

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



## ***July 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 August 8, 2017.

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## July 2017 Operations Performance Highlights

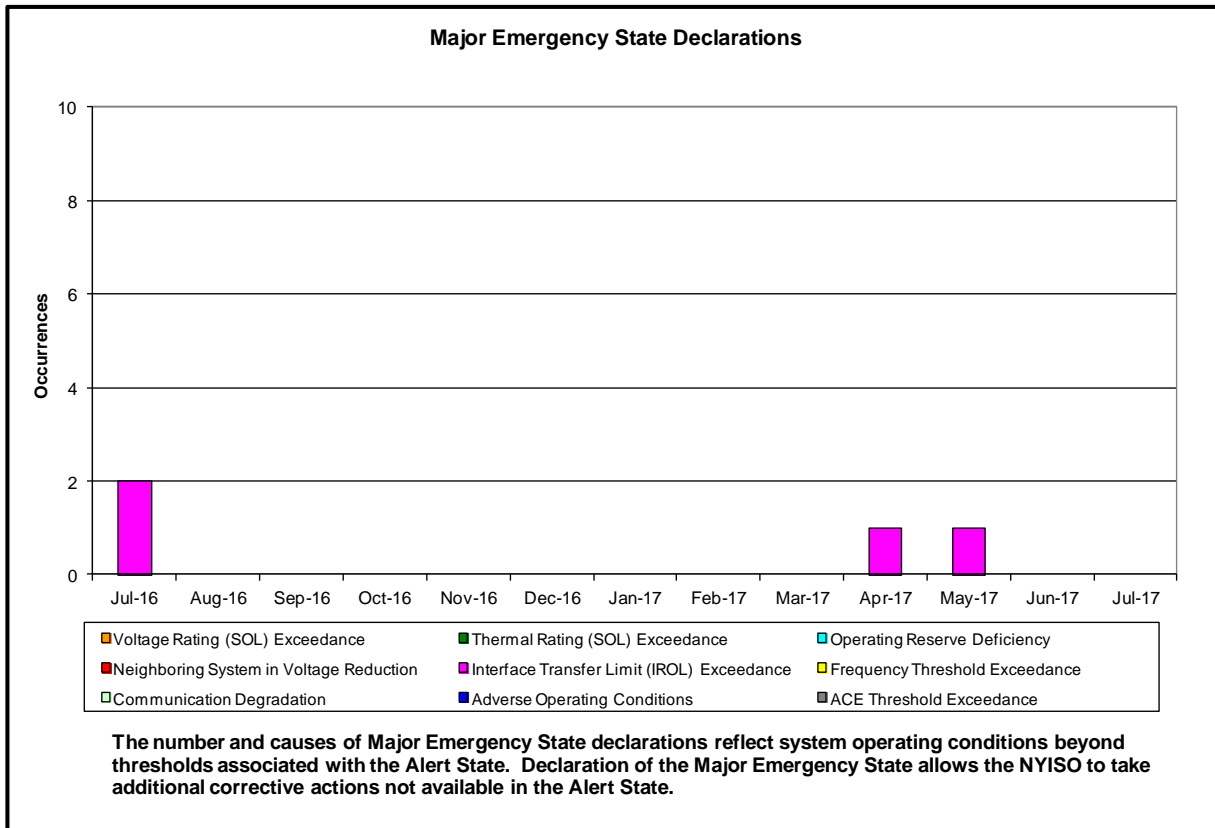
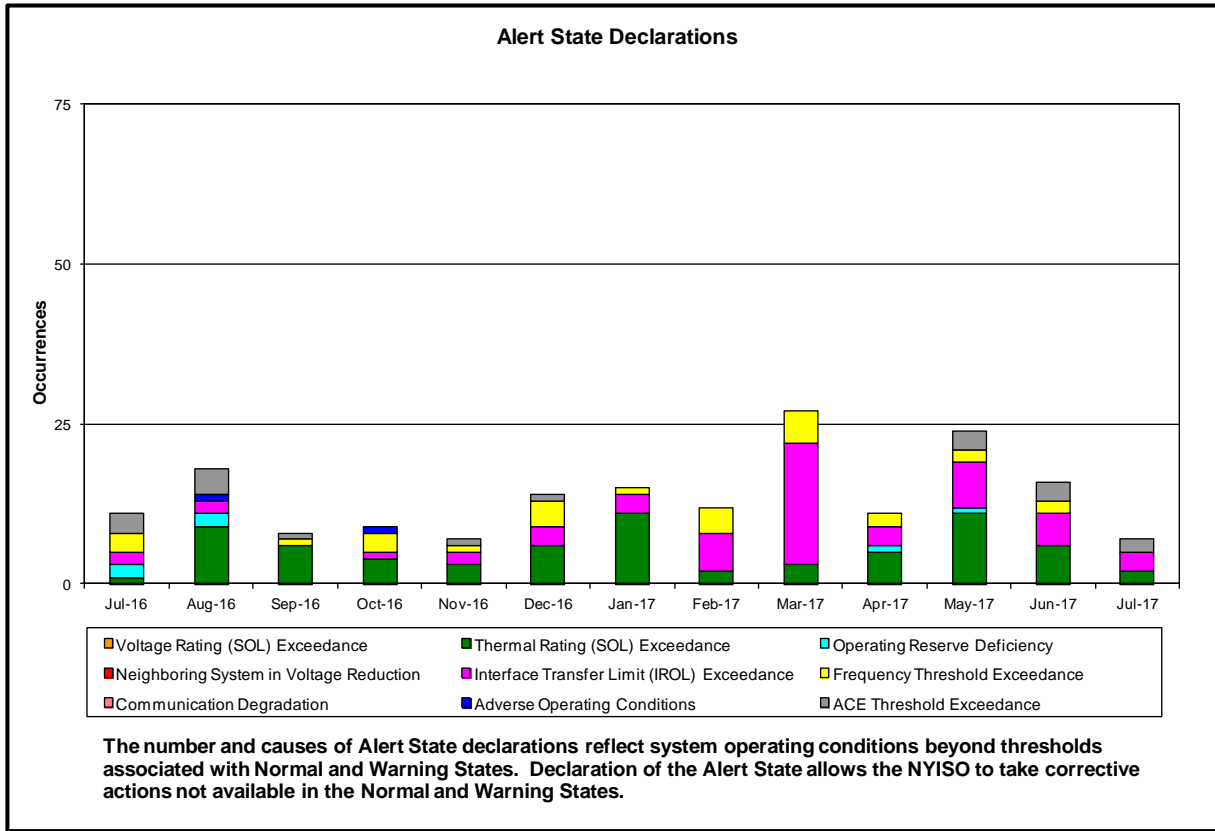
- Peak load of 29,699 MW occurred on 07/19/2017 HB 17
- All-time summer capability period peak load of 33,956 MW occurred on 7/19/2013 HB 16
- 13.9 hours of Thunder Storm Alerts were declared
- 0.5 hours of NERC TLR level 3 curtailment
- The Auburn Transmission project which mitigates NYSEG’s need to commit a Cayuga/Milliken unit for local reliability was completed on 7/12/2017.
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

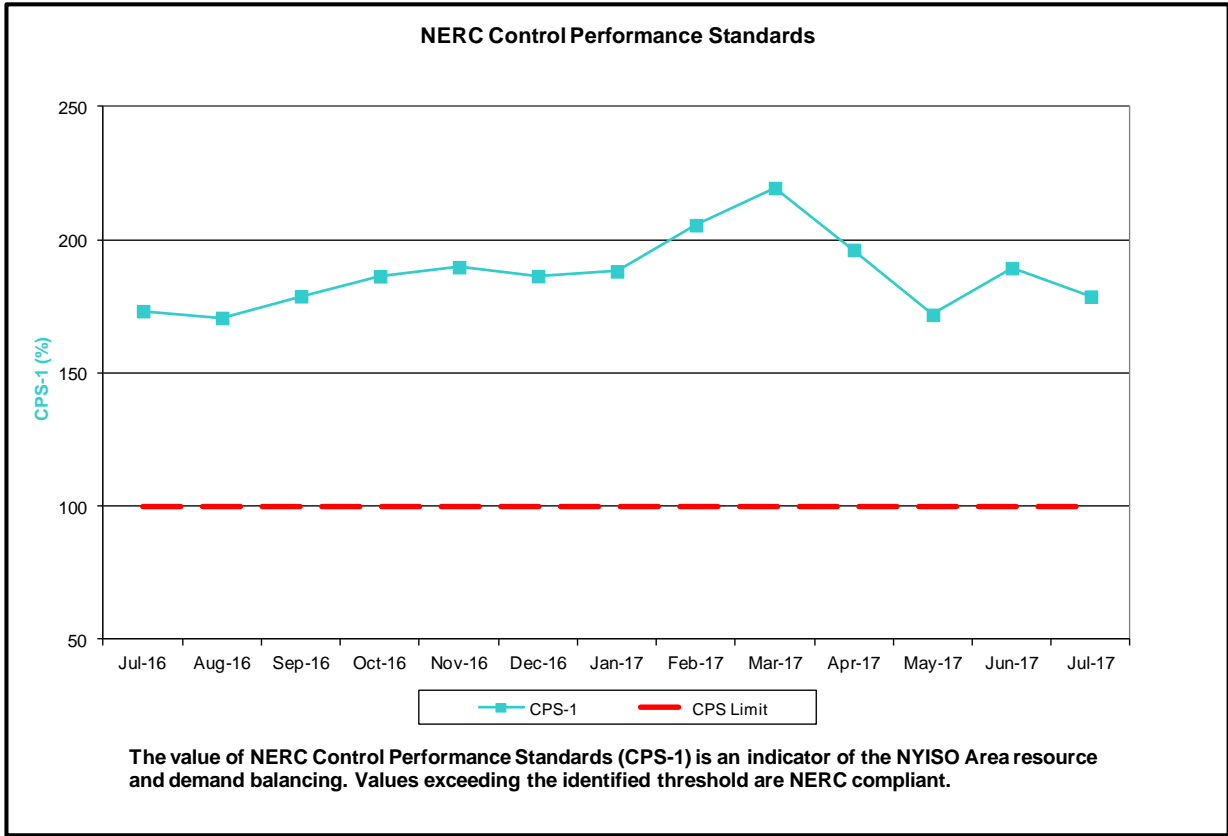
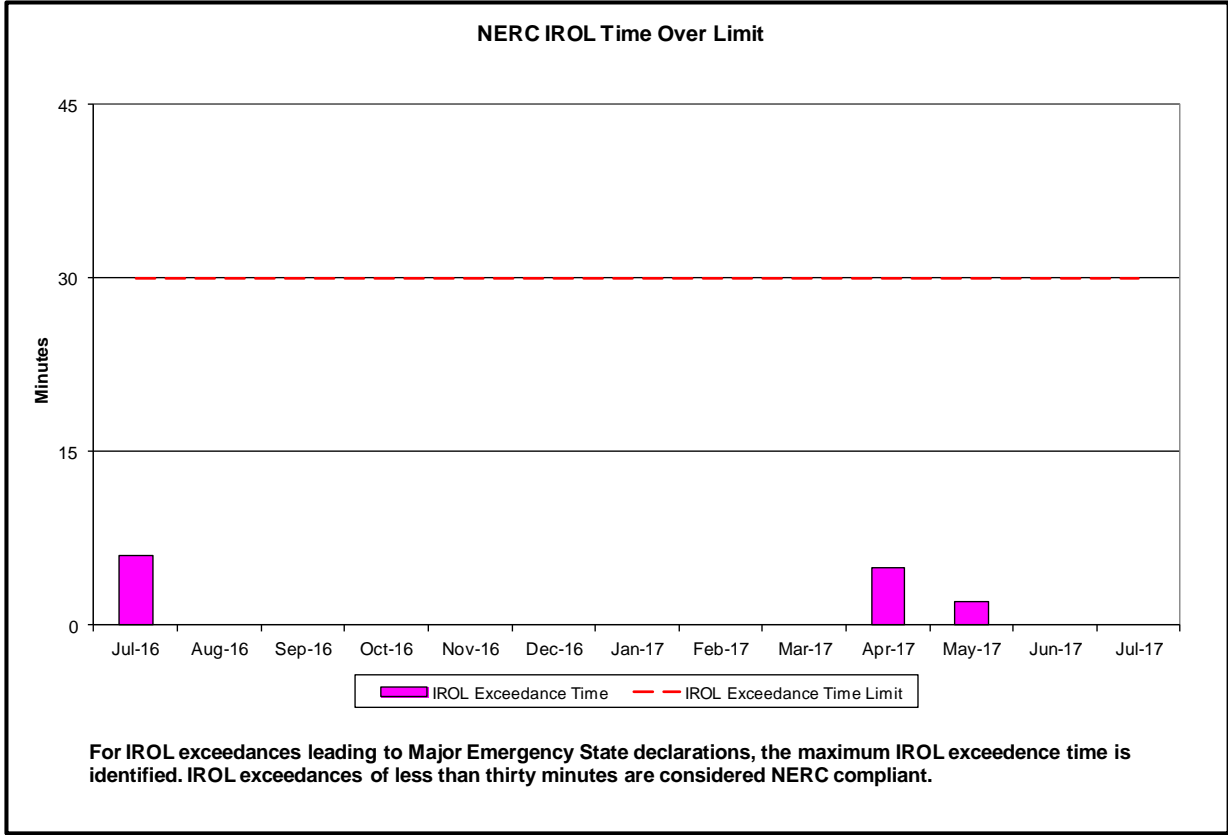
	Current Month Value (\$M)	Year-to-Date Value (\$M)
<b>NY Savings from PJM-NY Congestion Coordination</b>	\$0.08	\$8.87
<b>NY Savings from PJM-NY Coordinated Transaction Scheduling</b>	(\$0.30)	(\$0.65)
<b>NY Savings from NE-NY Coordinated Transaction Scheduling</b>	(\$0.18)	(\$0.52)
<b>Total NY Savings</b>	(\$0.40)	\$7.70
<b>Regional Savings from PJM-NY Coordinated Transaction Scheduling</b>	\$0.31	\$1.88
<b>Regional Savings from NE-NY Coordinated Transaction Scheduling</b>	\$0.13	\$0.73
<b>Total Regional Savings</b>	\$0.44	\$2.61

- Statewide uplift cost monthly average was (\$0.54)/MWh
- The following table identifies the Monthly ICAP spot market prices by locality and price delta.

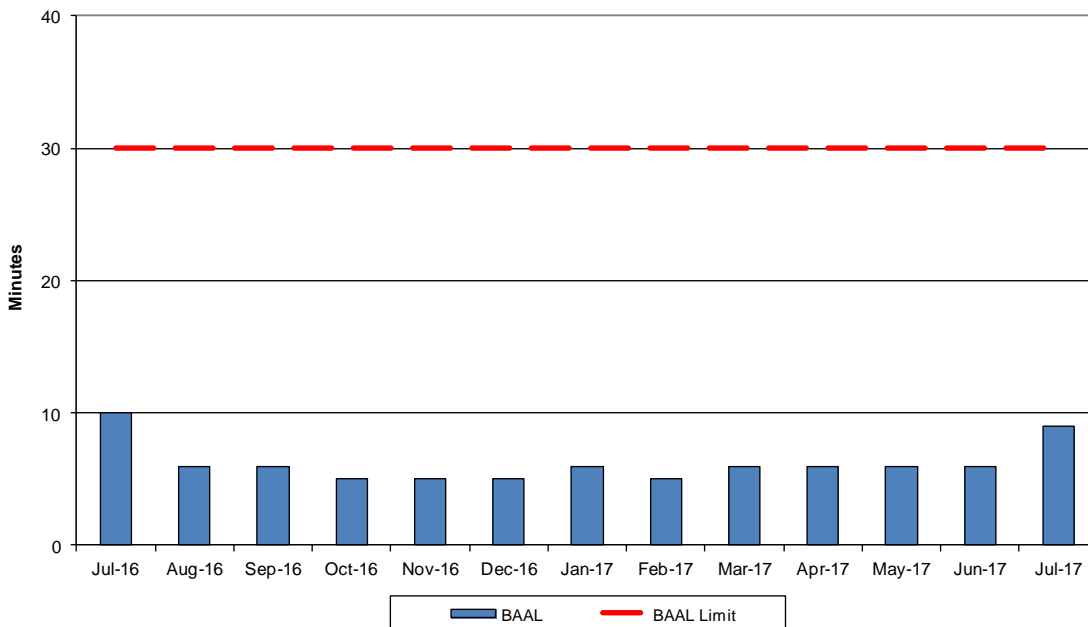
Spot Auction Price Results	NYCA	Lower Hudson Valley Zones	New York City Zone	Long Island Zone
August 2017 Spot Price	\$2.18	\$9.69	\$9.85	\$6.67
July 2017 Spot Price	\$2.26	\$9.75	\$9.86	\$6.69
Delta	(\$0.08)	(\$0.06)	(\$0.01)	(\$0.02)

- Reliability Performance Metrics



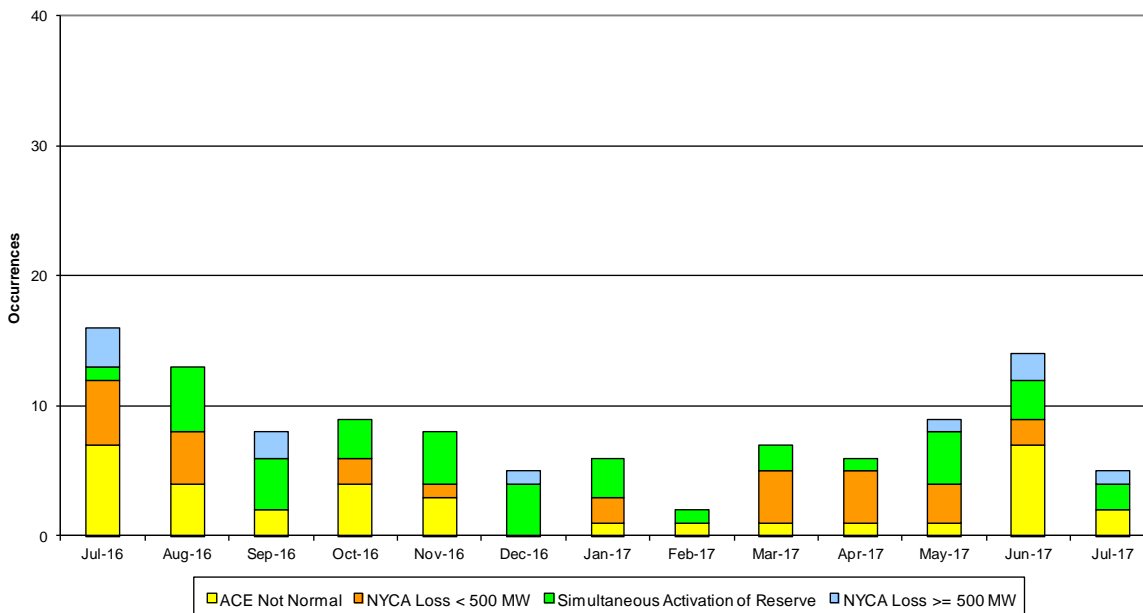


### NERC Balancing Authority ACE Limit Standard



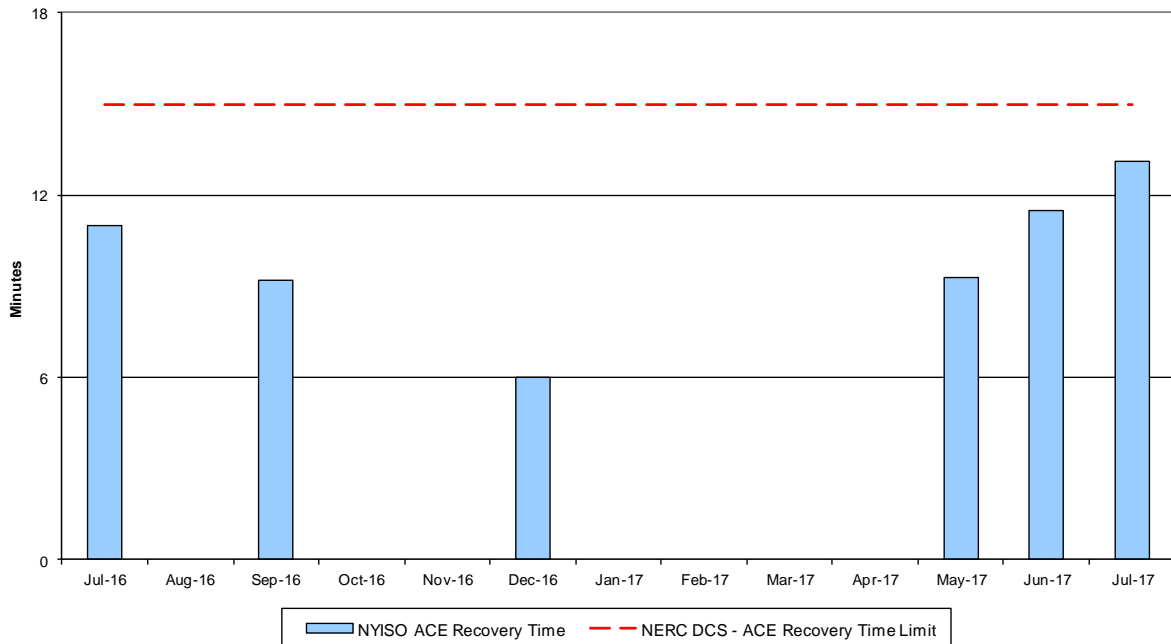
The amount of time the clock-minute average ACE exceeds the clock-minute Balancing Authority ACE Limit (BAAL) is an indicator of the NYISO Area resource and demand balancing. The maximum BAAL exceedance time is identified. BAAL exceedances of less than 30 consecutive clock-minutes are NERC compliant.

### Reserve Activations



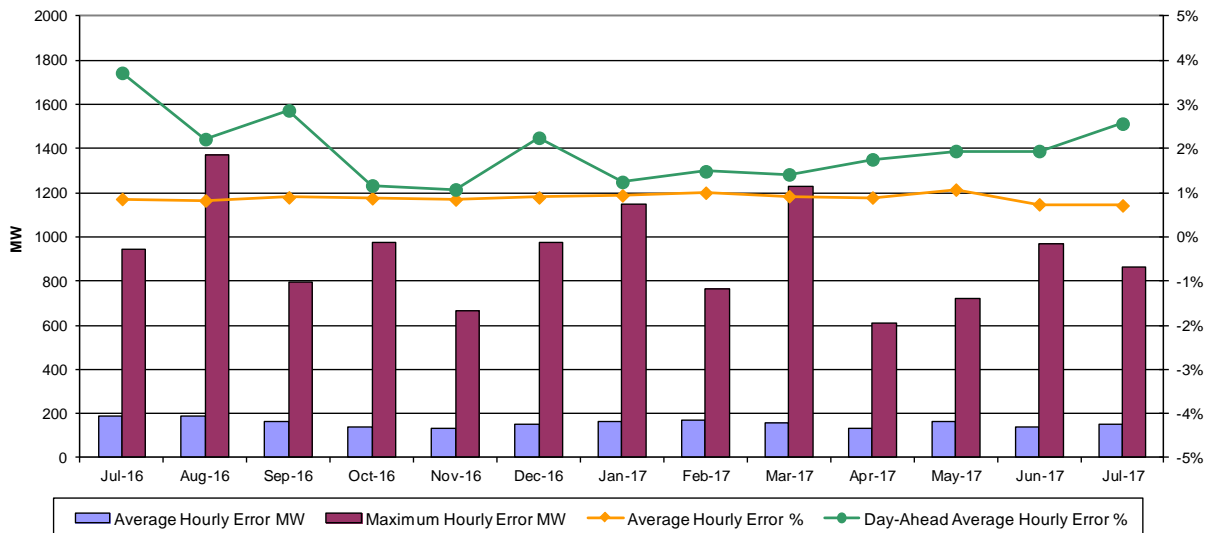
NYISO Reserve Activations are indicators of the need to respond to unexpected operational conditions within the NYISO Area or to assist a neighboring Area (Simultaneous Activation of Reserves) by activating an immediate resource and demand balancing operation.

### DCS Event Time to ACE Recovery

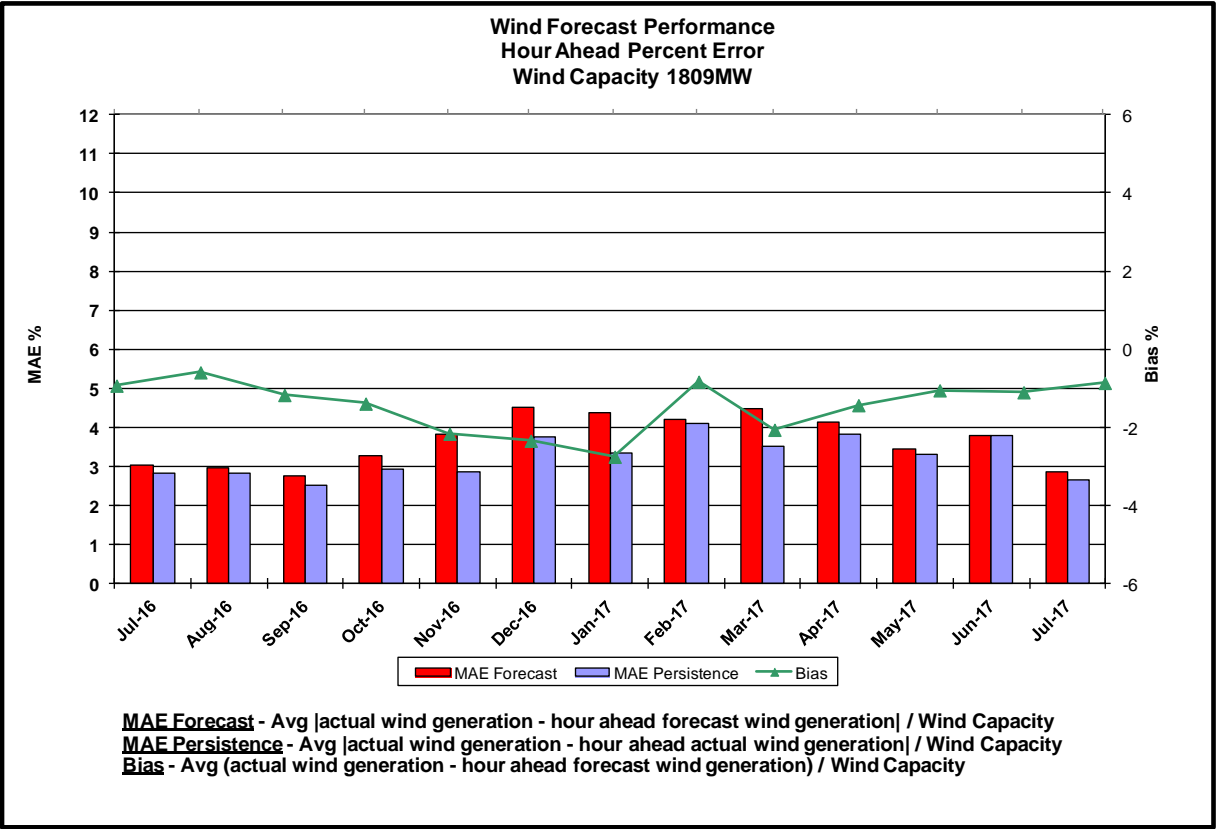
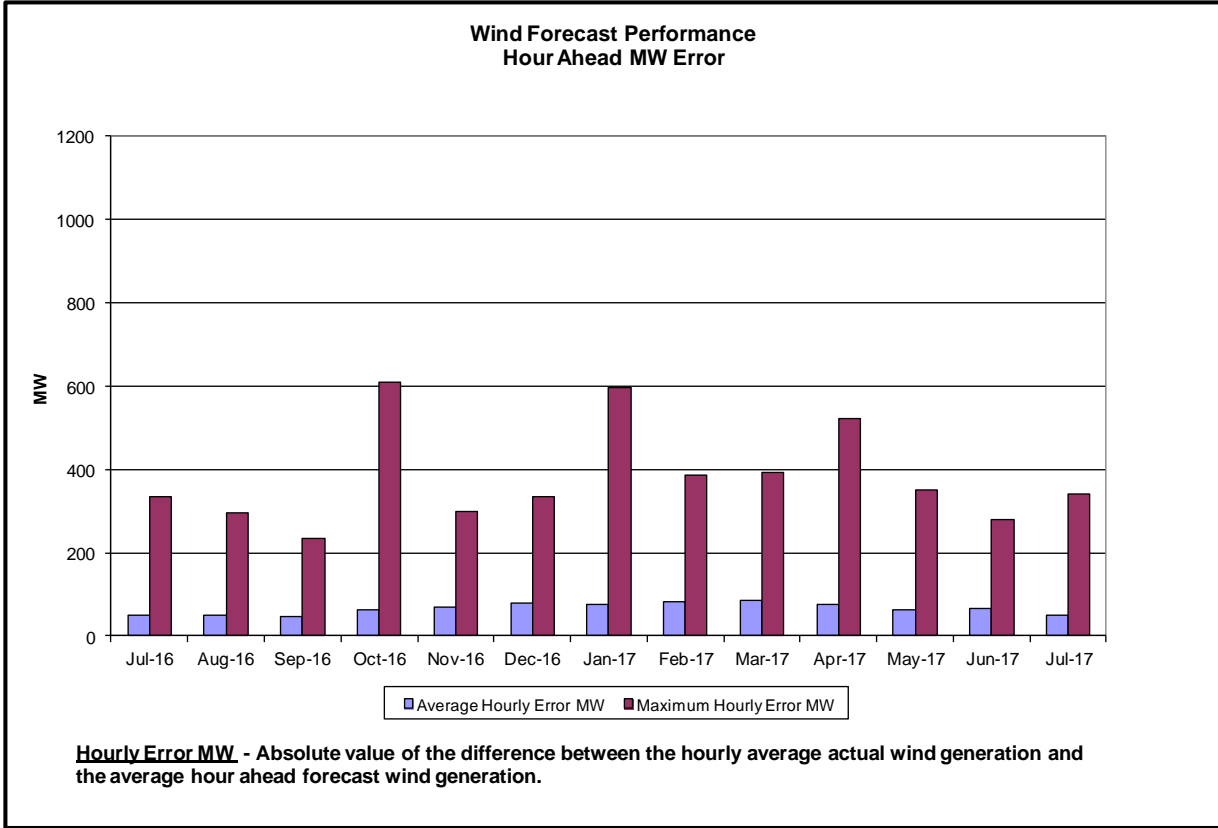


For NYISO initiated Reportable Disturbances, the maximum ACE recovery time is identified. Recovery times of less than 15 minutes are considered NERC compliant.

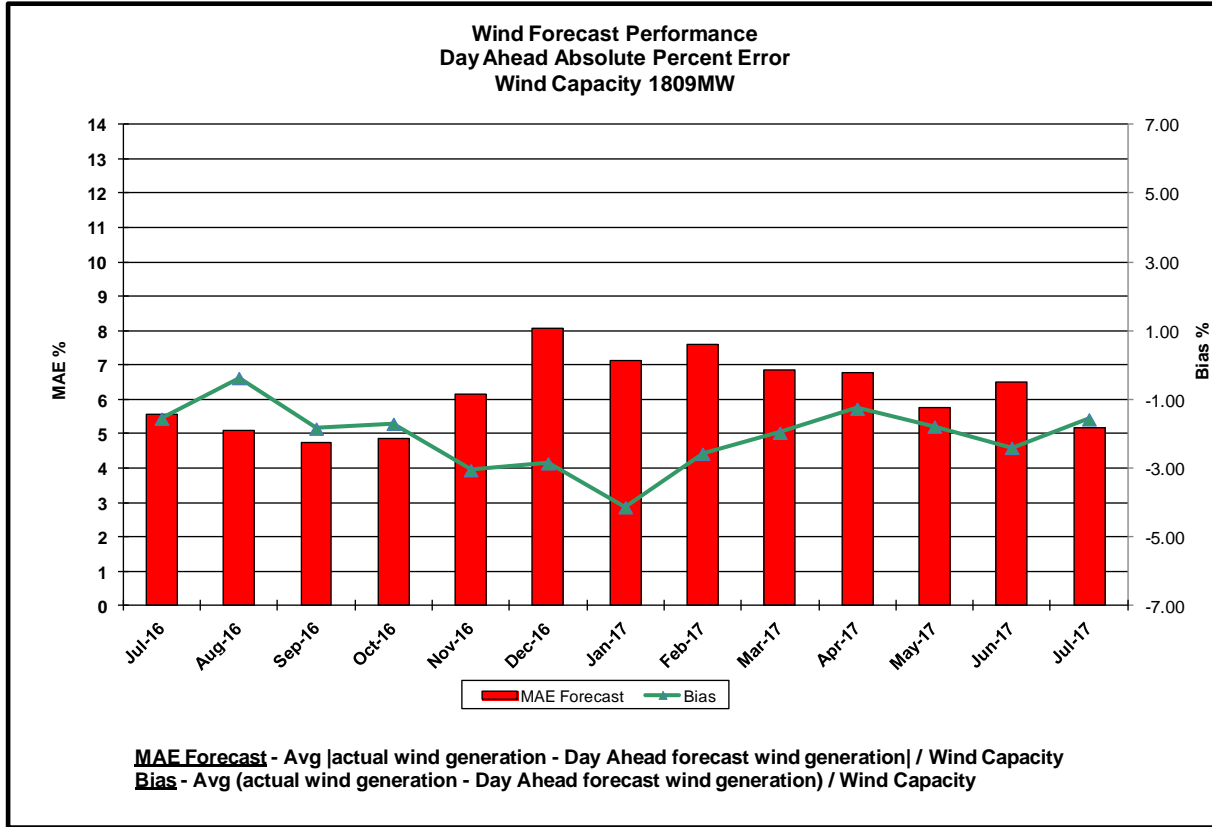
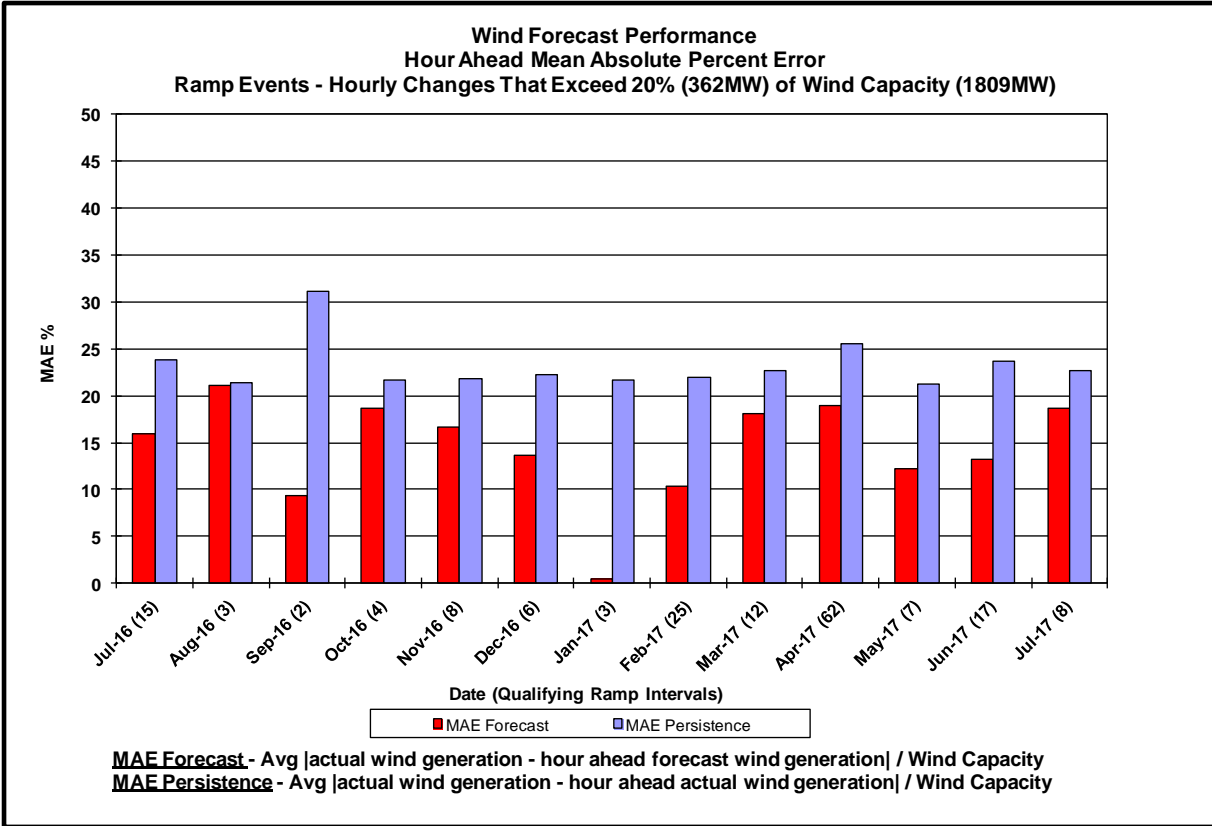
### Load Forecast Performance

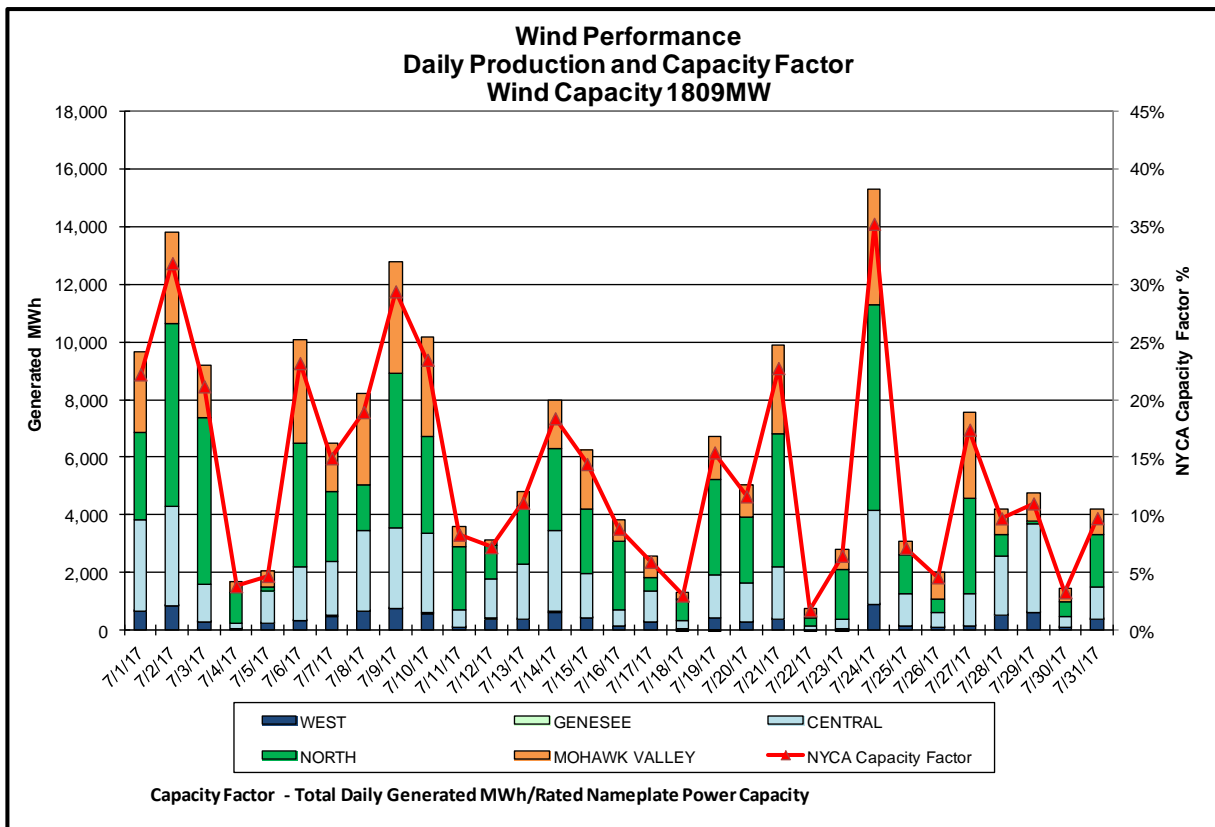
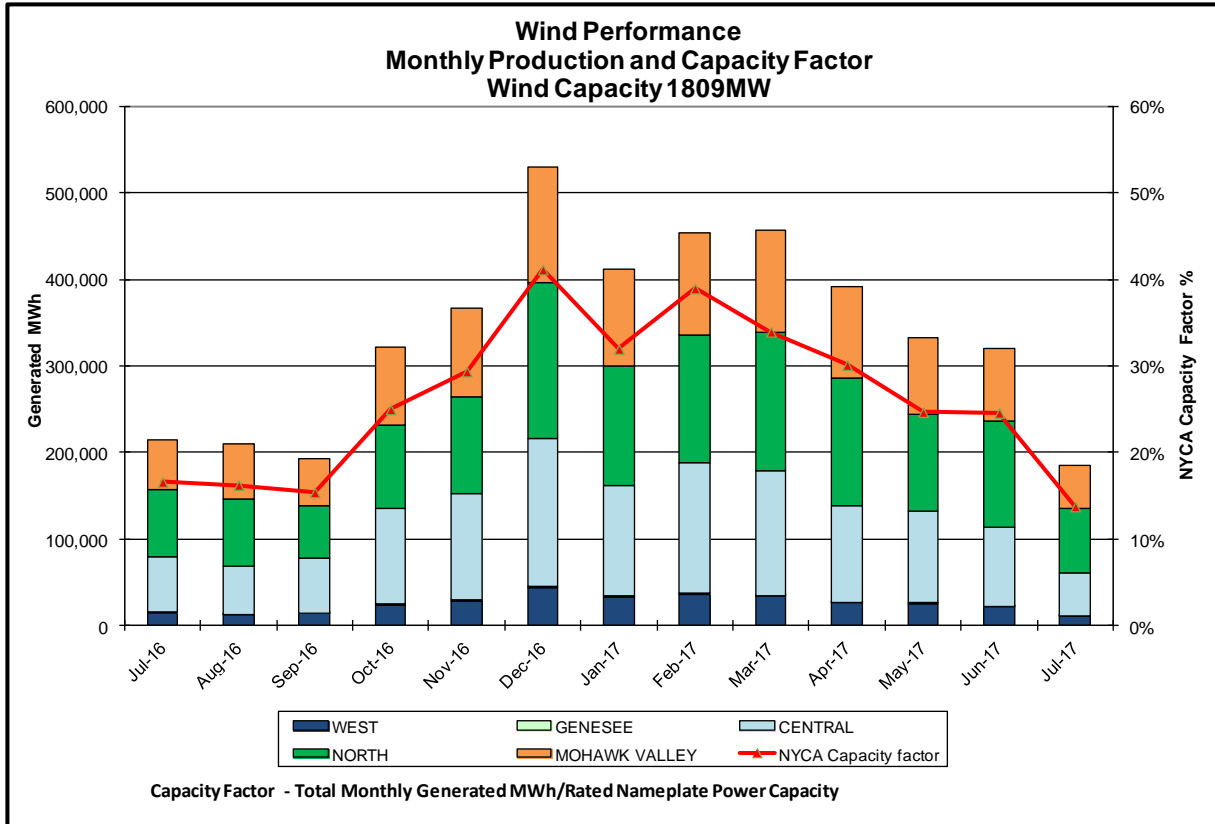


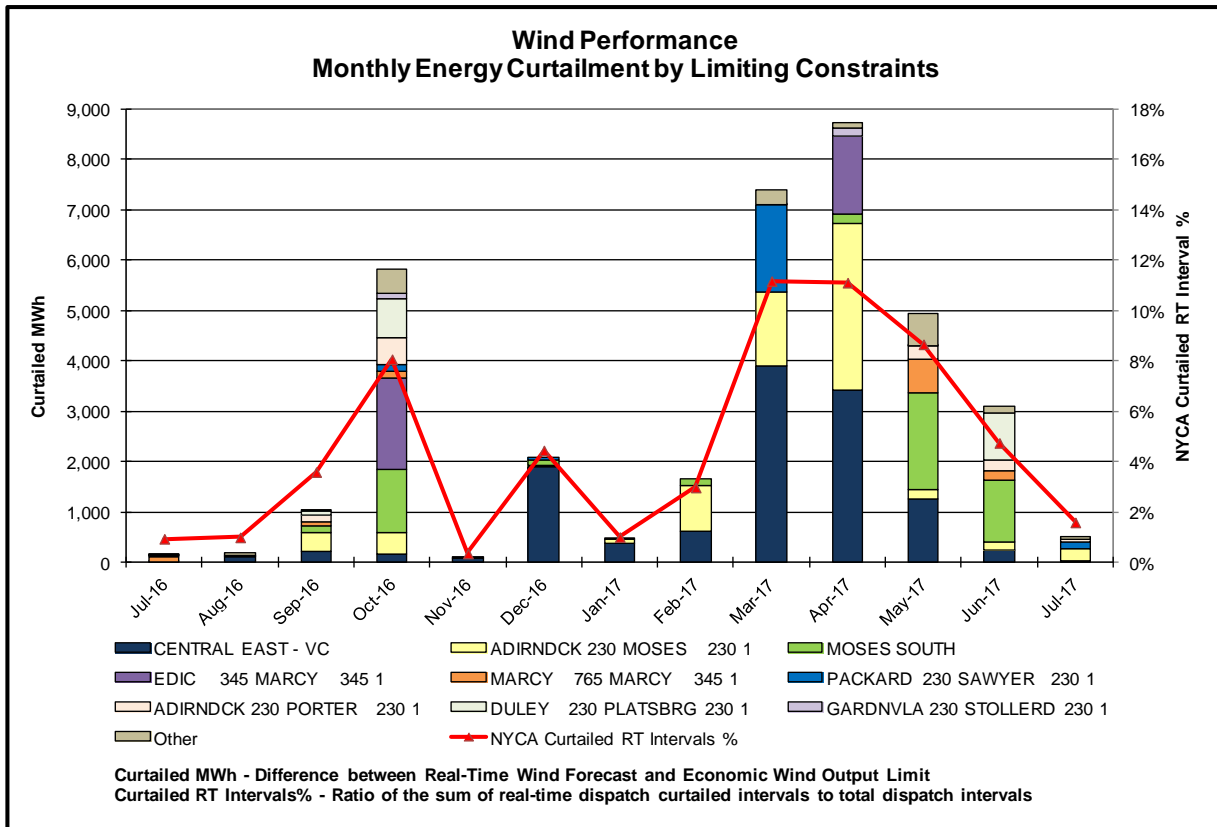
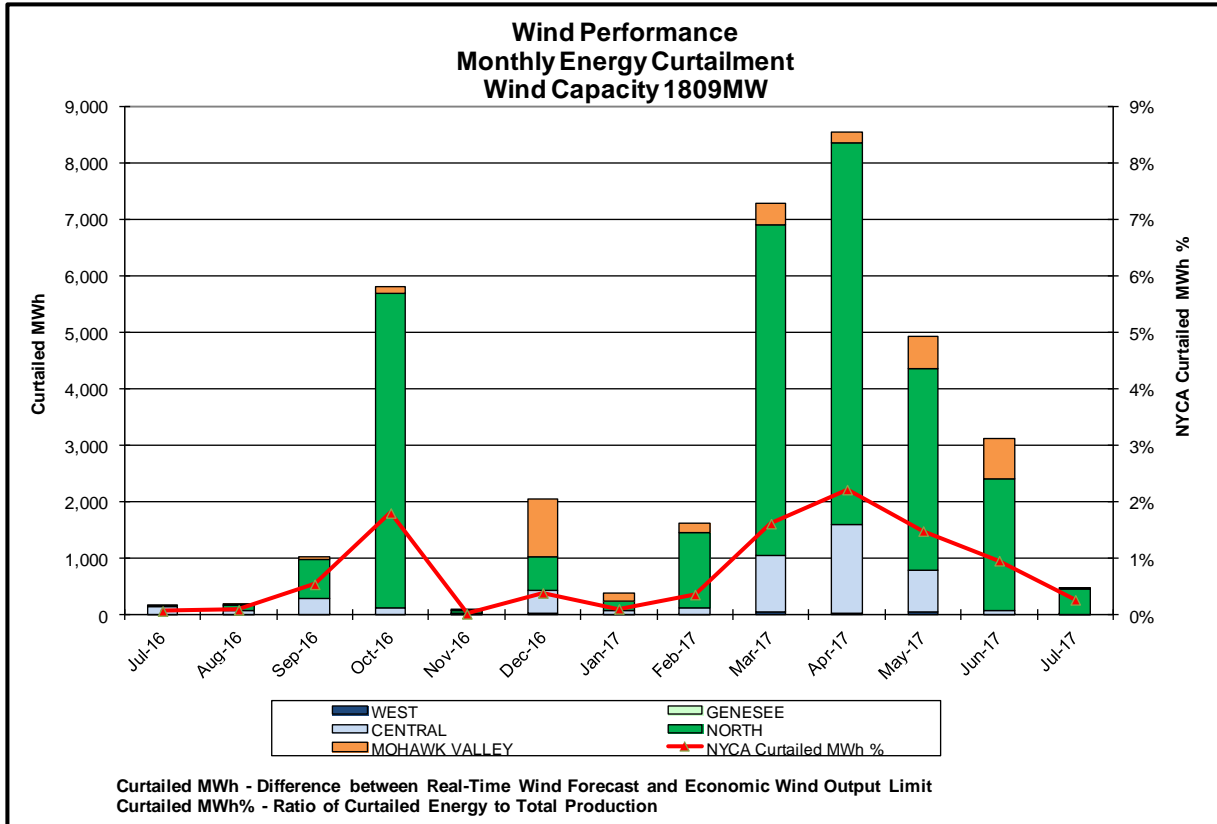
**Hourly Error MW** - Absolute value of the difference between the hourly average actual load demand and the average hour ahead forecast load demand.  
**Average Hourly Error %** - Average value of the ratio of hourly average error magnitude to hourly average actual load demand.  
**Day-Ahead Average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

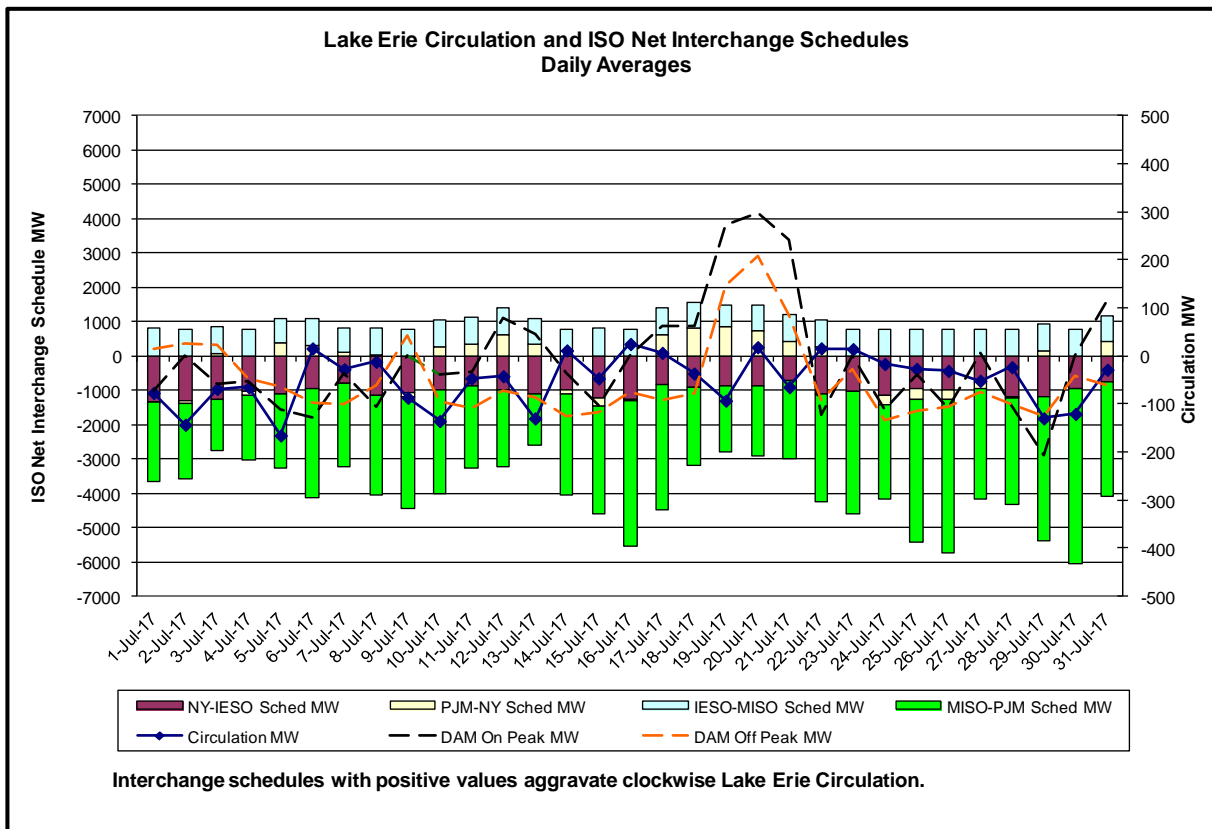
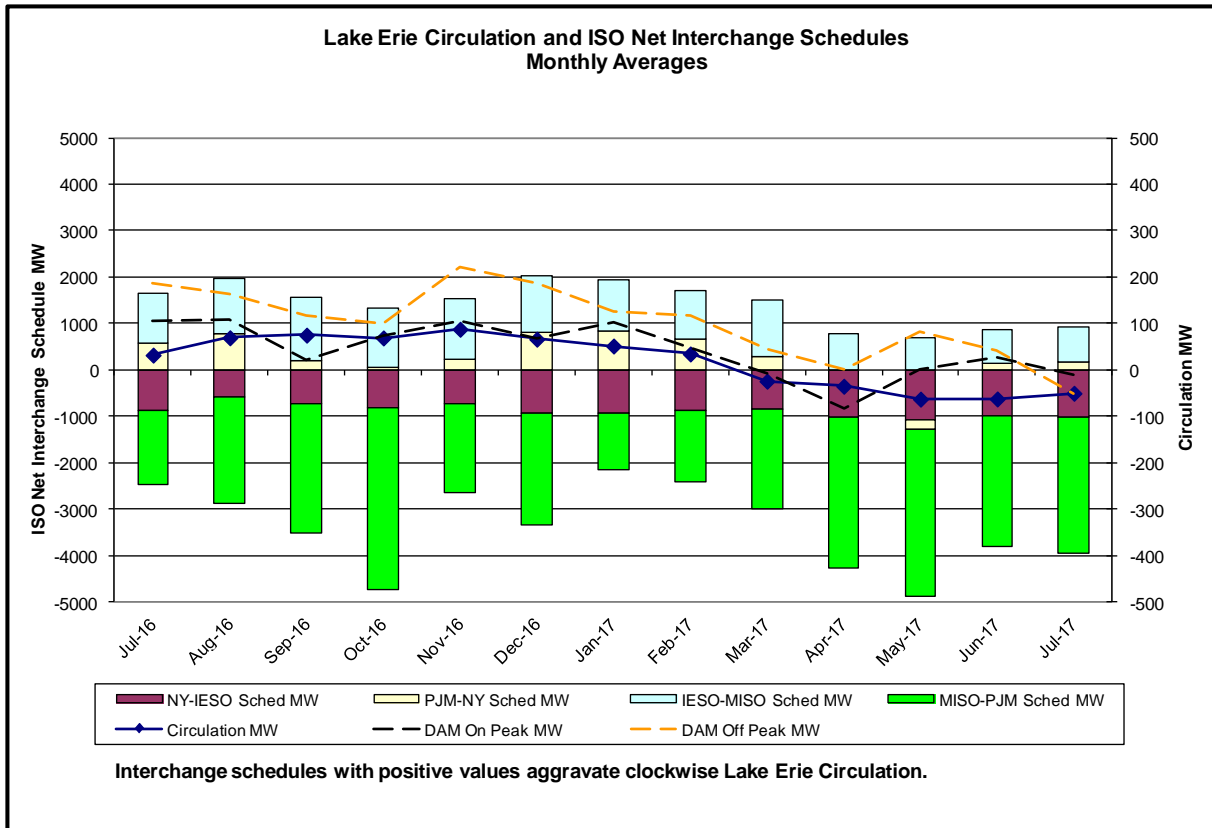




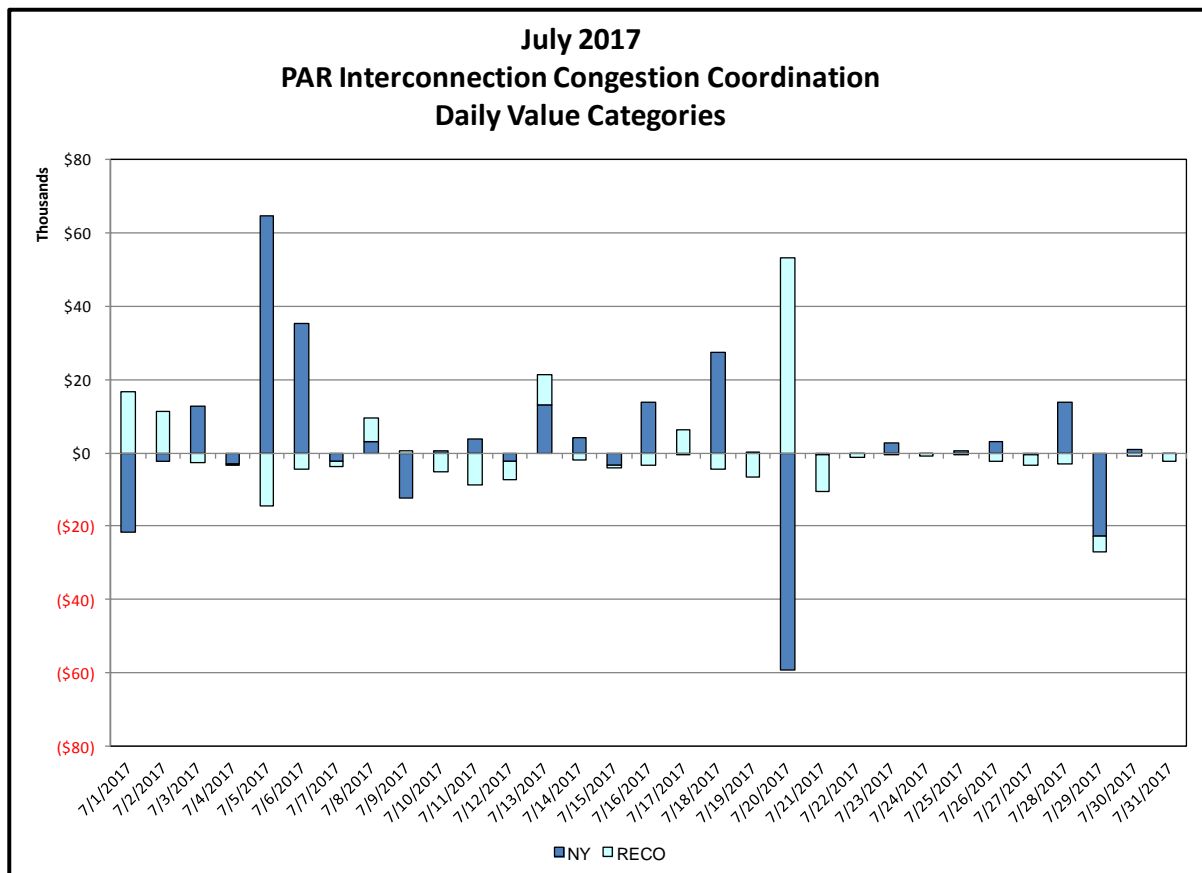
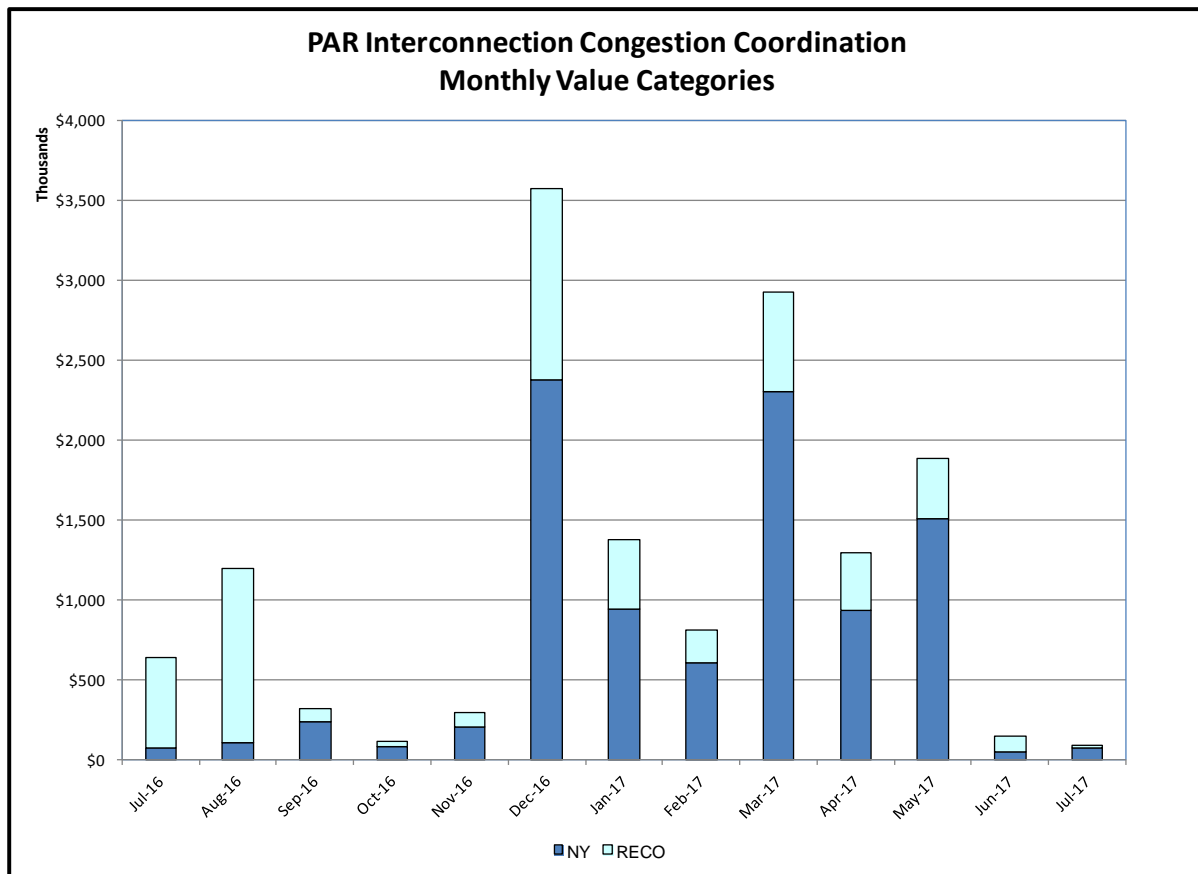








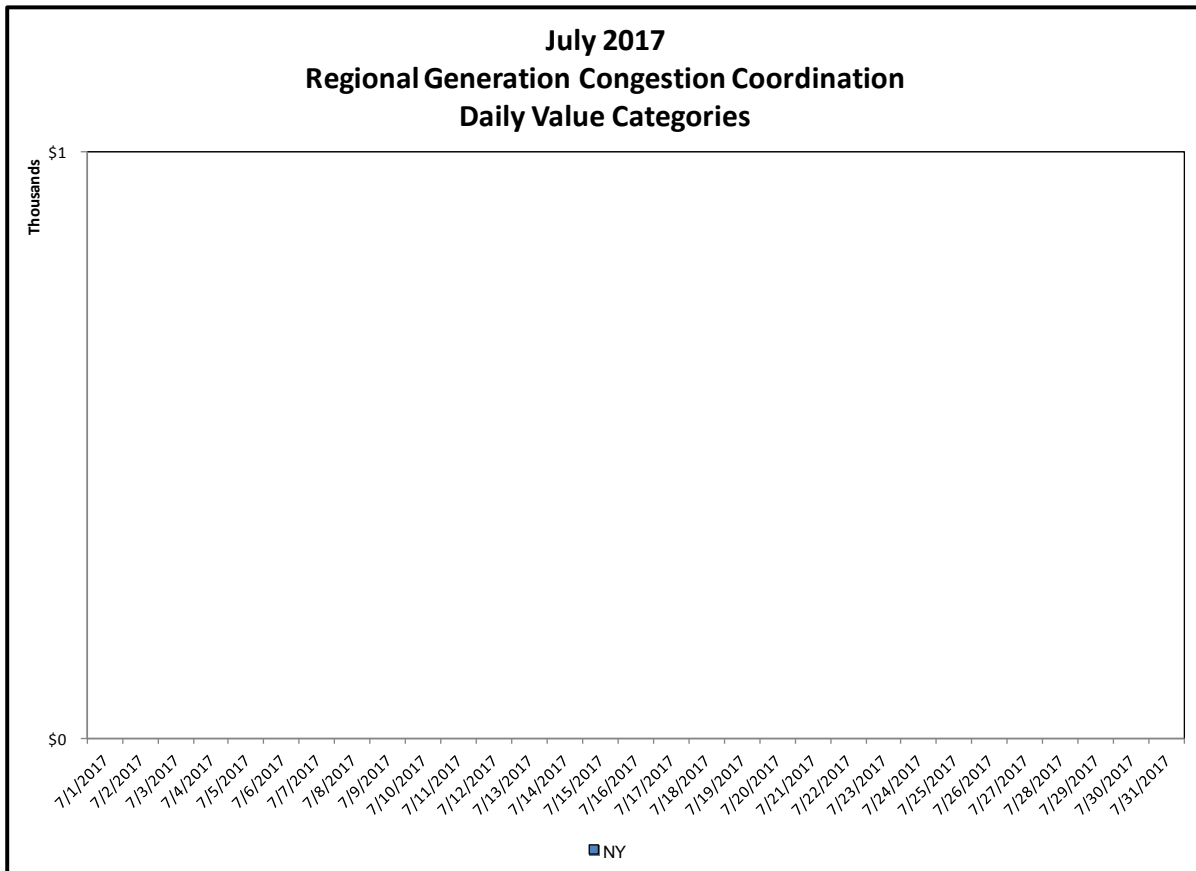
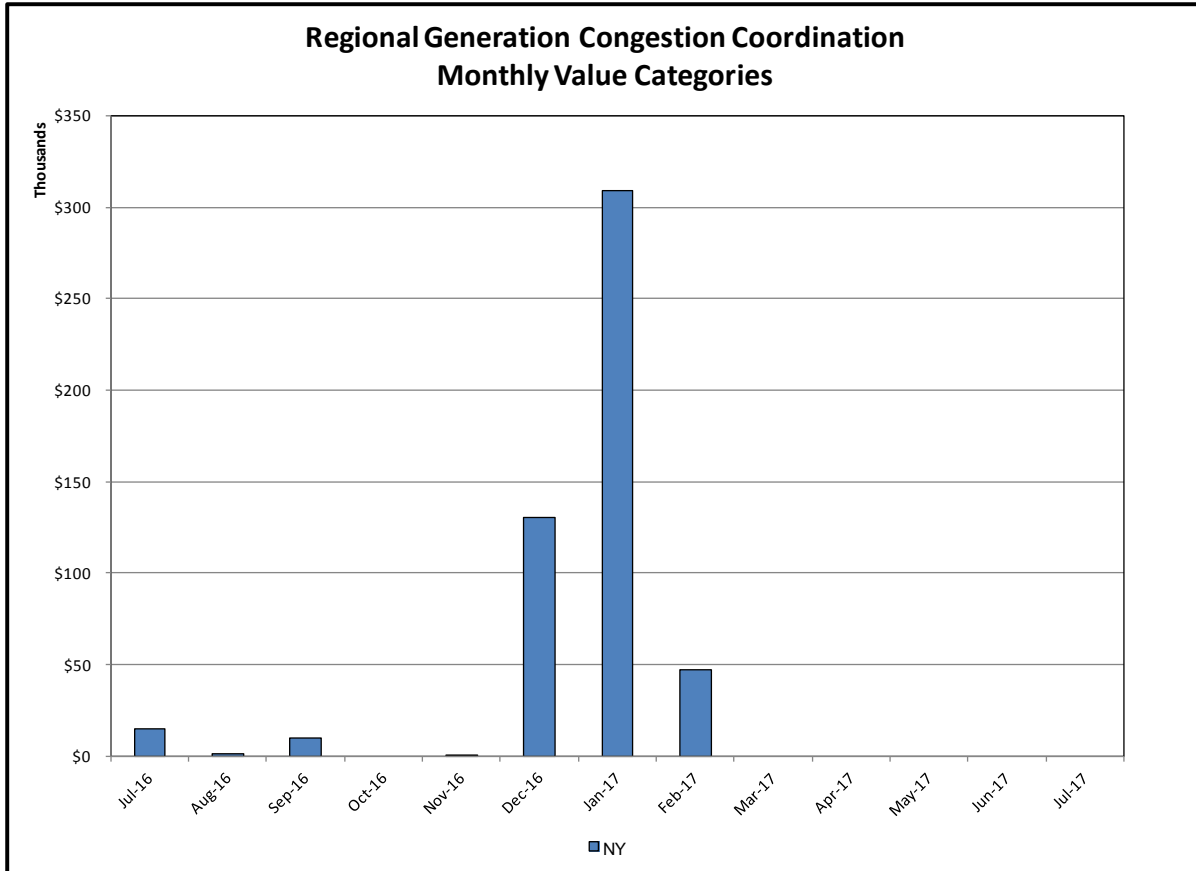


## Broader Regional Market Performance Metrics



**PAR Interconnection Congestion Coordination**

<u>Category</u>	<u>Description</u>
 <b>NY</b>	<p>Represents the value NY realizes from Market-to-Market PAR 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 Interconnection PAR Target levels, excluding RECO on the Ramapo PARs). This is net of any settlements to PJM when they are congested.</p>
 <b>RECO</b>	<p>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.</p>



### Regional Generation Congestion Coordination

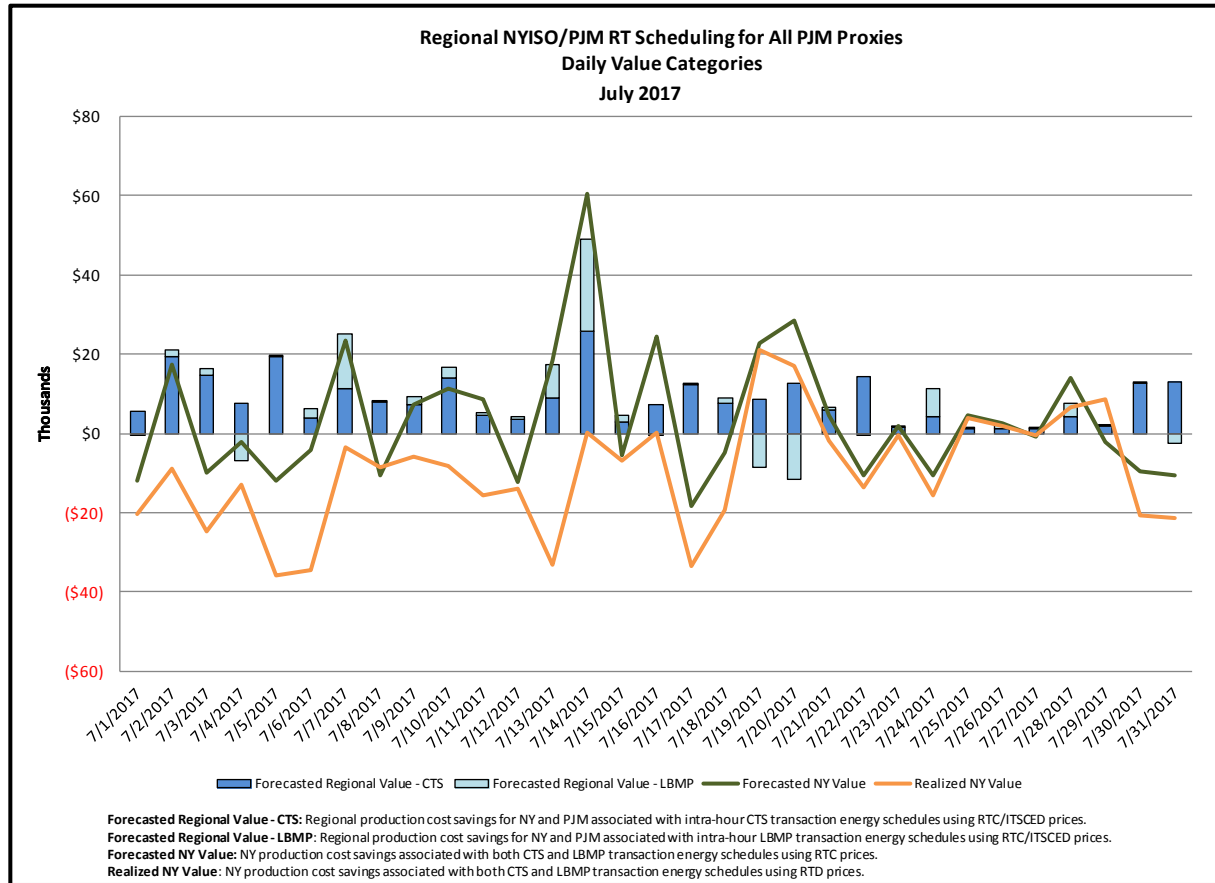
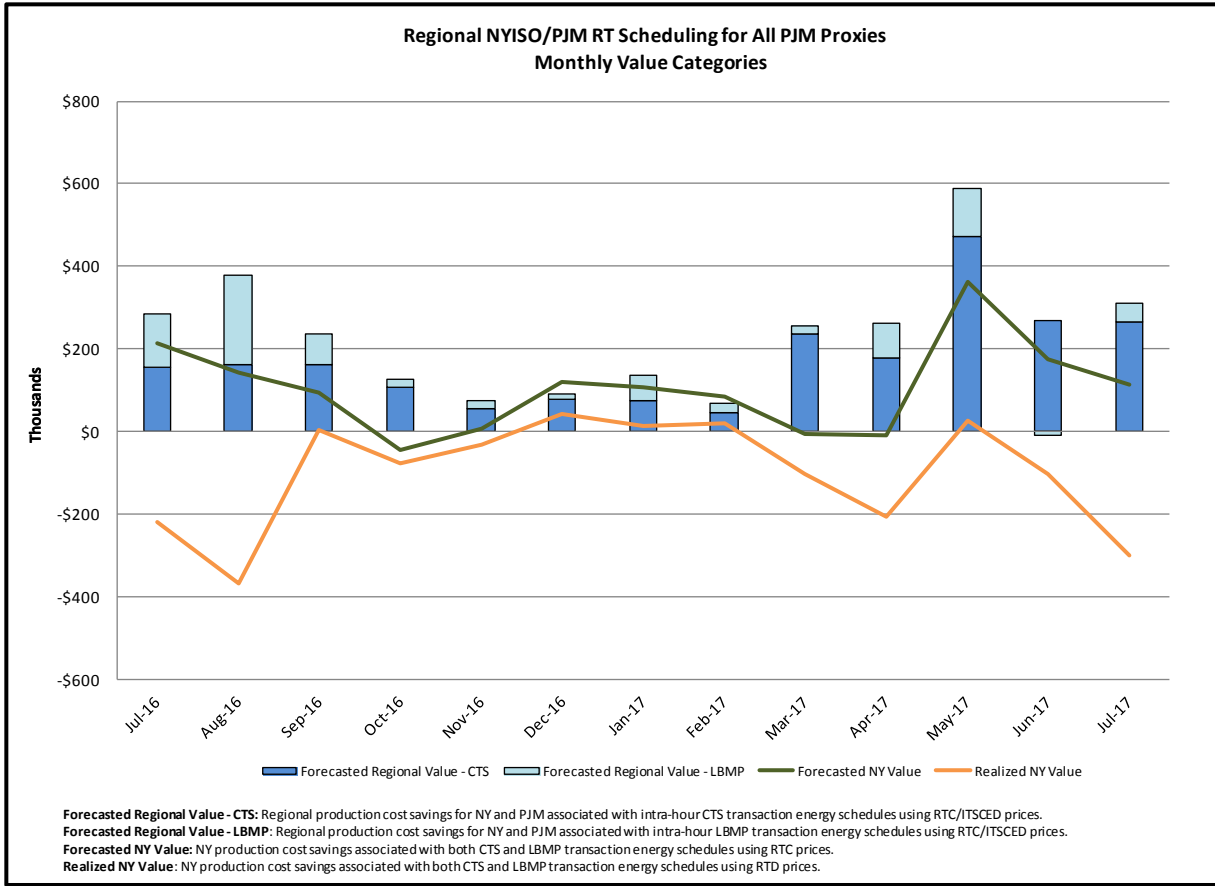
Category

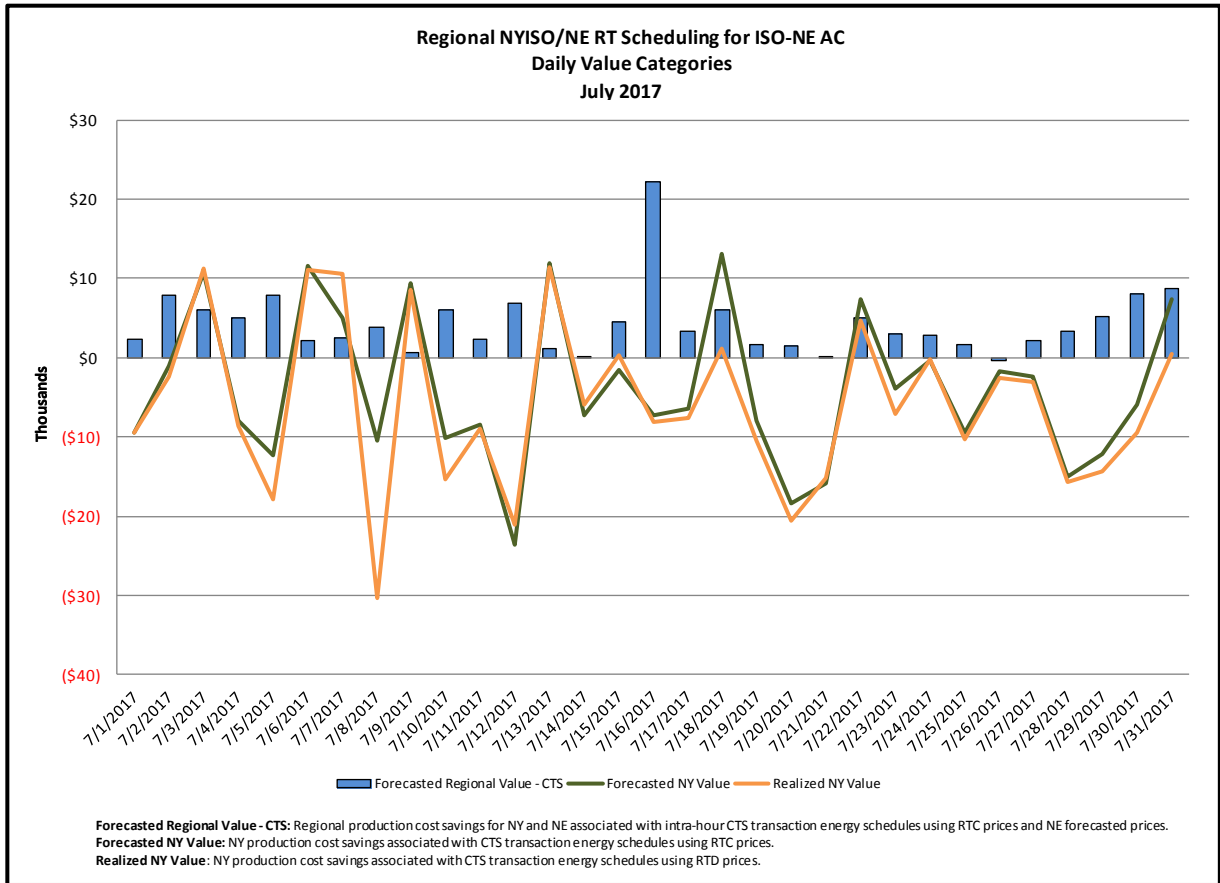
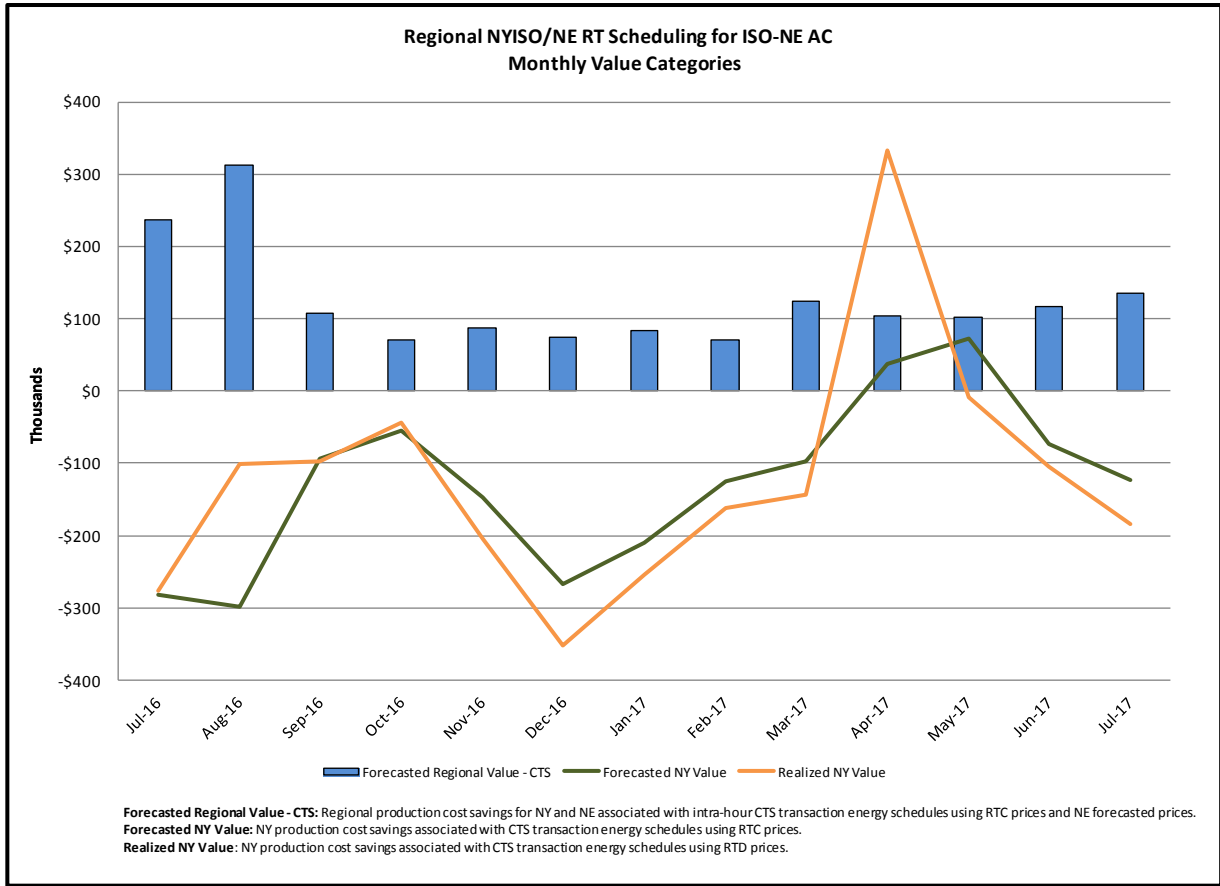
NY

Description

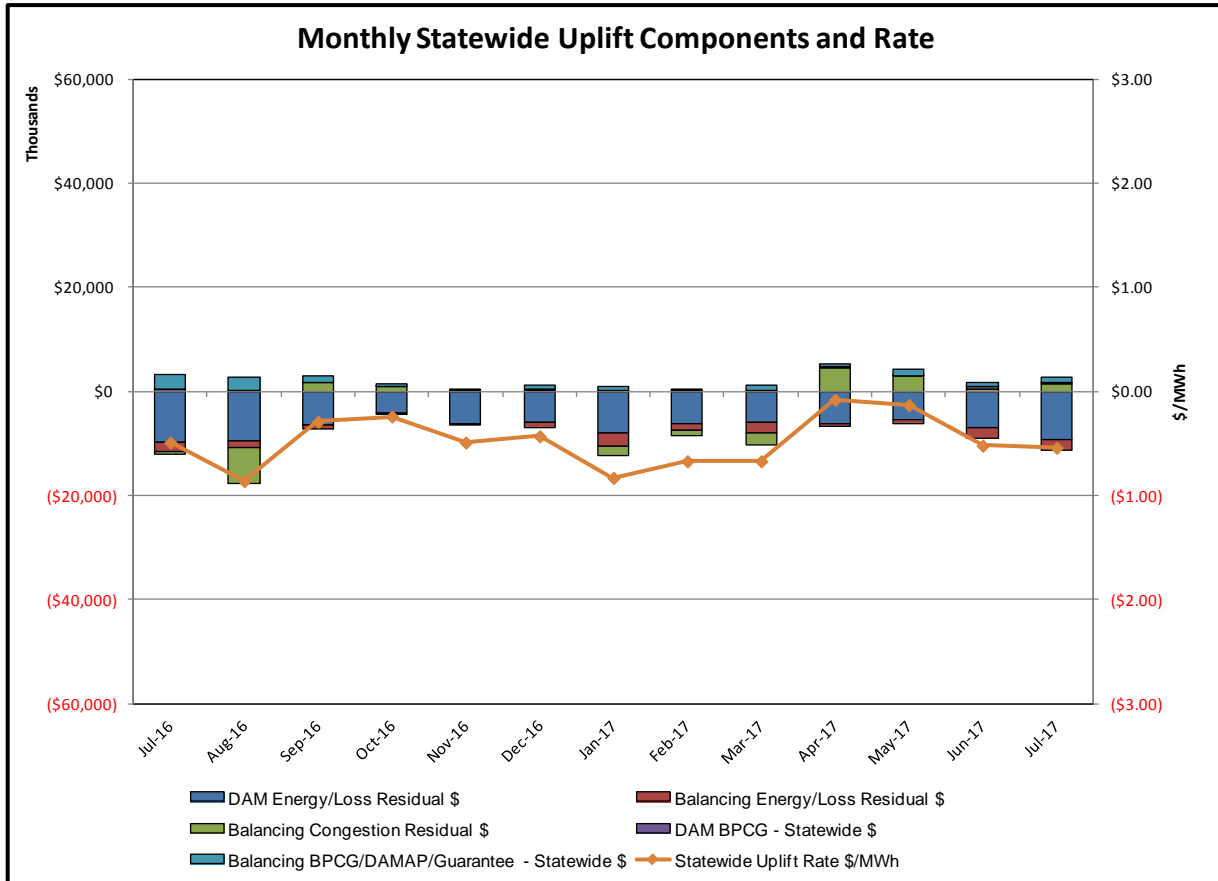
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization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

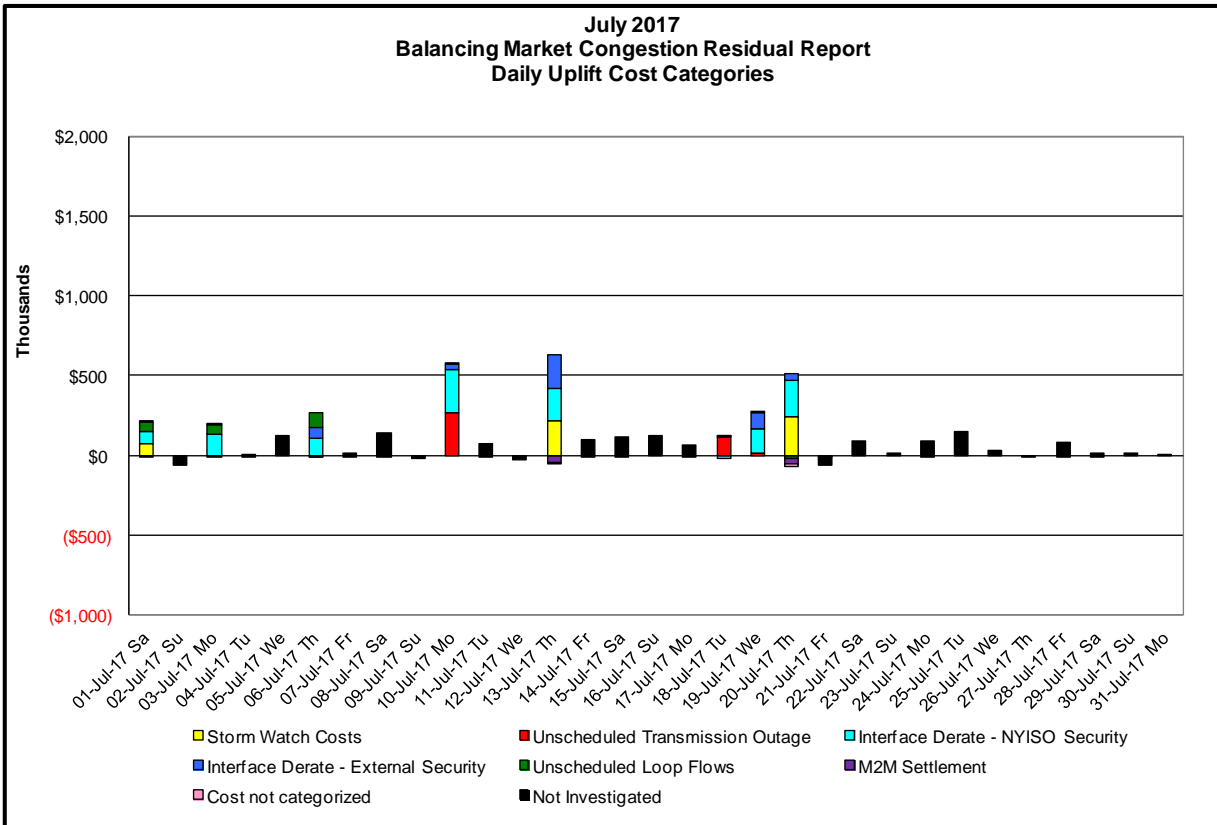
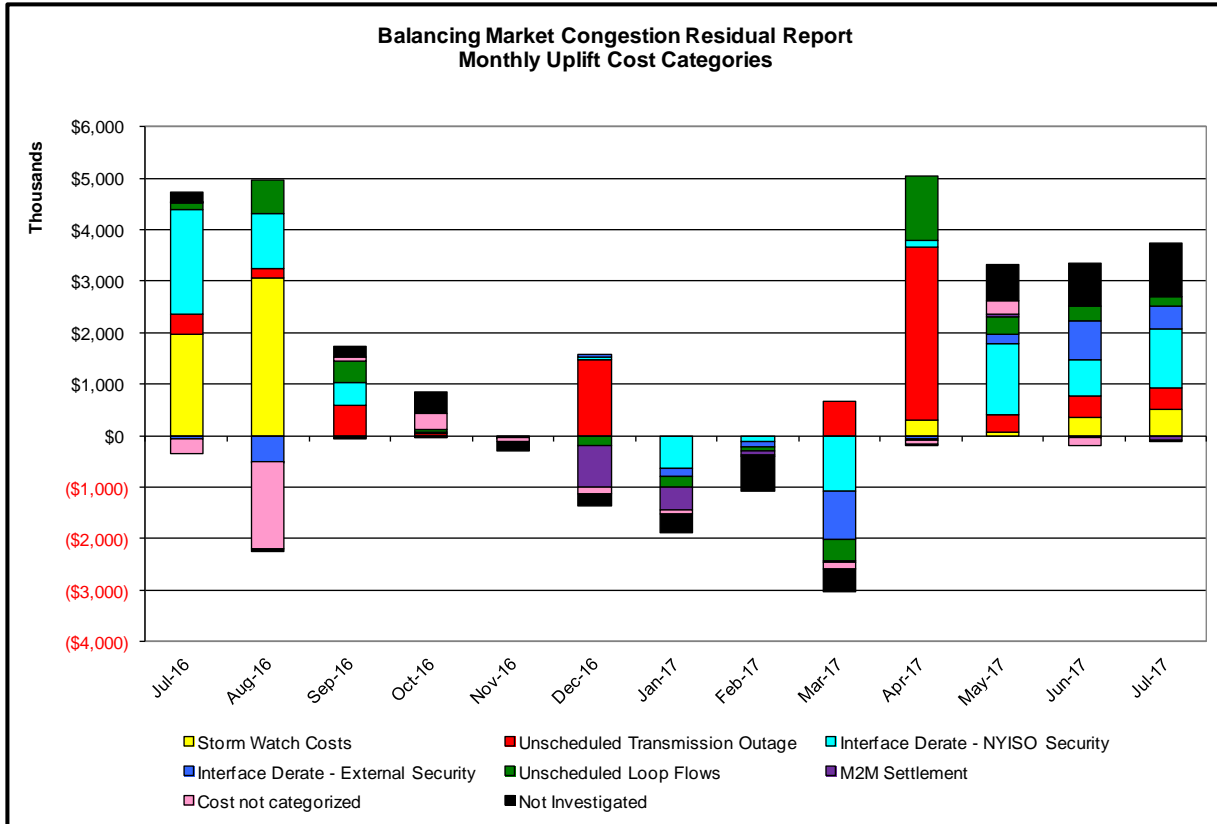






### Market Performance Metrics





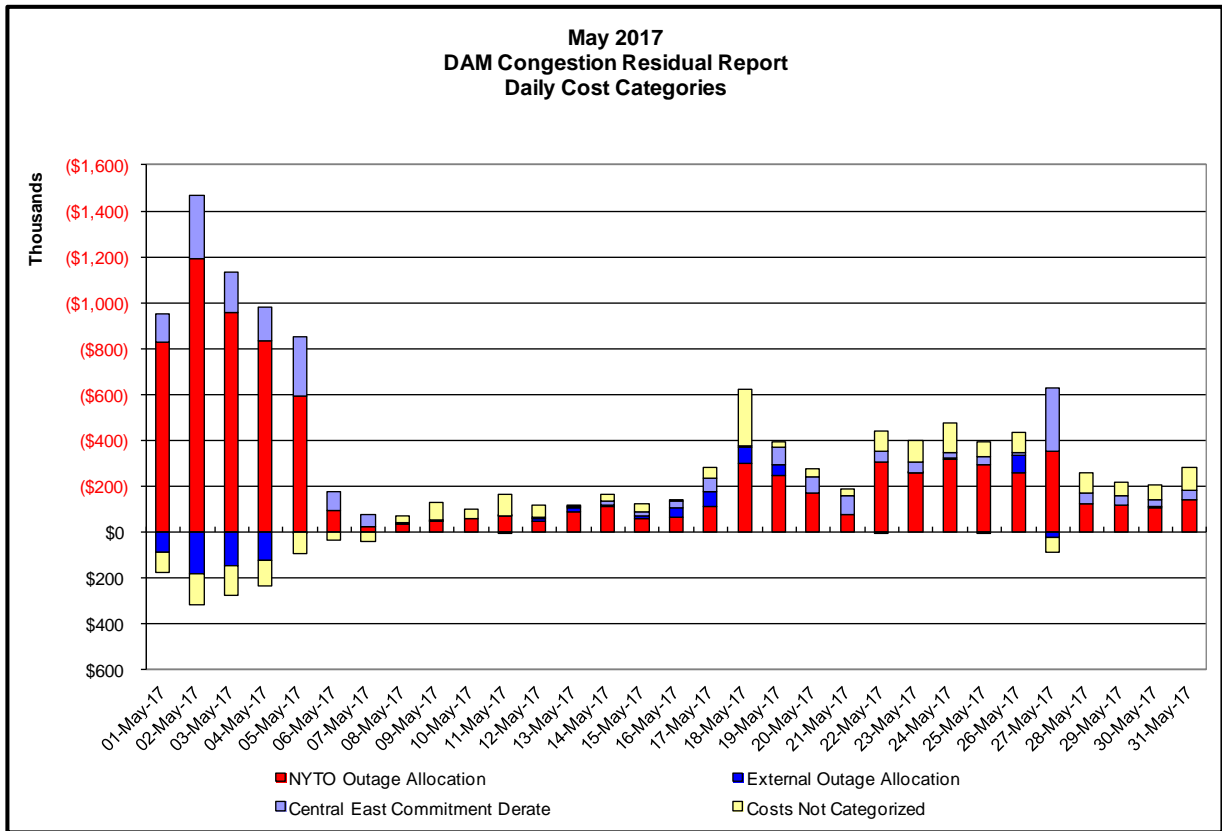
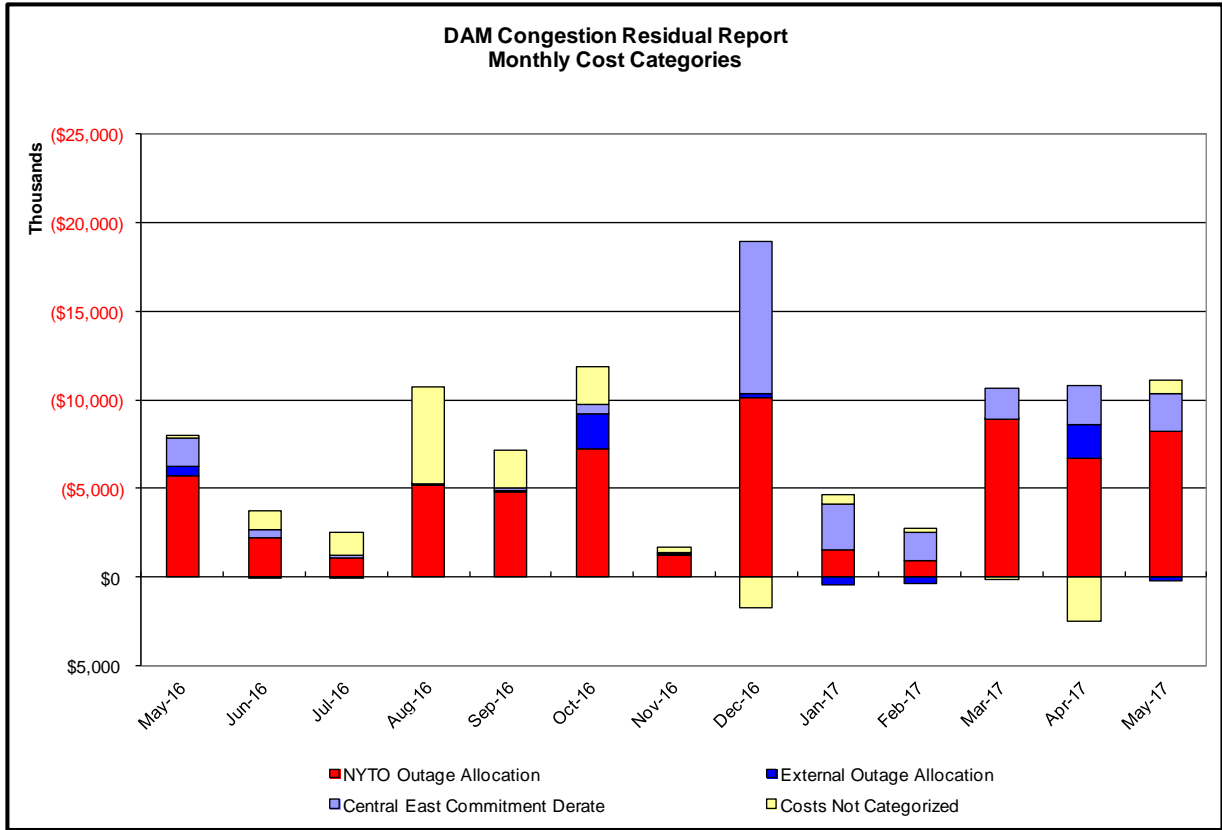
Day's investigated in July: 1,3,6,10,13,18,19,20			
Event	Date (yyyymmdd)	Hours	Description
	7/1/2017	17,18	Thunderstorm Alert
	7/1/2017	2	Uprate Central East
	7/1/2017	10	Derate Central East
	7/1/2017	9-11	Derate MottHaven-Dunwoodie 345kV (#72)
	7/1/2017	2	NE_AC DNI Ramp Limit
	7/1/2017	9,10	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer
	7/1/2017	10	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Packard, Central East
	7/3/2017	1,7	Uprate Central East
	7/3/2017	7	Uprate East 179th Street-Hellgate West 138kV (#15055)
	7/3/2017	9,13-15	Derate MottHaven-Dunwoodie 345kV (#72)
	7/3/2017	17	NYCA DNI Ramp Limit [-\$1k]
	7/3/2017	1	NE_AC DNI Ramp Limit
	7/3/2017	14	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer
	7/6/2017	9-12	Derate MottHaven-Dunwoodie 345kV (#71)
	7/6/2017	10,11,15	HQ_CHAT-NY Scheduling Limit
	7/6/2017	9,12-15	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer
	7/6/2017	9,12	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Niagara-Packard
	7/10/2017	12	Forced outage Massena-Marcy 765kV (#MSU1)
	7/10/2017	12	Derate Mott Haven-Dunwoodie 345kV (#71)
	7/10/2017	19	NE_AC DNI Ramp Limit
	7/10/2017	23	PJM_AC DNI Ramp Limit
	7/13/2017	13-18	Thunderstorm Alert
	7/13/2017	22	Uprate Gowanus-Greenwood 138kV (#42231) for I/o TWR:GOETHALS 22 & 21
	7/13/2017	22	Uprate Gowanus-Greenwood 138kV (#42232) for I/o TWR:GOETHALS 22 & 21
	7/13/2017	9,12-17	Derate Shore Road-Lake Success 138kV (#367) for I/o Shore Road-Lake Success 138kV (#368)
	7/13/2017	12-16	Derate Shore Road-Lake Success 138kV (#368) for I/o Shore Road-Lake Success 138kV (#367)
	7/13/2017	9,12	Derate MottHaven-Dunwoodie 345kV (#71)
	7/13/2017	2-7,9,12	HQ-CHAT-NY Scheduling Limit
	7/13/2017	16,17	NE_AC-NY Scheduling Limit
	7/13/2017	14-17	NE_AC DNI Ramp Limit
	7/13/2017	22	PJM_AC DNI Ramp Limit
	7/18/2017	8-11,13,15,17,18	Forced outage Ninemile-Clay 345kV (#8)
	7/18/2017	8,9	Derate East 179th St-Dunwoodie South 138kV (#99153)
	7/18/2017	13,15,18	Derate Shore Road-Lake Success 138kV (#367) for I/o Shore Road-Lake Success 138kV (#368)
	7/18/2017	15,17,18	Derate Shore Road-Lake Success 138kV (#368) for I/o Shore Road-Lake Success 138kV (#367)
	7/18/2017	7	Uprate Scriba-Volney (#20) for I/o Scriba-Volney (#21)
	7/18/2017	17,18	HQ-CHAT-NY Scheduling Limit
	7/19/2017	12,13	Early return-to-service Marion-Farragut 345kV (#C3403)
	7/19/2017	10,19	Uprate Gowanus-Greenwood 138kV (#42231) for I/o TWR:GOETHALS 22 & 21
	7/19/2017	10,19	Uprate Gowanus-Greenwood 138kV (#42232) for I/o TWR:GOETHALS 22 & 21
	7/19/2017	19	Uprate Scriba-Volney (#20) for I/o Scriba-Volney (#21)
	7/19/2017	13	NYCA DNI Ramp Limit
	7/19/2017	12-17	Derate Shore Road-Lake Success 138kV (#367) for I/o Shore Road-Lake Success 138kV (#368)
	7/19/2017	12,14-17	Derate Shore Road-Lake Success 138kV (#368) for I/o Shore Road-Lake Success 138kV (#367)
	7/19/2017	15,16,17	HQ-CHAT-NY Scheduling Limit
	7/20/2017	16-20	Thunderstorm Alert
	7/20/2017	15	Uprate Central East [by 5MW]
	7/20/2017	14,16-18,20,21	Derate Shore Road-Lake Success 138kV (#367) for I/o Shore Road-Lake Success 138kV (#368)
	7/20/2017	14,17	Derate Shore Road-Lake Success 138kV (#368) for I/o Shore Road-Lake Success 138kV (#367)
	7/20/2017	16	Derate Leeds-Pleasant Valley 345kV (#92) for I/o Athens-Pleasant Valley 345kV (#91)
	7/20/2017	15	Uprate Leeds-Pleasant Valley 345kV (#92) for I/o Athens-Pleasant Valley 345kV (#91)
	7/20/2017	11,19,20	NYCA DNI Ramp Limit
	7/20/2017	14	HQ-CHAT-NY Scheduling Limit
	7/20/2017	15,18	NE_AC-NY Scheduling Limit
	7/20/2017	15,19	NE_AC DNI Ramp Limit
	7/20/2017	11,15	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Packard-Sawyer
	7/20/2017	15	Lake Erie Circulation, DAM-RTM exceeds +/-125MW; Central East

**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**

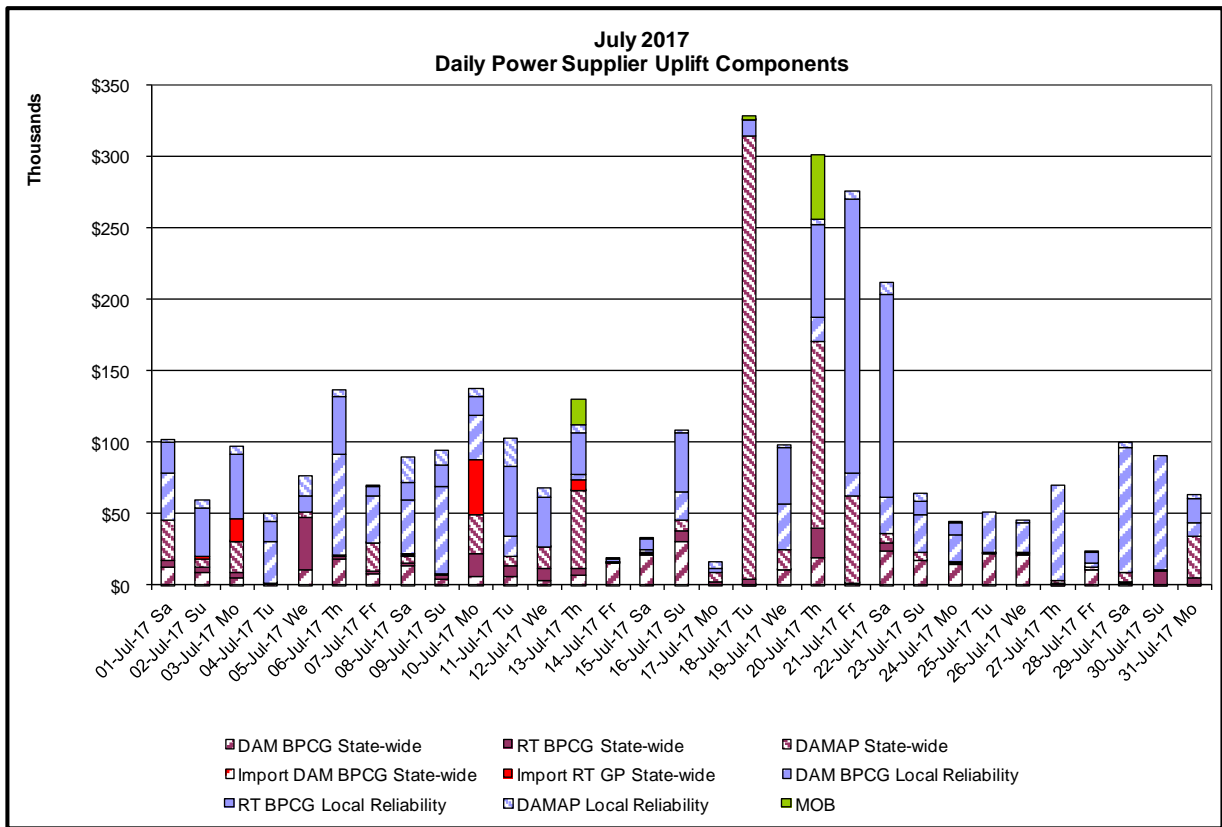
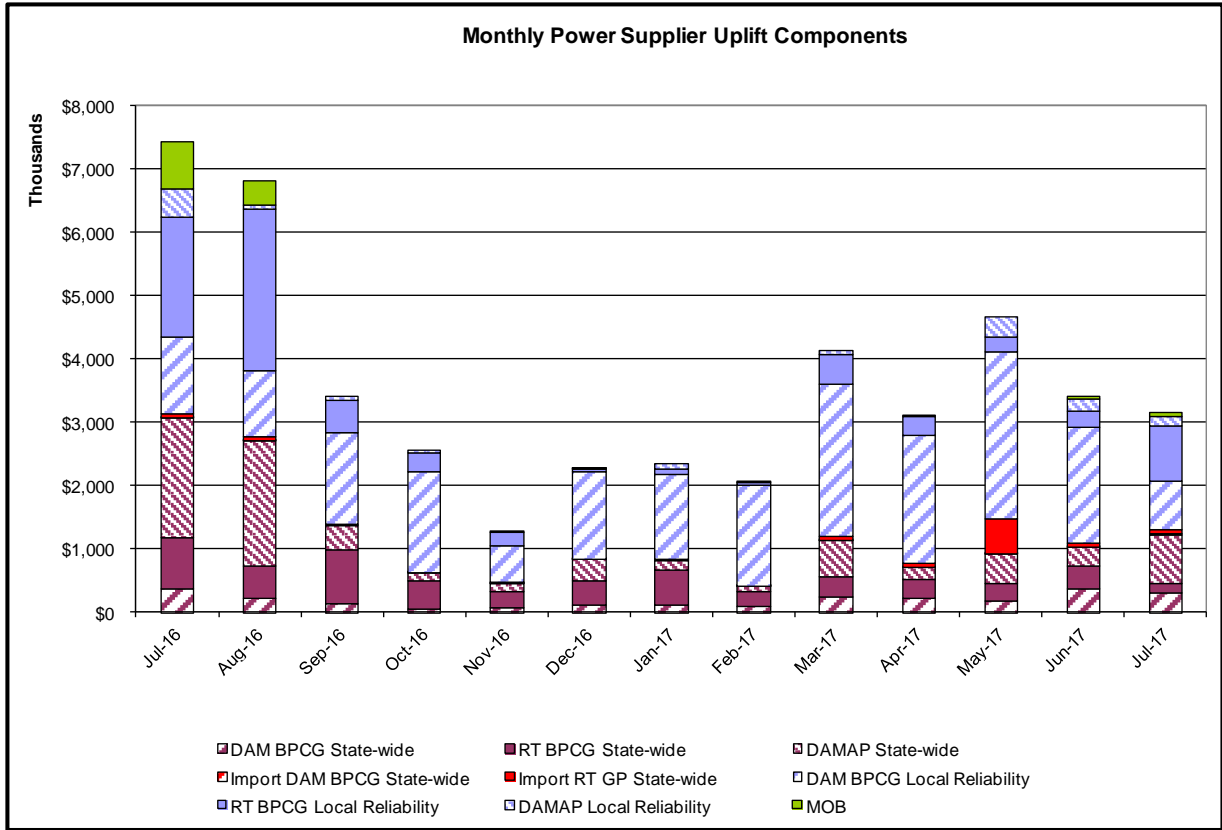
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

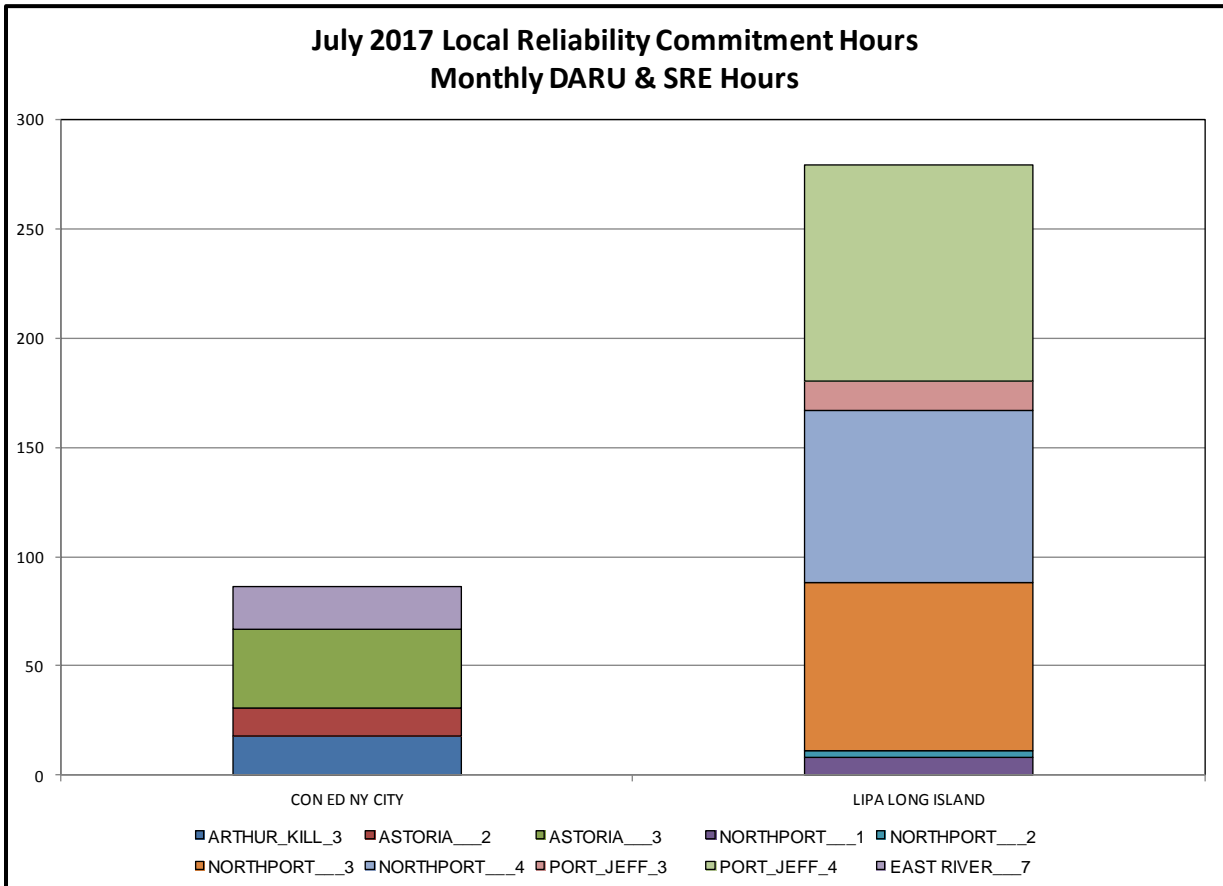
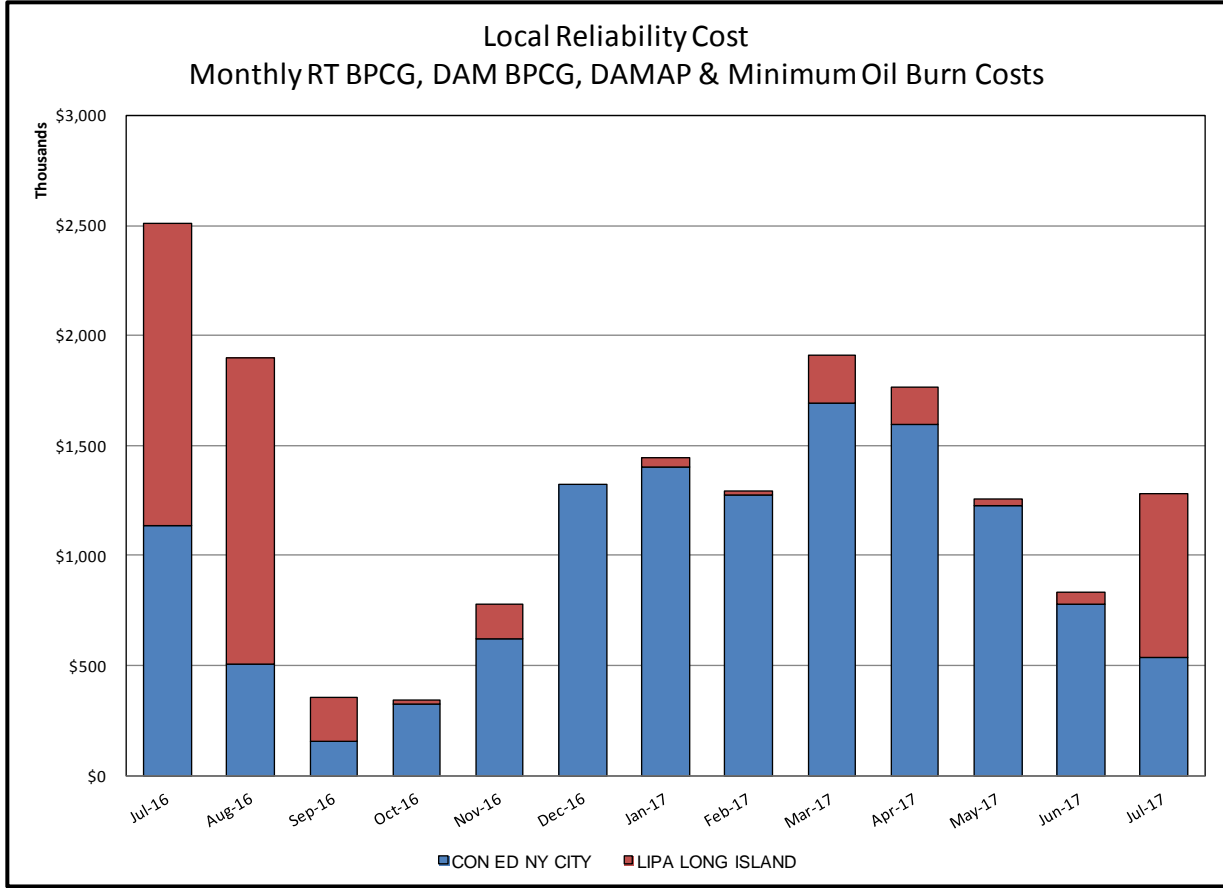


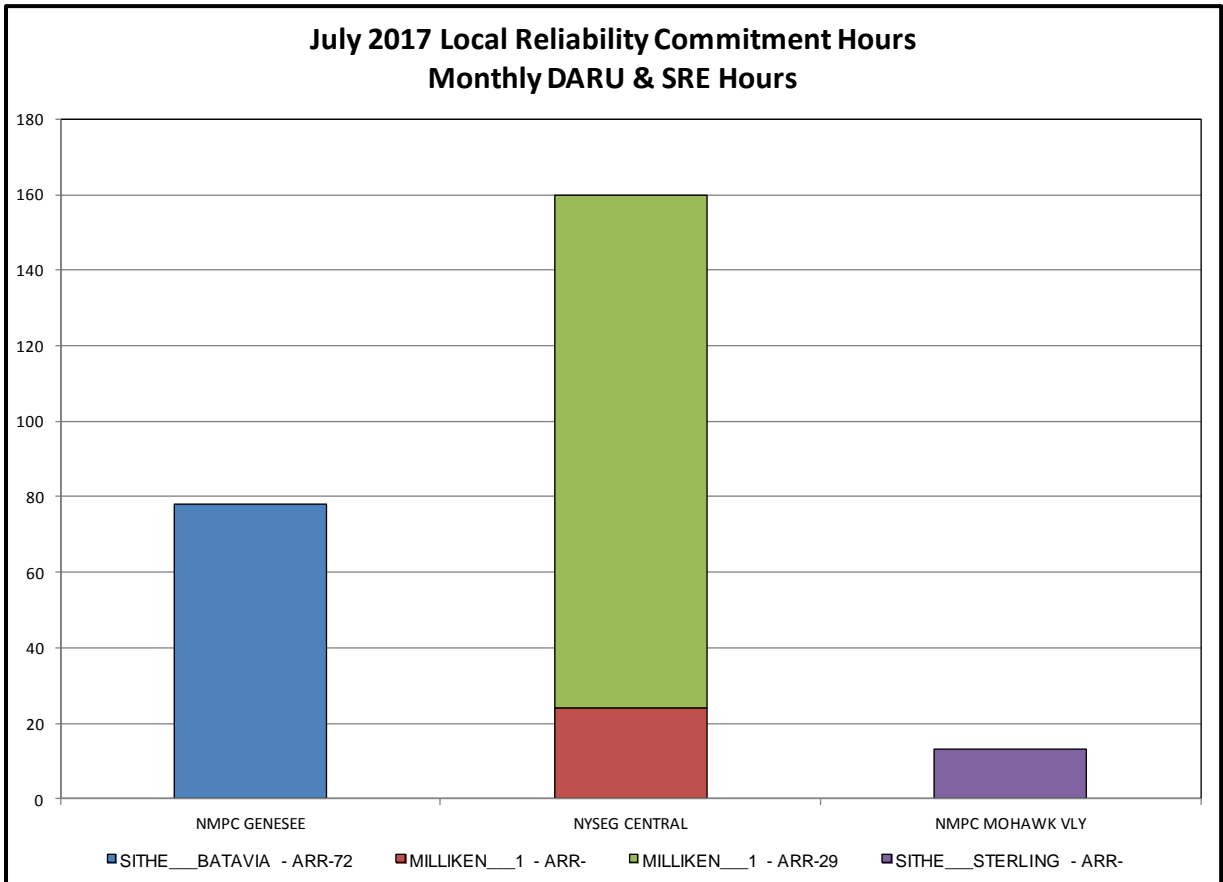
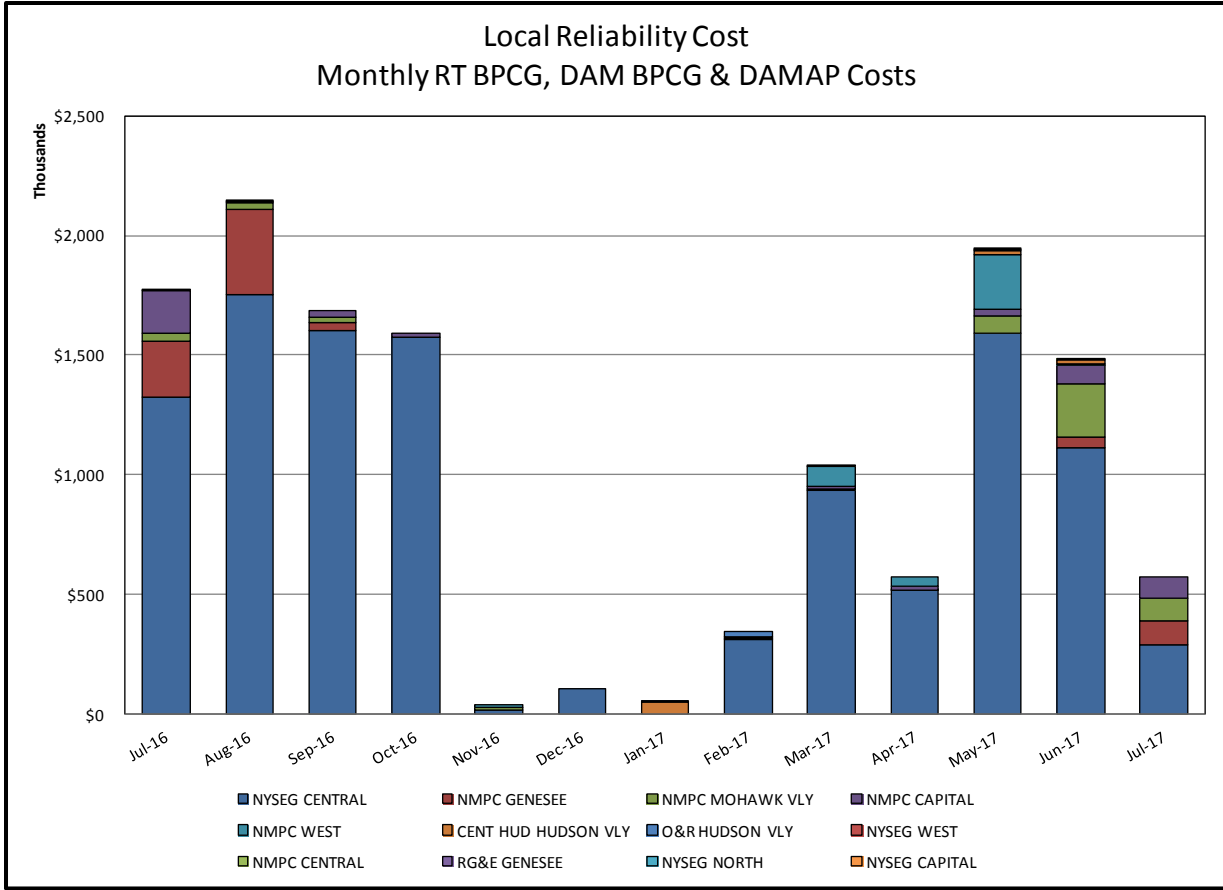
**Day-Ahead Market Congestion Residual Categories**

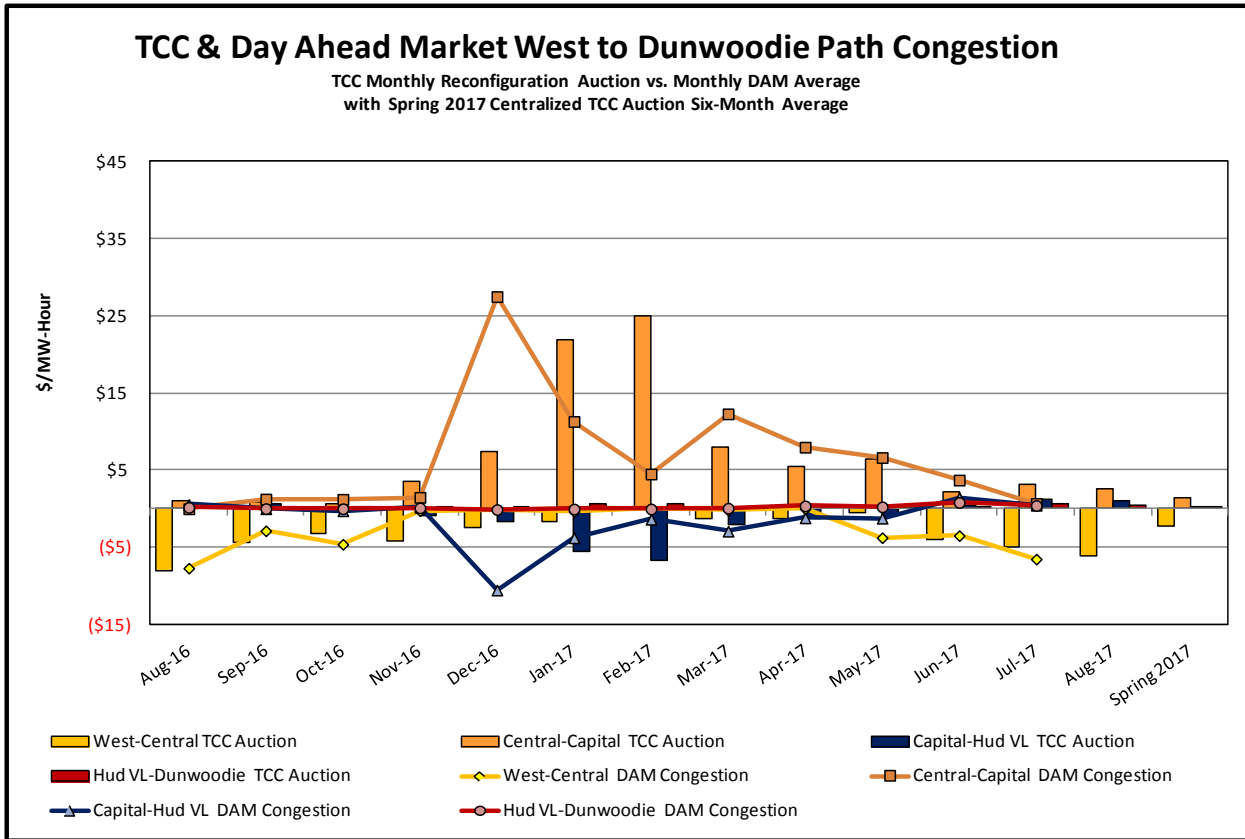
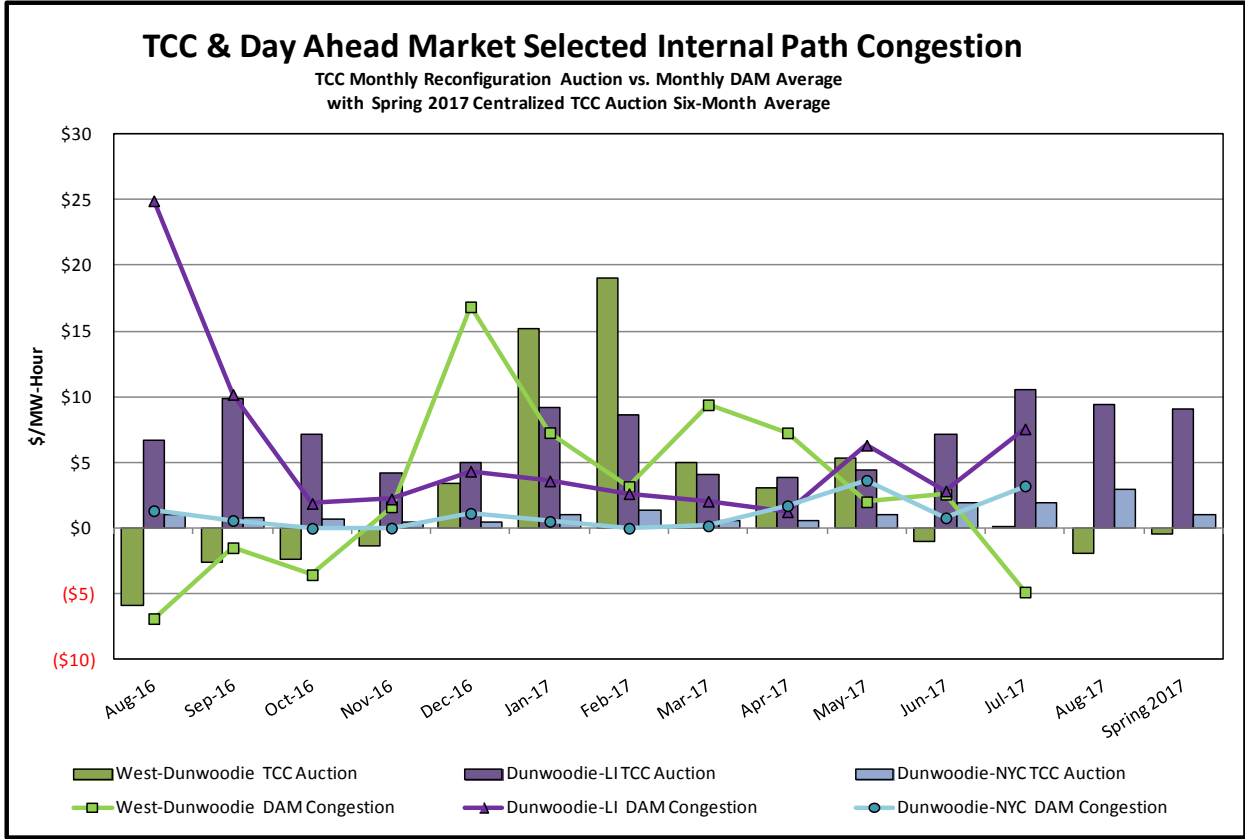
<u>Category</u>	<u>Cost Assignment</u>	<u>Events Types</u>	<u>Event Examples</u>
NYTO Outage Allocation	Responsible TO	Direct allocation to NYTO's responsible for transmission equipment status change.	DAM scheduled outage for equipment modeled in-service for the TCC Auction.
External Outage Allocation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

