

July 29, 2010

Via Electronic Delivery

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: *New York Independent System Operator, Inc.*, Docket No. ER06-1014-____
Eighth Price Validation Informational Report

Dear Ms. Bose:

Pursuant to Ordering Paragraph (B) of the Commission's January 14, 2006 order ("January 14 Order") in the above-captioned proceeding,¹ the New York Independent System Operator, Inc. ("NYISO") respectfully submits this Price Validation Informational Report ("Report"), which details the corrections that the NYISO has made to erroneous locational based marginal prices ("LBMPs") from the period January 1, 2010 through June 30, 2010, as well as actions the NYISO has taken to minimize pricing errors.

Due to the NYISO's continued efforts, conducted in collaboration with its stakeholders, price errors and the need for price corrections continue to be infrequent and to decline. In 2005, the NYISO corrected prices in approximately 16% of hours. In 2006, that number was reduced to approximately 3% of hours. In 2007, the number was further reduced to approximately 1% of hours. In 2008, the percentage of hours containing price errors continued to decline to approximately 0.7%. In 2009 the percentage of hours corrected was 0.3%. And in the first half of 2010 the percentage of hours corrected was 0.3%. The trend has been one of consistent improvement to a very high level of pricing performance.

I. Background

In its January 14 Order, the Commission conditionally accepted proposed revisions to the NYISO's tariffs to eliminate its Temporary Extraordinary Procedures ("TEPs") and establish a framework and time limits for price corrections outside of the TEPs. In that order, the Commission required the NYISO to submit informational reports every six months thereafter that indicate the causes of pricing errors that occurred during the reporting period, the duration and rate impact of those errors and the associated corrections, and the actions the NYISO took to correct the pricing errors. In addition, the Commission directed the NYISO to summarize and

¹ *New York Independent System Operator, Inc.*, 116 FERC ¶ 61,037 (2006).

discuss what actions it undertook during the preceding six months to reduce or eliminate the types of price errors that occurred.

This is the eighth Report submitted in compliance with the January 14 Order.² This Report details all of the price corrections the NYISO made for the period January 1, 2010, through June 30, 2010, in its Real-Time Market.³ There were no day-ahead market price corrections during the reporting period. The Report identifies the causes of each pricing error, the number of Real-Time Dispatch (“RTD”) intervals affected,⁴ and the amount by which each corrected price was changed. In addition, the Report describes the measures taken by the NYISO to minimize the incidence of pricing errors and to improve its price validation and correction practices. Attachments A and B to this Report detail the Real-Time Market price corrections for the period January 1, 2010 through June 30, 2010.

II. Communications and Correspondence

Communications regarding this filing should be directed to:

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III. Service

The NYISO has served a copy of this filing on the official service list compiled by the Secretary in this proceeding. In addition, the complete filing will be posted on the NYISO’s website at www.nyiso.com. The NYISO will also make a paper copy available to any interested party that requests one.

² The NYISO submitted the prior reports to the Commission on January 31, 2007, January 31, 2007, January 31, 2008, August 1, 2008, January 31, 2010, January 31, 2010 and January 29, 2010 respectively.

³ The Real-Time Market is defined as the “ISO-administered markets for Energy and Ancillary Services, resulting from the operation of the RTC [Real-Time Commitment] and RTD [Real-Time Dispatch]” models. OATT at § 1.36f; Services Tariff at § 2.155. While the NYISO corrects prices in the hour-ahead market, as necessary, that “market” consists of only advisory prices that are not used in NYISO settlements. Furthermore, the NYISO has corrected relatively few advisory prices during the period covered by this Report.

⁴ RTD intervals normally occur every five minutes.

IV. Report Details

A. Types and Causes of Pricing Errors

Attachment Q of the OATT and Attachment E of the Market Services Tariff define two types of price errors.⁵ The first type of error (“Type I”) results from a simple miscalculation and can reflect a software programming error or a failure of the software to produce an accurate price calculation. The second type of error (“Type II”) results when a price is based on an incorrect price-setting resource.

The NYISO classifies pricing errors at two levels. The first level is the type of error, as described above. The second level provides a more detailed description of the underlying cause of the error. The NYISO recognizes eight second-level error classifications, as follows:

- 1 - Posting Error** - Posting errors occur when prices do not properly post on NYISO’s website. These include instances when prices posted incorrectly or did not post at all.
- 2 - Indeterminacy / Penalty or Shift Factor Trade-offs** - Indeterminacies occur when the pricing solution cannot be tied to a specific resource. Penalty and shift factor trade-offs are dispatch schedules that are mathematically correct but inconsistent with actual operating practices or procedures.
- 3 - Static Data Error** - Static data errors are instances when incorrect non-metered data are used in the pricing and scheduling system software.
- 4 - Computer System Failure** - Computer system failures include all IT hardware systems used in compiling data, and calculating and posting prices.
- 5 - Software Error** - Software errors are programming errors in the computer code that is used in the commitment, dispatch and price calculation processes.
- 6 - Telemetry** - Telemetry issues are caused by problems in the metering, compilation and conveyance of meter data from generators, loads, tie lines and phase angle regulators to the NYISO.
- 7 - Prices Inconsistent with Dispatch / No Marginal Unit** - Errors here are the result of the unit dispatch and pricing not being consistent. Also included are instances when no marginal unit can be identified.
- 8 - Operator Input** - Operator input errors occur when the system operator enters an erroneous value that results in incorrect pricing.

⁵ See OATT, Attachment Q at §§ A(i)-(ii); Services Tariff, Attachment E at §§ A(i)-(ii).

B. Discussion of Pricing Errors from January through June 2010

The NYISO has conducted an analysis of its Real-Time Market from January through June 2010 to determine the number of intervals and hours that required price corrections, as well as the causes of the underlying price errors. Table 1-A below provides a count of hours corrected by month in the Real-Time Market.

Table 1-A
RTD Hours Corrected
January - June 2010

2010	Hours		
	Corrected	Total	% Corrected
January	3	744	0.40%
February	0	672	0.00%
March	2	744	0.27%
April	3	720	0.42%
May	2	744	0.27%
June	3	720	0.42%
Total	13	4,344	0.30%

As shown above, the NYISO corrected prices in only 0.3% of the hours in the first half of 2010. It should be noted that any hour that had at least one interval corrected is included in this tabulation. During this period, one month, February, had no price corrections.

Table 1-B below provides a compilation, by month, of the number of RTD intervals corrected from January through June of 2010. As would be expected, the percentage of intervals corrected is significantly less than the percentage of hours corrected because not all intervals in a corrected hour require correction.

Table 1-B
RTD Intervals Corrected
January - June 2010

2010	Intervals		
	Corrected	Total	% Corrected
January	4	8,934	0.04%
February	0	8,057	0.00%
March	7	8,913	0.08%
April	4	8,640	0.05%
May	4	8,946	0.04%
June	25	8,660	0.29%
Total	44	52,150	0.08%

For the period January through June 2010 there were 44 RTD intervals corrected for a correction rate of 0.08%. One month (February) had no corrections. The highest interval correction rate of 0.29% occurred in June, while the remaining five months had a correction rate under 0.1%. Of the 25 intervals corrected in June, all but one interval, accounting for nearly

55% of the total number of intervals corrected, were for an external proxy generator at the HQ interface.

The price corrections from January through June 2010 were classified by error type and error description for both hours and intervals. Table 2 provides the distribution of price corrections by month between the error types (Type I or Type II).

As Table 2 shows, most (57%) of the RTD interval price corrections in the first half of 2010 were Type I - Calculation Errors that occurred in April and June. All of these errors were caused by posting problems that resulted in the failure to apply special pricing rules for external interfaces. The remaining nineteen intervals were Type II errors. On an hourly basis, only 23% of the corrections were for Type I errors.

Table 2
RTD Price Correction Error Types
January - June 2010

2010	Intervals		Hours	
	Type I	Type II	Type I	Type II
January	-	4	-	3
February	-	-	-	-
March	-	7	-	2
April	1	3	1	2
May	-	4	-	2
June	24	1	2	1
Total	25	19	3	10

Table 3 presents a summary of RTD interval price corrections classified by reason for the second half of 2010.

Table 3
January - June 2010
RTD Interval Price Corrections by Reason

Reason	Jan	Feb	Mar	Apr	May	Jun	Total
1 - Posting Error	-	-	-	1	-	24	25
2 - Indeterminacy / Penalty or Shift Factor Trade-Off	1	-	-	-	-	-	1
3 - Data Error - Static	-	-	-	-	-	-	0
4 - Computer System Failure	-	-	-	-	-	-	0
5 - Software Error	-	-	6	-	4	-	10
6- Telemetry	-	-	-	-	-	1	1
7 - Prices Inconsistent w/Dispatch / No Marginal Unit	3	-	-	3	-	-	6
8 - Operator Input	-	-	1	-	-	-	1
Total	4	0	7	4	4	25	44

January Price Corrections

There were two separate price corrections in January 2010. The first, on January 7, was for a single interval that had a penalty factor trade-off. The second correction, which spanned three intervals on January 10, was due to the unintended deletion of an Out-of-Merit record for a

generator that did not have a commitment schedule, and hence was scheduled off. The unit continued to operate until its commitment schedule returned.

February Price Corrections

There were no price corrections in February 2010.

March Price Corrections

There were two price corrections in March 2010. The first, on March 5, was due to a software error that applied an incorrect limit that resulted in extreme pricing for six intervals in one hour. The second price correction, on March 6, was due to an operator error resulting in an incorrect limit being used for a single interval.

April Price Corrections

In April 2010 there were two price corrections. The first, on April 11, was due to a software error that resulted in a single interval posting failure of generator (not zonal) prices. The second correction, on April 28, was caused by an incorrect generator unit status that resulted in improper schedules for the unit. This error existed for three intervals and spanned two hours.

May Price Corrections

May 2010 had one day with RTD price corrections with four affected intervals over two hours. The problem was due to a change in load forecast coefficients that generated erroneous forecasts.

June Price Corrections

In June 2010 there were three days with price corrections totaling twenty-five intervals and three hours. The first of the price corrections was due to a software deployment that resulted in generator (not zonal) prices failing to post. The second price correction was because of a Transmission Owner ICCP problem that resulted in erroneous generator schedules. The last of the June price corrections was due to a software error that caused a posting problem.

C. Correction of Pricing Errors

The overwhelming majority of price corrections occur in the Real-Time Market. When erroneous prices are found, there are a number of ways they can be corrected. NYISO uses the following seven correction modes for erroneous LBMPs:

1. Replace with a preceding or subsequent interval's price
2. Average the preceding and subsequent interval prices
3. Replace with a preceding interval's advisory price
4. Substitute erroneous LBMP with price from a similar bus

5. Recalculate prices
6. Replace with another market's prices (RTC or SCUC)
7. Repost missing prices

In accordance with NYISO's Market Services Tariff, price corrections must accurately reflect actual system conditions. A correction mode that is appropriate for an error in one circumstance may not be appropriate for the same error in another circumstance due, for example, to different commitment schedules, constraint patterns or external schedules. When pricing errors are found, the NYISO conducts an evaluation of the system conditions in the erroneous pricing interval, and uses a correction mode that most accurately reflects those conditions. The determining factor is how closely the final price reflects the state of the system during the erroneous pricing interval.

D. Impact of Price Corrections

The impact of price corrections on zonal LBMPs was evaluated for the period January through June 2010. In this evaluation, the average change in LBMP was calculated for each month using zonal prices in the Real-Time Market. The number of price increases and decreases that resulted from the price corrections was also examined. Tables 4 and 5 present the results of this analysis.

Table 4
Average Zonal Price Change
January - June 2010

	Jan	Feb	Mar	Apr	May	Jun
CAPITAL	-585.62	-	-267.60	-0.50	71.74	-358.45
CENTRAL	-542.21	-	-109.85	28.24	70.31	-326.71
DUNWOODIE	-599.22	-	-228.24	9.23	74.72	-360.56
GENESEE	-523.54	-	-101.54	28.40	70.72	-315.01
HUDSON VALLEY	-595.96	-	-227.53	9.42	73.99	-359.31
LONG ISLAND	-571.70	-	-230.41	11.08	76.38	-365.49
MILLWOOD	-597.85	-	-229.16	9.03	74.31	-359.59
MOHAWK VALLEY	-575.66	-	-115.10	30.28	71.06	-303.91
NEW YORK CITY	-603.36	-	-228.91	7.55	75.80	-359.36
NORTH	-508.16	-	-85.07	30.55	66.27	12.51
WEST	-495.41	-	-104.36	26.66	72.25	-301.54
HQ	-510.68	-	-85.08	31.45	66.55	-32.11
NPX	-585.93	-	-250.30	3.96	72.22	-42.07
OH	-468.67	-	-97.20	25.86	71.16	-36.36
PJM	-531.70	-	-178.97	15.36	71.56	-36.62

Table 5
Zonal Price Change Count (Increase/Decrease)
January - June 2010

	Jan		Feb		Mar		Apr		May		Jun		Total	
	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease	Increase	Decrease
CAPITAL	0	4	0	0	0	7	1	2	2	2	0	1	3	16
CENTRAL	0	4	0	0	3	4	2	1	2	2	0	1	7	12
DUNWOODIE	0	4	0	0	0	7	1	2	2	2	0	1	3	16
GENESEE	0	4	0	0	3	4	2	1	2	2	0	1	7	12
HUDSON VALLEY	0	4	0	0	0	7	1	2	2	2	0	1	3	16
LONG ISLAND	1	3	0	0	0	7	1	2	2	2	0	1	4	15
MILLWOOD	0	4	0	0	0	7	1	2	2	2	0	1	3	16
MOHAWK VALLEY	0	4	0	0	3	4	2	1	2	2	0	1	7	12
NEW YORK CITY	0	4	0	0	0	7	1	2	2	2	0	1	3	16
NORTH	1	3	0	0	3	4	2	1	2	2	1	0	9	10
WEST	0	4	0	0	3	4	2	1	2	2	0	1	7	12
HQ	1	3	0	0	3	4	2	1	2	2	0	13	8	23
NPX	0	4	0	0	0	7	1	2	2	2	0	13	3	28
OH	0	4	0	0	3	4	2	1	2	2	0	13	7	24
PJM	0	4	0	0	0	7	2	1	2	2	0	13	4	27
Total	3	57	0	0	21	84	23	22	30	30	1	62	78	255

As can be seen in Table 4, the average zonal price changes were quite high in January, March and June. The January average change was driven by one interval (07 Jan 2010, 16:55) whose corrected price was over \$2000 less than the original price. Coupled with the fact that there were only four intervals corrected in January, this single interval had a large impact. The average change in March was -\$170, while the average change in June was -\$236. Given the limited number of price corrections, the impact of a few large corrections was substantial. As shown in Table 5, there were a total of 333 zonal interval prices corrected. Of these, 78 zonal interval prices (23.4%) were increased and 255 (76.6%) were decreased.

E. Price Correction Mitigation Initiatives

The NYISO's efforts to improve initial price accuracy have successfully maintained a high level of price accuracy in 2010. This continued success is due to the NYISO's commitment to identifying pricing problems, thoroughly evaluating these problems, and developing, where possible, solutions to mitigate these problems. These efforts have dramatically reduced pricing errors since 2006.

For the January through June 2010 reporting period the NYISO has initiated a number of efforts - both institutional (e.g., software enhancements) and operational - to revise and develop strategies and procedures to mitigate pricing errors. Among the measures undertaken during the reporting period are:

- The Integrated Source Selection (ISS), an automated system that screens telemetry and switches to alternate metering sources when erroneous values are found, has been enhanced to expand and improve monitoring of interfaces and load pockets. A generalized degrade feature has been added to include, where available, a third metering source.
- A 3-Way comparison for SCADA metering, State Estimator and RTD for zonal loads, sub-zonal loads and interface flows has been enhanced by adding individual timers.

- On-going operator training has an enhanced curriculum to focus on the identification and response to pricing problems.
- The NYISO has continued to enhance its network model to improve its performance in the scheduling systems.

V. Conclusion

WHEREFORE, the New York Independent System Operator, Inc., respectfully requests that the Commission accept this informational report.

Respectfully submitted,

/s/ Mollie Lampi

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 29th day of July, 2010

/s/ Joy A. Zimmerlin

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