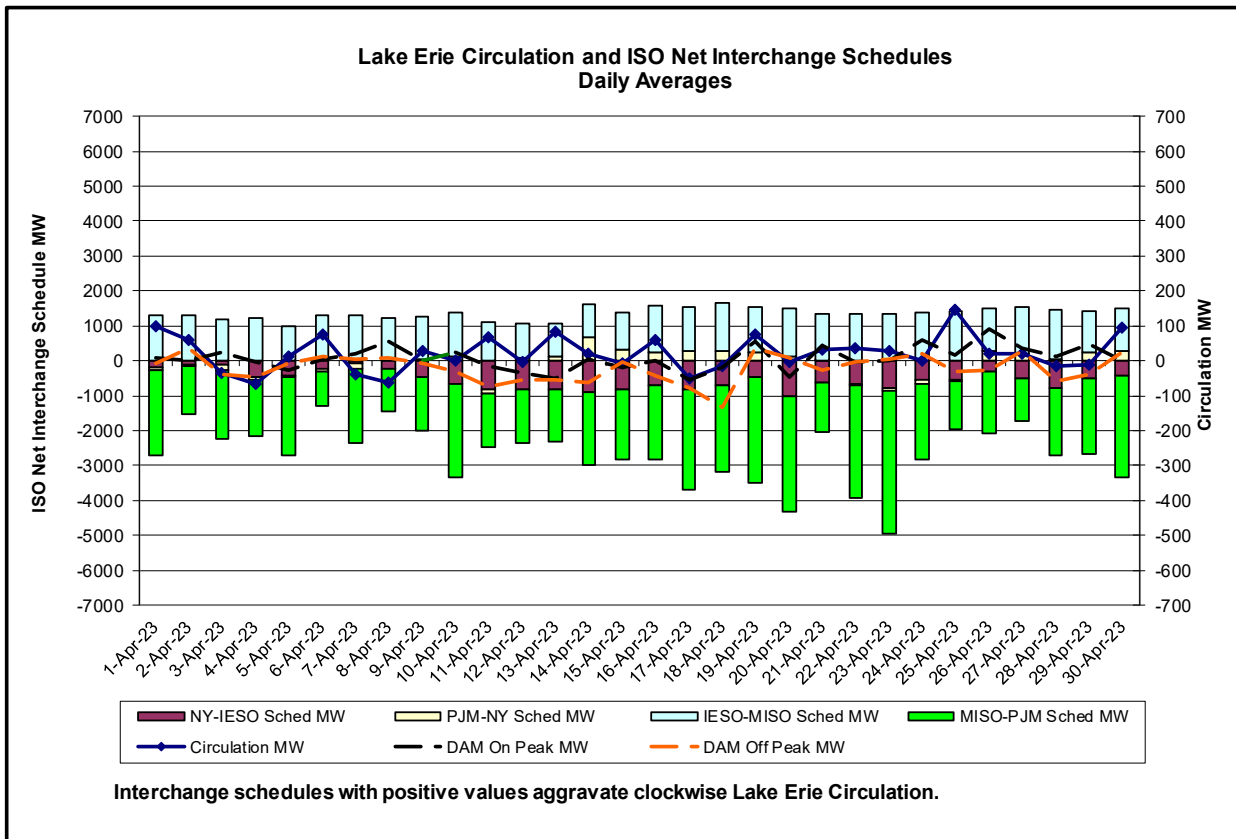
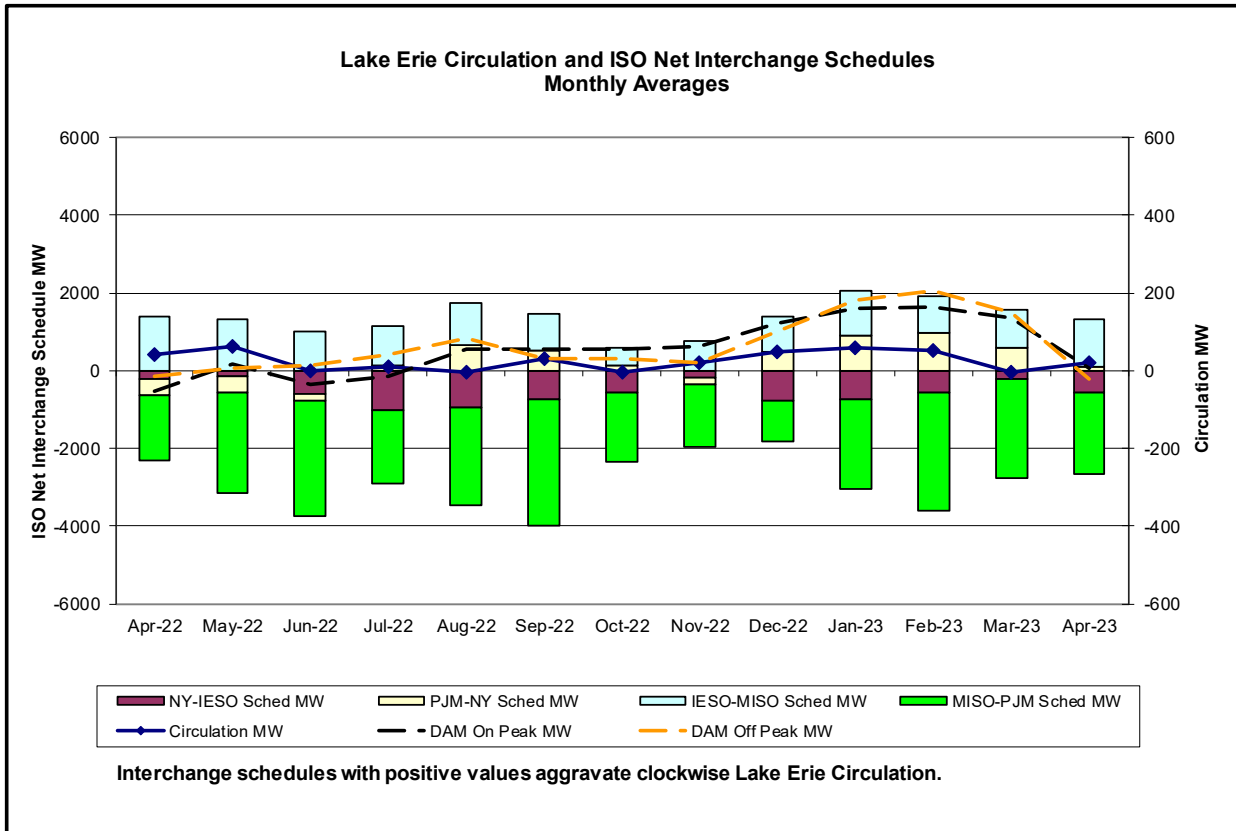
Unavailable Capacity is calculated as the difference of Day-Ahead Market (DAM) capacity relative to Real-Time (RT) capacity during RT peak load hour.

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

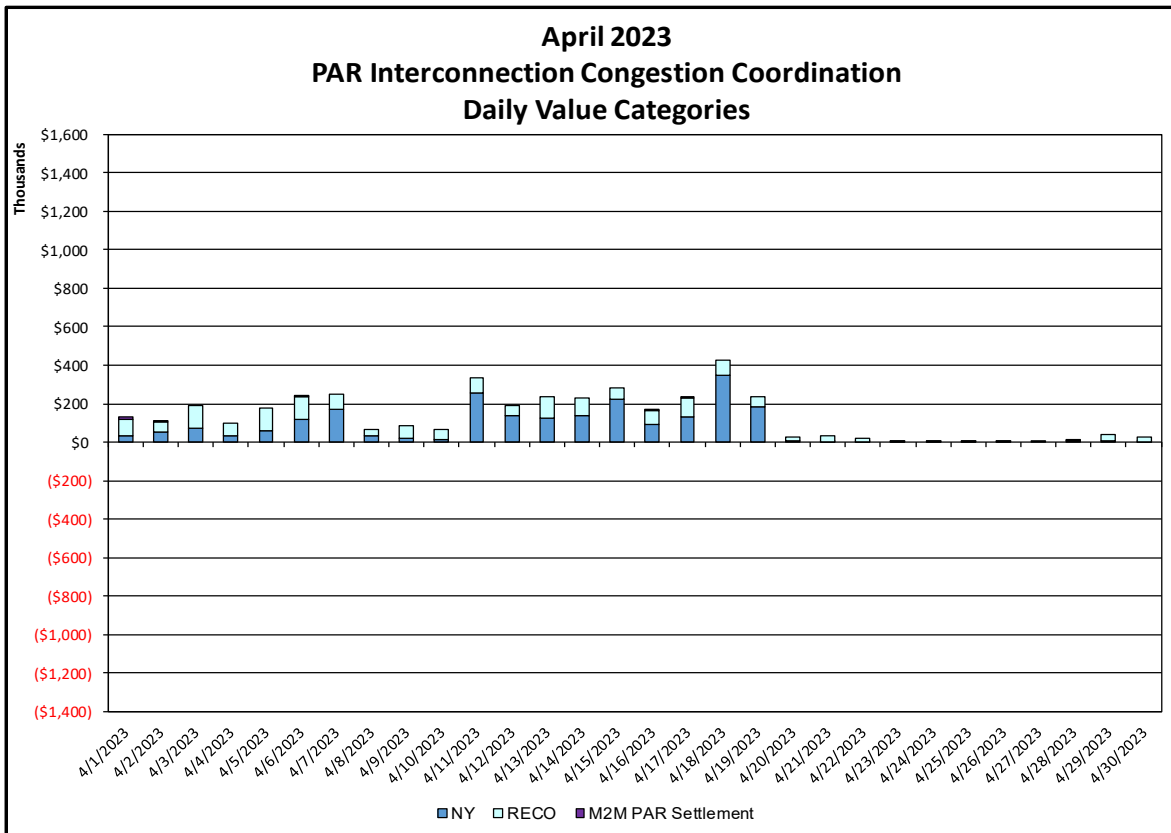
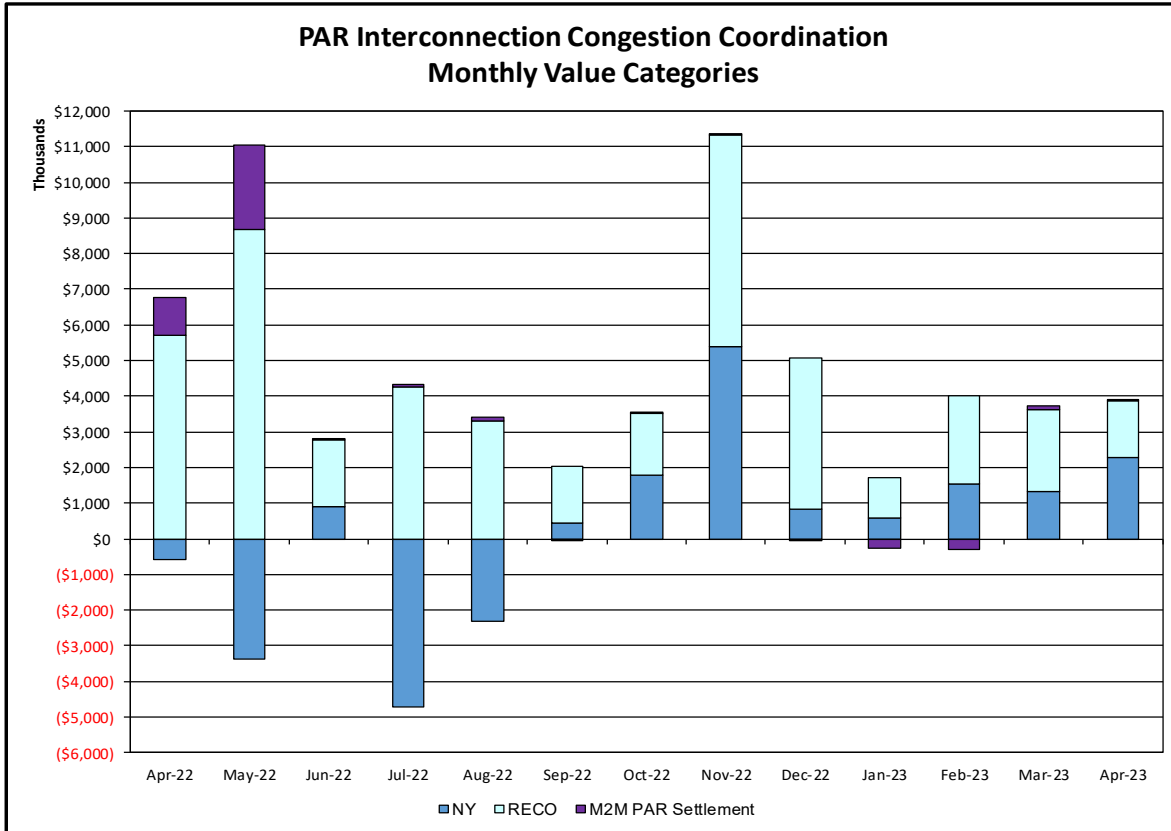
Daily Day-Ahead Market Capacity Unavailable In Real Time



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

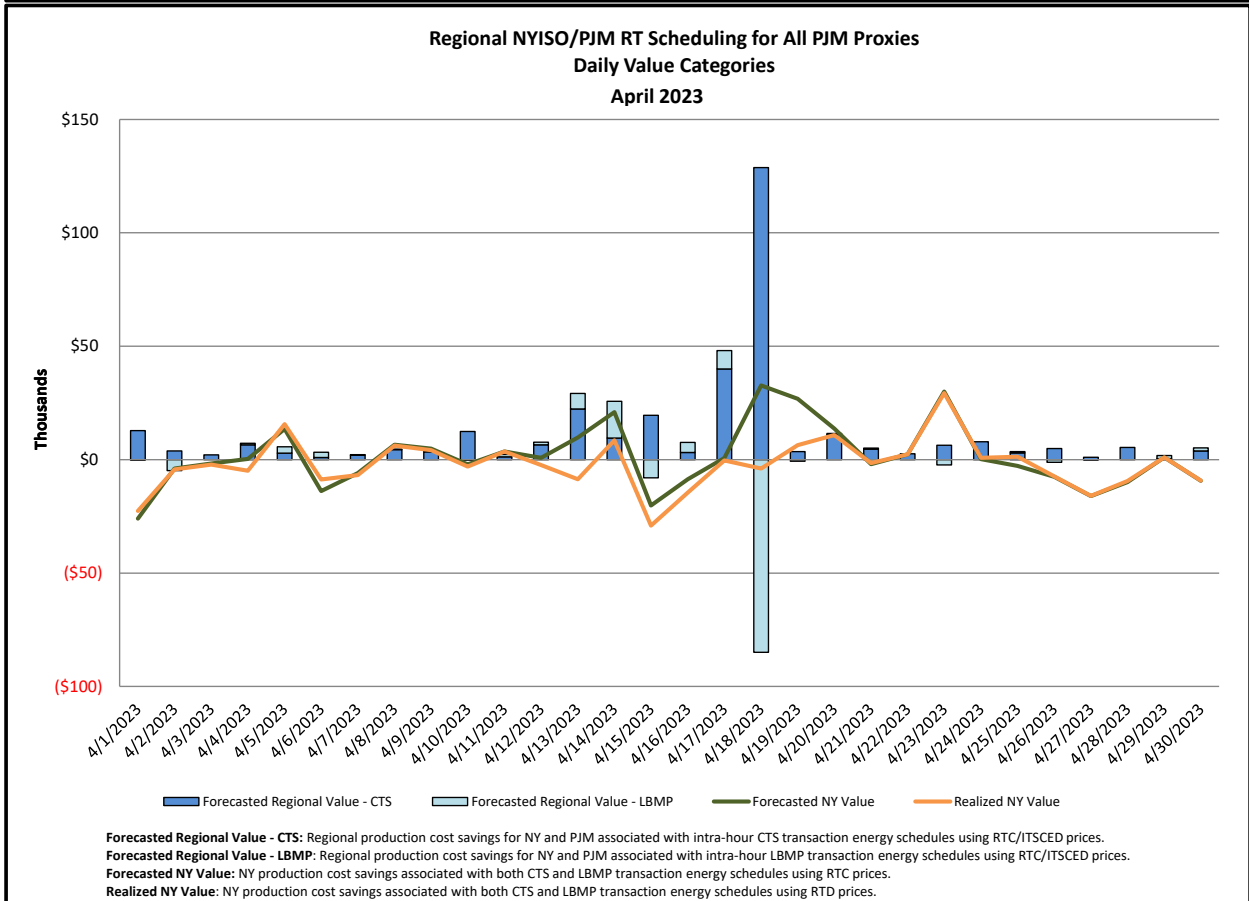
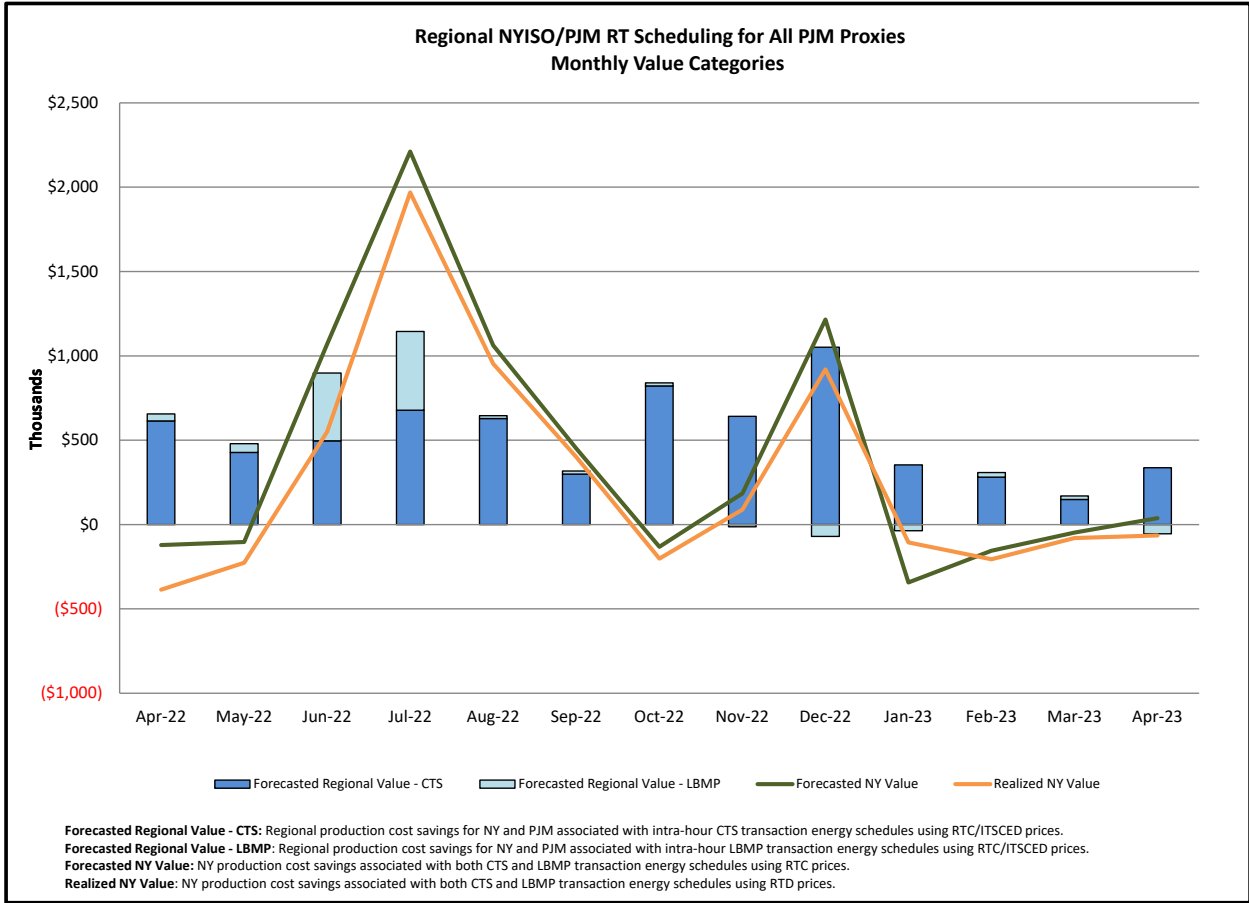


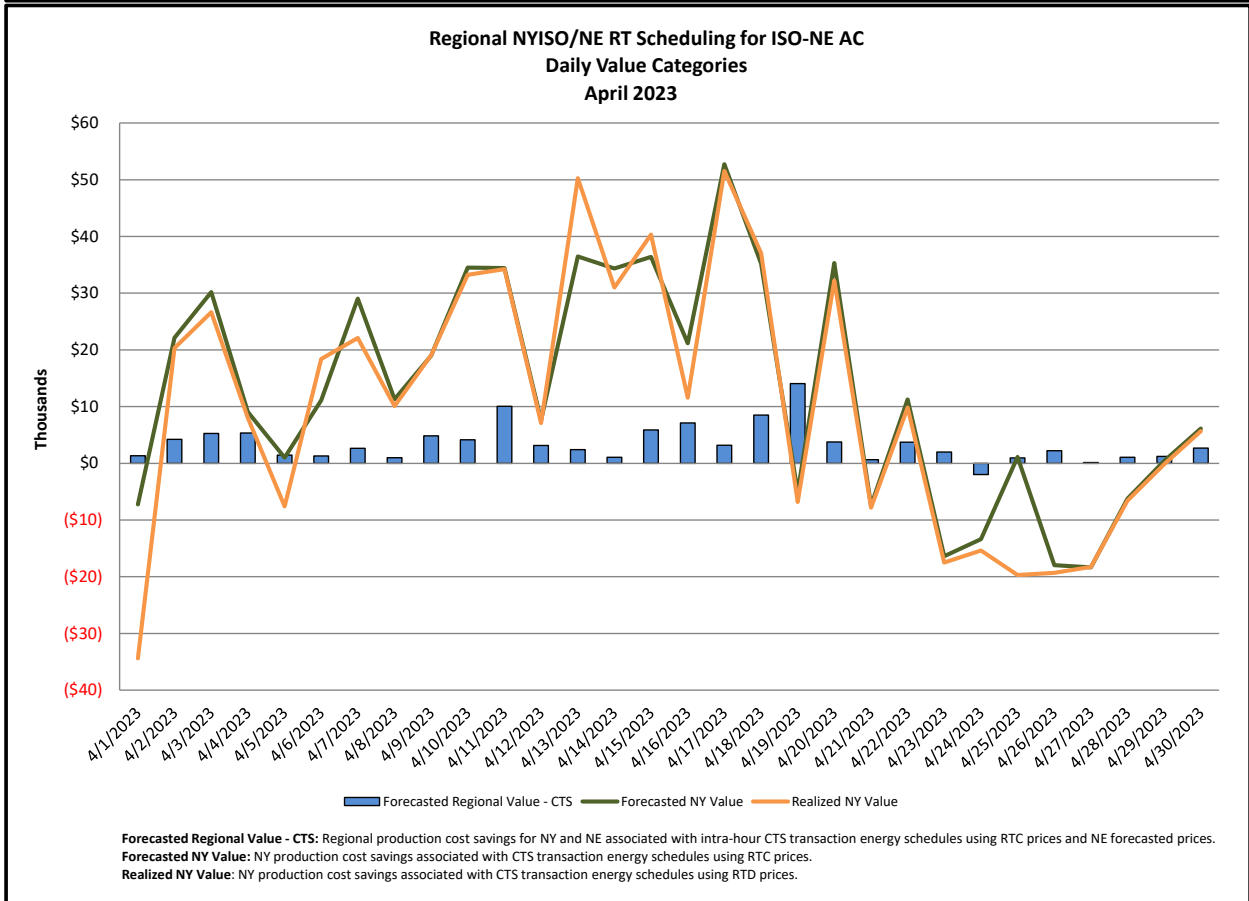
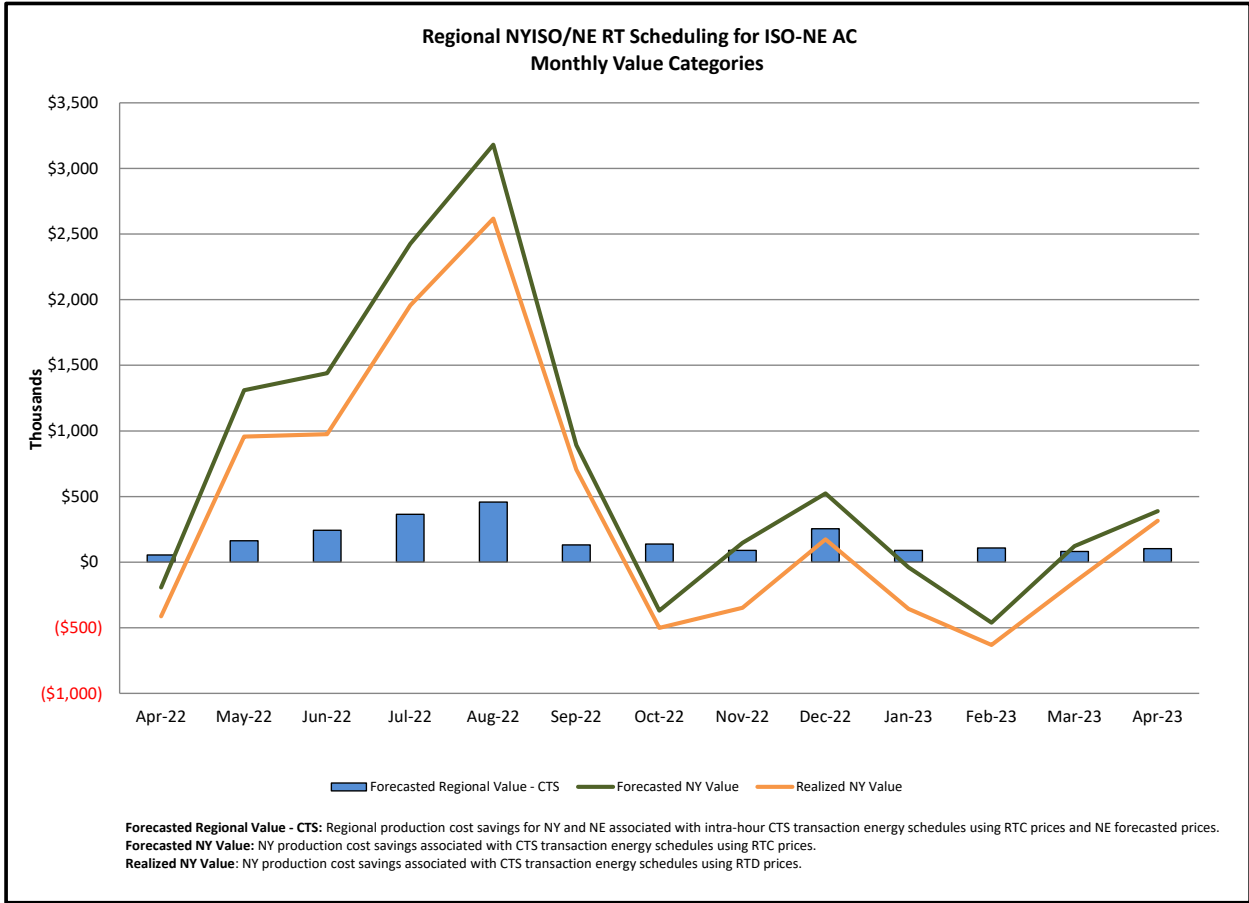
Broader Regional Market Performance Metrics



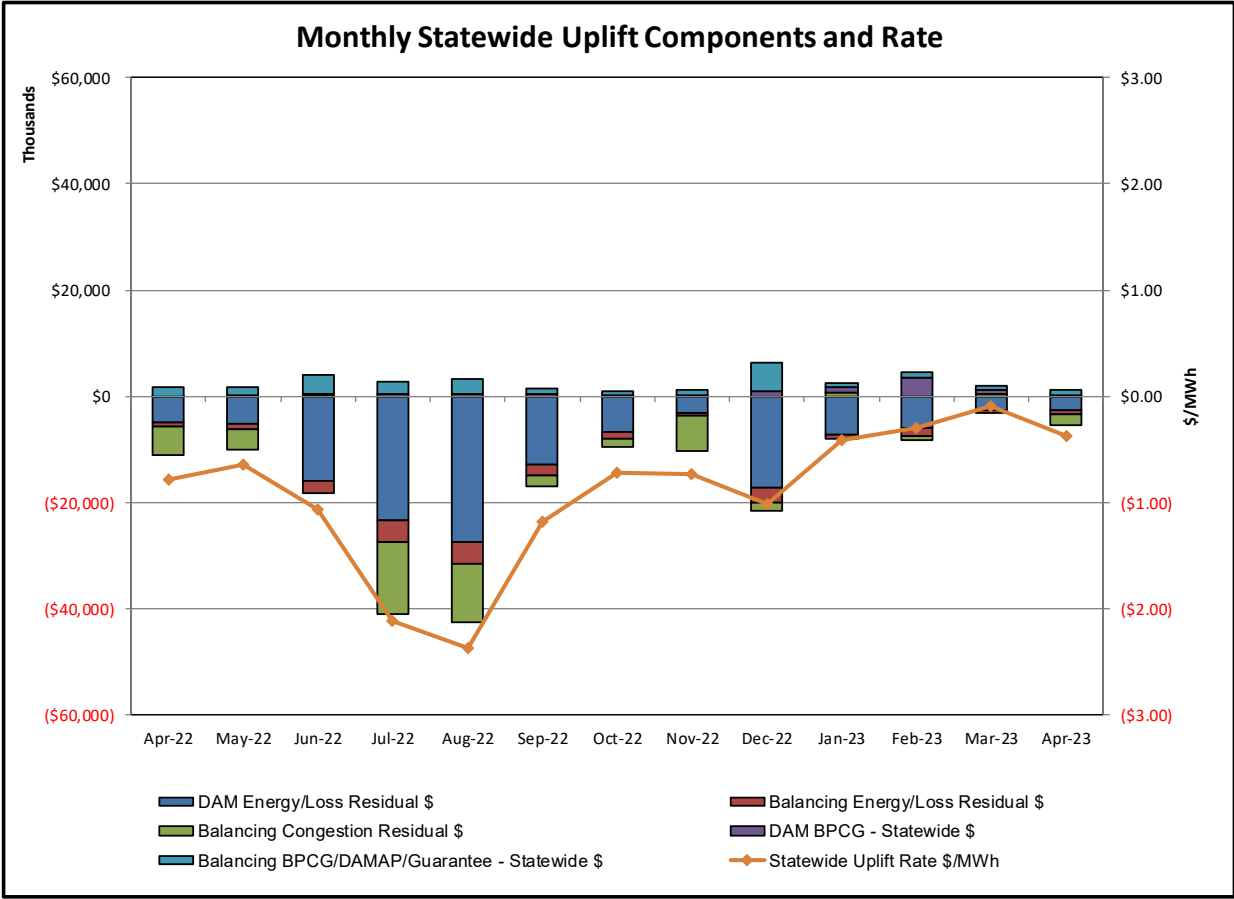
PAR Interconnection Congestion Coordination

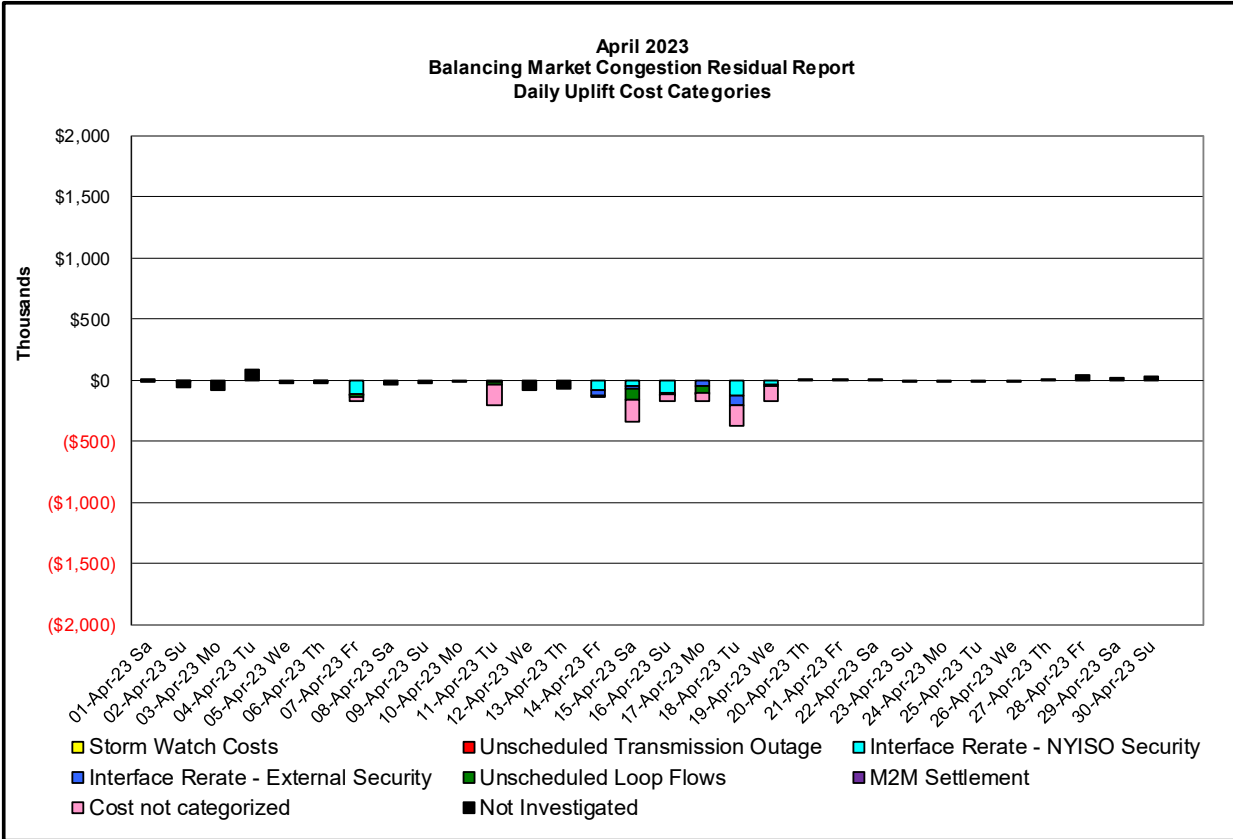
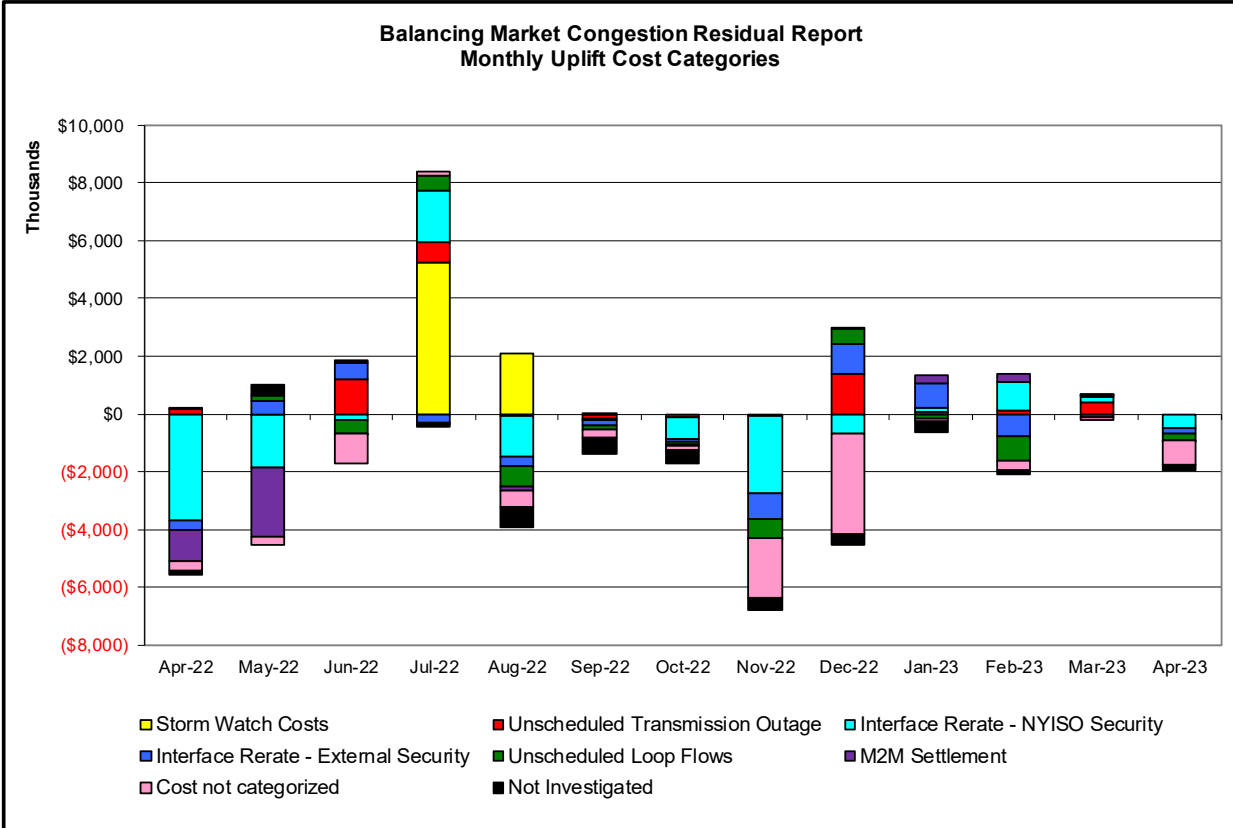
| <u>Category</u> | <u>Description</u> |
|---------------------------|--|
| NY | Represents the value NY realizes from Market-to-Market PAR Coordination when experiencing congestion. This is the estimated savings to NY for additional deliveries into NY |
| RECO | Represents the value of PJM's obligation 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 April:7,11,14,15,16,17,18,19 | | |
|--|---|------------------|
| Event | Description | April Dates |
| | Derate Adirondack-Porter 230kV (#12) I/o SIN:MSU1&7040& HQ GN&LD PROXY | 11 |
| | Derate Carl Place-East Garden City 138kV (#361) I/o EGRDNCTY-ROSLYN 138 362 | 18,19 |
| | Derate Central East | 11,15 |
| | Derate East Garden City-New Bridge 138kV #462 | 14 |
| | Derate Foxhills-Greenwood 138kV (#29232) I/o SCB:GOWANUS(2):41&42231&R4 | 18 |
| | Derate Malone-Willis 115kV (#1-910) I/o TWR:MOSES MW2 & MAL4 | 11 |
| | NYCA DNI Ramp Limit | 7,15,18 |
| | Uprate Central East | 7,11,14-16,18,19 |
| | HQ_CHAT - NY Scheduling Limit | 14 |
| | IESO AC ACTIVE DNI Ramp Limit | 15 |
| | NE AC ACTIVE DNI Ramp Limit | 17 |
| | NE AC-NY Scheduling Limit | 15 |
| | NE NNC1385 - NY Scheduling Limit | 14,17,18 |
| | PJM AC-NY DNI Ramp Limit | 7 |
| | Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East | 7,11,15-17,19 |
| | Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West | 11,17,19 |

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

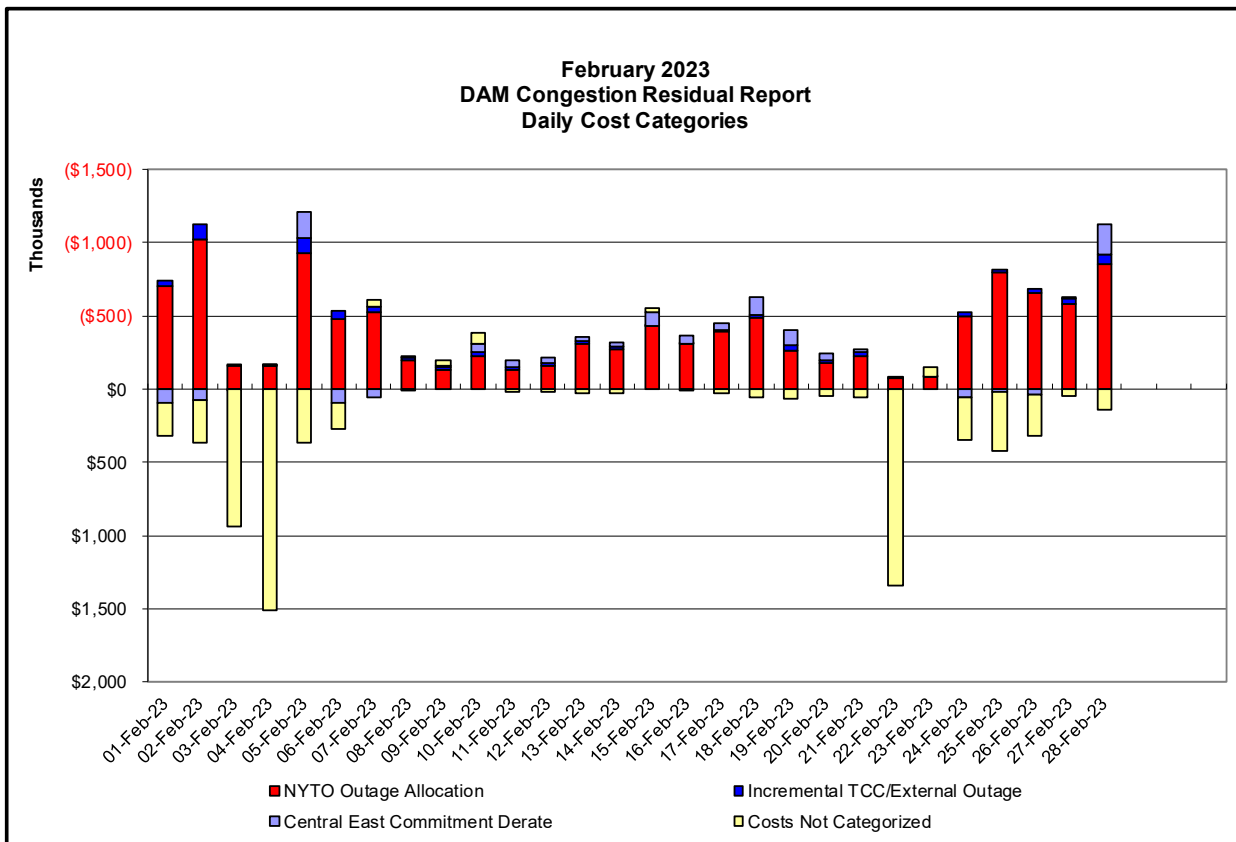
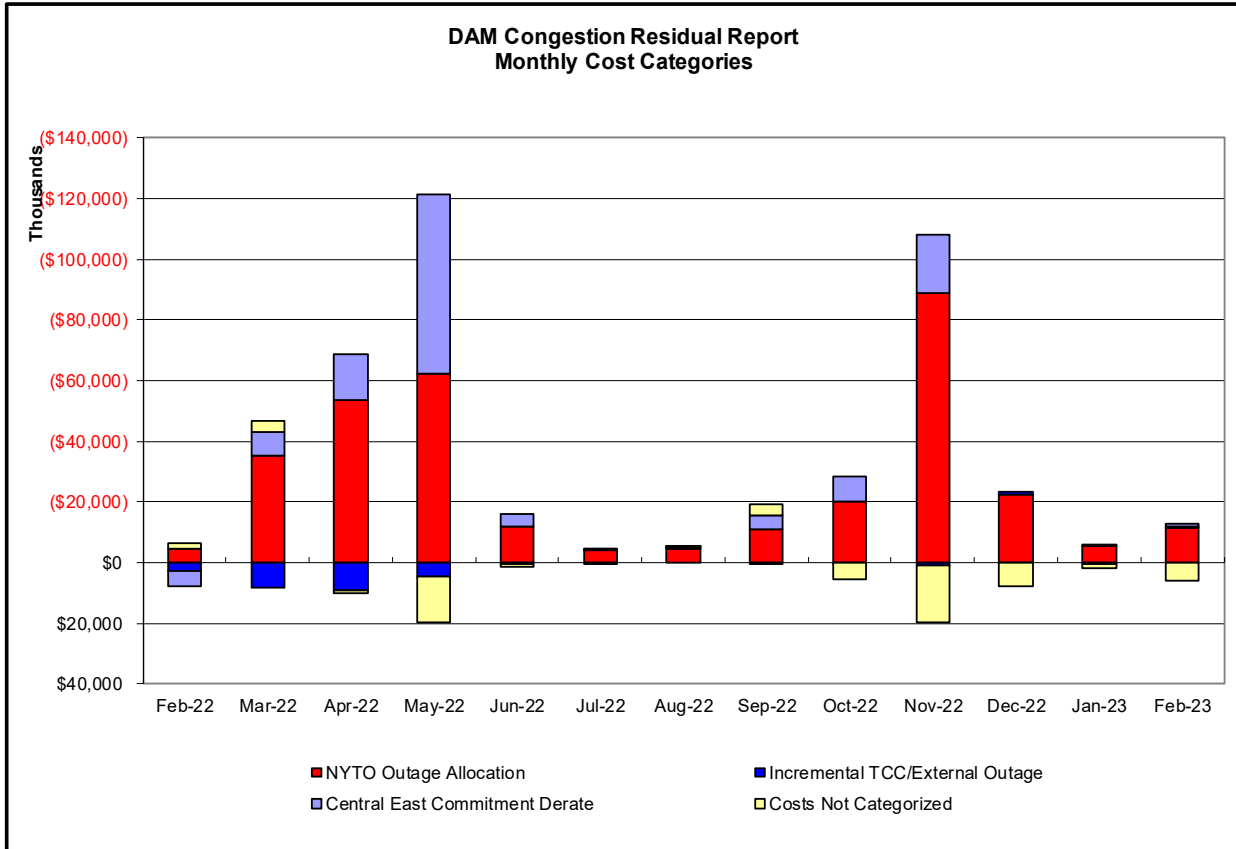
| <u>Category</u> | <u>Cost Assignment</u> | <u>Events Types</u> | <u>Event Examples</u> |
|--|------------------------|---|---|
| Storm Watch | Zone J | Thunderstorm Alert (TSA) | TSA Activations |
| Transmission Outage Mismatch | Market-wide | Changes in DAM to RTM transfers related to transmission 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. | |

