

# 2013 Year To Date (Jan. – July) Import / Export Benchmark

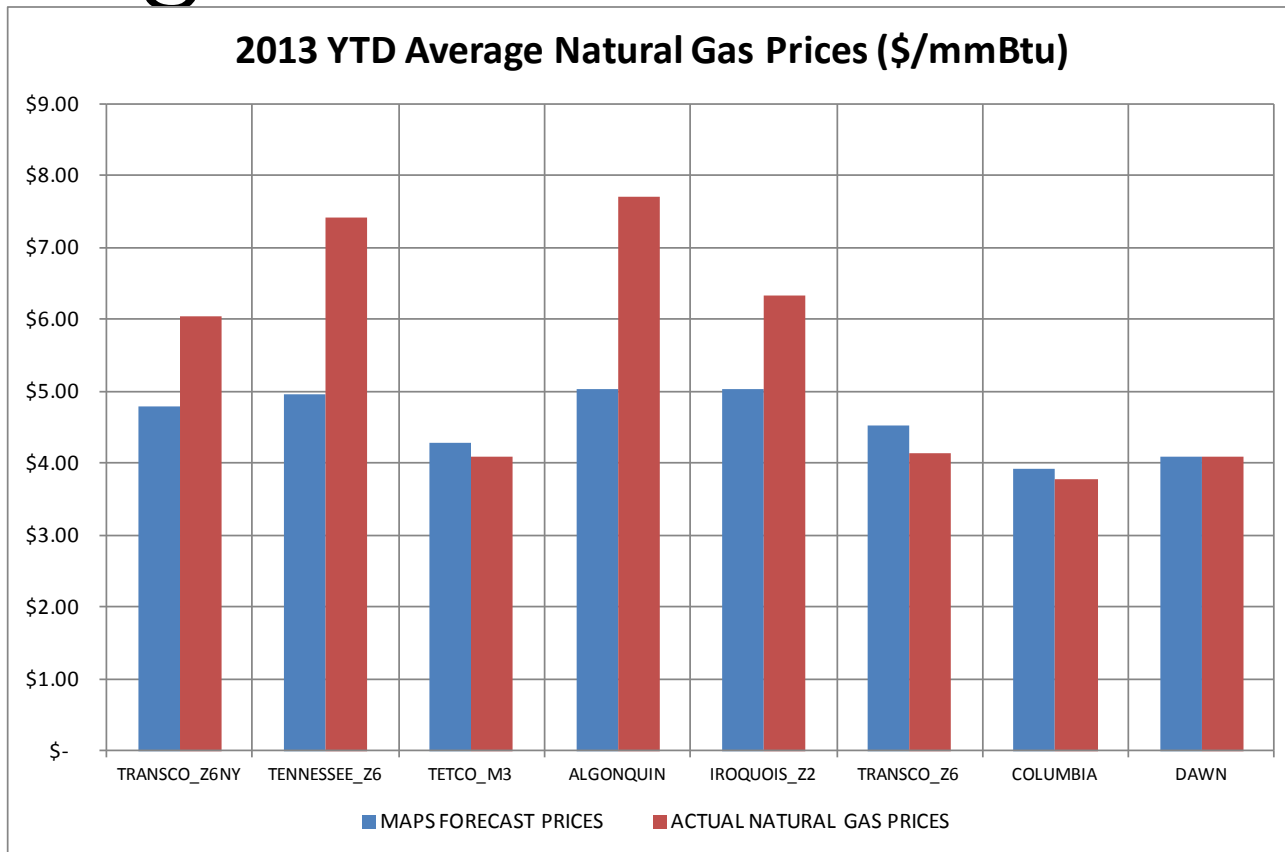
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New York Independent System Operator*

**Electric System Planning Working Group**  
*September 9, 2013*  
**KCC**

# Background

- ◆ **Modeled IESO – NY Transfers are 1.7 TWh Greater Than Year to Date Actual Transfers**
  - *IESO Forecast 2 TWh (3%) Below Actual YTD*
  - *Actual Natural Gas Prices Varied from Forecast*
  - *Modeling these two variables accounts for 82% of the difference in transfers*
- ◆ **The effect of modeling actual natural gas prices appears counterintuitive considering only NY and Ontario.**

# Average Natural Gas Price



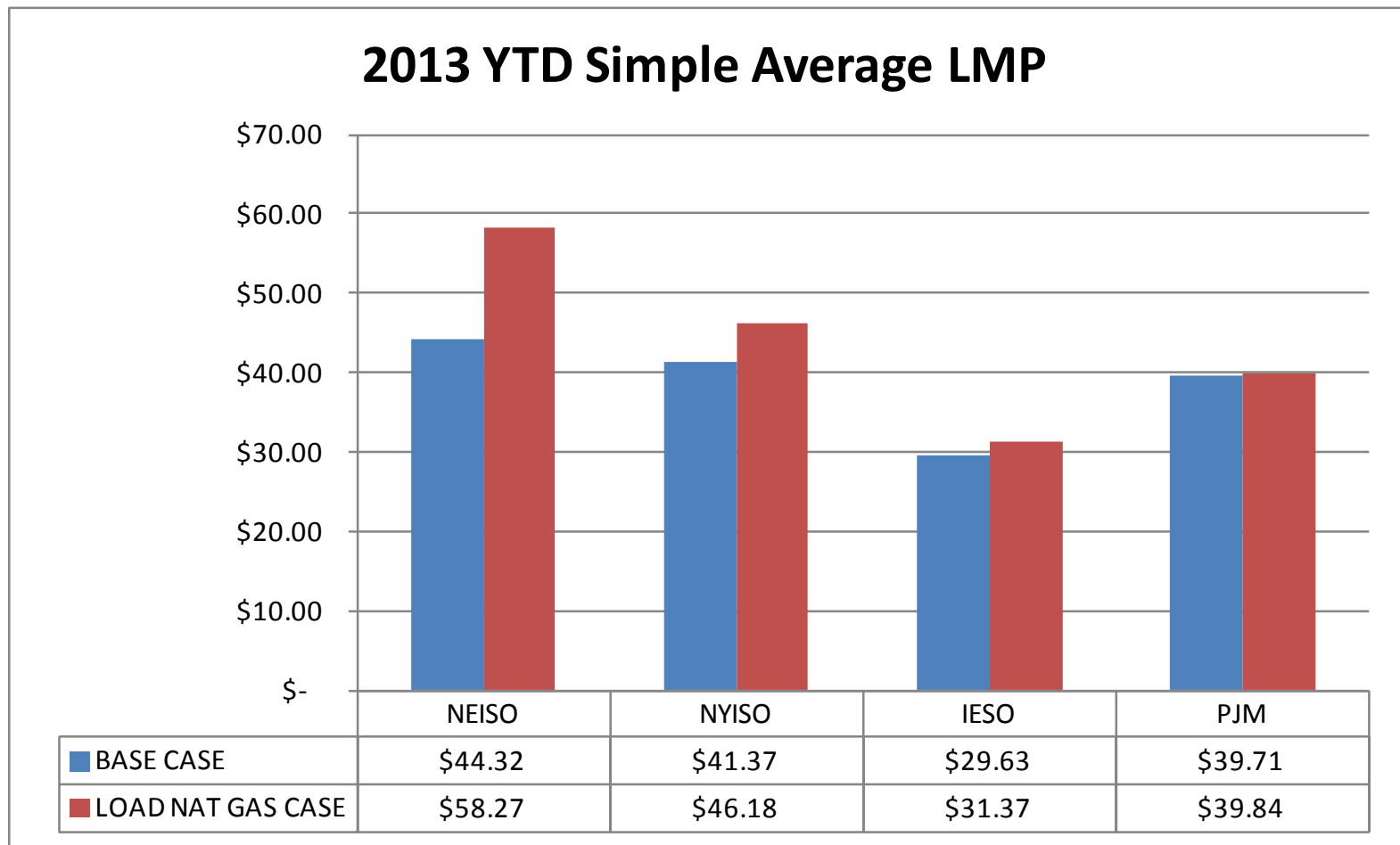
The Actual Natural Gas Price averages reflected in this chart were calculated by the NYISO based on daily gas prices available on the IntercontinentalExchange website at [https://www.theice.com/natural\\_gas.jhtml](https://www.theice.com/natural_gas.jhtml). The IntercontinentalExchange has not reviewed or verified the averages in this chart, and assumes no liability and shall not be responsible for the chart, underlying data, or calculations.

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# Average Natural Gas Price

- ◆ **On Average:**
  - *Eastern New York and New England Gas Prices were **HIGHER** through July than forecast*
  - *Western New York and PJM Gas Prices were **LOWER** through July than forecast*
  - *Ontario Gas Prices were nominally the **SAME** as forecast*
- ◆ **Decreases in PJM gas prices combined with increases in IESO Loads changed the relative economics of importing from PJM vs. IESO**
- ◆ **PJM more proximate to gas price increases**
- ◆ **IESO-NY flows decreased as a result of these trade-offs**

# Pool Average LBMP

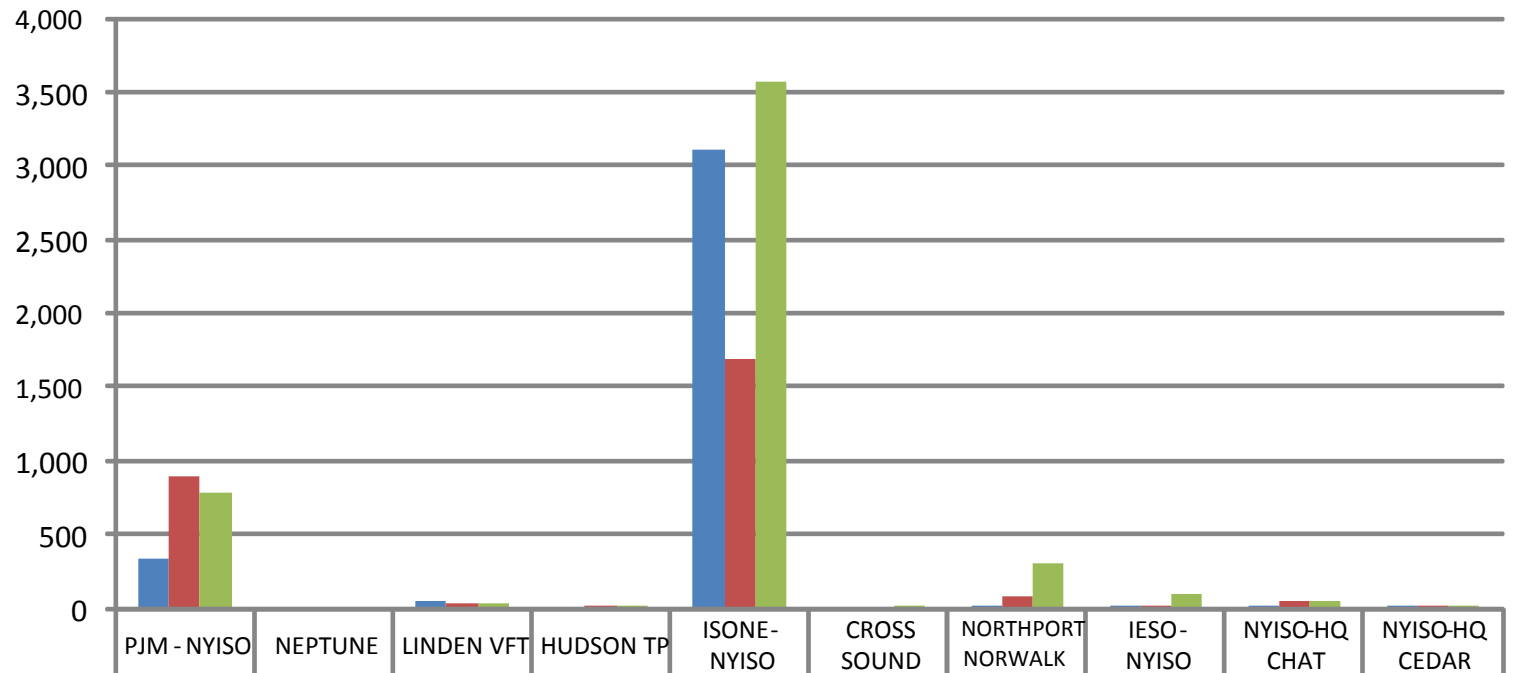


# Average LBMP

- ◆ **PJM LBMP Remains Constant**
  - *Decrease in gas price offset by increase in generation*
  - *Gas is a relatively small fraction of PJM generation*
- ◆ **IESO LBMP Increases Marginally**
  - *Gas prices nominally the same*
  - *Increase in load*
- ◆ **NY and NE LBMP Increases Significantly**
  - *Gas prices increase more than PJM gas prices decrease*
  - *NY and New England more predominantly gas-fired generation*
- ◆ **Reflected in Increased NYISO Imports from PJM**

# Exports

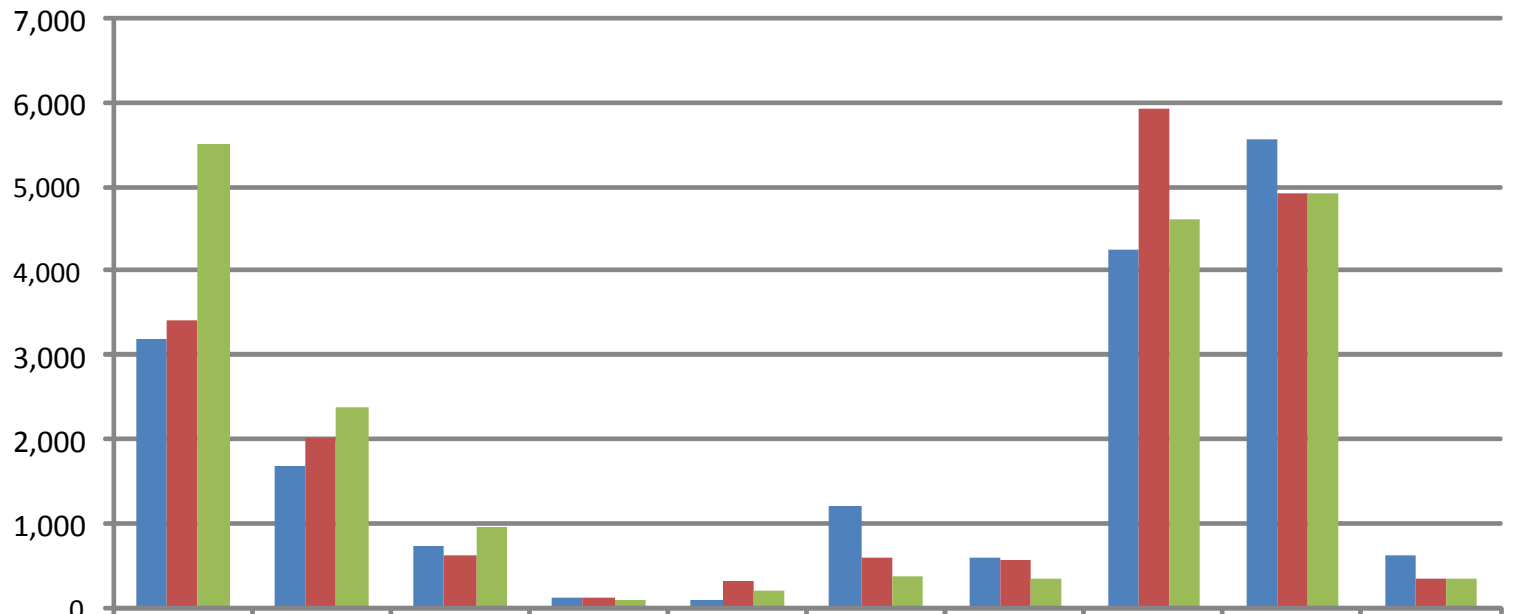
## Exports (GWh)



2013 YTD ACTUAL	331	0	50	0	3,116	0	23	3	18	4
BASE CASE	899	0	35	0	1,685	0	74	16	50	2
LOAD NAT GAS CASE	775	0	32	0	3,573	0	303	90	50	2

# Imports

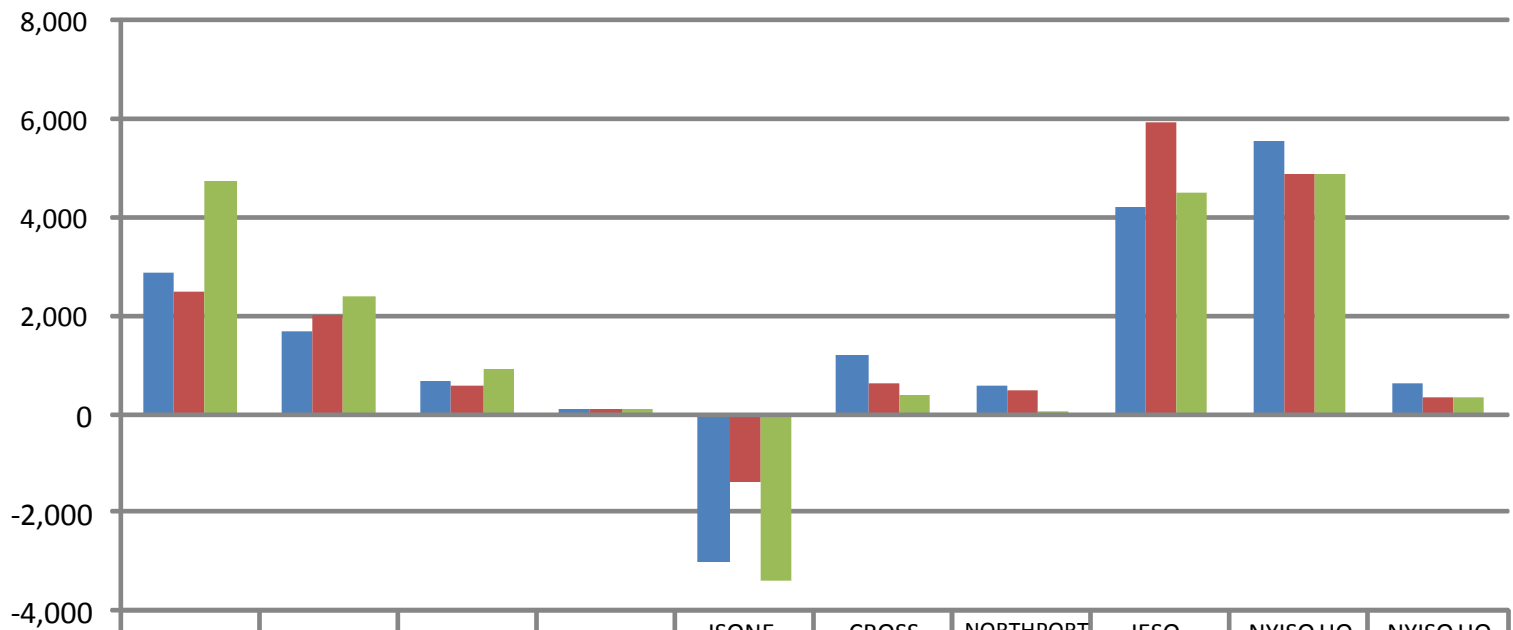
## 2013 YTD Imports (GWh)



	PJM - NYISO	NEPTUNE	LINDEN VFT	HUDSON TP	ISONE-NYISO	CROSS SOUND	NORTHPORT NORWALK	IESO-NYISO	NYISO-HQ CHAT	NYISO-HQ CEDAR
2013 YTD ACTUAL	3,204	1,680	726	110	106	1,207	587	4,255	5,561	635
BASE CASE	3,405	2,023	631	114	320	607	576	5,931	4,913	338
LOAD NAT GAS CASE	5,502	2,394	963	103	200	382	349	4,611	4,913	338

# Net Interchange

## 2013 YTD Net Interchange (GWh)



	PJM - NYISO	NEPTUNE	LINDEN VFT	HUDSON TP	ISONE-NYISO	CROSS SOUND	NORTHPORT NORWALK	IESO-NYISO	NYISO-HQ CHAT	NYISO-HQ CEDAR
2013 YTD ACTUAL	2,872	1,680	676	110	-3,010	1,207	563	4,213	5,543	631
BASE CASE	2,507	2,023	597	114	-1,365	607	502	5,915	4,863	336
LOAD NAT GAS CASE	4,727	2,394	931	103	-3,374	382	46	4,521	4,863	336

# Follow-Up

- ◆ **Model incorporating actual IESO loads and pool-wide natural gas prices yields increased variance in PJM-NYISO flows**
  - *Actual Net Interchange: 2,872 GWh*
  - *Base Case Interchange: 2,507 GWh*
  - *Load/NG Case Interchange: 4,727 GWh*
- ◆ **Additional analysis performed to understand the variance**

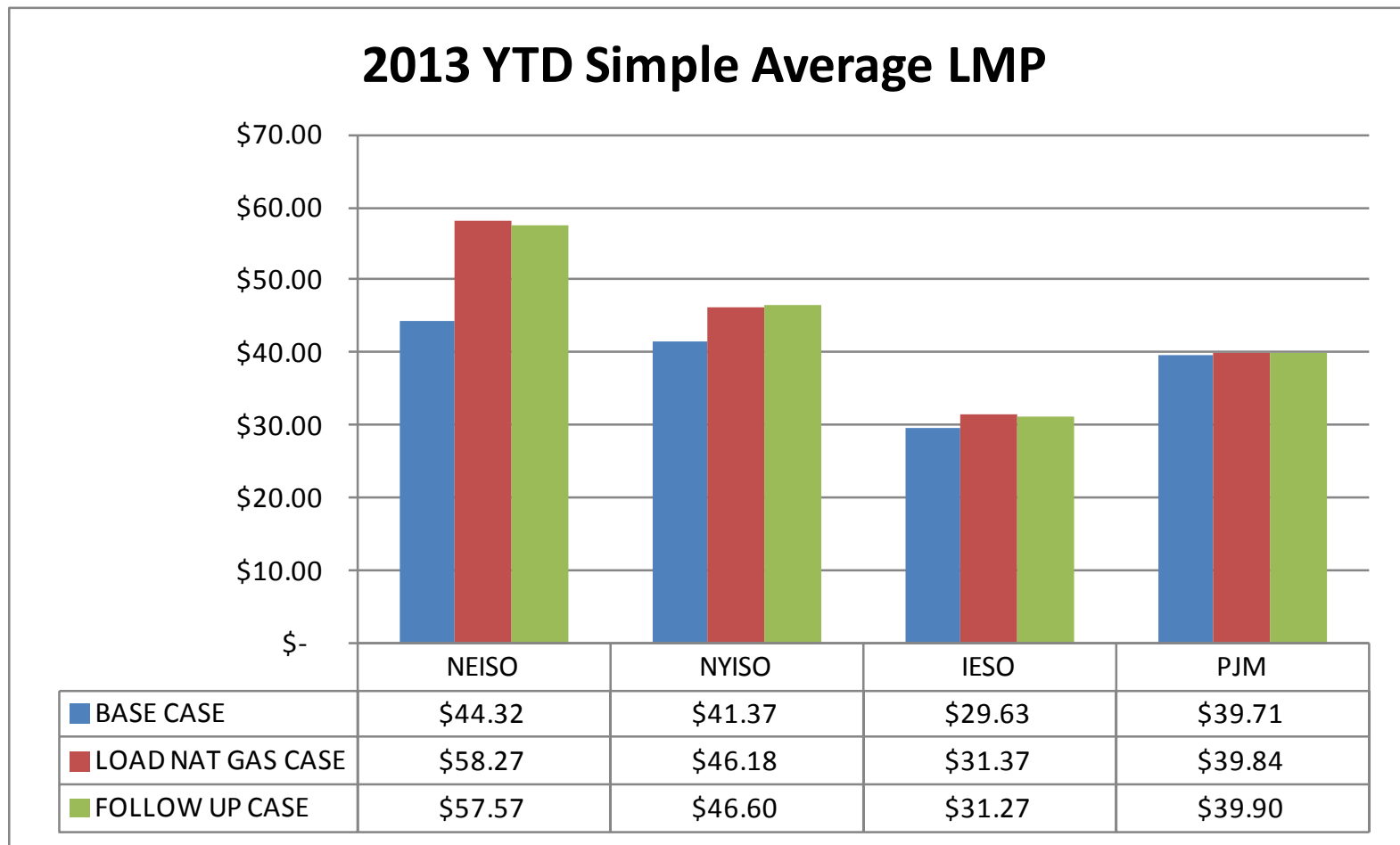
# Follow-Up

- ◆ **PJM – NYISO Interchange**
  - ***Ramapo PAR Outages***
    - PAR 3500 – Jan. 7 to Jan. 18; Apr. 7 – May 15
    - PAR 4500 – Jan. 7 to Jan. 18; Feb. 4 – Ongoing
- ◆ **Long Island Imports**
  - ***Neptune Transformer Outage: 5/27/12 – 7/1/13***
- ◆ **Canadian Imports (HQ, New Brunswick)**
  - ***Hourly Modifiers Based on 2011, YTD 2013 is 1.0 TWh more into NY, 2.3 TWh more into NE***

# Follow-Up: Modeling

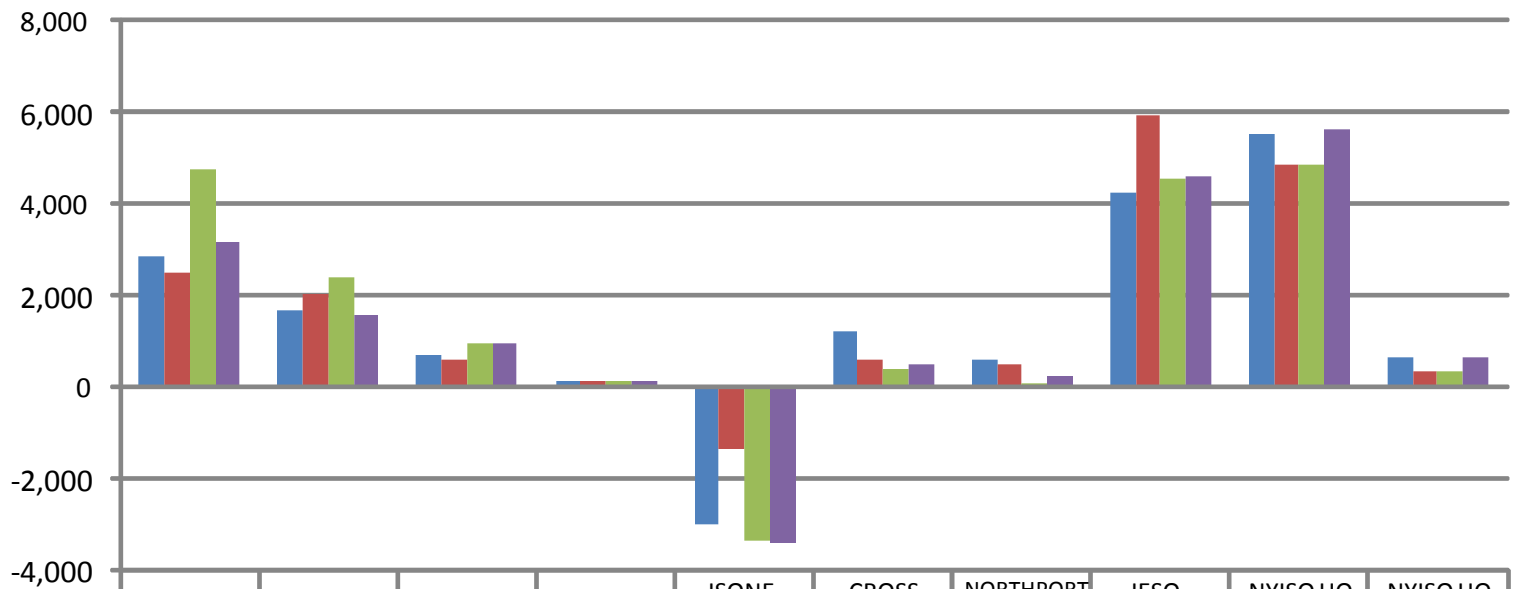
- ◆ **PJM – NYISO Interchange**
  - *Model PAR 4500 Outages as a Branchburg-Ramapo Derate*
  - *Technically Complex to Model the Simultaneous Outage of Both PARs*
- ◆ **Long Island Imports**
  - *Neptune Derate*
- ◆ **Canadian Imports (HQ, New Brunswick)**
  - *Hourly Modifiers Changed to YTD 2013*

# Follow Up Average LBMP



# Follow Up Net Interchange

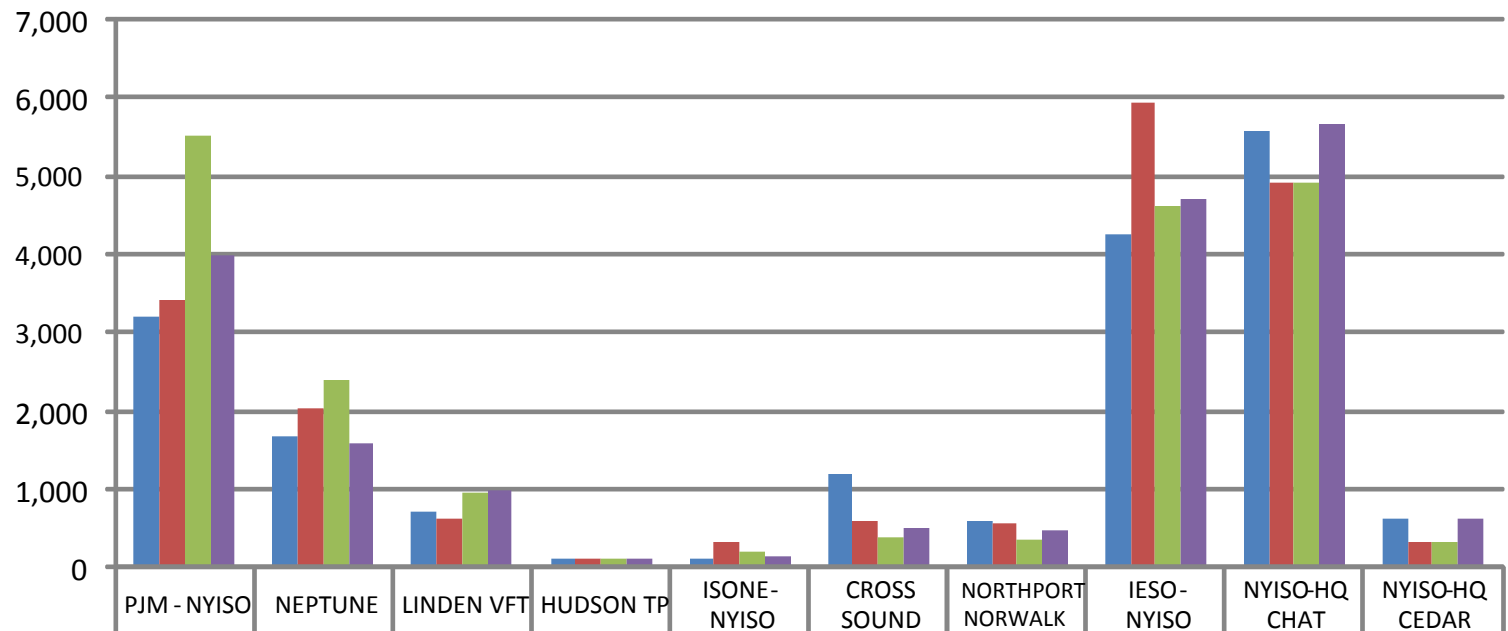
## 2013 YTD Net Interchange (GWh)



	PJM - NYISO	NEPTUNE	LINDEN VFT	HUDSON TP	ISONE-NYISO	CROSS SOUND	NORTHPORT NORWALK	IESO-NYISO	NYISO-HQ CHAT	NYISO-HQ CEDAR
2013 YTD ACTUAL	2,872	1,680	676	110	-3,010	1,207	563	4,213	5,543	631
BASE CASE	2,507	2,023	597	114	-1,365	607	502	5,915	4,863	336
LOAD NAT GAS CASE	4,727	2,394	931	103	-3,374	382	46	4,521	4,863	336
FOLLOW UP CASE	3,182	1,586	932	116	-3,398	498	238	4,609	5,648	632

# Follow Up Imports

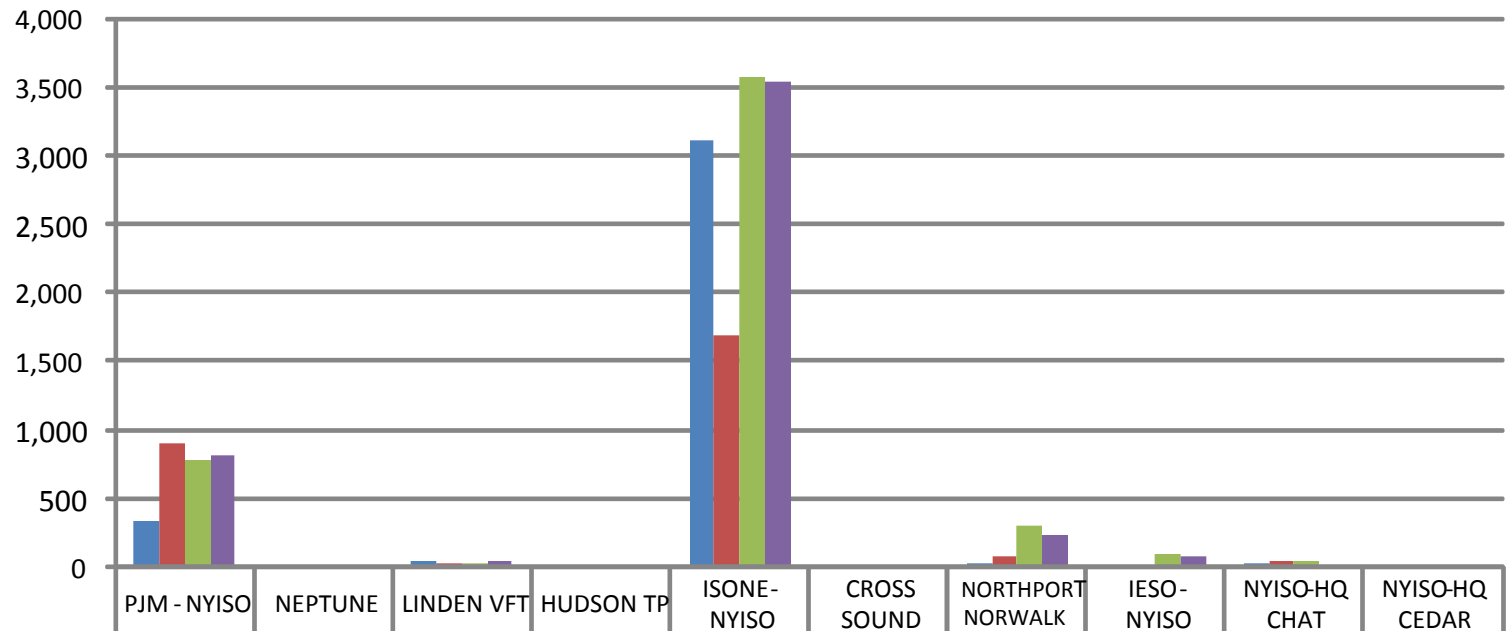
## 2013 YTD Imports (GWh)



	PJM - NYISO	NEPTUNE	LINDEN VFT	HUDSON TP	ISONE-NYISO	CROSS SOUND	NORTHPORT NORWALK	IESO-NYISO	NYISO-HQ CHAT	NYISO-HQ CEDAR
2013 YTD ACTUAL	3,204	1,680	726	110	106	1,207	587	4,255	5,561	635
BASE CASE	3,405	2,023	631	114	320	607	576	5,931	4,913	338
LOAD NAT GAS CASE	5,502	2,394	963	103	200	382	349	4,611	4,913	338
FOLLOW UP CASE	3,996	1,586	983	116	144	498	466	4,690	5,665	636

# Follow Up Exports

## Exports (GWh)



	PJM - NYISO	NEPTUNE	LINDEN VFT	HUDSON TP	ISONE-NYISO	CROSS SOUND	NORTHPORT NORWALK	IESO-NYISO	NYISO-HQ CHAT	NYISO-HQ CEDAR
2013 YTD ACTUAL	331	0	50	0	3,116	0	23	3	18	4
BASE CASE	899	0	35	0	1,685	0	74	16	50	2
LOAD NAT GAS CASE	775	0	32	0	3,573	0	303	90	50	2
FOLLOW UP CASE	814	0	51	0	3,542	0	228	81	17	4

# Conclusions

- ◆ **Modeling Actual Natural Gas Prices caused a decrease in IESO – NY flows because importing from PJM became more desirable.**
- ◆ **Eighty-Three percent (83%) of the difference between modeled and YTD actual PJM flows can be explained by the Ramapo PAR 4500 outages and increased imports from HQ and New Brunswick.**

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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