Operations Performance Metrics Monthly Report




November 2022 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 December 8, 2022.

Table of Contents

November 2022 Operations Performance Highlights

- November 2022 peak load of 20,358 MW occurred on 11/21/2022 HB 17
- Winter 2022-2023 capability period peak load to date of 20,358MW occurred on 11/21/2022 HB 17
- 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
- 0.0 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)
2,191 MW	4,184 MW	94 MW	20 MW

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

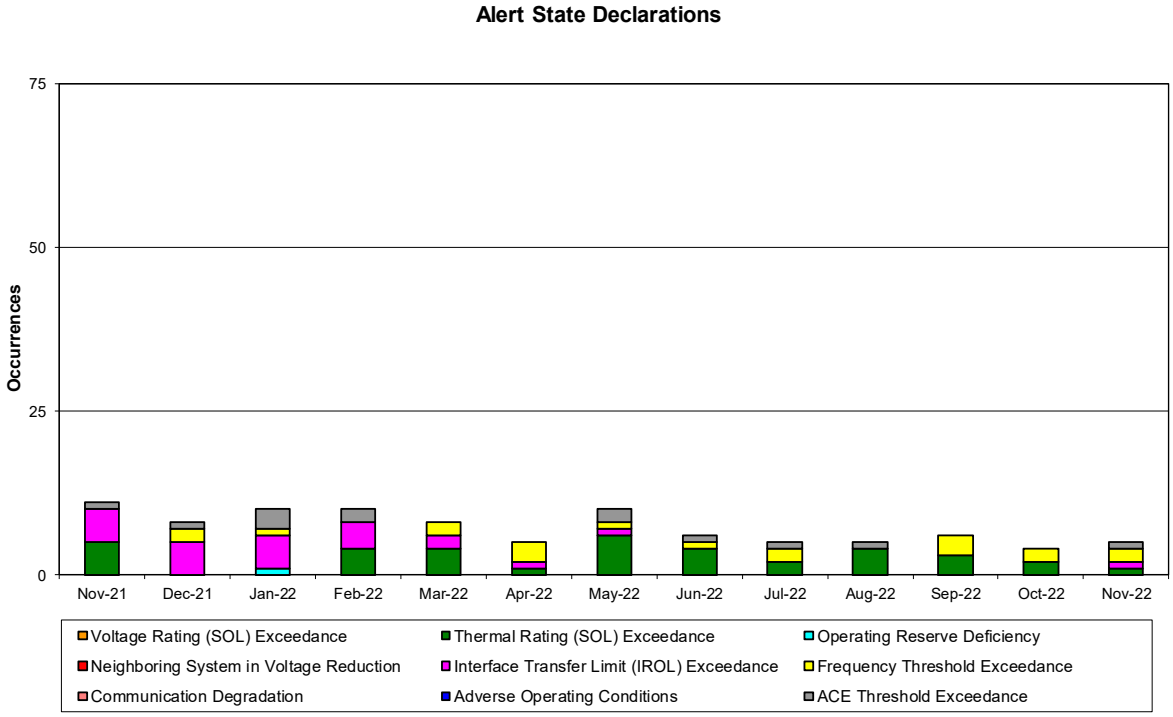
	Current Month Value ($M)	**Year-to-Date Value ($M)**
NY Savings from PJM-NY Congestion Coordination	$11.36	$40.76
NY Savings from PJM-NY Coordinated Transaction Scheduling	$0.09	$1.53
NY Savings from NE-NY Coordinated Transaction Scheduling	($0.35)	$8.11
Total NY Savings	$11.10	$50.40
Regional Savings from PJM-NY Coordinated Transaction Scheduling	$0.63	$6.65
Regional Savings from NE-NY Coordinated Transaction Scheduling	$0.09	$3.35
Total Regional Savings	$0.72	$10.00

- Statewide uplift cost monthly average was ($0.74)/MWh.
- The following table identifies the Monthly ICAP spot market prices and the price delta.

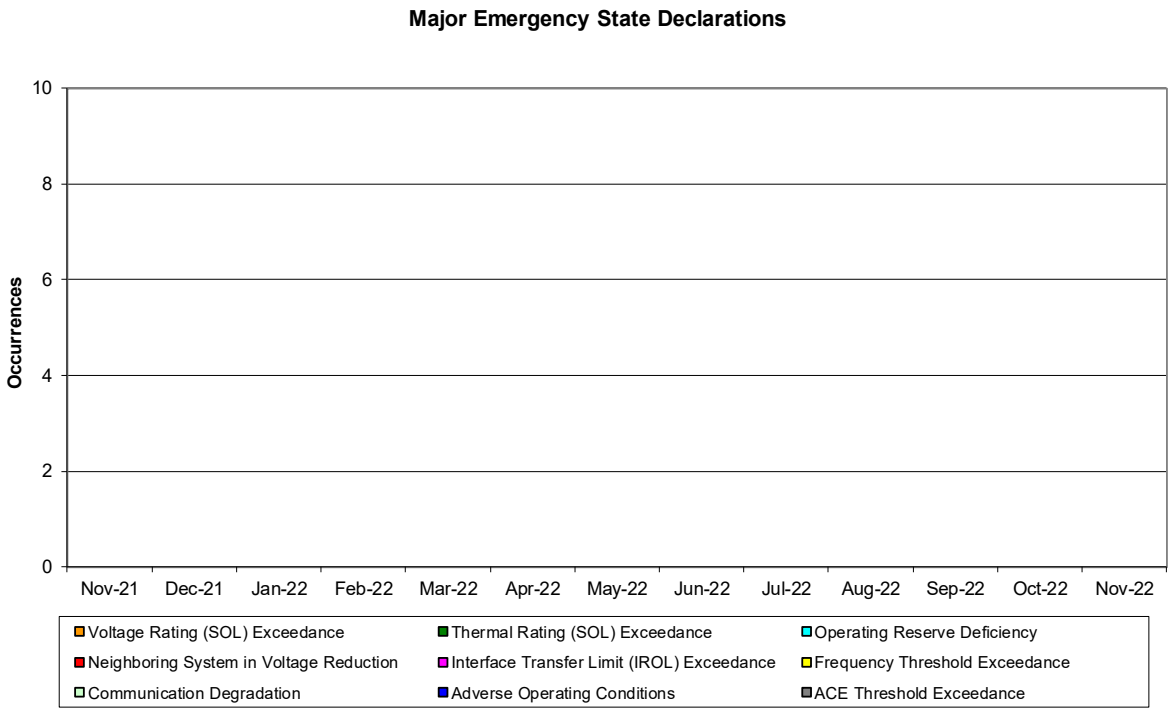
Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
December 2022 Spot Price	$2.06	$2.06	$2.06	$2.06
November 2022 Spot Price	$1.54	$1.54	$1.54	$1.54
Delta	$0.52	$0.52	$0.52	$0.52

- Price increase from November to December 2022 is driven by an increase in Unoffered MW

Reliability Performance Metrics

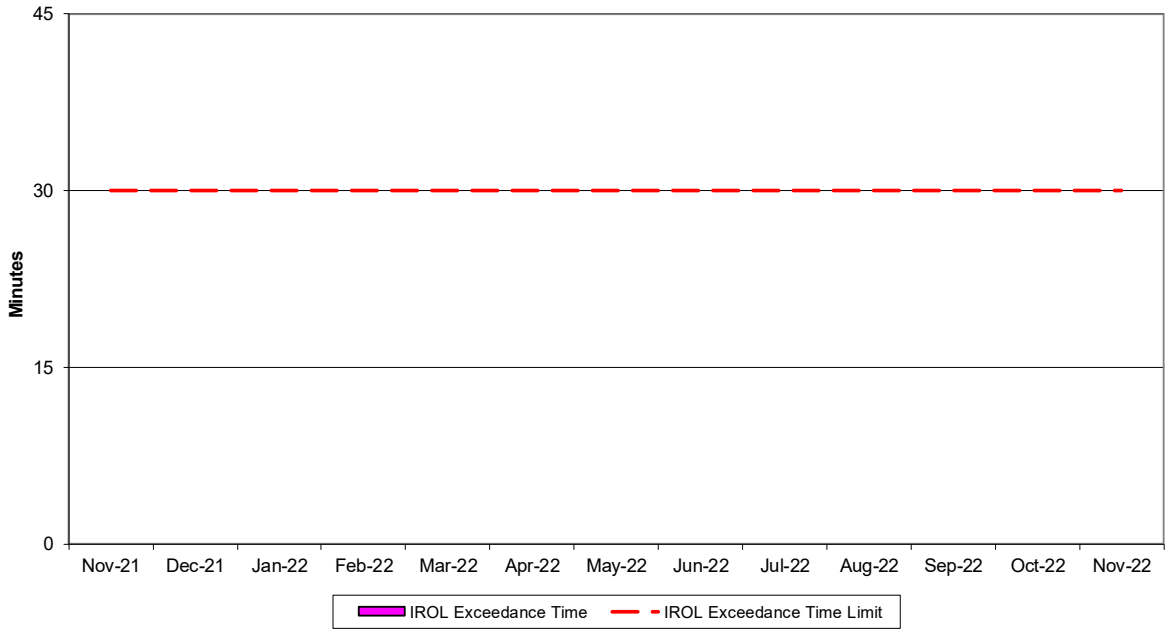


The number and causes of Alert State declarations reflect system operating conditions beyond thresholds associated with Normal and Warning States. Declaration of the Alert State allows the NYISO to take corrective actions not available in the Normal and Warning States.



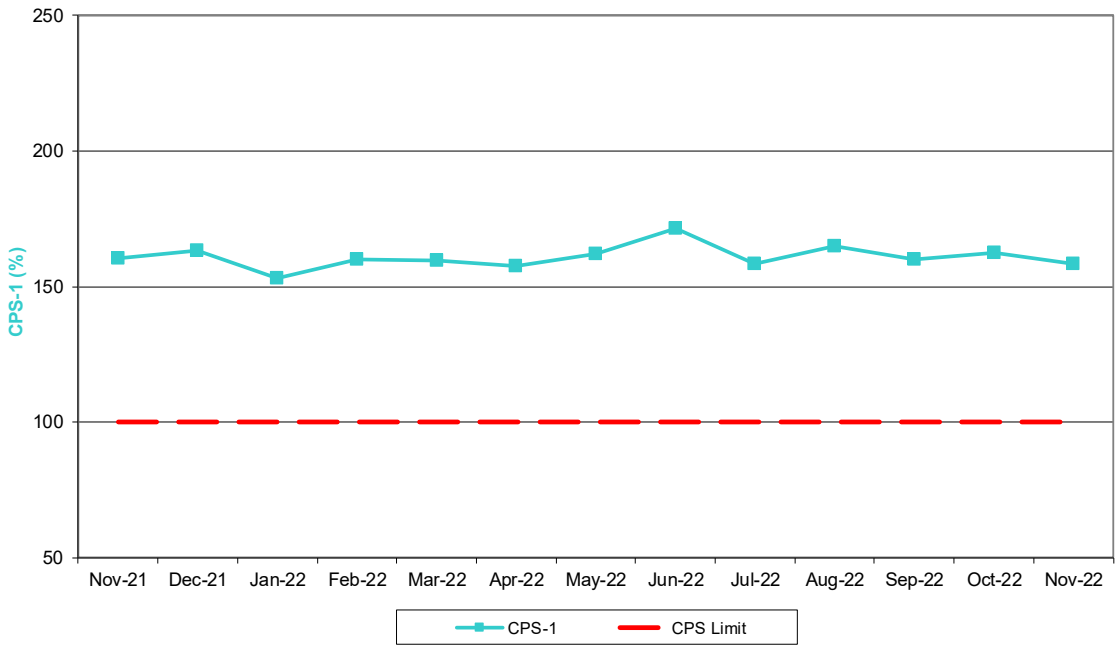
The number and causes of Major Emergency State declarations reflect system operating conditions beyond thresholds associated with the Alert State. Declaration of the Major Emergency State allows the NYISO to take additional corrective actions not available in the Alert State.

NERC IROL Time Over Limit



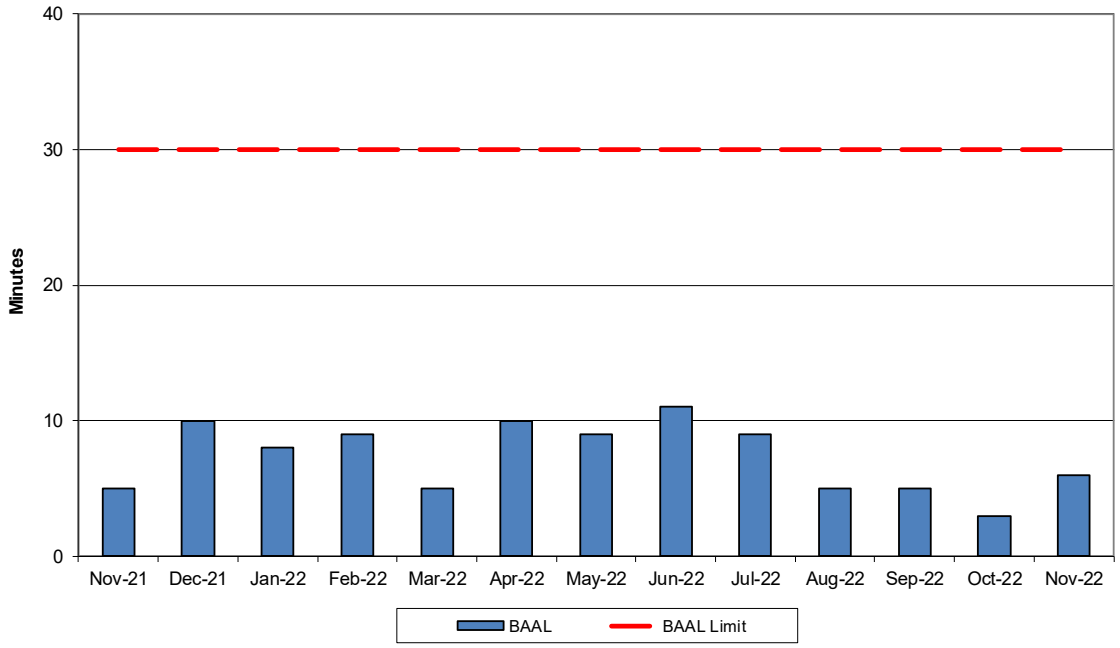
For IROL exceedances leading to Major Emergency State declarations, the maximum IROL exceedence time is identified. IROL exceedances of less than thirty minutes are considered NERC compliant.

NERC Control Performance Standards



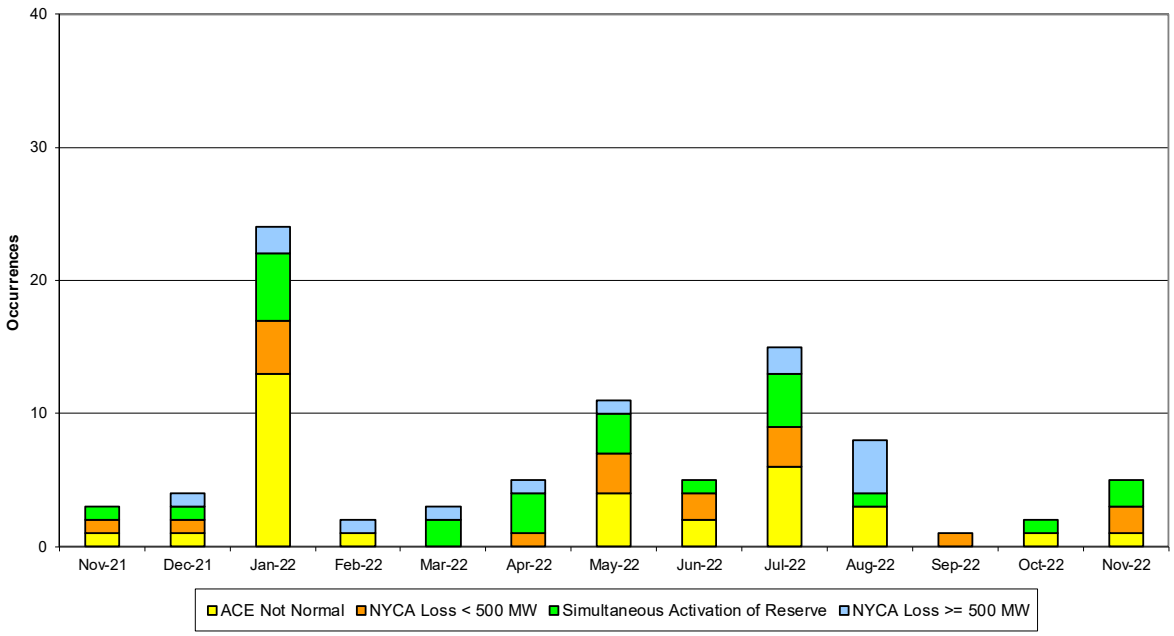
The value of NERC Control Performance Standards (CPS-1) is an indicator of the NYISO Area resource and demand balancing. Values exceeding the identified threshold are NERC compliant.

NERC Balancing Authority ACE Limit Standard



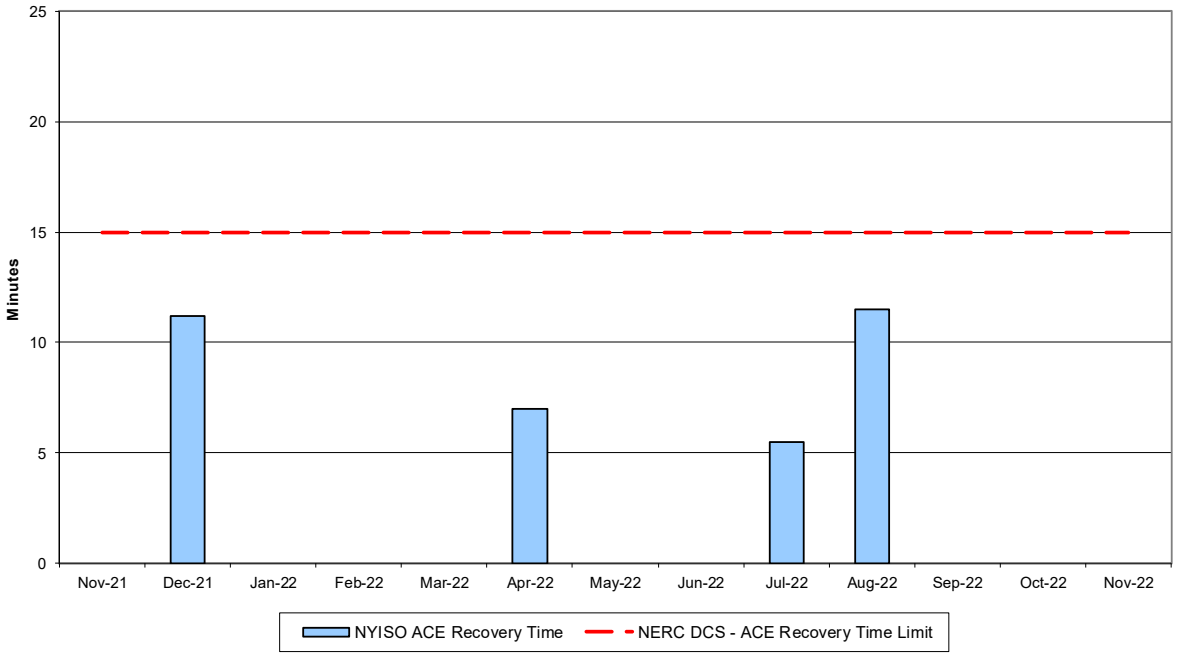
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

Reserve Activations



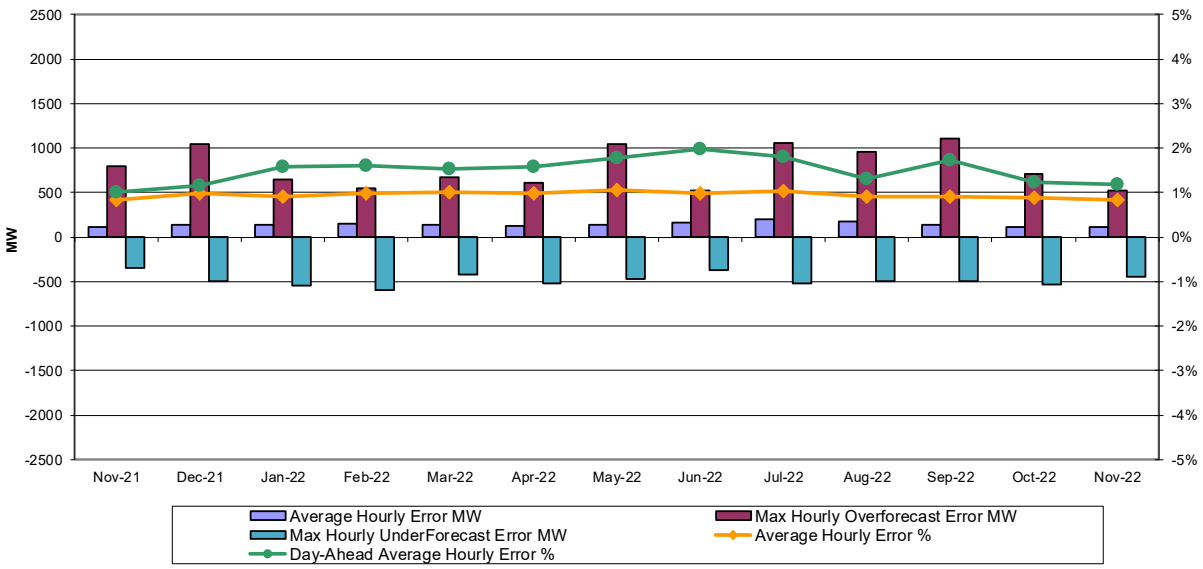
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

DCS Event Time to ACE Recovery

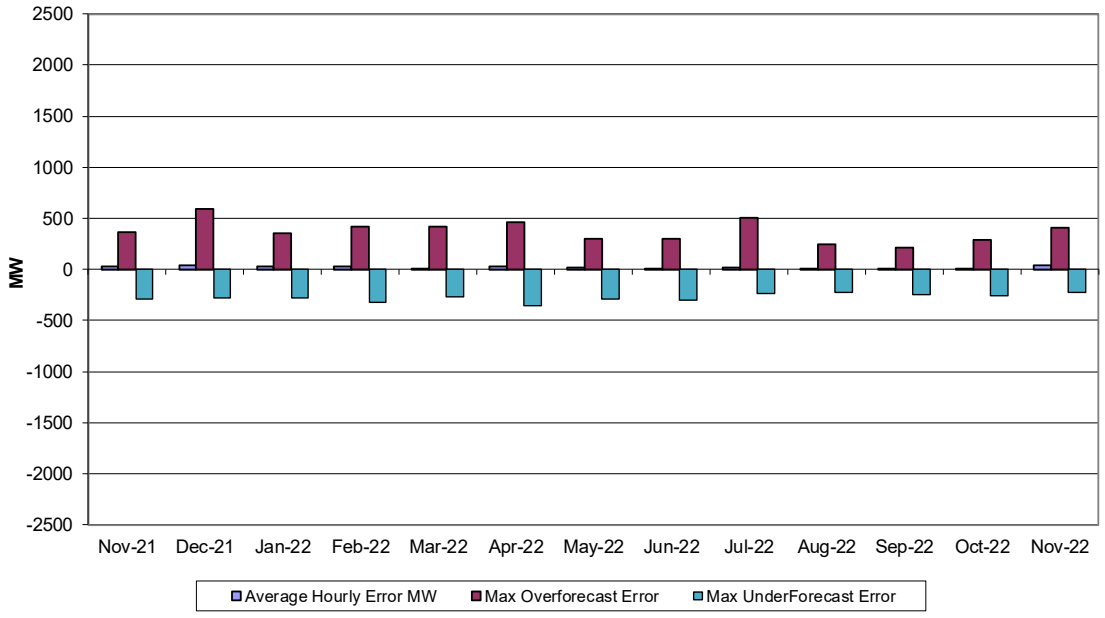


For NYISO initiated NERC Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

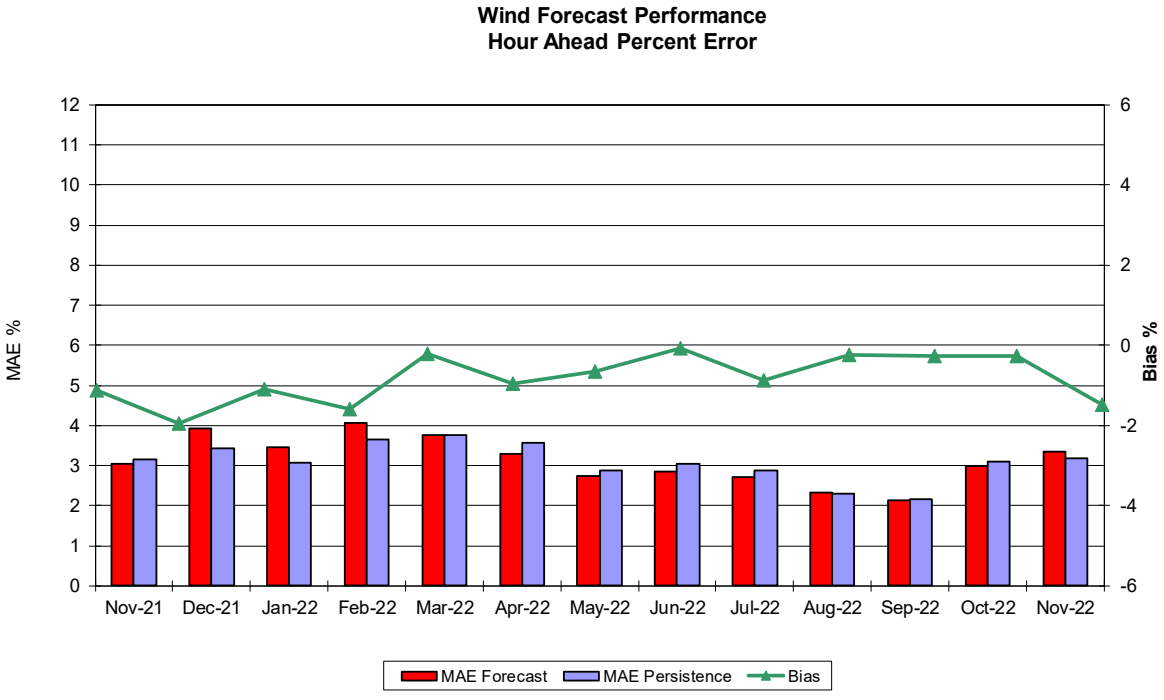
Load Forecast Performance



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.

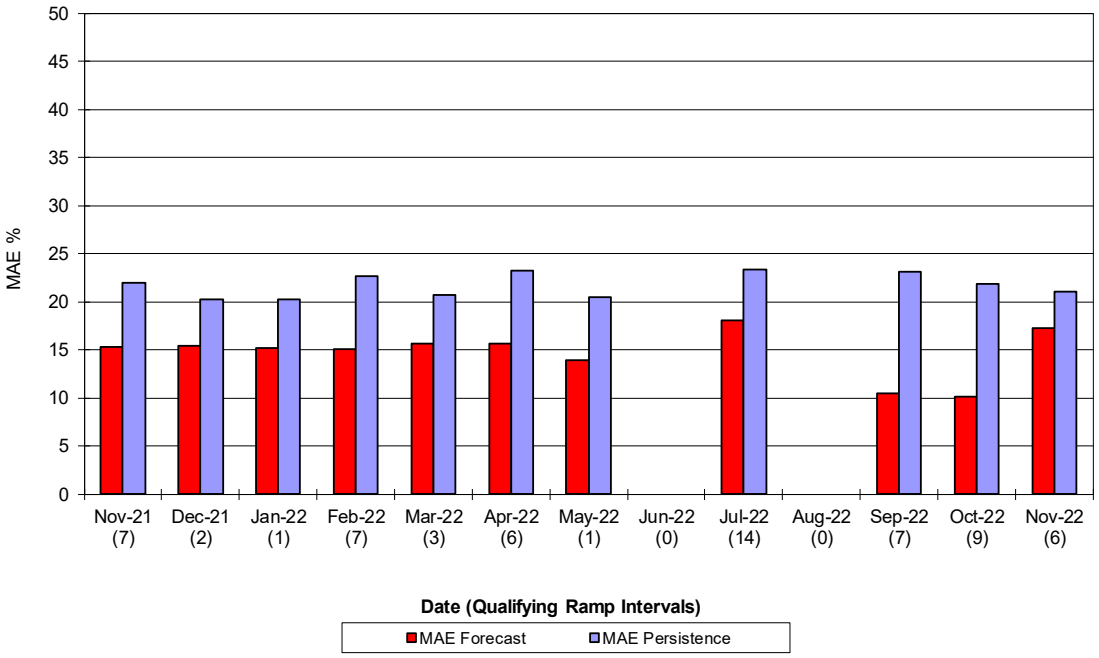


Hourly Error MW - Value of the difference between the hourly average actual wind generation and the average hour ahead forecast wind generation.



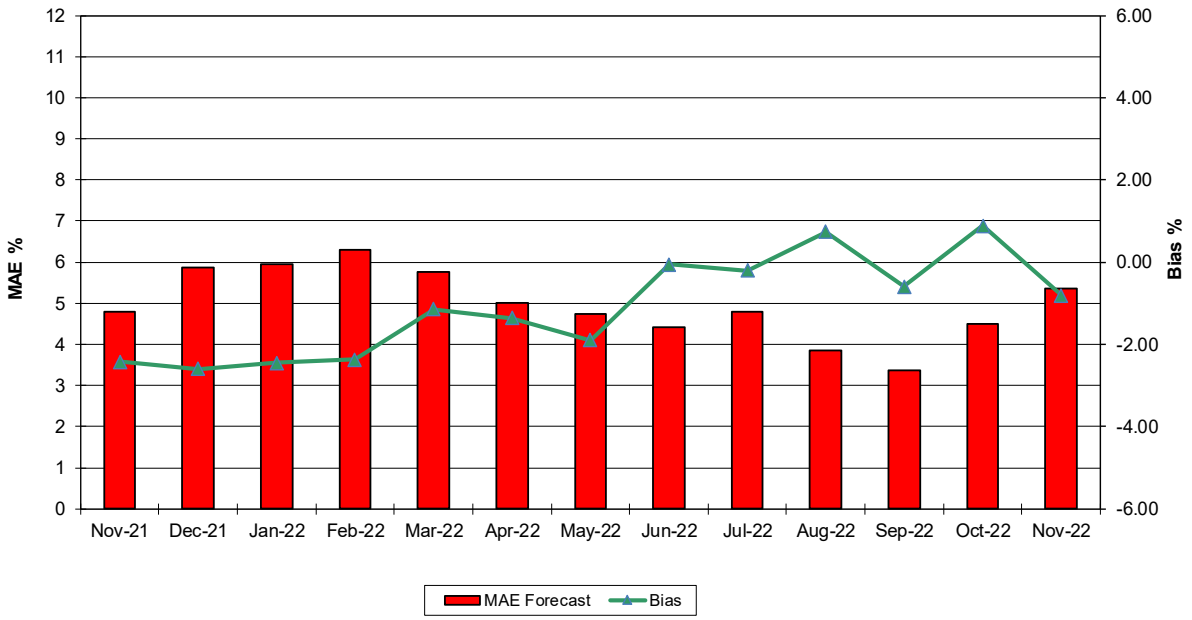
MAE Forecast - Avg |actual wind generation - hour ahead forecast wind generation| / Wind Capacity
MAE Persistence - Avg |actual wind generation - hour ahead actual wind generation| / Wind Capacity
Bias - Avg (actual wind generation - hour ahead forecast wind generation) / Wind Capacity

Wind Forecast Performance
Hour Ahead Mean Absolute Percent Error
Ramp Events - Hourly Changes That Exceed 20% of Wind Capacity on Dispatch

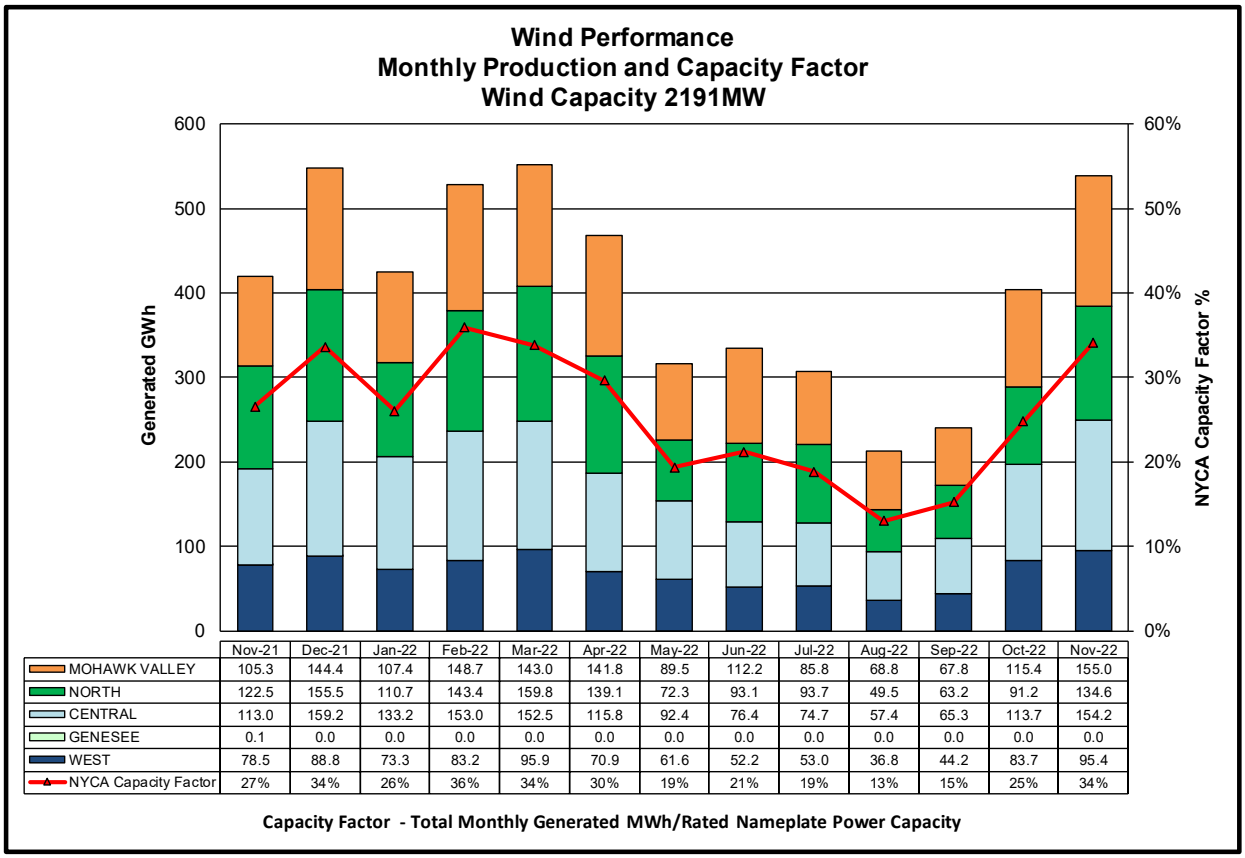


MAE Forecast - Avg |actual wind generation - hour ahead forecast wind generation| / Wind Capacity
MAE Persistence - Avg |actual wind generation - hour ahead actual wind generation| / Wind Capacity

Wind Forecast Performance
Day Ahead Absolute Percent Error

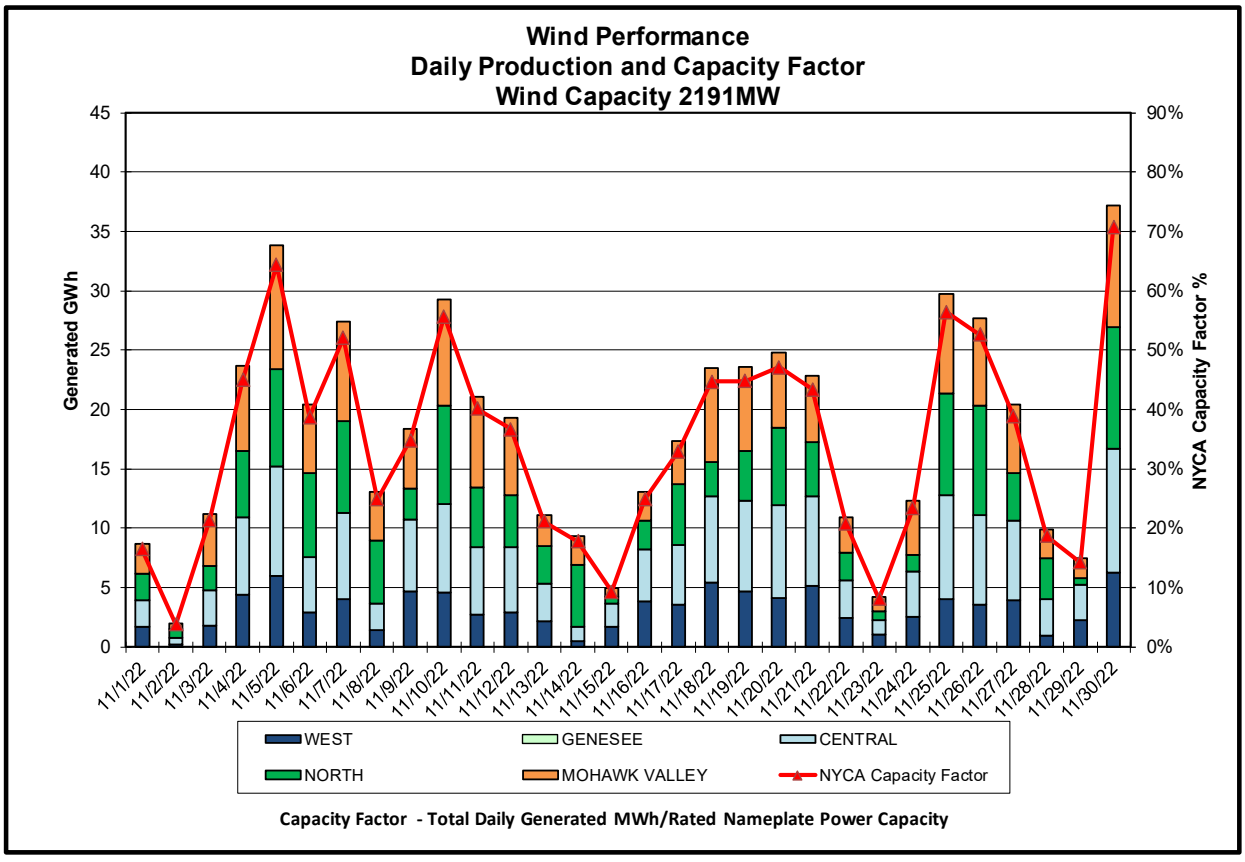


MAE Forecast - Avg |actual wind generation - Day Ahead forecast wind generation| / Wind Capacity
Bias - Avg (actual wind generation - Day Ahead forecast wind generation) / Wind Capacity



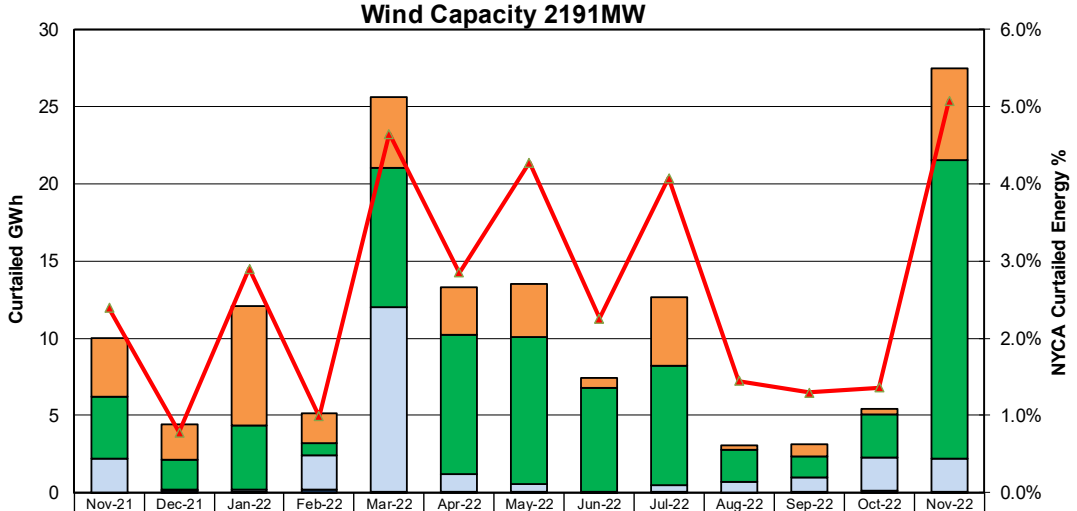
	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
MOHAWK VALLEY	105.3	144.4	107.4	148.7	143.0	141.8	89.5	112.2	85.8	68.8	67.8	115.4	155.0
NORTH	122.5	155.5	110.7	143.4	159.8	139.1	72.3	93.1	93.7	49.5	63.2	91.2	134.6
CENTRAL	113.0	159.2	133.2	153.0	152.5	115.8	92.4	76.4	74.7	57.4	65.3	113.7	154.2
GENESEE	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST	78.5	88.8	73.3	83.2	95.9	70.9	61.6	52.2	53.0	36.8	44.2	83.7	95.4
NYCA Capacity Factor	27%	34%	26%	36%	34%	30%	19%	21%	19%	13%	15%	25%	34%

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



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

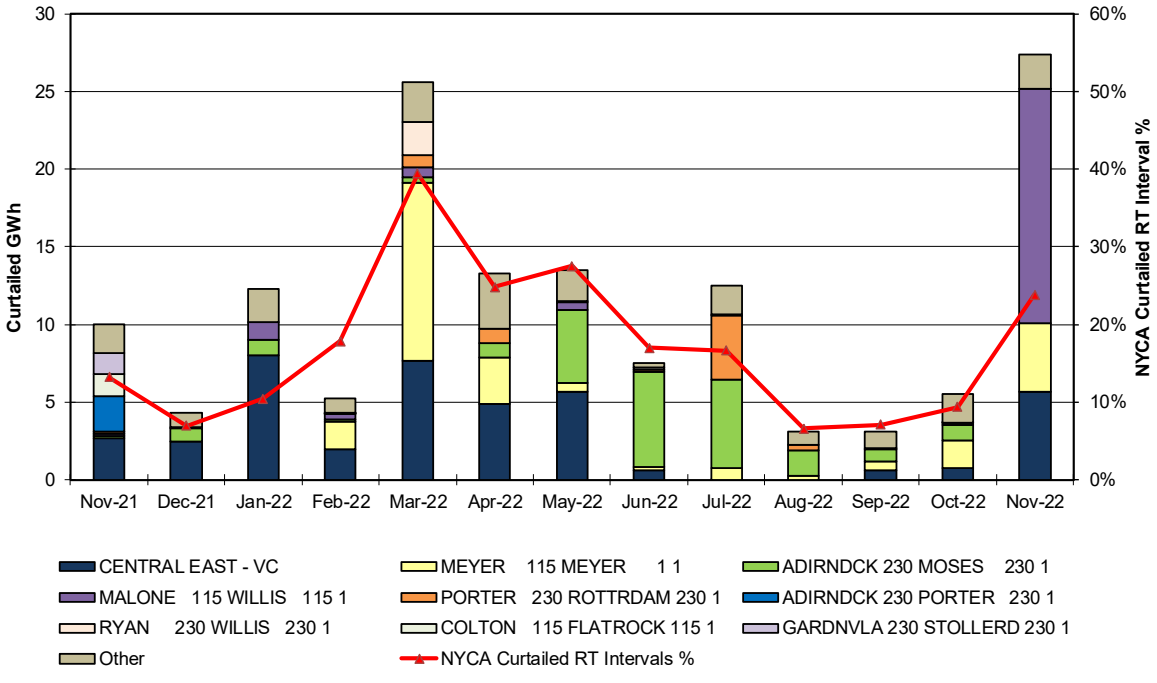
Wind Performance
Monthly Energy Curtailment
Wind Capacity 2191MW



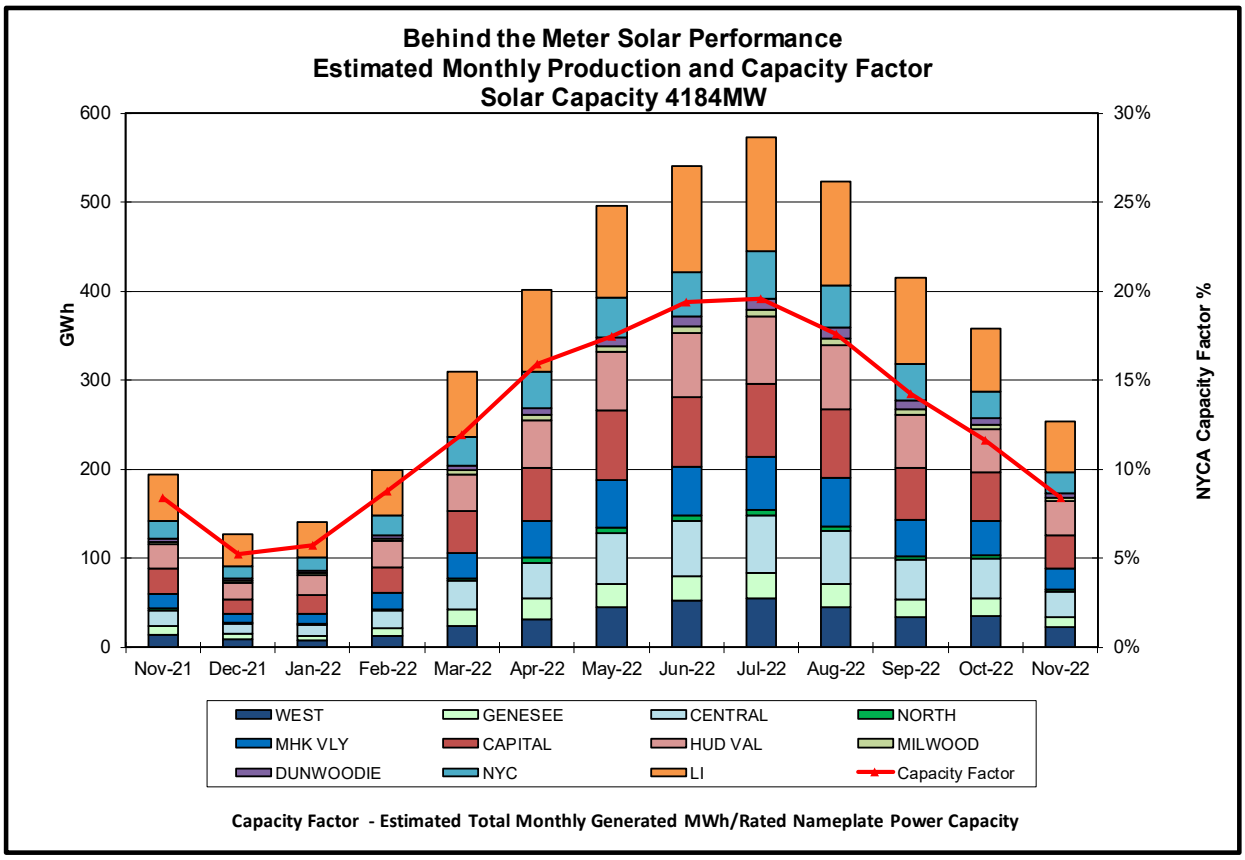
	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
MOHAWK VALLEY	3.75	2.30	7.77	1.91	4.55	3.10	3.49	0.60	4.44	0.31	0.73	0.35	5.95
NORTH	4.02	1.89	4.10	0.78	9.03	9.04	9.50	6.72	7.73	2.11	1.42	2.83	19.31
CENTRAL	2.20	0.12	0.15	2.26	11.99	1.12	0.48	0.08	0.49	0.66	0.92	2.15	2.18
GENESEE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WEST	0.02	0.09	0.07	0.18	0.05	0.07	0.06	0.00	0.03	0.01	0.04	0.11	0.05
NYCA Curtailed %	2.4%	0.8%	2.9%	1.0%	4.6%	2.8%	4.3%	2.3%	4.1%	1.4%	1.3%	1.4%	5.1%

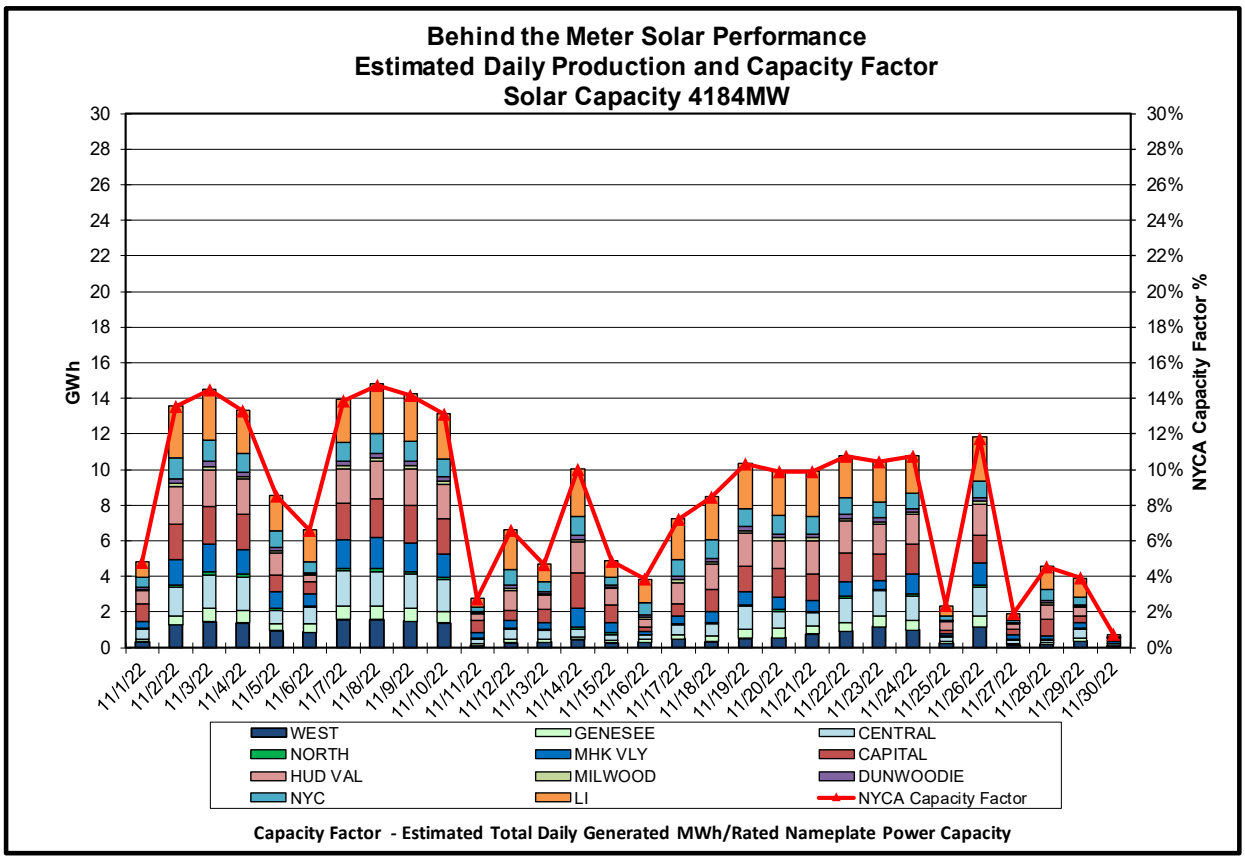
Curtailed GWh - Difference between Real-Time Wind Forecast and Economic Wind Output Limit
Curtailed % - Ratio of Curtailed Energy to Total Production

Wind Performance
Monthly Energy Curtailment by Limiting Constraints



Curtailed GWh - Difference between Real-Time Wind Forecast and Economic Wind Output Limit
Curtailed RT Intervals% - Ratio of the sum of real-time dispatch curtailed intervals to total dispatch intervals


Behind the Meter Solar Performance
Estimated Monthly Production and Capacity Factor
Solar Capacity 4184MW
GWh
NYCA Capacity Factor %
600
500
400
300
200
100
0
30%
25%
20%
15%
10%
5%
0%
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
WEST
GENESEE
CENTRAL
NORTH
MHK VLY
CAPITAL
HUD VAL
MILWOOD
DUNWOODIE
NYC
LI
Capacity Factor
Capacity Factor - Estimated Total Monthly Generated MWh/Rated Nameplate Power Capacity


Behind the Meter Solar Performance
Estimated Daily Production and Capacity Factor
Solar Capacity 4184MW
GWh
NYCA Capacity Factor %
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
30%
28%
26%
24%
22%
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
11/1/22
11/2/22
11/3/22
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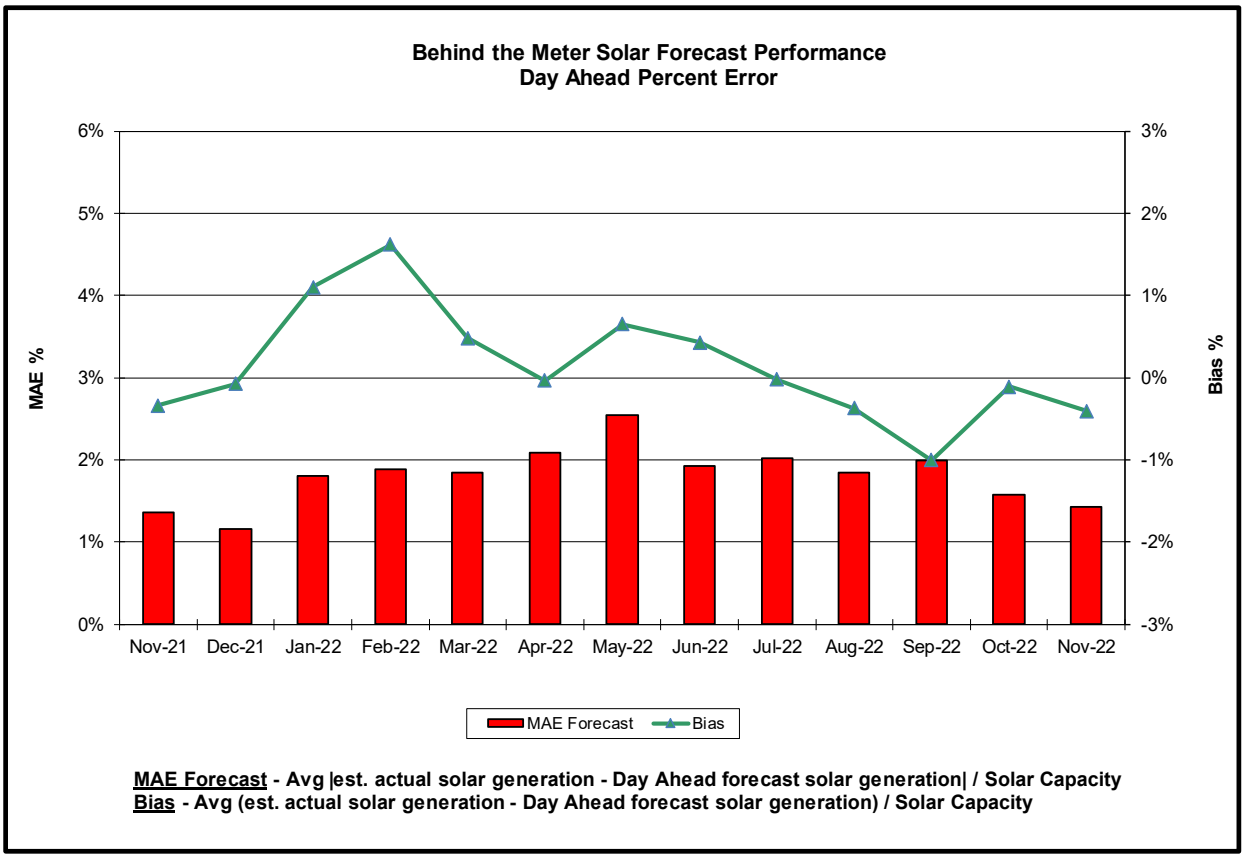
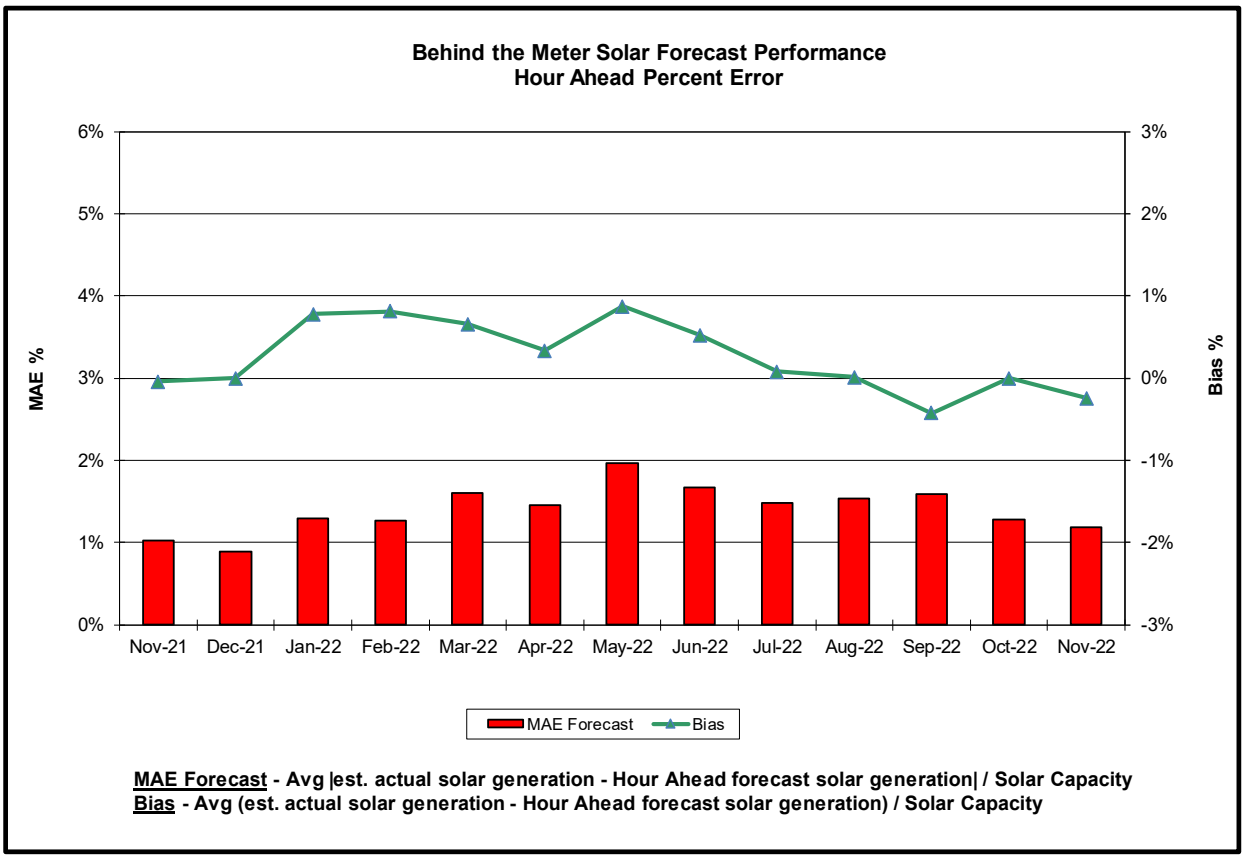
11/26/22
11/27/22
11/28/22
11/29/22
11/30/22
WEST
GENESEE
CENTRAL
NORTH
MHK VLY
CAPITAL
HUD VAL
MILWOOD
DUNWOODIE
NYC
LI
NYCA Capacity Factor
Capacity Factor - Estimated Total Daily Generated MWh/Rated Nameplate Power Capacity

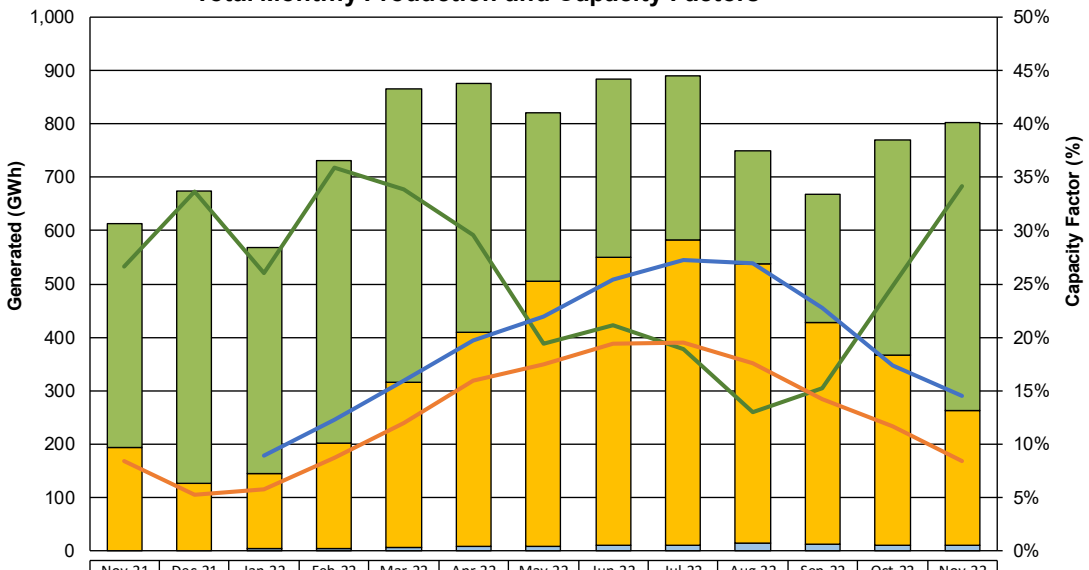


MAE Forecast - Avg |est. actual solar generation - Day Ahead forecast solar generation| / Solar Capacity
Bias - Avg (est. actual solar generation - Day Ahead forecast solar generation) / Solar Capacity



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

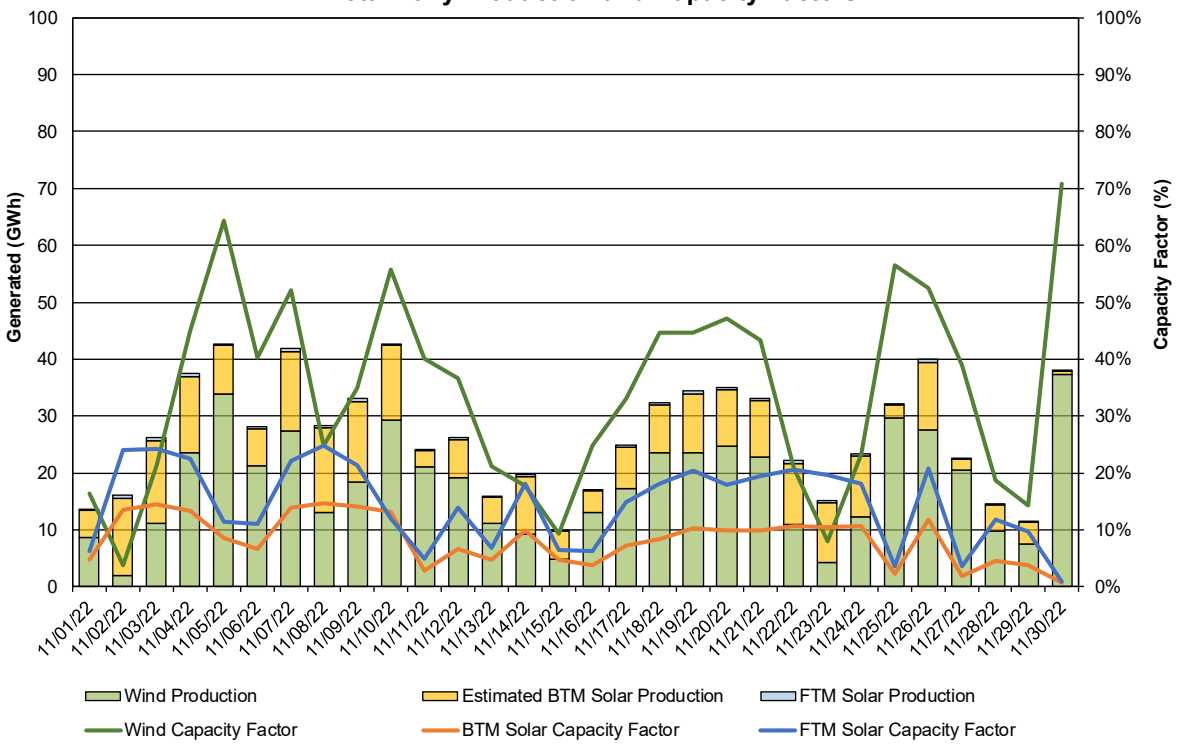
Net Wind and Solar Performance
Total Monthly Production and Capacity Factors



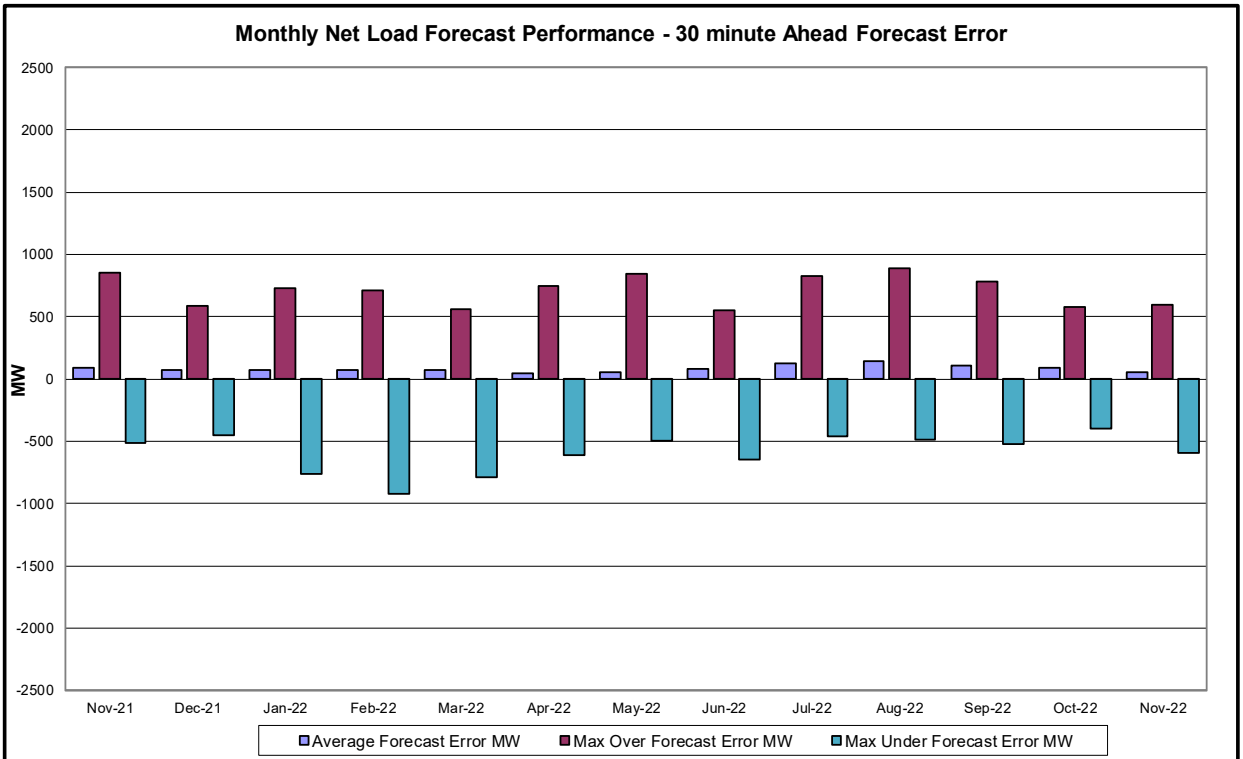
	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
Wind	419	548	425	528	551	468	316	334	307	212	240	404	539
Estimated BTM Solar	194	127	141	198	309	402	496	540	572	523	415	357	254
FTM Solar			3	4	6	7	9	9	11	15	12	10	10
Wind Capacity Factor	27%	34%	26%	36%	34%	30%	19%	21%	19%	13%	15%	25%	34%
BTM Solar Capacity Factor	8%	5%	6%	9%	12%	16%	17%	19%	20%	18%	14%	12%	8%
FTM Solar Capacity Factor			9%	12%	16%	20%	22%	25%	27%	27%	23%	17%	15%

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

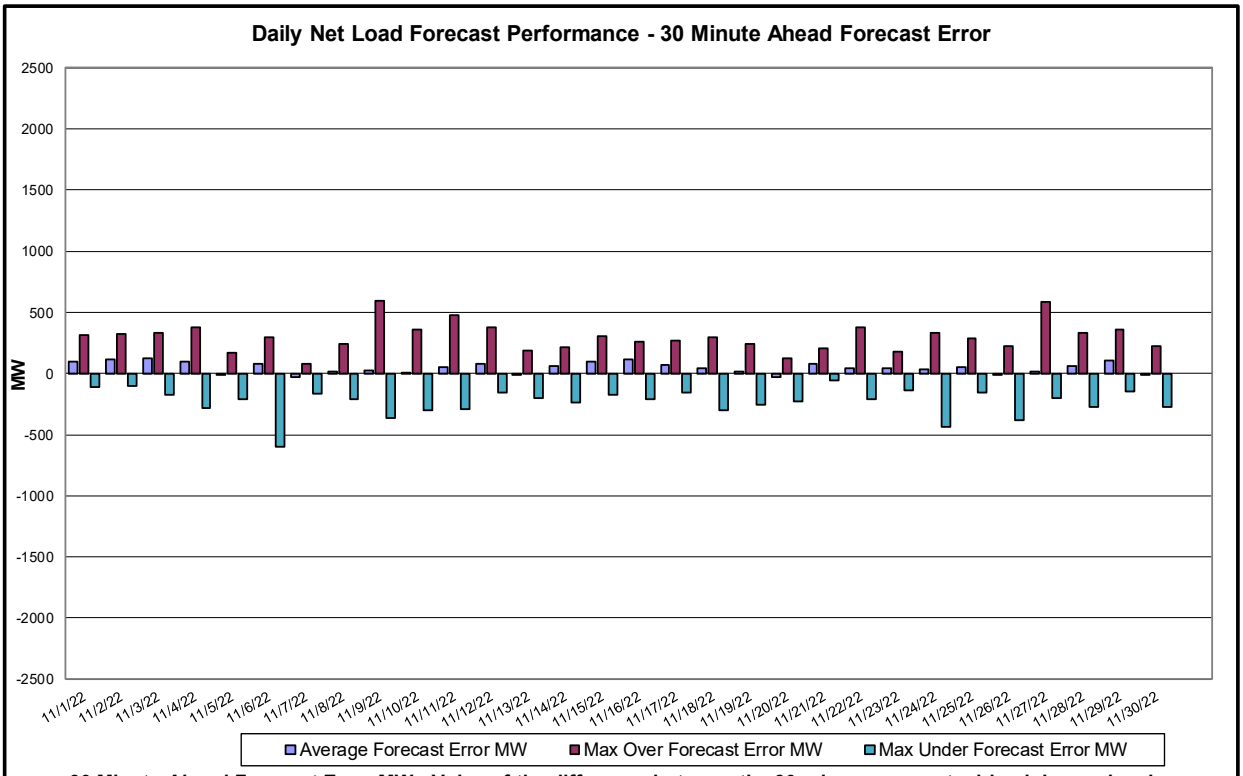
Net Wind and Solar Performance
Total Daily Production and Capacity Factors



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



30 minute Ahead Forecast Error MW- Value of the difference between the 30 min average actual load demand and the average 30 min ahead forecast load demand netted with the difference between the 30 min average actual wind production and the average 30 min ahead forecast wind.



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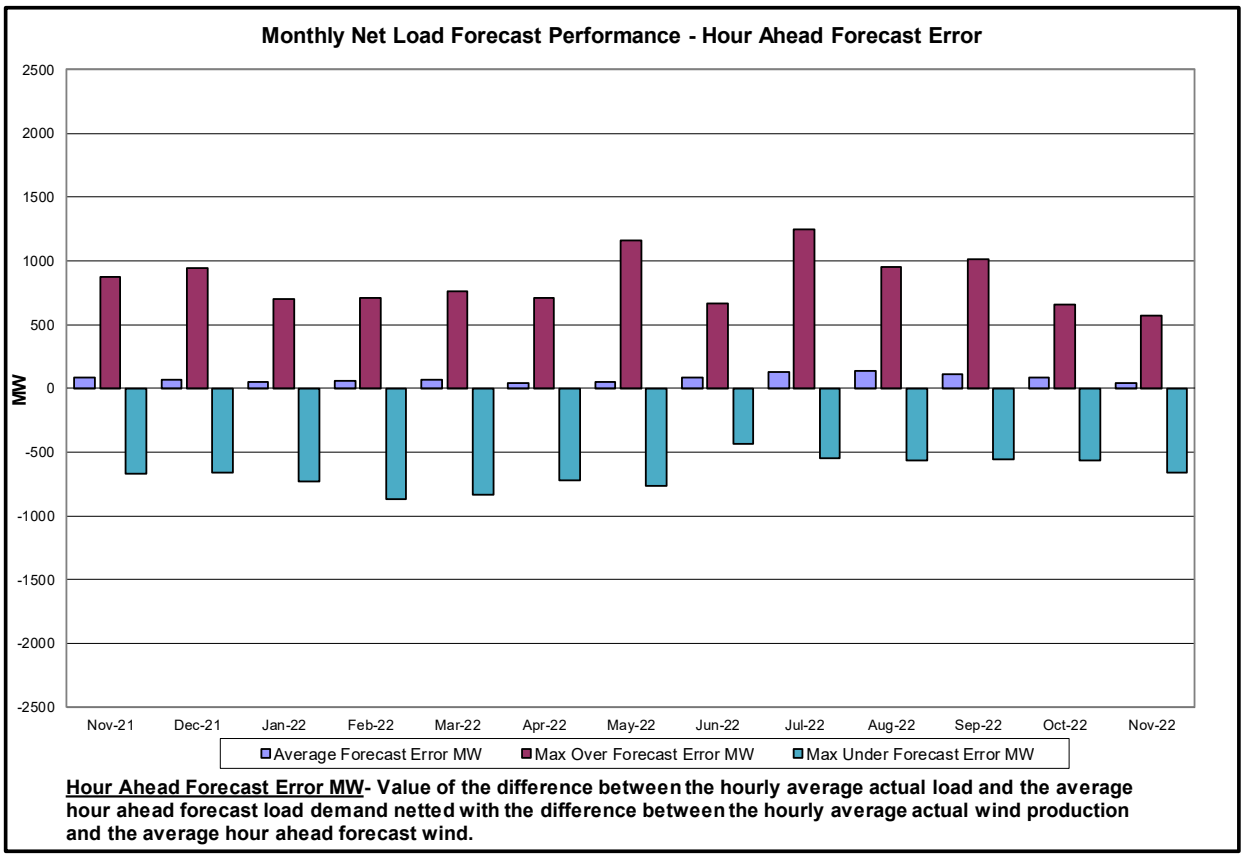
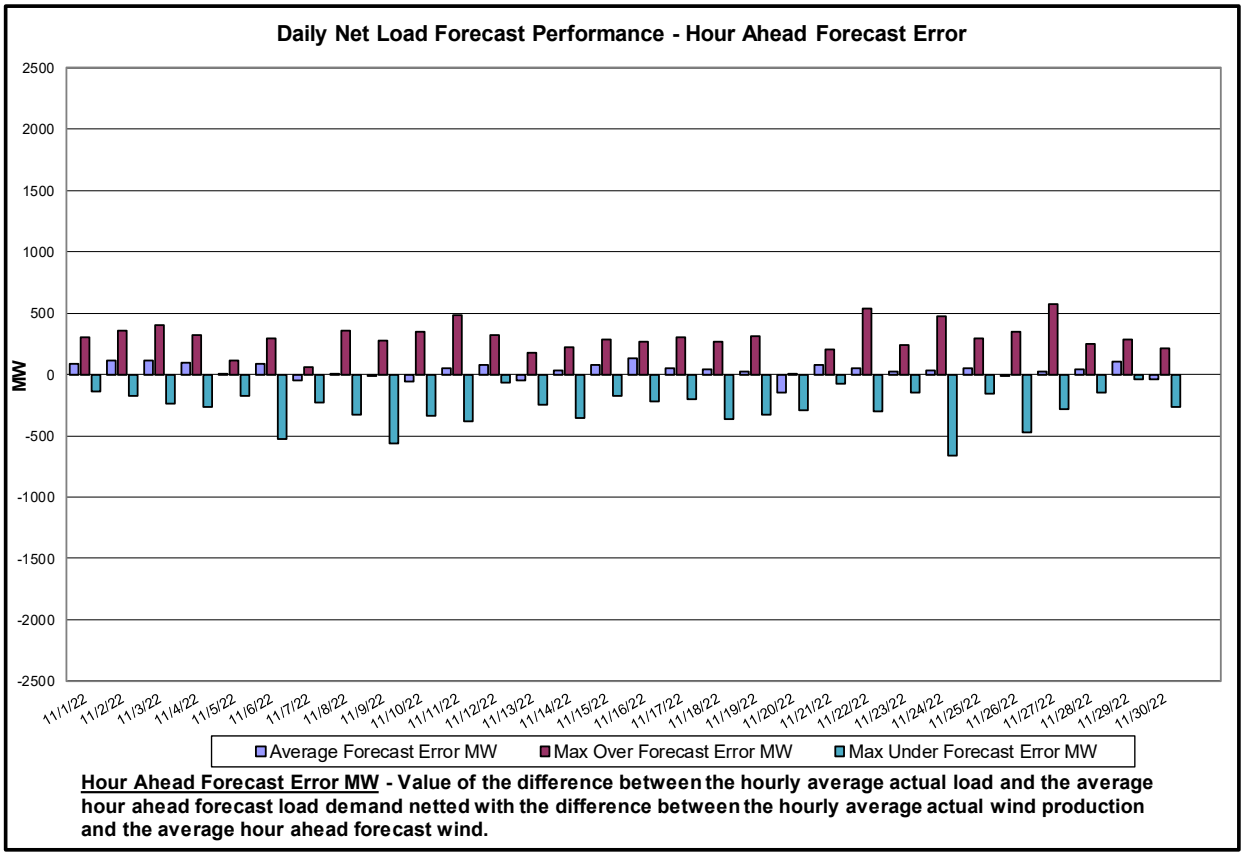
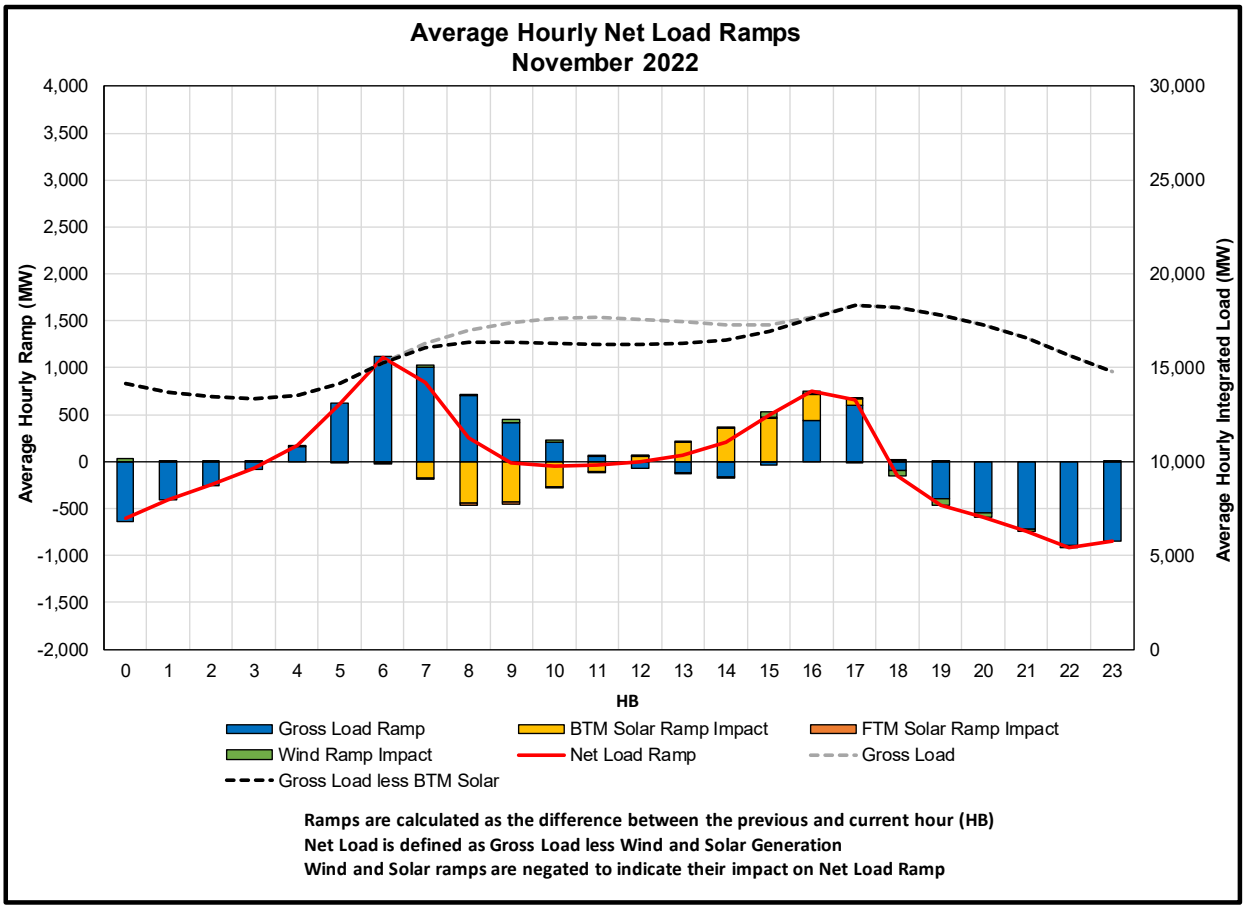
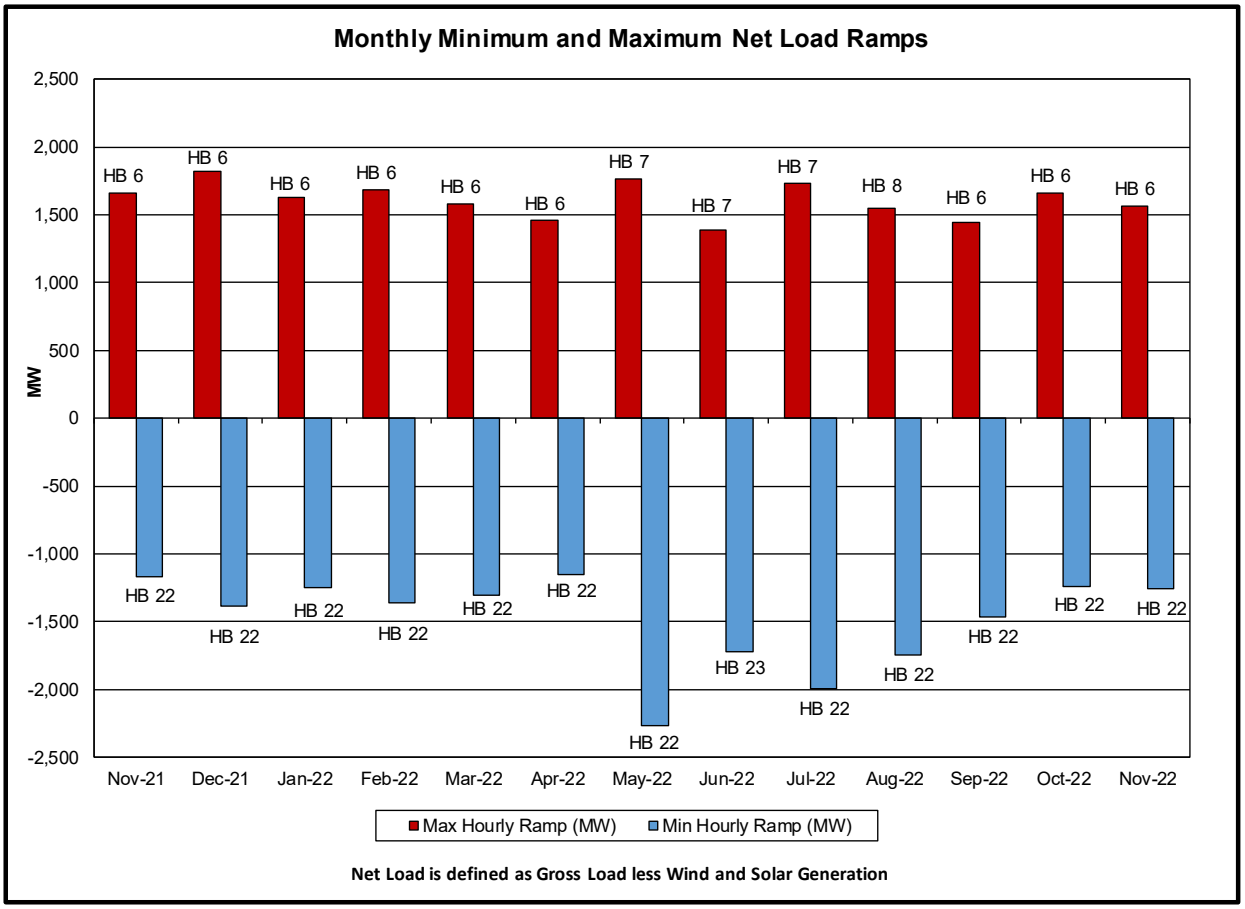


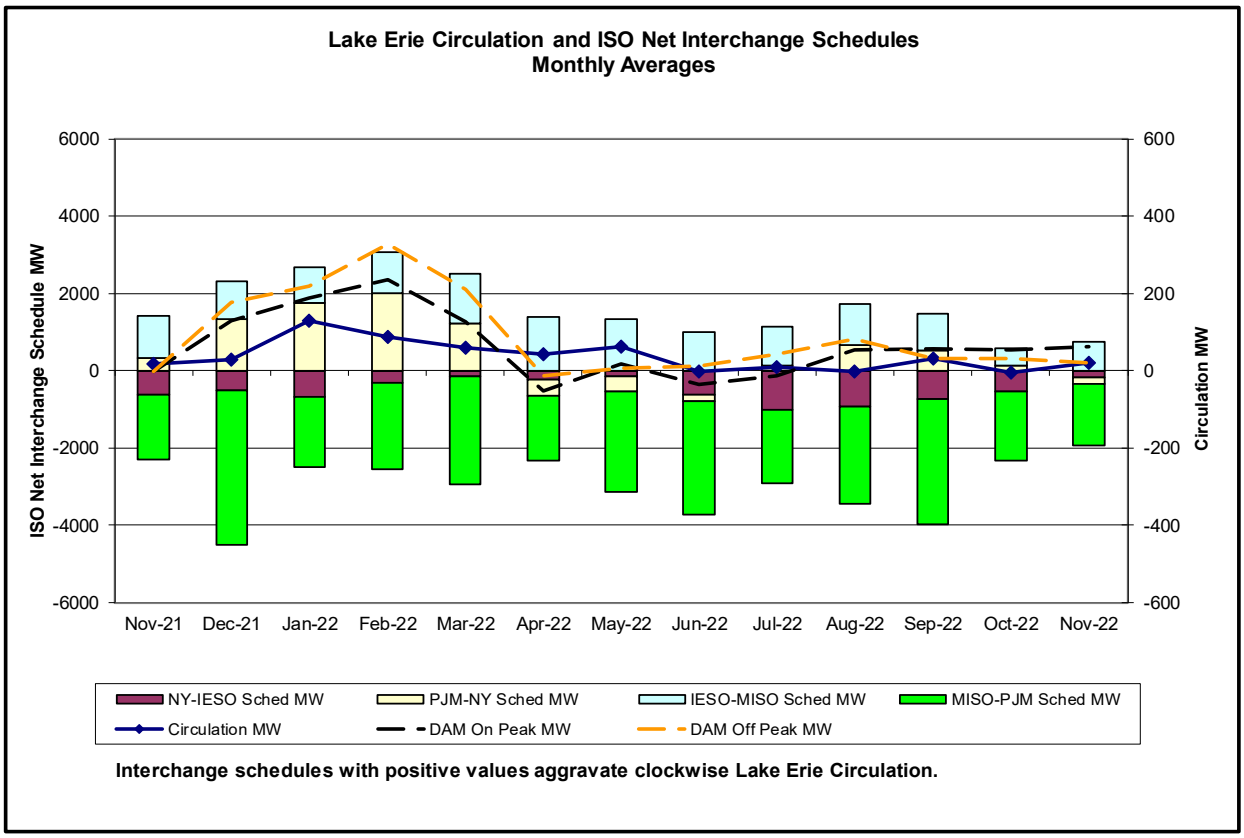
Hour Ahead Forecast Error MW- Value of the difference between the hourly average actual load and the average hour ahead forecast load demand netted with the difference between the hourly average actual wind production and the average hour ahead forecast wind.



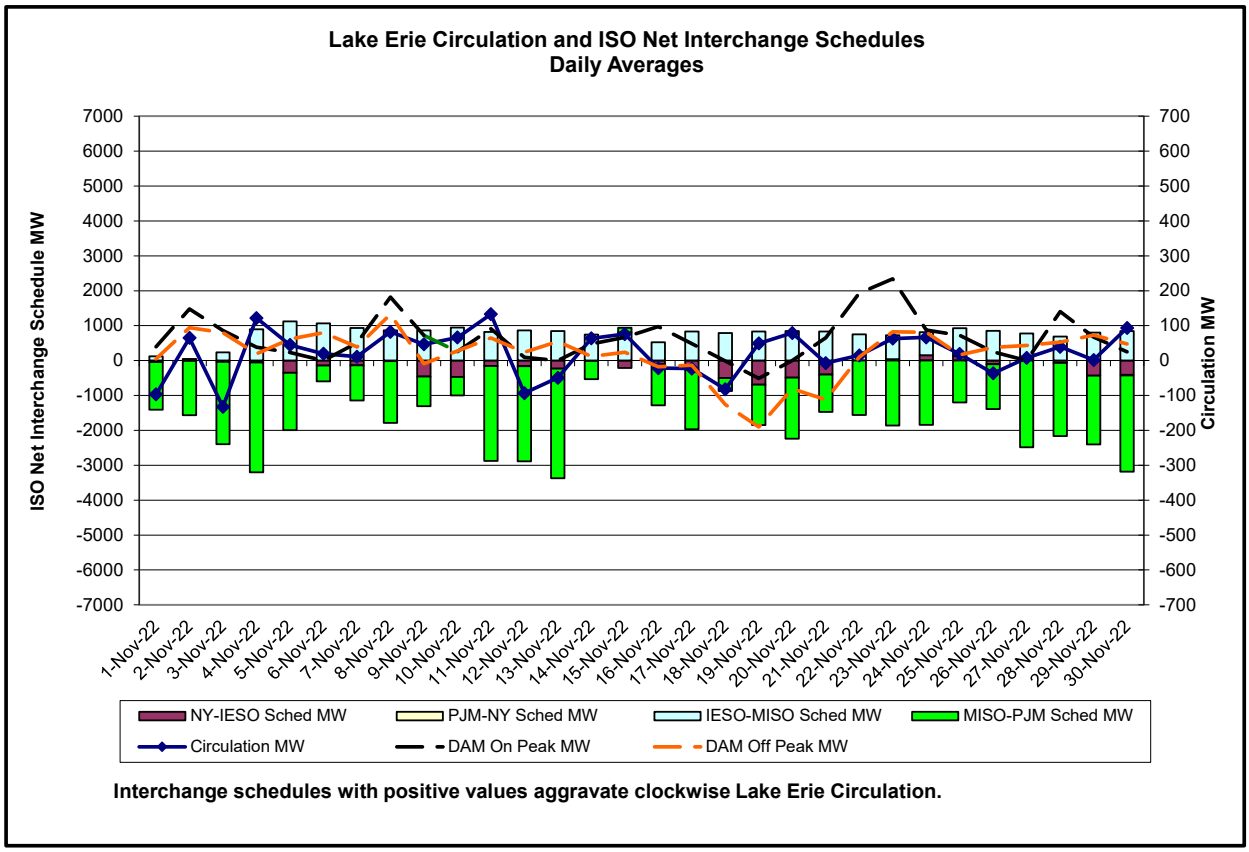
Hour Ahead Forecast Error MW - Value of the difference between the hourly average actual load and the average hour ahead forecast load demand netted with the difference between the hourly average actual wind production and the average hour ahead forecast wind.


Average Hourly Net Load Ramps
November 2022
Average Hourly Ramp (MW)
Average Hourly Integrated Load (MW)
HB
Gross Load Ramp
BTM Solar Ramp Impact
FTM Solar Ramp Impact
Wind Ramp Impact
Net Load Ramp
Gross Load
Gross Load less BTM Solar
Ramps are calculated as the difference between the previous and current hour (HB)
Net Load is defined as Gross Load less Wind and Solar Generation
Wind and Solar ramps are negated to indicate their impact on Net Load Ramp


Monthly Minimum and Maximum Net Load Ramps
MW
Nov-21 HB 6 HB 22
Dec-21 HB 6 HB 22
Jan-22 HB 6 HB 22
Feb-22 HB 6 HB 22
Mar-22 HB 6 HB 22
Apr-22 HB 6 HB 22
May-22 HB 7 HB 22
Jun-22 HB 7 HB 23
Jul-22 HB 7 HB 22
Aug-22 HB 8 HB 22
Sep-22 HB 6 HB 22
Oct-22 HB 6 HB 22
Nov-22 HB 6 HB 22
Max Hourly Ramp (MW)
Min Hourly Ramp (MW)
Net Load is defined as Gross Load less Wind and Solar Generation



Interchange schedules with positive values aggravate clockwise Lake Erie Circulation.



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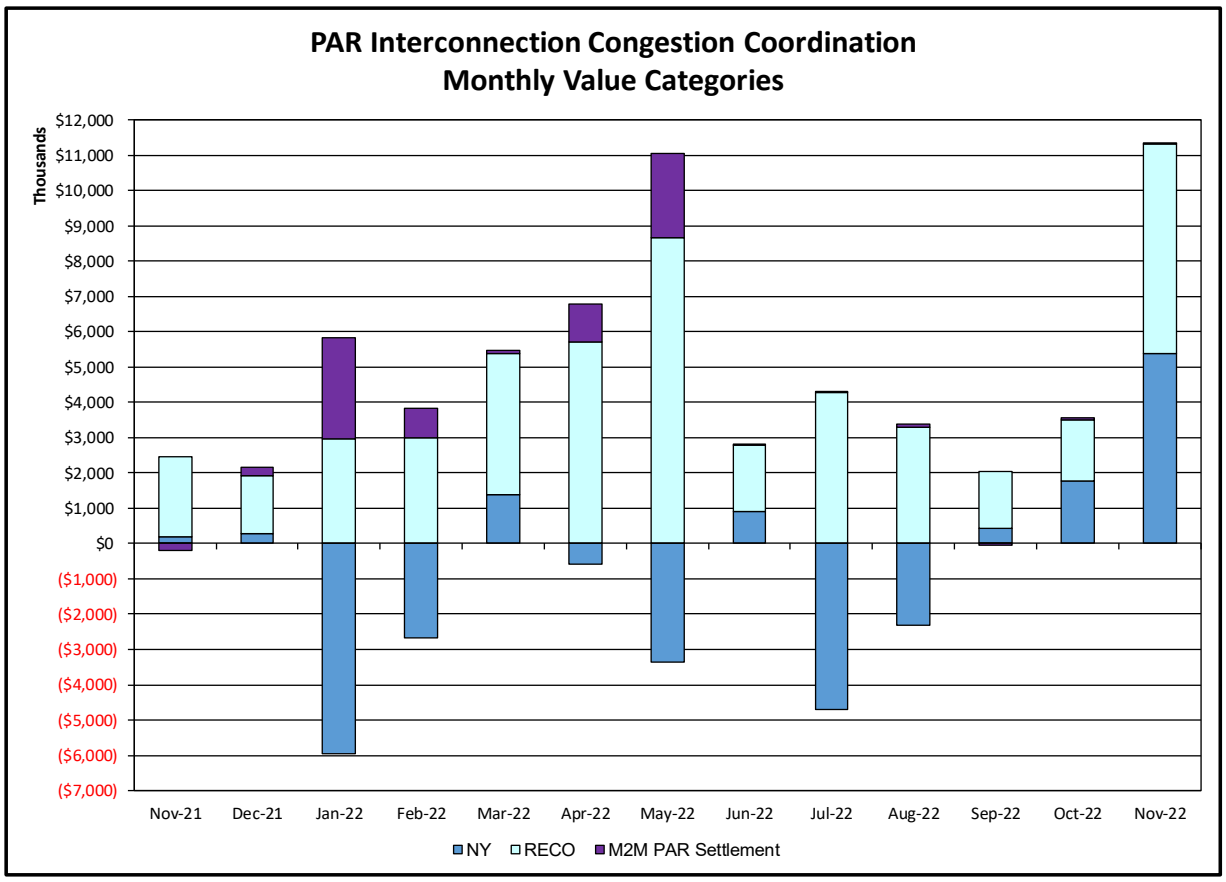
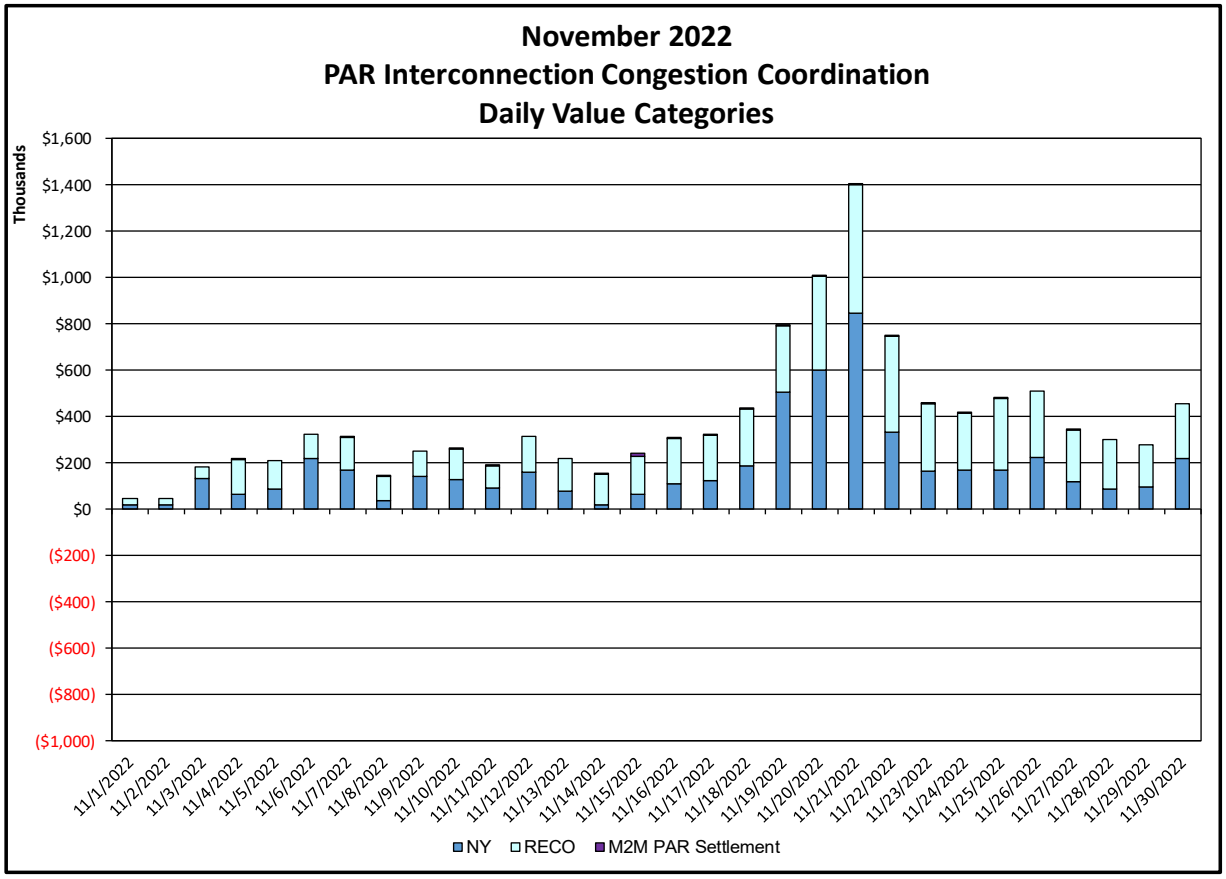
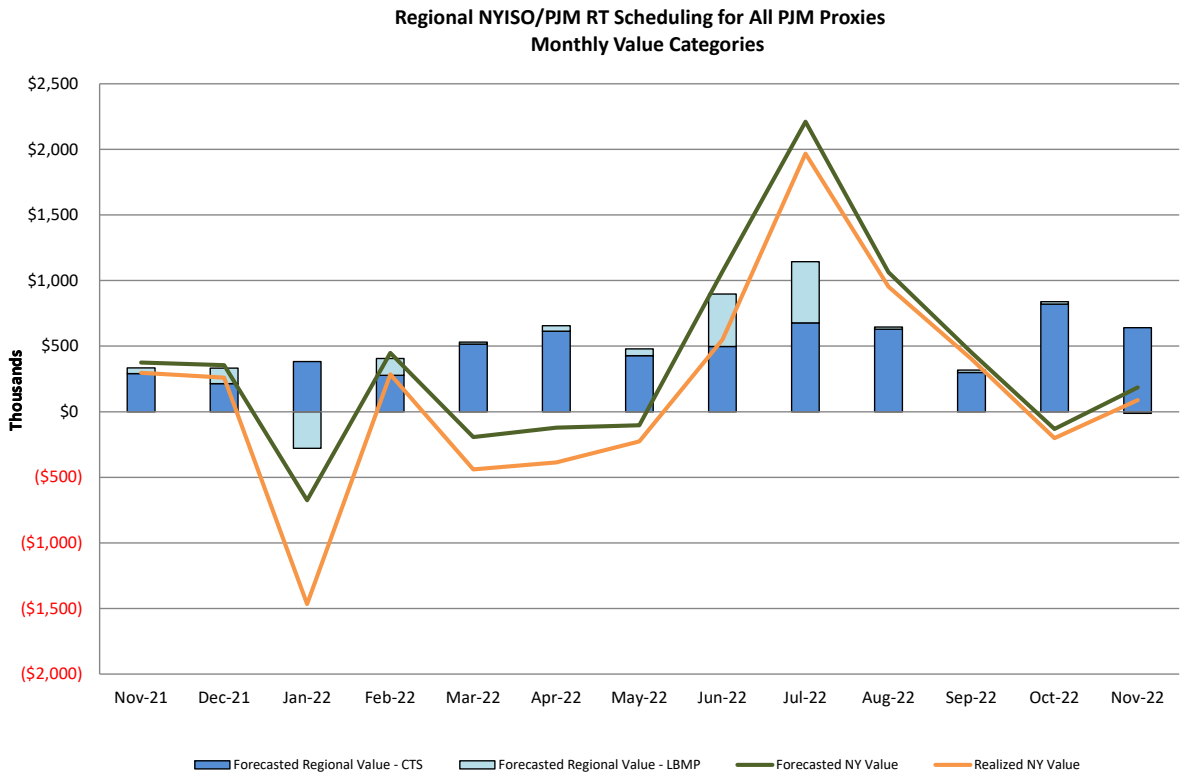
Broader Regional Market Performance Metrics



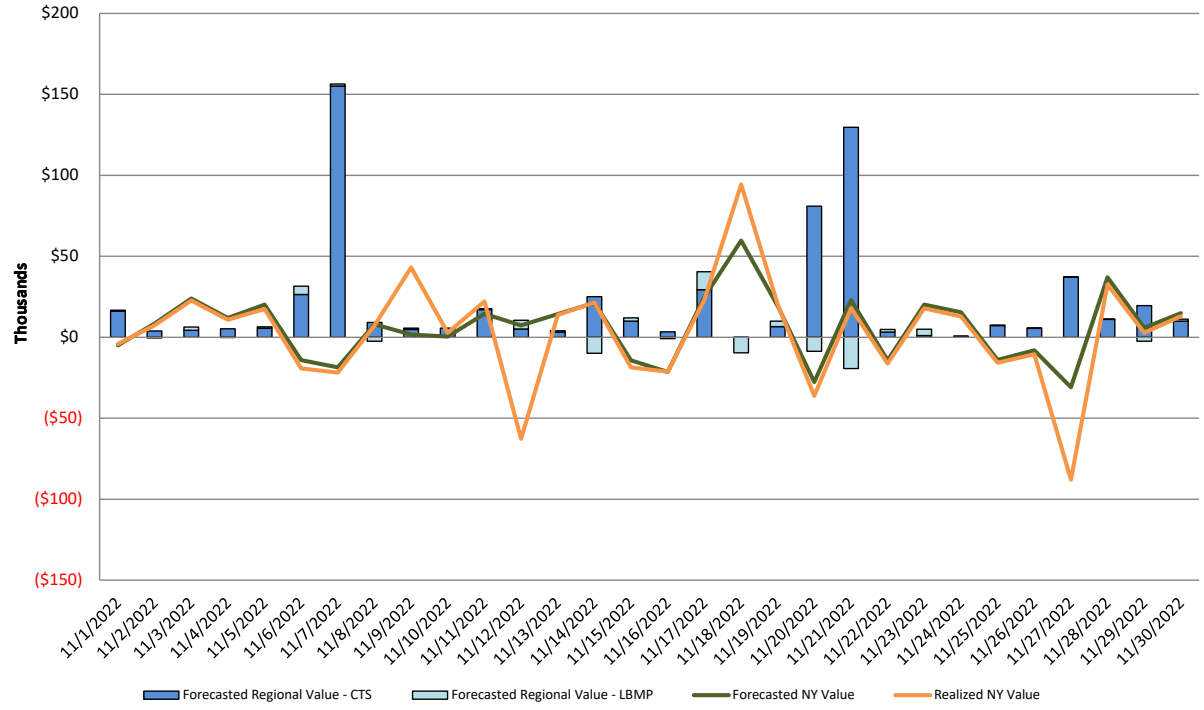


PAR Interconnection Congestion Coordination

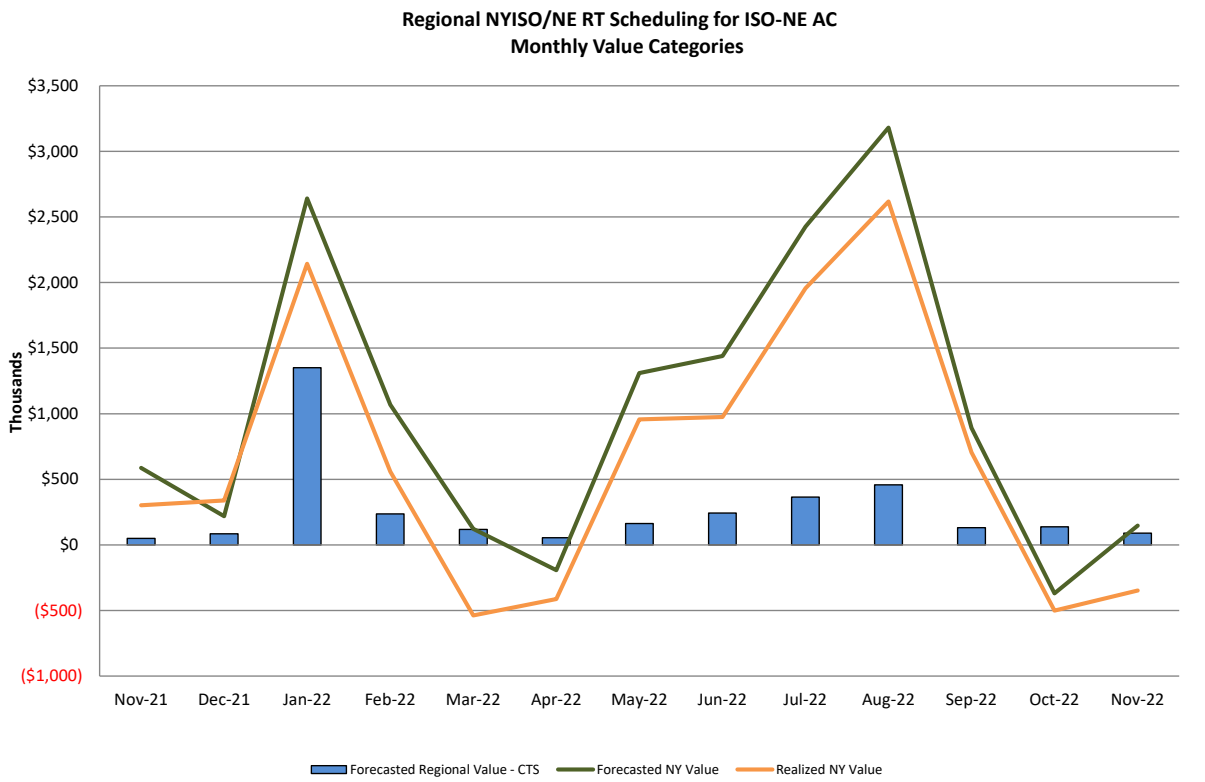
Category	*Description*
NY	Represents the value NY realizes from Market-to-Market PAR Coordination when experiencing congestion. This is the estimated savings to NY for additional deliveries into NY
RECO	Represents the value of PJM's obligation to deliver 80% of service to RECO load over Ramapo 5018. 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.



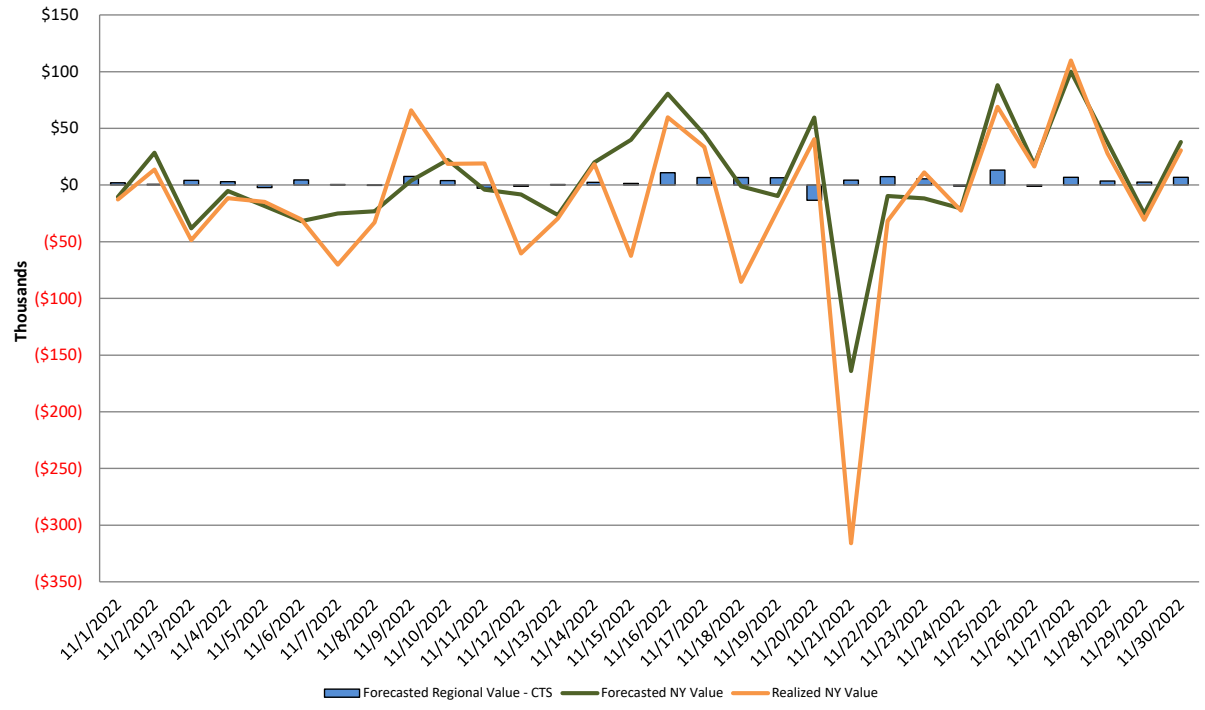
Forecasted Regional Value - CTS: Regional production cost savings for NY and PJM associated with intra-hour CTS transaction energy schedules using RTC/ITSCED prices.
Forecasted Regional Value - LBMP: Regional production cost savings for NY and PJM associated with intra-hour LBMP transaction energy schedules using RTC/ITSCED prices.
Forecasted NY Value: NY production cost savings associated with both CTS and LBMP transaction energy schedules using RTC prices.
Realized NY Value: NY production cost savings associated with both CTS and LBMP transaction energy schedules using RTD prices.



Forecasted Regional Value - CTS: Regional production cost savings for NY and PJM associated with intra-hour CTS transaction energy schedules using RTC/ITSCED prices.
Forecasted Regional Value - LBMP: Regional production cost savings for NY and PJM associated with intra-hour LBMP transaction energy schedules using RTC/ITSCED prices.
Forecasted NY Value: NY production cost savings associated with both CTS and LBMP transaction energy schedules using RTC prices.
Realized NY Value: NY production cost savings associated with both CTS and LBMP transaction energy schedules using RTD prices.

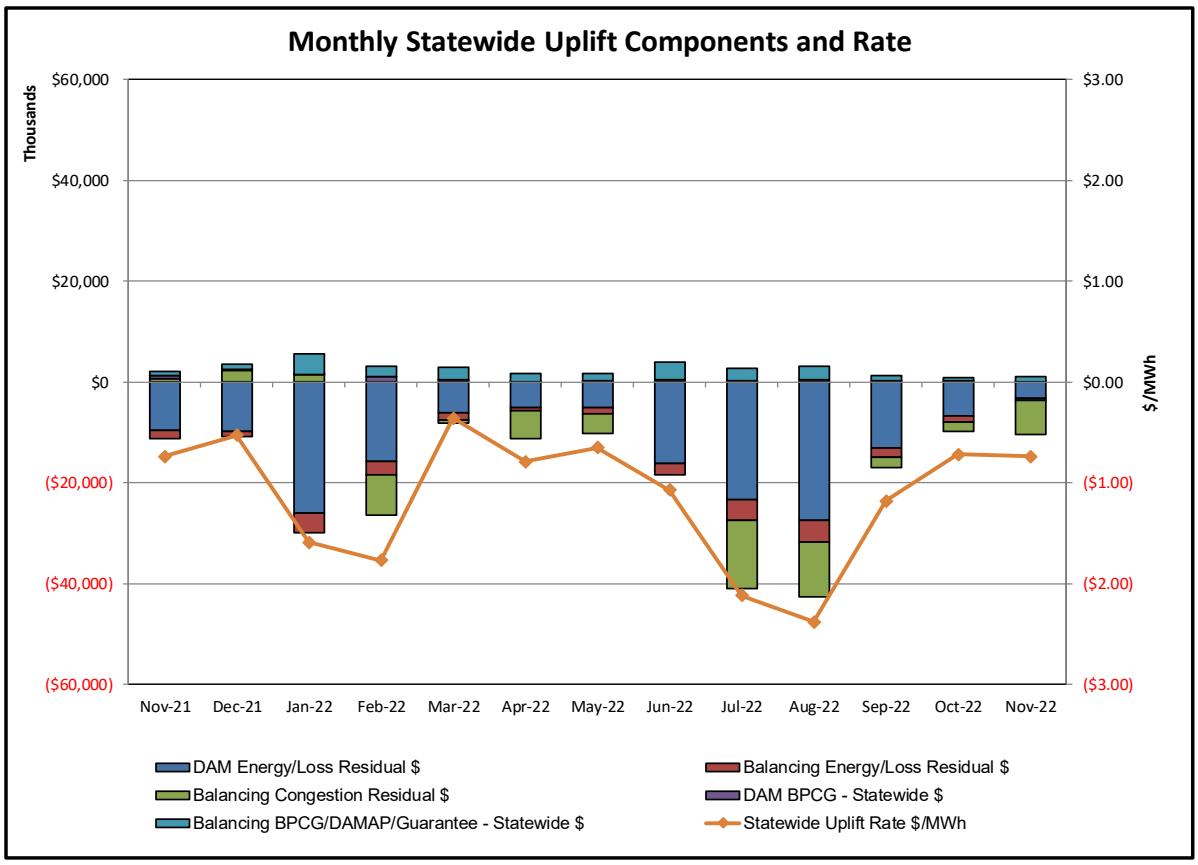


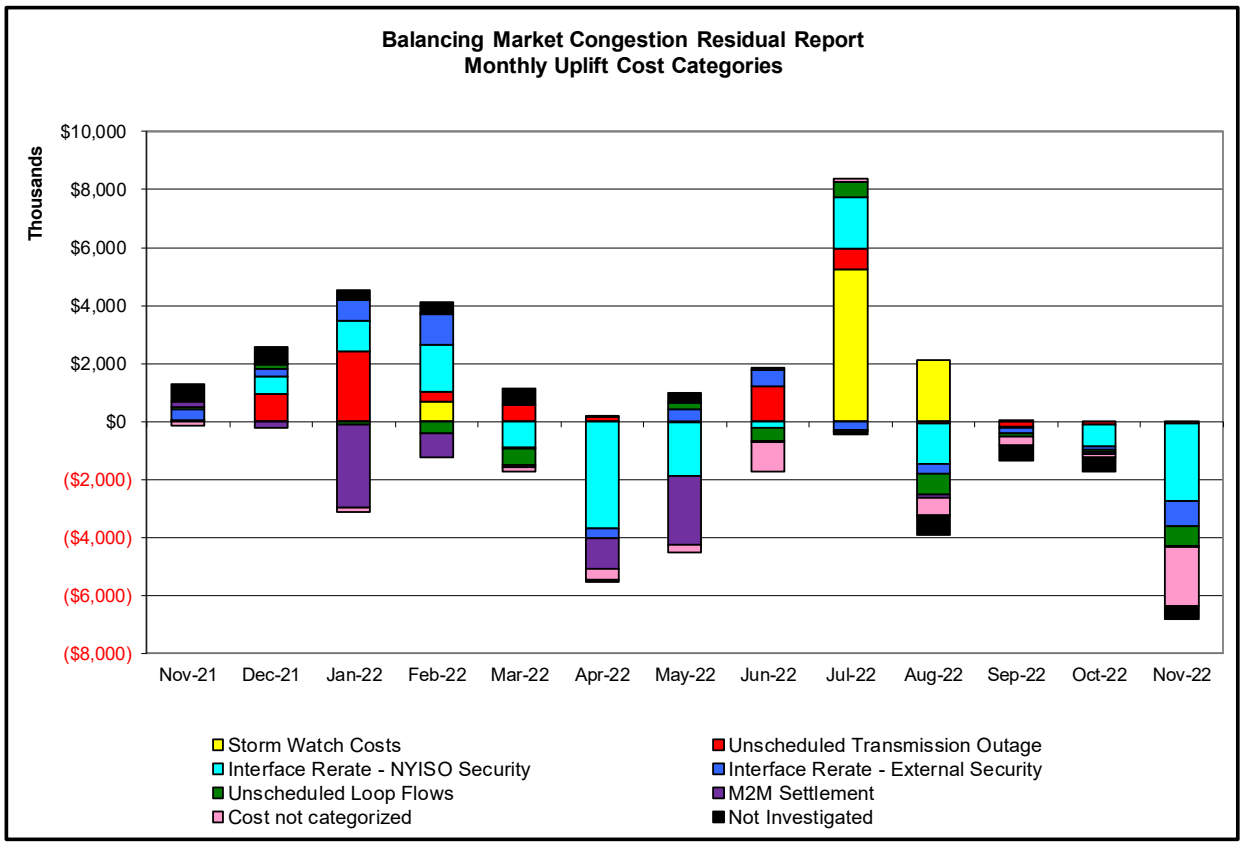
Forecasted Regional Value - CTS: Regional production cost savings for NY and NE associated with intra-hour CTS transaction energy schedules using RTC prices and NE forecasted prices.
Forecasted NY Value: NY production cost savings associated with CTS transaction energy schedules using RTC prices.
Realized NY Value: NY production cost savings associated with CTS transaction energy schedules using RTD prices.

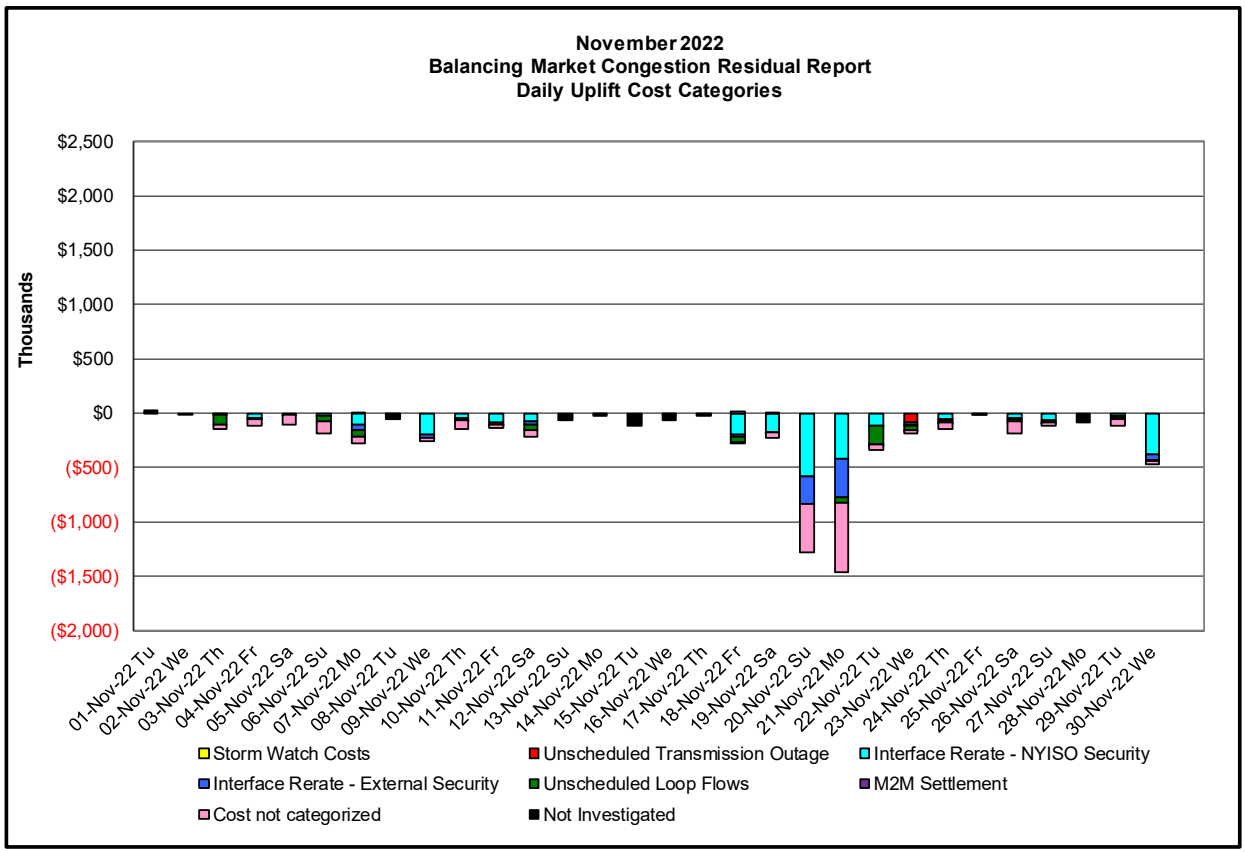


Forecasted Regional Value - CTS: Regional production cost savings for NY and NE associated with intra-hour CTS transaction energy schedules using RTC prices and NE forecasted prices.
Forecasted NY Value: NY production cost savings associated with CTS transaction energy schedules using RTC prices.
Realized NY Value: NY production cost savings associated with CTS transaction energy schedules using RTD prices.

Market Performance Metrics




Balancing Market Congestion Residual Report
Monthly Uplift Cost Categories
Thousands
$10,000
$8,000
$6,000
$4,000
$2,000
$0
($2,000)
($4,000)
($6,000)
($8,000)
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Storm Watch Costs
Unscheduled Transmission Outage
Interface Rerate - NYISO Security
Interface Rerate - External Security
Unscheduled Loop Flows
M2M Settlement
Cost not categorized
Not Investigated


November 2022
Balancing Market Congestion Residual Report
Daily Uplift Cost Categories
Thousands
$2,500
$2,000
$1,500
$1,000
$500
$0
($500)
($1,000)
($1,500)
($2,000)
01-Nov-22 Tu
02-Nov-22 We
03-Nov-22 Th
04-Nov-22 Fr
05-Nov-22 Sa
06-Nov-22 Su
07-Nov-22 Mo
08-Nov-22 Tu
09-Nov-22 We
10-Nov-22 Th
11-Nov-22 Fr
12-Nov-22 Sa
13-Nov-22 Su
14-Nov-22 Mo
15-Nov-22 Tu
16-Nov-22 We
17-Nov-22 Th
18-Nov-22 Fr
19-Nov-22 Sa
20-Nov-22 Su
21-Nov-22 Mo
22-Nov-22 Tu
23-Nov-22 We
24-Nov-22 Th
25-Nov-22 Fr
26-Nov-22 Sa
27-Nov-22 Su
28-Nov-22 Mo
29-Nov-22 Tu
30-Nov-22 We
Storm Watch Costs
Unscheduled Transmission Outage
Interface Rerate - NYISO Security
Interface Rerate - External Security
Unscheduled Loop Flows
M2M Settlement
Cost not categorized
Not Investigated

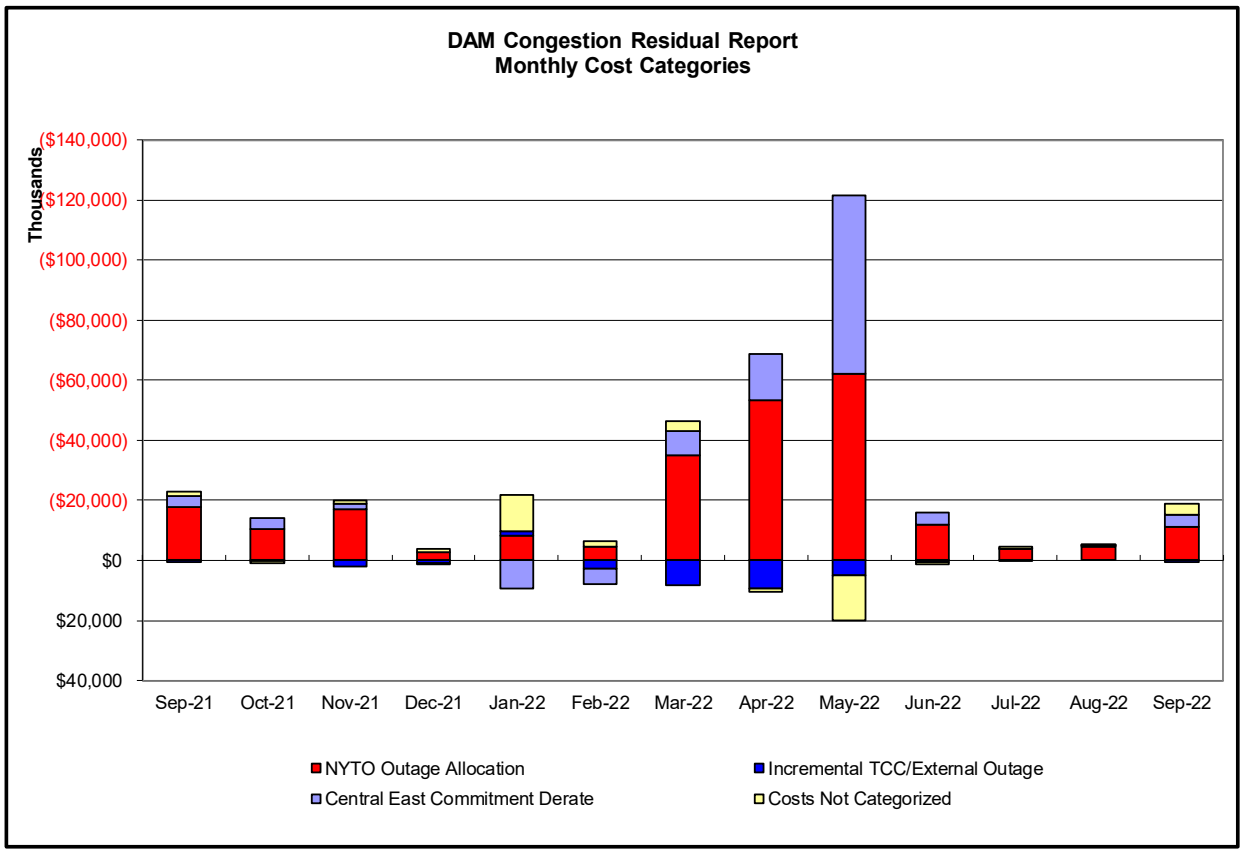
Day's investigated in November: 3,4,5,6,7,9,10,11,12,18,19,20,21,22,23,24,26,27,29,30		
Event	Description	November Dates
	Early return to service Ramapo-Buchanan 345kV (#Y94)	23
	Forced outage Gowanus-Greenwood 138KV (#42231)	7
	Derate Central East	7,19,21,24
	Derate Foxhills-Willowbrook 138kV (#29231) I/o FOXHLLS-WILLWBRK_138_29212&BK2	7
	Derate Lake Success-Shore Rd. 138kV (#368)	7
	Derate Malone-Willis 115kV (1-910) I/o MOSES___-WILLIS___230_MW1	7
	NYCA DNI Ramp Limit	5,7,9,11,12,18-22,24,27,30
	Uprate Central East	3-7,9-12,18-24,26,27,29,30
	Uprate CricketValley-PleasantValley 345kV (#F83) I/o CricketValley-PleasantValley 345kV (#F84)	19
	Uprate Motthaven-Dunwoodie 345kV (#72) I/o $SCB:W49TH_ST(6):M55&BK5&BK13	19
	Uprate Northport-Pilgrim 138kV (#672) I/o BUS:NRTHPRT 677 & PS2 & G2	9
	IESO_AC ACTIVE DNI Ramp Limit	4,9,18,21
	NE_AC - NY Scheduling Limit	9,12,18,20,21
	NE_AC ACTIVE DNI Ramp Limit	3,7,10,12,19-24,26,29,30
	NE_NNC1385 - NY Scheduling Limit	24
	PJM_AC ACTIVE DNI Ramp Limit	6,22,23,26
	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East	3,5-7,10-12,18-24,26,27,29,30
	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West	7,10,11,18,21,22,29,30

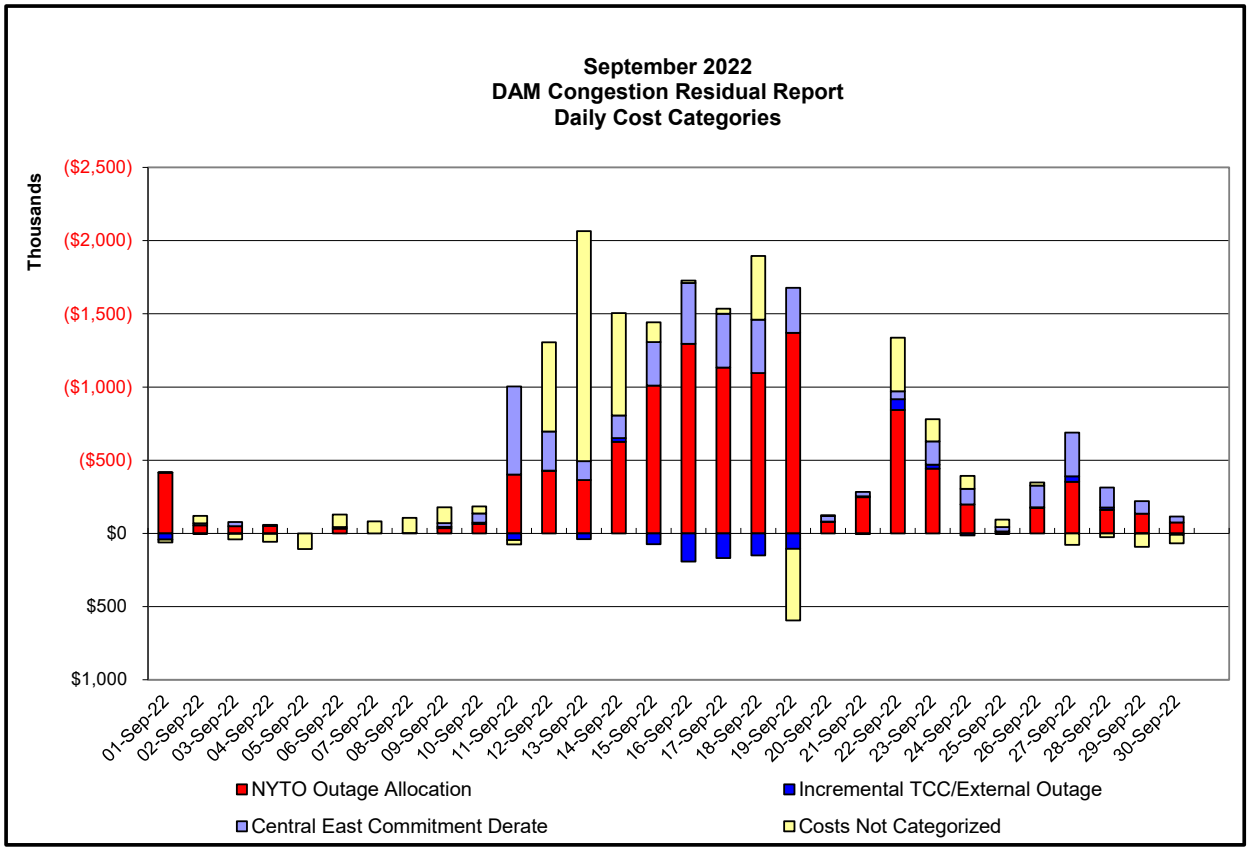
Real-Time Balancing Market Congestion Residual (Uplift Cost) Categories

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**	

Monthly Balancing Market Congestion Report Assumptions/Notes

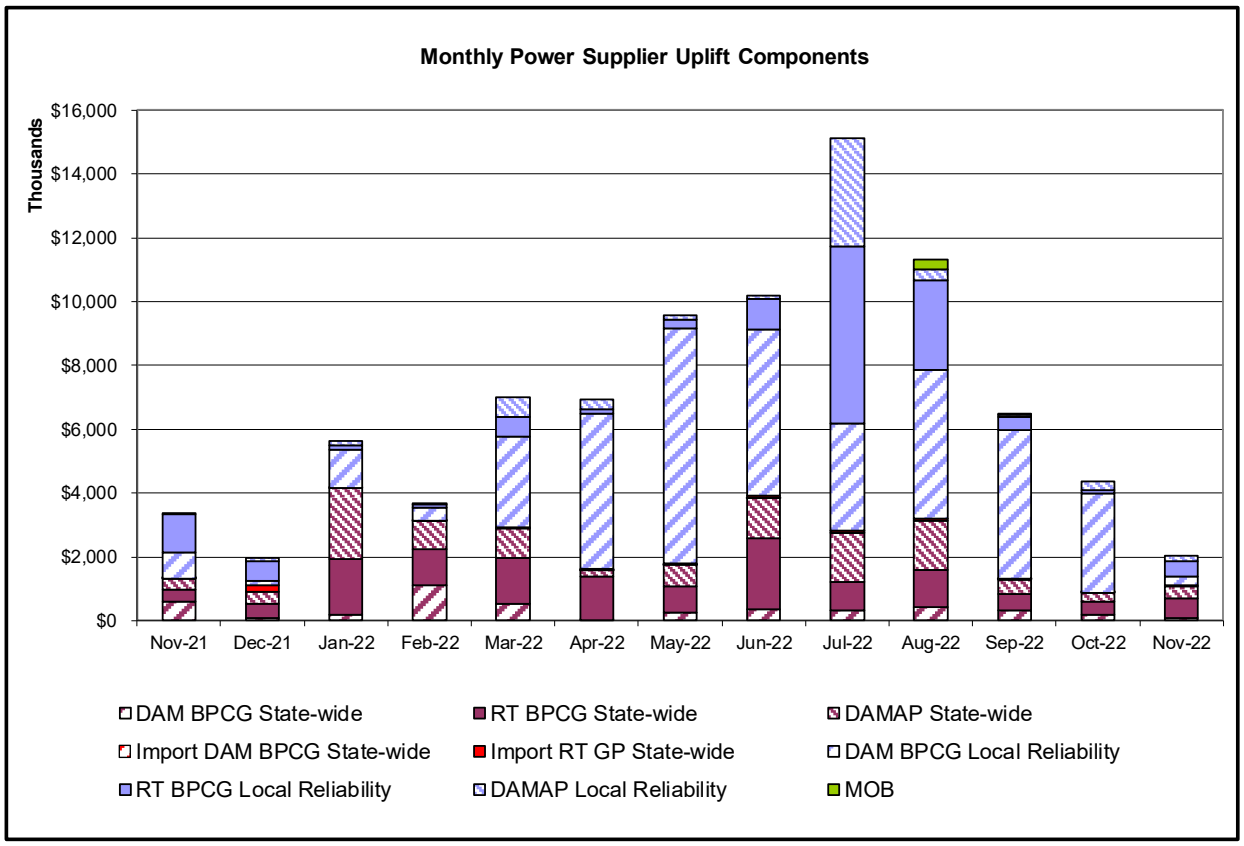
1) Storm Watch Costs are identified as daily total uplift costs
2) Days with a value of BMCR less M2M Settlement of $100K/HR, shortfall of $200K/Day or more, or surplus of $100K/Day or more are investigated.
3) Uplift costs associated with multiple event types are apportioned equally by hour

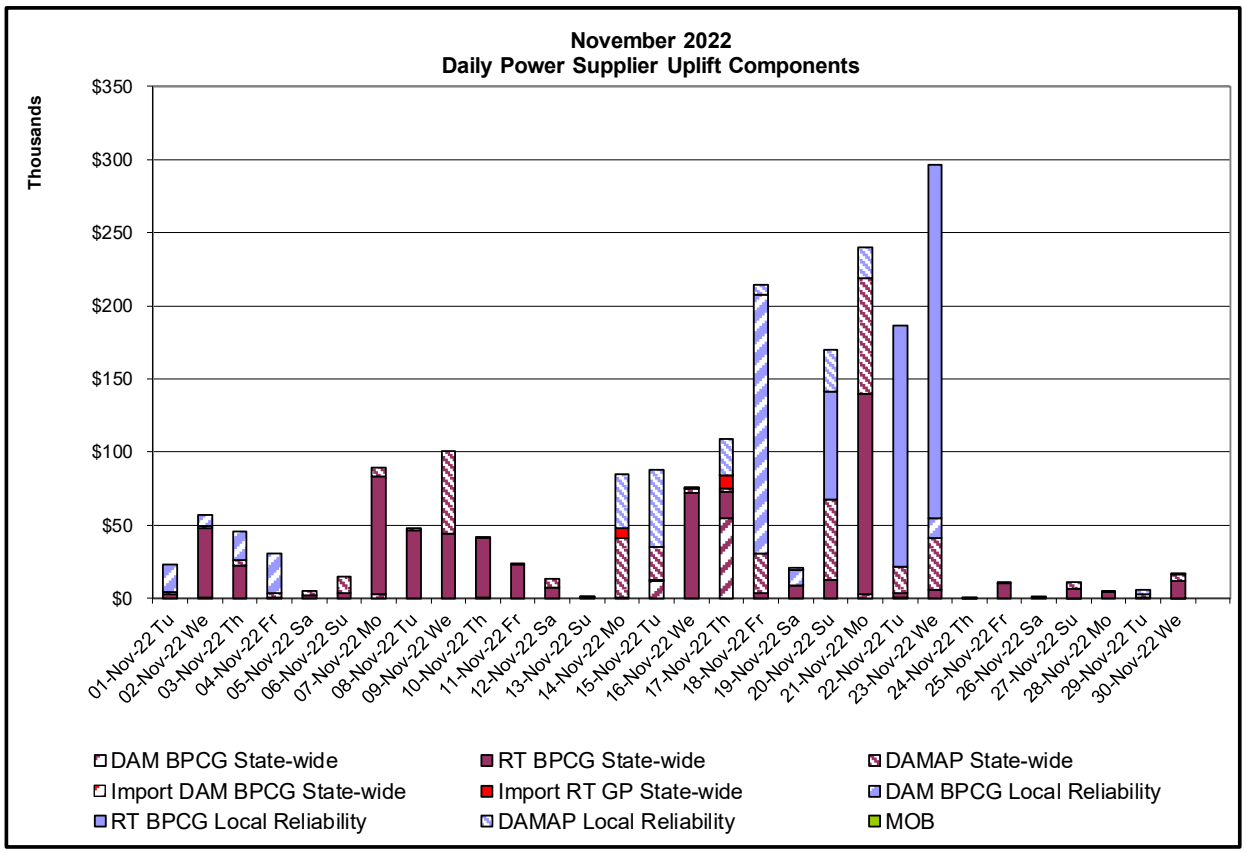

DAM Congestion Residual Report
Monthly Cost Categories
Thousands
($140,000)
($120,000)
($100,000)
($80,000)
($60,000)
($40,000)
($20,000)
$0
$20,000
$40,000
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
NYTO Outage Allocation
Incremental TCC/External Outage
Central East Commitment Derate
Costs Not Categorized

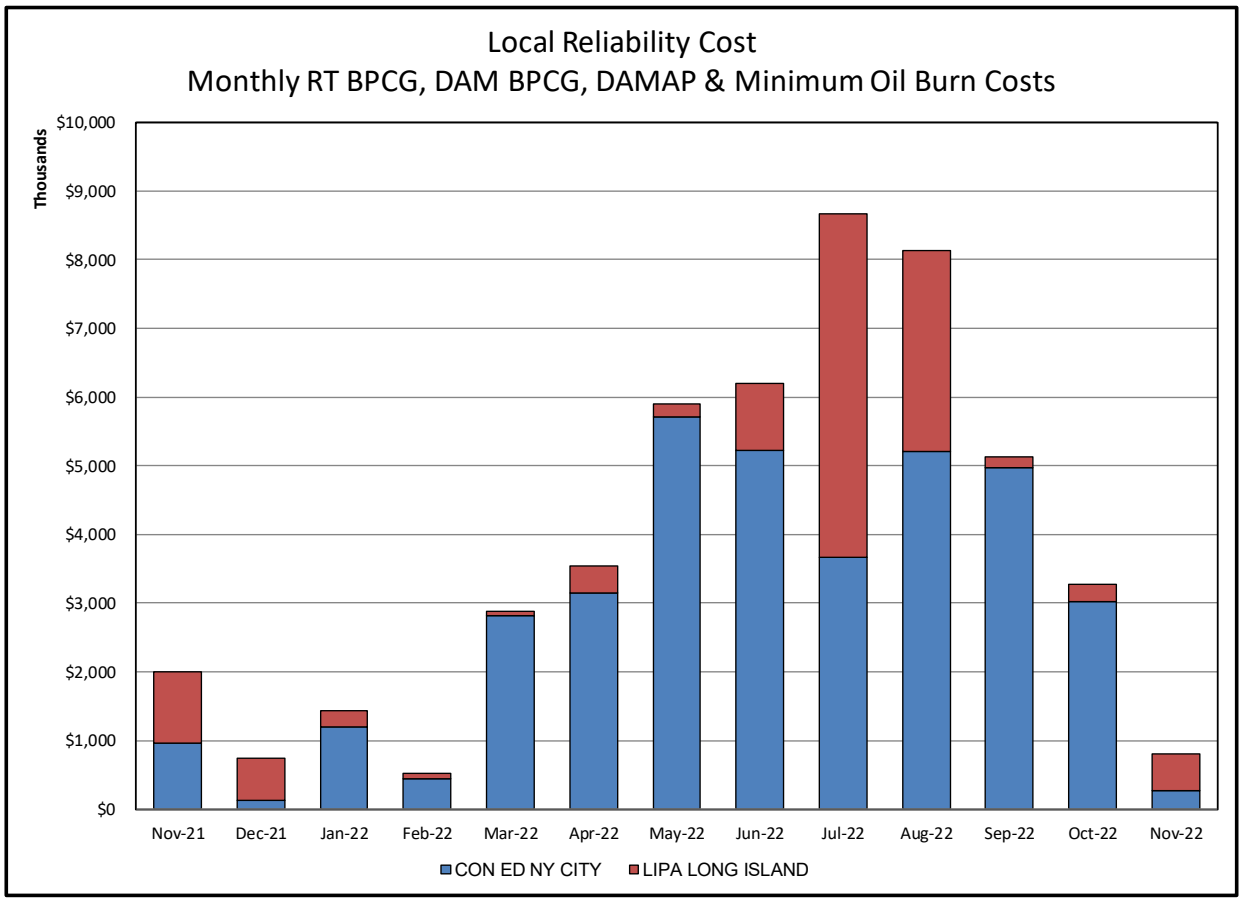

September 2022
DAM Congestion Residual Report
Daily Cost Categories
Thousands
($2,500)
($2,000)
($1,500)
($1,000)
($500)
$0
$500
$1,000
01-Sep-22
02-Sep-22
03-Sep-22
04-Sep-22
05-Sep-22
06-Sep-22
07-Sep-22
08-Sep-22
09-Sep-22
10-Sep-22
11-Sep-22
12-Sep-22
13-Sep-22
14-Sep-22
15-Sep-22
16-Sep-22
17-Sep-22
18-Sep-22
19-Sep-22
20-Sep-22
21-Sep-22
22-Sep-22
23-Sep-22
24-Sep-22
25-Sep-22
26-Sep-22
27-Sep-22
28-Sep-22
29-Sep-22
30-Sep-22
NYTO Outage Allocation
Incremental TCC/External Outage
Central East Commitment Derate
Costs Not Categorized

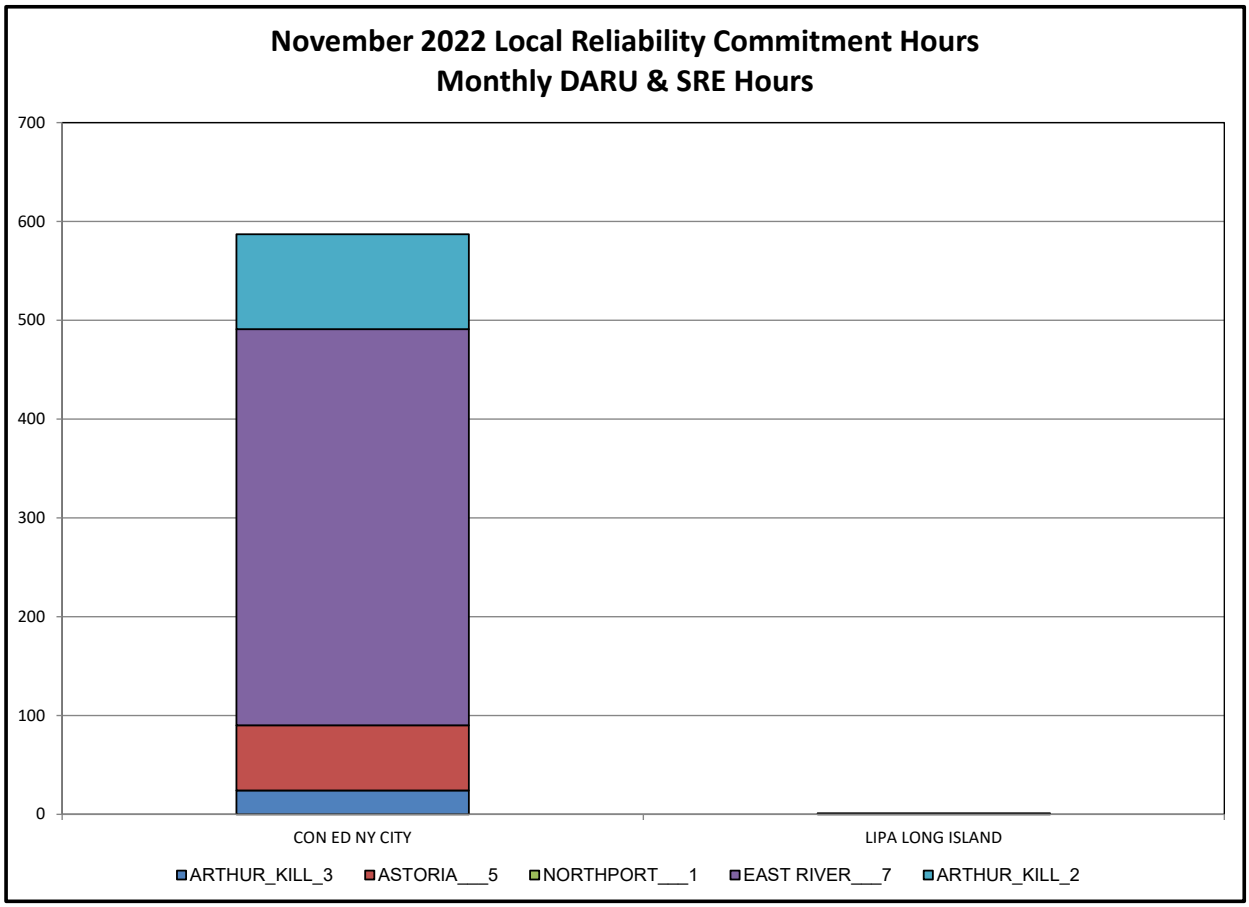
Day-Ahead Market Congestion Residual Categories

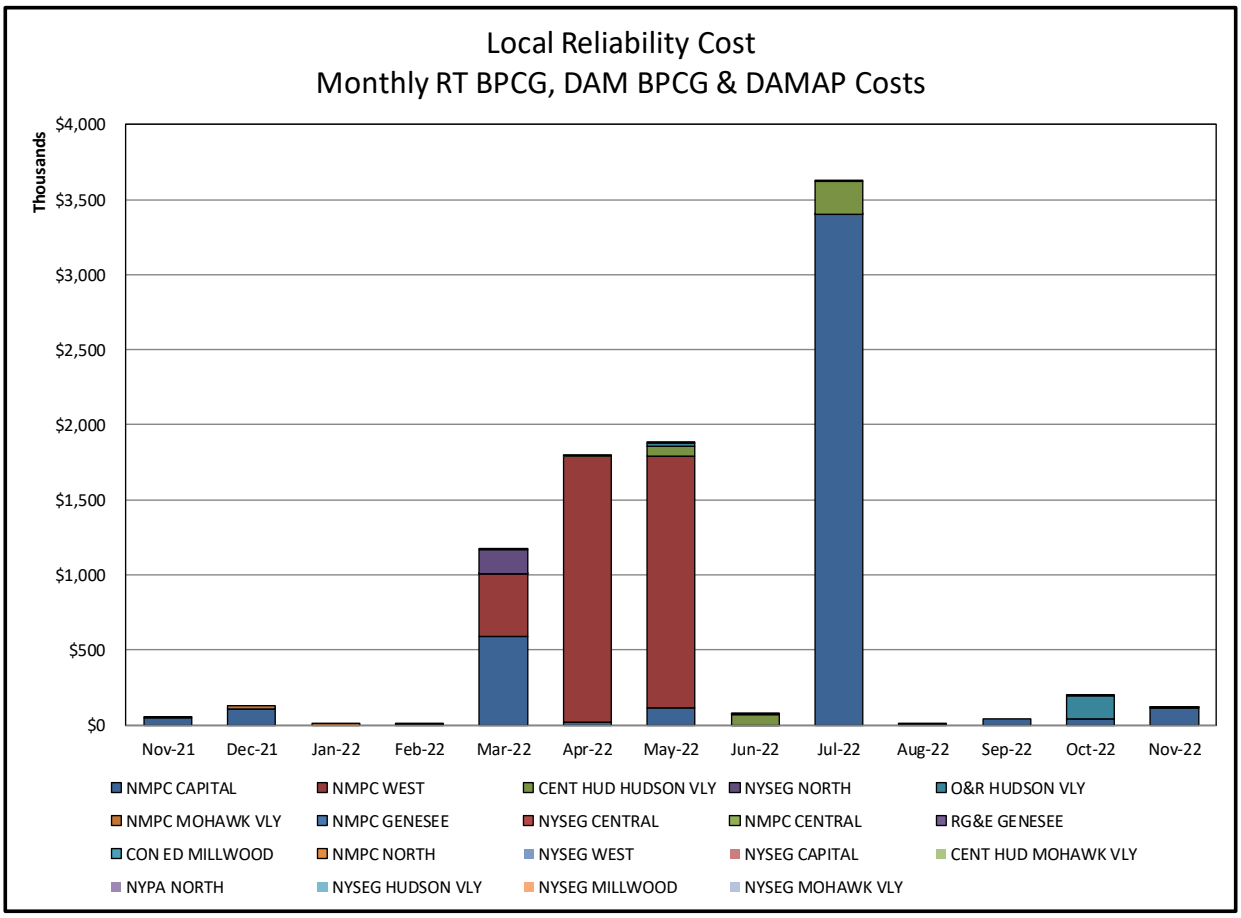
Category	*Cost Assignment*	*Events Types*	*Event Examples*
NYTO Outage Allocation	Responsible TO	Direct allocation to NYTO's responsible for transmission equipment status change.	DAM scheduled outage for equipment modeled in-service for the TCC Auction.
Incremental TCC/External Outage Impacts	All TO 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.	

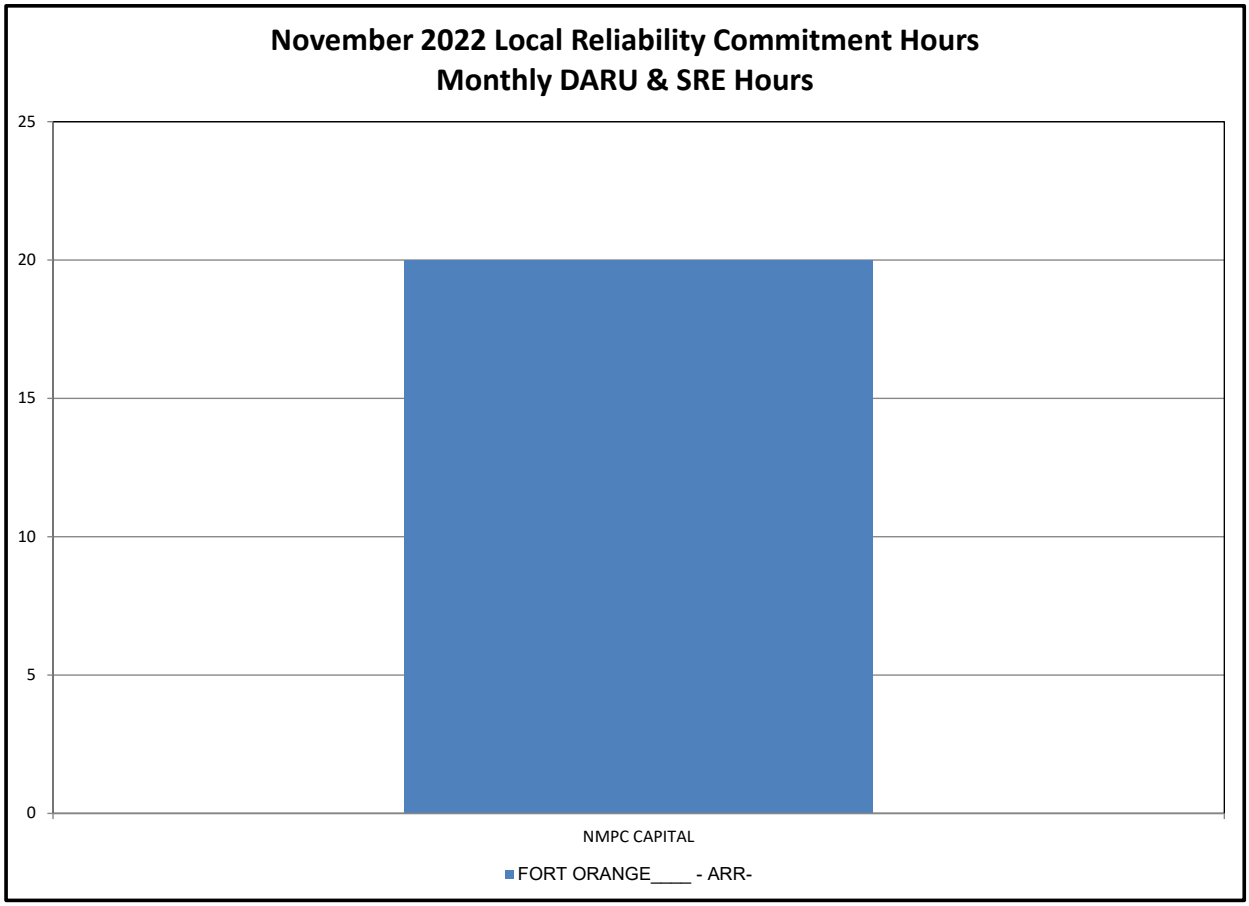

Monthly Power Supplier Uplift Components
Thousands
$16,000
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
DAM BPCG State-wide
RT BPCG State-wide
DAMAP State-wide
Import DAM BPCG State-wide
Import RT GP State-wide
DAM BPCG Local Reliability
RT BPCG Local Reliability
DAMAP Local Reliability
MOB

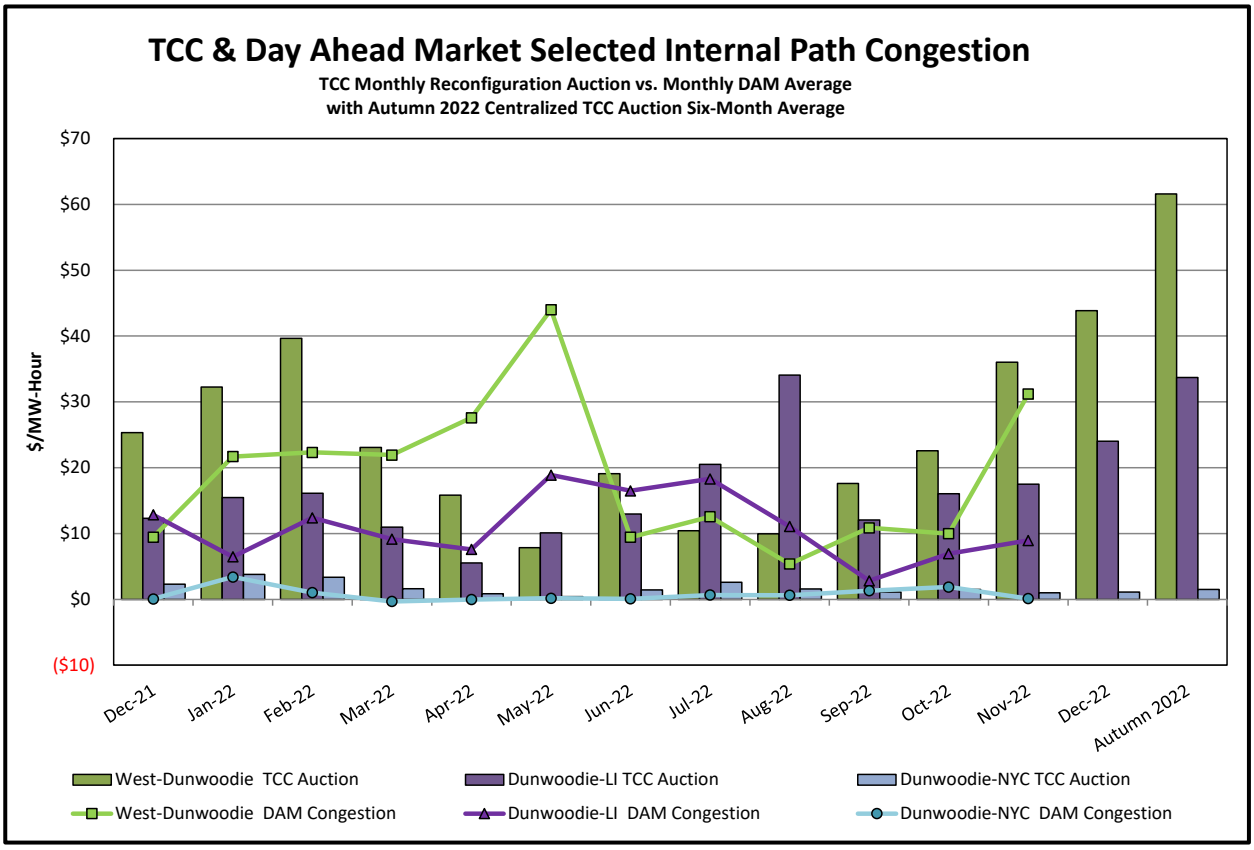

November 2022
Daily Power Supplier Uplift Components
Thousands
$350
$300
$250
$200
$150
$100
$50
$0
01-Nov-22 Tu
02-Nov-22 We
03-Nov-22 Th
04-Nov-22 Fr
05-Nov-22 Sa
06-Nov-22 Su
07-Nov-22 Mo
08-Nov-22 Tu
09-Nov-22 We
10-Nov-22 Th
11-Nov-22 Fr
12-Nov-22 Sa
13-Nov-22 Su
14-Nov-22 Mo
15-Nov-22 Tu
16-Nov-22 We
17-Nov-22 Th
18-Nov-22 Fr
19-Nov-22 Sa
20-Nov-22 Su
21-Nov-22 Mo
22-Nov-22 Tu
23-Nov-22 We
24-Nov-22 Th
25-Nov-22 Fr
26-Nov-22 Sa
27-Nov-22 Su
28-Nov-22 Mo
29-Nov-22 Tu
30-Nov-22 We
DAM BPCG State-wide
RT BPCG State-wide
DAMAP State-wide
Import DAM BPCG State-wide
Import RT GP State-wide
DAM BPCG Local Reliability
RT BPCG Local Reliability
DAMAP Local Reliability
MOB

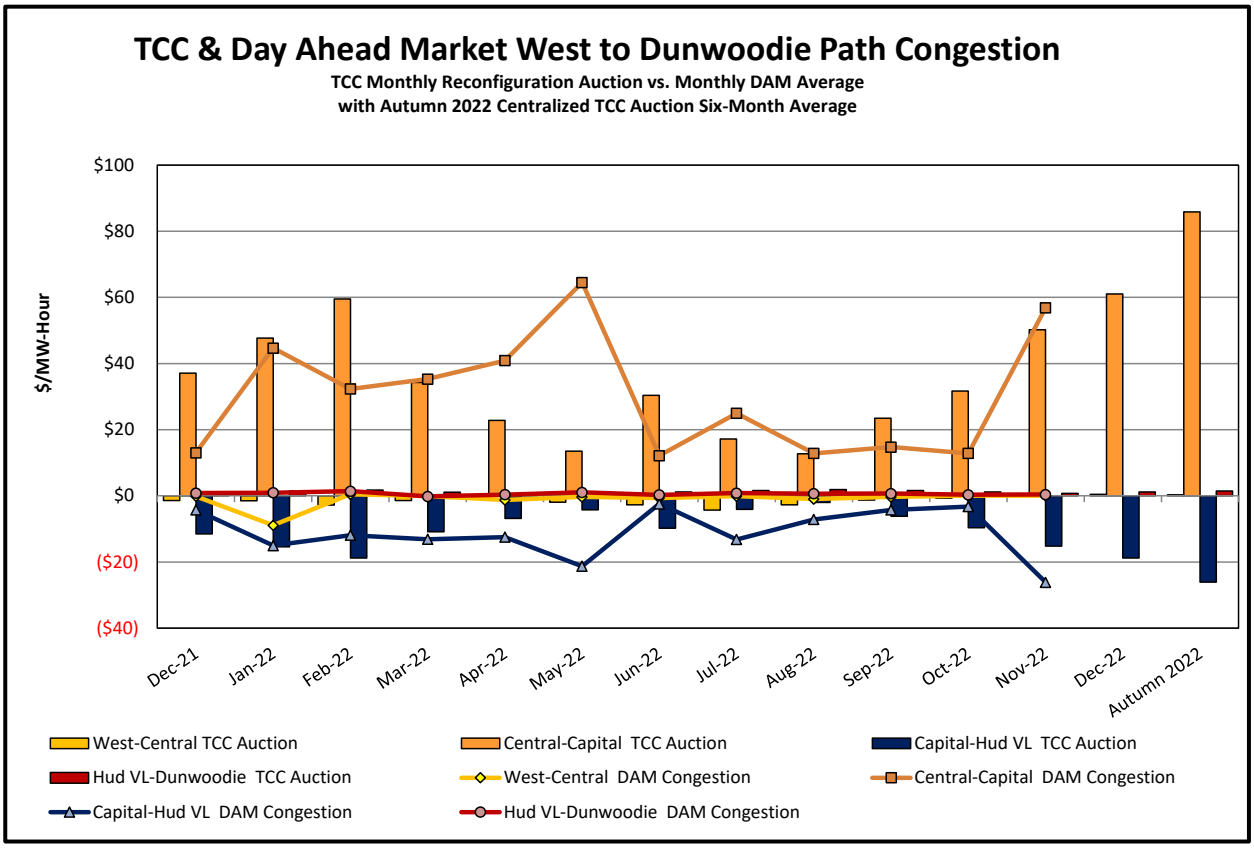

Local Reliability Cost
Monthly RT BPCG, DAM BPCG, DAMAP & Minimum Oil Burn Costs
Thousands
$10,000
$9,000
$8,000
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
CON ED NY CITY
LIPA LONG ISLAND

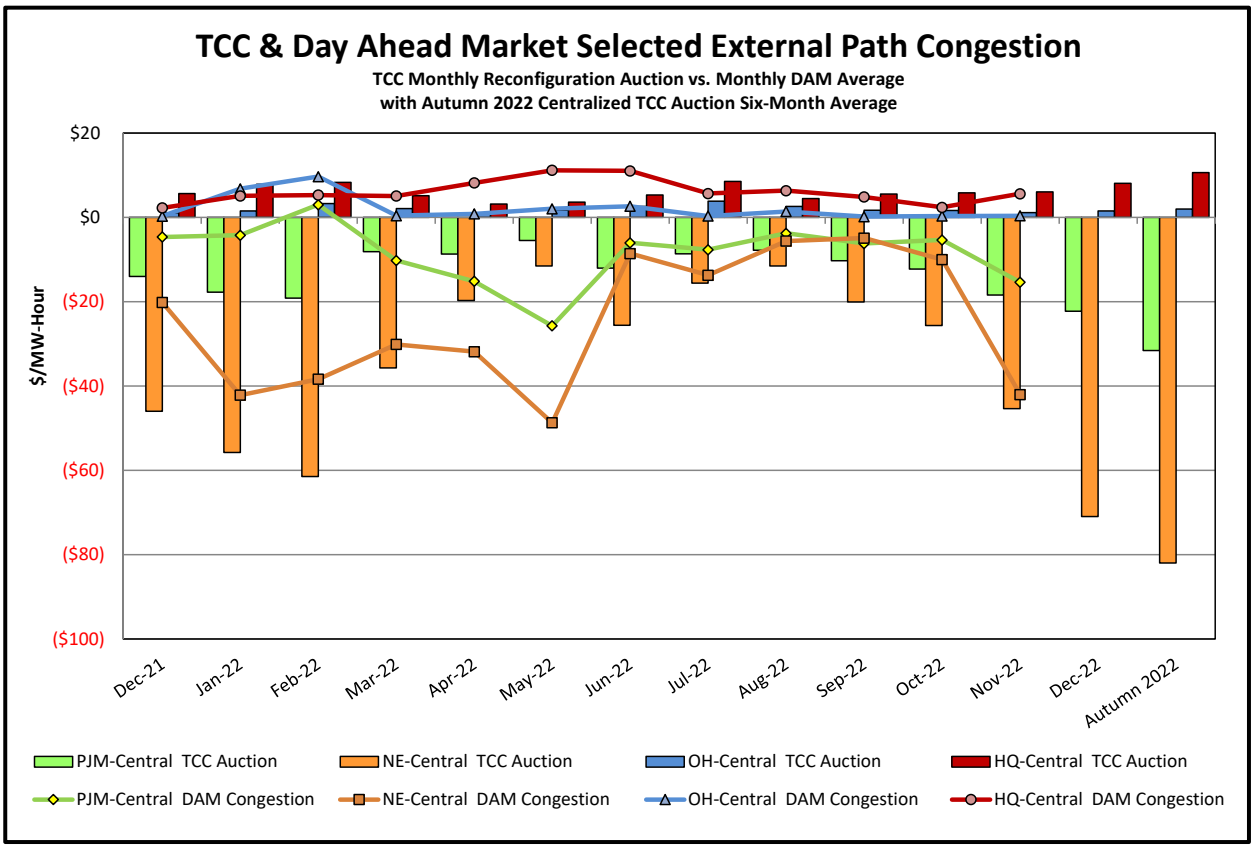

November 2022 Local Reliability Commitment Hours
Monthly DARU & SRE Hours
700
600
500
400
300
200
100
0
CON ED NY CITY
LIPA LONG ISLAND
ARTHUR_KILL_3
ASTORIA___5
NORTHPORT___1
EAST RIVER___7
ARTHUR_KILL_2

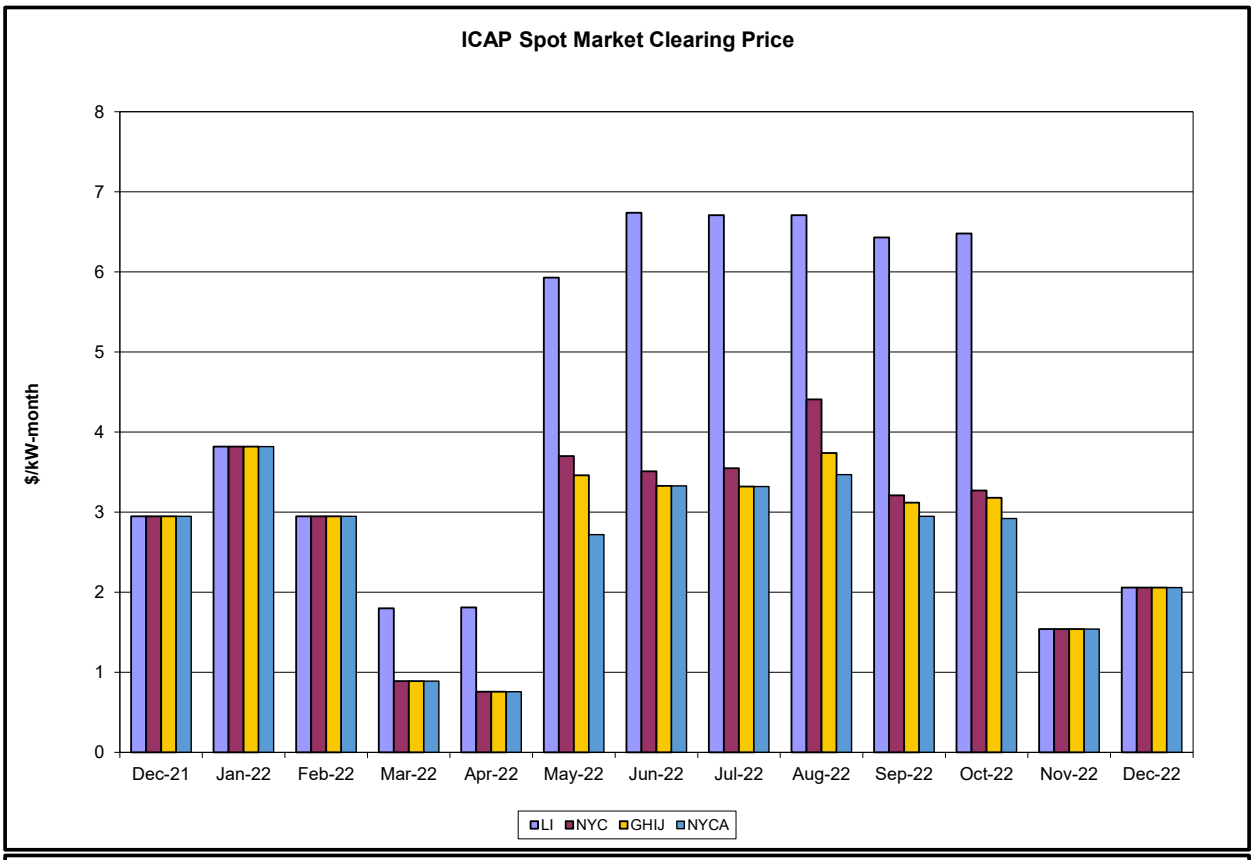

Local Reliability Cost
Monthly RT BPCG, DAM BPCG & DAMAP Costs
Thousands
$4,000
$3,500
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
NMPC CAPITAL
NMPC WEST
CENT HUD HUDSON VLY
NYSEG NORTH
O&R HUDSON VLY
NMPC MOHAWK VLY
NMPC GENESEE
NYSEG CENTRAL
NMPC CENTRAL
RG&E GENESEE
CON ED MILLWOOD
NMPC NORTH
NYSEG WEST
NYSEG CAPITAL
CENT HUD MOHAWK VLY
NYPA NORTH
NYSEG HUDSON VLY
NYSEG MILLWOOD
NYSEG MOHAWK VLY

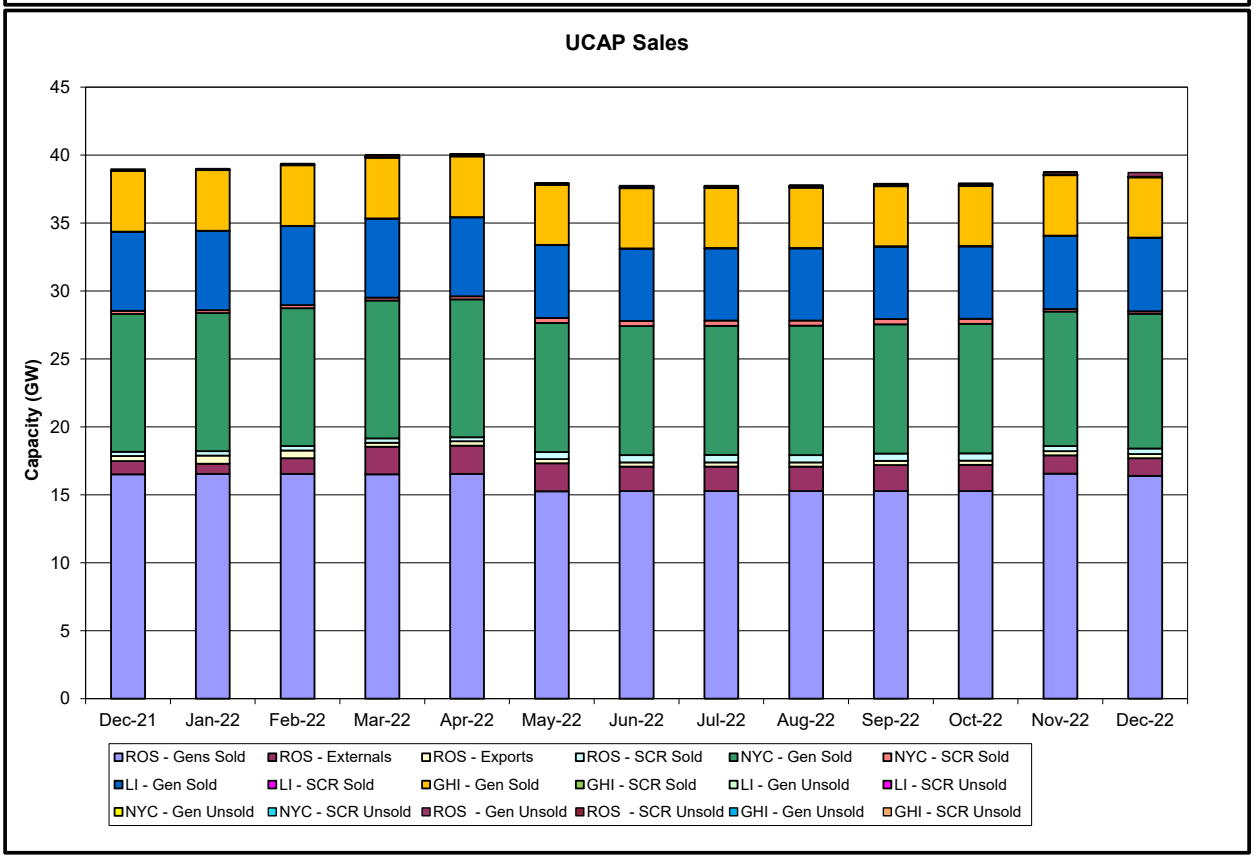

November 2022 Local Reliability Commitment Hours
Monthly DARU & SRE Hours
25
20
15
10
5
0
NMPC CAPITAL
FORT ORANGE____ - ARR-


TCC & Day Ahead Market Selected Internal Path Congestion
TCC Monthly Reconfiguration Auction vs. Monthly DAM Average
with Autumn 2022 Centralized TCC Auction Six-Month Average
$/MW-Hour
$70
$60
$50
$40
$30
$20
$10
$0
($10)
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Autumn 2022
West-Dunwoodie TCC Auction
Dunwoodie-LI TCC Auction
Dunwoodie-NYC TCC Auction
West-Dunwoodie DAM Congestion
Dunwoodie-LI DAM Congestion
Dunwoodie-NYC DAM Congestion


TCC & Day Ahead Market West to Dunwoodie Path Congestion
TCC Monthly Reconfiguration Auction vs. Monthly DAM Average
with Autumn 2022 Centralized TCC Auction Six-Month Average
$/MW-Hour
$100
$80
$60
$40
$20
$0
($20)
($40)
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Autumn 2022
West-Central TCC Auction
Central-Capital TCC Auction
Capital-Hud VL TCC Auction
Hud VL-Dunwoodie TCC Auction
West-Central DAM Congestion
Central-Capital DAM Congestion
Capital-Hud VL DAM Congestion
Hud VL-Dunwoodie DAM Congestion


TCC & Day Ahead Market Selected External Path Congestion
TCC Monthly Reconfiguration Auction vs. Monthly DAM Average
with Autumn 2022 Centralized TCC Auction Six-Month Average
$20
$0
($20)
($40)
($60)
($80)
($100)
$/MW-Hour
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Autumn 2022
PJM-Central TCC Auction
NE-Central TCC Auction
OH-Central TCC Auction
HQ-Central TCC Auction
PJM-Central DAM Congestion
NE-Central DAM Congestion
OH-Central DAM Congestion
HQ-Central DAM Congestion


ICAP Spot Market Clearing Price
$/kW-month
0
1
2
3
4
5
6
7
8
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
LI
NYC
GHIJ
NYCA


UCAP Sales
Capacity (GW)
0
5
10
15
20
25
30
35
40
45
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
ROS - Gens Sold
ROS - Externals
ROS - Exports
ROS - SCR Sold
NYC - Gen Sold
NYC - SCR Sold
LI - Gen Sold
LI - SCR Sold
GHI - Gen Sold
GHI - SCR Sold
LI - Gen Unsold
LI - SCR Unsold
NYC - Gen Unsold
NYC - SCR Unsold
ROS - Gen Unsold
ROS - SCR Unsold
GHI - Gen Unsold
GHI - SCR Unsold