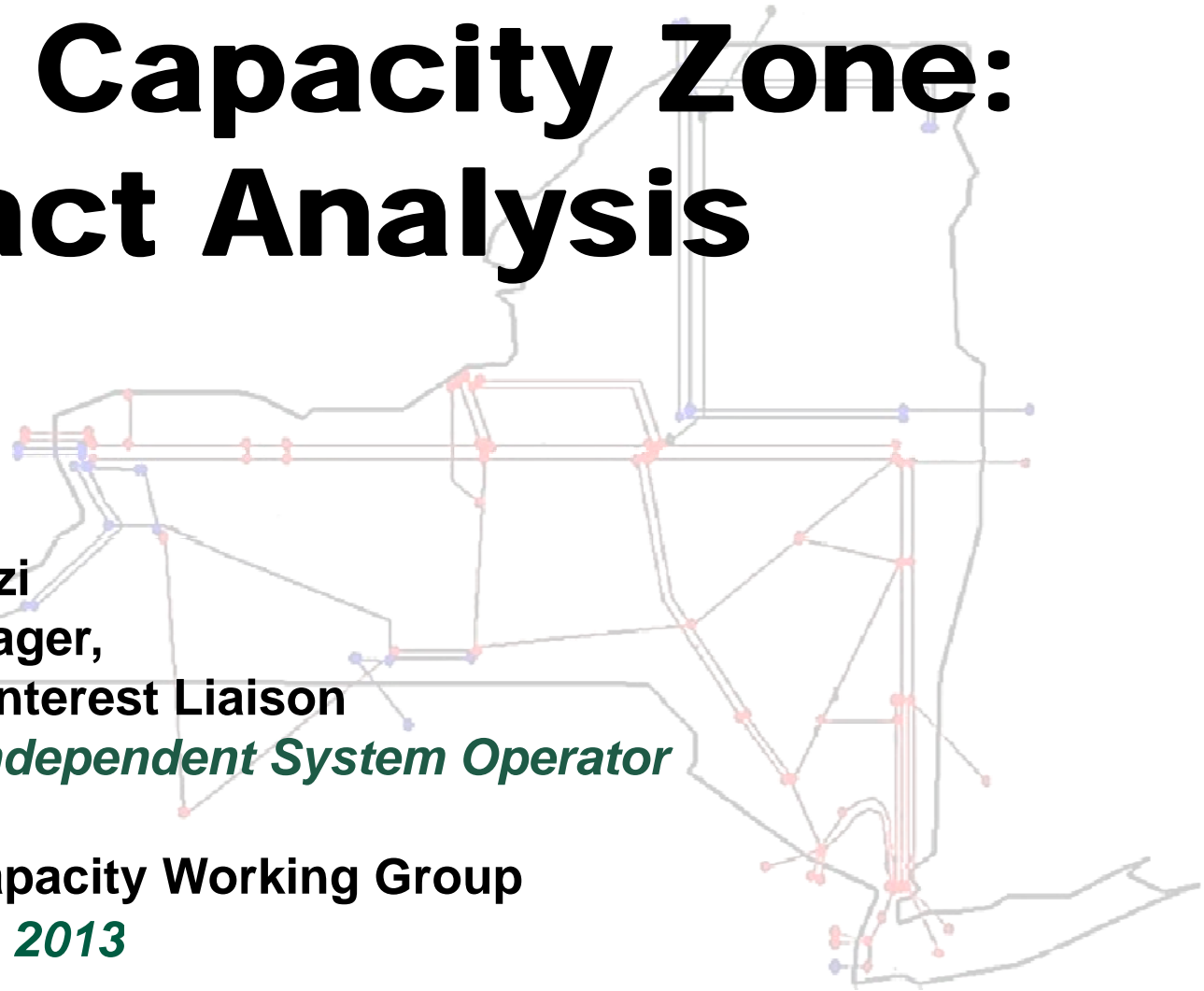


# New Capacity Zone: Impact Analysis

A faint, light-colored map of New York state is overlaid with a complex network of lines and nodes, representing the state's electrical transmission system. The nodes are marked with small colored dots in red, blue, and purple, and the lines represent transmission lines connecting these nodes across the state.

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**Installed Capacity Working Group**  
*January 30, 2013*  
**KCC**

# Proposed Agenda

- ◆ **Background/Overview**
- ◆ **Key Assumptions**
- ◆ **Impact Analysis**
- ◆ **Additional Analysis**
- ◆ **Next Steps**

# Background/Overview

- ◆ **The NYISO’s New Capacity Zone (NCZ) Highway constraint deliverability study (“NCZ Study”) concluded that “The UPNY-SENY Highway interface is bottling 849.2 MW generation from upstream (Zones A through F), thus indicating a need to create a New Capacity Zone.”**
- ◆ **Based on the results of the NCZ Study, the NYISO plans to propose an NCZ which includes Load Zones G, H, and I (“Lower Hudson Valley” or “LHV”)**
- ◆ **Since zones G through K are on the constrained side of the UPNY/SENY interface, the NCZ could be a stand-alone G, H & I zone or could be nested with either Zone J or Zone K or with both Zones J & K.**
- ◆ **This Consumer Impact Analysis looks at the impact on capacity prices of several possible configurations for a new capacity zone**

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# Key Assumptions

- ◆ **Boundary Design**
- ◆ **Demand Curve Slope**

# Boundary Design

- ◆ **We looked at three different zonal designs for the new capacity zone:**
  - *A new capacity zone consisting of Zones G, H & I with only Zone J*
  - *A new capacity zone consisting of Zones G, H & I with Zones J & K*
  - *A new stand-alone LHV capacity zone consisting of only Zones G, H & I*

# Demand Curve Slope

- ◆ **The actual ICAP Demand Curve for the NCZ will be determined as part of the reset process. For the Impact Analysis, we assumed the following three zero crossing points for the new capacity zone:**
  - *A 110%, 112% & 115% zero crossing point*
- ◆ **Similarly, we assumed the following four illustrative reference prices for the new capacity zone:**
  - *The Zone J reference price, the NYCA reference price, the average of the Zone J and NYCA reference prices and 85% of the Zone J reference price*

# Price Impacts

- ◆ **To illustrate potential capacity price impacts, we re-ran the August 2012 monthly capacity auction for the following three boundary designs:**
  - *Zones G, H, I & J (Excludes Zone K)*
  - *Zones G, H, I, J & K (Includes both Zones J & K)*
  - *Zones G,H & I (Stand Alone)*
- ◆ **For all three boundary designs, we looked at 12 scenarios based on three different zero crossing points and at four different reference prices**

# Auction 1:GHIJ Zone (Prior to Removal of Danskammer)

- ◆ **The three tables that follow show the price impacts for the three boundary designs prior to the removal of Danskammer**
- ◆ **Auction 1 show the price impacts for the GHIJ Zone:**
  - *Clearing price would remain unchanged for NYCA and Zone K*
  - *Zone J clearing price would be set by the Zone GHIJ price in some scenarios and would be higher than the actual August 2012 auction price*
  - *The NCZ (GHIJ) price would be significantly higher than the NYCA actual August 2012 auction price*



# Auction 1

## NCZ (Zone GHIJ) Capacity Requirement = 13,604 (Danskammer Included)

Reference Price	Zero Cross	NYCA Clearing Price	NYCA Excess	Zone J Clearing Price	Zone J Excess	Zone K Clearing Price	Zone K Excess	NCZ Clearing Price	NCZ Excess
Original Auction		\$1.90	3401	\$10.64	787.5	\$3.56	608.5	-	-
\$20.94	110%	\$1.90	3401	\$12.58	787.5	\$3.56	608.5	\$12.58	542.8
\$20.94	112%	\$1.90	3401	\$13.98	787.5	\$3.56	608.5	\$13.98	542.8
\$20.94	115%	\$1.90	3401	\$15.37	787.5	\$3.56	608.5	\$15.37	542.8
\$17.80	110%	\$1.90	3401	\$10.70	787.5	\$3.56	608.5	\$10.70	542.8
\$17.80	112%	\$1.90	3401	\$11.88	787.5	\$3.56	608.5	\$11.88	542.8
\$17.80	115%	\$1.90	3401	\$13.07	787.5	\$3.56	608.5	\$13.07	542.8
\$15.42	110%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$9.27	542.8
\$15.42	112%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$10.29	542.8
\$15.42	115%	\$1.90	3401	\$11.32	787.5	\$3.56	608.5	\$11.32	542.8
\$9.90	110%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$5.95	542.8
\$9.90	112%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$6.61	542.8
\$9.90	115%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$7.27	542.8

J Price Change	K Price Change	NCZ Price Change*
18.23%	0.00%	562.11%
31.39%	0.00%	635.79%
44.45%	0.00%	708.95%
0.56%	0.00%	463.16%
11.65%	0.00%	525.26%
22.84%	0.00%	587.89%
0.00%	0.00%	387.89%
0.00%	0.00%	441.58%
6.39%	0.00%	495.79%
0.00%	0.00%	213.16%
0.00%	0.00%	247.89%
0.00%	0.00%	282.63%

Notes:

- (1) \$20.94 is the Zone J UCAP reference price
- (2) \$17.80 is 85% of the Zone J UCAP reference price
- (3) \$15.42 is the average of the ROS and Zone J UCAP reference prices
- (4) \$9.90 is the ROS UCAP reference price

\*NCZ Price Change from NYCA

2013 Zero Crossings

J = K= 118%

ROS =112%

## Auction 2:GHIJK Zone (Prior to Removal of Danskammer)

- ◆ **Auction 2 shows the price impacts for the GHIJK Zone:**

- *Clearing price would remain unchanged for NYCA*
- *Zone J clearing price would remain the same as the actual August 2012 auction price in each scenario save one*
- *Zone K price would be set by the Zone GHIJK price and would be higher than the actual August 2012 auction price*
- *The NCZ (GHIJK) price would be higher than the NYCA actual August 2012 auction price but not as high as Auction 1.*

# Auction 2

## NCZ (Zone GHIJK) Capacity Requirement = 18,565.1-- (Danskammer Included)

Reference Price	Zero Cross	NYCA Clearing Price	NYCA Excess	Zone J Clearing Price	Zone J Excess	Zone K Clearing Price	Zone K Excess	NCZ Clearing Price	NCZ Excess
Original Auction		\$1.90	3401	\$10.64	787.5	\$3.56	608.5	-	-
\$20.94	110%	\$1.90	3401	\$10.64	787.5	\$7.95	608.5	\$7.95	1151.3
\$20.94	112%	\$1.90	3401	\$10.64	787.5	\$10.12	608.5	\$10.12	1151.3
\$20.94	115%	\$1.90	3401	\$12.28	787.5	\$12.28	608.5	\$12.28	1151.3
\$17.80	110%	\$1.90	3401	\$10.64	787.5	\$6.76	608.5	\$6.76	1151.3
\$17.80	112%	\$1.90	3401	\$10.64	787.5	\$8.60	608.5	\$8.60	1151.3
\$17.80	115%	\$1.90	3401	\$10.64	787.5	\$10.44	608.5	\$10.44	1151.3
\$15.42	110%	\$1.90	3401	\$10.64	787.5	\$5.86	608.5	\$5.86	1151.3
\$15.42	112%	\$1.90	3401	\$10.64	787.5	\$7.45	608.5	\$7.45	1151.3
\$15.42	115%	\$1.90	3401	\$10.64	787.5	\$9.04	608.5	\$9.04	1151.3
\$9.90	110%	\$1.90	3401	\$10.64	787.5	\$3.76	608.5	\$3.76	1151.3
\$9.90	112%	\$1.90	3401	\$10.64	787.5	\$4.78	608.5	\$4.78	1151.3
\$9.90	115%	\$1.90	3401	\$10.64	787.5	\$5.81	608.5	\$5.81	1151.3

J Price Change	K Price Change	NCZ Price Change*
0.00%	123.31%	318.42%
0.00%	184.27%	432.63%
15.41%	244.94%	546.32%
0.00%	89.89%	255.79%
0.00%	141.57%	352.63%
0.00%	193.26%	449.47%
0.00%	64.61%	208.42%
0.00%	109.27%	292.11%
0.00%	153.93%	375.79%
0.00%	5.62%	97.89%
0.00%	34.27%	151.58%
0.00%	63.20%	205.79%

**Notes:**

- (1) \$20.94 is the Zone J UCAP reference price
- (2) \$17.80 is 85% of the Zone J UCAP reference price
- (3) \$15.42 is the average of the ROS and Zone J UCAP reference prices
- (4) \$9.90 is the ROS UCAP reference price

2013 Zero Crossings  
 J - K- 118%  
 ROS =112%

NCZ Price Change from NYCA

## Auction 3:GHI Zone (Prior to Removal of Danskammer)

- ◆ **Auction 3 shows the price impacts for the GHI Zone:**

- *Clearing price would remain unchanged for NYCA, Zone J and Zone K*
- *The NCZ (GHI) price would be significantly higher than the price in Auction 1 and Auction 2*

# Auction 3

## NCZ(Zone GHI) Capacity Requirement = 4,707.1 -- (Danskammer Included)

Reference Price	Zero Cross	NYCA Clearing Price	NYCA Excess	Zone J Clearing Price	Zone J Excess	Zone K Clearing Price	Zone K Excess	NCZ Clearing Price	NCZ Excess
Original Auction		\$1.90	3401	\$10.64	787.5	\$3.56	608.5	-	-
\$20.94	110%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$31.83	-244.7
\$20.94	112%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$30.01	-244.7
\$20.94	115%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$28.20	-244.7
\$17.80	110%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$27.05	-244.7
\$17.80	112%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$25.51	-244.7
\$17.80	115%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$23.97	-244.7
\$15.42	110%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$23.44	-244.7
\$15.42	112%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$22.10	-244.7
\$15.42	115%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$20.76	-244.7
\$9.90	110%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$15.05	-244.7
\$9.90	112%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$14.19	-244.7
\$9.90	115%	\$1.90	3401	\$10.64	787.5	\$3.56	608.5	\$13.33	-244.7

J Price Change	K Price Change	NCZ Price Change*
0.00%	0.00%	1575.26%
0.00%	0.00%	1479.47%
0.00%	0.00%	1384.21%
0.00%	0.00%	1323.68%
0.00%	0.00%	1242.63%
0.00%	0.00%	1161.58%
0.00%	0.00%	1133.68%
0.00%	0.00%	1063.16%
0.00%	0.00%	992.63%
0.00%	0.00%	692.11%
0.00%	0.00%	646.84%
0.00%	0.00%	601.58%

**Notes:**

- (1) \$20.94 is the Zone J UCAP reference price
- (2) \$17.80 is 85% of the Zone J UCAP reference price
- (3) \$15.42 is the average of the ROS and Zone J UCAP reference prices
- (4) \$9.90 is the ROS UCAP reference price

2013 Zero  
 Crossings  
 J = K= 118%  
 ROS =112%

NCZ Price Change from NYCA

## Auction 4:GHIJ Zone (After Removal of Danskammer)

- ◆ **The next three tables that follow show the price impacts for the three boundary designs after the removal of Danskammer**
- ◆ **Auction 4 shows the price impacts for the GHIJ Zone without Danskammer:**
  - *Clearing price would remain unchanged for Zone K*
  - *Without Danskammer, total NYCA capacity would be lower and as a result the NYCA price would be higher than the actual August 2012 auction price*
  - *Zone J clearing price would be set by the Zone GHIJ price in most scenarios and would be higher than the actual August 2012 auction price*
  - *The NCZ (GHIJ) price would be significantly higher than the NYCA actual August 2012 auction price*

# Auction 4

## NCZ(Zone GHIJ) Capacity Requirement = 13,604 -- (Danskammer Excluded)

Reference Price	Zero Cross	NYCA Clearing Price	NYCA Excess	Zone J Clearing Price	Zone J Excess	Zone K Clearing Price	Zone K Excess	NCZ Clearing Price	NCZ Excess
Original Auction		\$1.90	3401	\$10.64	787.5	\$3.56	608.5	-	-
\$20.94	110%	\$3.02	2926	\$19.90	787.5	\$3.56	608.5	\$19.90	67.8
\$20.94	112%	\$3.02	2926	\$20.07	787.5	\$3.56	608.5	\$20.07	67.8
\$20.94	115%	\$3.02	2926	\$20.24	787.5	\$3.56	608.5	\$20.24	67.8
\$17.80	110%	\$3.02	2926	\$16.91	787.5	\$3.56	608.5	\$16.91	67.8
\$17.80	112%	\$3.02	2926	\$17.06	787.5	\$3.56	608.5	\$17.06	67.8
\$17.80	115%	\$3.02	2926	\$17.21	787.5	\$3.56	608.5	\$17.21	67.8
\$15.42	110%	\$3.02	2926	\$14.65	787.5	\$3.56	608.5	\$14.65	67.8
\$15.42	112%	\$3.02	2926	\$14.78	787.5	\$3.56	608.5	\$14.78	67.8
\$15.42	115%	\$3.02	2926	\$14.91	787.5	\$3.56	608.5	\$14.91	67.8
\$9.90	110%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$9.41	67.8
\$9.90	112%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$9.49	67.8
\$9.90	115%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$9.57	67.8

J Price Change	K Price Change	NCZ Price Change*
87.03%	0.00%	947.37%
88.63%	0.00%	956.32%
90.23%	0.00%	965.26%
58.93%	0.00%	790.00%
60.34%	0.00%	797.89%
61.75%	0.00%	805.79%
37.69%	0.00%	671.05%
38.91%	0.00%	677.89%
40.13%	0.00%	684.74%
0.00%	0.00%	395.26%
0.00%	0.00%	399.47%
0.00%	0.00%	403.68%

**Notes:**

- (1) \$20.94 is the Zone J UCAP reference price
- (2) \$17.80 is 85% of the Zone J UCAP reference price
- (3) \$15.42 is the average of the ROS and Zone J UCAP reference prices
- (4) \$9.90 is the ROS UCAP reference price

2013 Zero Crossings

J = K= 118%

ROS =112%

NCZ Price Change from NYCA

# Auction 5:GHIJK Zone (After Removal of Danskammer)

- ◆ **Auction 5 shows the price impacts for the GHIJK Zone without Danskammer:**
  - *Without Danskammer, total NYCA capacity would be lower and as a result the NYCA price would be higher than the actual August 2012 auction price*
  - *Zone K price would be set by the Zone GHIJK price and would be higher than the actual August 2012 auction price*
  - *Zone J price would also be set by the Zone GHIJK price but would not be as high as price in Auction 4*
  - *The NCZ (GHIJK) price would be higher than the NYCA actual August 2012 auction price but not as high as Auction 1.*

# Auction 5

## NCZ(Zone GHIJK) Capacity Requirement = 18,565.1-- (Danskammer Excluded)

Reference Price	Zero Cross	NYCA Clearing Price	NYCA Excess	Zone J Clearing Price	Zone J Excess	Zone K Clearing Price	Zone K Excess	NCZ Clearing Price	NCZ Excess
Original Auction		\$1.90	3401	\$10.64	787.5	\$3.56	608.5	-	-
\$20.94	110%	\$3.02	2926	\$13.31	787.5	\$13.31	608.5	\$13.31	676.3
\$20.94	112%	\$3.02	2926	\$14.58	787.5	\$14.58	608.5	\$14.58	676.3
\$20.94	115%	\$3.02	2926	\$15.85	787.5	\$15.85	608.5	\$15.85	676.3
\$17.80	110%	\$3.02	2926	\$11.32	787.5	\$11.32	608.5	\$11.32	676.3
\$17.80	112%	\$3.02	2926	\$12.40	787.5	\$12.40	608.5	\$12.40	676.3
\$17.80	115%	\$3.02	2926	\$13.48	787.5	\$13.48	608.5	\$13.48	676.3
\$15.42	110%	\$3.02	2926	\$10.64	787.5	\$9.80	608.5	\$9.80	676.3
\$15.42	112%	\$3.02	2926	\$10.74	787.5	\$10.74	608.5	\$10.74	676.3
\$15.42	115%	\$3.02	2926	\$11.68	787.5	\$11.68	608.5	\$11.68	676.3
\$9.90	110%	\$3.02	2926	\$10.64	787.5	\$6.29	608.5	\$6.29	676.3
\$9.90	112%	\$3.02	2926	\$10.64	787.5	\$6.89	608.5	\$6.89	676.3
\$9.90	115%	\$3.02	2926	\$10.64	787.5	\$7.50	608.5	\$7.50	676.3

J Price Change	K Price Change	NCZ Price Change*
25.09%	273.88%	600.53%
37.03%	309.55%	667.37%
48.97%	345.22%	734.21%
6.39%	217.98%	495.79%
16.54%	248.31%	552.63%
26.69%	278.65%	609.47%
0.00%	175.28%	415.79%
0.94%	201.69%	465.26%
9.77%	228.09%	514.74%
0.00%	76.69%	231.05%
0.00%	93.54%	262.63%
0.00%	110.67%	294.74%

**Notes:**

- (1) \$20.94 is the Zone J UCAP reference price
- (2) \$17.80 is 85% of the Zone J UCAP reference price
- (3) \$15.42 is the average of the ROS and Zone J UCAP reference prices
- (4) \$9.90 is the ROS UCAP reference price

NCZ Price Change from NYCA

2013 Zero Crossings

J = K= 118%

ROS =112%

## Auction 6:GHI Zone (After Removal of Danskammer)

- ◆ **Auction 6 shows the price impacts for the GHI Zone without Danskammer:**
  - *Clearing price would remain unchanged for Zone J and Zone K*
  - *Without Danskammer, total NYCA capacity would be lower and as a result the NYCA price would be higher than the actual August 2012 auction price*
  - *The NCZ (GHI) price would be significantly higher than the price in Auction 4 and Auction 5*

# Auction 6

## NCZ(Zone GHI) Capacity Requirement = 4,707.1 -- (Danskammer Excluded)

Reference Price	Zero Cross	NYCA Clearing Price	NYCA Excess	Zone J Clearing Price	Zone J Excess	Zone K Clearing Price	Zone K Excess	NCZ Clearing Price	NCZ Excess
Original Auction		\$1.90	3401	\$10.64	787.5	\$3.56	608.5	-	-
\$20.94	110%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$52.96	-719.7
\$20.94	112%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$47.62	-719.7
\$20.94	115%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$42.28	-719.7
\$17.80	110%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$45.02	-719.7
\$17.80	112%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$40.48	-719.7
\$17.80	115%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$35.94	-719.7
\$15.42	110%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$39.00	-719.7
\$15.42	112%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$35.07	-719.7
\$15.42	115%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$31.14	-719.7
\$9.90	110%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$25.04	-719.7
\$9.90	112%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$22.51	-719.7
\$9.90	115%	\$3.02	2926	\$10.64	787.5	\$3.56	608.5	\$19.99	-719.7

J Price Change	K Price Change	NCZ Price Change*
0.00%	0.00%	2687.37%
0.00%	0.00%	2406.32%
0.00%	0.00%	2125.26%
0.00%	0.00%	2269.47%
0.00%	0.00%	2030.53%
0.00%	0.00%	1791.58%
0.00%	0.00%	1952.63%
0.00%	0.00%	1745.79%
0.00%	0.00%	1538.95%
0.00%	0.00%	1217.89%
0.00%	0.00%	1084.74%
0.00%	0.00%	952.11%

**Notes:**

- (1) \$20.94 is the Zone J UCAP reference price
- (2) \$17.80 is 85% of the Zone J UCAP reference price
- (3) \$15.42 is the average of the ROS and Zone J UCAP reference prices
- (4) \$9.90 is the ROS UCAP reference price

2013 Zero Crossings

J = K= 118%

ROS =112%

\*LHV Price Change vs ROS

# Additional Analysis

- ◆ **Present a forward looking analysis on capacity prices**
- ◆ **Present the expected impact on reliability, the environment and the impact on transparency**

# Next Steps

- ◆ **Present Additional Analysis to the ICAP Working Group**
- ◆ **Report to BIC**
- ◆ **Report to MC**

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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