

Operations Performance Metrics Monthly Report



July 2019 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 August 8, 2019.

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July 2019 Operations Performance Highlights

- Peak load of 30,397 MW occurred on 07/20/2019 HB 16
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 25.48 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

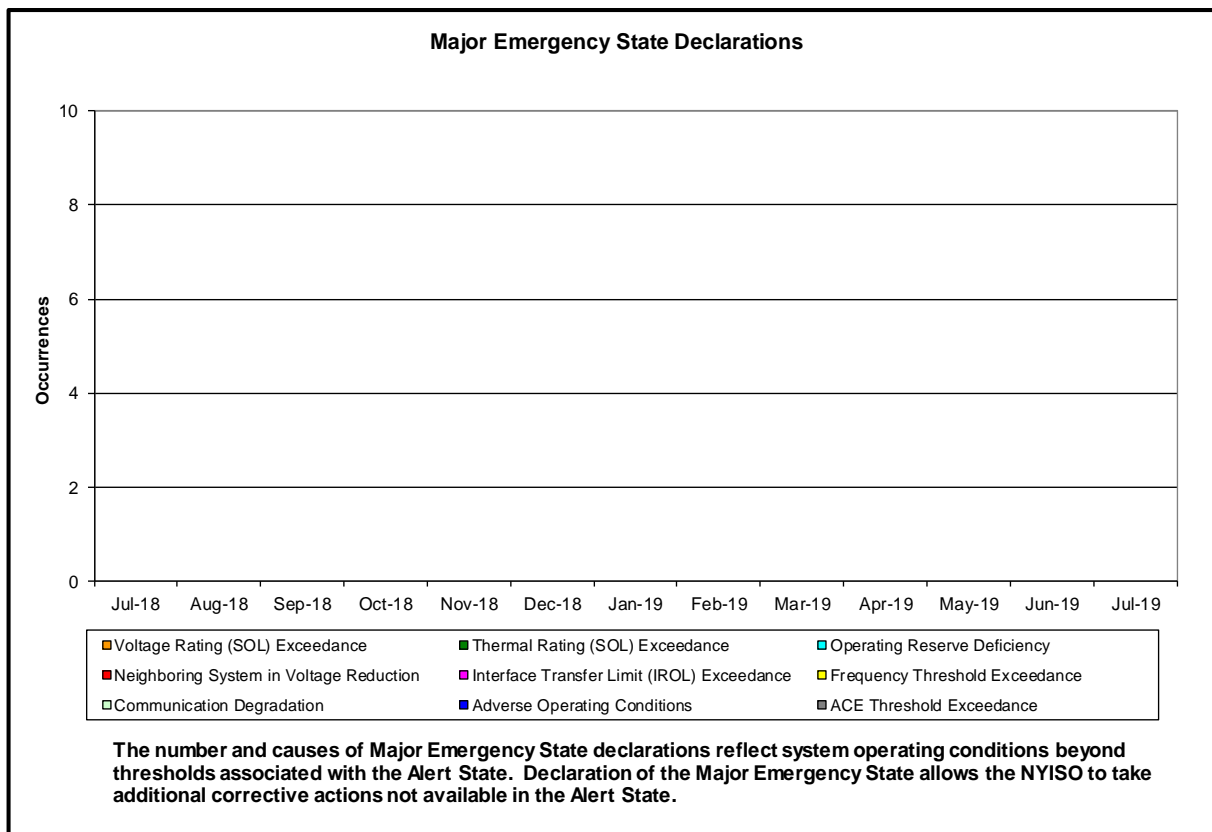
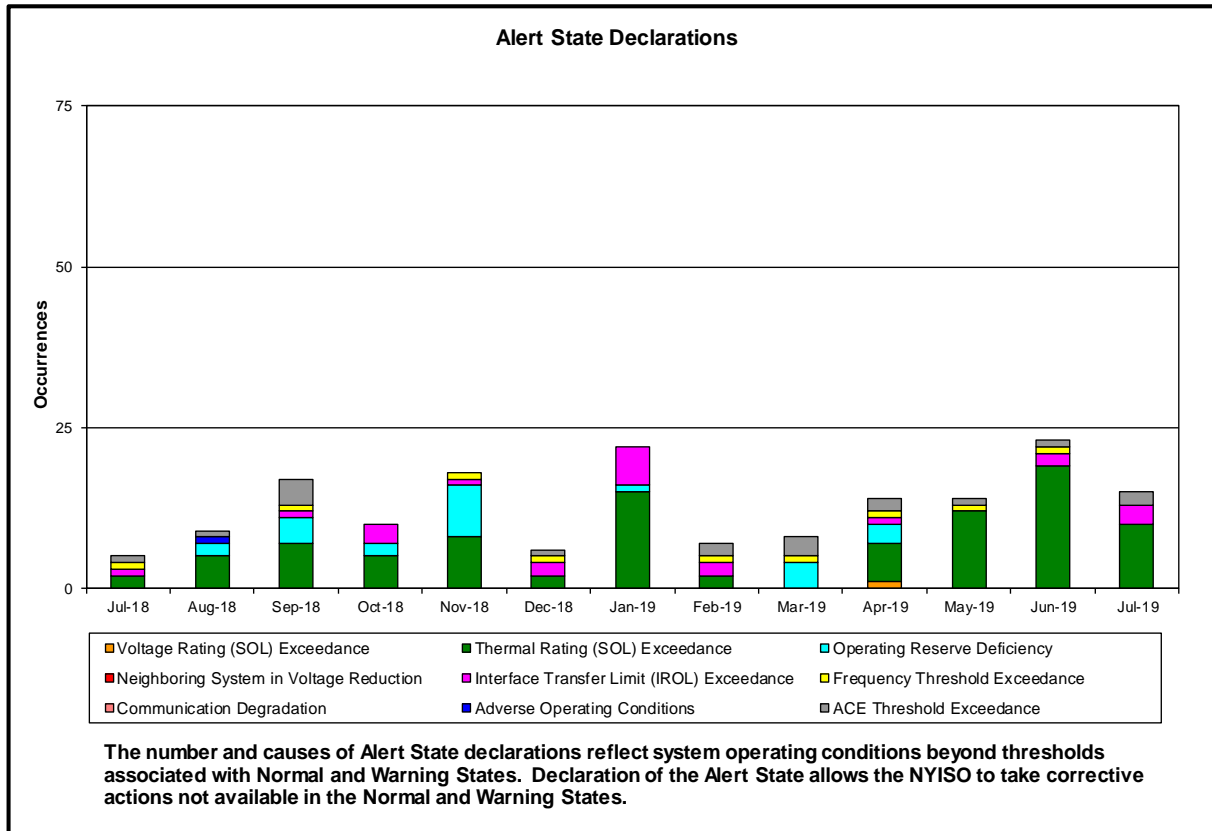
	Current Month Value (\$M)	Year-to-Date Value (\$M)
NY Savings from PJM-NY Congestion Coordination	\$0.47	\$6.53
NY Savings from PJM-NY Coordinated Transaction Scheduling	(\$0.44)	(\$1.15)
NY Savings from NE-NY Coordinated Transaction Scheduling	\$0.57	\$0.01
Total NY Savings	\$0.60	\$5.39
Regional Savings from PJM-NY Coordinated Transaction Scheduling	\$0.93	\$3.57
Regional Savings from NE-NY Coordinated Transaction Scheduling	\$0.08	\$0.37
Total Regional Savings	\$1.01	\$3.94

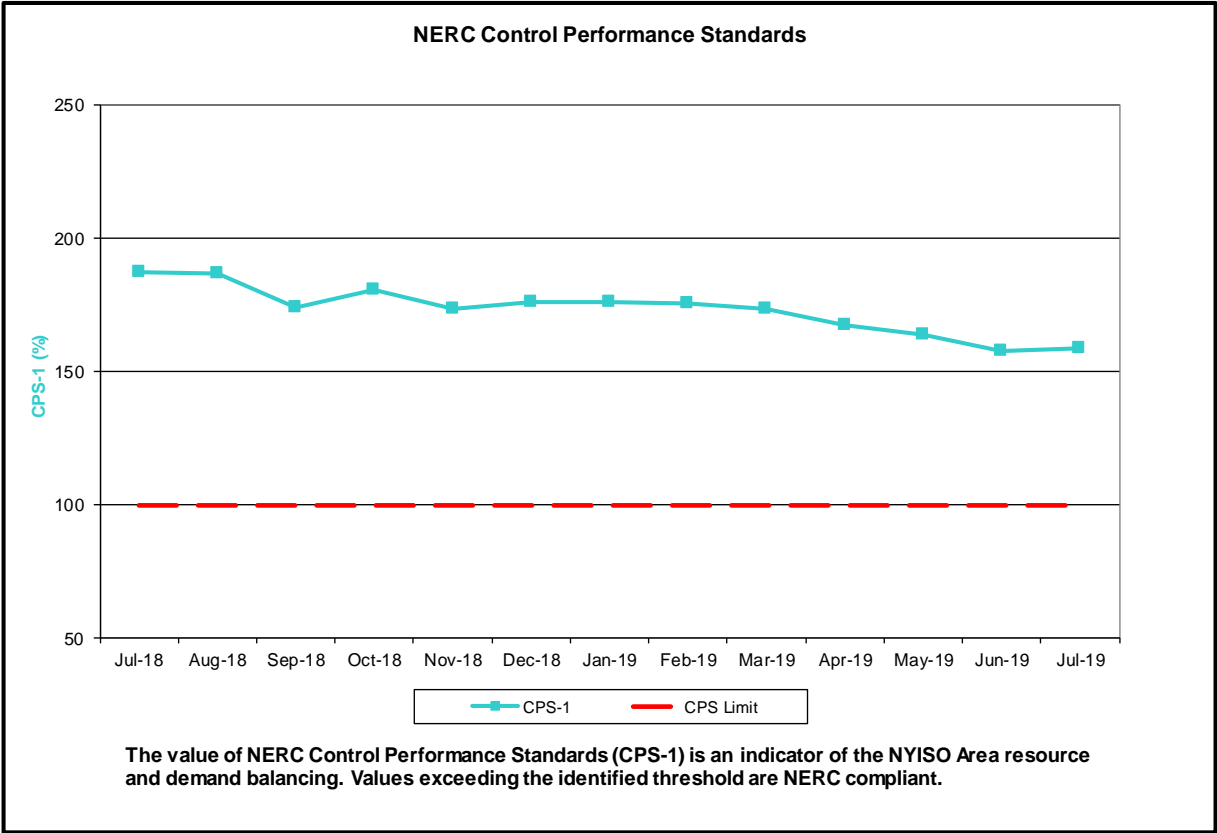
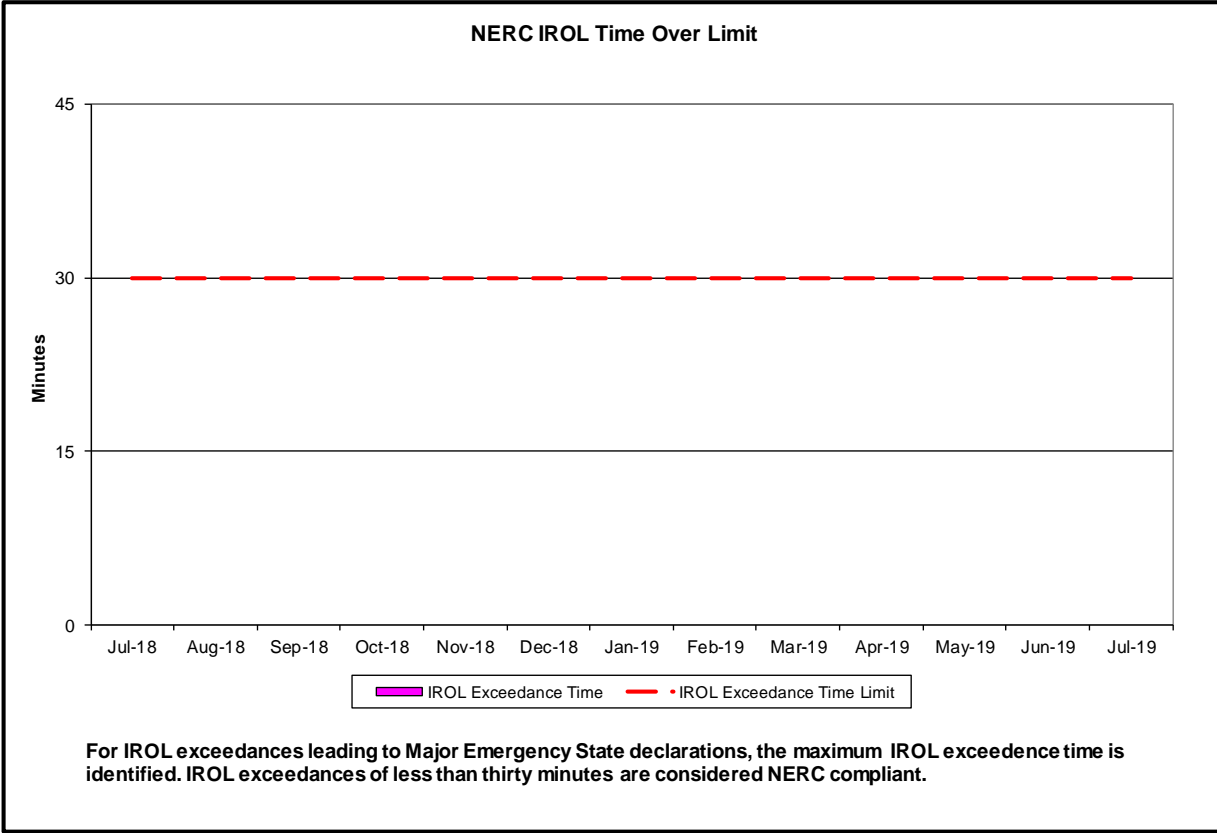
- Statewide uplift cost monthly average was (\$0.50)/MWh
- The following table identifies the Monthly ICAP spot market prices and the price delta.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
August 2019 Spot Price	\$1.36	\$4.78	\$13.39	\$5.51
July 2019 Spot Price	\$1.39	\$4.83	\$13.46	\$5.94
Delta	(\$0.03)	(\$0.05)	(\$0.07)	(\$0.43)

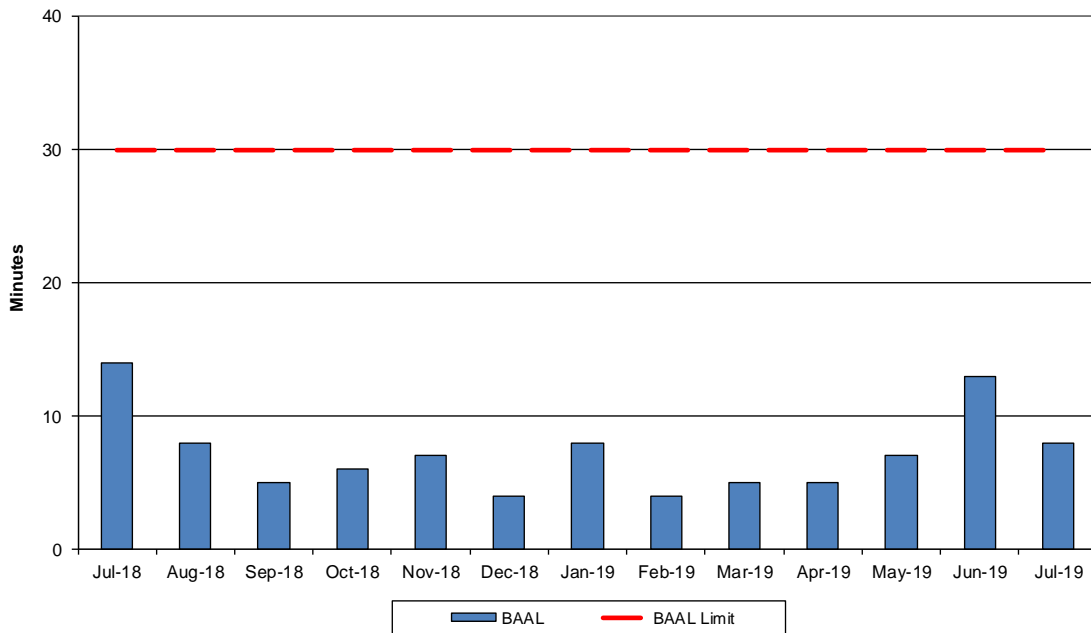
- LI - The decrease in LI Spot MCP is due to an increase in generation UCAP.

Reliability Performance Metrics



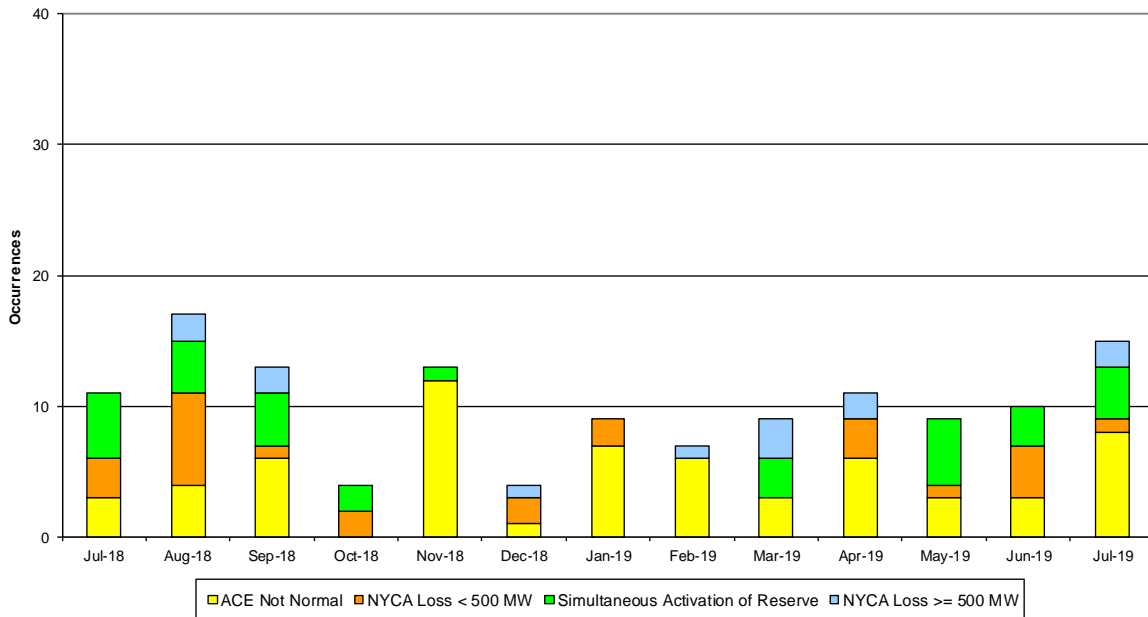


NERC Balancing Authority ACE Limit Standard



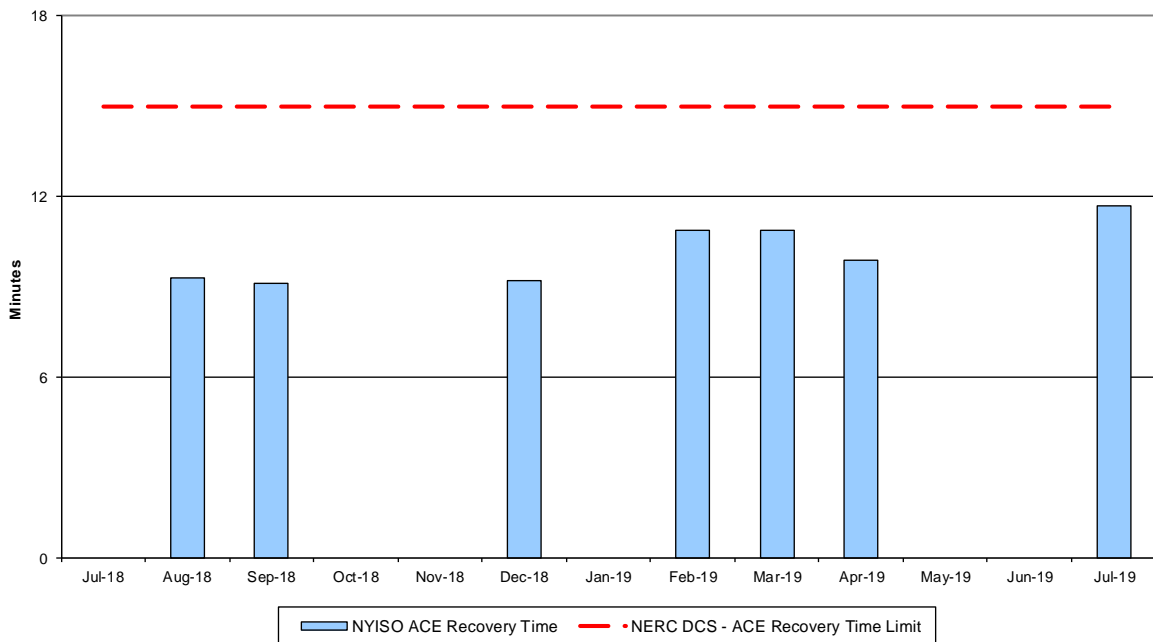
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

Reserve Activations



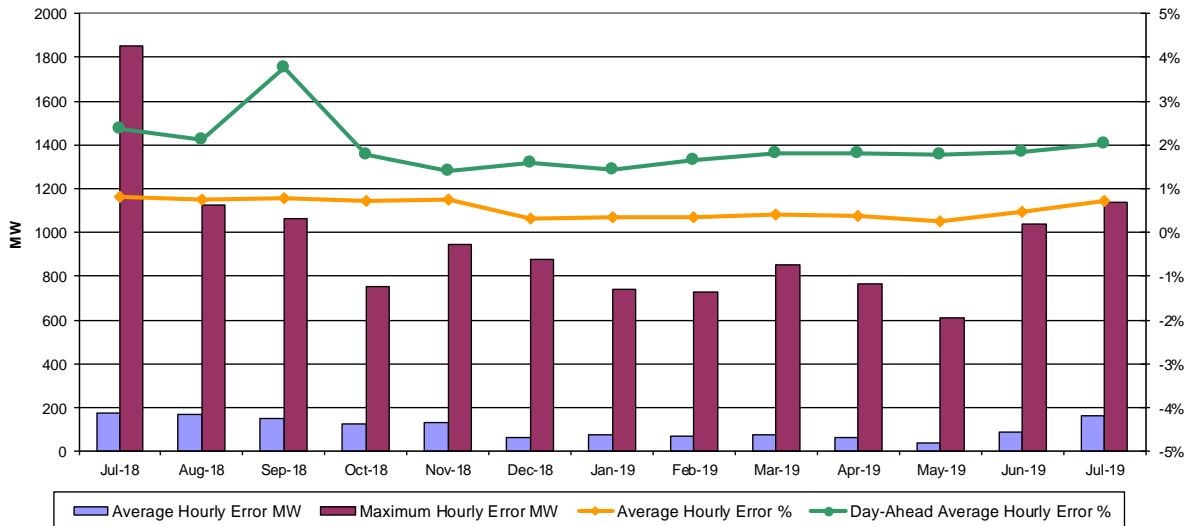
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

DCS Event Time to ACE Recovery

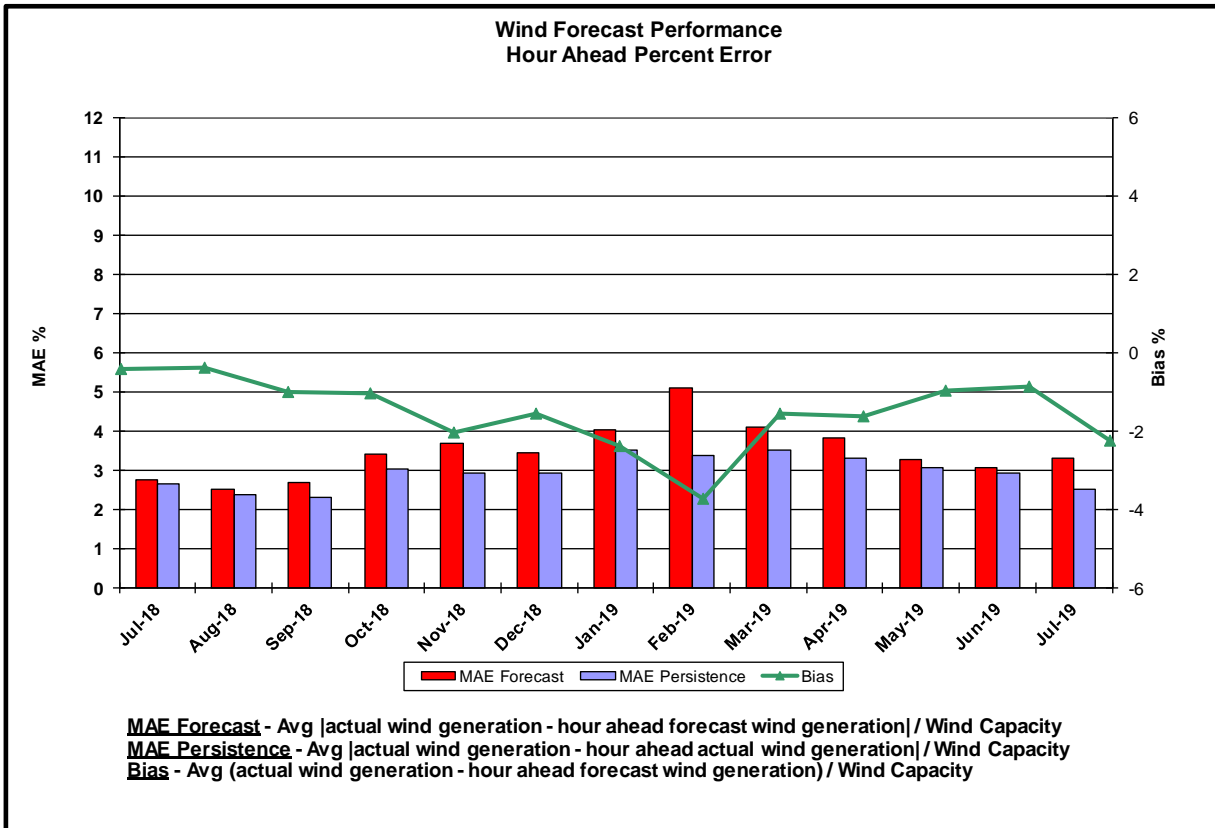
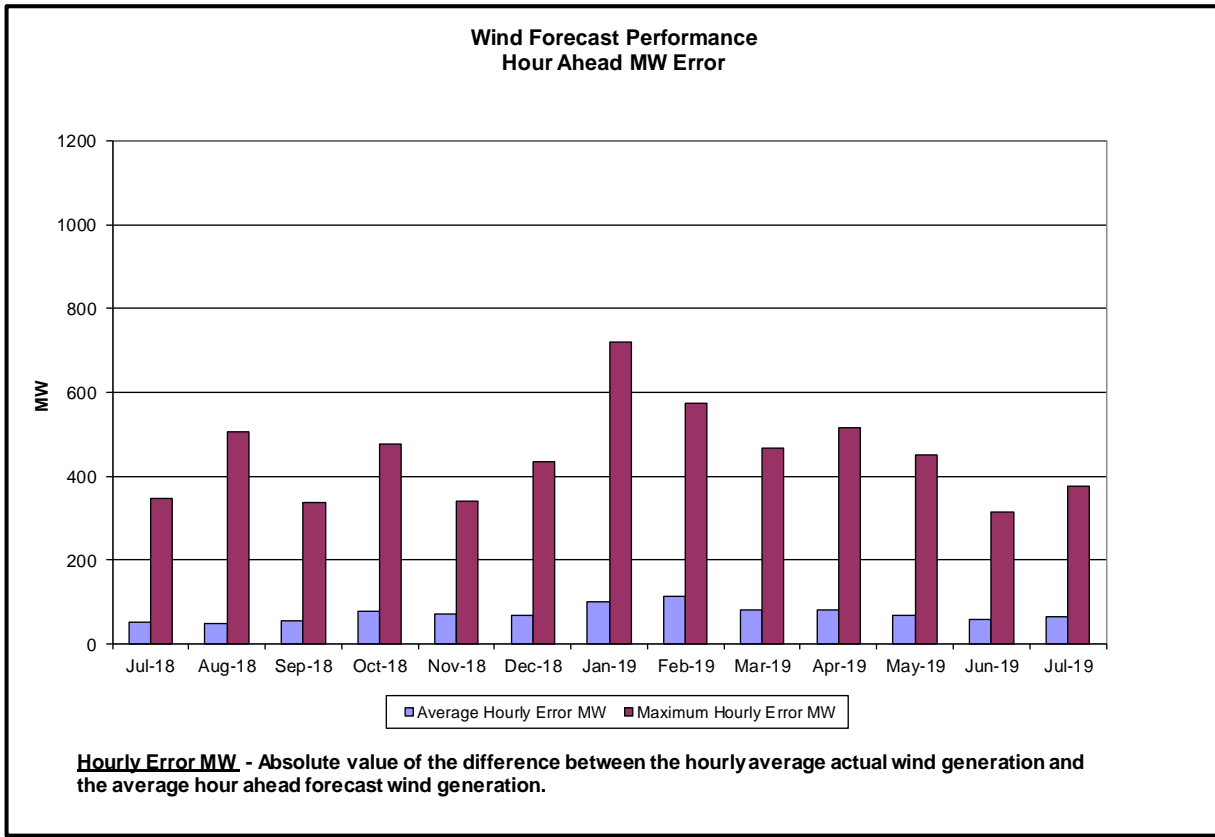


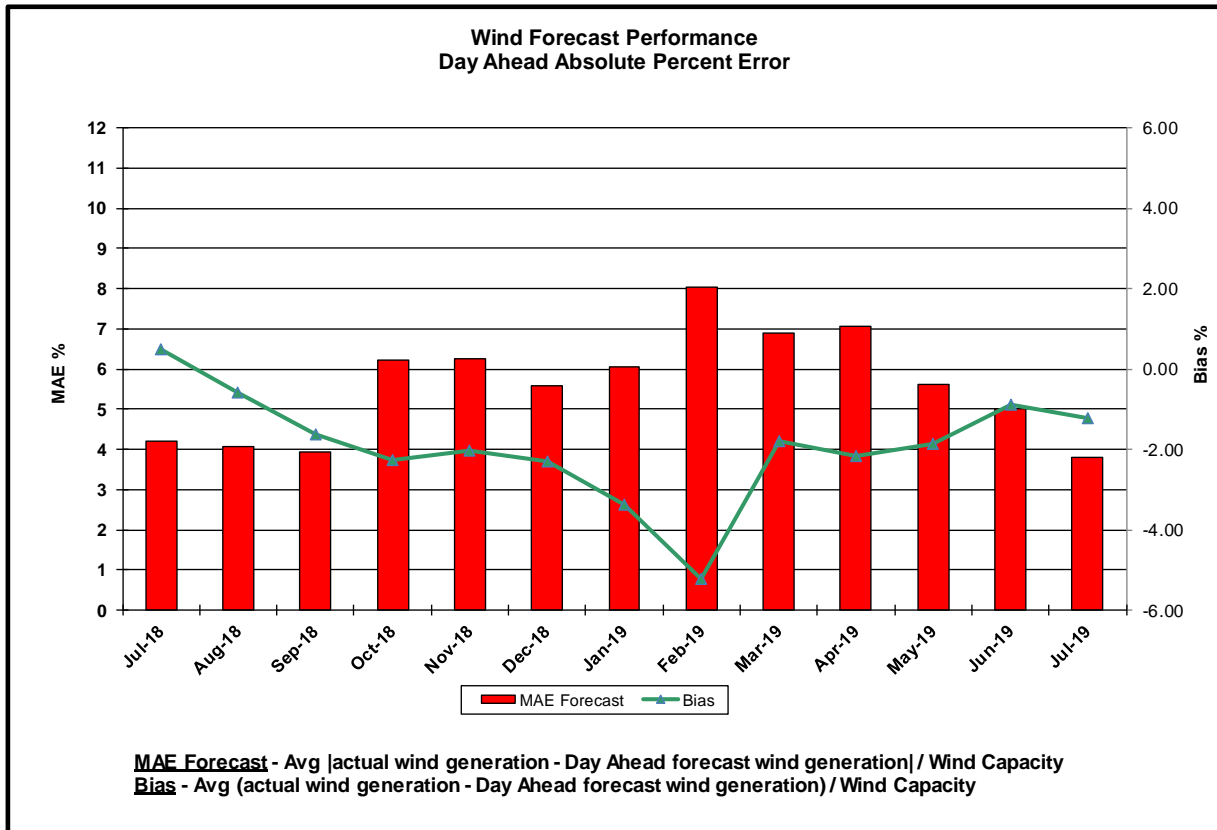
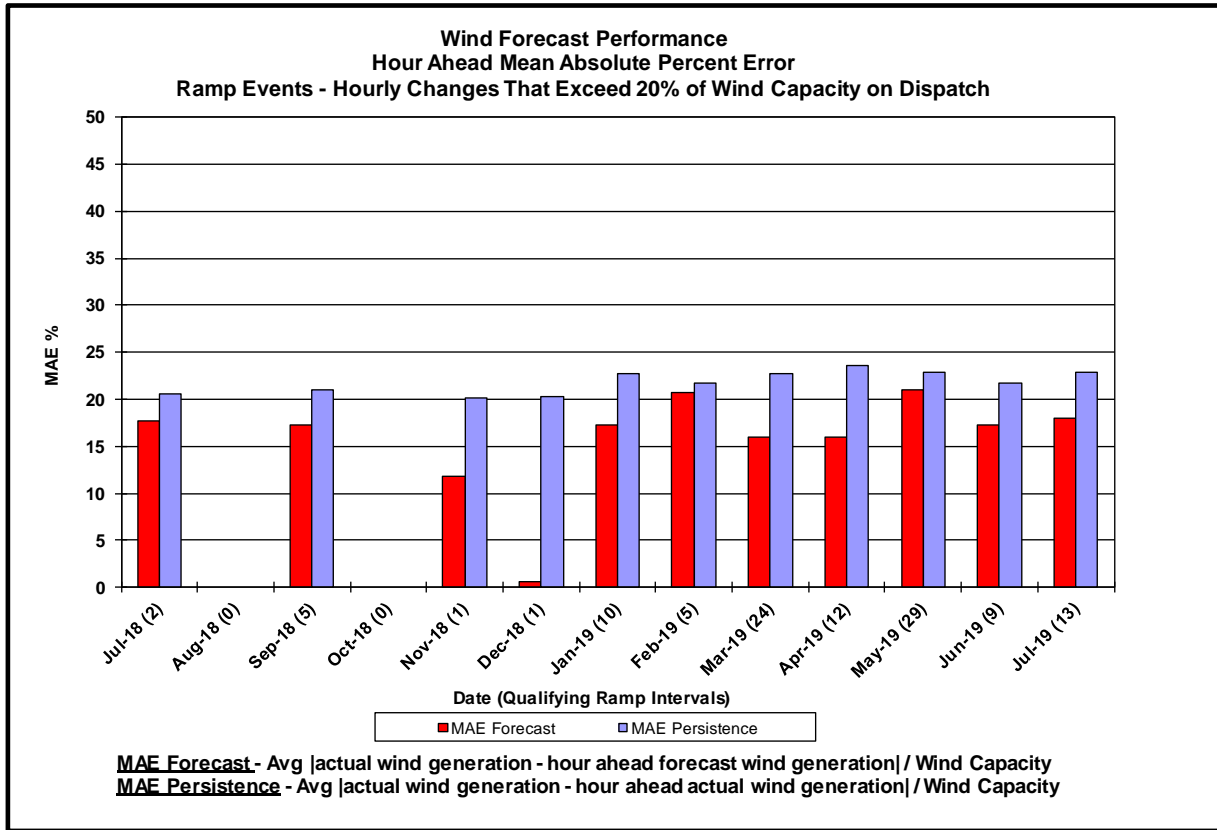
For NYISO initiated Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

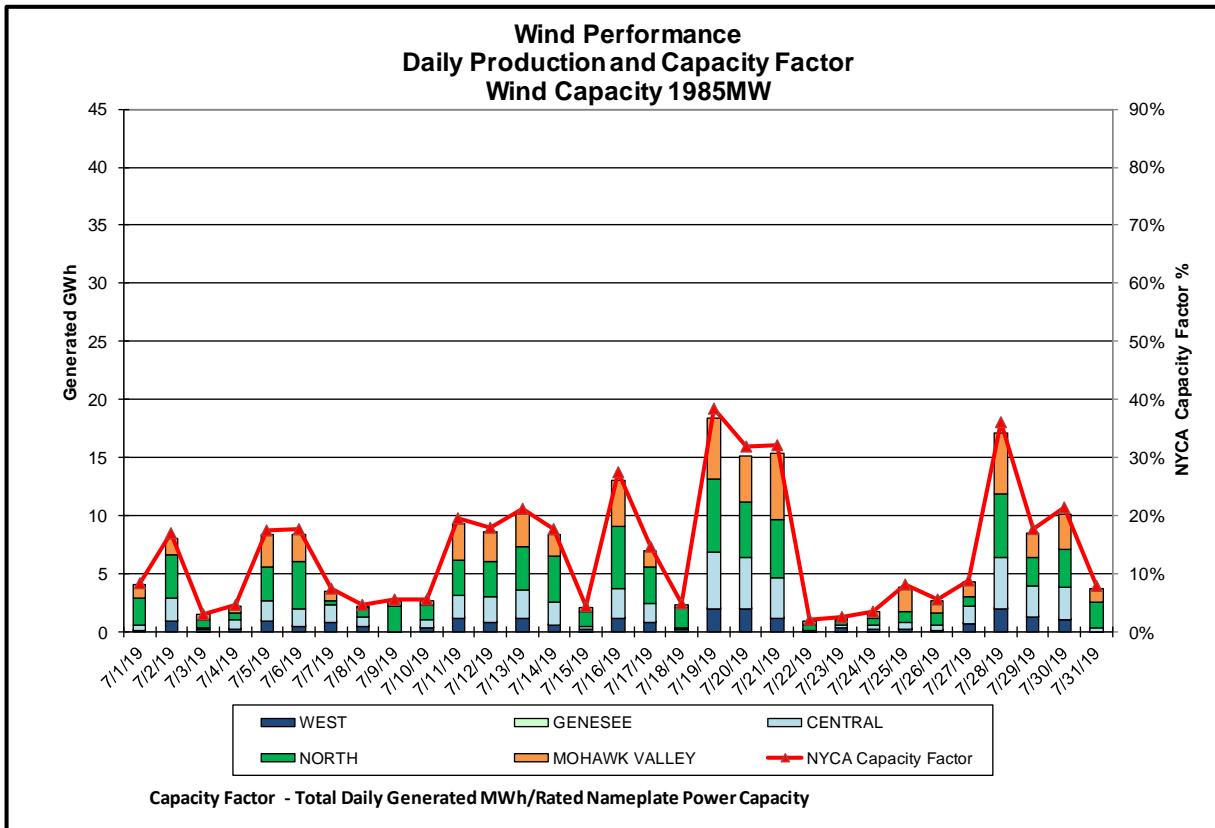
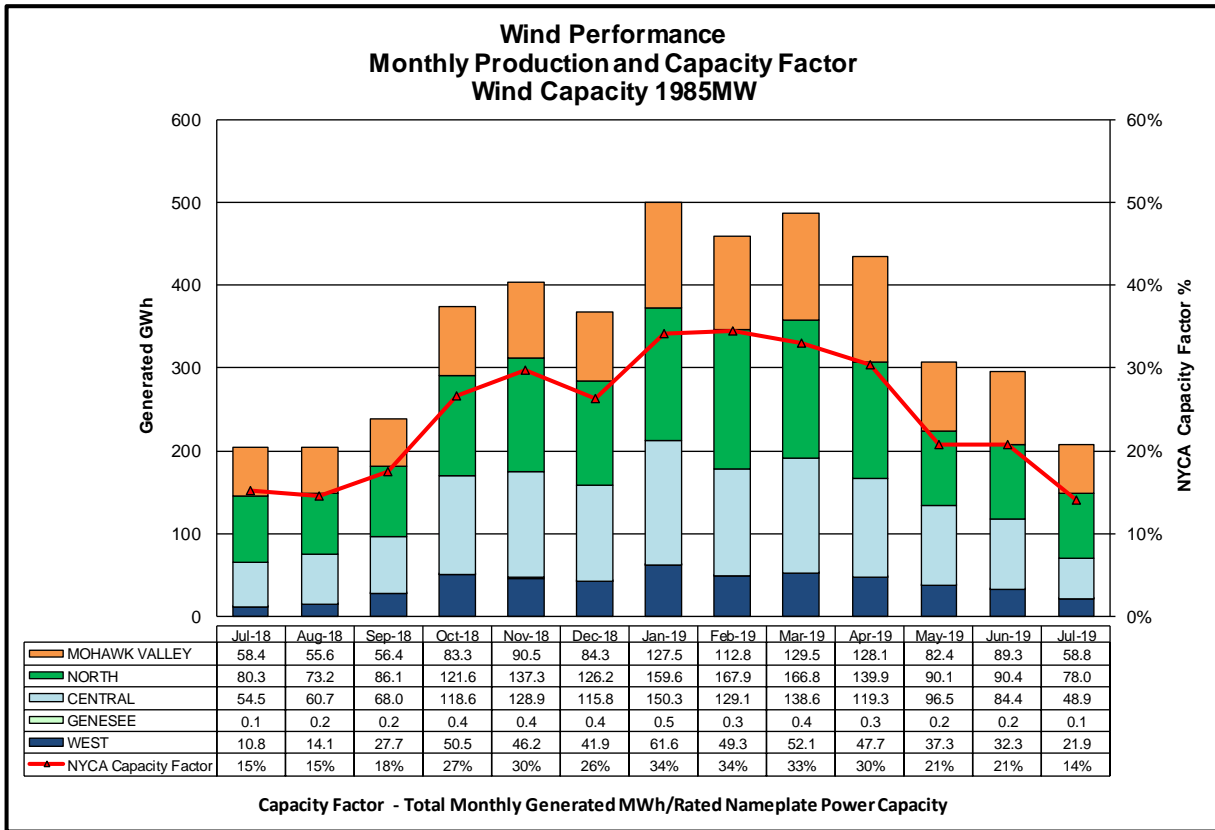
Load Forecast Performance

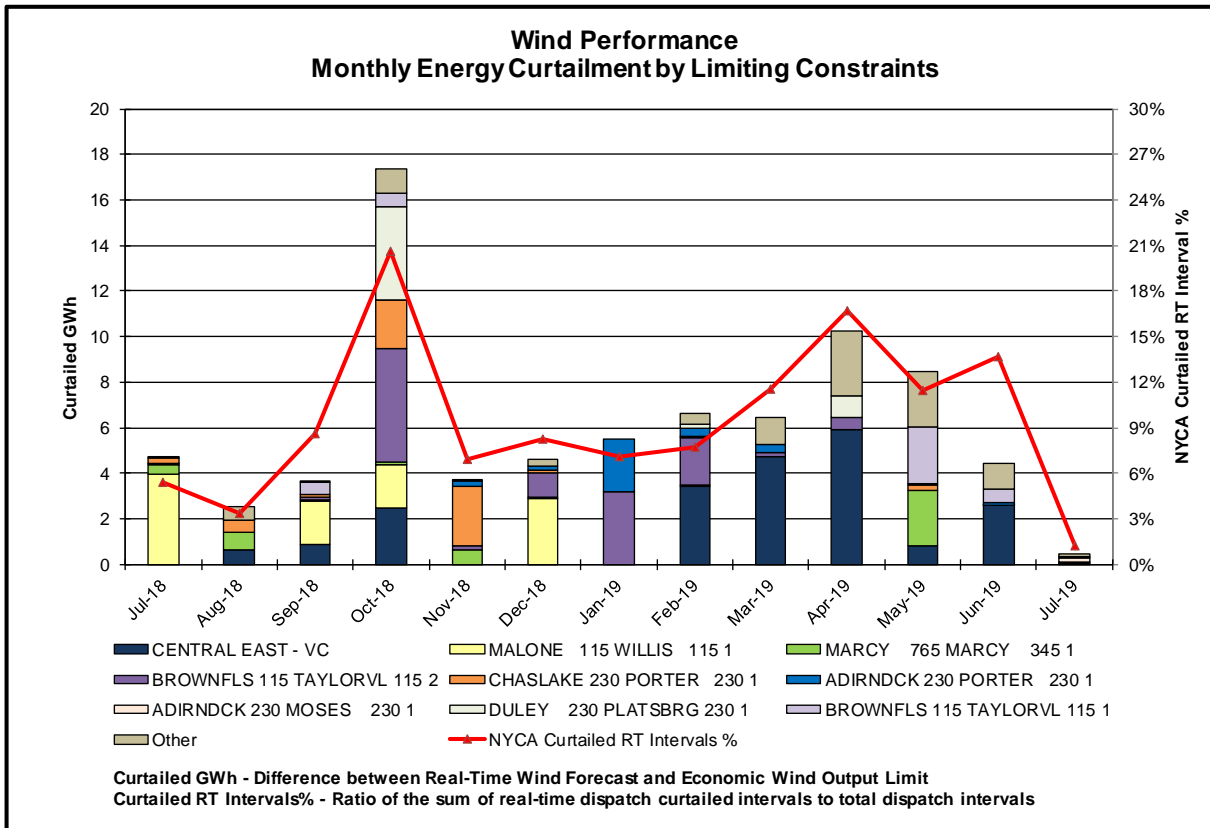
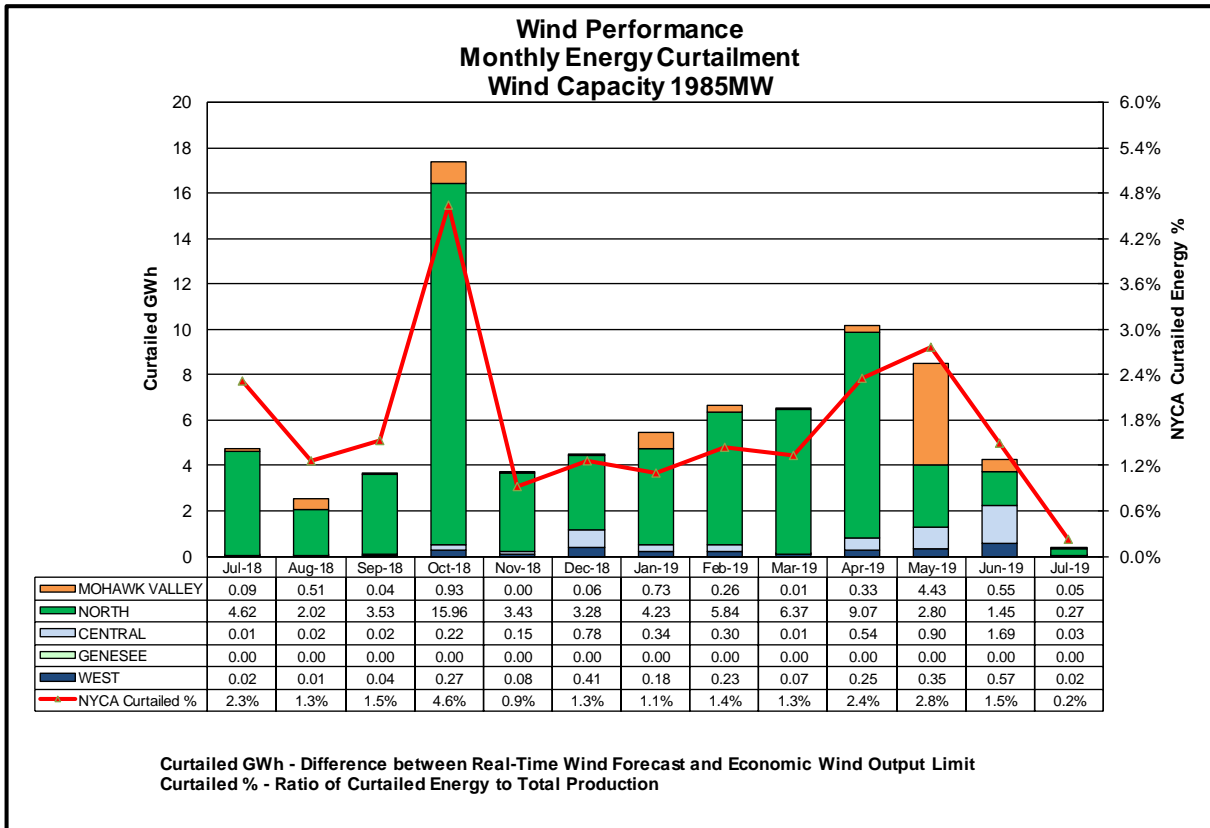


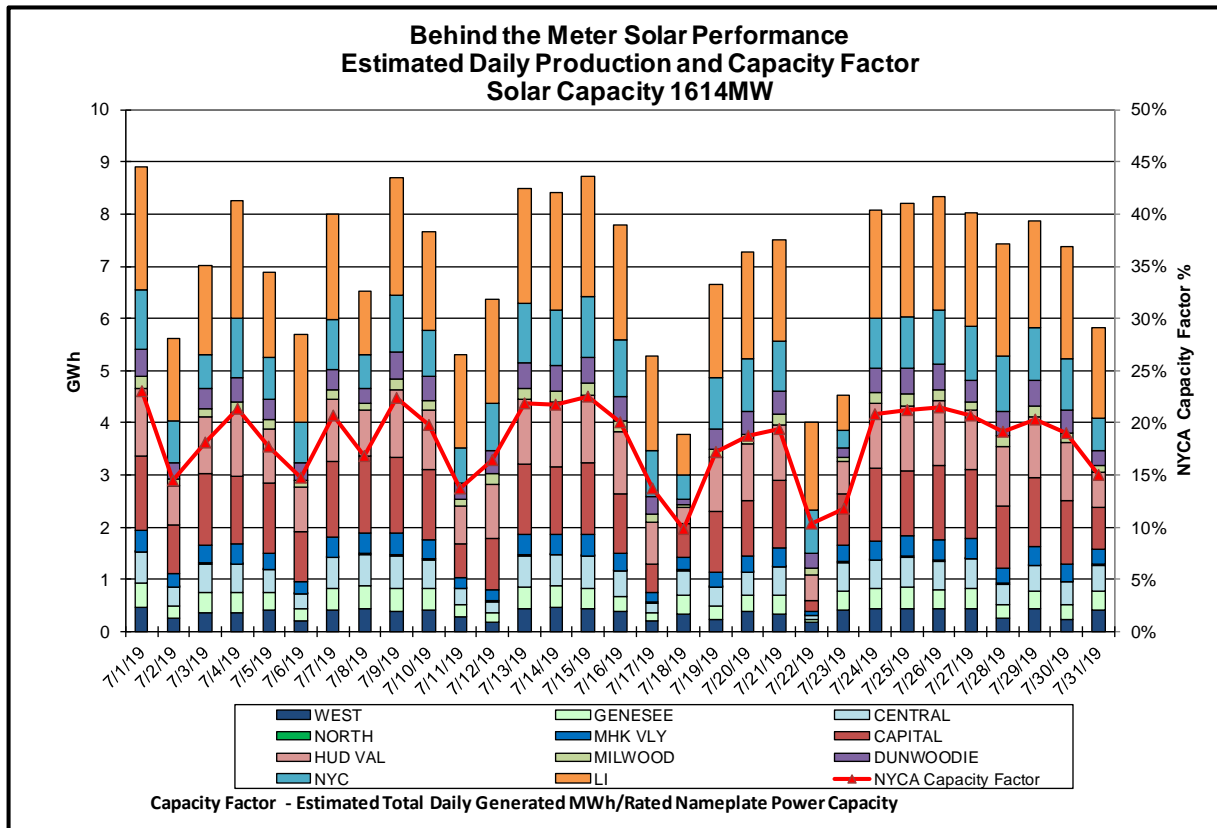
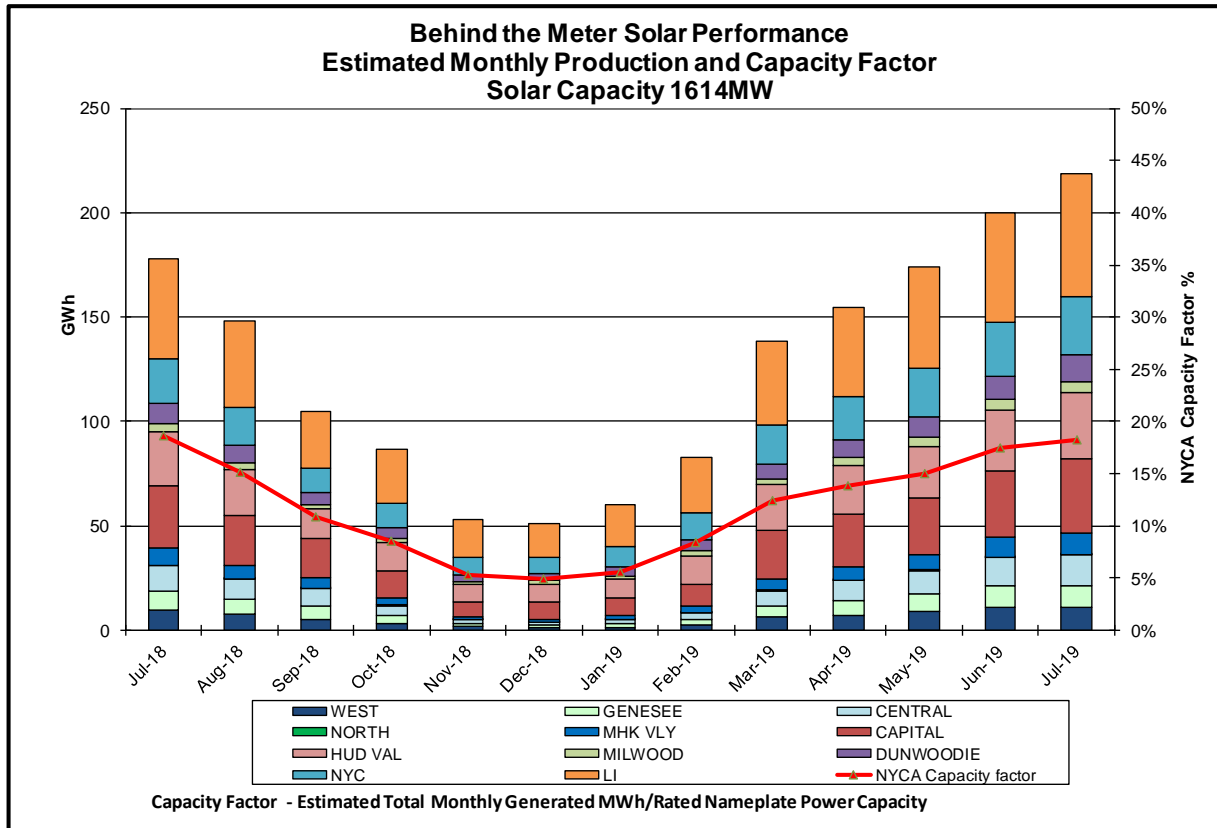
Hourly Error MW - Absolute value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.
Average Hourly Error % - Average value of the ratio of hourly average error magnitude to hourly average actual load demand.
Day-Ahead Average Hourly Error % - 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.

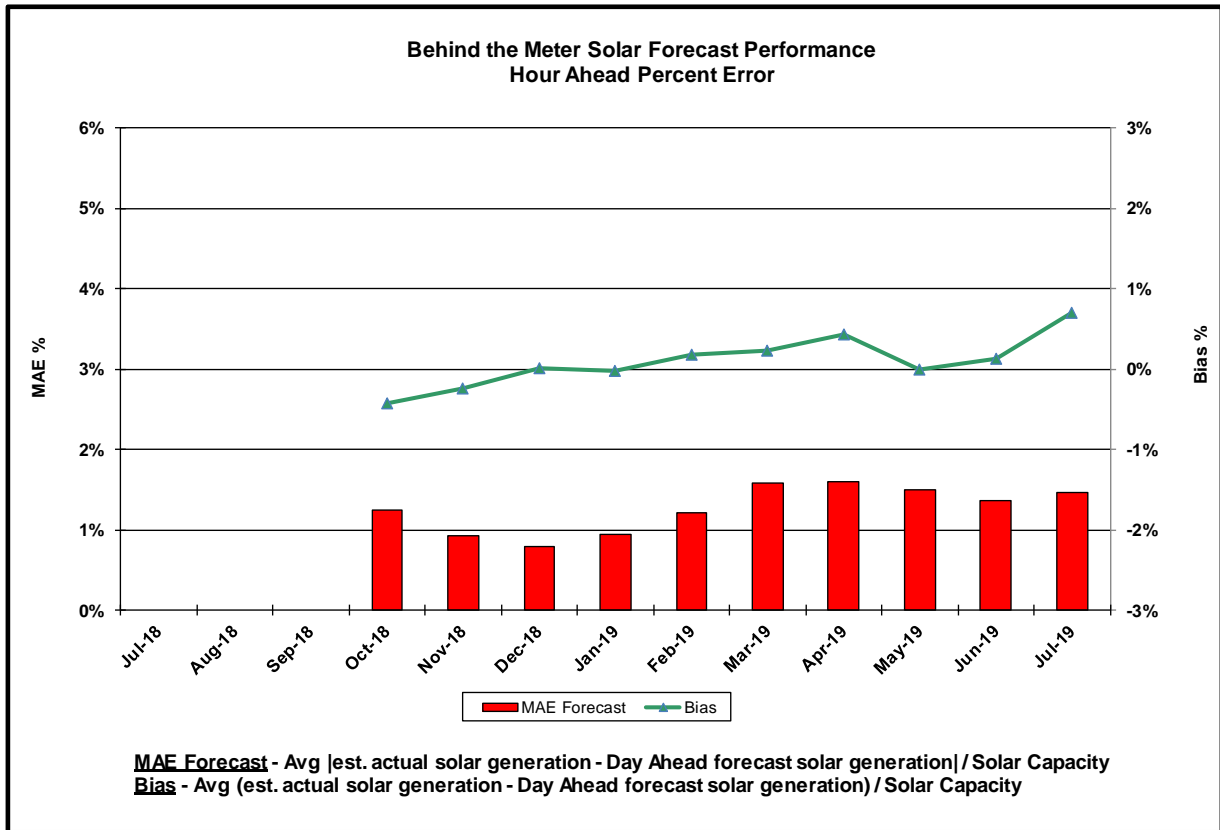
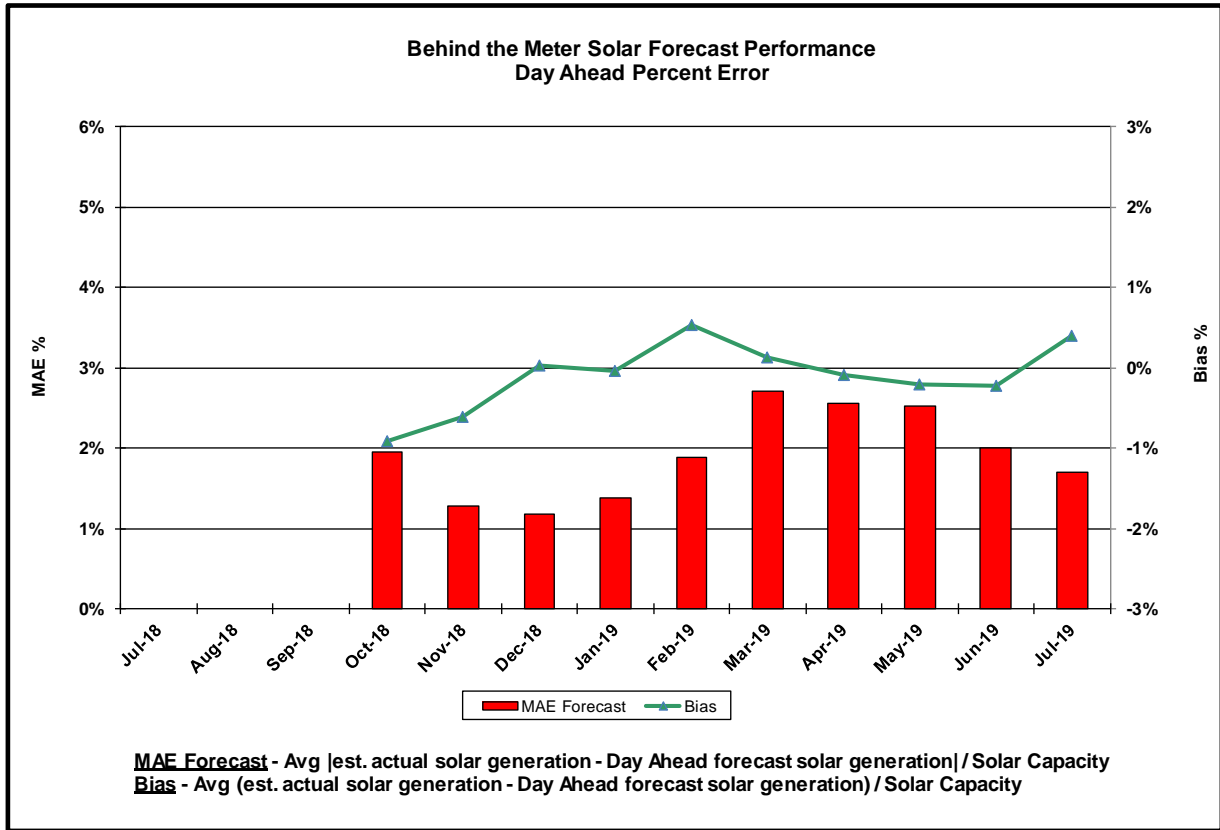


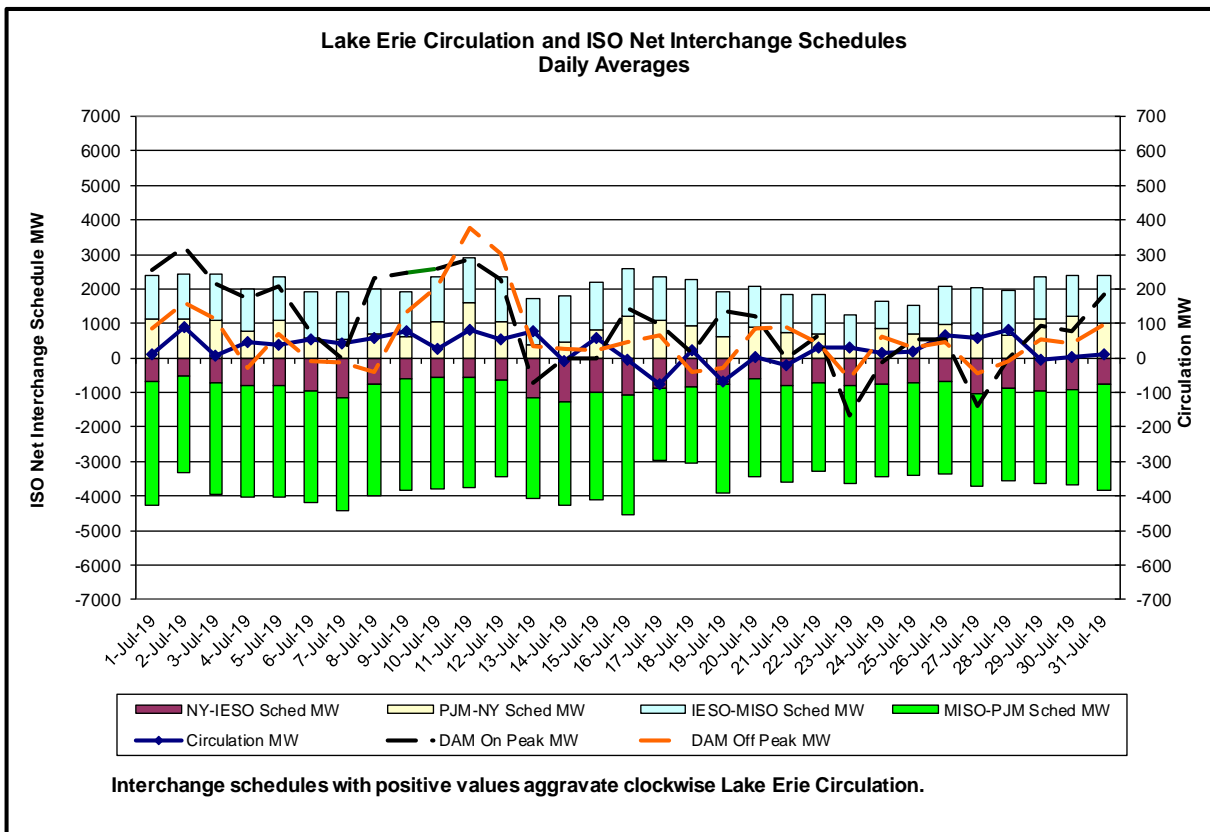
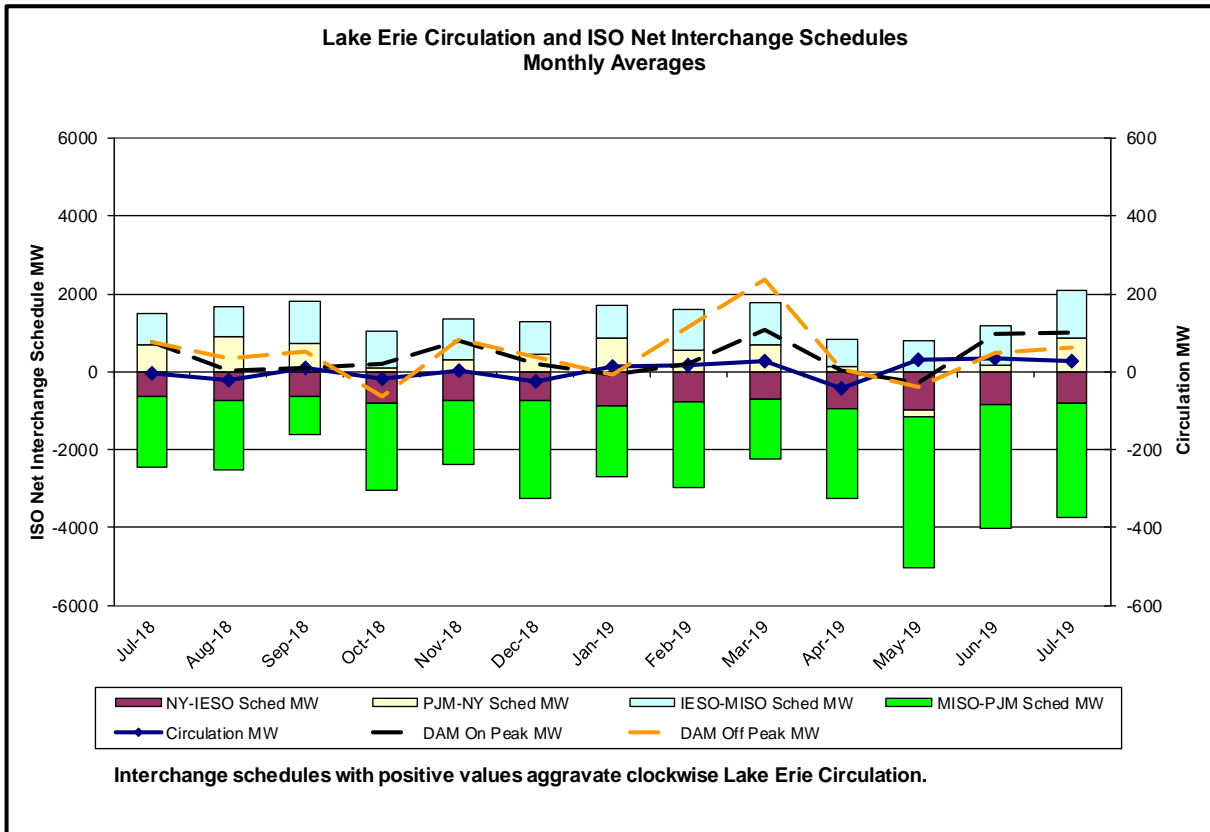




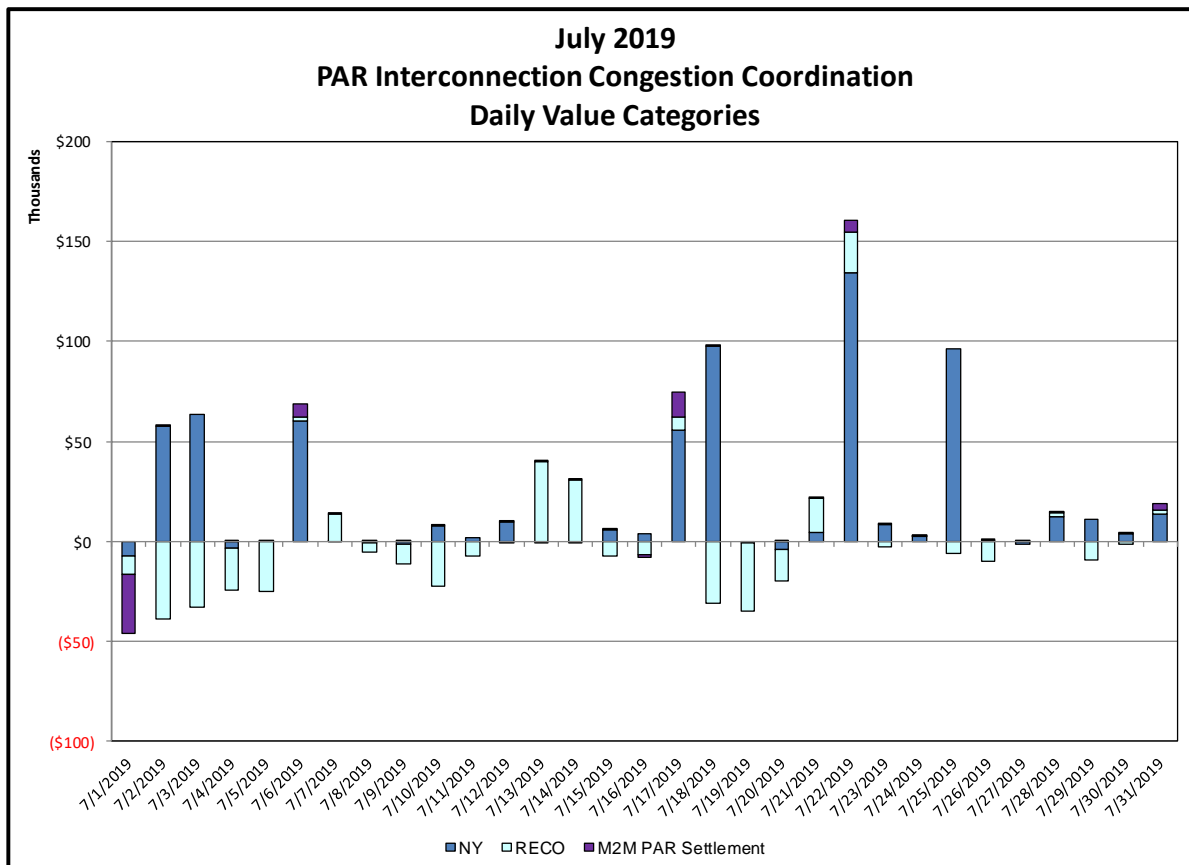
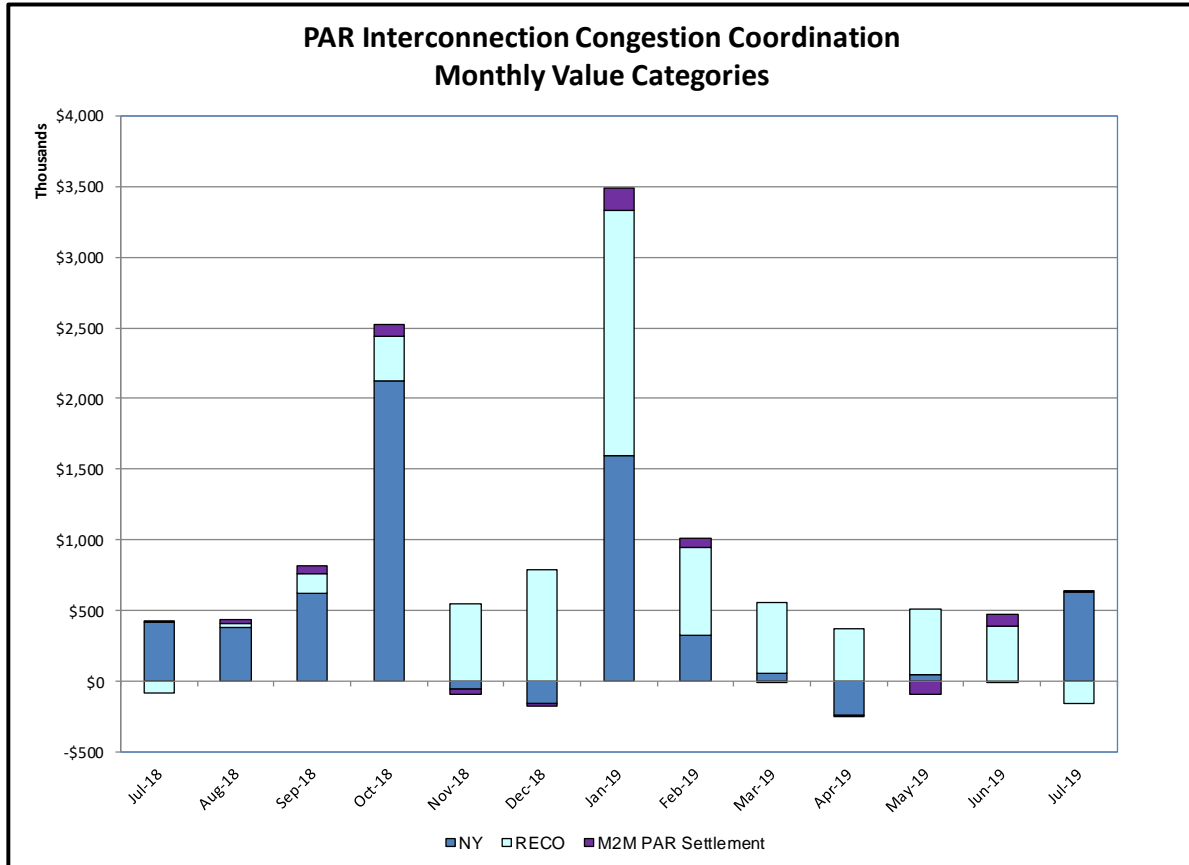






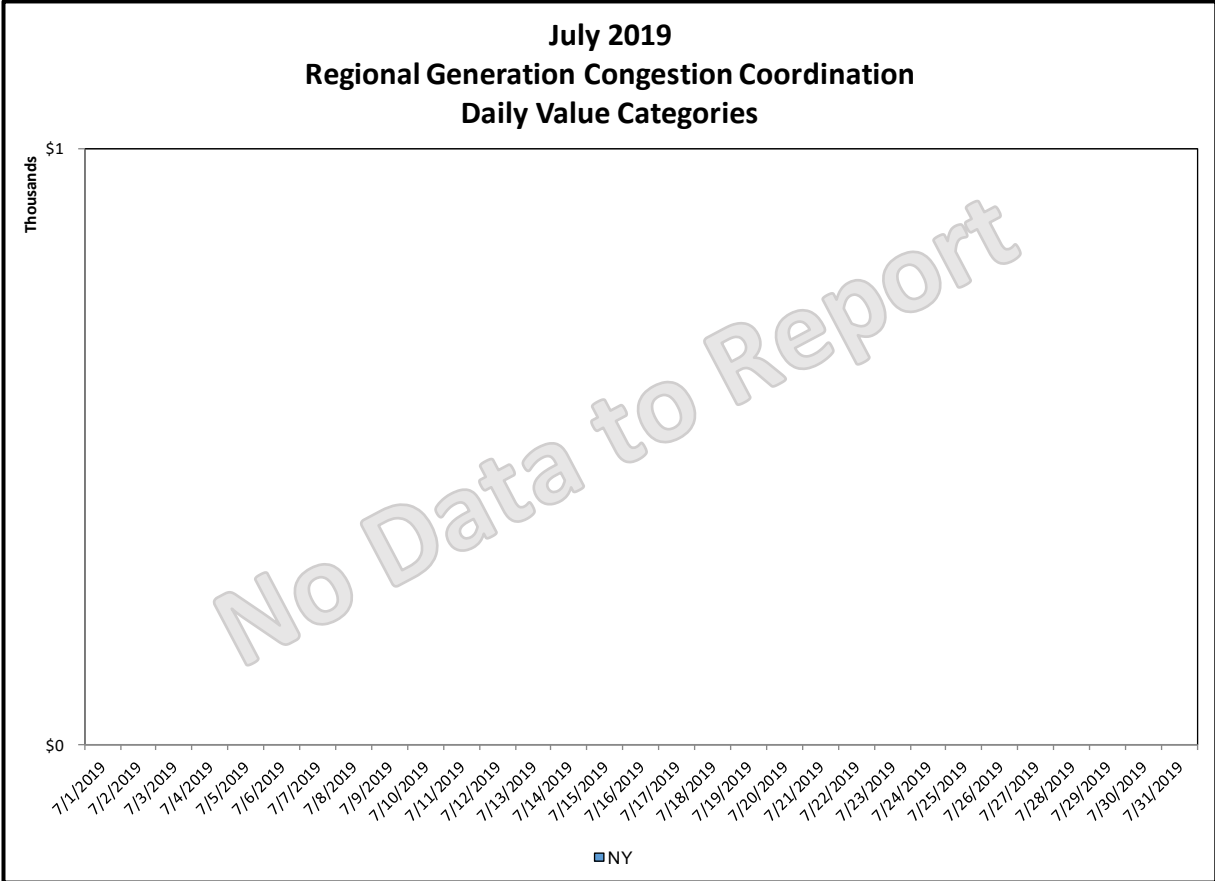
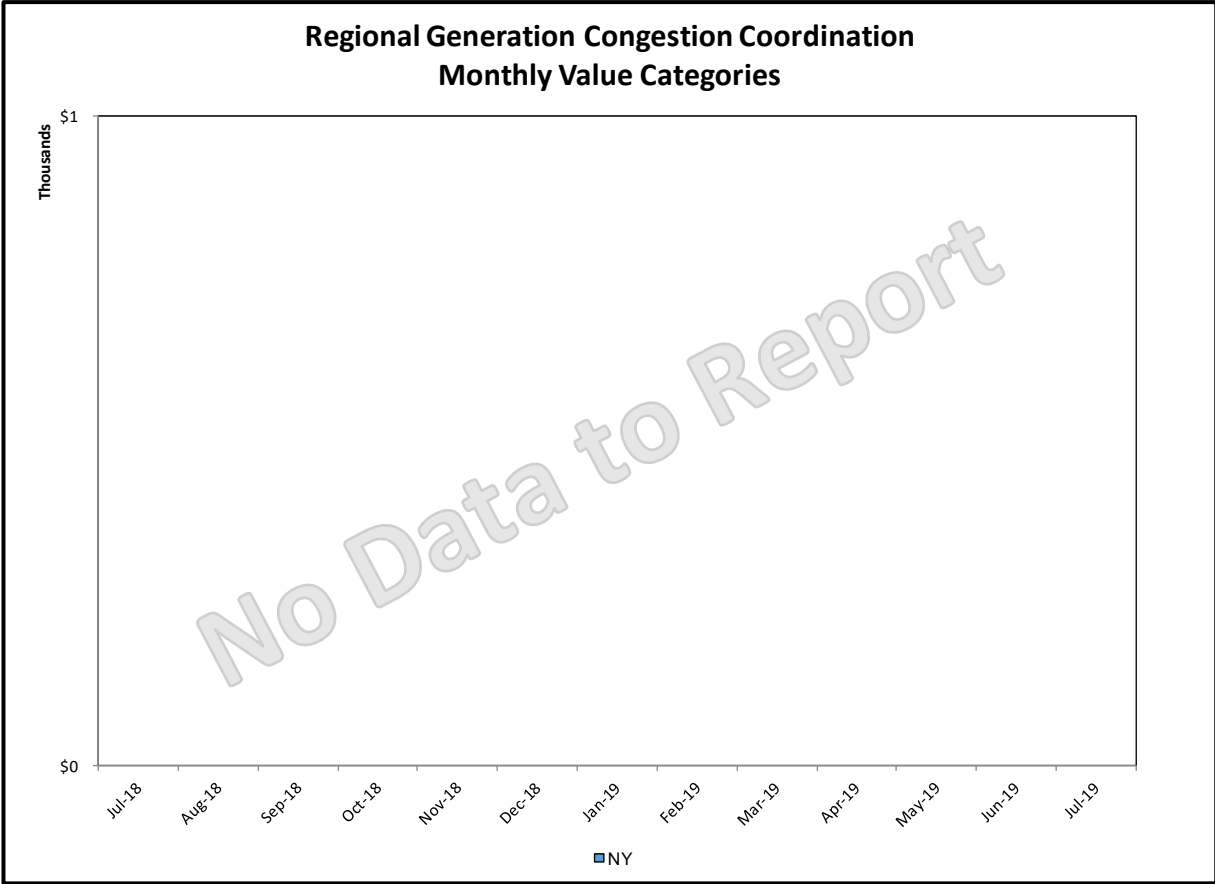


Broader Regional Market Performance Metrics



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.



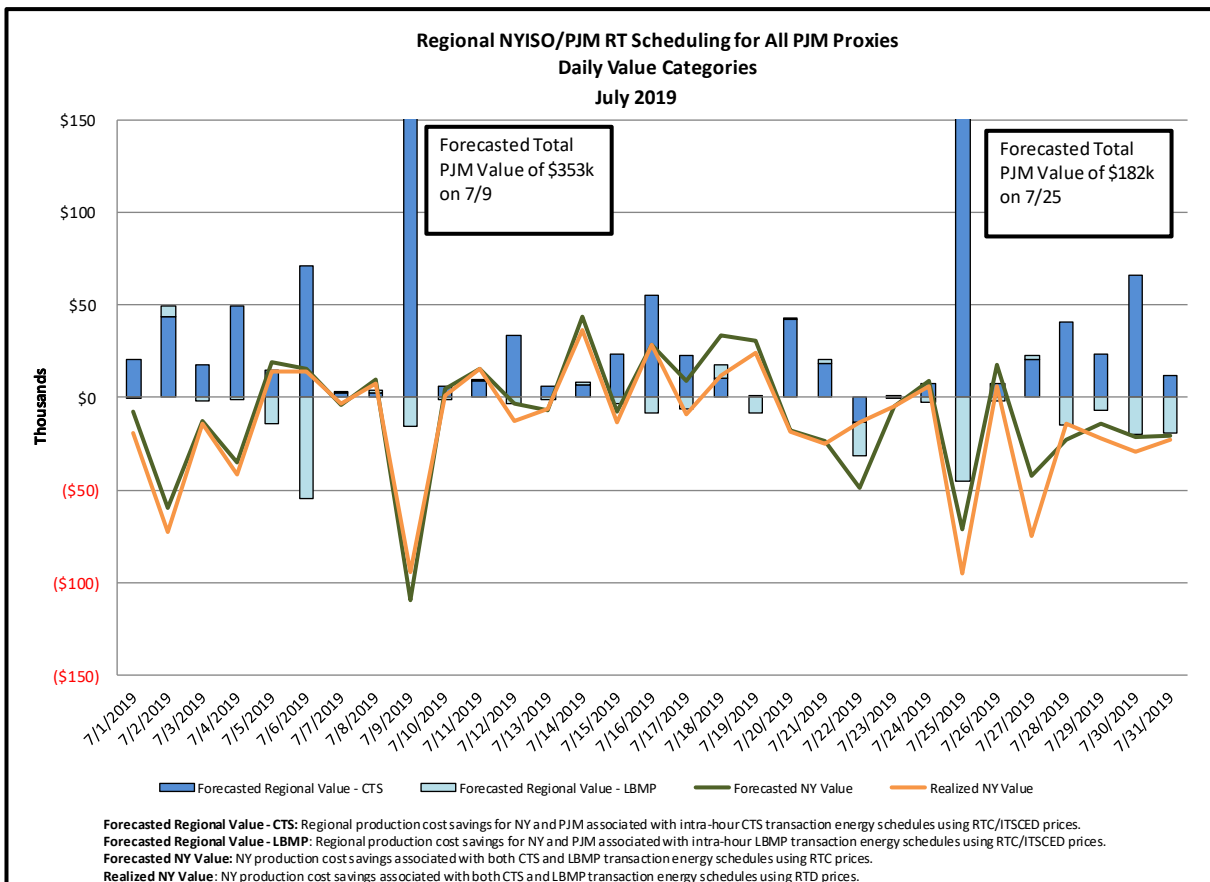
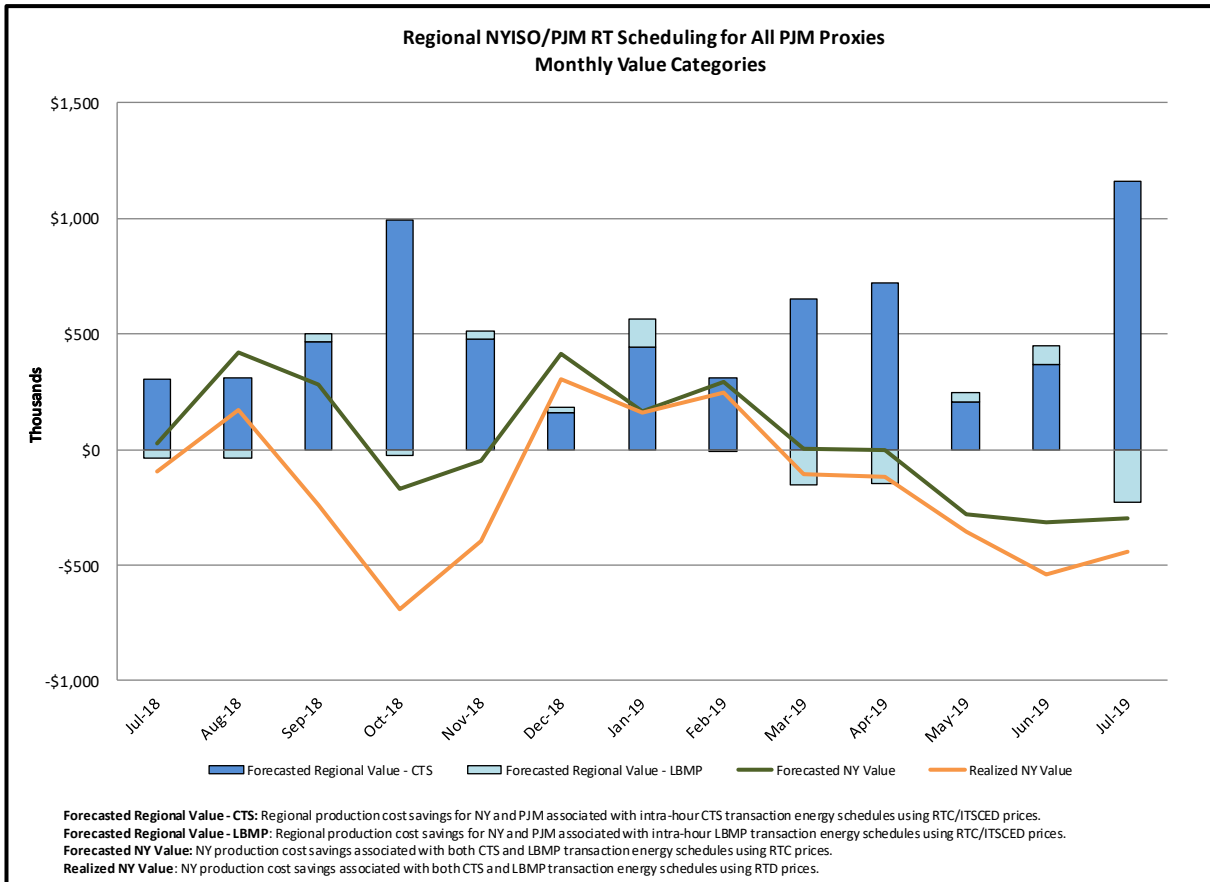
Regional Generation Congestion Coordination

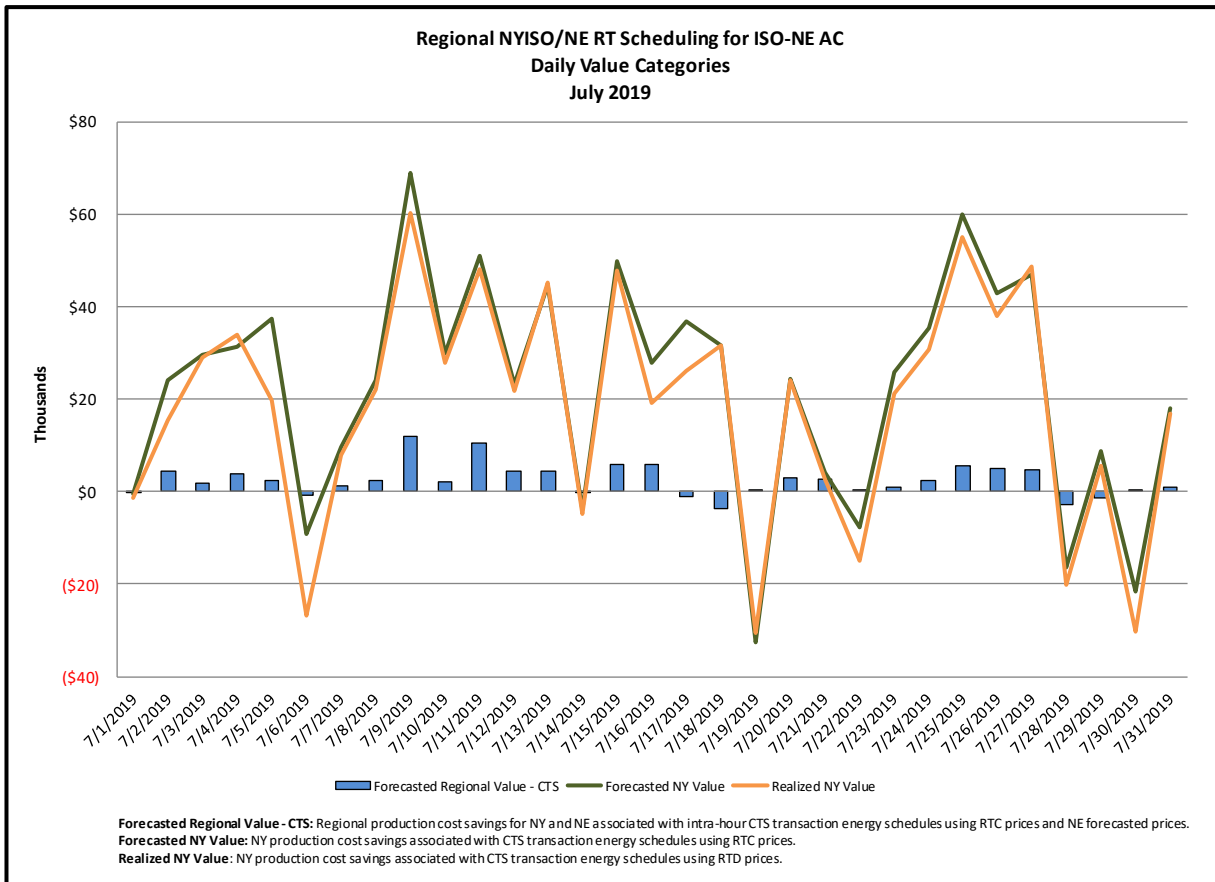
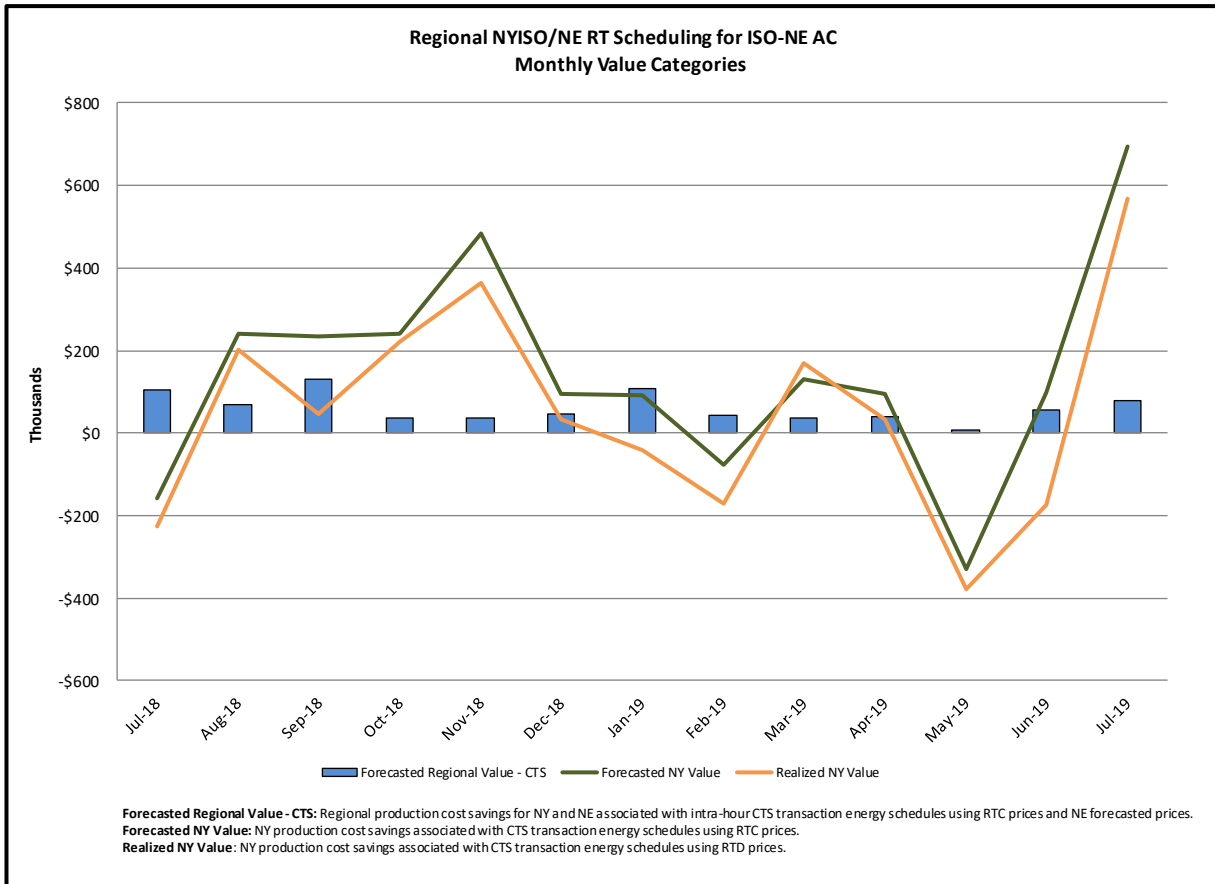
Category

NY

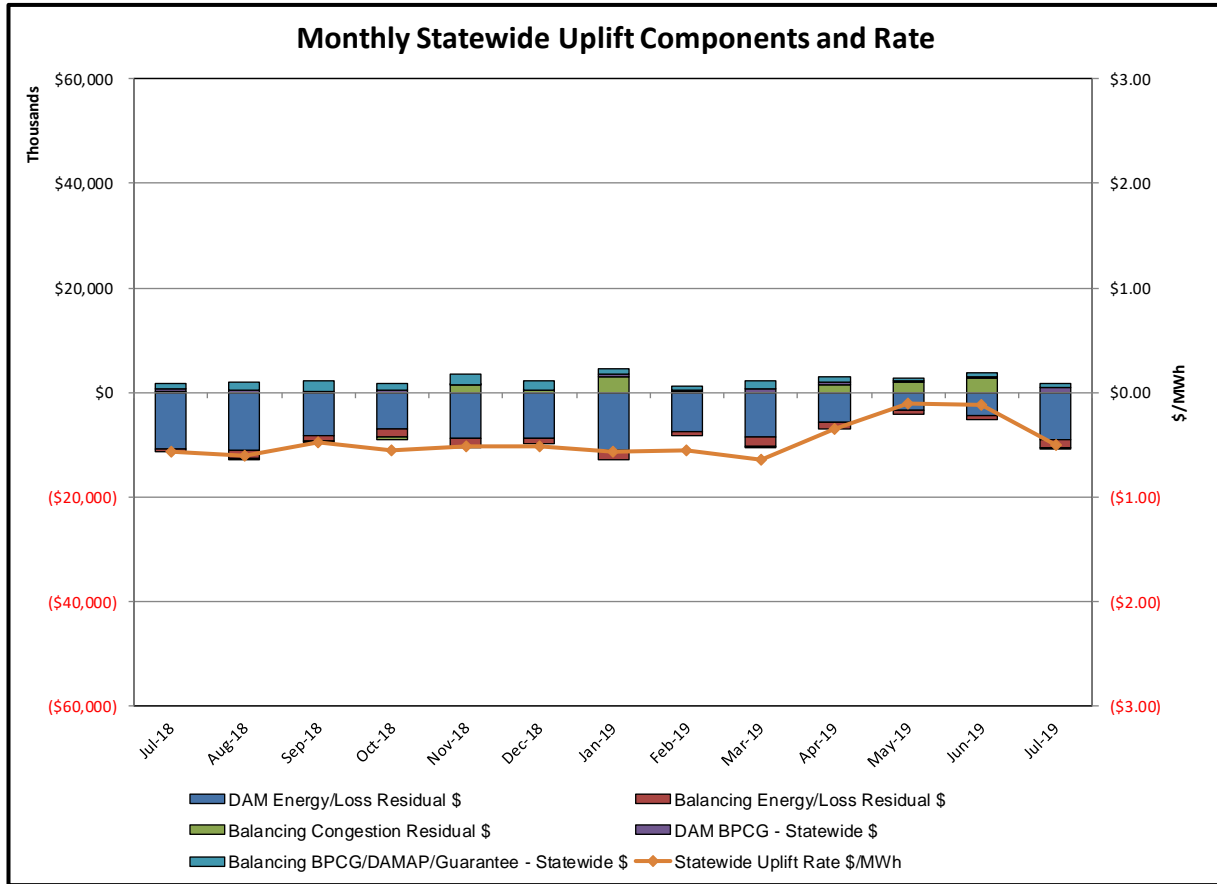
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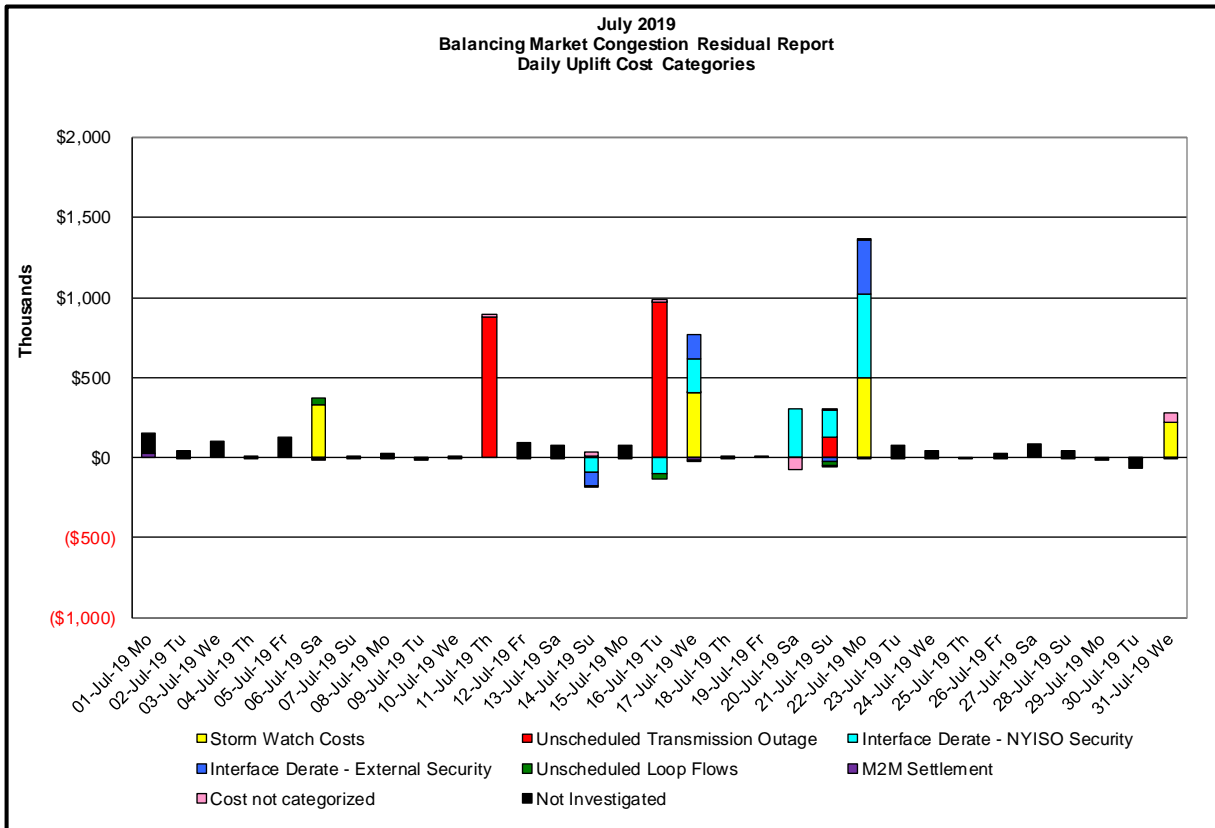
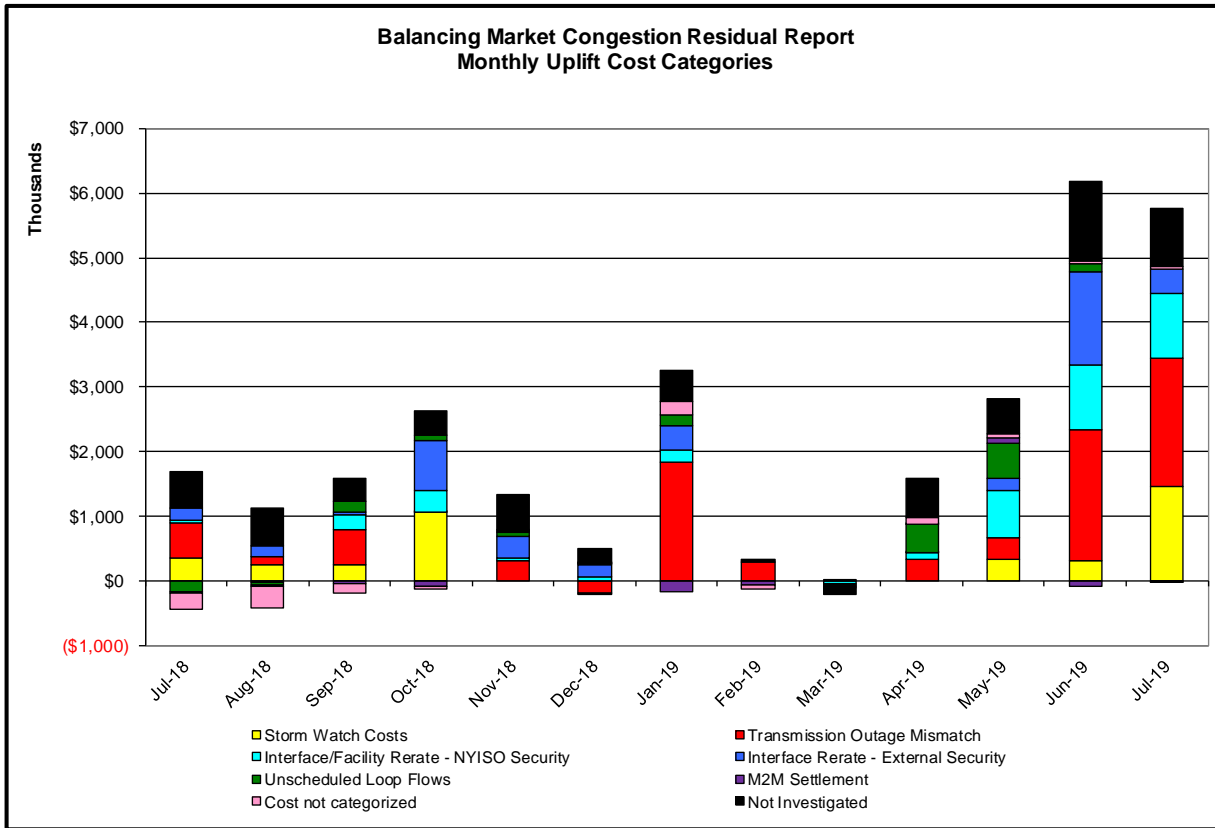
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization of PJM's generation resources to directly address Western or Central NY transmission congestion.





Market Performance Metrics





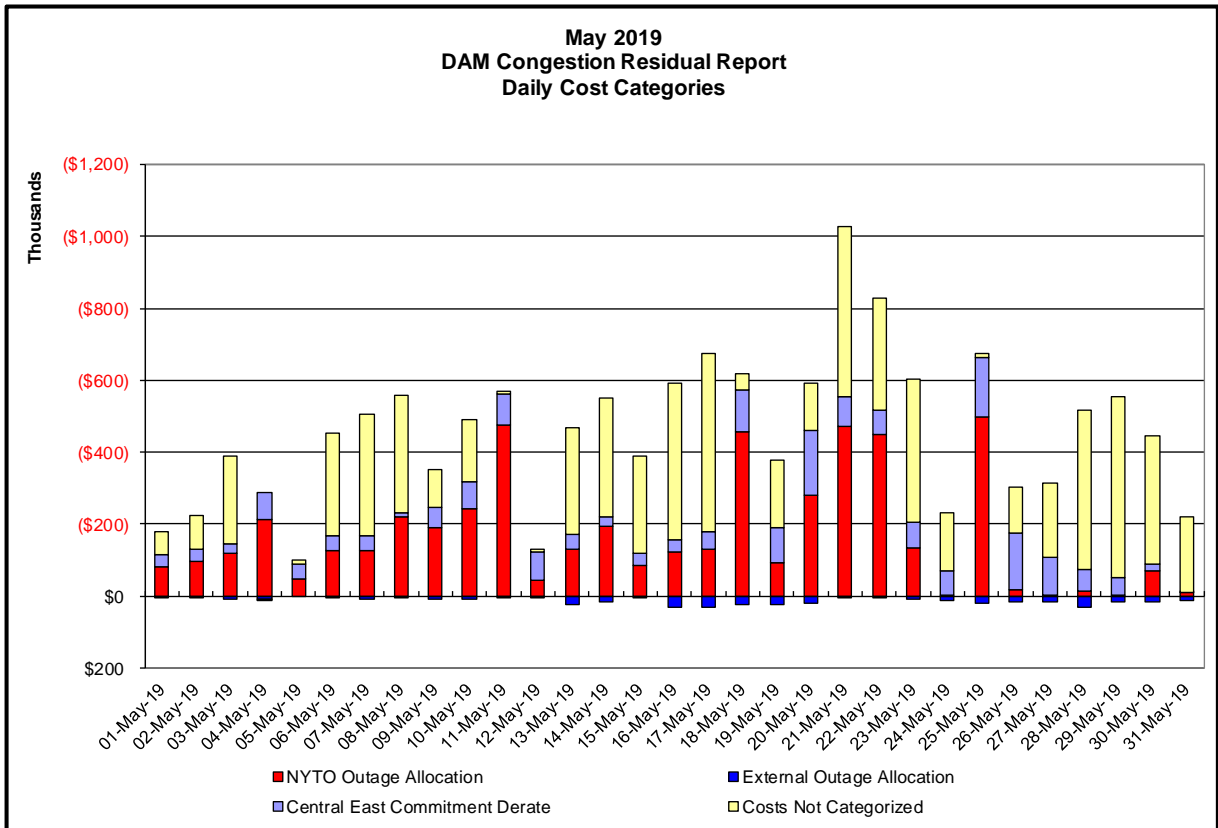
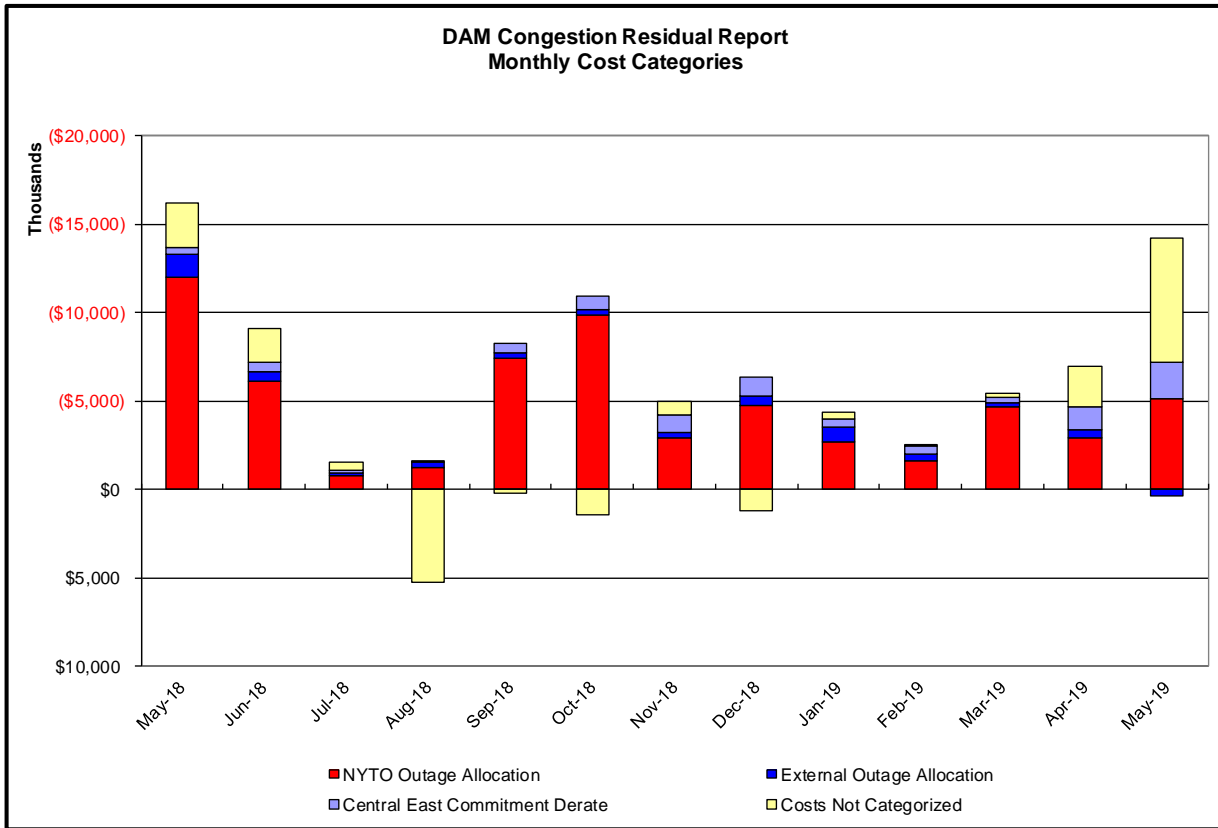
Day's investigated in July:6,11,14,16,17,20,21,22,31			
Event	Date (yyyymmdd)	Hours	Description
	7/6/2019	13-19	Thunder Storm Alert, Leeds-Pleasant Valley 345kV
	7/6/2019	19,20	Thunder Storm Alert, Buchanan-EastView 345kV
	7/6/2019	19,20	Thunder Storm Alert, RockTavern-Roseton 345kV
	7/6/2019	15	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	7/11/2019	20-22	Forced Outage Massena-Marcy 765kV (#MSU1), Chateaugay-Massena 765kV (#7040)
	7/14/2019	17	NYCA DNI Ramp Limit
	7/14/2019	21,22	Uprate East Garden City-Valley Stream 138kV (#262)
	7/14/2019	22	Uprate East Garden City-Valley Stream 138kV I/o SCB:NEWBRDG 1380 461&BK6+4 (#262)
	7/14/2019	17,20-22	Uprate Freshkills-Willowbrook 138kV (#29211)
	7/14/2019	17,20	Uprate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	7/14/2019	17	Uprate Niagara Blvd-Packard 115kV (#181-922)
	7/14/2019	17	Uprate Niagara Blvd-Packard 115kV (#181-922) I/o TWR:PACK 77 & 78 & SAWY BKS
	7/14/2019	17	Uprate Pleasant Valley-Leeds 345kV (#92) I/o Athens-Pleasant Valley 345kV (#91)
	7/14/2019	17	Uprate Scriba-Volney 345kV (#20) I/o Scriba-Volney 345kV (#21)
	7/14/2019	17,20-22	NE_AC-NY Scheduling Limit
	7/14/2019	12,21	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	7/14/2019	12,17	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	7/16/2019	17	Forced outage Sprainbrook-East Garden City 345kV (#Y49)
	7/16/2019	17-20	Forced outage East Garden City 345/138kV Bk(#AT1)
	7/16/2019	21-23	Uprate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	7/16/2019	21,22	Uprate Freshkills-Willowbrook 138kV (#29211)
	7/16/2019	22,23	Uprate Central East
	7/16/2019	9-11	Derate Dunwoodie-MottHaven 345kV (#72)
	7/16/2019	10	Derate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	7/16/2019	21	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; West 115kV & 230kV
	7/17/2019	14-18	Thunder Storm Alert, Leeds-Pleasant Valley 345kV
	7/17/2019	14,17-21	Thunder Storm Alert, Buchanan-EastView 345kV
	7/17/2019	14-18	Thunder Storm Alert, Chester-Shoemaker 138kV
	7/17/2019	7	Forced outage East Garden City 345/138kV Bk(#AT1)
	7/17/2019	0,16,18,19	NYCA DNI Ramp Limit
	7/17/2019	9,10	Derate E179th-Dunwoodie South 138kV (#99153)
	7/17/2019	0	Uprate Gowanus-Greenwood 138kV (#42231/42232)
	7/17/2019	0	Uprate Gowanus-Greenwood 138kV (#42232) I/o TWR:GOETHALS 22 & 21
	7/17/2019	7,9,10,12	Derate Motthaven-Dunwoodie 345kV (#71)
	7/17/2019	9,10,12-14	Derate Niagara-Packard 230kV (#61) for I/o TWR:PACKARD 62 & BP76
	7/17/2019	9,10,12-14	Derate Niagara Blvd-Packard 115kV (#181-922) I/o TWR:PACK 77 & 78 & SAWY BKS
	7/17/2019	10	Derate Rainey-Vernon 138kV (#36312)
	7/17/2019	0	Uprate Central East
	7/17/2019	0	Uprate Freshkills-Willowbrook 138kV (#29211)
	7/17/2019	15	NE_AC DNI Ramp Limit
	7/17/2019	0,17	NE_AC-NY Scheduling Limit
	7/20/2019	10	Uprate East 179th St.-HellGate 138kV (#15055)
	7/20/2019	10	Uprate Freshkills-Willowbrook 138kV (#29211)
	7/20/2019	15,16	Derate Gowanus-Greenwood 138kV (#42231/42232)
	7/20/2019	19-21	Derate Greenwood-Kent Ave 138kV (#31232)
	7/20/2019	11-16	Derate Greenwood-Vernon 138kV (#31231)
	7/20/2019	11-16,20	Derate Lake Success-Shore Road 345kV (367/368) I/o SHORE_RD-LAKSUCSS_138_368/367
	7/20/2019	10,11	Derate Buffalo-WalckRd 115kV (#133) I/o SIN:PACKARD-BUFALO78_130
	7/21/2019	9-17	Forced outage Chateaugay DC 1
	7/21/2019	10,22	NYCA DNI Ramp Limit
	7/21/2019	20,22	Derate Central East
	7/21/2019	0-2,4,5	Uprate Central East
	7/21/2019	15,16	Derate East Garden City-Valley Stream 138kV (#262) for BUS:BARRETT 292&459&G2&IC9-12
	7/21/2019	9-18,20,22	Derate Freshkills-Willowbrook 138kV (#29212)
	7/21/2019	0-2,4,5	Uprate Gowanus-Greenwood 138kV (#42231/42232)
	7/21/2019	11-18	Derate Greenwood-Kent Ave 138kV (#31232)
	7/21/2019	10-18	Derate Lake Success-Shore Road 345kV (367/368) I/o SHORE_RD-LAKSUCSS_138_368/367
	7/21/2019	10,11,13	Derate Buffalo-WalckRd 115kV (#133) I/o SIN:PACKARD-BUFALO78_130
	7/21/2019	9,10	Derate East179th-Dunwoodie South 138kV (#99153)
	7/21/2019	9,10,22	Derate Dunwoodie-MottHaven 345kV (#72)
	7/21/2019	0	IESO_AC DNI Ramp Limit
	7/21/2019	0-2,4,5	NE_AC-NY Scheduling Limit
	7/21/2019	21	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	7/22/2019	14,17-20	Thunder Storm Alert, Buchanan-EastView 345kV
	7/22/2019	14,17-20	Thunder Storm Alert, Carplace-East Garden City 138kV
	7/22/2019	14-18	Thunder Storm Alert, Leeds-Pleasant Valley 345kV
	7/22/2019	14-18	Thunder Storm Alert, Chester-Shoemaker 138kV
	7/22/2019	11-20	Derate Freshkills-Willowbrook 138kV (#29212)
	7/22/2019	11,12,20	Derate Dunwoodie-MottHaven 345kV (#72)
	7/22/2019	6	Uprate Goethals-Gowanus 345kV (#25/26)
	7/22/2019	6,23	Uprate Gowanus-Greenwood 138kV (#42231/42232)
	7/22/2019	15,17	NYCA DNI Ramp Limit
	7/22/2019	16,17,18	NE_AC DNI Ramp Limit
	7/31/2019	13-16,18	Thunder Storm Alert, Buchanan-EastView 345kV
	7/31/2019	14	Thunder Storm Alert, Chester-Shoemaker 138kV
	7/31/2019	14-16	Thunder Storm Alert, Leeds-Pleasant Valley 345kV
	7/31/2019	16,18	Thunder Storm Alert, RockTavern-Roseton 345kV

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	

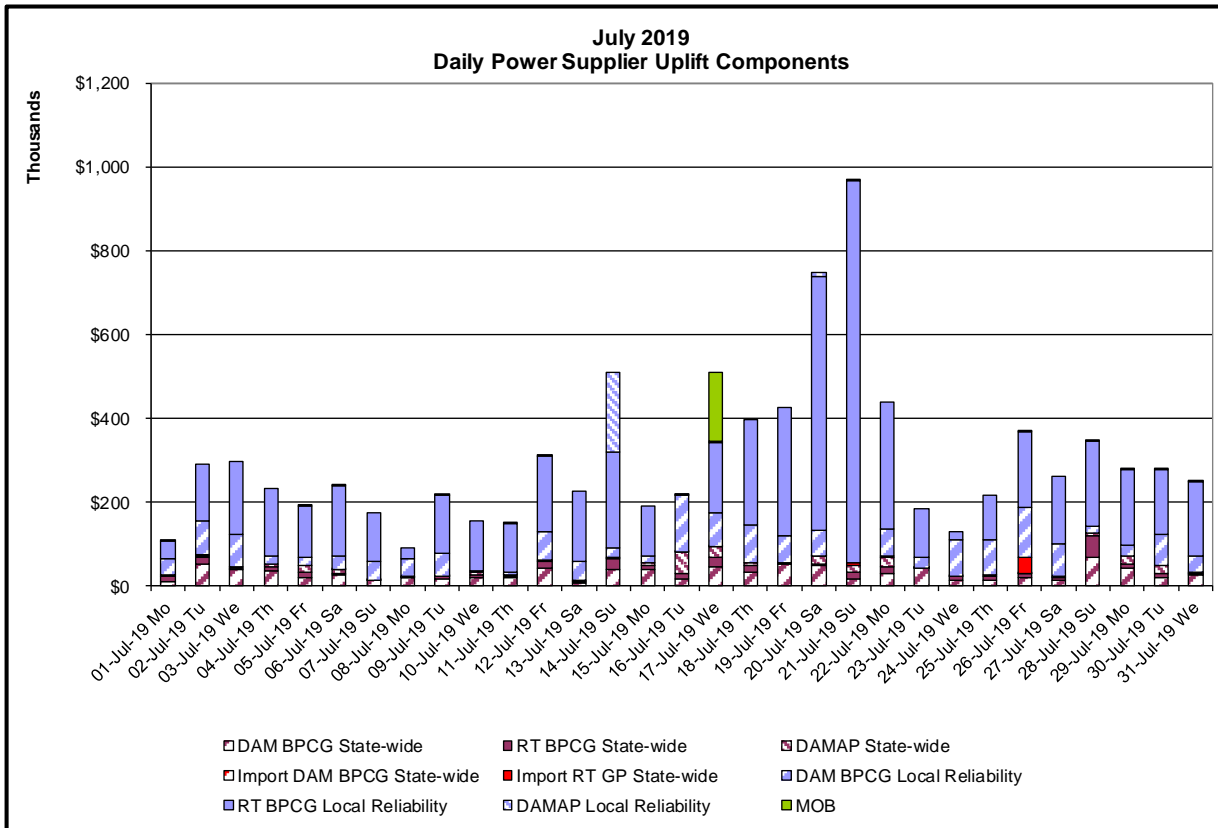
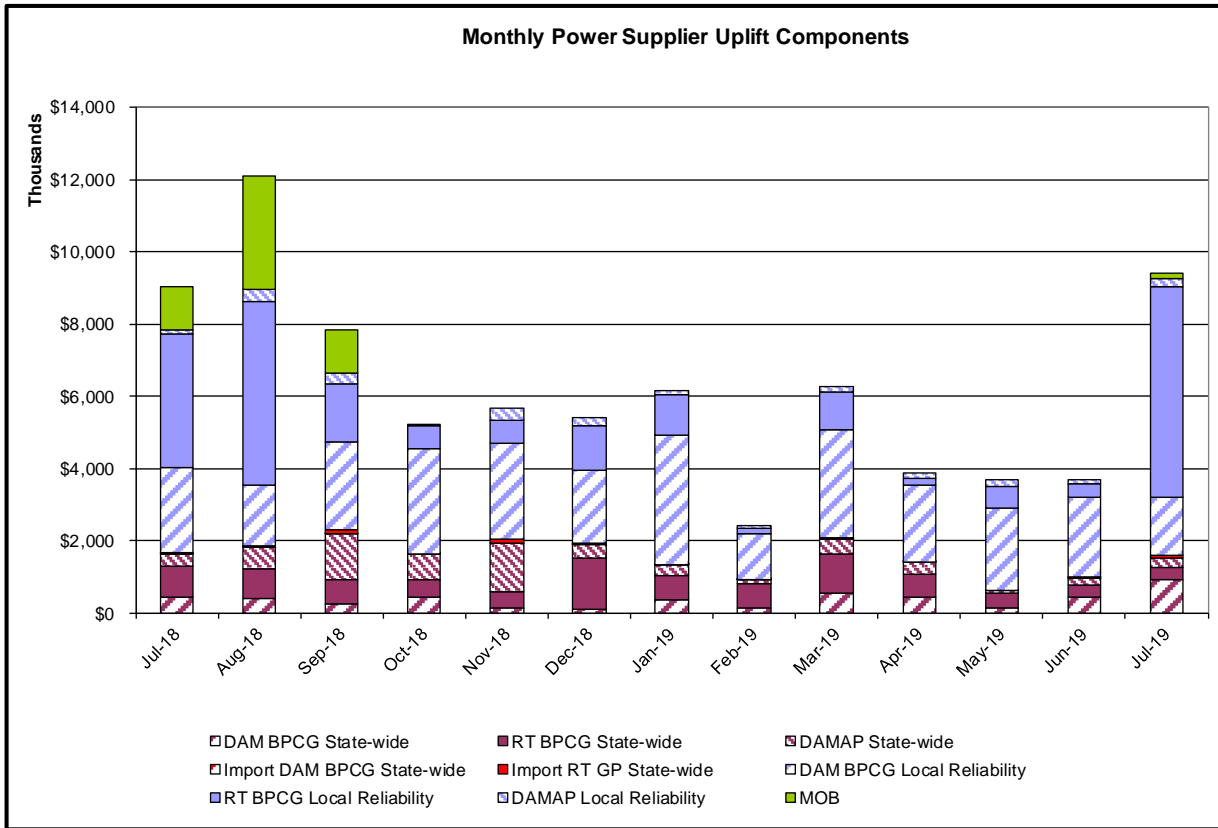
Monthly Balancing Market Congestion Report Assumptions/Notes

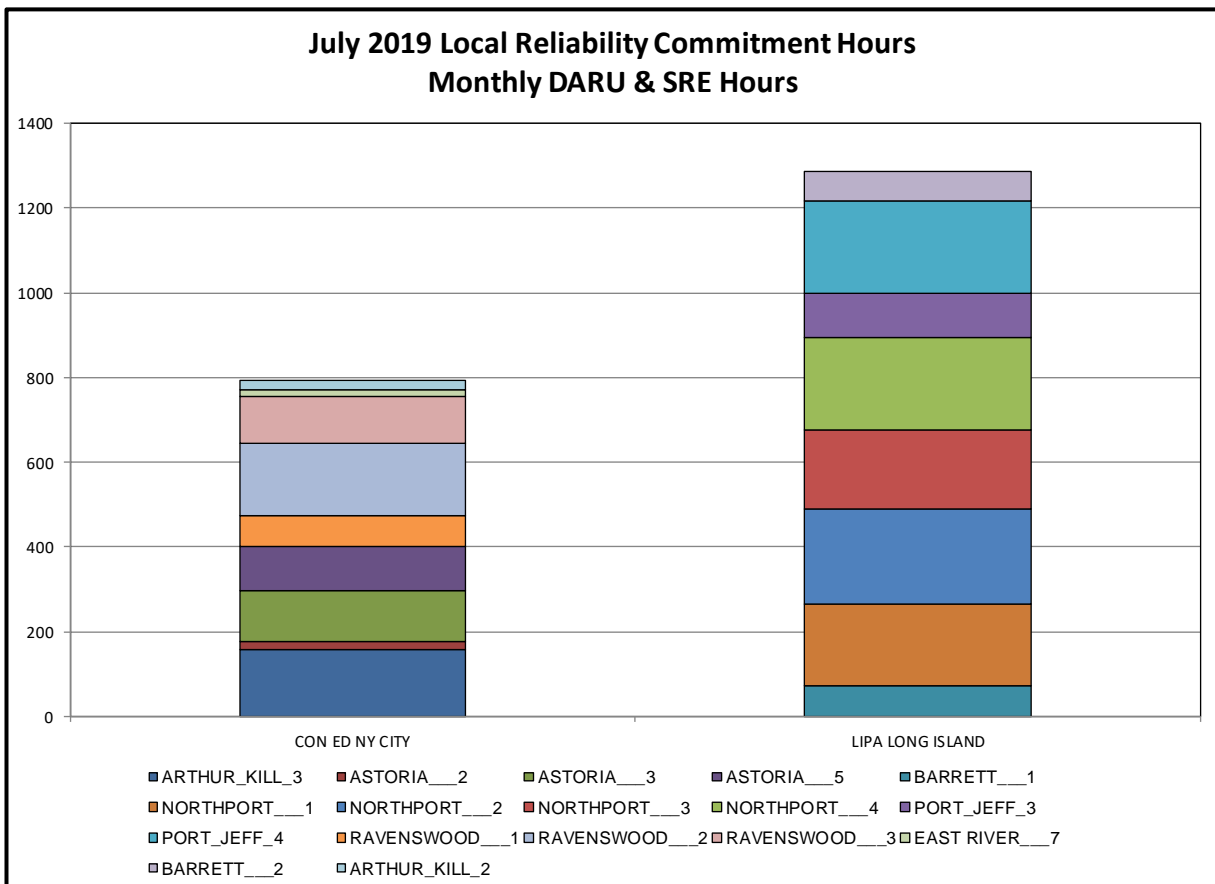
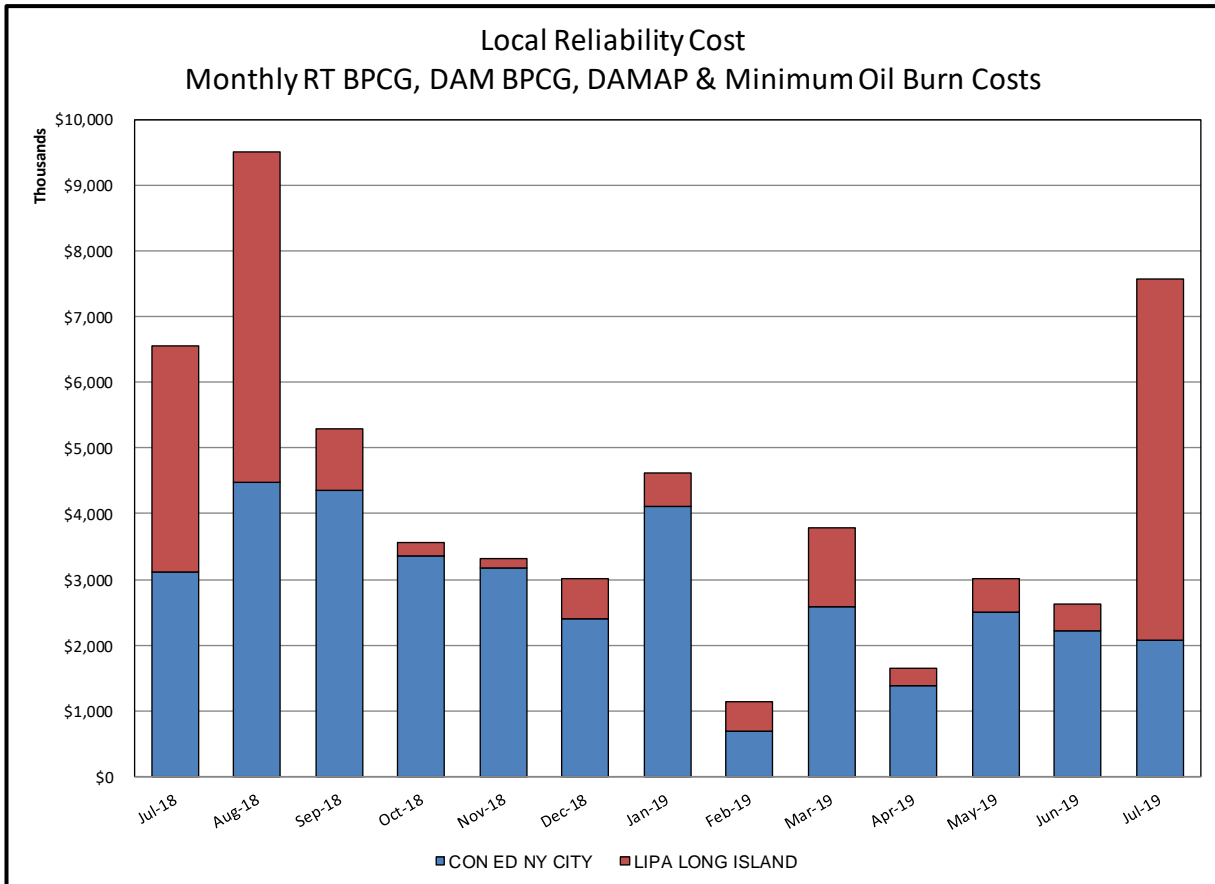
1) Storm Watch Costs are identified as daily total uplift costs
 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
 3) Uplift costs associated with multiple event types are apportioned equally by hour

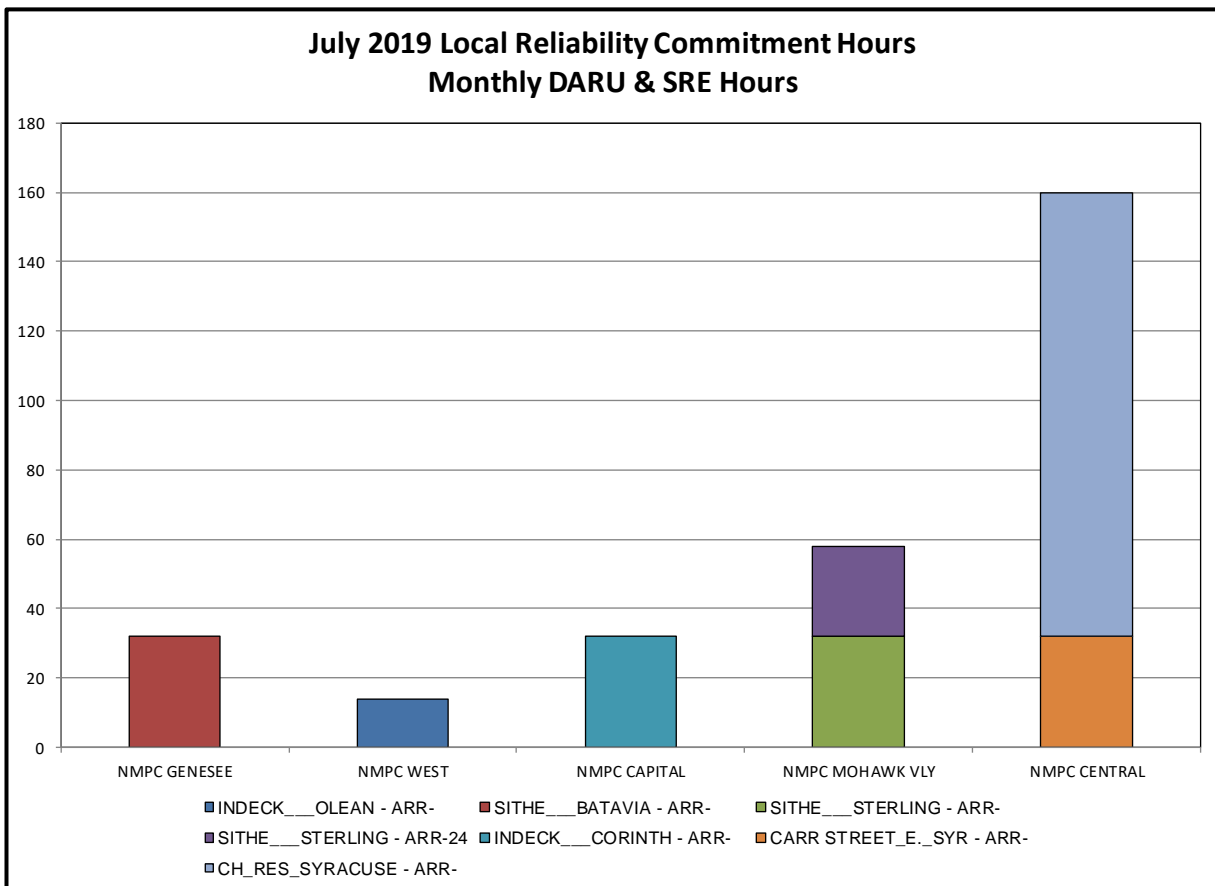
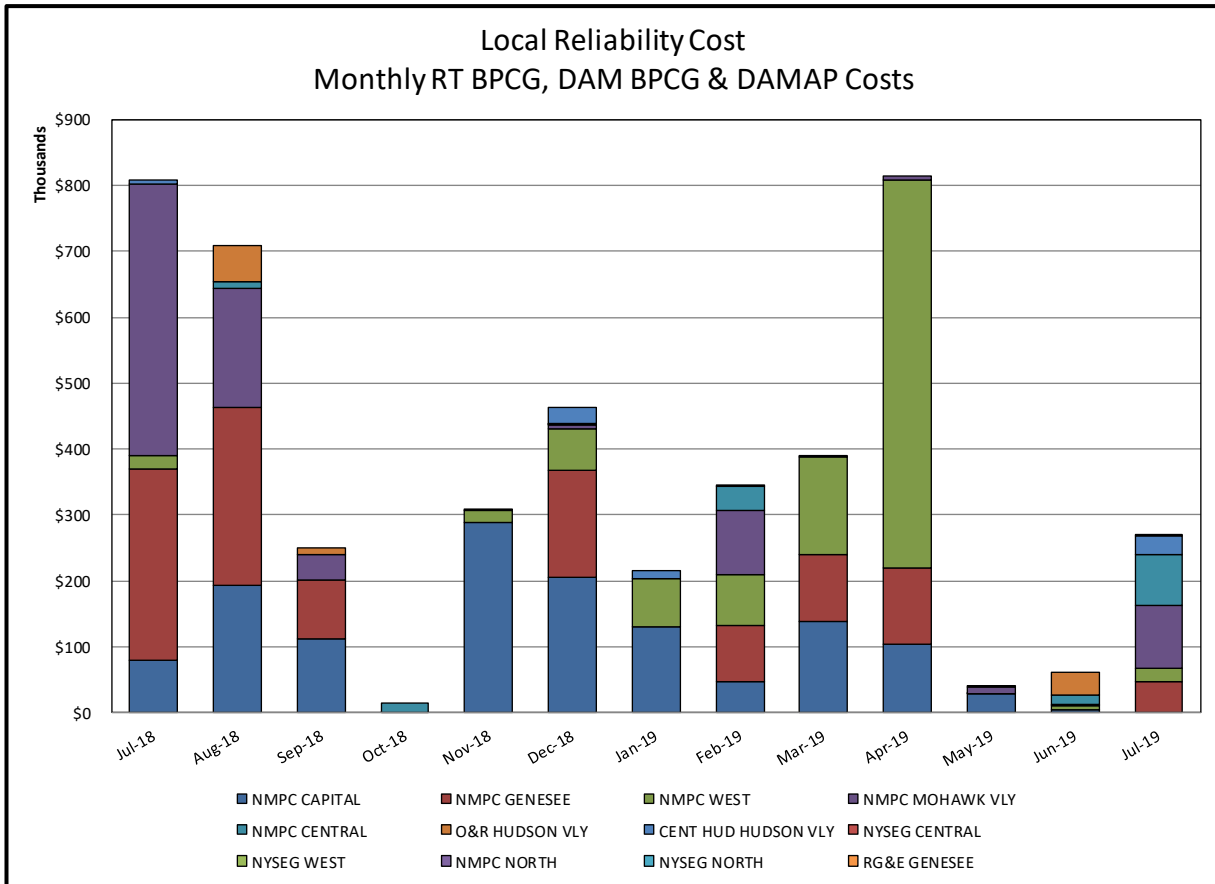


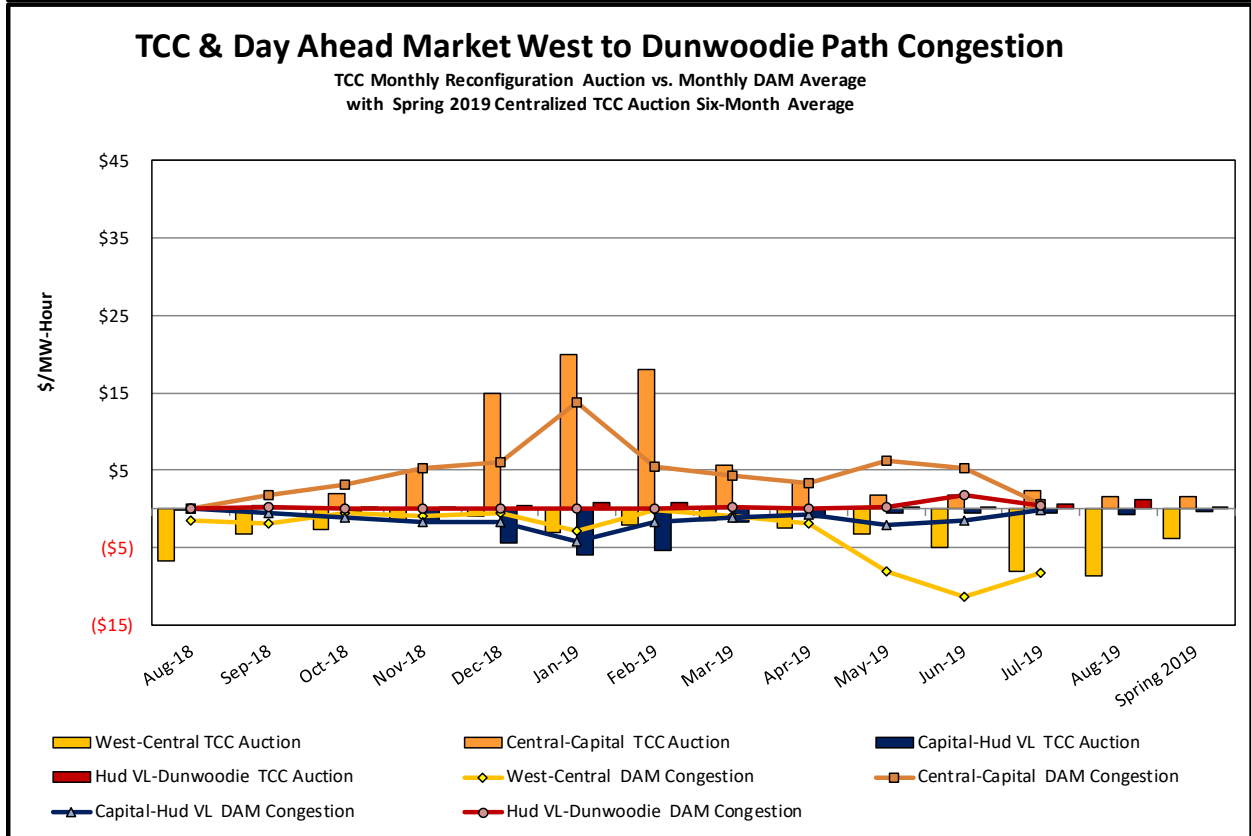
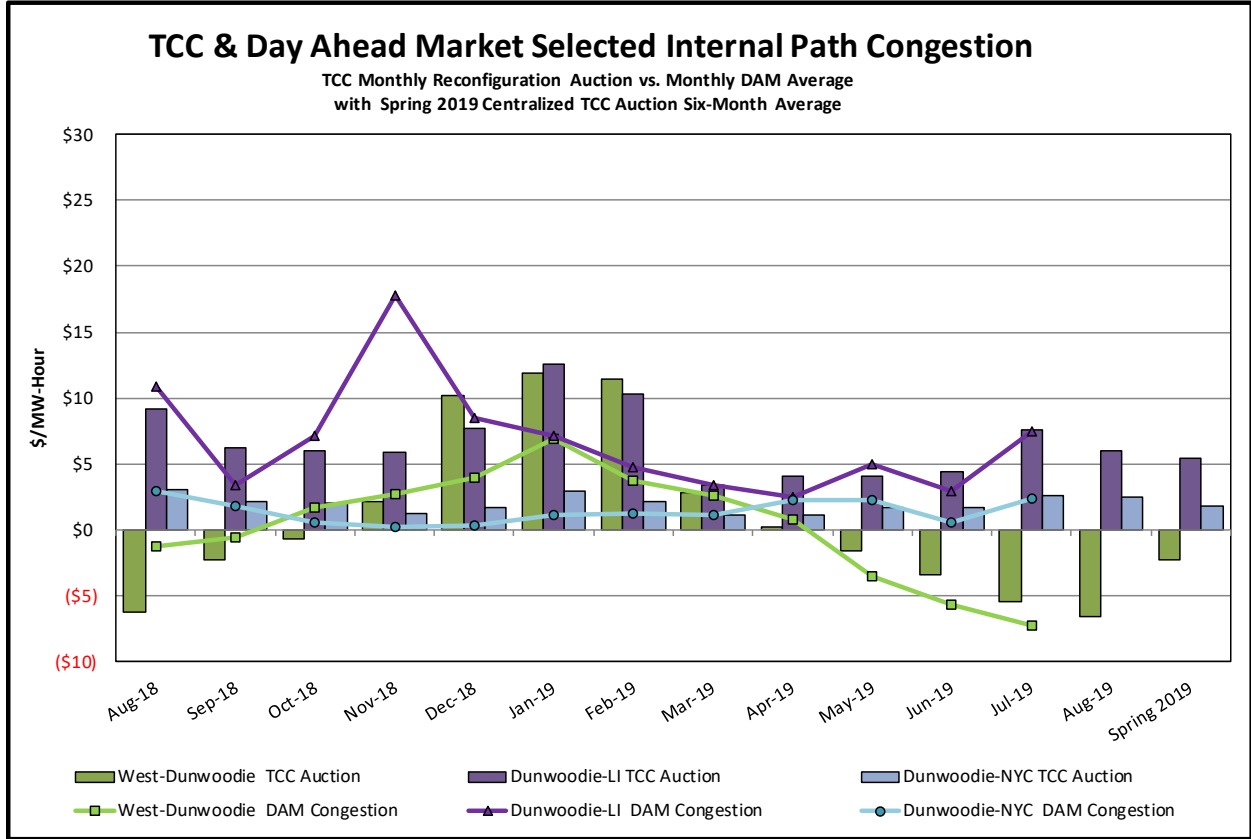
Day-Ahead Market Congestion Residual Categories

<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.
External Outage Allocation	All TO by Monthly Allocation Factor	Direct allocation to transmission equipment status change caused by change in status of external equipment.	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.	



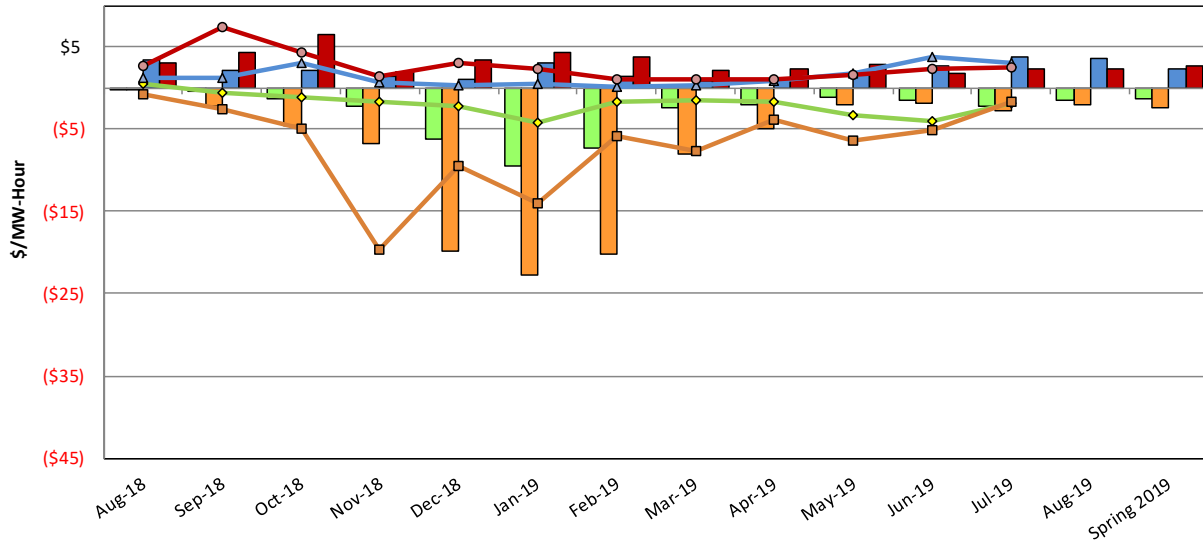






TCC & Day Ahead Market Selected External Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average
with Spring 2019 Centralized TCC Auction Six-Month Average



- 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

