

Operations Performance Metrics Monthly Report



June 2017 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 11, 2017.

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June 2017 Operations Performance Highlights

- Peak load of 29,126 MW occurred on 06/13/2017 HB 16
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 15.5 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- Implemented the 150MW hourly adjustment in the Day-Ahead market to reflect PJM's service to RECo load over the Ramapo PARs on 6/14/2017.
- Implemented the revised tariff modifications to the Graduated Transmission Demand Curve on 6/20/2017.
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

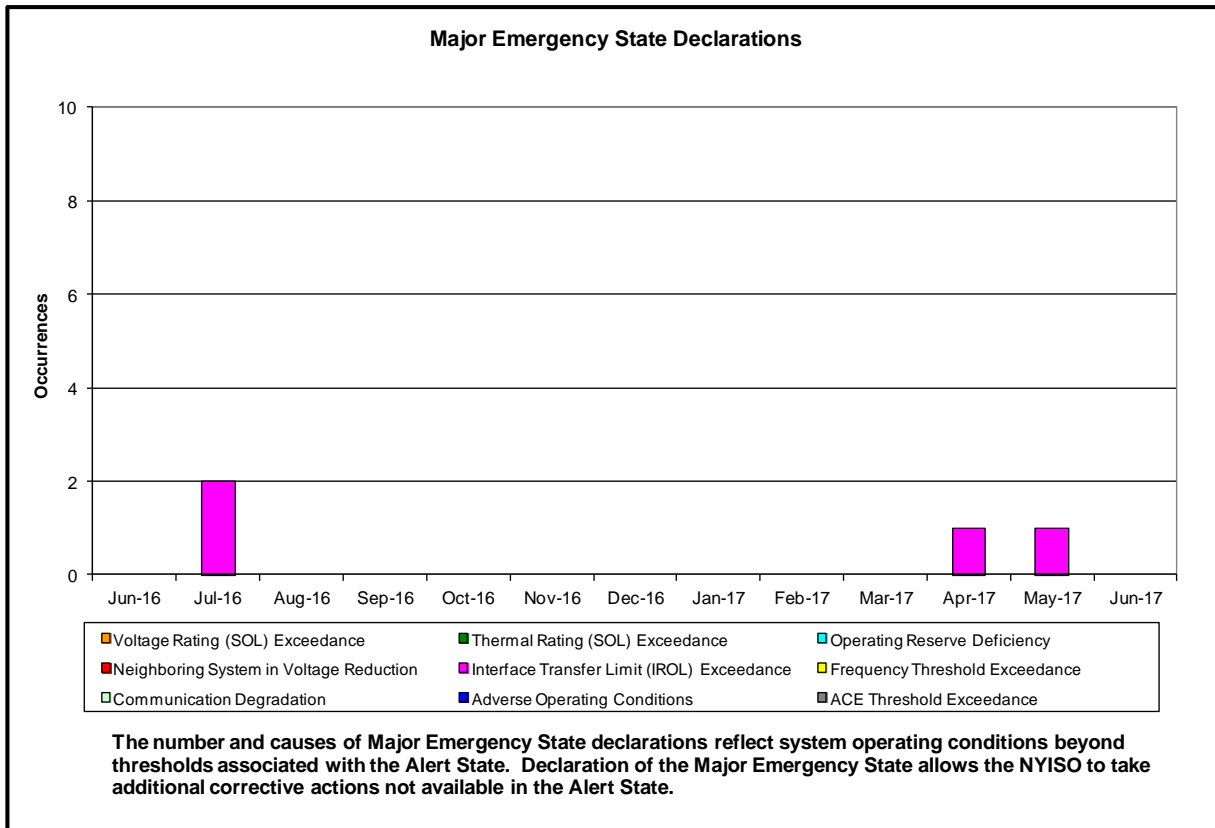
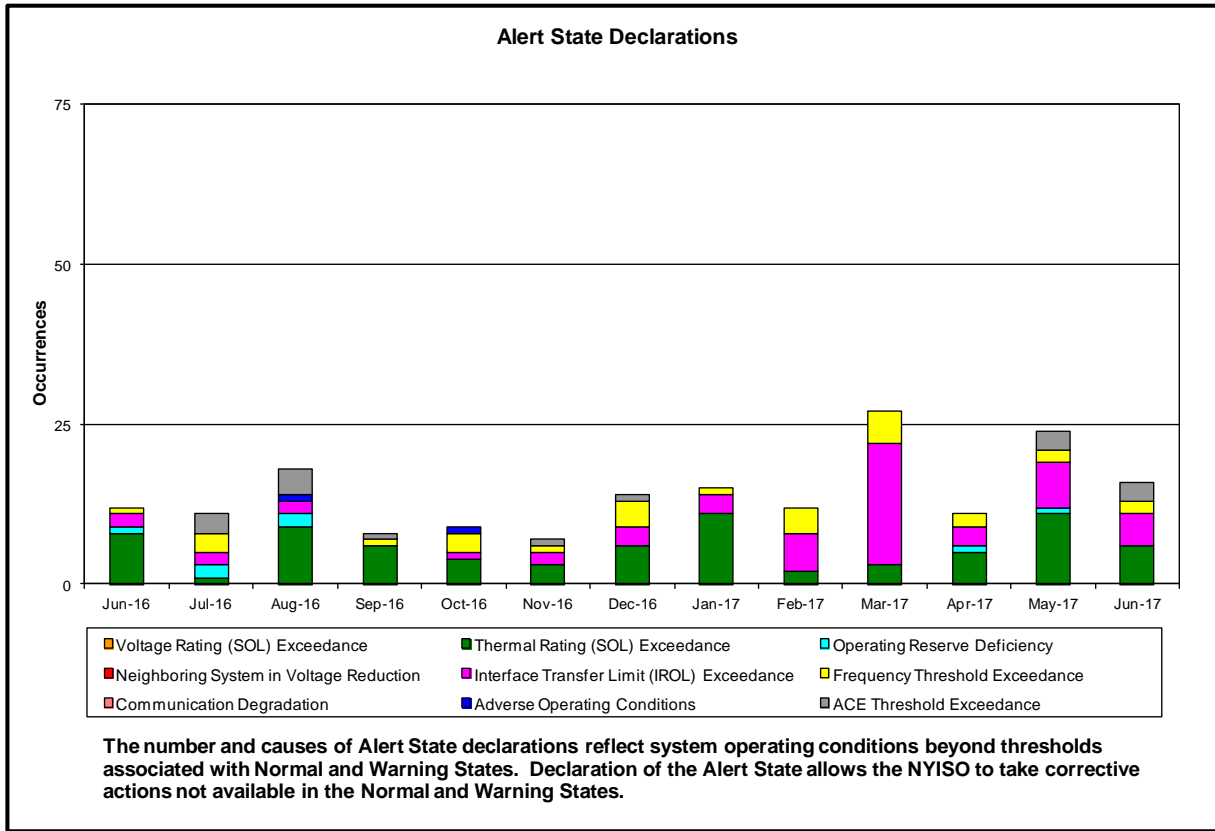
	Current Month Value (\$M)	Year-to-Date Value (\$M)
NY Savings from PJM-NY Congestion Coordination	\$0.15	\$8.79
NY Savings from PJM-NY Coordinated Transaction Scheduling	(\$0.10)	(\$0.35)
NY Savings from NE-NY Coordinated Transaction Scheduling	(\$0.10)	(\$0.34)
Total NY Savings	(\$0.06)	\$8.10
Regional Savings from PJM-NY Coordinated Transaction Scheduling	\$0.26	\$1.57
Regional Savings from NE-NY Coordinated Transaction Scheduling	\$0.12	\$0.60
Total Regional Savings	\$0.38	\$2.17

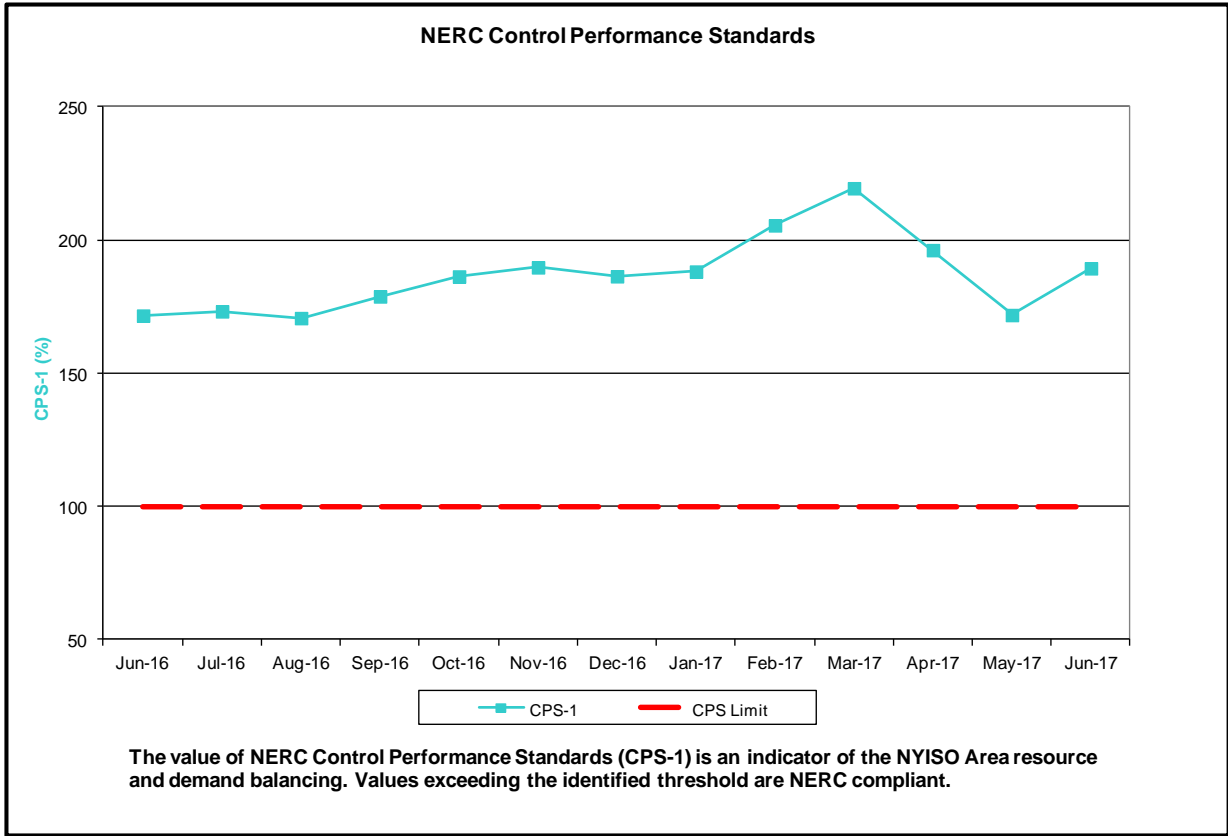
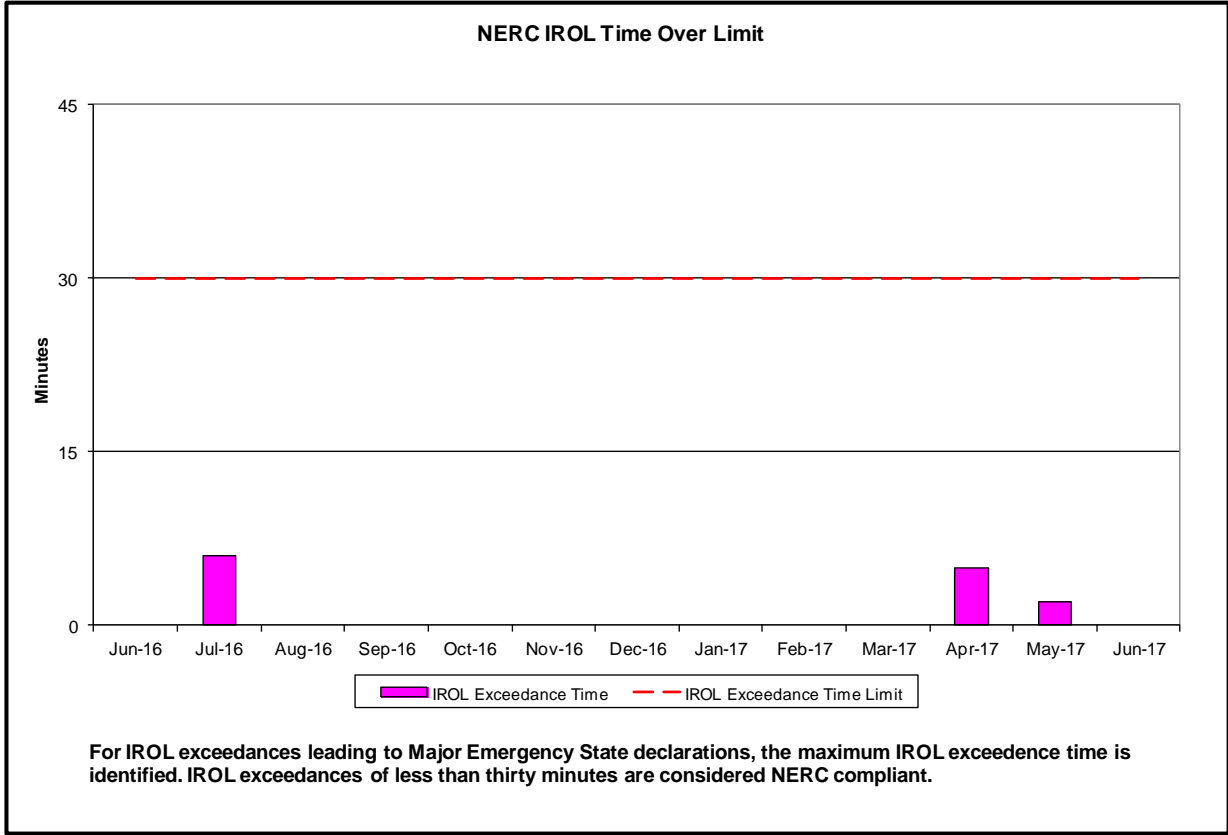
- Statewide uplift cost monthly average was (\$0.52)/MWh
- The following table identifies the Monthly ICAP spot market prices by locality and price delta.

Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
July 2017 Spot Price	\$2.26	\$9.75	\$9.86	\$6.69
June 2017 Spot Price	\$3.89	\$10.01	\$10.24	\$6.69
Delta	(\$1.63)	(\$0.26)	(\$0.38)	\$0.00

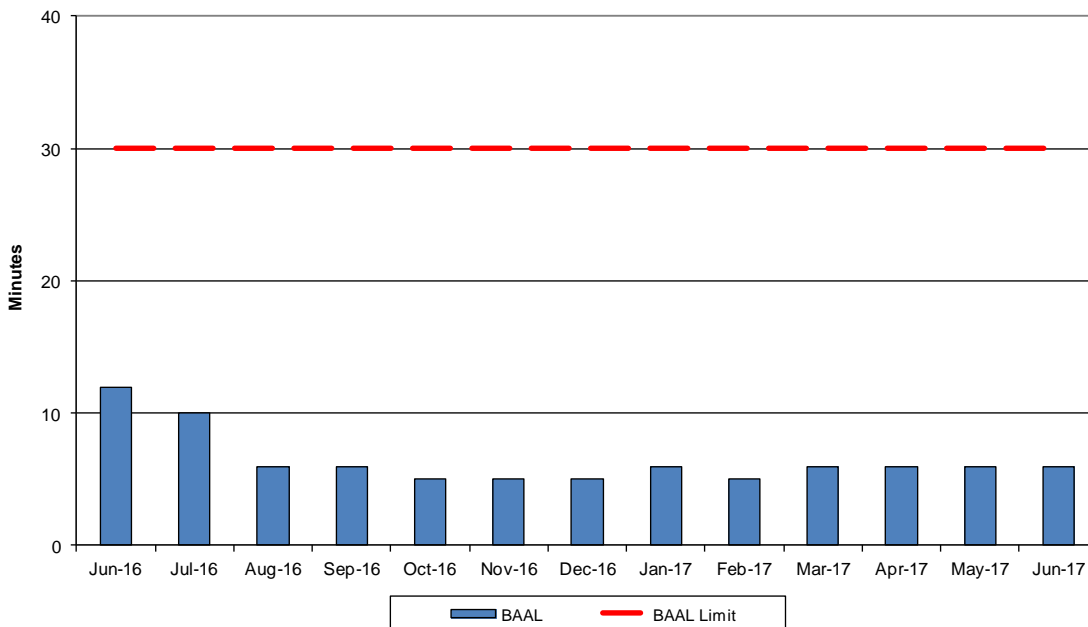
- LHV - Price is decreased by \$0.26 due primarily to an increase in generation.
- NYC - Price is decreased by \$0.38 due primarily to an increase in generation.
- NYCA - Price is decreased by \$1.63 due to an increase in imports (primarily from PJM), a reduction in unoffered, and an increase in generation and SCRs, and which is partially offset by an increase in exports.

- Reliability Performance Metrics



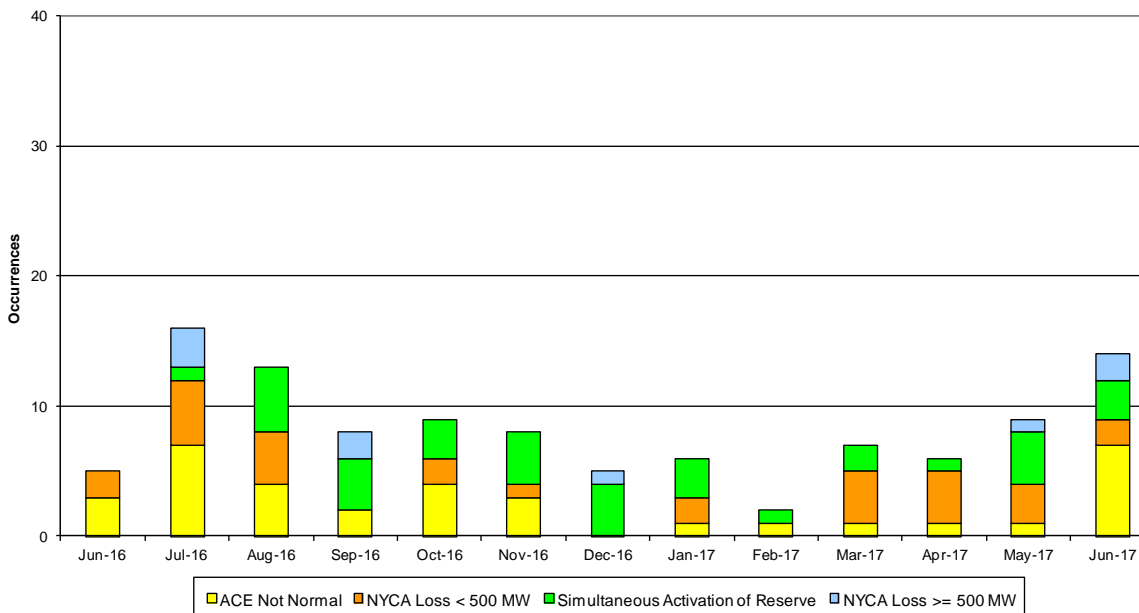


NERC Balancing Authority ACE Limit Standard



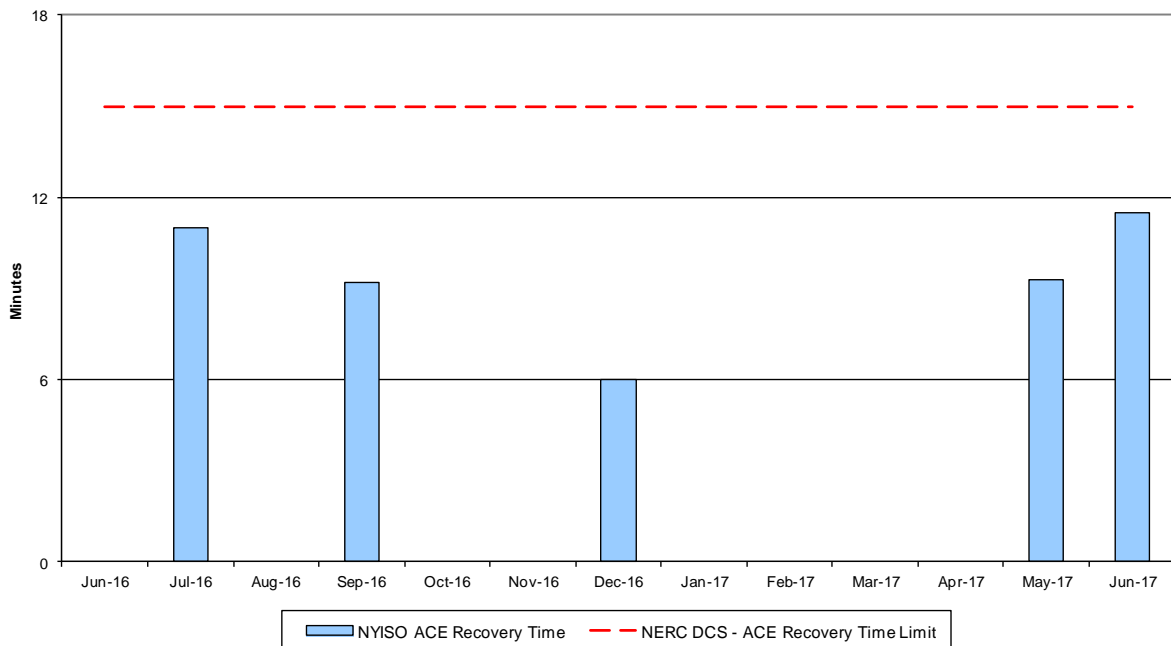
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

Reserve Activations



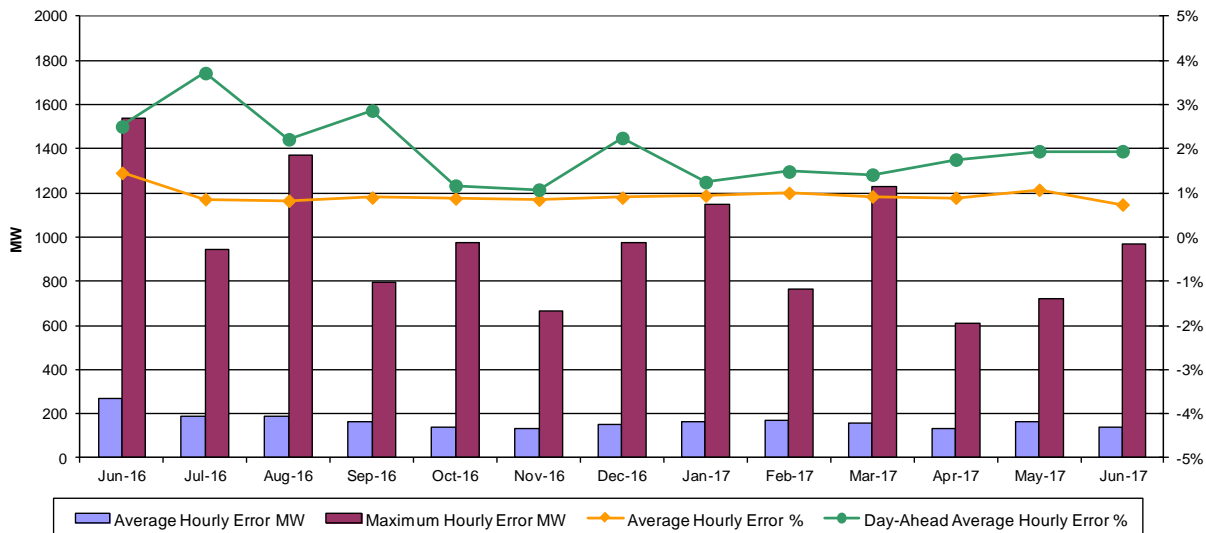
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

DCS Event Time to ACE Recovery

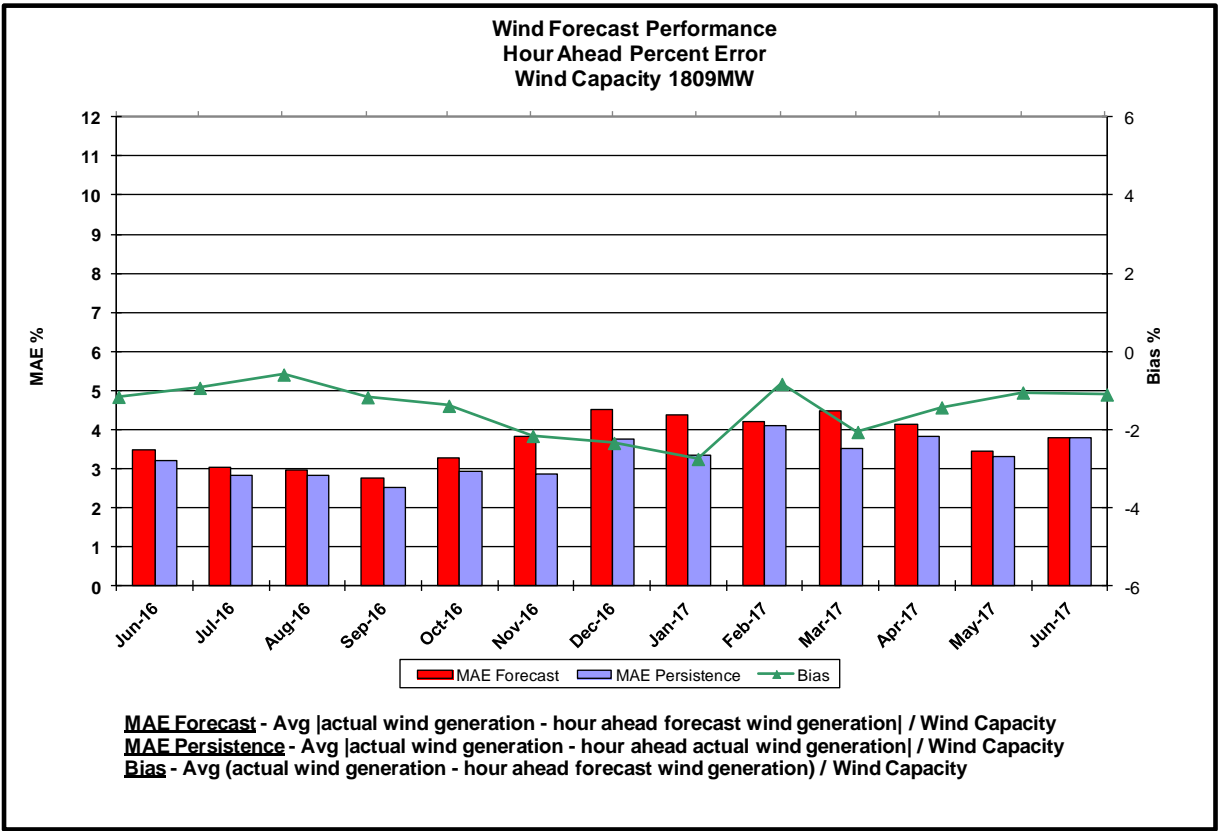
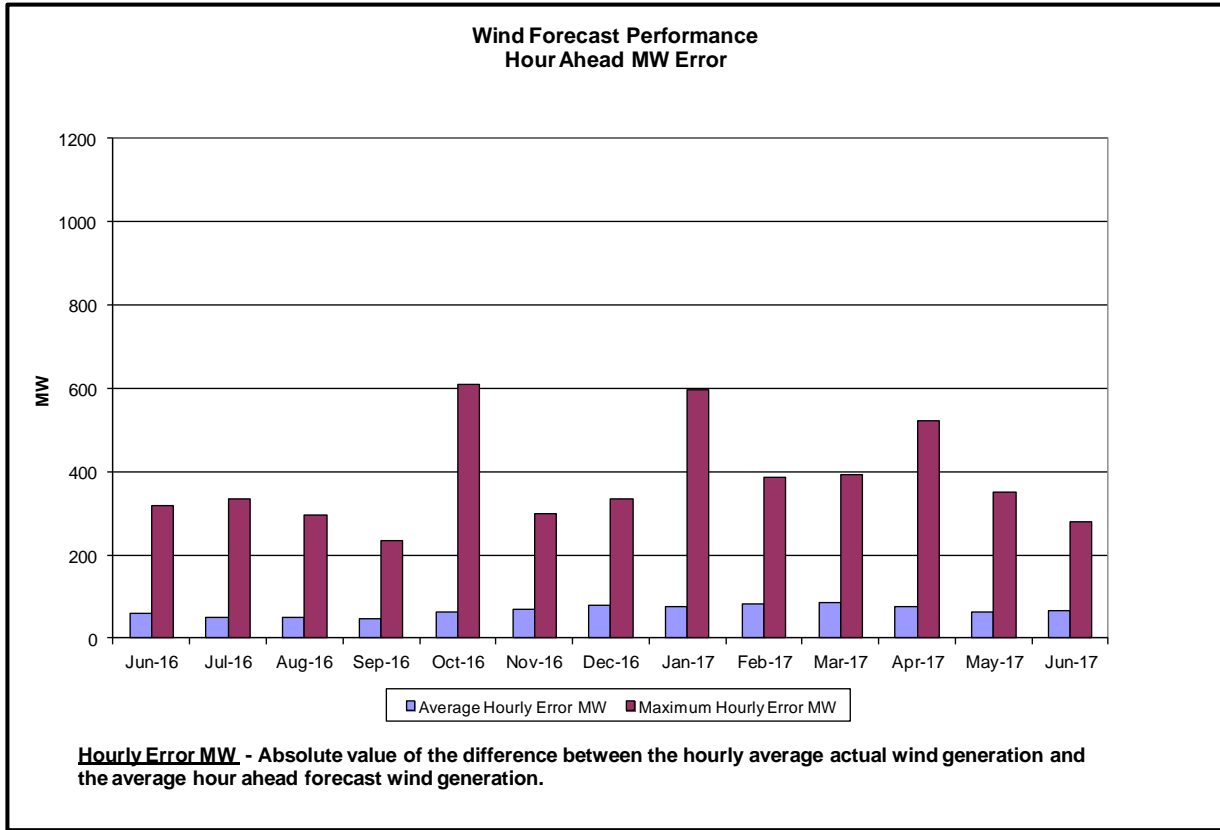


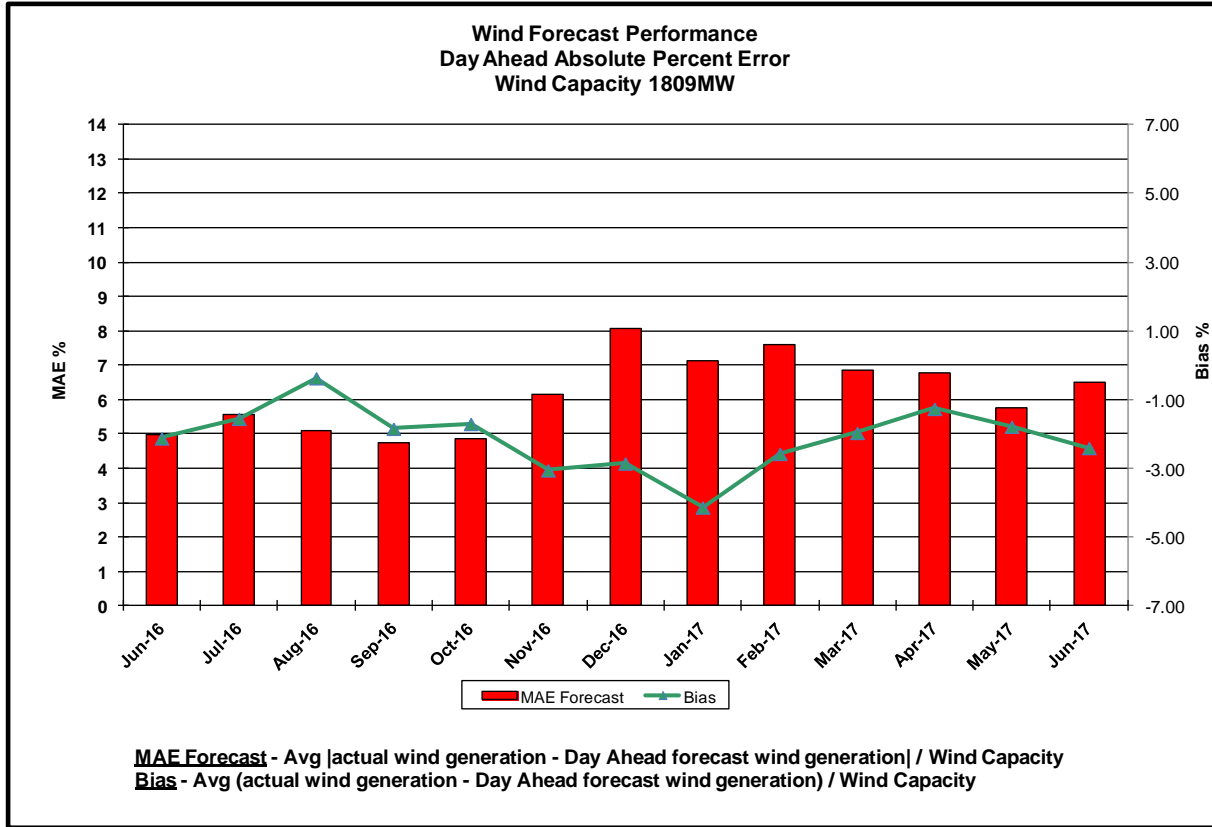
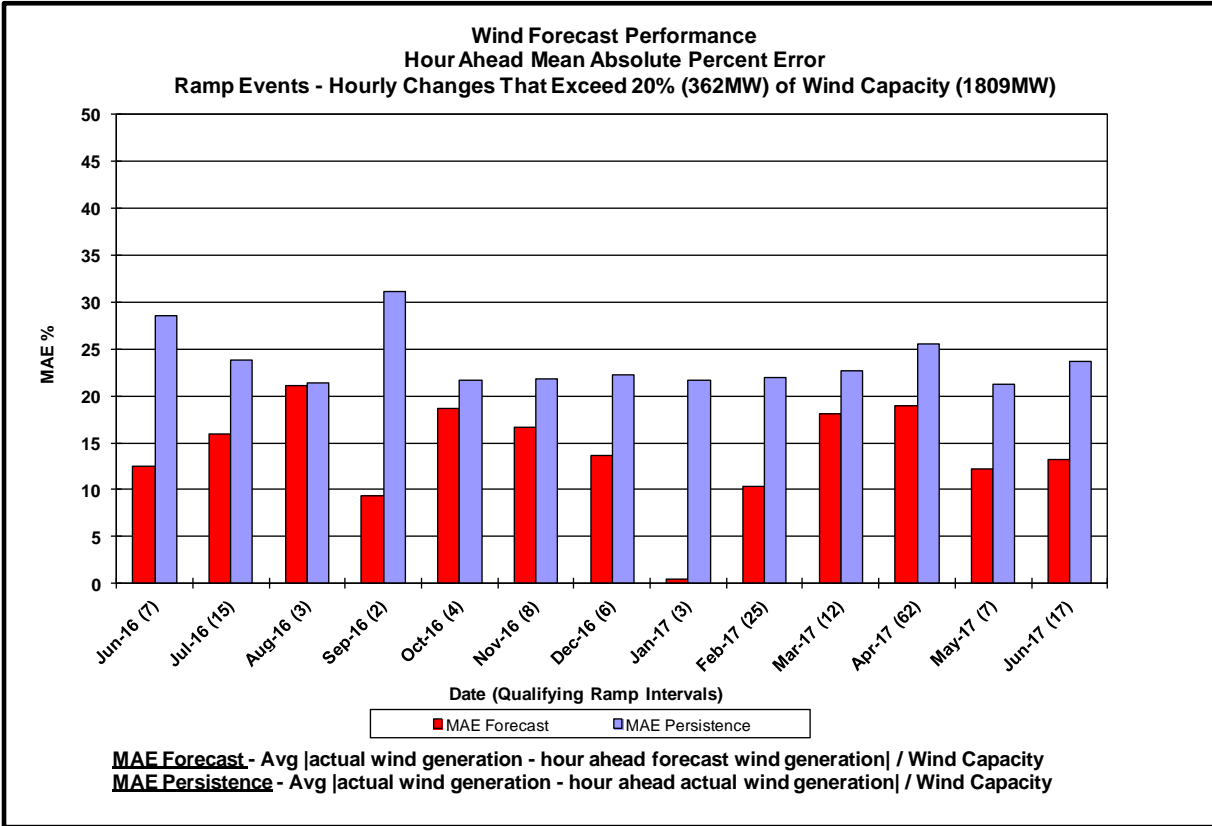
For NYISO initiated Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

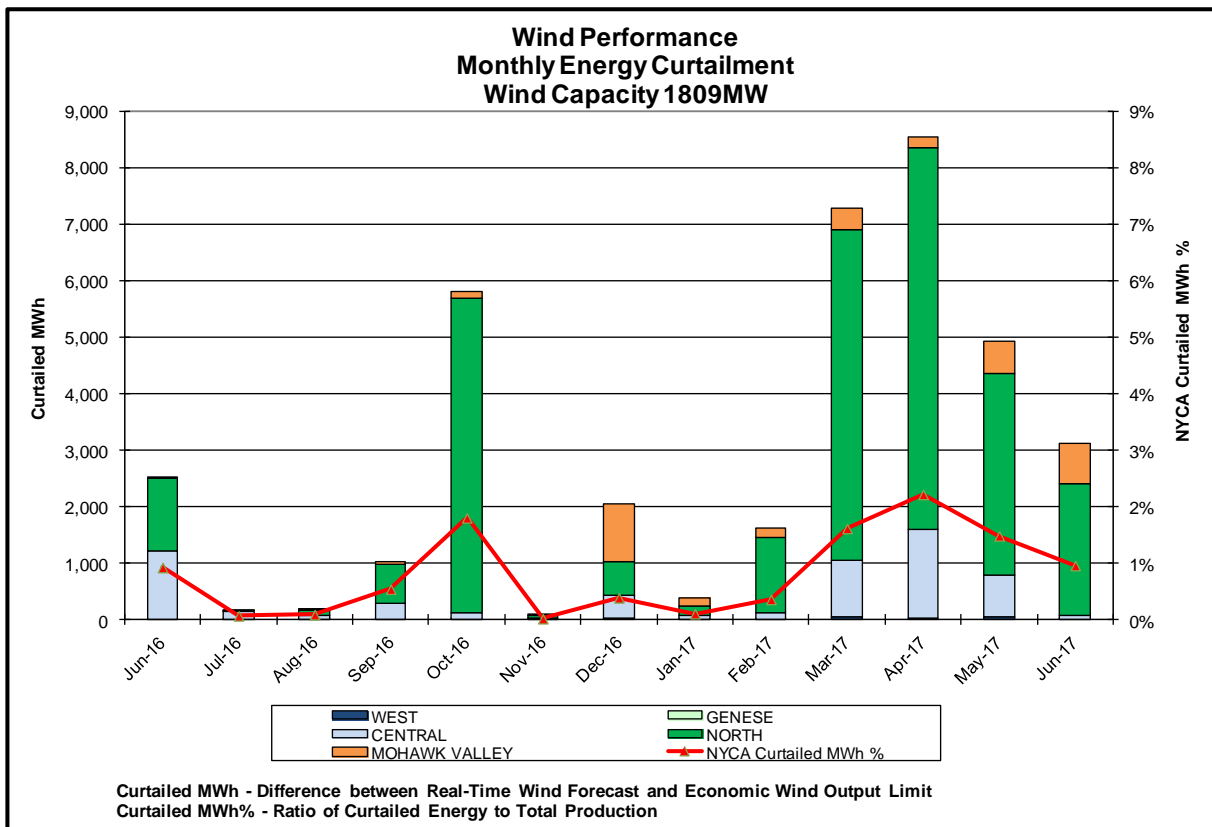
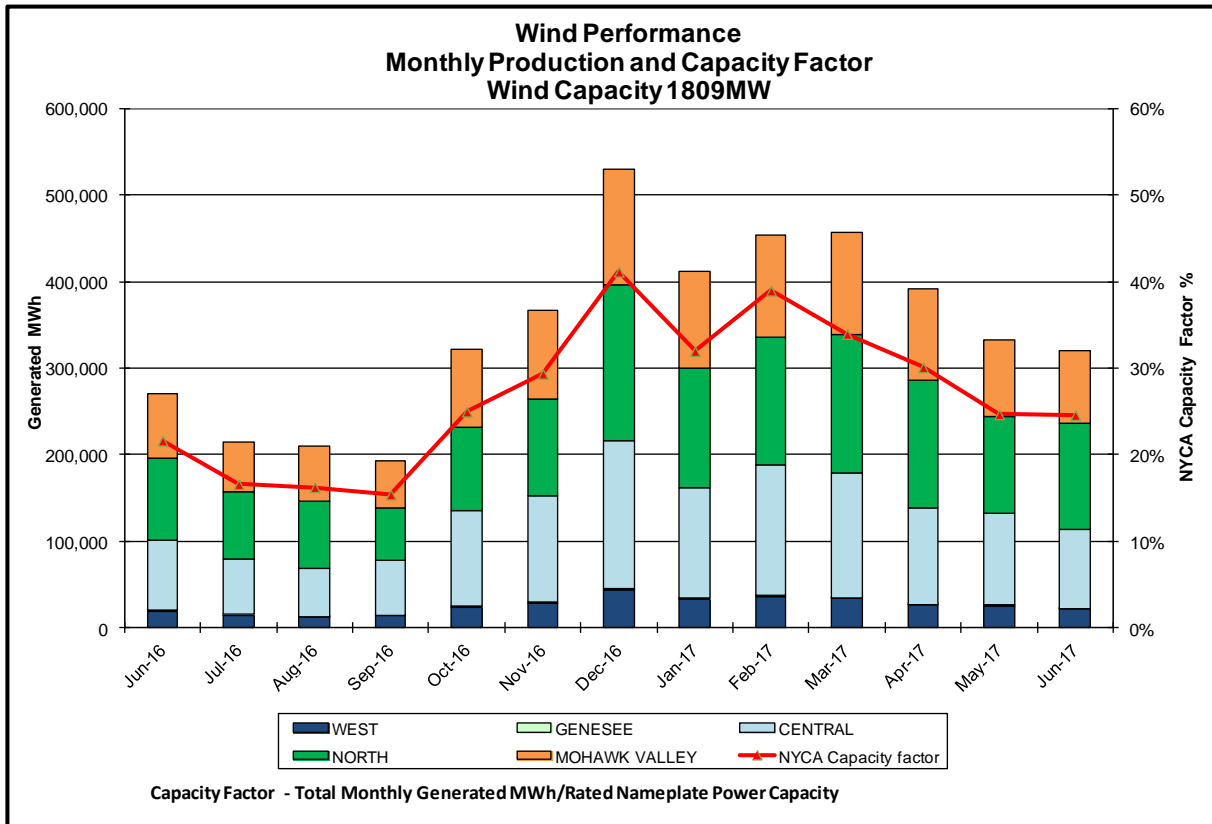
Load Forecast Performance

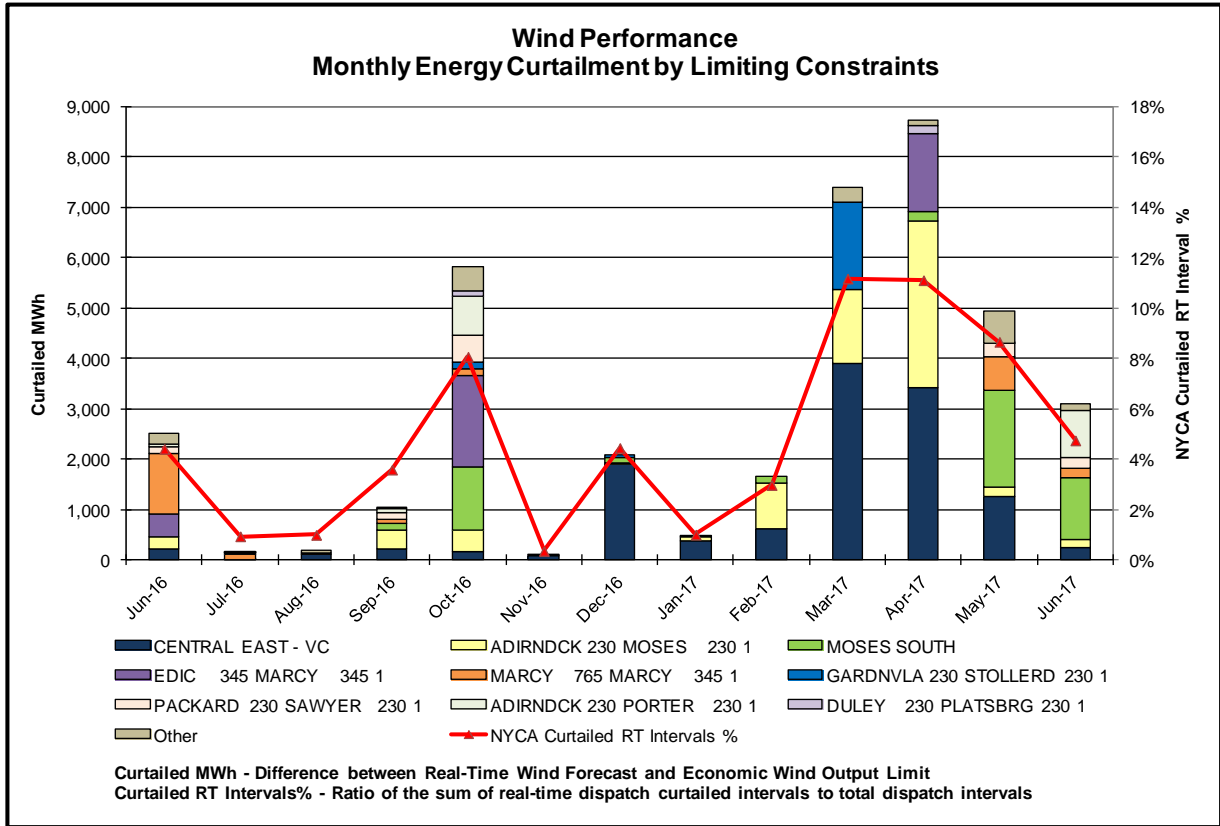


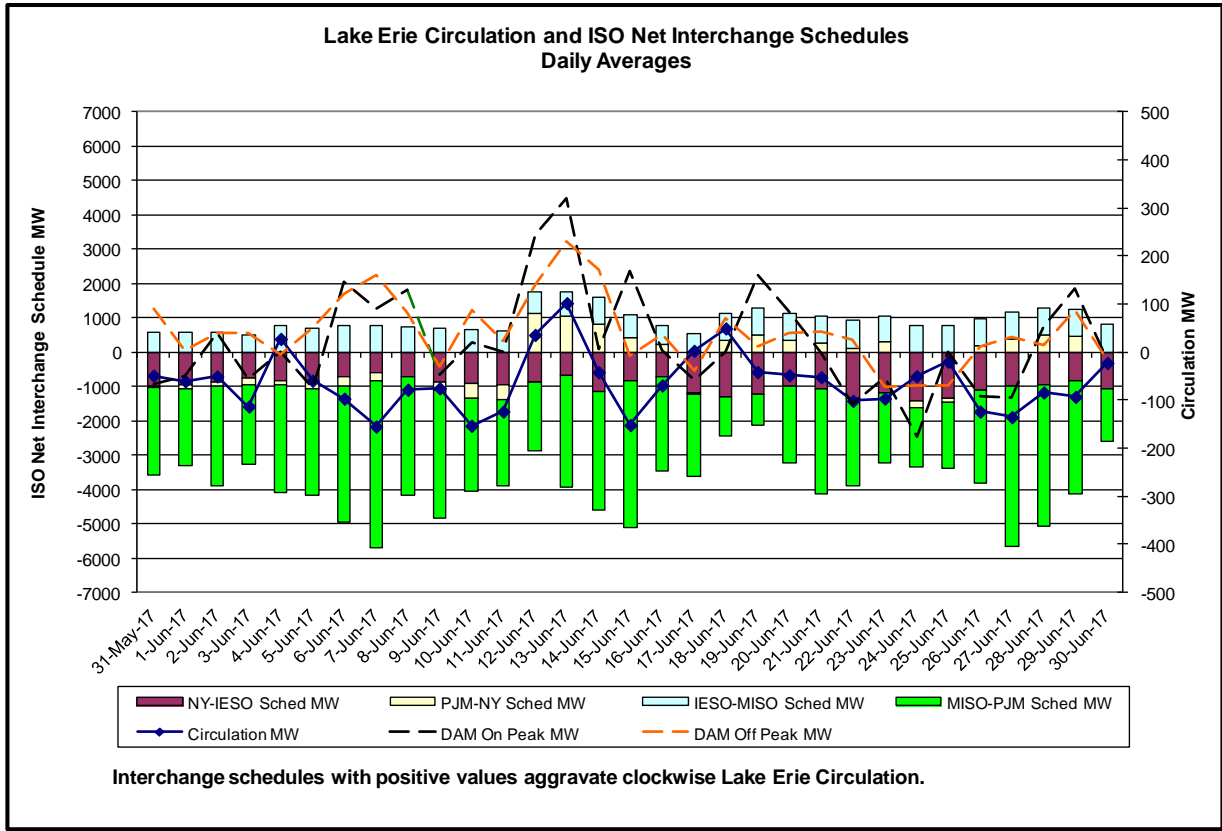
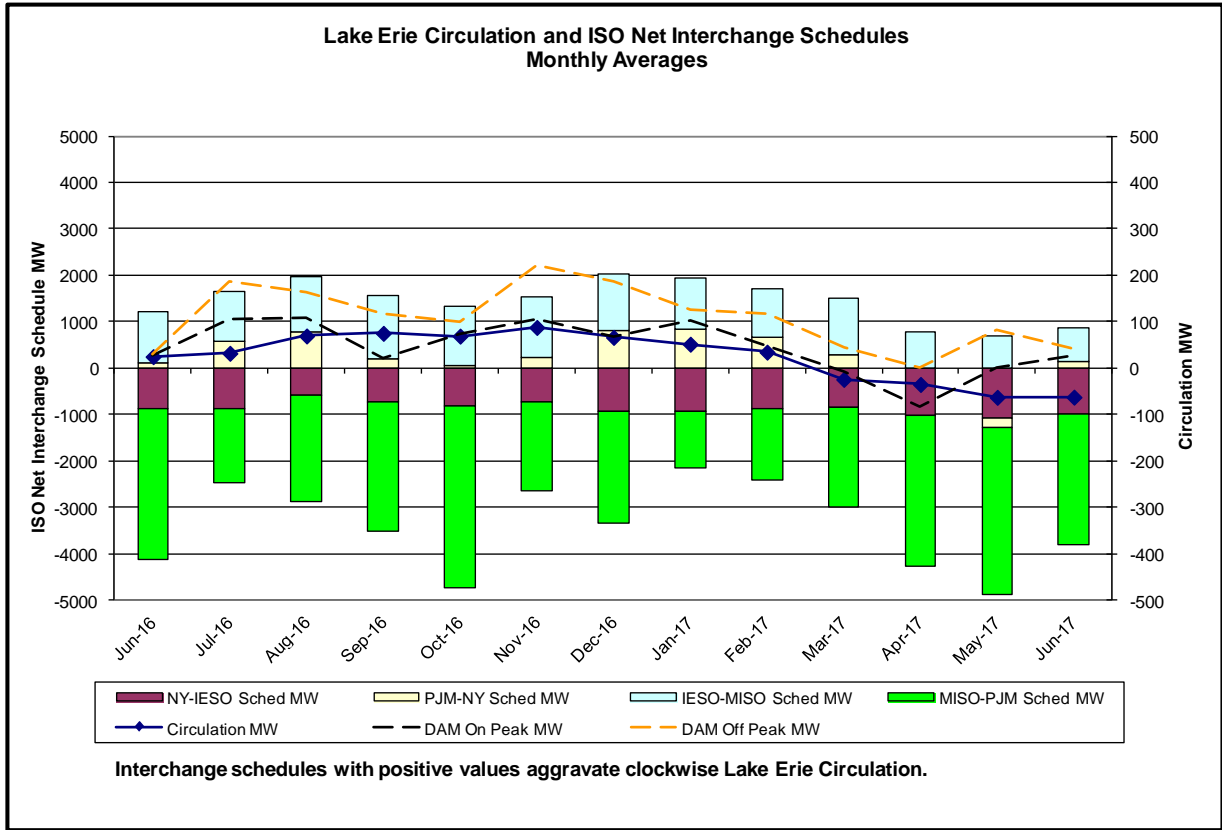
Hourly Error MW - Absolute value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.
Average Hourly Error % - Average value of the ratio of hourly average error magnitude to hourly average actual load demand.
Day-Ahead Average Hourly Error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



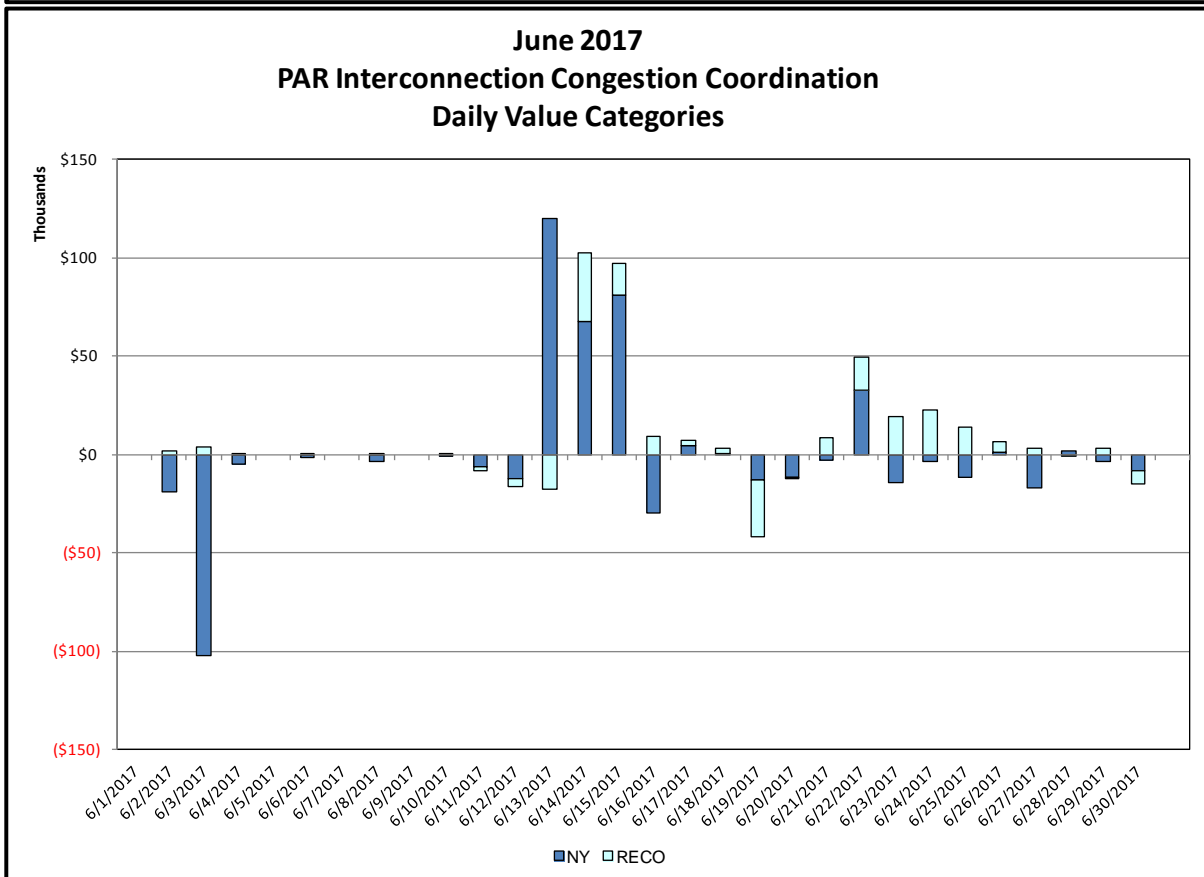
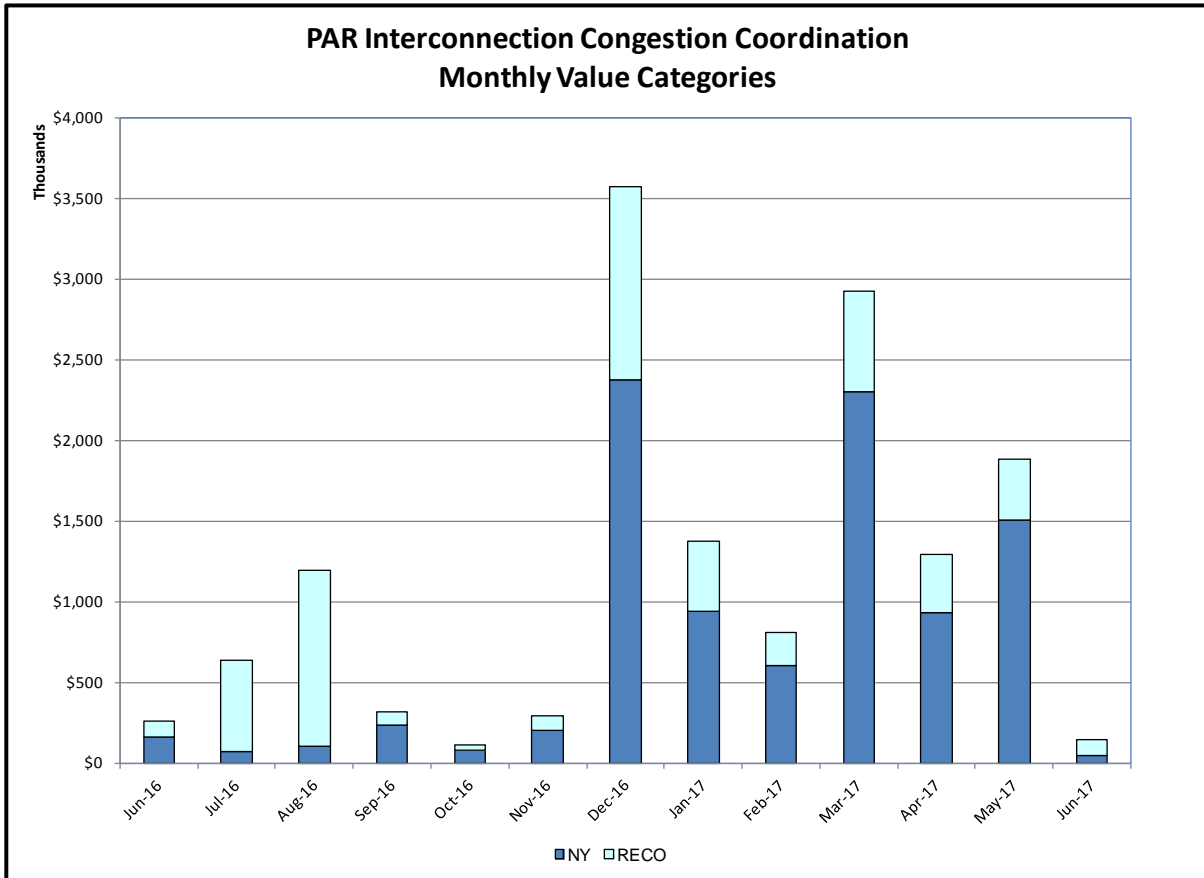






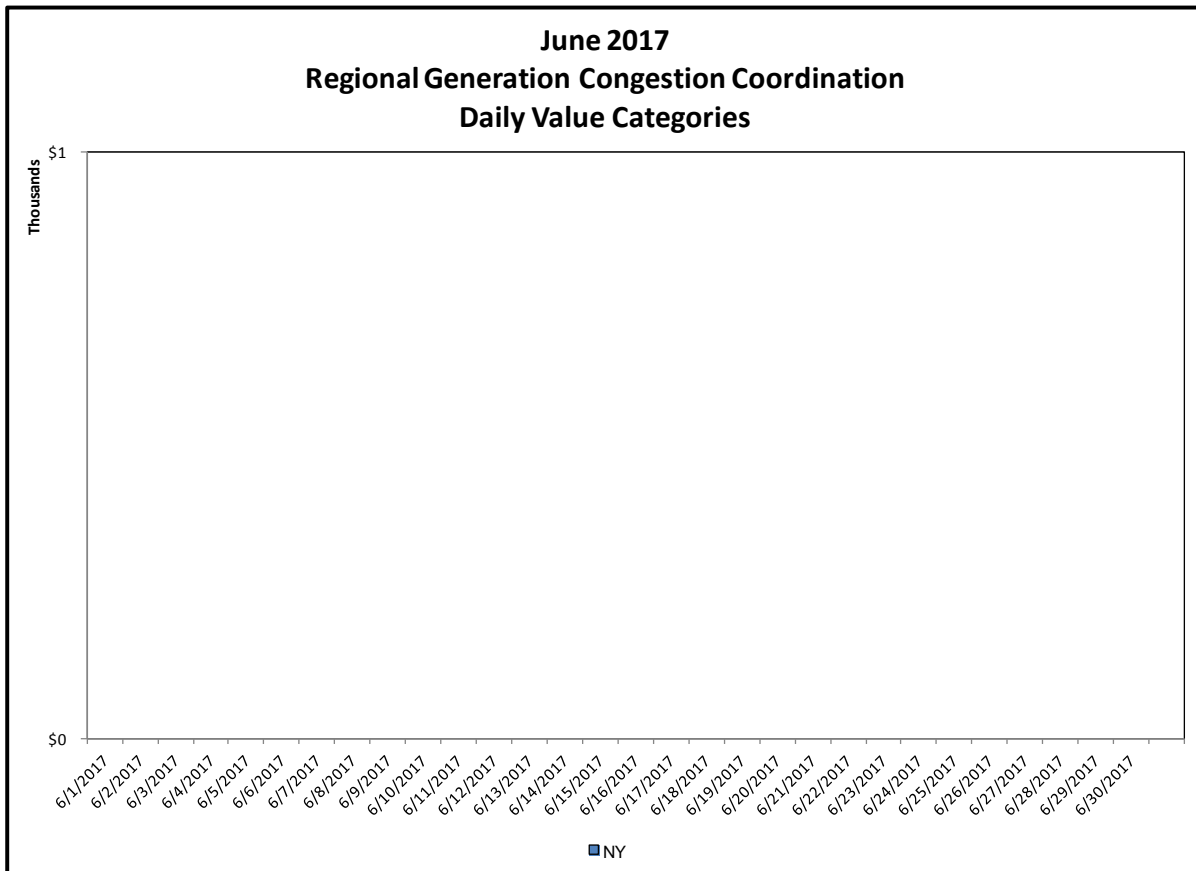
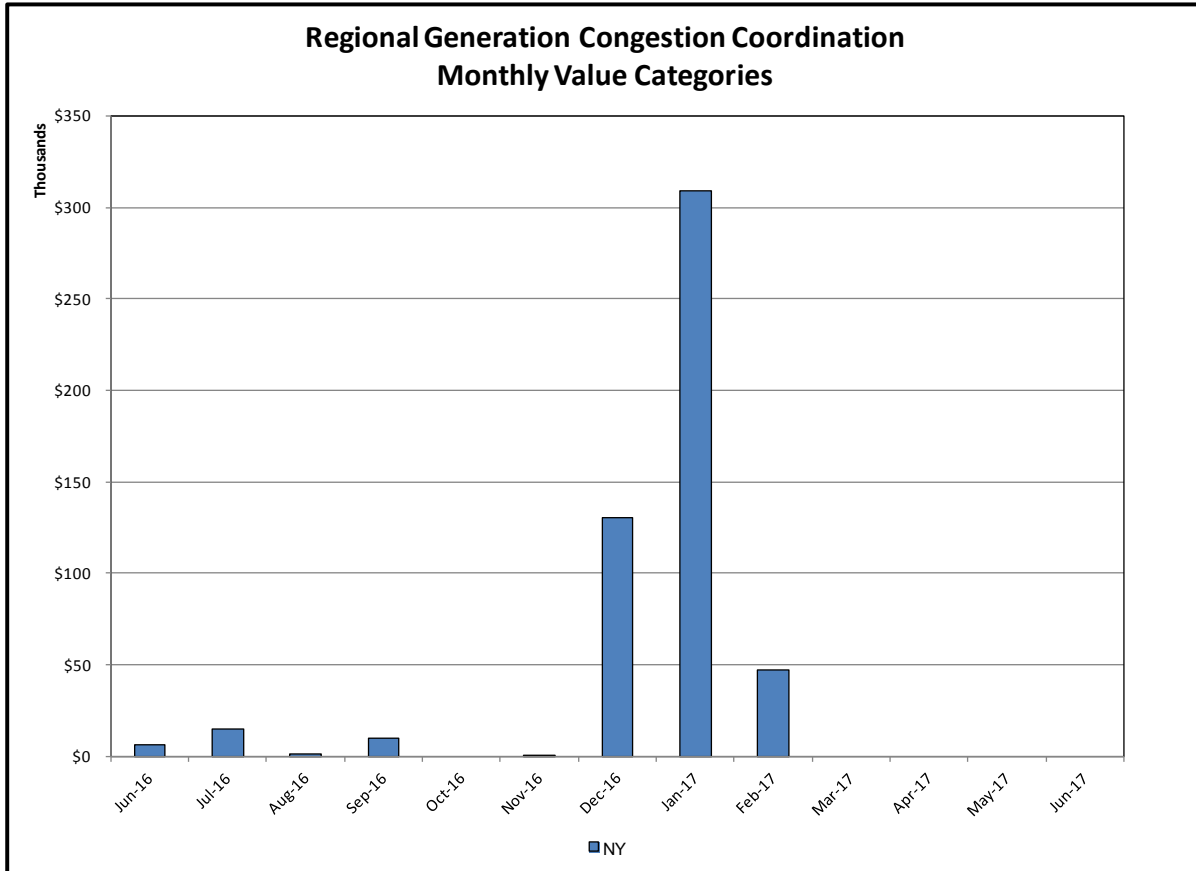


Broader Regional Market Performance Metrics



Ramapo Interconnection Congestion Coordination

<u>Category</u>	<u>Description</u>
NY	Represents the value NY realizes from Market-to-Market Ramapo Coordination. When experiencing congestion, this includes (1) the estimated savings to NY for additional deliveries into NY, plus (2) PJM compensation to NY for additional deliveries into PJM (as compared to the Ramapo Target level, excluding RECO). This is net of any settlements to PJM when they are congested.
RECO	Represents the value of PJM's obligation to deliver 80% of service to RECO load over Ramapo 5018. This includes (1) the estimated reduction in NYCA congestion due to the PJM delivery of RECO over Ramapo 5018, plus (2) PJM compensation to NY for NYCA congestion for the under-delivery or inability to deliver service to RECO load over Ramapo 5018.



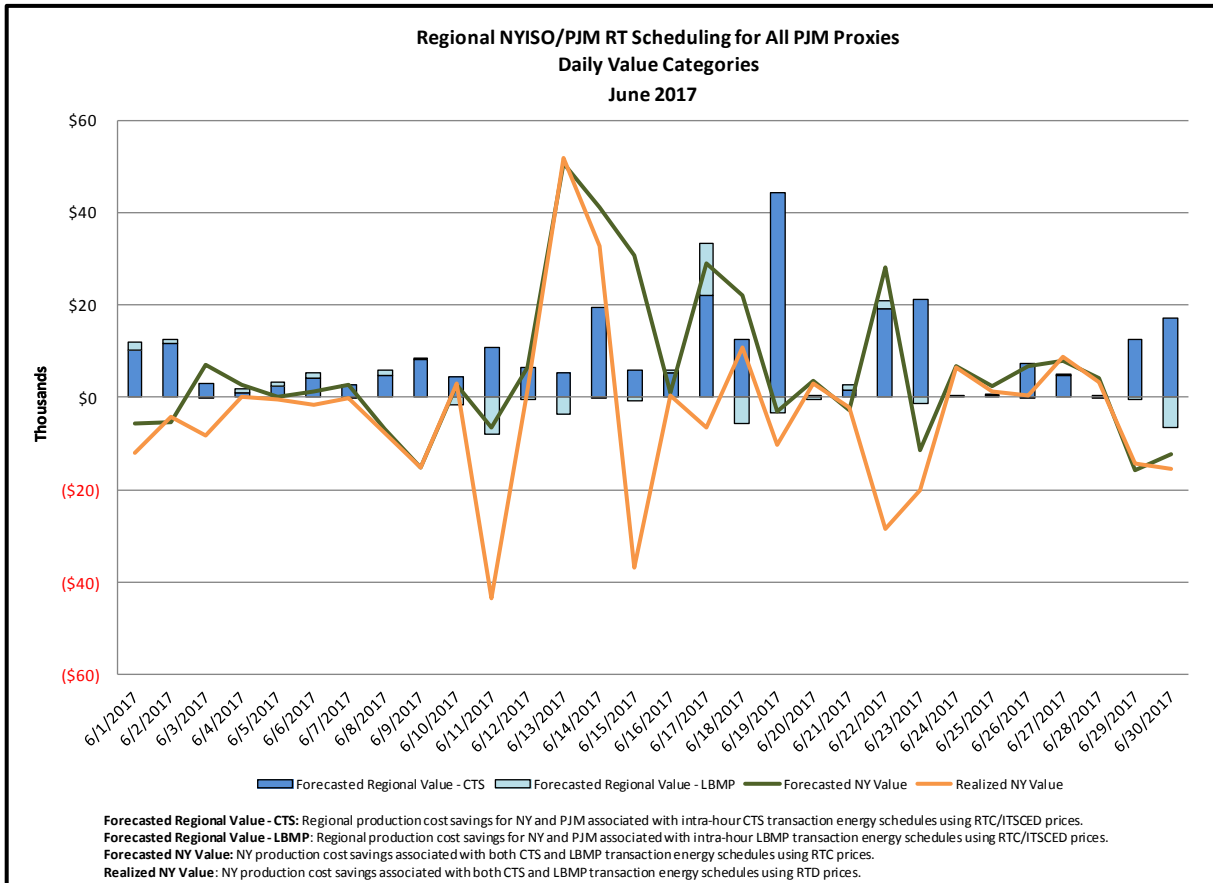
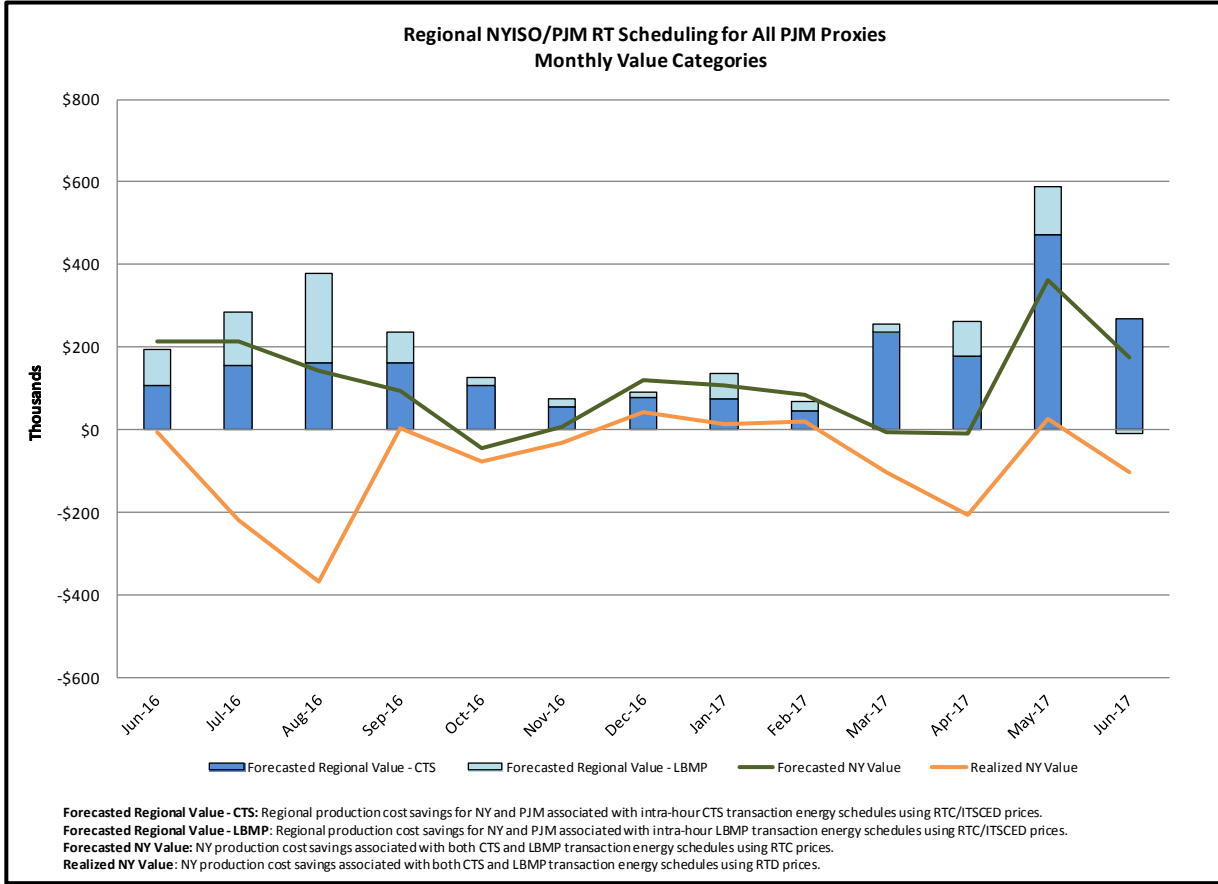
Regional Generation Congestion Coordination

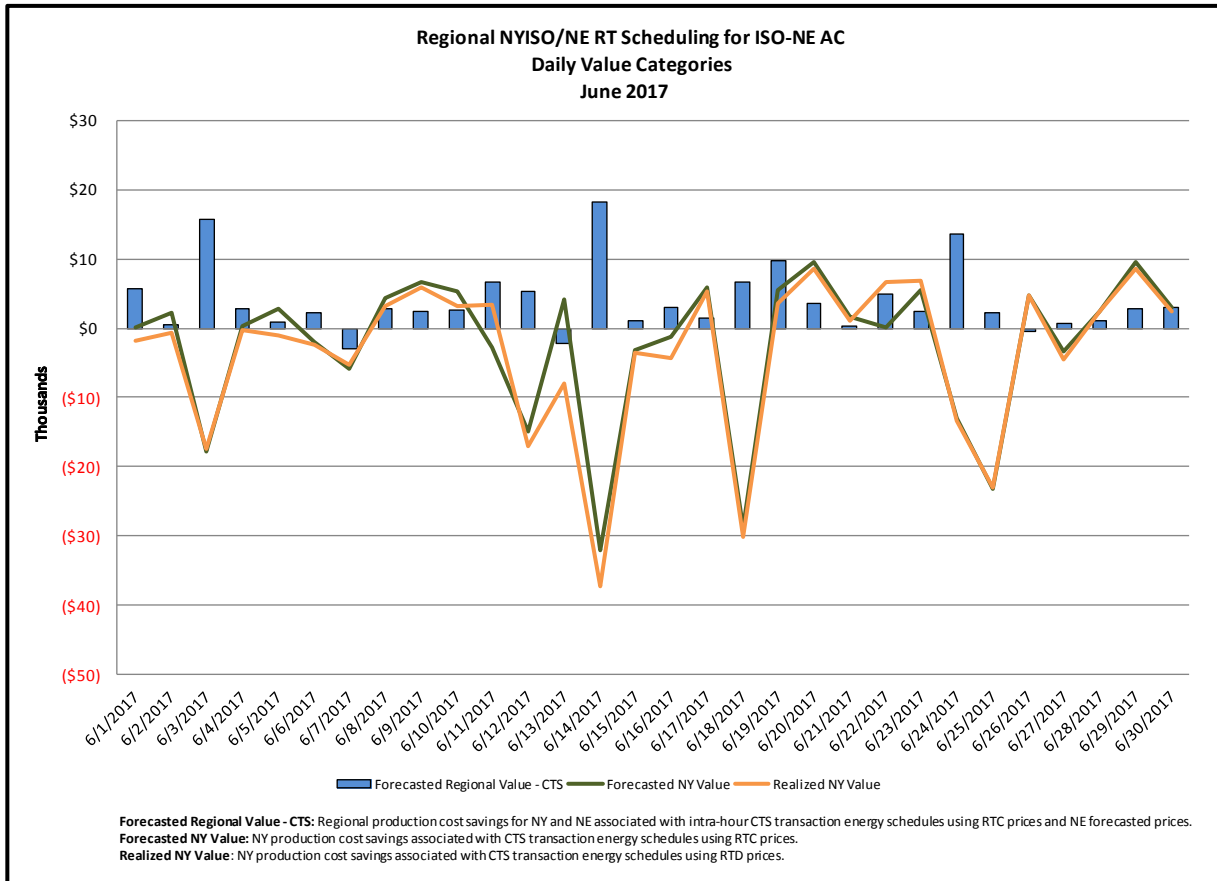
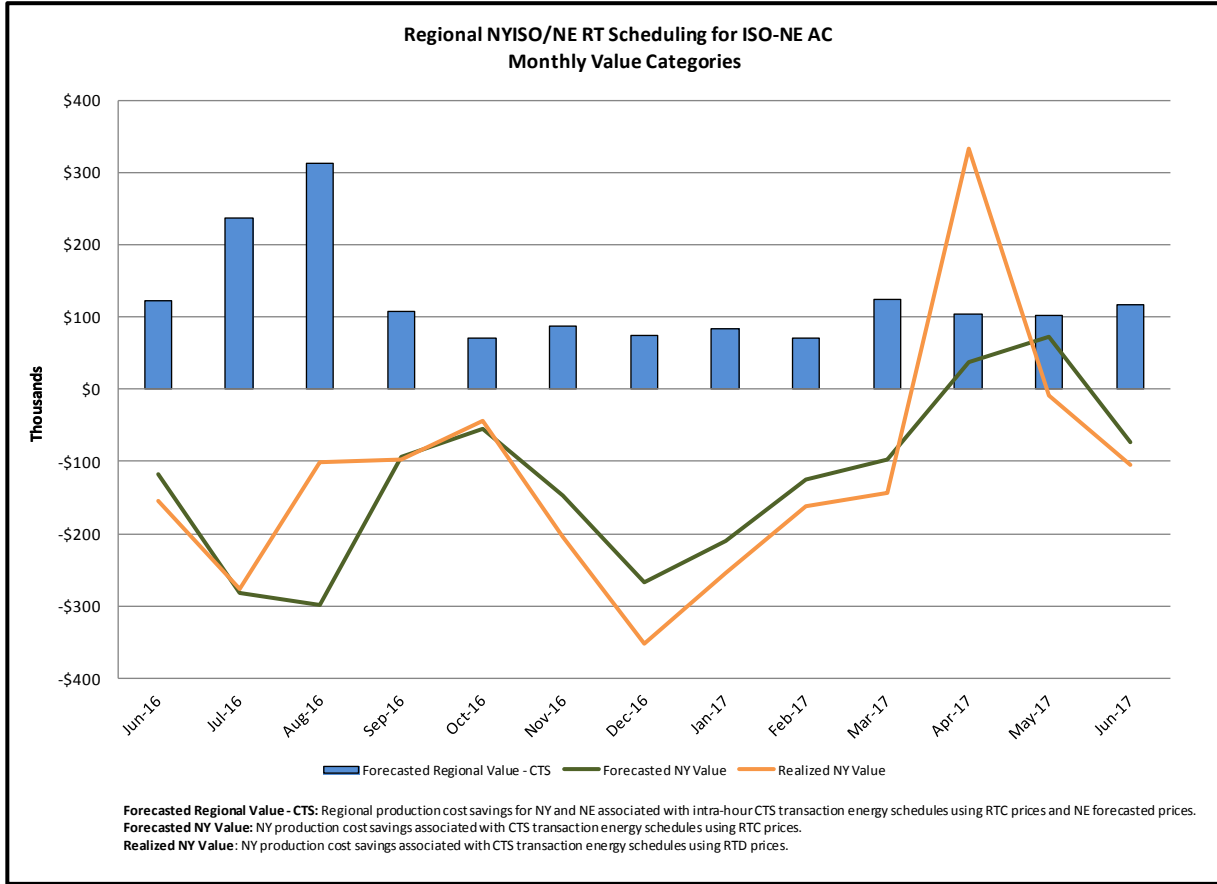
Category

NY

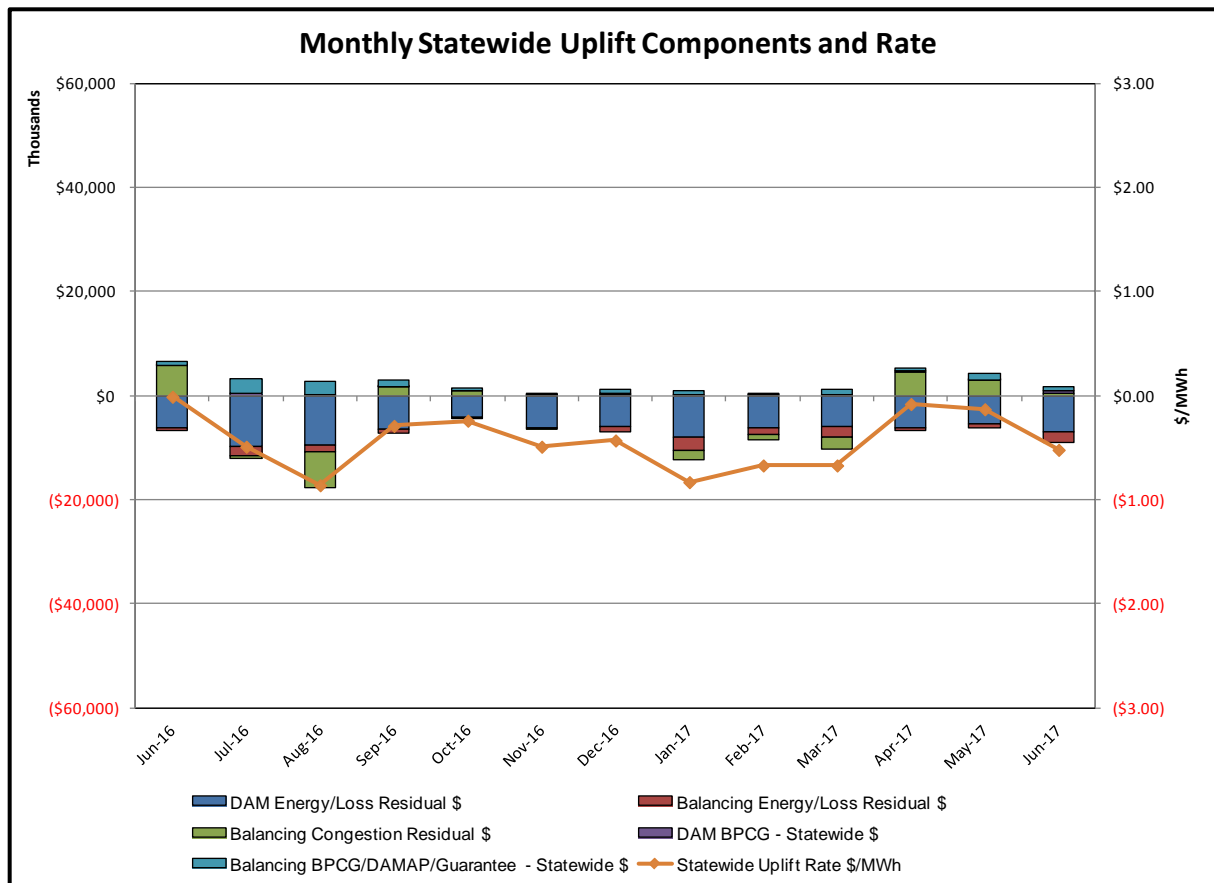
Description

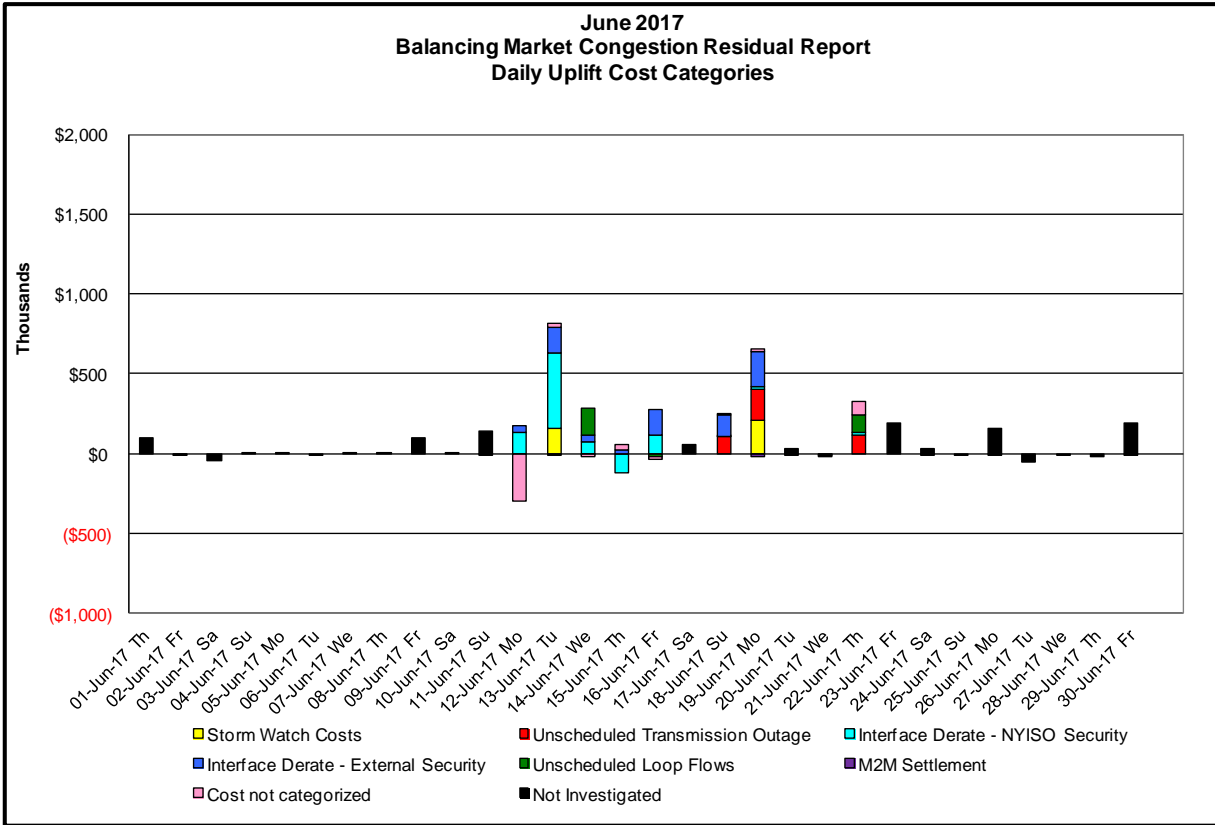
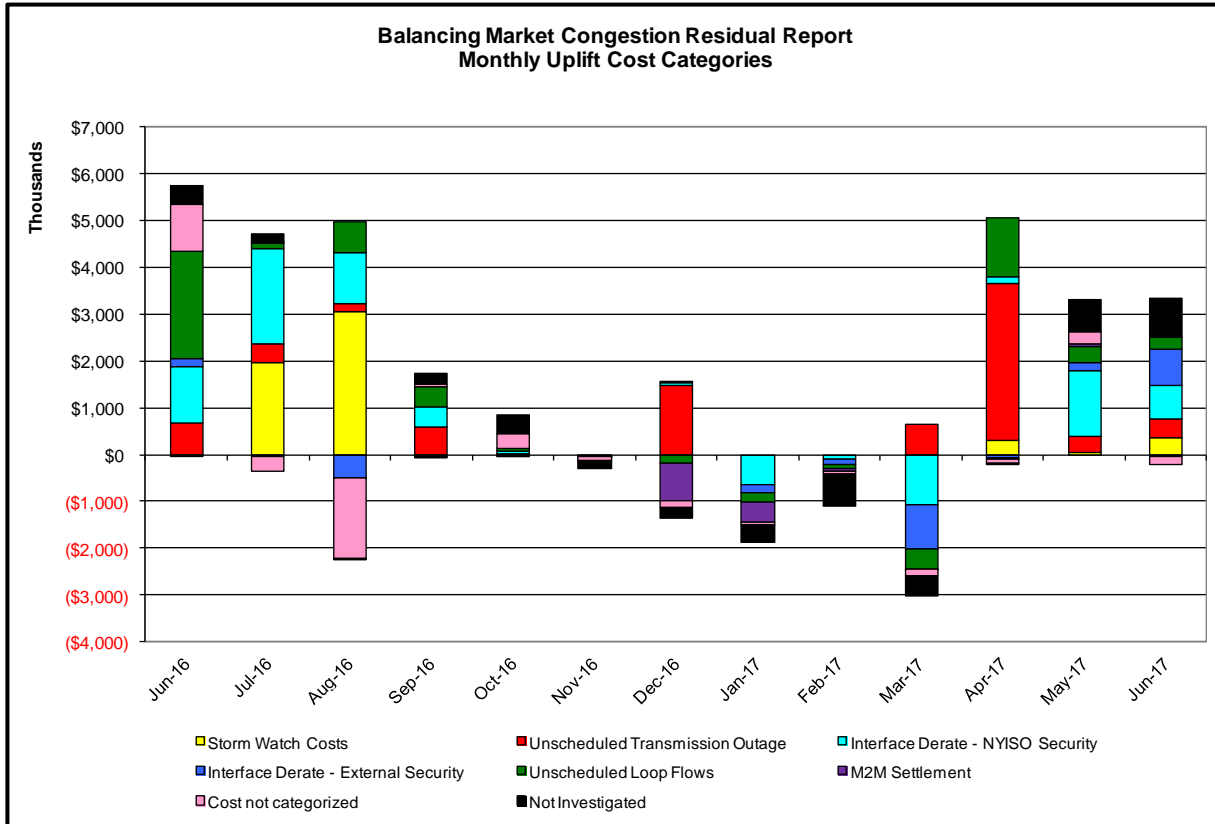
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization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





Market Performance Metrics





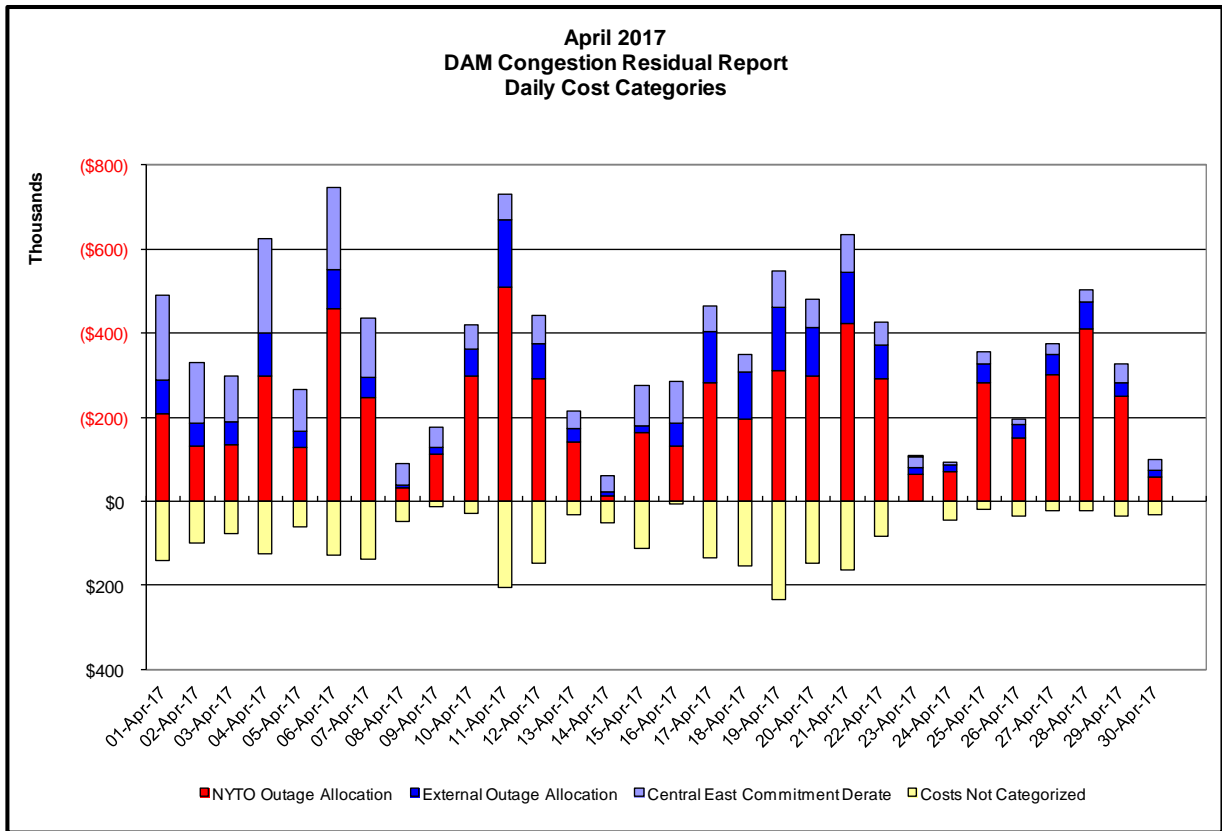
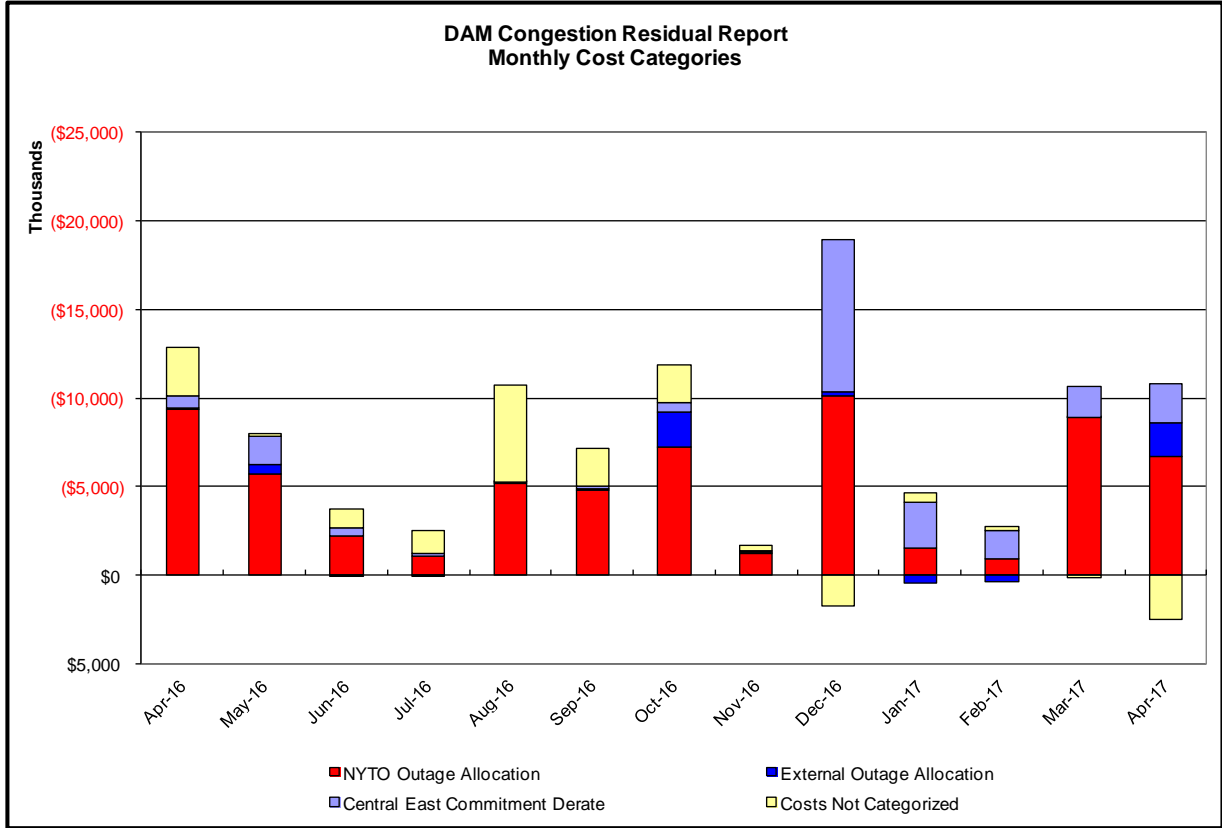
Day's investigated in June: 12,13,14,15,16,18,19,22			
Event	Date (yyyymmdd)	Hours	Description
	6/12/2017	14	NYCA DNI Ramp Limit
	6/12/2017	22,23	Derate East Garden City-Valley Stream 138kV (#262) for I/o SCB:NEWBRDG 1380 461&BK6+4
	6/12/2017	14,17	Derate Leeds-Pleasant Valley 345kV (#92) for I/o Athens-Pleasant Valley 345kV (#91)
	6/12/2017	17,21,22	Derate Scriba-Volney 345kV (#20) for I/o Scriba-Volney 354kV (#21)
	6/12/2017	12	NE_AC DNI Ramp Limit
	6/12/2017	14,15	PJM_AC-NY Scheduling Limit
	6/13/2017	19-21	Thunderstorm Alert
	6/13/2017	13,14,20	NYCA DNI Ramp Limit
	6/13/2017	9	Uprate East 179th Street-HellGate West 138kV (#15055)
	6/13/2017	12,13,21	Derate East Garden City-Valley Stream 138kV (#262) for I/o BUS:BARRETT 292&459&G2&IC9-12
	6/13/2017	23	Uprate Freshkills-Willow Brook 138kV (#29211)
	6/13/2017	22,23	Uprate Gowanus-Goethals 345kV (#25)
	6/13/2017	22,23	Uprate Gowanus-Goethals 345kV (#26)
	6/13/2017	23	Uprate Gowanus-Greenwood 138kV (#42231)
	6/13/2017	23	Uprate Gowanus-Greenwood 138kV (#42231) for I/o SCB:GOWANUS(14):42&42232&R14
	6/13/2017	23	Uprate Gowanus-Greenwood 138kV (#42232) for I/o SCB:GOWANUS(2):41&42231&R4
	6/13/2017	9,22,23	Uprate Gowanus-Greenwood 138kV (#42231) for I/o TWR:GOETHALS 22 & 21
	6/13/2017	9,22,23	Uprate Gowanus-Greenwood 138kV (#42232) for I/o TWR:GOETHALS 22 & 21
	6/13/2017	12-18	Derate Leeds-Pleasant Valley 345kV (#92) for I/o Athens-Pleasant Valley 345kV (#91)
	6/13/2017	10	Derate Rainey-Vernon 138kV (#36312)
	6/13/2017	13,19,20	HQ_CHAT-NY Scheduling Limit
	6/13/2017	19,20	NE_AC DNI Ramp Limit
	6/13/2017	16	PJM_AC-NY Scheduling Limit
	6/14/2017	8	Uprate East 179th Street-HellGate West 138kV (#15055)
	6/14/2017	18	Uprate Scriba-Volney 345kV (#20) for I/o Scriba-Volney 354kV (#21)
	6/14/2017	14,18	NYCA DNI Ramp Limit
	6/14/2017	23	Derate East Garden City-Valley Stream 138kV (#262) for I/o SCB:NEWBRDG 1380 461&BK6+4
	6/14/2017	8	PJM_AC-NY Scheduling Limit
	6/14/2017	16,23	NE_AC DNI Ramp Limit
	6/14/2017	18	IESO_AC DNI Ramp Limit
	6/14/2017	13	NE_NNC1385 - NY Scheduling Limit
	6/14/2017	16	NE_AC-NY Scheduling Limit
	6/14/2017	23	HQ_CHAT-NY Scheduling Limit
	6/14/2017	14,15	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer
	6/14/2017	14	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagra-Packard
	6/15/2017	12	Uprate East 179th Street-HellGate West 138kV (#15055)
	6/15/2017	12	Uprate Gowanus-Goethals 345kV (#25)
	6/15/2017	12	Uprate Gowanus-Goethals 345kV (#26)
	6/15/2017	0,1,2	HQ_CHAT-NY Scheduling Limit
	6/15/2017	8	NE_AC Scheduling Limit
	6/16/2017	1-4	Uprate Central East
	6/16/2017	6-12,17	Derate Moses South
	6/16/2017	7-13,17	HQ_CEDARS-NY Scheduling Limit
	6/16/2017	10,13	IESO_AC-NY Scheduling Limit
	6/16/2017	1-3	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East
	6/18/2017	17-23	Forced outage Chase Lake-Porter 230kV (#11)
	6/18/2017	14	NYCA DNI Ramp Limit
	6/18/2017	14-18,21,23	HQ_Cedars-NY Scheduling Limit
	6/18/2017	15-22	HQ_CHAT-NY Scheduling Limit
	6/19/2017	12-19	Thunderstorm Alert
	6/19/2017	0	Forced outage Chase Lake-Porter 230kV (#11)
	6/19/2017	13-19	Forced outage Bear Swamp-Eastover 230kV (#E205W)
	6/19/2017	13	NYCA DNI Ramp Limit
	6/19/2017	0	Derate East Garden City-Valley Stream 138kV (#262) for I/o SCB:NEWBRDG 1380 461&BK6+4
	6/19/2017	9,10,12-19	HQ_CEDARS-NY Scheduling Limit
	6/19/2017	0,9,10	HQ_CHAT-NY Scheduling Limit
	6/22/2017	12	Forced outage Moses-Massena 230kV (#MMS1)
	6/22/2017	10	Derate East Garden City-Valley Stream 138kV (#262) for I/o SCB:NEWBRDG 1380 461&BK6+4
	6/22/2017	16-18	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer

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
Unscheduled Transmission Outage	Market-wide	Reduction in DAM to RTM transfers related to unscheduled transmission outage	Forced Line Outage, Unit AVR Outages
Interface Derate - NYISO Security	Market-wide	Reduction in DAM to RTM transfers not related to transmission outage	Interface Derates due to RTM voltages
Interface Derate - External Security	Market-wide	Reduction 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	

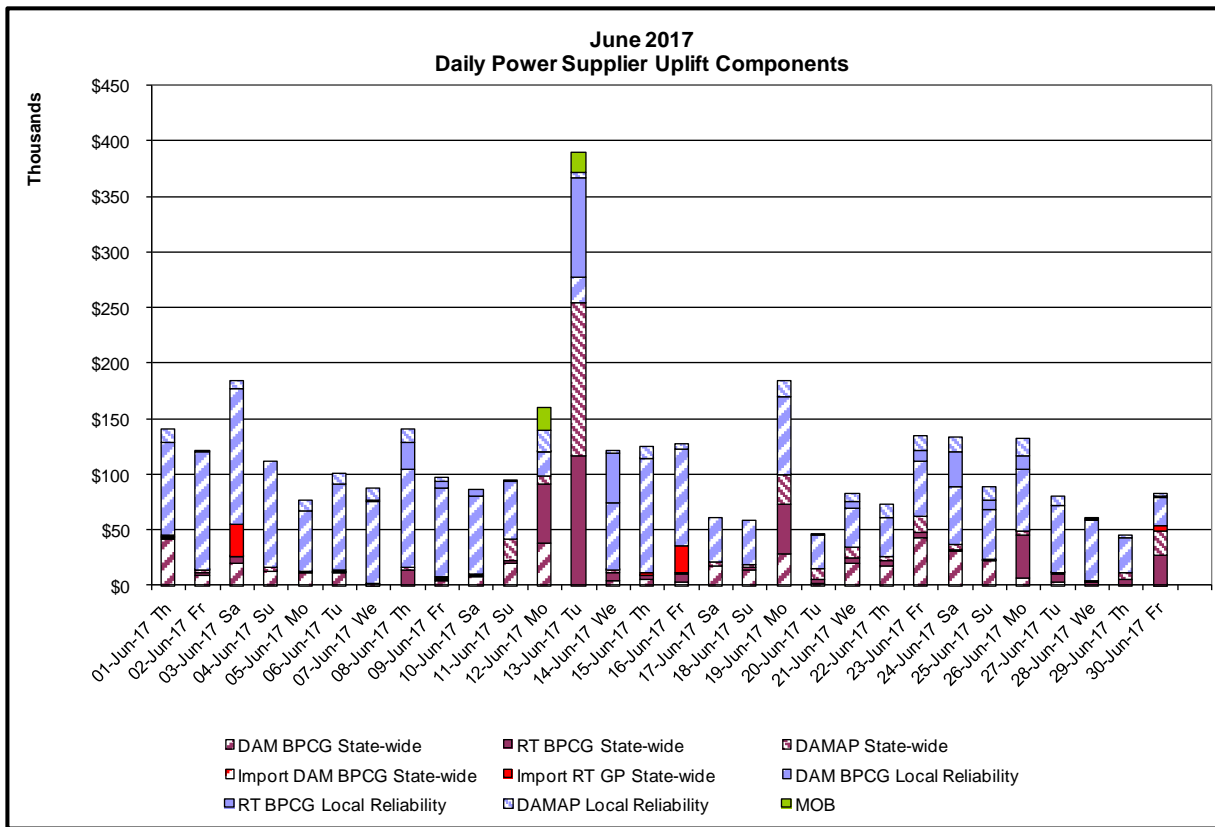
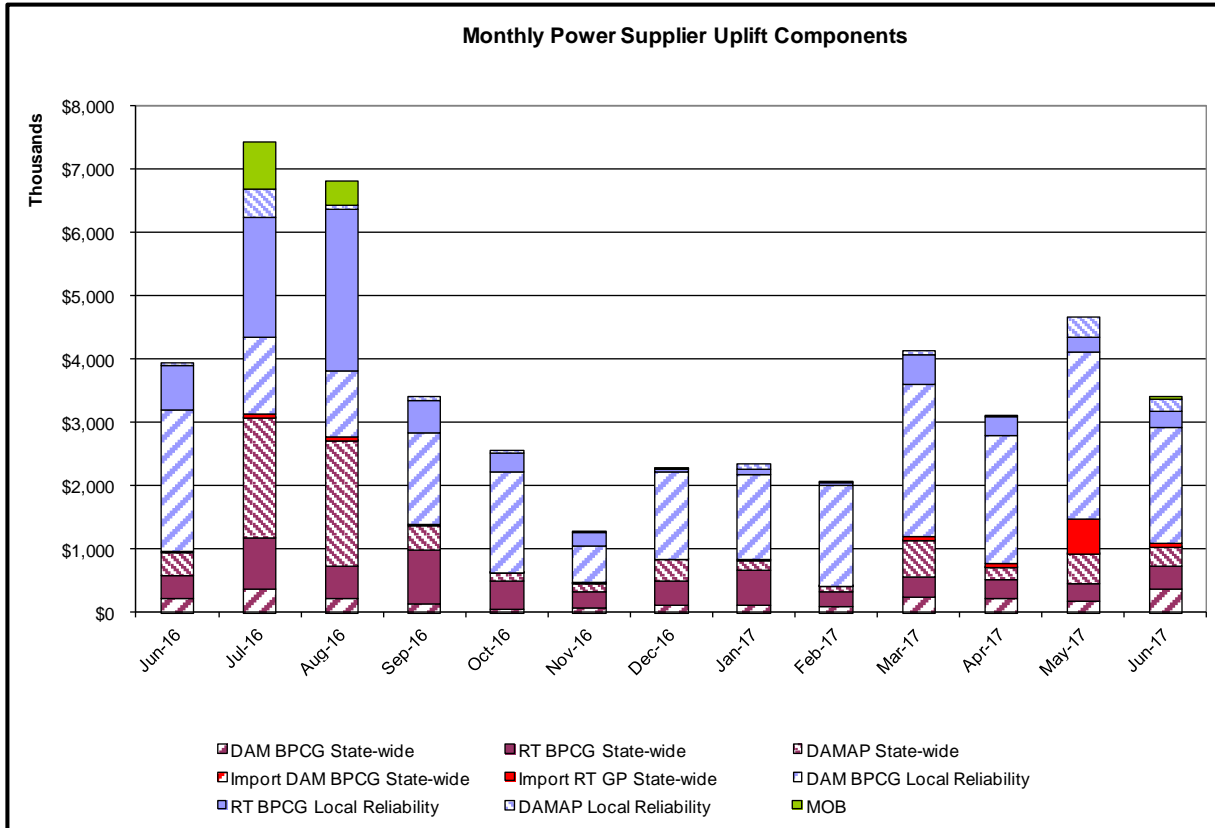
Monthly Balancing Market Congestion Report Assumptions/Notes

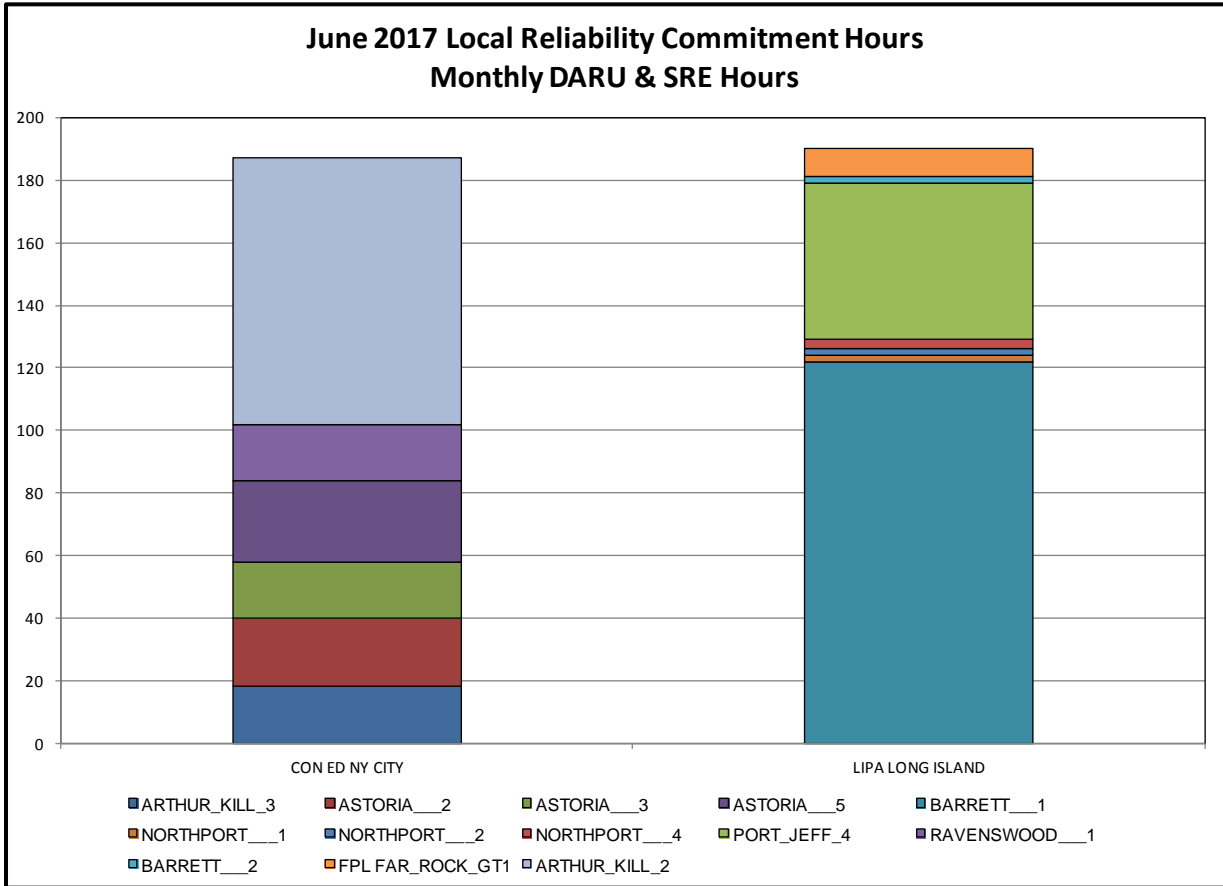
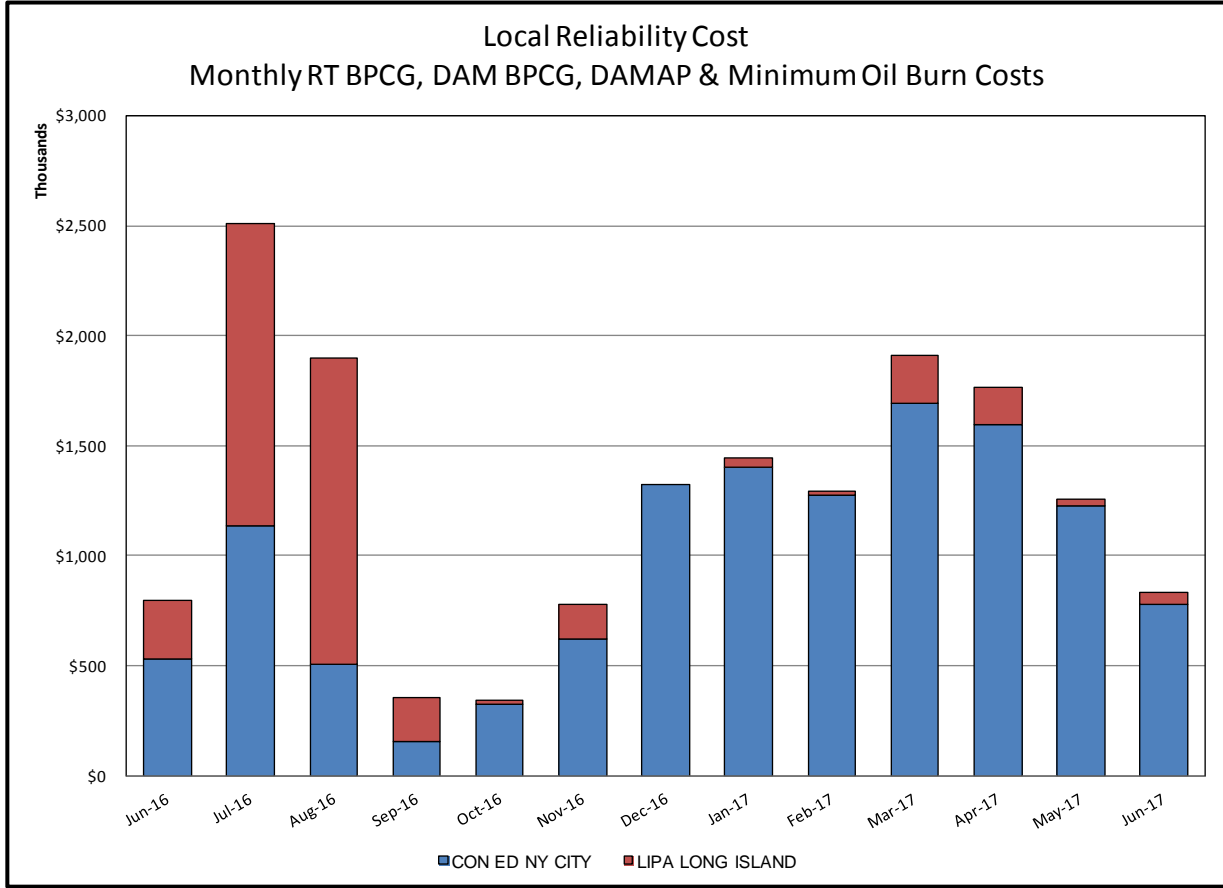
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

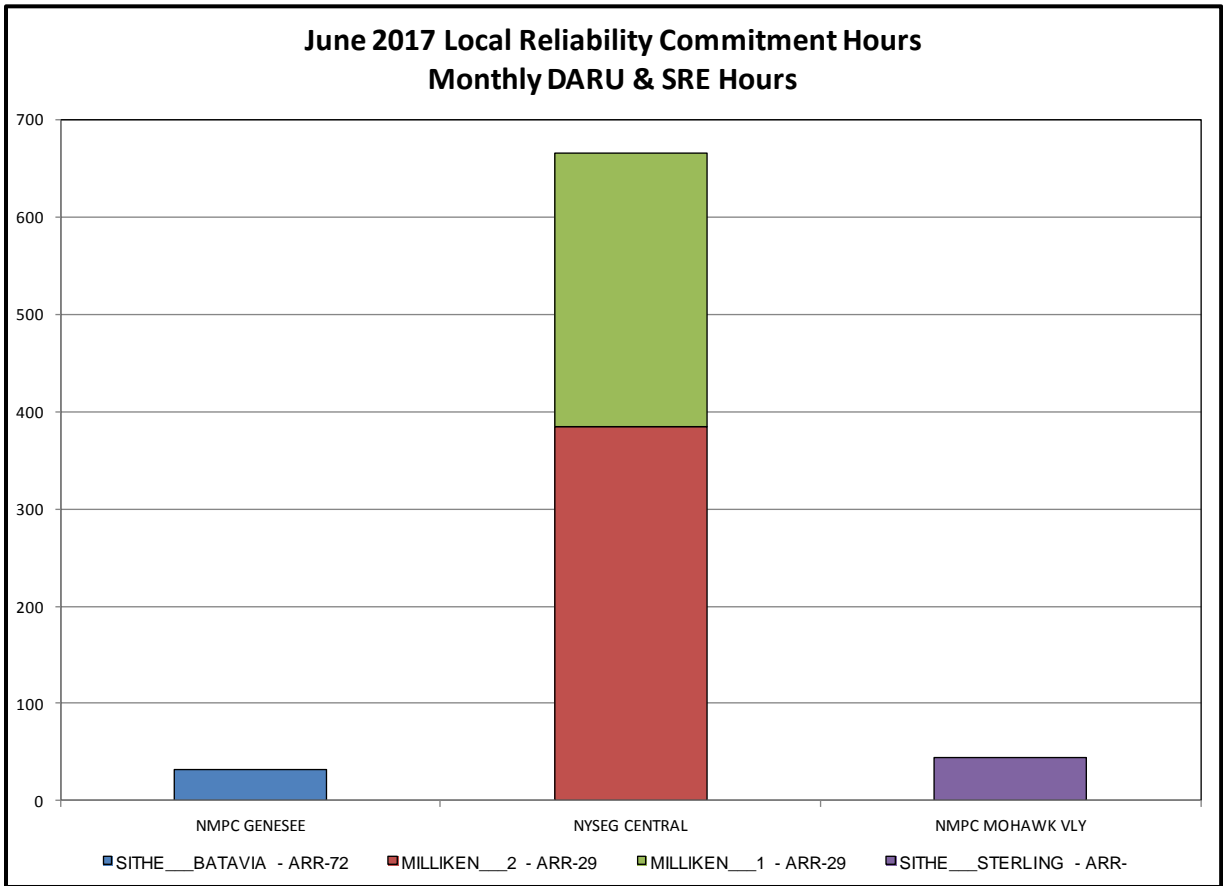
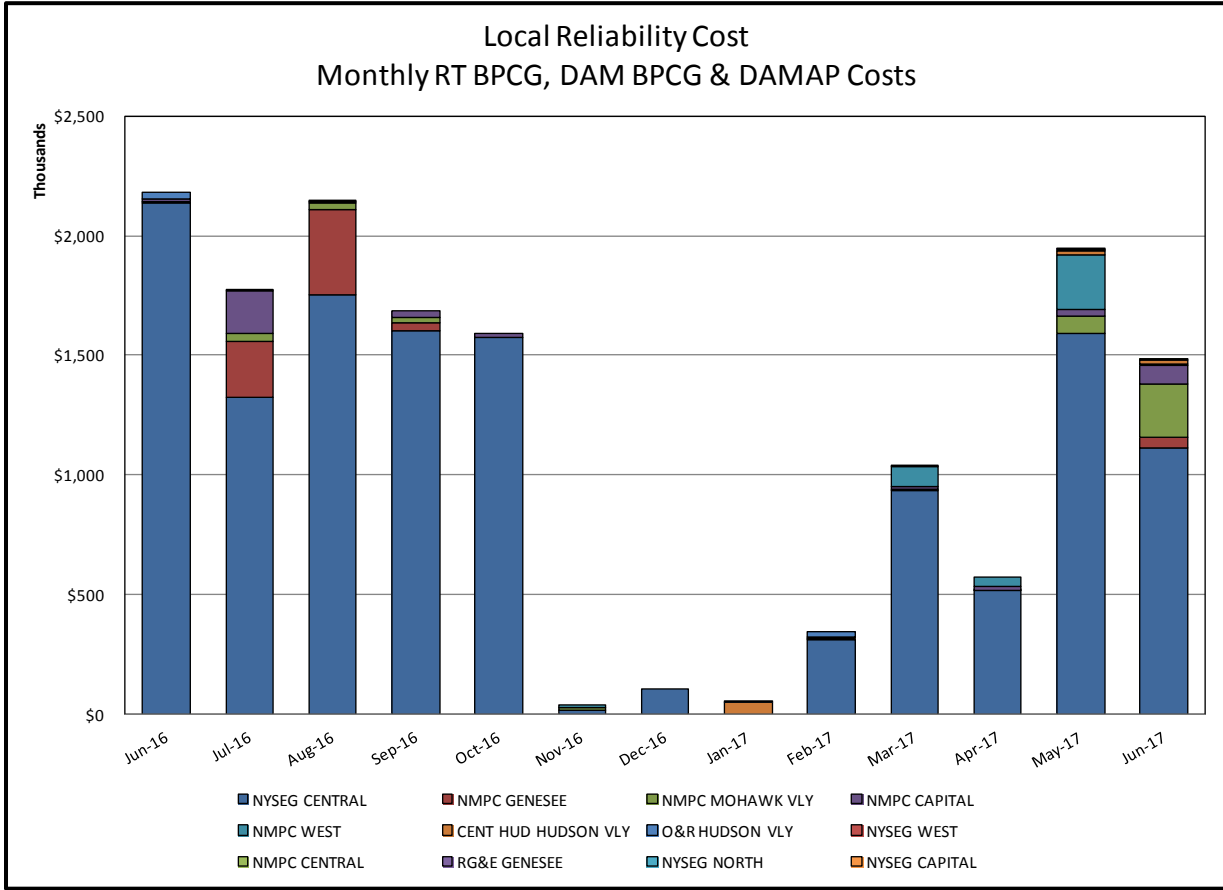


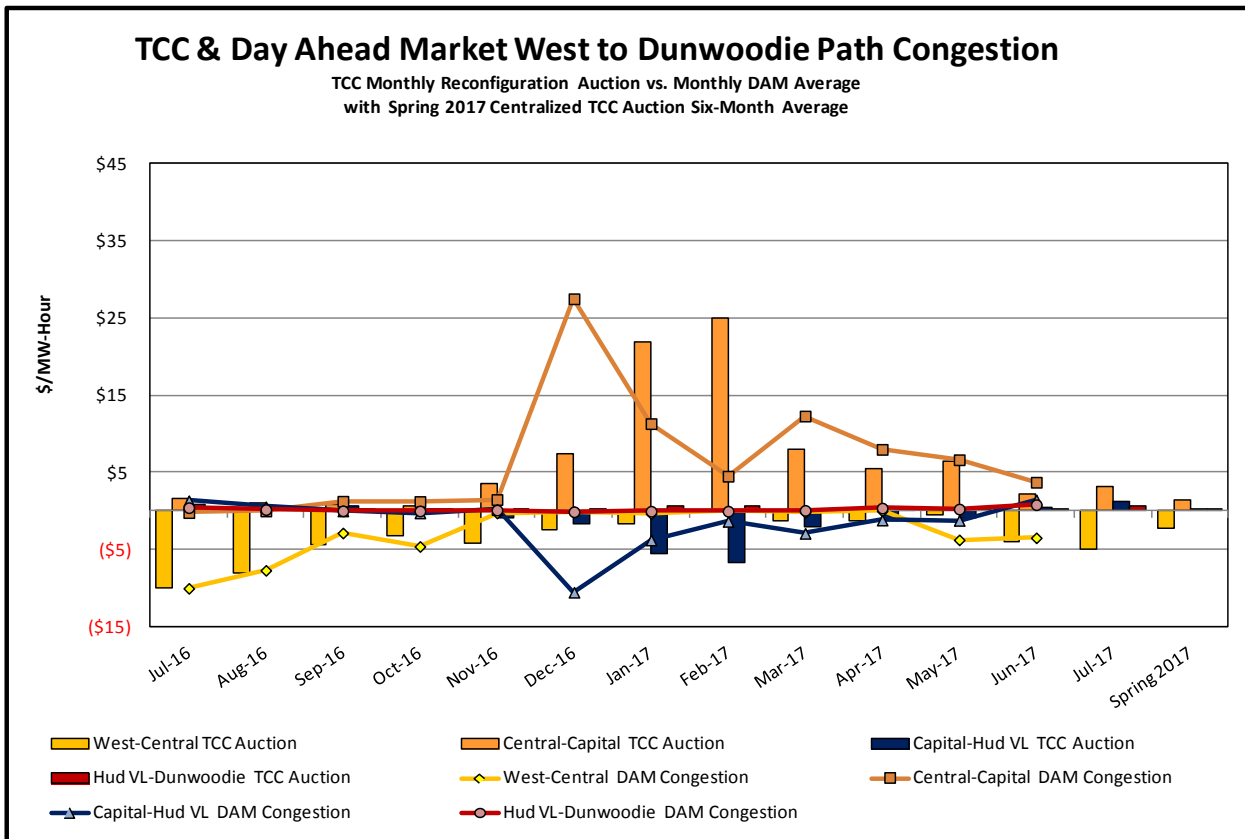
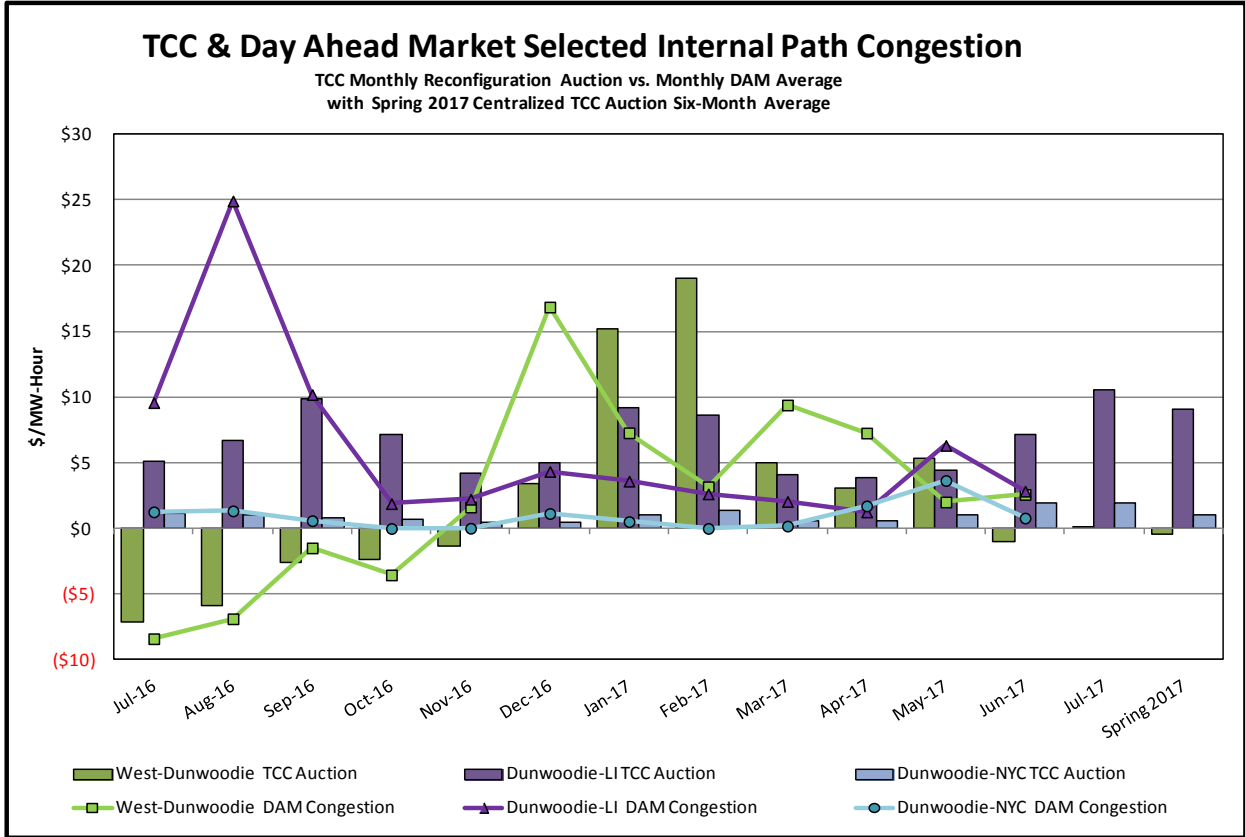
Day-Ahead Market Congestion Residual Categories

<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 2017 Centralized TCC Auction Six-Month Average

