

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



## ***December 2015 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 January 11, 2016.

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## December 2015 Operations Performance Highlights

- Peak load of 21,254 MW occurred on 12/28/2015 HB 17
- All-time winter capability period peak load of 25,738 MW occurred on 1/7/2014 HB 18
- 0 hours of Thunder Storm Alerts were declared
- 0 hours of NERC TLR level 3 curtailment
- Coordinated Transaction Scheduling (CTS) with ISO New England was activated on 12/15/2015.
- On 12/20/2015 the NYISO declared the Alert State and reduced power flows to 90% of ratings due to the K-8 intensity solar storm.
- The Five Mile Road station project went into service 12/23/2015, reducing the need for out of market commitments to manage Western New York reliability.
- The following table identifies the estimated production cost savings associated with the Broader Regional Market initiatives.

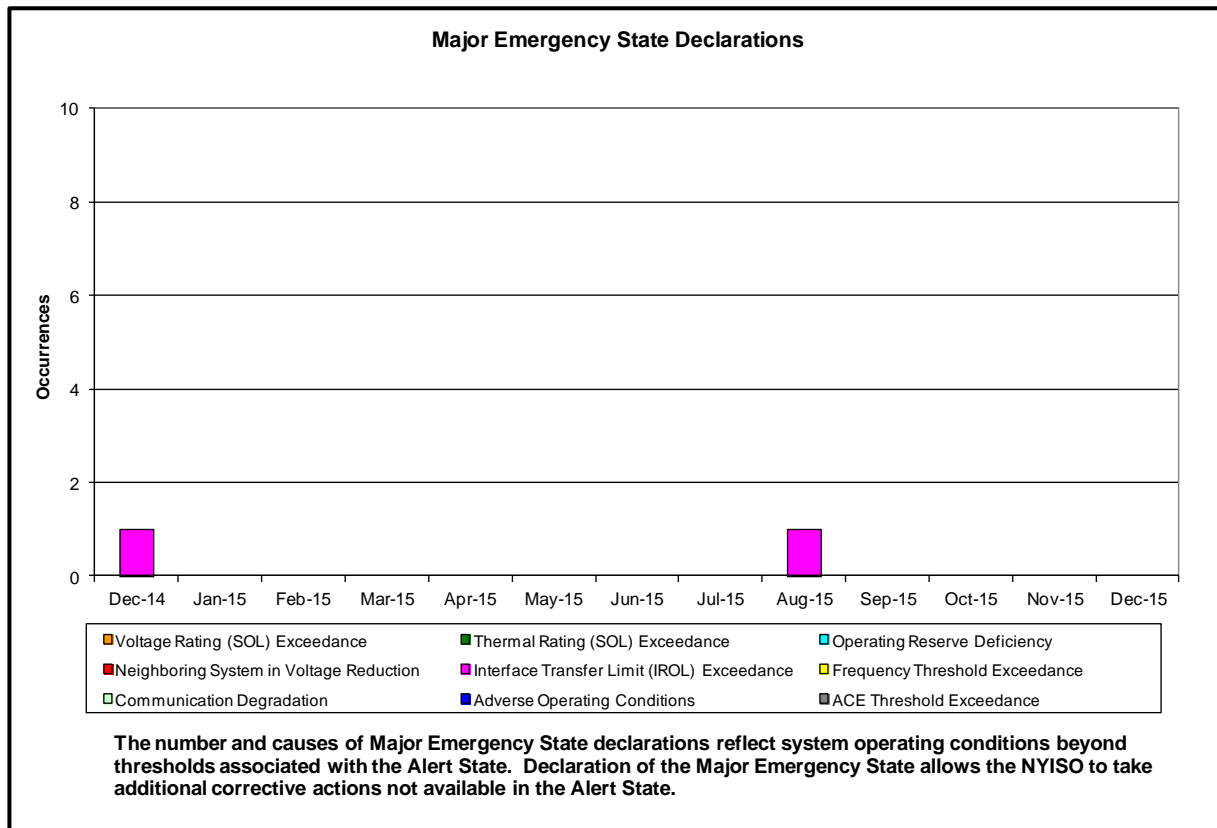
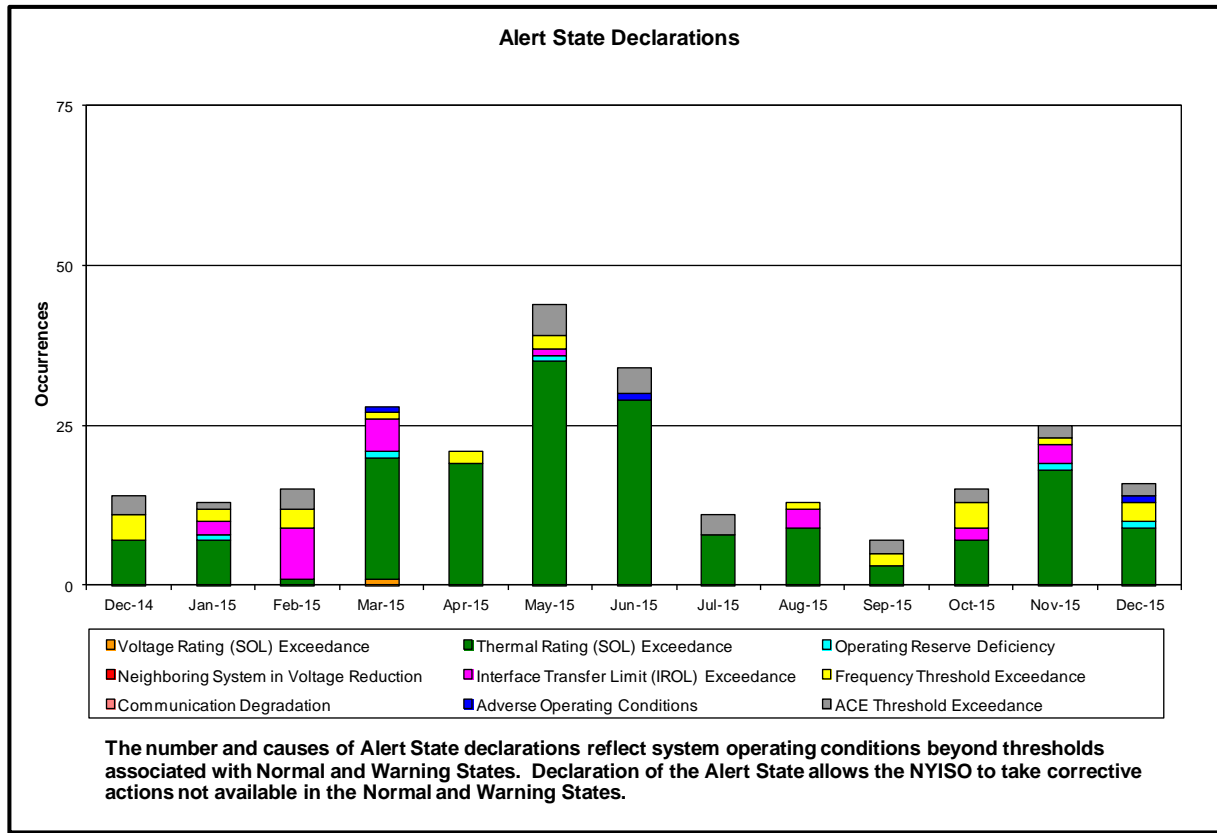
|   | Current Month Value (\$M) | Year-to-Date Value (\$M) |
|---|---------------------------|--------------------------|
| <b>Regional Congestion Coordination</b> | \$3.20                    | \$17.91                  |
| <b>Regional PJM-NY RT Scheduling</b>    | \$0.05                    | \$2.48                   |
| <b>Regional NE-NY RT Scheduling</b>     | (\$0.09)                  | (\$0.09)                 |
| <b>Total</b>                            | \$3.16                    | \$20.30                  |

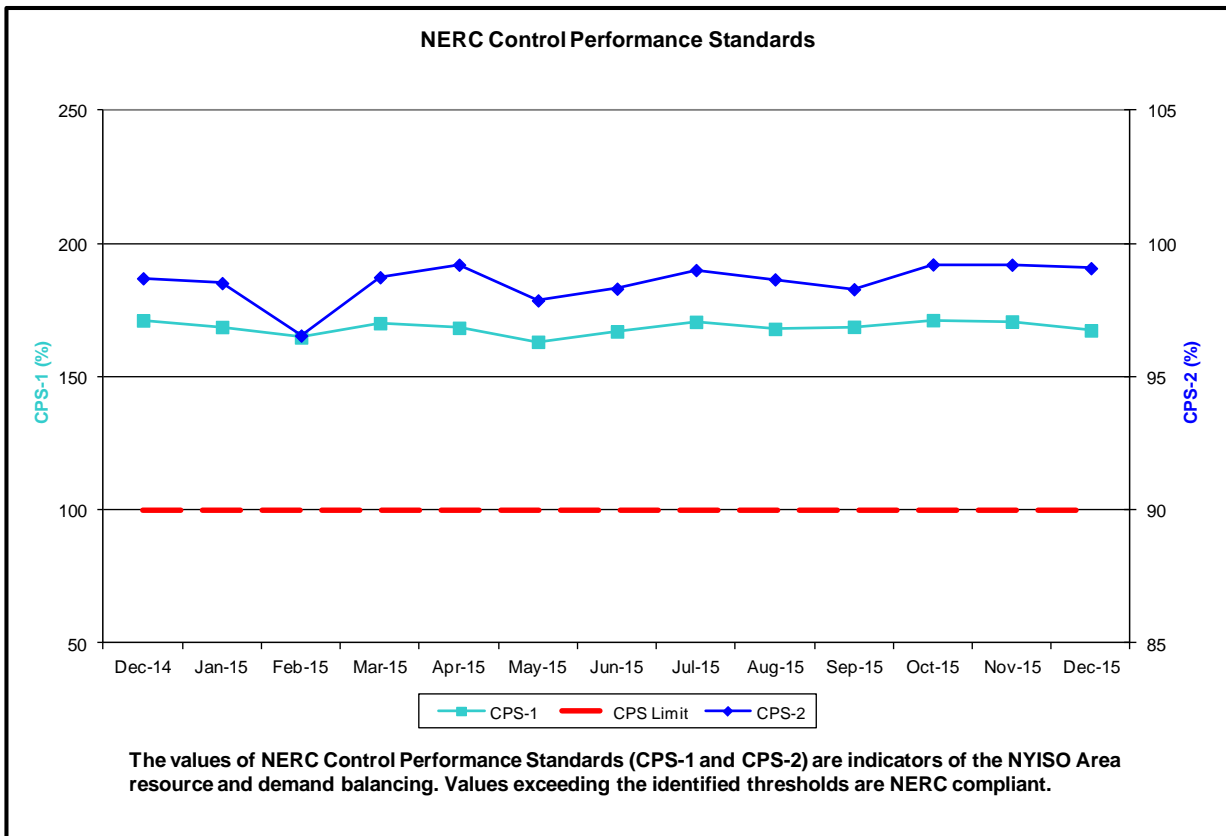
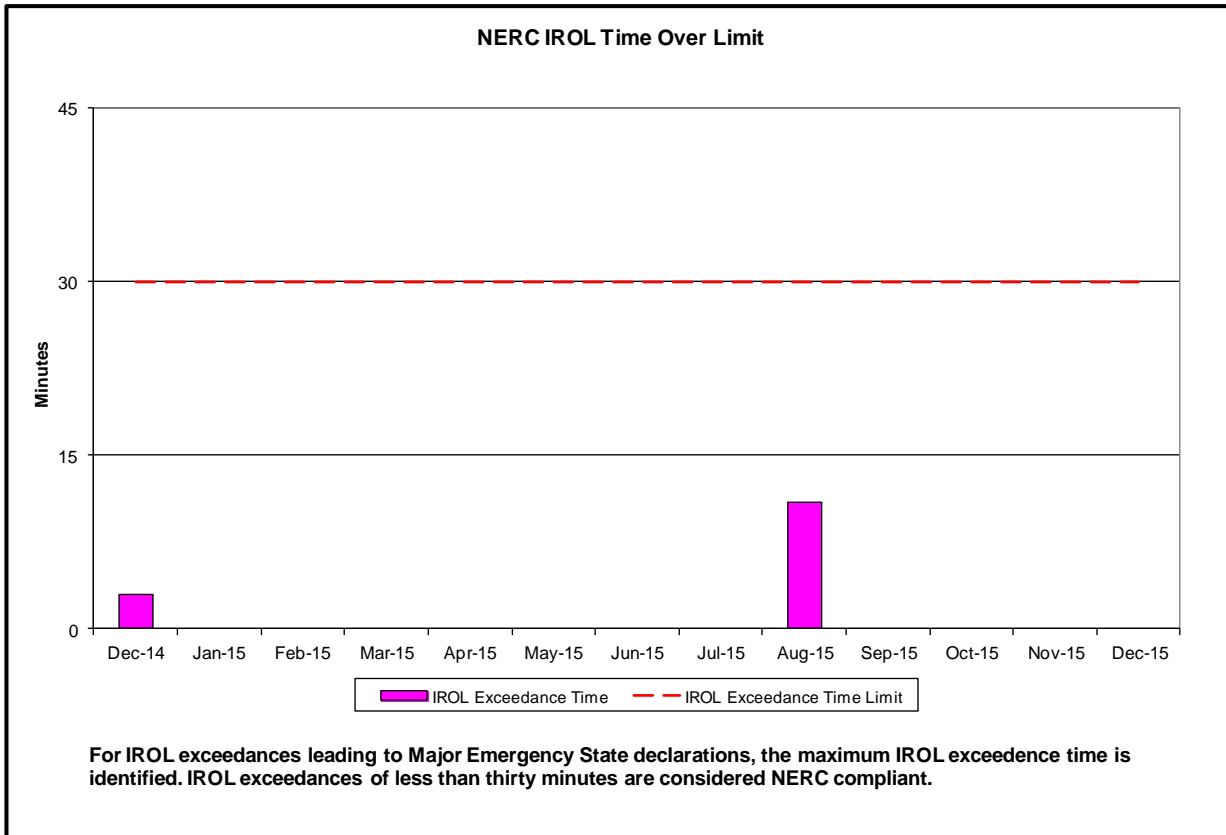
- Statewide uplift cost monthly average was (\$0.18)/MWh
- The following table identifies the Monthly ICAP spot market prices by locality and the price delta.

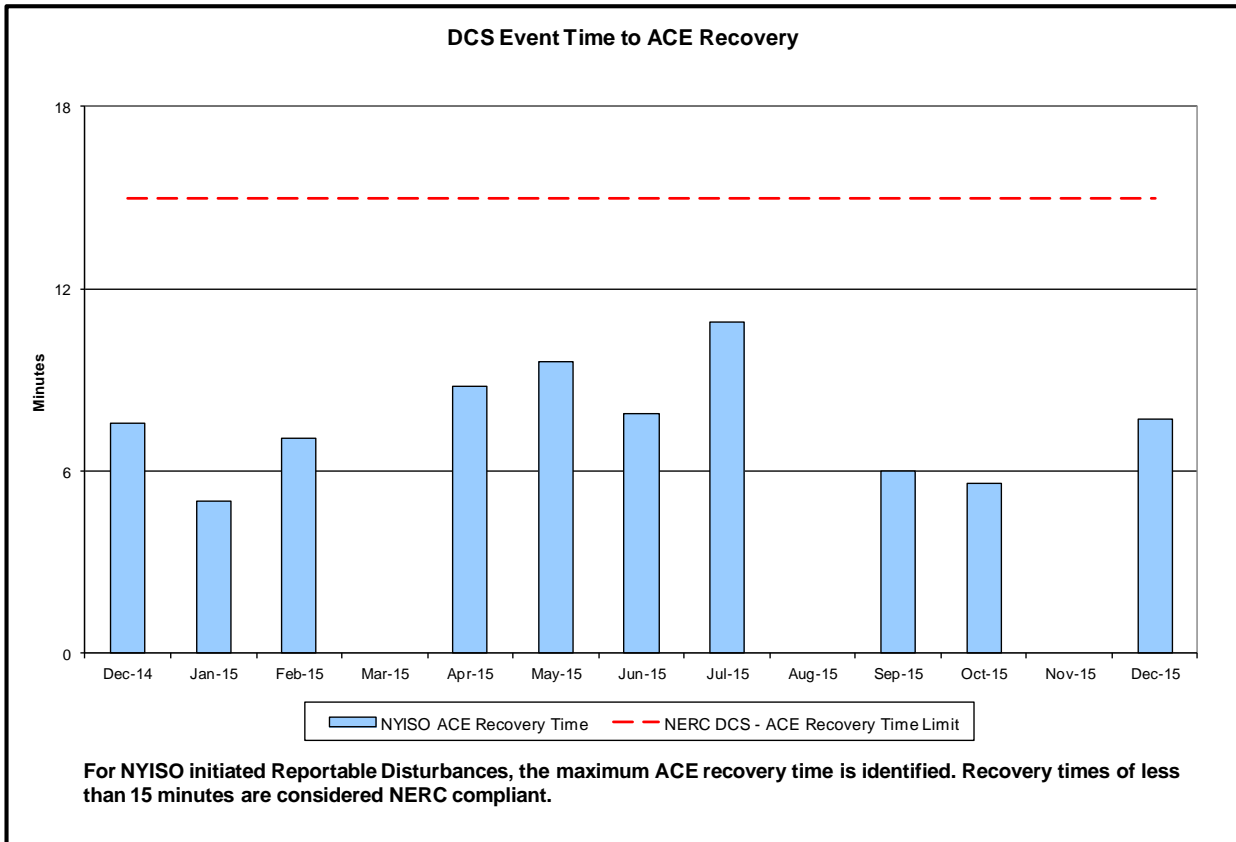
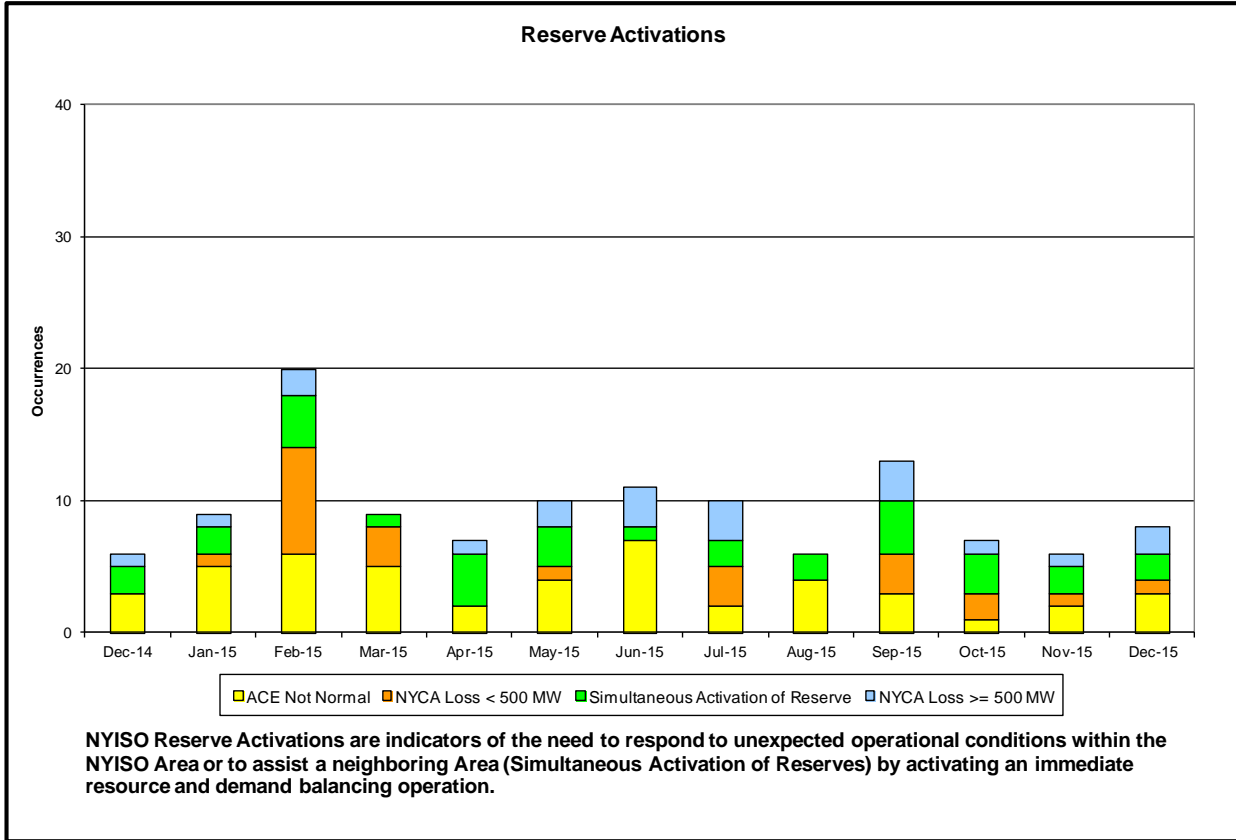
| Spot Auction Price Results | NYCA   | Lower Hudson Valley Zones | New York City Zone | Long Island Zone |
|----------------------------|--------|---------------------------|--------------------|------------------|
| January 2016 Spot Price    | \$1.37 | \$3.16                    | \$5.85             | \$1.55           |
| December 2015 Spot Price   | \$1.28 | \$3.48                    | \$6.29             | \$1.85           |
| Delta                      | \$0.09 | (\$0.32)                  | (\$0.44)           | (\$0.30)         |

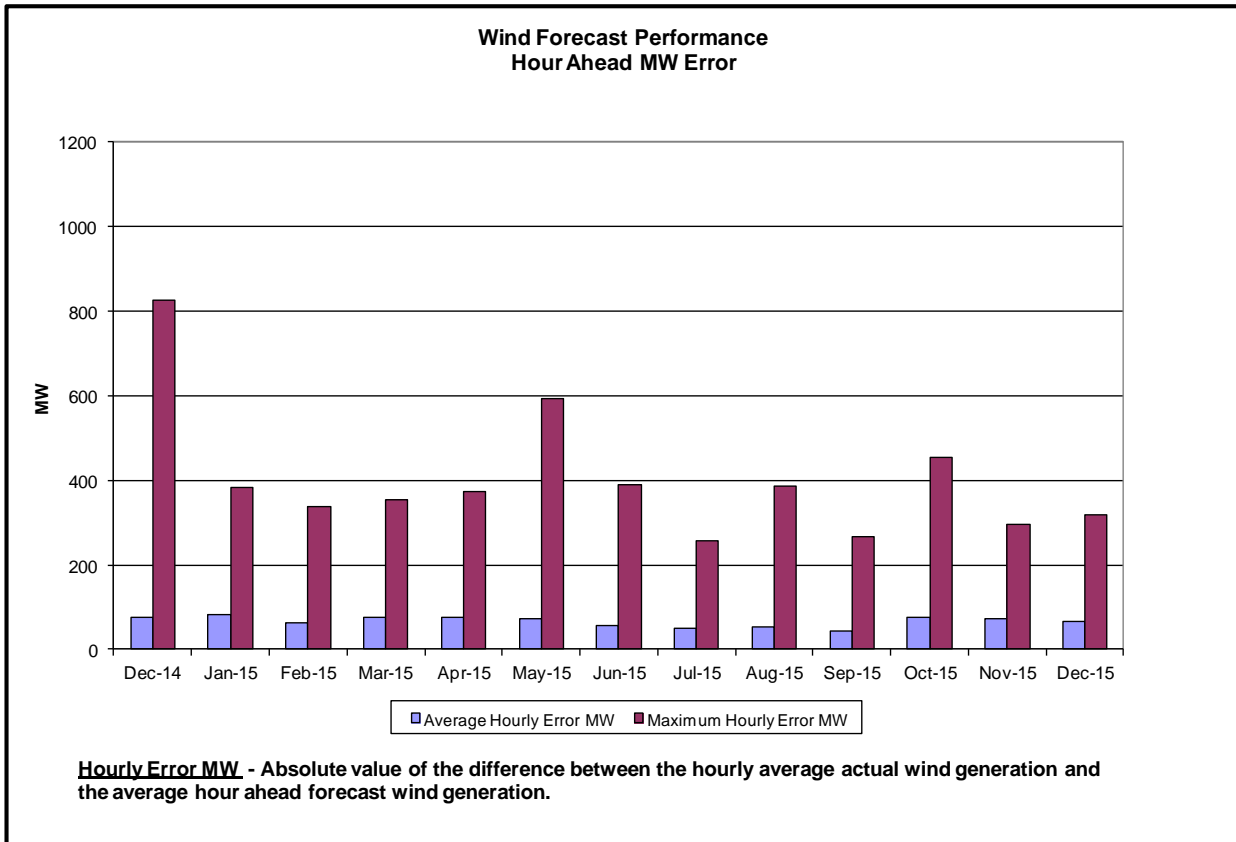
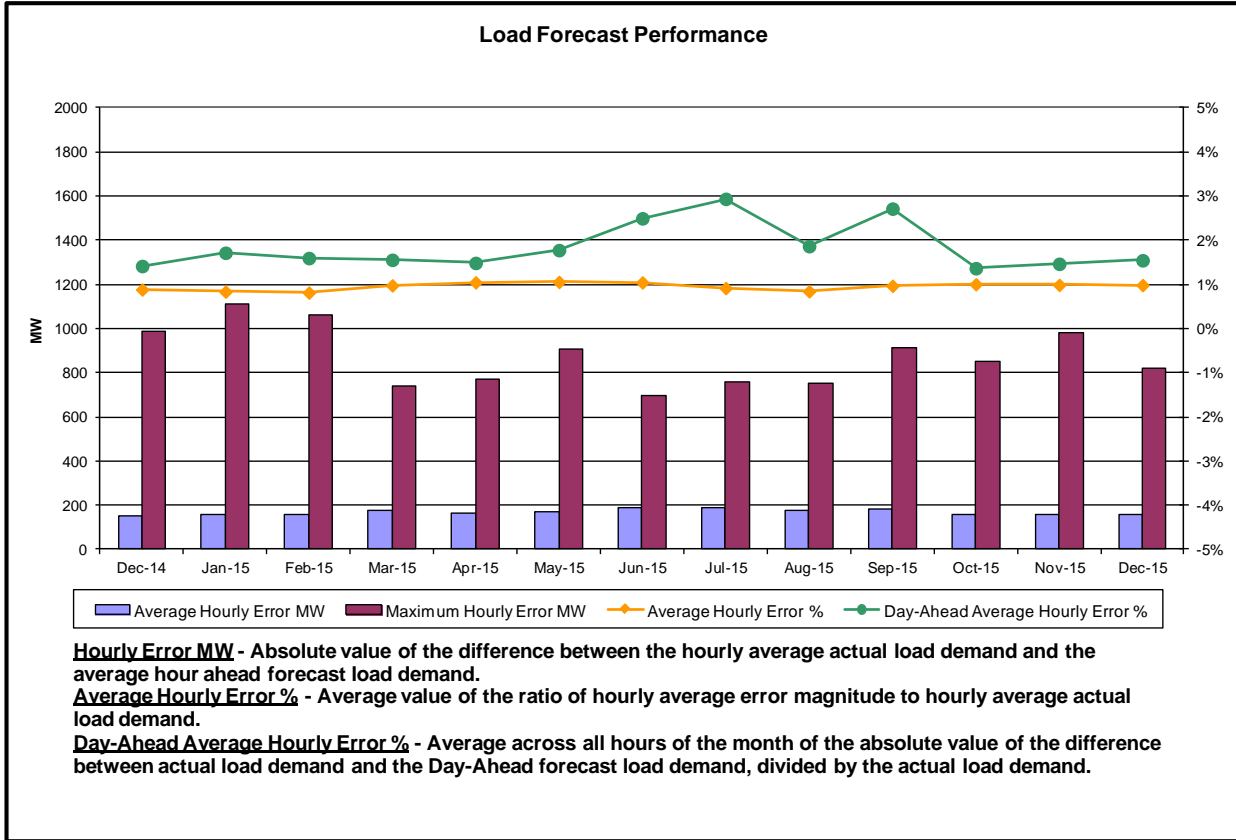
- LHV - Price decreases by \$0.32 due to increases in generator UCAP available and decrease in unoffered MW
- NYC - Price decreases by \$0.44 due to increases in generator UCAP available
- LI - Price decreases by \$0.30 due to increases in generator UCAP available

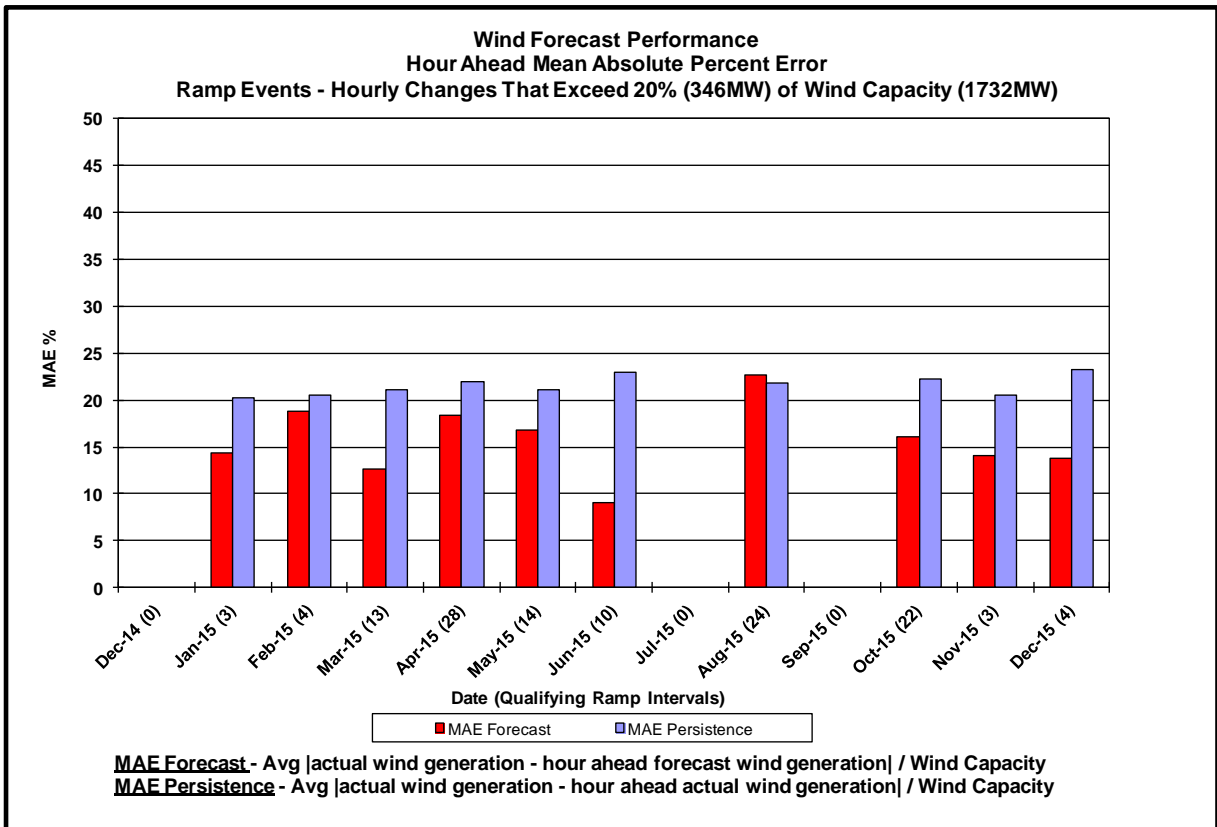
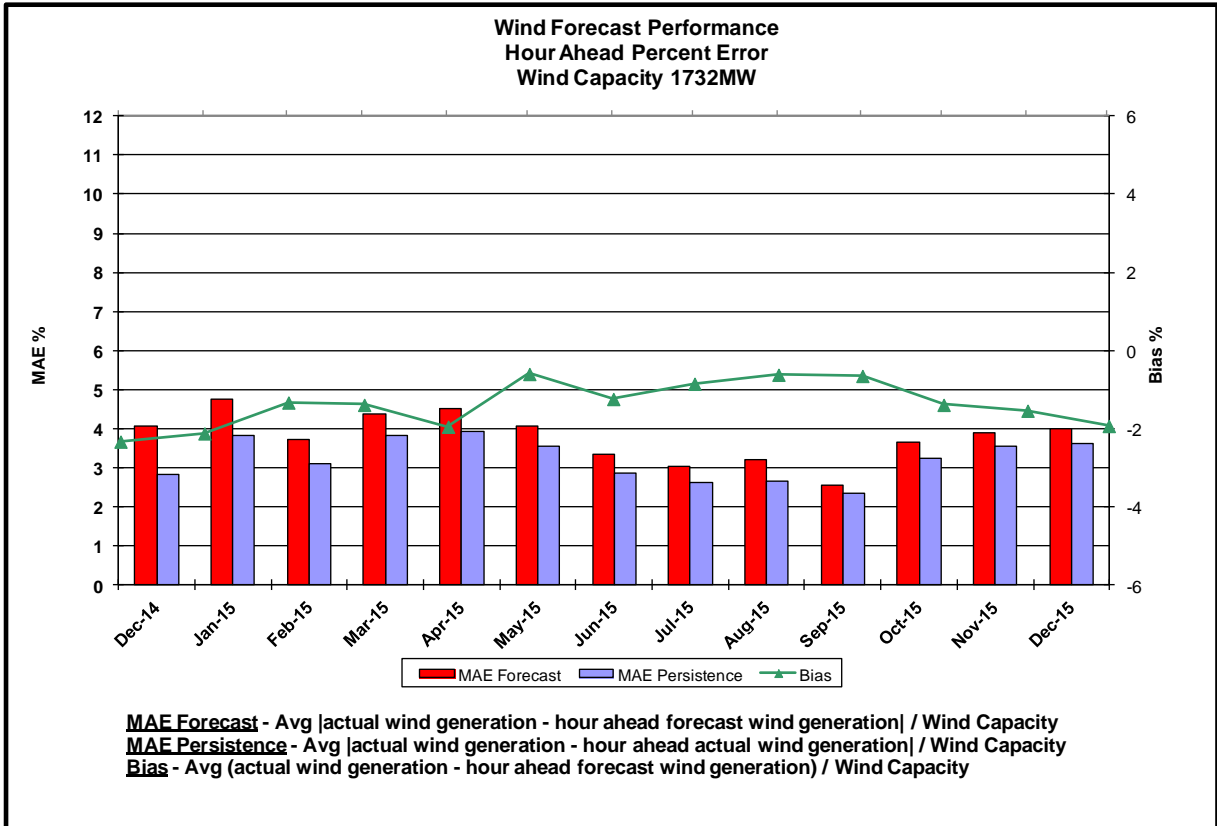
## Reliability Performance Metrics



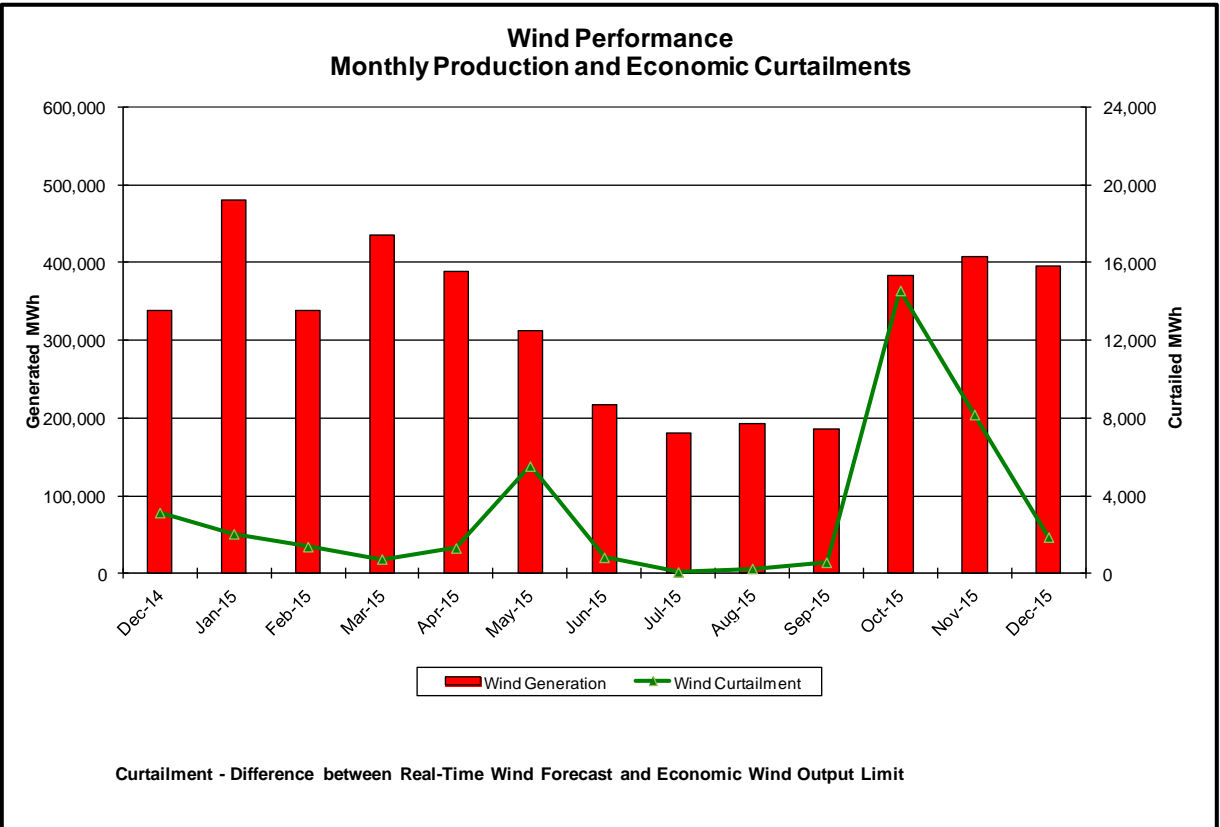
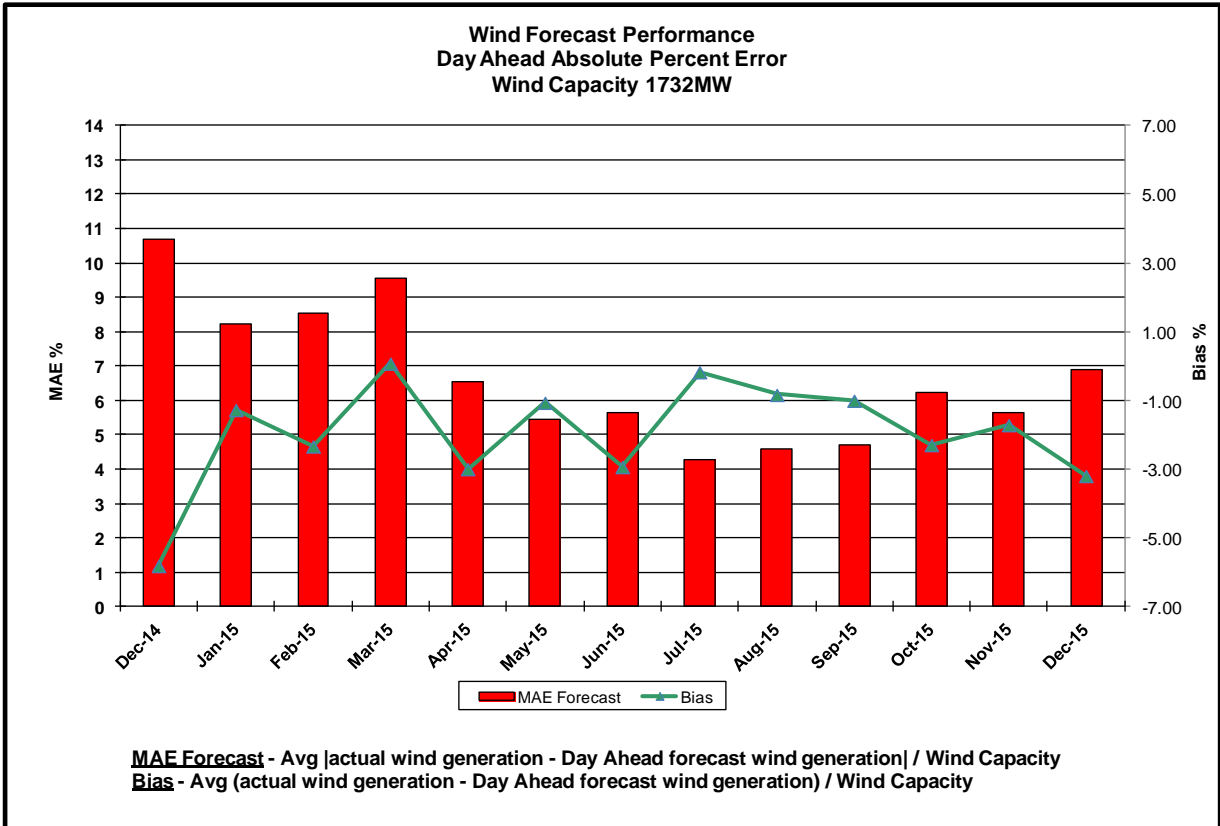


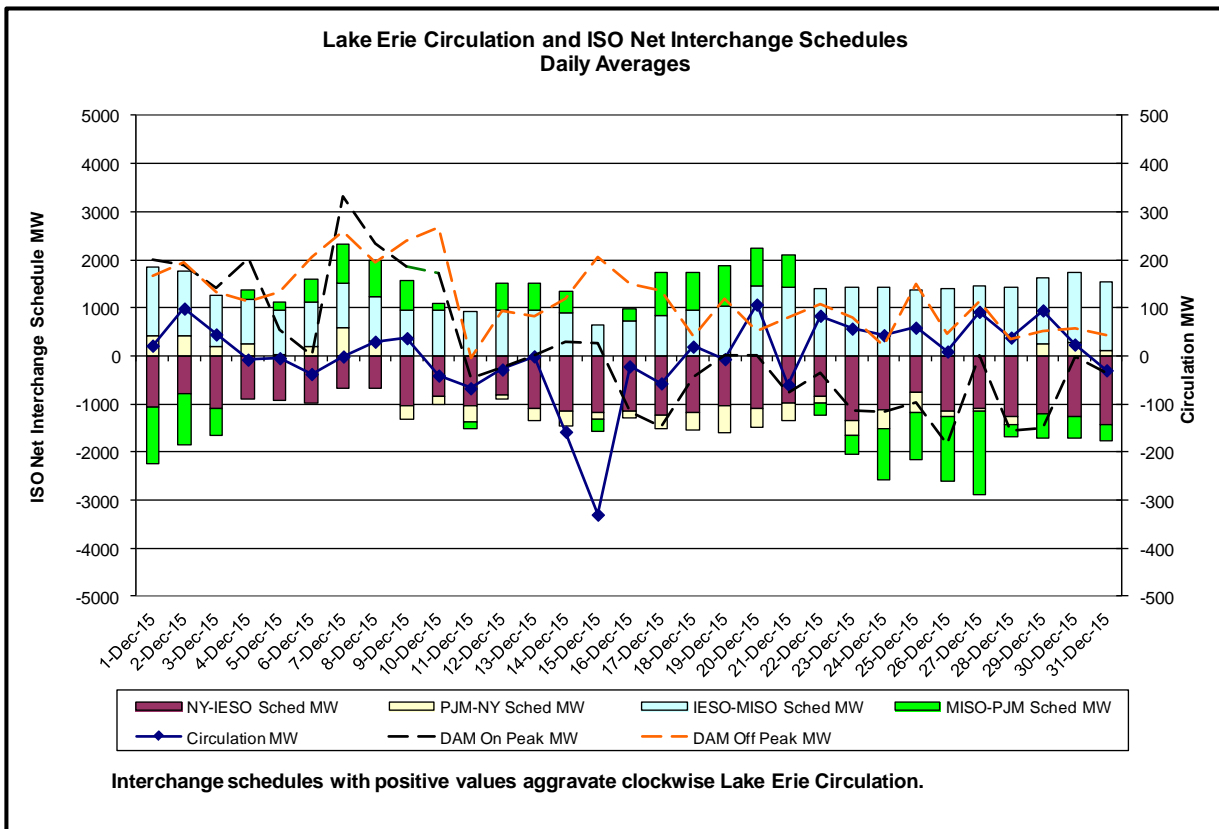
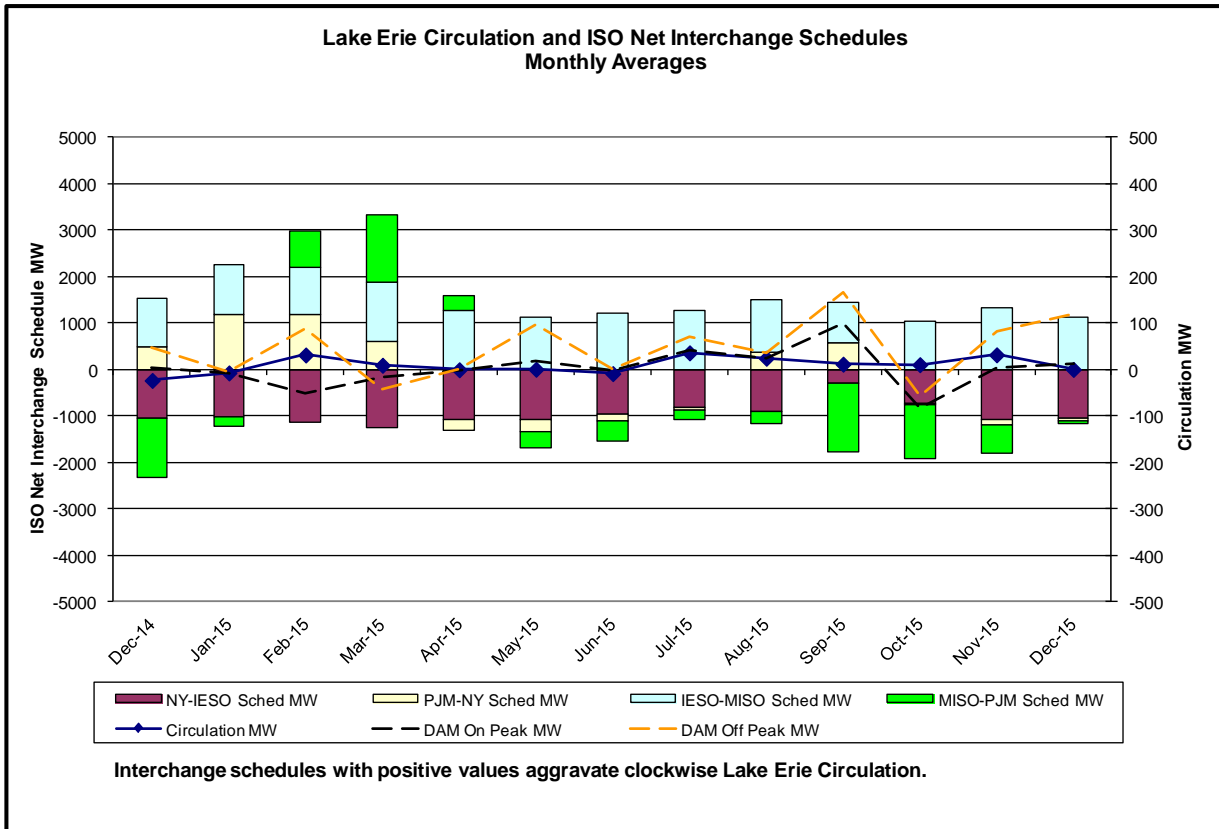




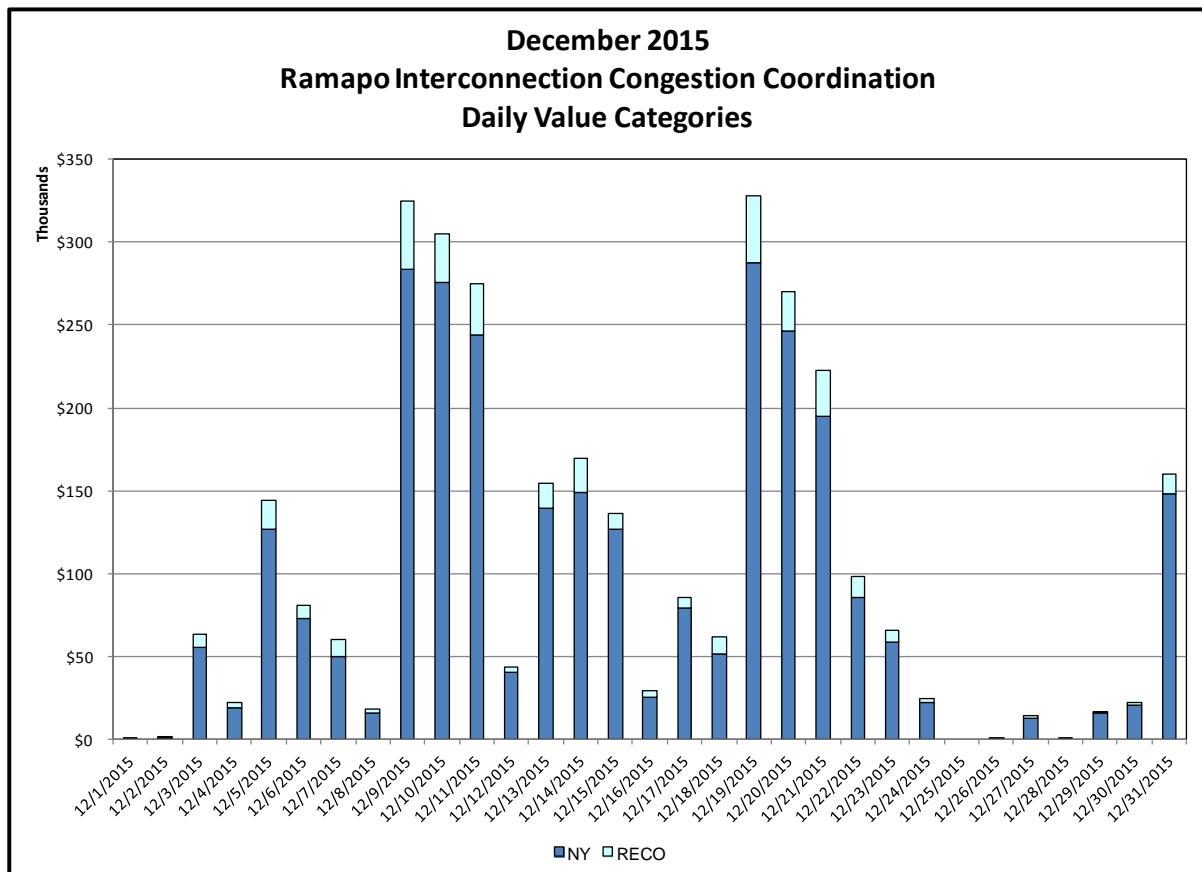
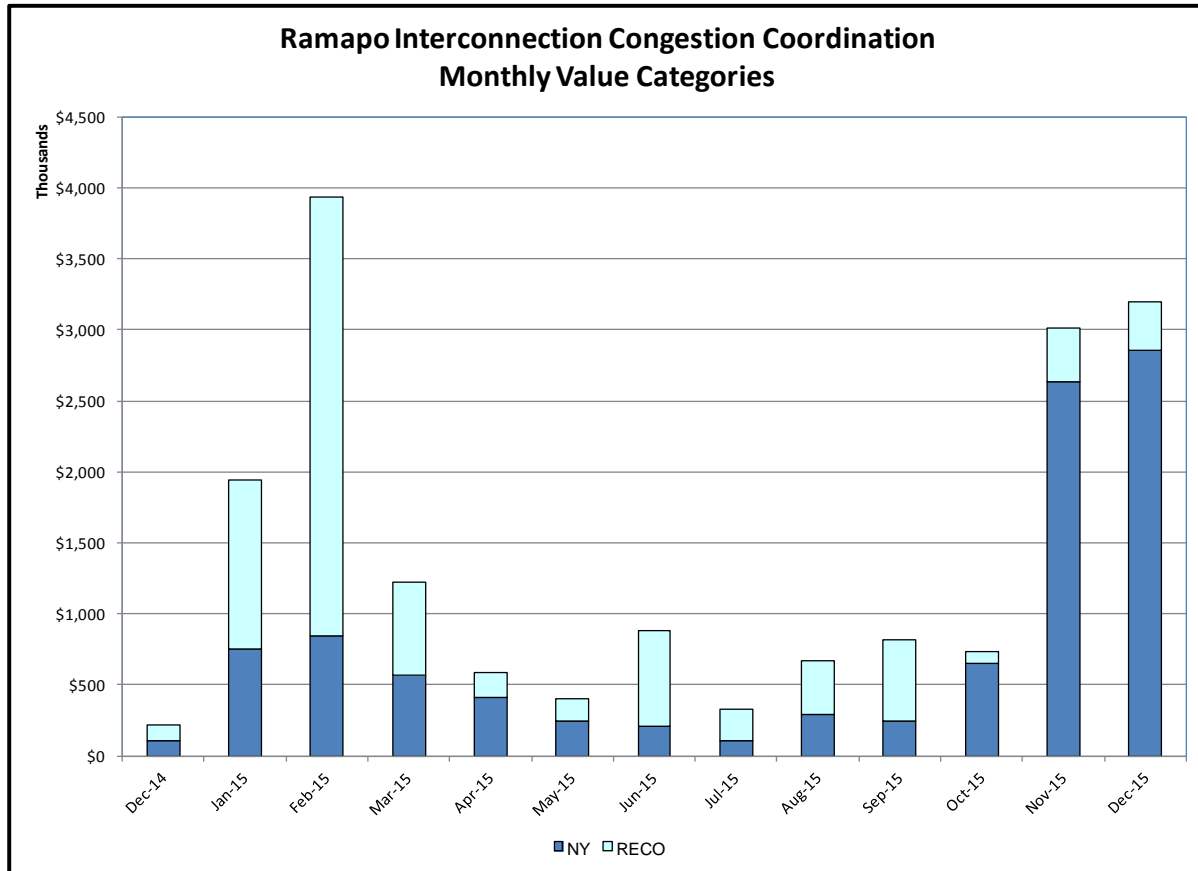






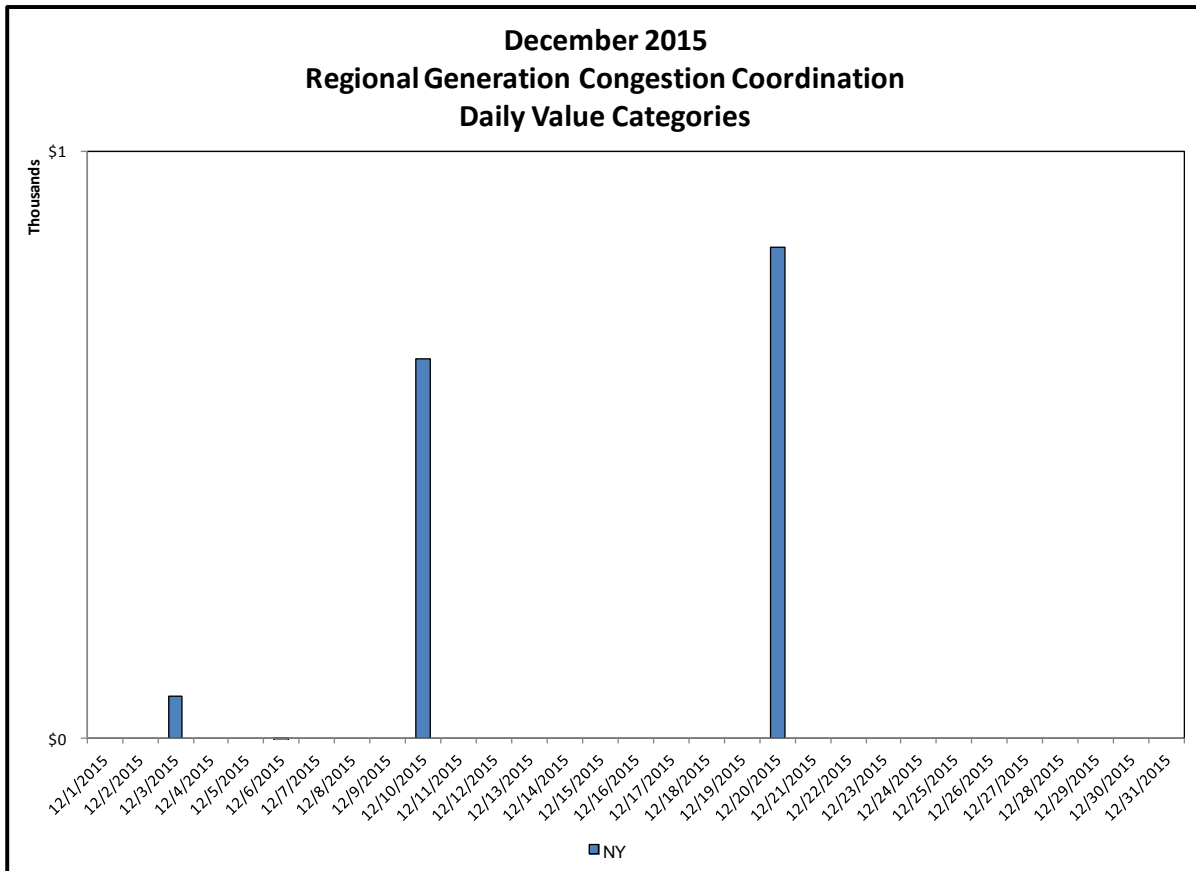
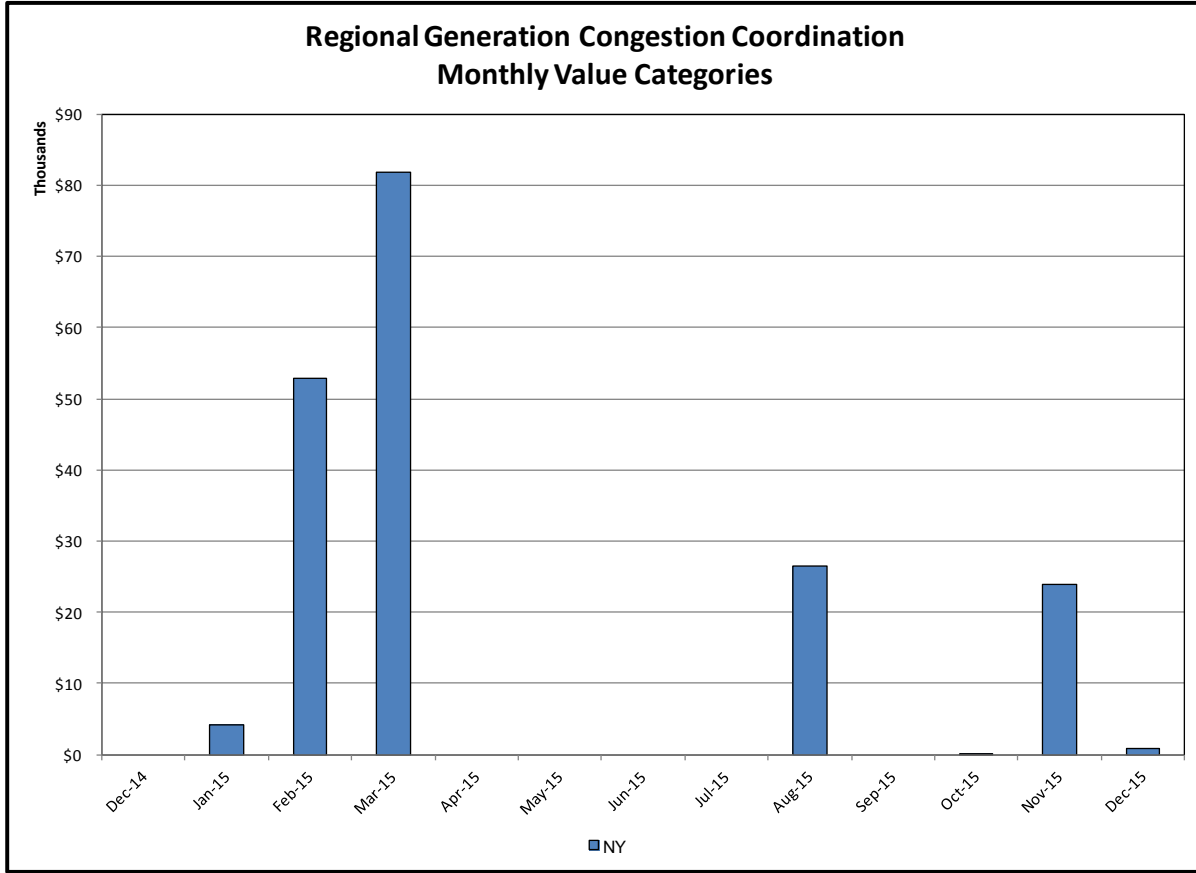


## Broader Regional Market Performance Metrics



**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.                             |



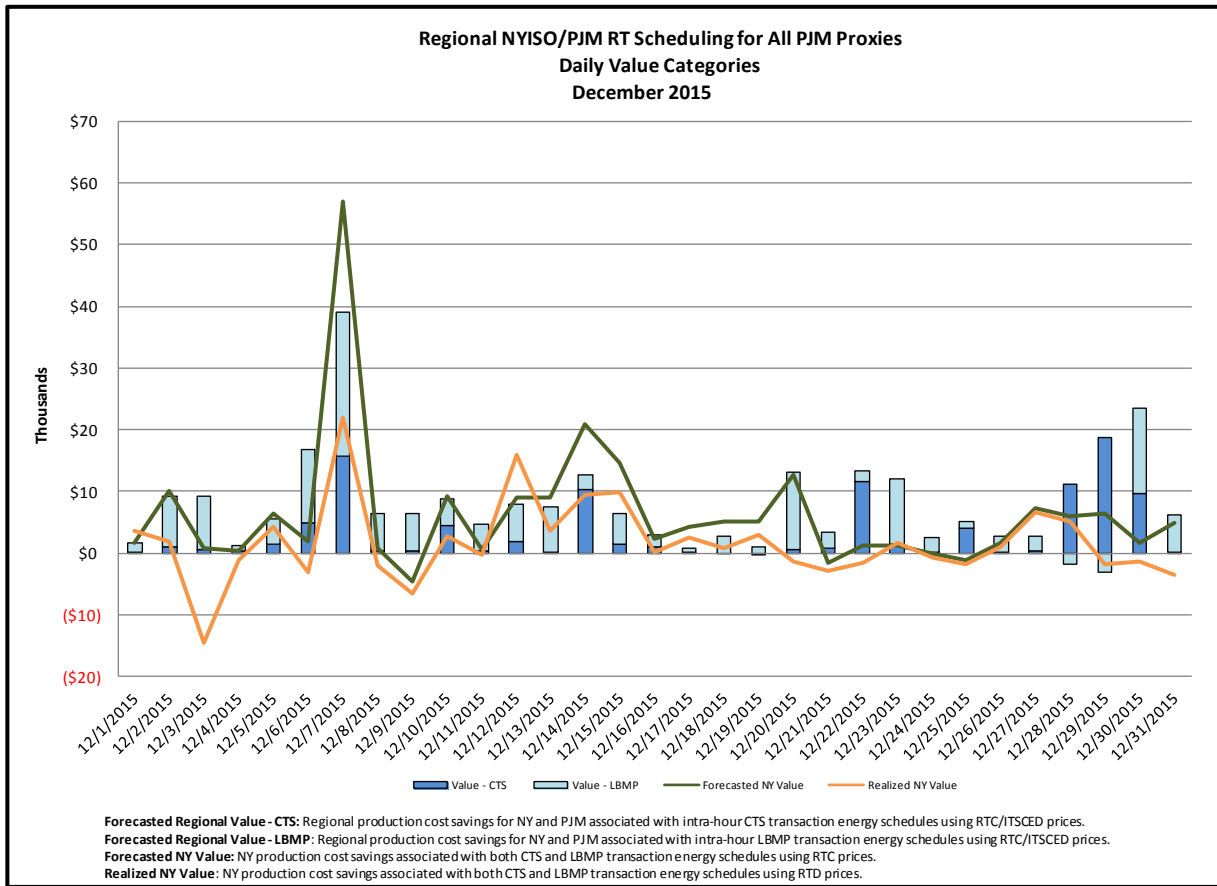
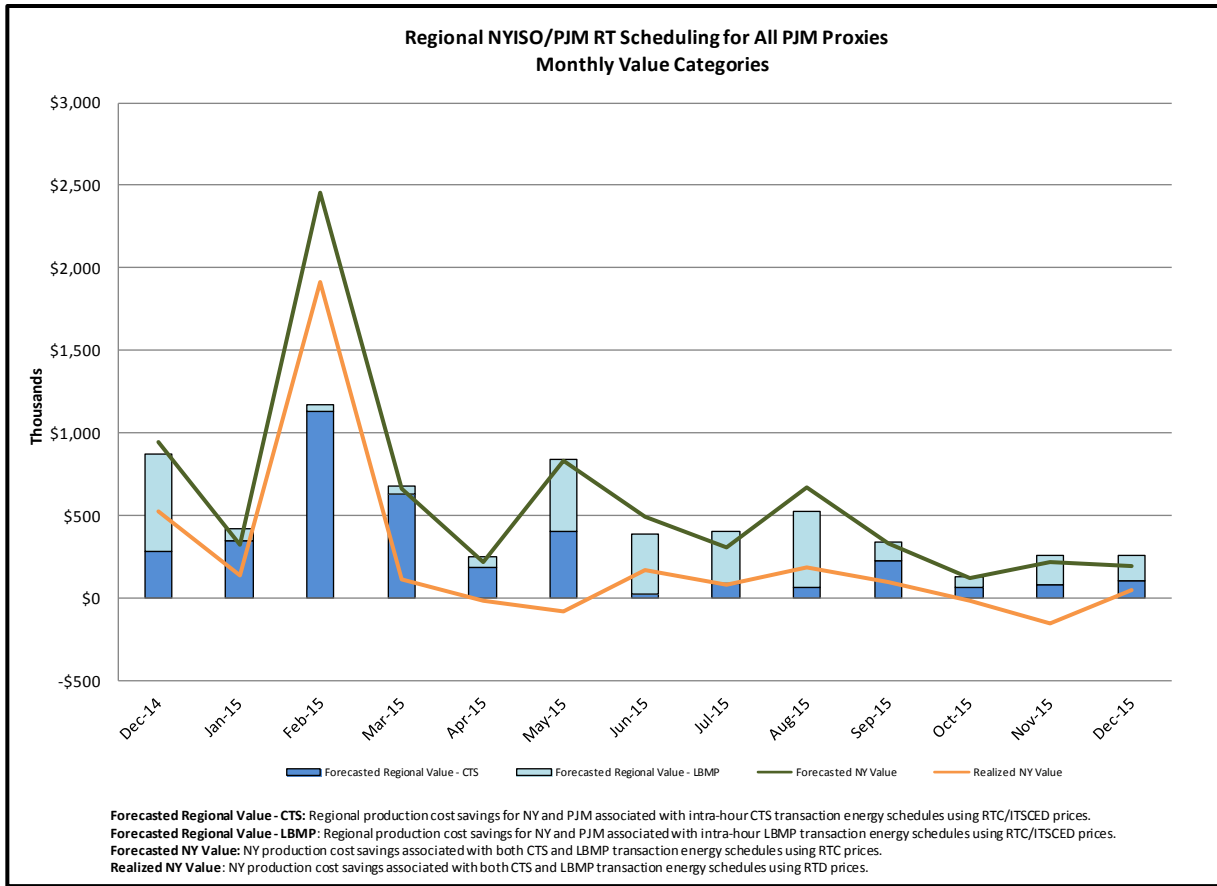
### Regional Generation Congestion Coordination

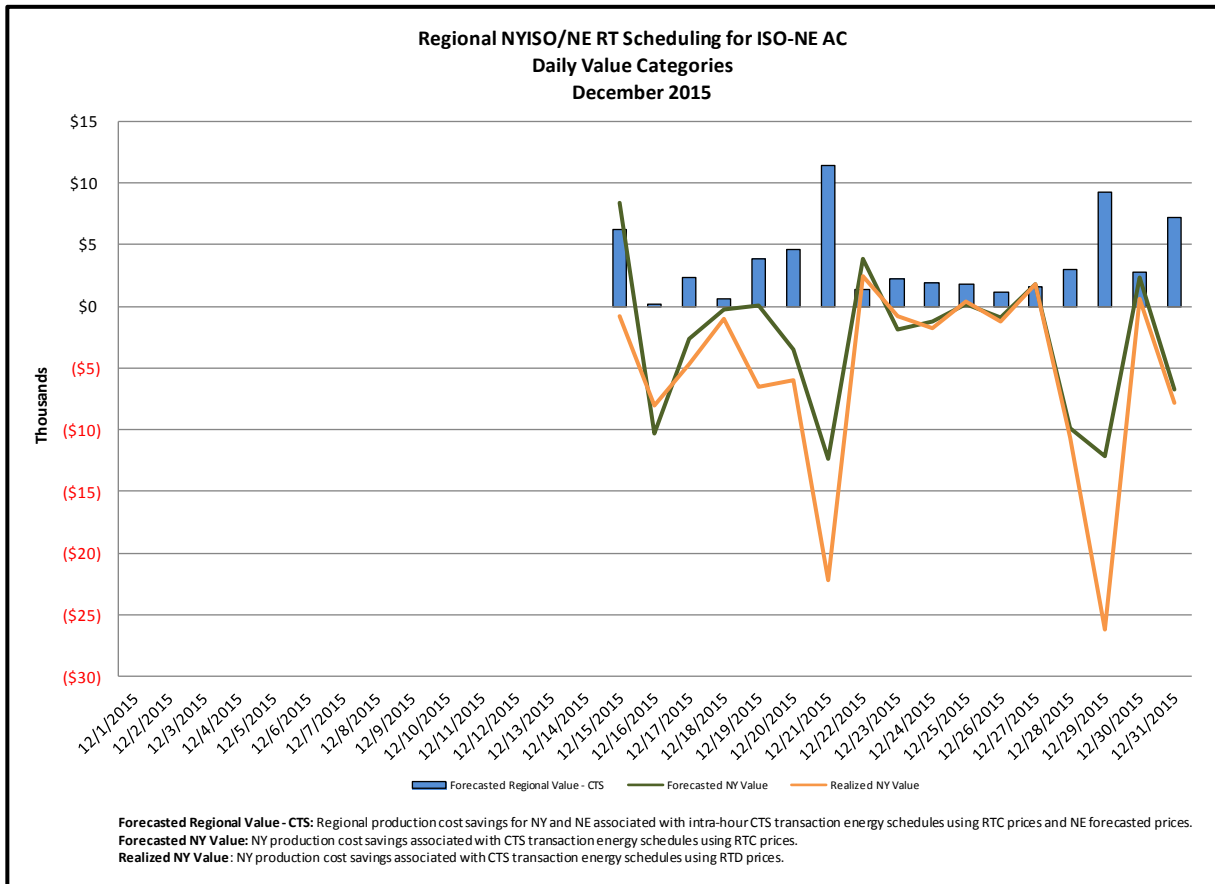
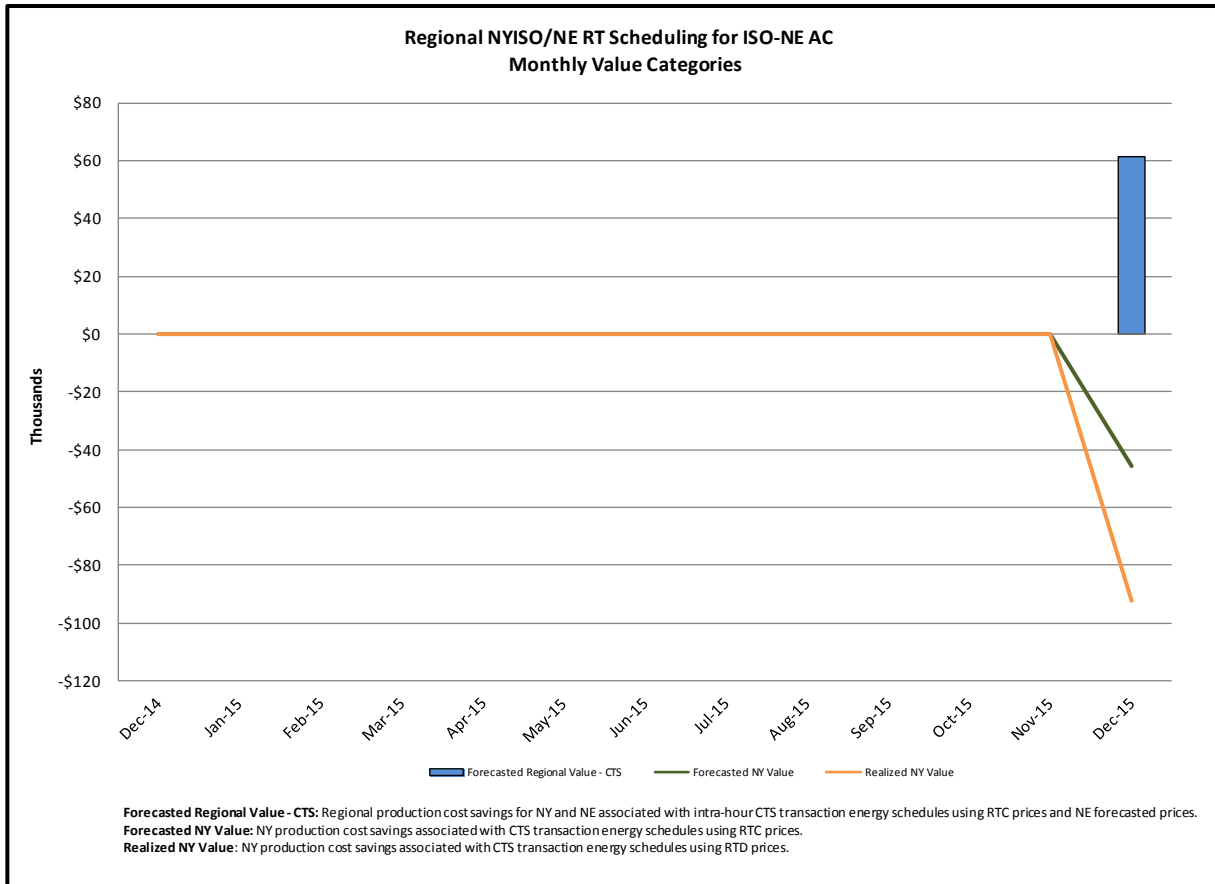
Category

NY

Description

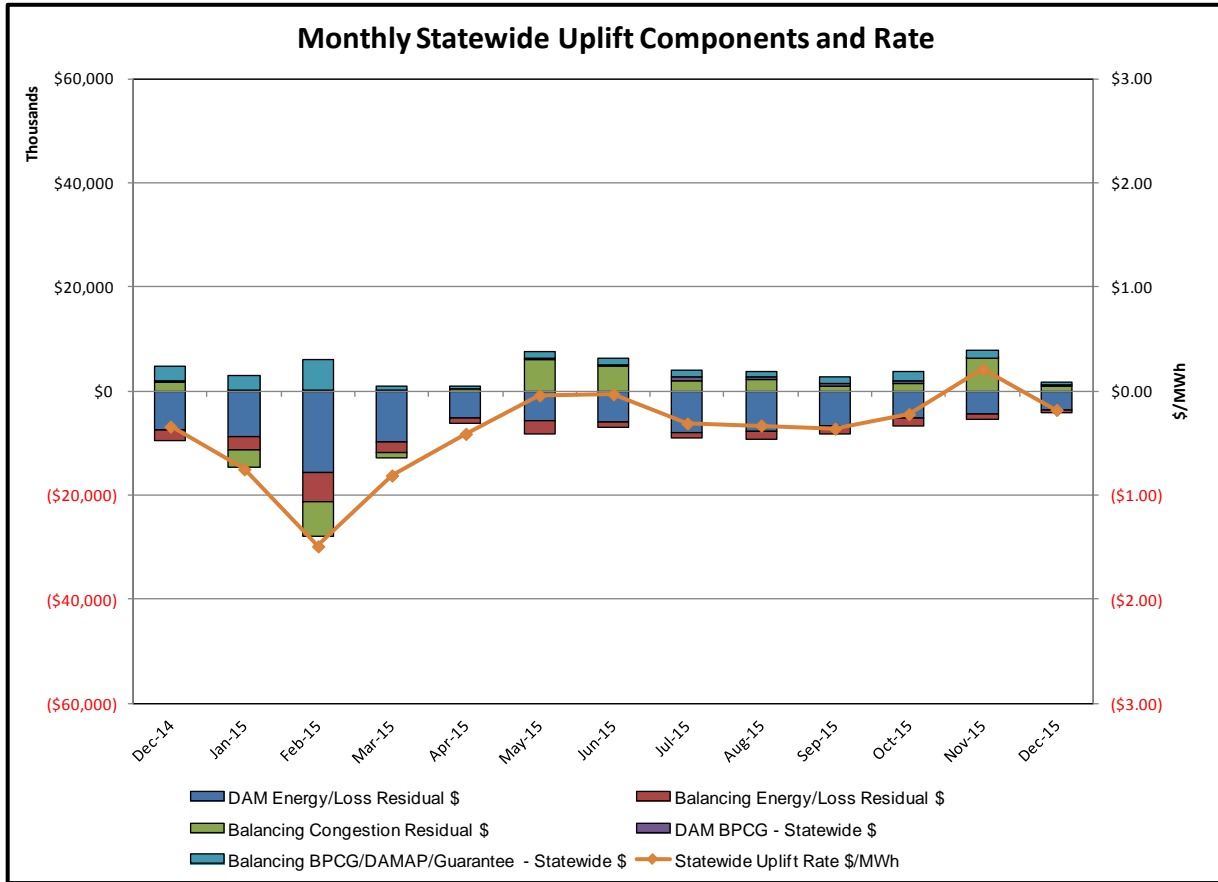
NYISO savings that result from PJM payments to NYISO when PJM's transmission use (PJM's market flow) is greater than PJM's entitlement of the NY transmission system and NYISO is incurring Western or Central NY congestion. Additionally, NYISO savings may result from the more efficient regional utilization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

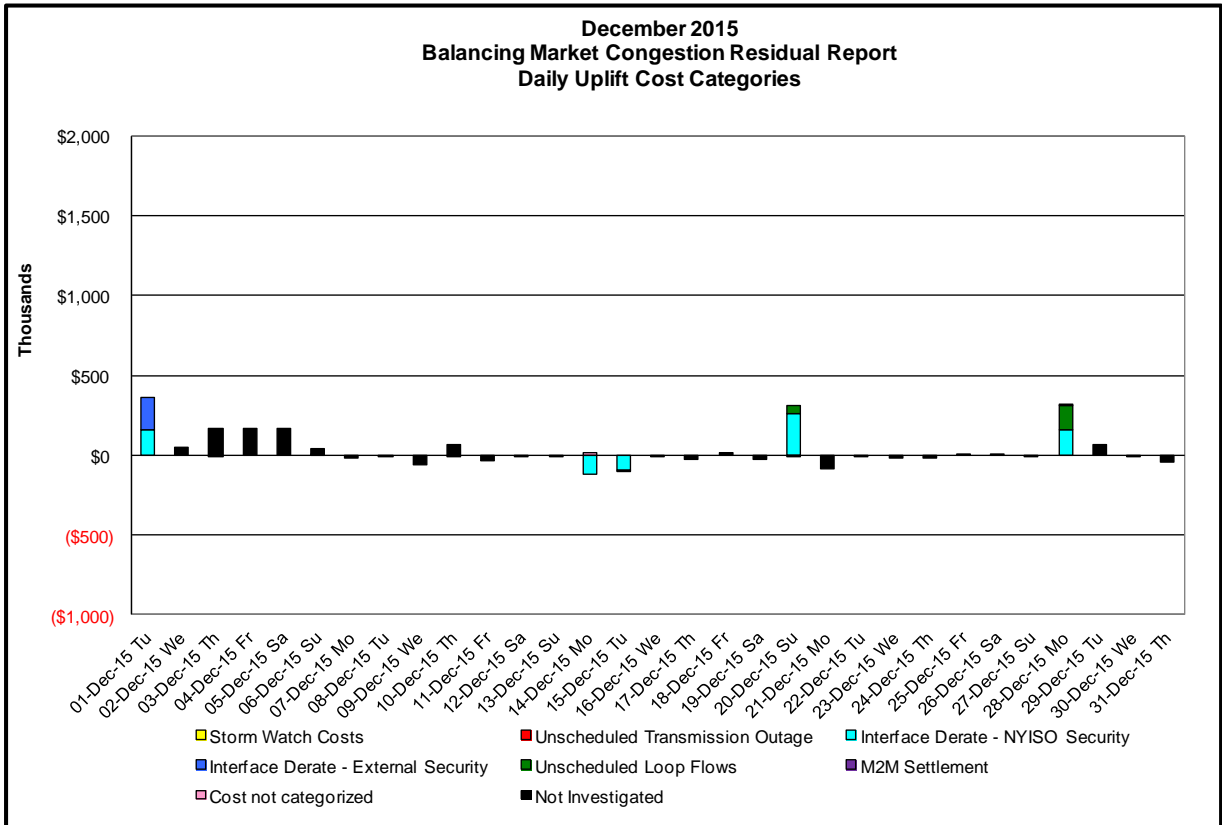
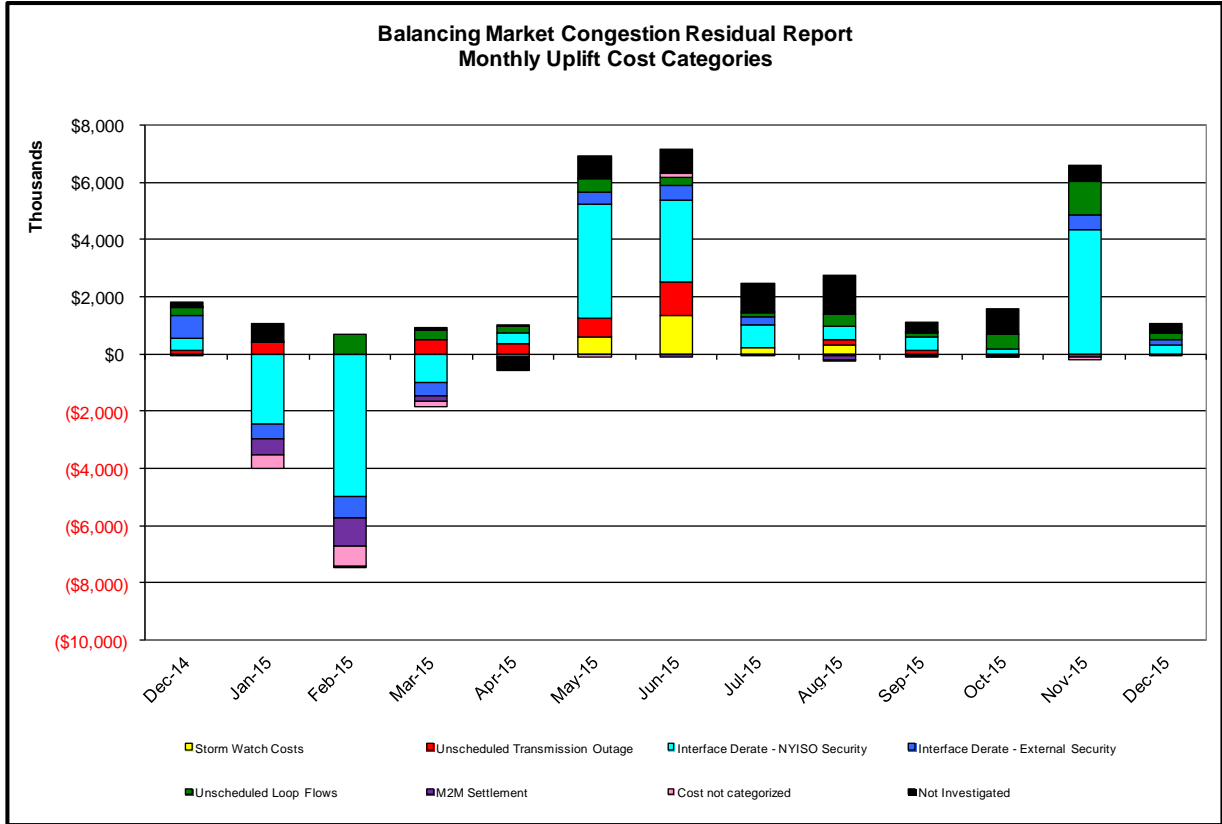






## Market Performance Metrics





Day's investigated in December: 1, 14, 15, 20, 28

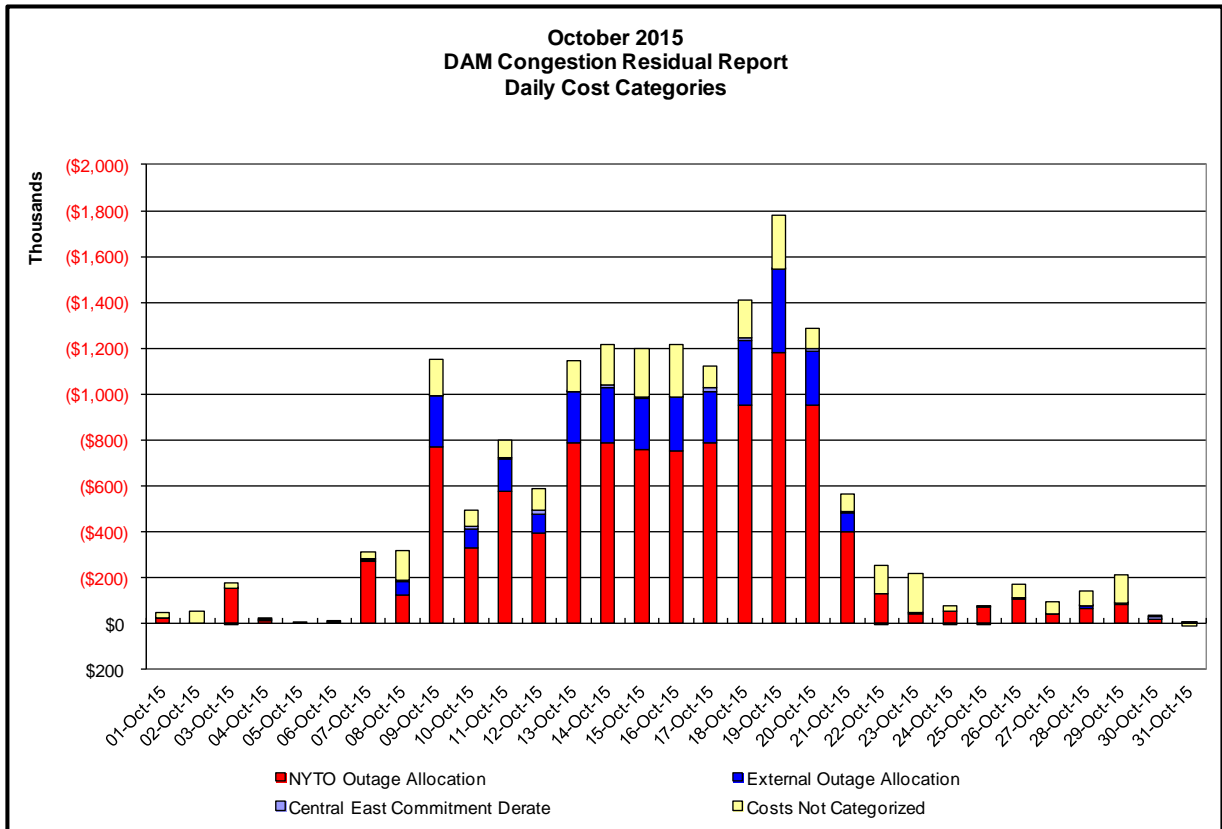
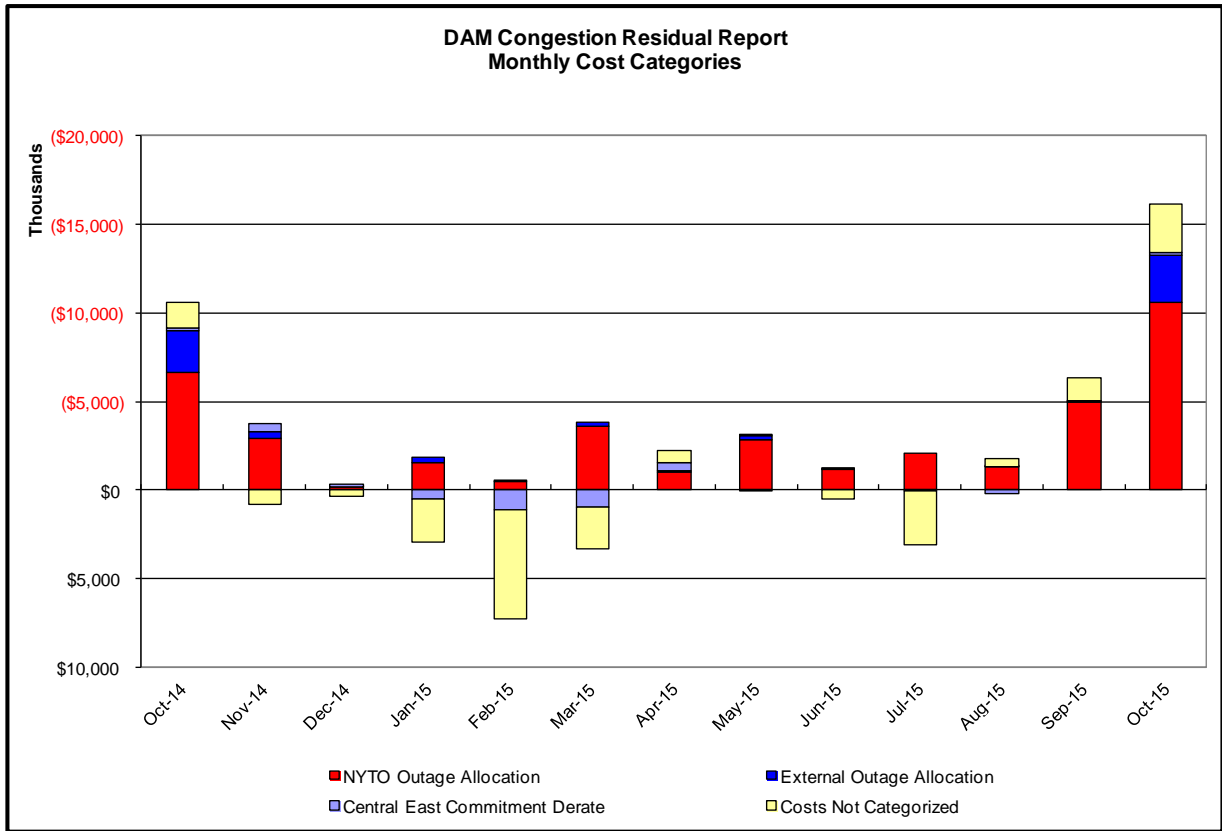
| Event | Date (yyyymmdd) | Hours                    | Description   |
|-------|-----------------|--------------------------|---|
|       | 12/1/2015       |                          | 6 NYCA DNI Ramp Limit   |
|       | 12/1/2015       | 6-20,23                  | Derate Gardenville-Stolle Road 230kV (#66) for I/o TWR:PACKARD 77 & 78                              |
|       | 12/1/2015       | 0-23                     | NE_AC-NY Scheduling Limit   |
|       | 12/1/2015       | 18                       | HQ_CHAT-NY Scheduling Limit   |
|       | 12/1/2015       | 17,19                    | IESO_AC DNI Ramp limit  |
|       | 12/14/2015      | 0,1,5,6,8-10,12-15,17-23 | Uprate Central East   |
|       | 12/14/2015      | 23                       | NYCA DNI Ramp Limit   |
|       | 12/15/2015      | 0-8,11-12                | Uprate Central East   |
|       | 12/20/2015      | 8                        | Derate Central East   |
|       | 12/20/2015      | 15-19,21,22              | Derate Dunwoodie-Shore Road 345kV (Y50) for I/o Neptune HVDC Tie Line                               |
|       | 12/20/2015      | 16-18                    | Derate Dunwoodie-Shore Road 345kV (Y50) for SCB:SPBK(RNS2):Y49 & M29                                |
|       | 12/20/2015      | 17                       | Derate Dunwoodie-Shore Road 345kV (Y50) for I/o SPRNBRK -EGRDNCTR_345_Y49                           |
|       | 12/20/2015      | 15-19,21                 | Derate East Garden City-Valley Stream 138kV for I/o BARRETT 292&459&G2&IC9-12                       |
|       | 12/20/2015      | 18                       | Derate Gardenville-Stolle Road 230kV (#66) for I/o TWR:PACKARD 77 & 78                              |
|       | 12/20/2015      | 15-19                    | Derate Lafayette-Clarkscomers 345kV for I/o TWR:UCC2-41&EF24-40                                     |
|       | 12/20/2015      | 19,22                    | Derate Meyer-Weathersford 230kV for SCB:ROCH(3408): NR-2& RP-2                                      |
|       | 12/20/2015      | 17                       | Derate Packard-Sawyer 230kV (#78) for I/o Packard-Sawyer 230kV (#77)                                |
|       | 12/20/2015      | 2,7,9-14,20,23           | Uprate Central East   |
|       | 12/20/2015      | 16                       | NYCA DNI Ramp Limit   |
|       | 12/20/2015      | 3-6,15                   | Lake Erie Clockwise Circulation, DAM-RTM exceeds 125MW; Central East                                |
|       | 12/28/2015      | 11,12                    | Derate Niagara-Packard 230kV for I/o TWR:PACKARD 62 & BP76  |
|       | 12/28/2015      | 11,12                    | Derate Packard-Sawyer 230kV (#78) for I/o Packard-Sawyer 230kV (#77)                                |
|       | 12/28/2015      | 11,12                    | Lake Erie Clockwise Circulation, DAM-RTM exceeds 125MW; Packard-Sawyer 230kV, Niagara-Packard 230kV |

### 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 Clockwise Lake Erie Loop Flows greater than 125 MW |
| M2M Settlement                       | Market-wide            | Settlement result inclusive of coordinated redispatch and Ramapo flowgates                      |   |

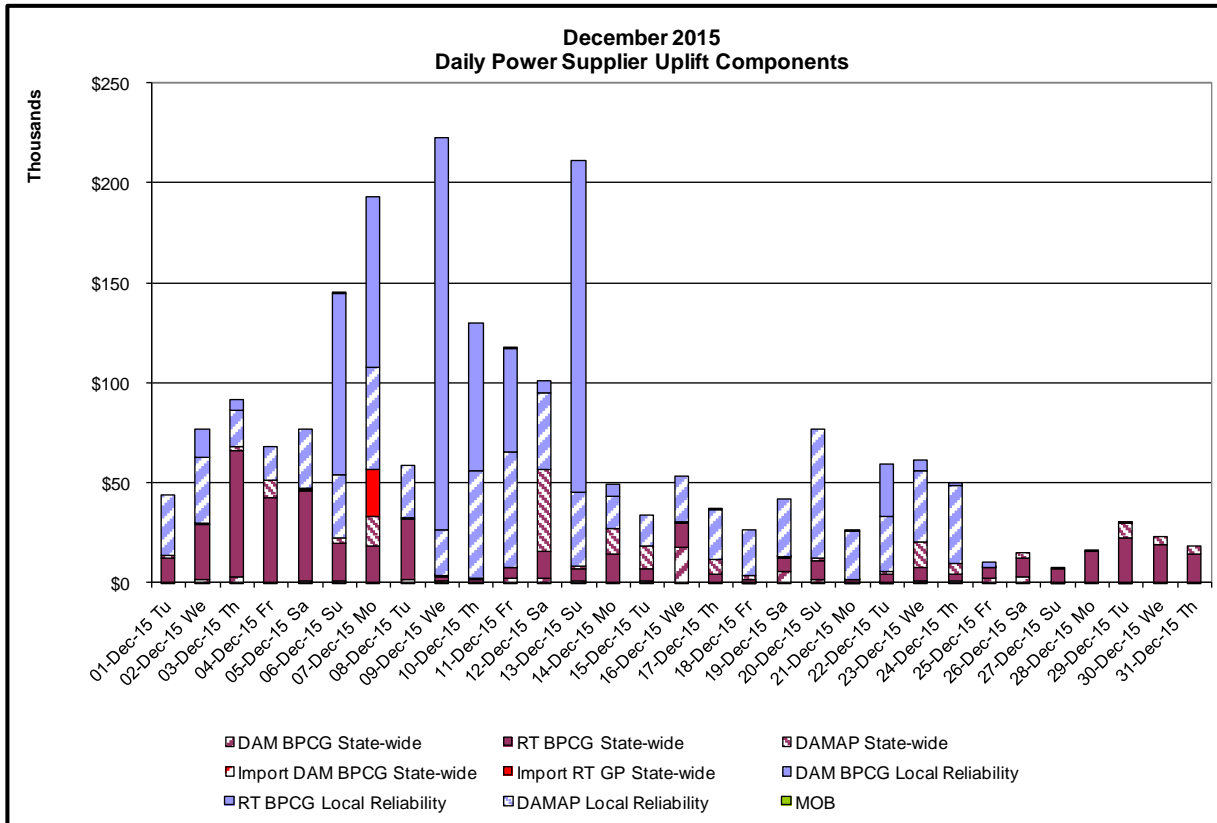
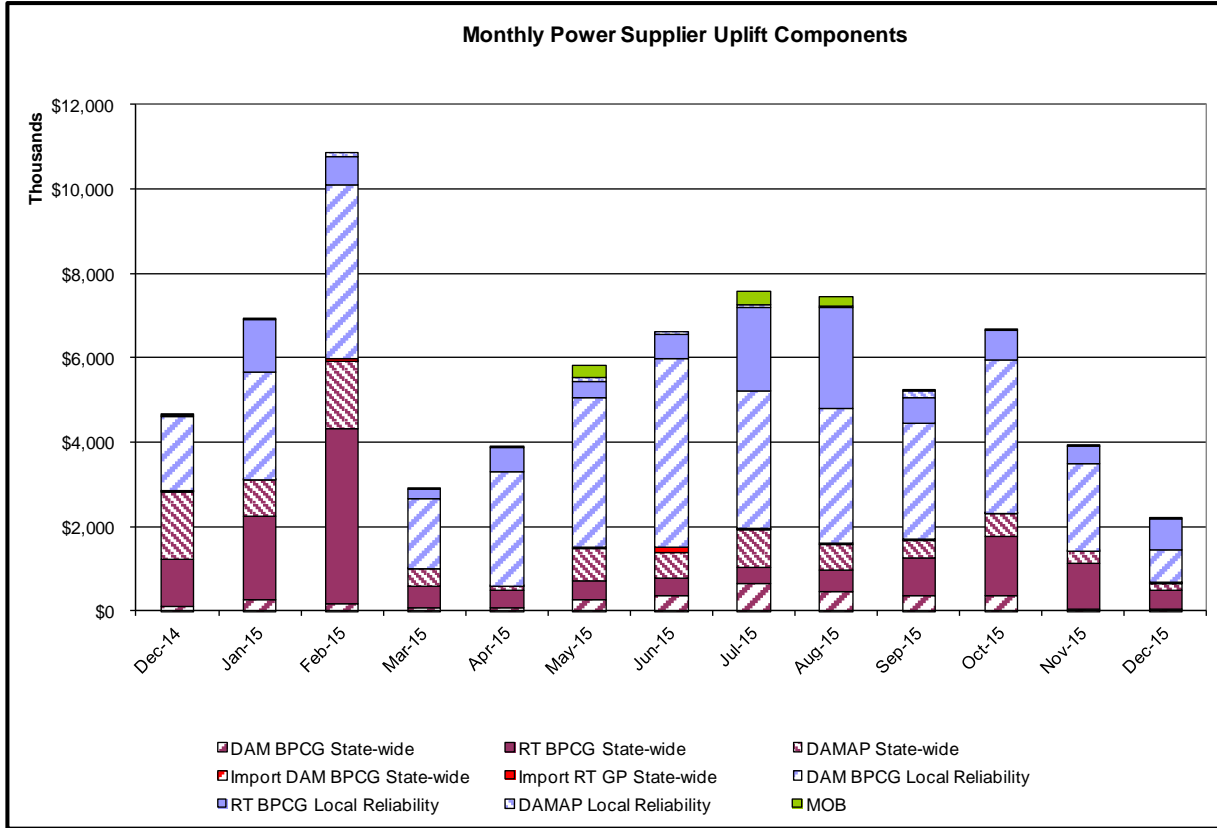
**Monthly Balancing Market Congestion Report Assumptions/Notes**

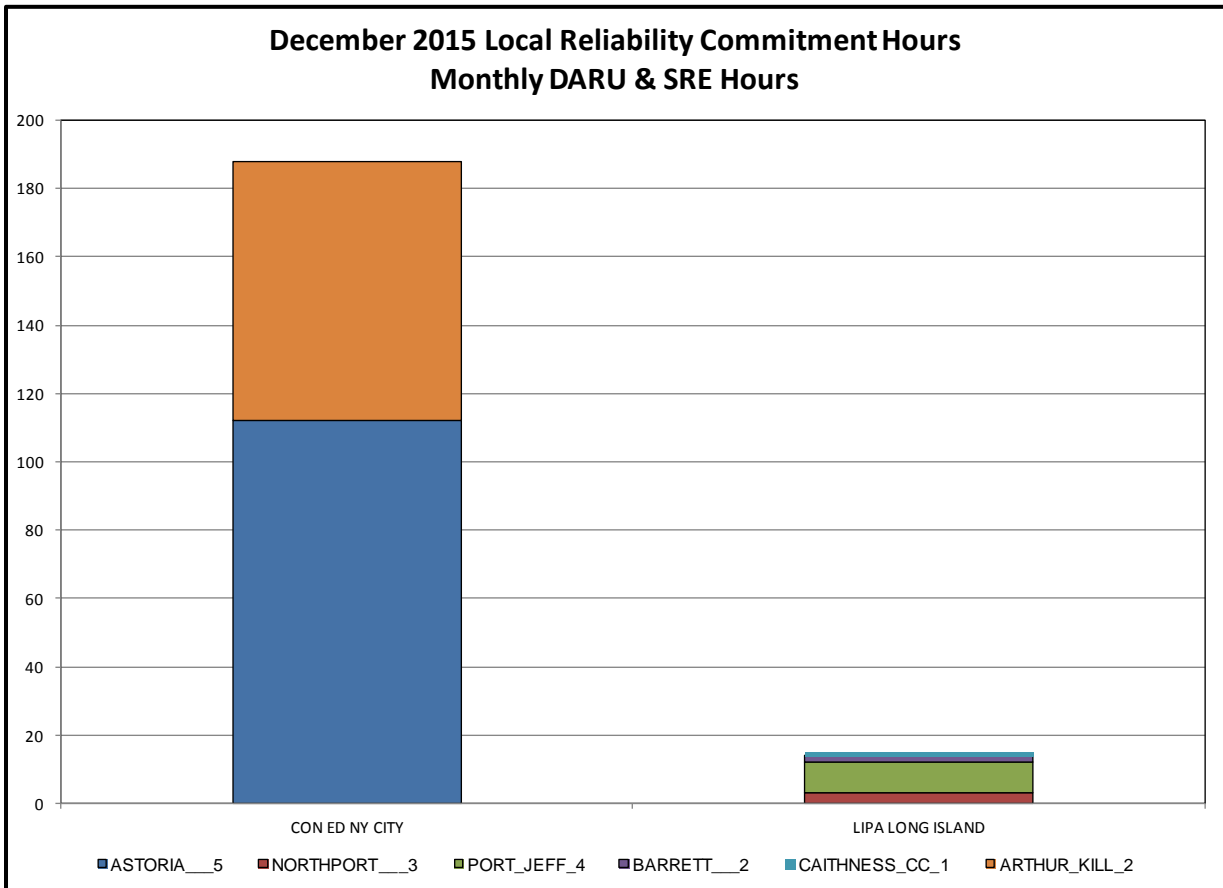
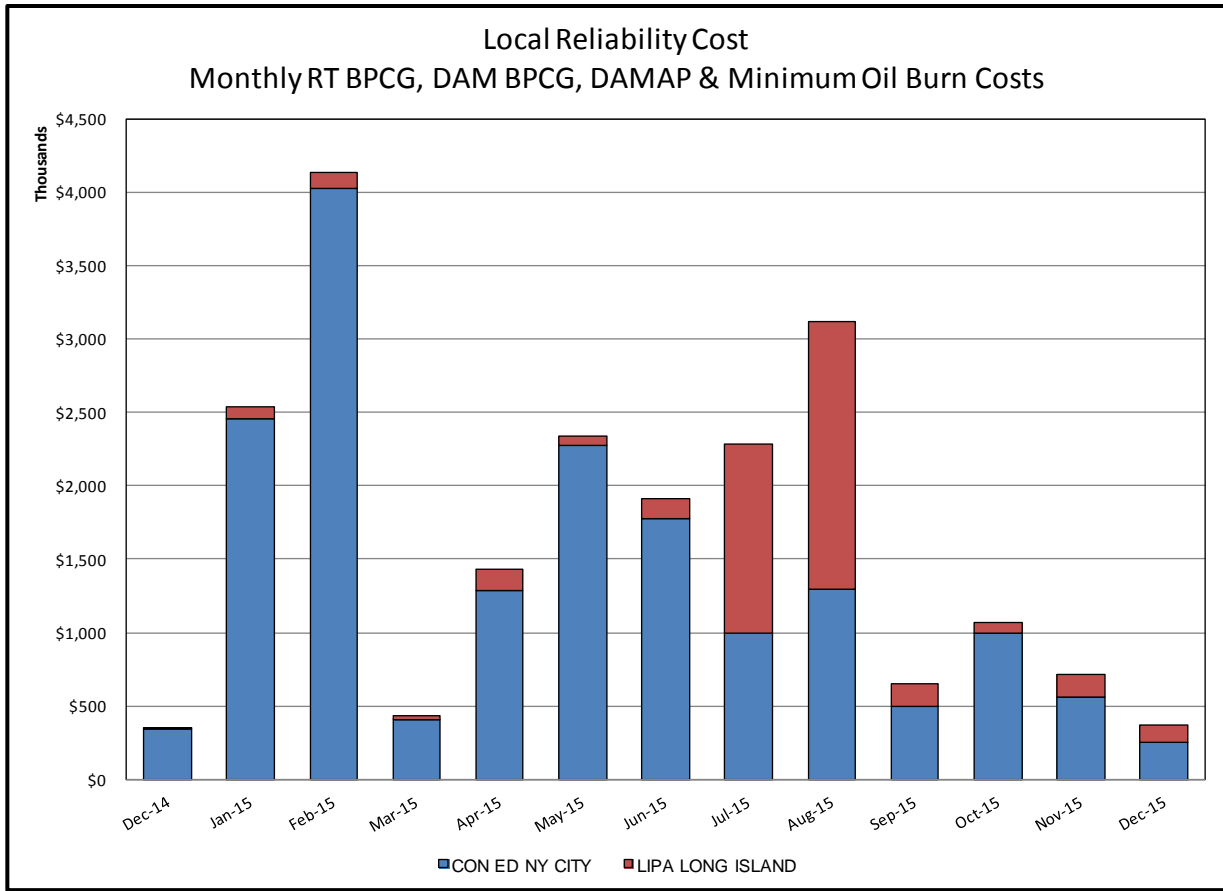
- 1) Storm Watch Costs are identified as daily total uplift costs
- 2) Days with a value of BMCR less M2M Settlement of \$100K/HR, shortfall of \$200K/Day or more, or surplus of \$100K/Day or more are investigated.
- 3) Uplift costs associated with multiple event types are apportioned equally by hour

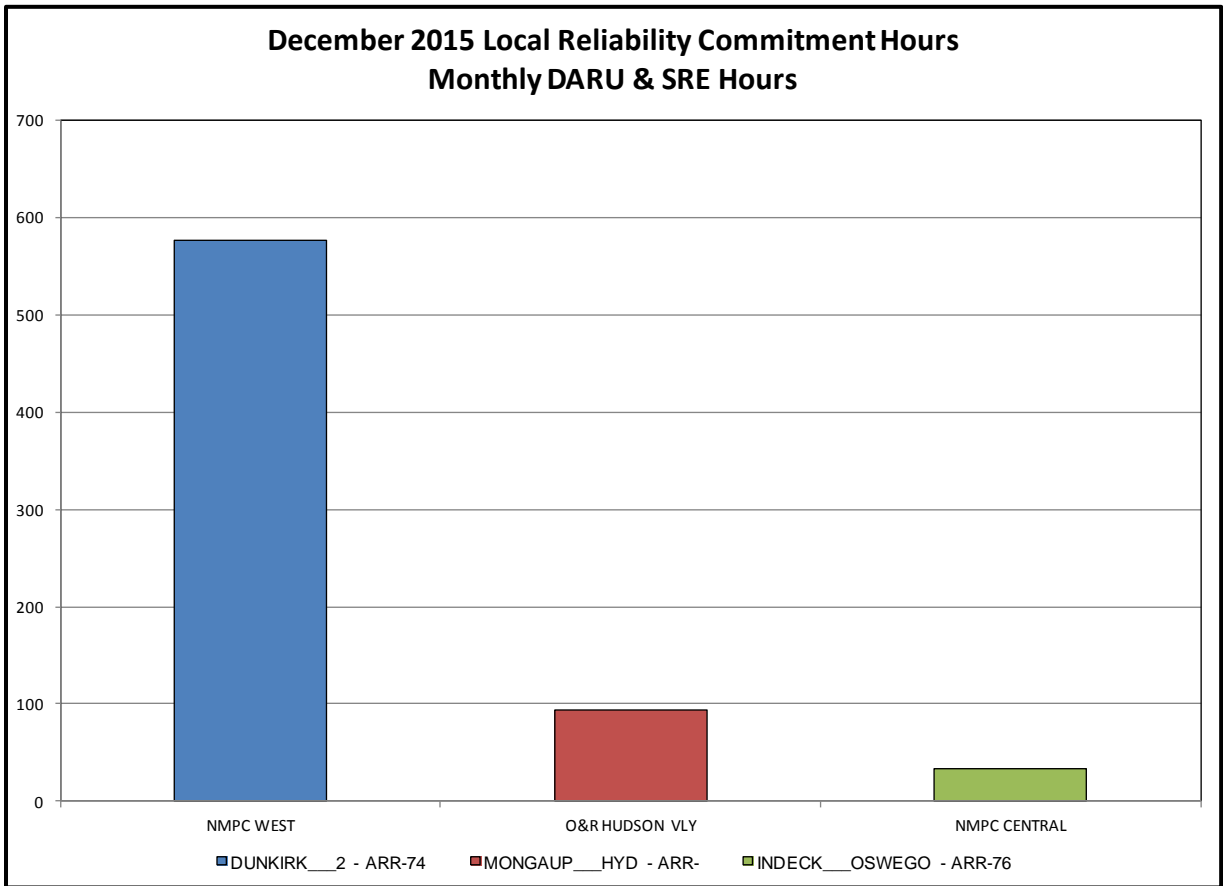
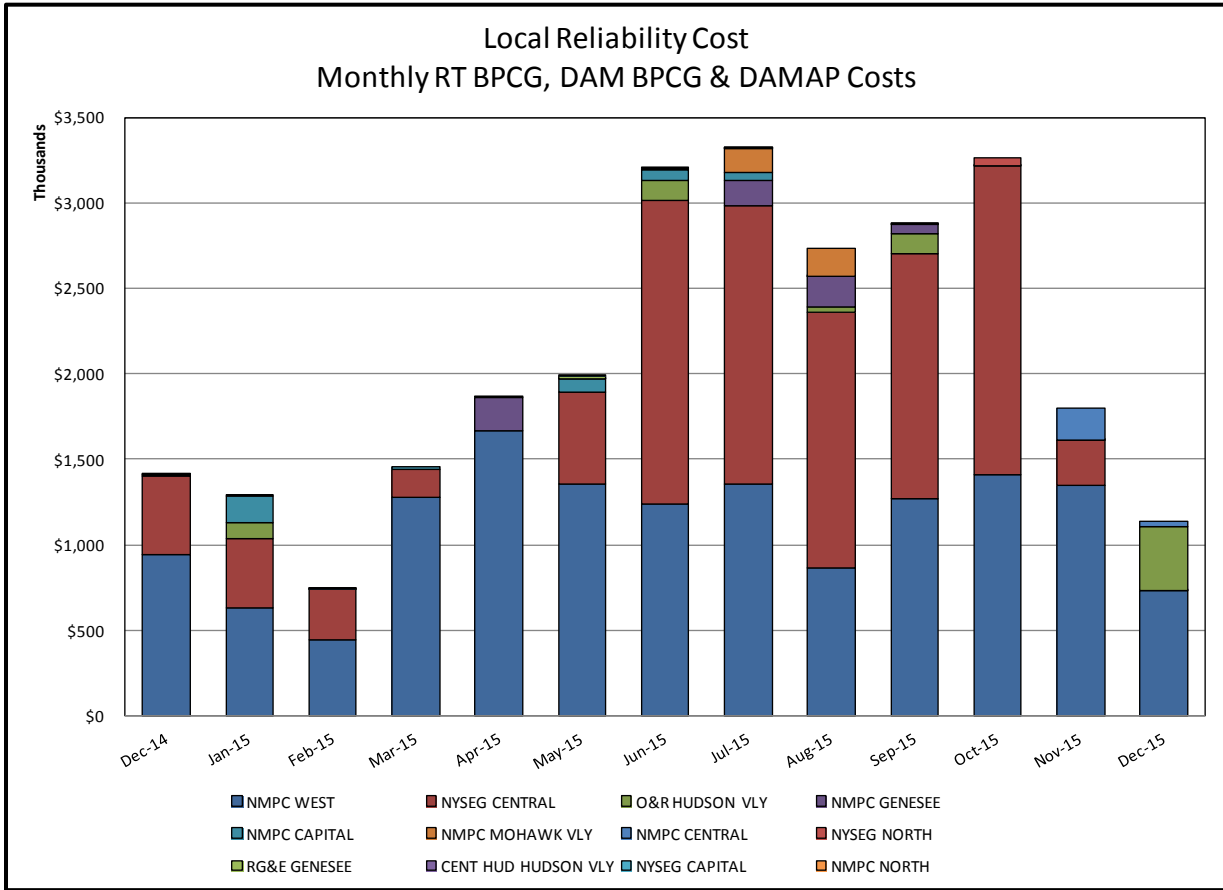


**Day-Ahead Market Congestion Residual Categories**

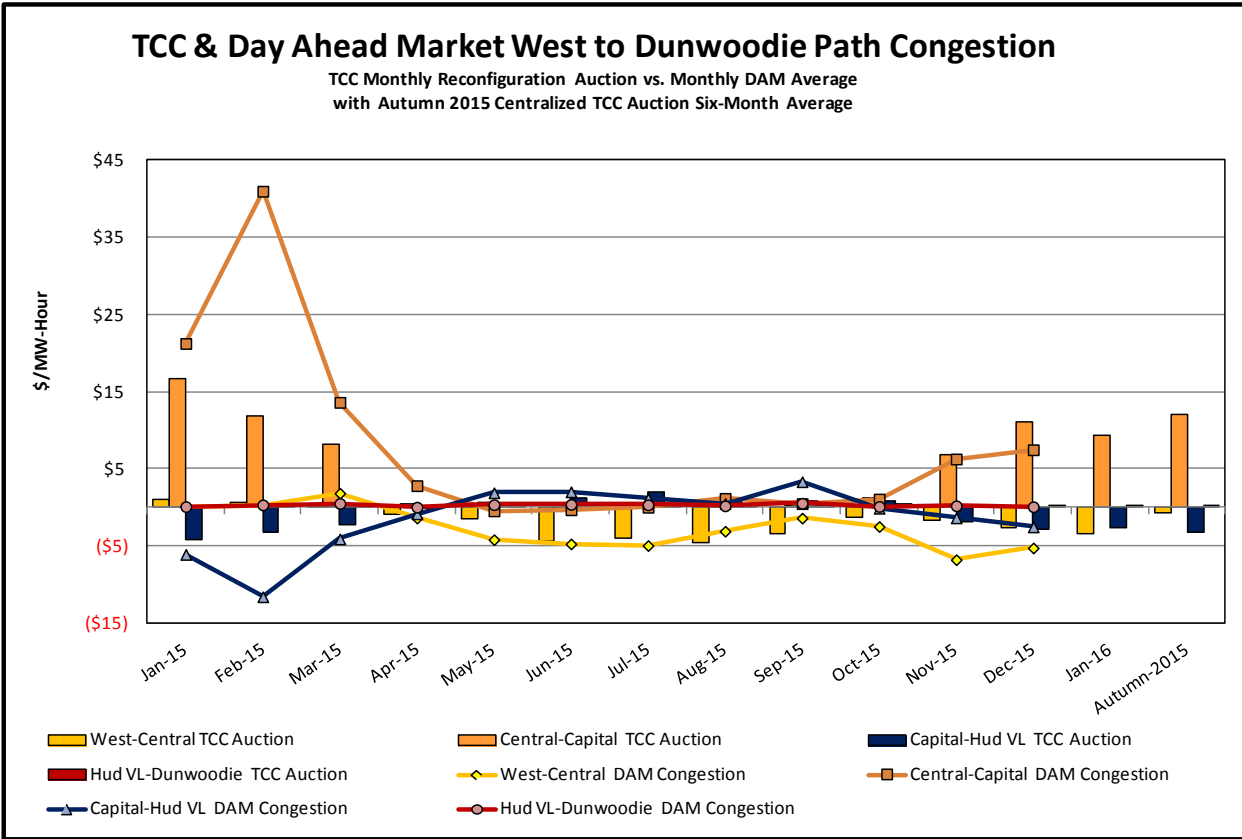
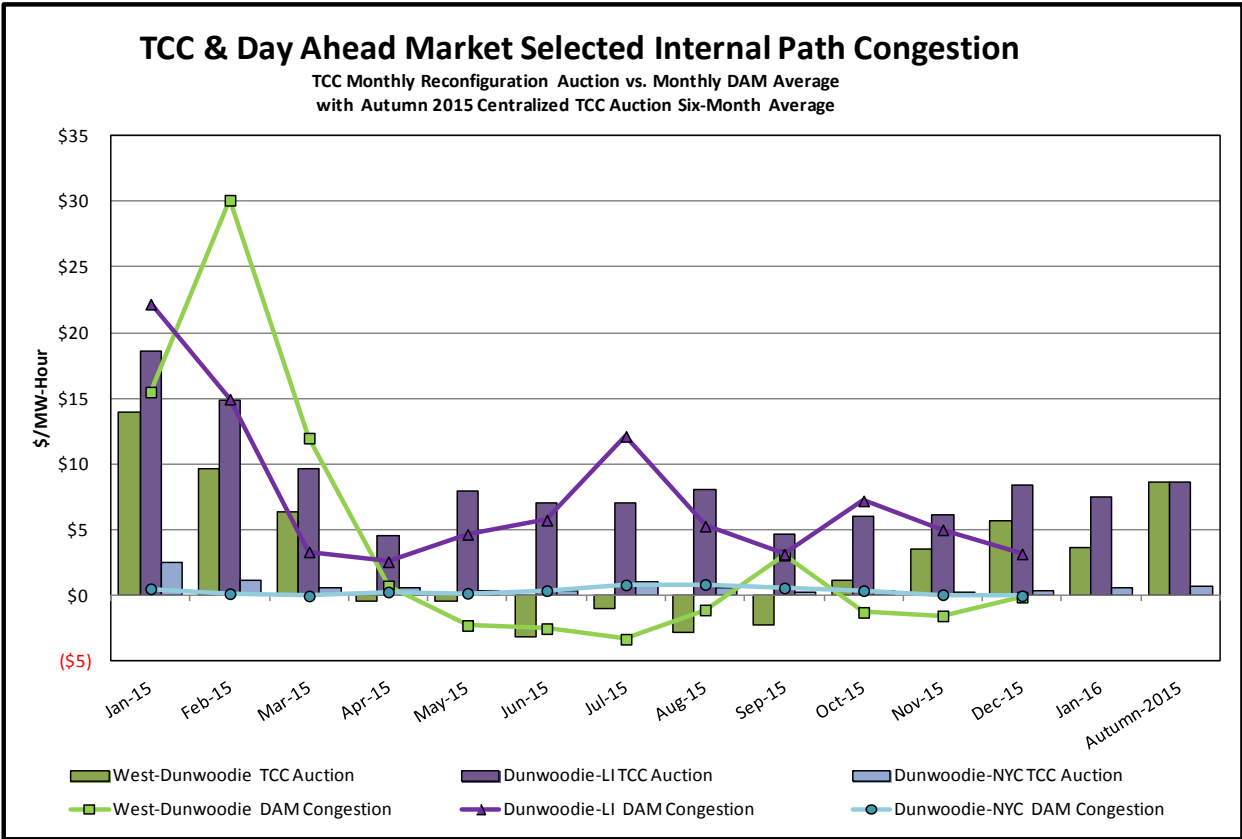
| <u>Category</u>                | <u>Cost Assignment</u>              | <u>Events Types</u>  | <u>Event Examples</u>  |
|--------------------------------|-------------------------------------|--|--|
| NYTO Outage Allocation         | Responsible TO                      | Direct allocation to NYTO's 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. |  |





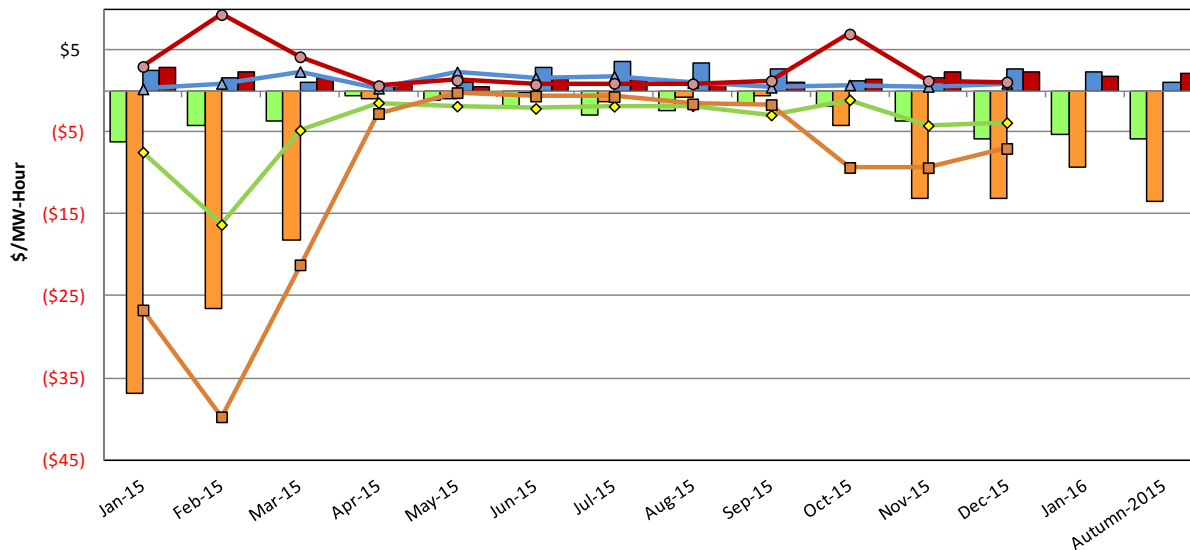






### TCC & Day Ahead Market Selected External Path Congestion

TCC Monthly Reconfiguration Auction vs. Monthly DAM Average  
with Autumn 2015 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

