

**Evaluation of
NYISO Virtual Trading Collateral Multiple Policy**

**Prepared by
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I. INTRODUCTION

In general terms, the NYISO credit risk associated with the activities of virtual traders is that they may enter into transactions in the day-ahead market that will result in losses, which they will be unable or unwilling to cover. In the case of virtual traders submitting virtual supply offers to sell power in the day-ahead market, it is the risk that unanticipated changes in market conditions between the time the offers are submitted and real-time will require that the virtual supply positions be covered with purchases from the real-time spot market at real-time prices that are much higher than the day-ahead price at which the virtual trader sold power, resulting in losses that cannot be covered by the virtual trader. Conversely, in the case of virtual traders submitting virtual demand bids to buy power in the day-ahead market, it is the risk that unanticipated changes in market conditions will require that the trader sell power purchased in the day-ahead market at real-time prices that are lower than day-ahead prices, resulting in losses. Offsetting these potential credit risks associated with the participation of virtual traders in the day-ahead market is a variety of benefits to the overall market from the participation of virtual traders.

Because of the very short-term nature of the price movements with which virtual trading credit issues are concerned, the source of the price movements resulting in virtual trading losses is unlikely to be changes in the broad economy that might be correlated with other elements of a trader's financial position. Instead, price movements generating virtual trading losses are likely to be driven by short-term events such as generator outages, electric transmission outages, interruptions or unanticipated imbalances in gas supply, and load forecast errors.

An important factor impacting the appropriate level of collateral requirements for virtual trading is the time lags in the NYISO market and in the NYISO process for adjusting the collateral required of virtual traders. There are time lags between the time that bids and offers are submitted in the day-ahead market and the time that prices in the real-time market for the operating day are determined; between the time that virtual trading losses are incurred and the time that the NYISO reviews trader positions and requires additional collateral, and another time lag before additional collateral must be posted. As a result, there is a potential for a virtual trader to have locked in losses for several days before revised collateral requirements would be applied and additional collateral required. The collateral requirement therefore needs not only to protect the NYISO's market participants against single-day virtual trading losses resulting in default but also against losses accruing over multiple days before the collateral requirement is adjusted.

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The current NYISO credit policy for virtual traders is based on allowing virtual traders to choose the MW limit on their daily virtual trading positions and then requiring coverage for each MW equal to two times the highest spread between the absolute value of the day-ahead and integrated real-time energy market prices in any zone of the NYCA at the 97th percentile over the prior 90 days during the on-peak hours.² By this, it is meant that the collateral requirement is set so that 97% of the absolute value of virtual trading returns would be less than this threshold over that 90-day period. This collateral requirement therefore limits the size of positions that individual virtual traders can take in each day-ahead market. In addition to requiring that virtual traders post collateral, the NYISO tariffs provide for monitoring of the trading position of virtual traders and to require payment or the posting of additional collateral any time losses rise to 50% of the posted collateral. If the NYISO notifies a trader that additional collateral is required, the virtual trader has until 4:00 p.m. on the following business day (i.e., the business day following notification by the NYISO) to post the required additional collateral. If the additional collateral is not posted by 4:00 p.m., permission to engage in virtual trading may then be suspended by the NYISO.

One element of the appropriate collateral requirement for virtual trading in the NYISO administered markets is the determination of an appropriate multiple to account for the possibility that the collateral will need to cover more than one day's trading losses. This role of the collateral multiple in the overall NYISO collateral policy reflects a somewhat distinctive feature of collateral for virtual trading in day-ahead electricity markets. This distinctive feature is that the collateral does not cover positions arising from a single day's trades, but rather must cover potential losses on positions taken over several days. It will be shown below that under the current market, collateral call and collateral posting timelines, the NYISO two-day multiple must cover potential trading losses over periods of up to four on-peak trading days and as many as six total trading days (with some of these days being off-peak weekends). Holidays falling on Monday or Friday can occasionally result in even longer periods.

II. NYISO COLLATERAL MULTIPLE

The appropriate multiple for the NYISO virtual trading credit requirement (i.e., the multiple that is applied to the one-day loss threshold to determine the total collateral requirement) is a distinct component of the NYISO's virtual trading collateral policy. As observed in the introduction, there are a number of conflicting considerations that affect the appropriate virtual trading credit multiple.

² The tariff states that "The amount of collateral required per MWh is equal to two times the highest differential between the Day-Ahead and Real-Time Energy market prices in the NYCA at the 97th percentile over the previous 90 days." Services Tariff Attachment K Section VI Sheet 505; OATT Attachment W Section VI. Addendum A explains that the price difference calculation is to be based on the on-peak prices in any of the zones; thus, the price difference is calculated for each zone for each hour and the largest difference in any zone for the hour is used to define the threshold. Subsequent to the completion of this analysis, the FERC ordered the NYISO to base its determination of the collateral threshold on the distribution of returns during all hours, including the less volatile off-peak hours.

The first consideration is the timing structure of NYISO day-ahead and real-time markets. Because of the timing of the day-ahead market close, 5:00 a.m. the day before the operating day, a virtual trader could potentially lock in multiple days of losses before the first day's losses would be observed by the NYISO and the trader's collateral requirements adjusted accordingly. If a virtual trader submitted virtual supply offer at 5:00 a.m. on Day 1 (Figure 1) for the day-ahead market for Day 2, the total losses attributable to the day's virtual trades could not be identified until early on Day 3, by which time the day-ahead market for operating Day 3 would already have cleared and the trader could have taken additional positions. One reason for a collateral multiple is that the market timelines make it impossible for the NYISO to (1) identify virtual traders that have incurred losses; (2) recalculate collateral to identify traders that need to post additional collateral; (3) inform collateral deficient traders of the need to post additional collateral; and (4) allow the trader the time for posting additional collateral specified in the tariff before the virtual trader will submit bids to participate in one or more additional day-ahead markets. In terms of the timing described above, day-ahead market positions for Day 2 entered into at 5:00 a.m. on Day 1 will be settled at the real-time prices determined during Day 2. By 5:00 a.m. on Day 2, bids will have been submitted in the day-ahead market for Day 3 and the resulting positions will typically be known around 9:30 a.m.³ The potential for Day 3 losses will therefore have been locked in well before the results of bids submitted on Day 1, for Day 2, are known to anyone.

Figure 1
Market Times and Collateral Calls

Day 1 Operating Day	Day 2 Operating Day	Day 3 Operating Day	Day 4 Operating Day
5:00 a.m.-9:30 a.m. DAM for Day 2	5:00 a.m.-9:30 a.m. DAM for Day 3	5:00 a.m.-9:30 a.m. DAM for Day 4	5:00 a.m.-9:30 a.m. DAM for Day 5
	Event 10:00 a.m.	Settlements for Day 2	
	Losses	Collateral call for Day 2 Losses	4:00 p.m. Collateral Deadline for Day 2 Losses

³ The tariff requires that day-ahead market schedules be posted by 11:00 a.m. but they are typically posted by around 9:30 a.m.

A second consideration in evaluating the NYISO's collateral multiple is the NYISO's actual mark to market policy for virtual trading. Under current NYISO policies and tariff requirements, as illustrated in Figure 1, the NYISO would not notify a virtual trader of its losses in the real-time market for Day 2 and that additional collateral was required until Day 3, by which time the virtual trader could have taken additional positions in the day-ahead market for Days 3 and 4. Moreover, the current NYISO collateral policies and tariff requirements would not require that any additional collateral be posted until 4:00 p.m. on Day 4, by which time the virtual trader could also have taken positions in the day-ahead market for Day 5.⁴ If such a trader then failed to post collateral at the end of Day 4 because it was unwilling, unable, or insolvent, the NYISO would potentially be exposed to four days of trading losses that would need to be covered by the original posted collateral. These would include the losses incurred on Operating Day 2 which motivated the collateral call, any losses incurred on Operating Days 3 and 4, plus the possible losses on Day 5 which would not yet be known. In addition, since the NYISO issues a collateral call only when losses reach 50% of posted collateral, a virtual trader could in practice have collateral that is only 51% of the 2-day multiple on Day 1, so that if it lost the threshold amount on Day 2, it would have virtually no remaining collateral to cover possible losses on Days 3, 4 and 5.

While the NYISO is potentially exposed under current practices to trading losses over as many as four on-peak trading days, this does not necessarily imply that a four-day multiple would be required to protect against a given probability of uncollateralized losses. This is because the probability that a given trader would incur losses in excess of its daily collateral requirement every day over four days will be lower than the probability of incurring such a loss on a single day. If it were known that virtual trading returns were normally and independently distributed from day to day with a common variance, then the collateral required to protect against a given probability of loss in excess of collateral over four days would be only about twice the collateral required to protect against that level of loss on a single trading day.

There are, however, reasons to anticipate both that virtual trading returns are not independent from day to day and that they are not normally distributed. Consider first the issue of independence. Positions taken in any two successive day-ahead markets (i.e., for the Day 2 and Day 3 markets in Figure 1) are subject to being impacted by a common factor that was not known to the virtual trader, or any other market participant, at the time that those positions were taken and day-ahead prices determined. For example, the forced outage of a large generator occurring at 10:00 a.m. on Day 2 would not be reflected in the day-ahead prices for either Day 2 or Day 3 (because both day-ahead markets would already have occurred), but could have an impact on real-time prices in both markets. Therefore, there is likely to be a correlation in losses across positions taken in such successive day-ahead markets.

⁴ A concern that should be kept in mind is that by 4:00 p.m. on Day 4 the virtual trader would know how its trades in Day 3 had turned out and might know how some of its virtual trades for Day 4 had turned out. Its decision whether to post the required collateral or to default could therefore take into account additional losses that might have been incurred during the Day 3 and Day 4 operating days. While the collateral call is made when losses exceed 50% of collateral, the virtual trader may know that its losses exceed total collateral by the time additional collateral must be posted.

This is important because, as noted earlier, if the probability of incurring virtual trading losses on Day 2 and Day 3 were independent, and if the collateral requirement threshold were defined based on a 1% loss probability, the probability of losing the threshold amount or more on successive days would be relatively small, and the 1% probability loss over the two days would be 1.4 times the single day 1% probability loss. If these losses are not independent, however, but subject to a common influence, then the 1% probability threshold over two days would be between 1.4 and 2 times the single day threshold, depending on the degree of correlation.

It is noteworthy, however, that this potential for correlated losses does not extend to the third and fourth successive day-ahead market (for operating Days 4 and 5 in the example in Figure 1). That is, while the virtual trading returns on Days 2 and 3; 3 and 4; and 4 and 5; have reason to be correlated because of common factors that occurred after the closing of both day-ahead markets and prior to both real-time markets, the virtual trading returns for Days 2 and 4, and 3 and 5 should be independent. The reason for this independence relates to market timing and market efficiency. It will necessarily be the case that events which impose substantial losses on market participants during the real-time market for Day 2, will be known before positions are taken in the day-ahead market for Day 4 which will close at 5:00 a.m. on Day 3. A market surprise that occurred after the close of the day-ahead market for Days 2 and 3 and imposed losses on positions taken in those day-ahead markets (such as a generator outage that occurred during hour 11 on Day 2), would be known and factored into the day-ahead market prices for Day 4.

This is important from a credit standpoint, because it suggests that even if the NYISO does not adjust its collateral requirements at the end of Day 2 before the day-ahead market for Day 4 is run, the availability to the market in general of information regarding the events that imposed such losses on virtual traders during Day 2 would substantially reduce the potential for this same surprise to impose losses on Day 4 positions that would be correlated with the losses on Day 2 and Day 3. These considerations suggest that the 1% probability loss over four days should, in practice, be less than four times the 1% probability loss on a single day, but likely more than twice the single-day loss threshold.

Now consider the issue of normality. There are several reasons to expect that the distribution of virtual trading returns might not be normal. First, the potential profits and losses to virtual supply and virtual demand positions are likely not symmetric. A virtual demand position incurs a trading loss if the real-time price is lower than the price at which power was purchased in the day-ahead market. Since zonal prices in New York are rarely substantially negative in real-time, the potential losses for virtual demand positions are very unlikely to be greater than the day-ahead price. Conversely, however, a virtual supply position incurs a trading loss if the real-time price is higher than the price at which power was sold in the day-ahead market. Since real-time zonal prices can rise to many times the day-ahead price, it cannot be presumed that the potential losses for virtual supply positions are very unlikely to be more than the day-ahead price, they might well be several times the day-ahead price. These considerations suggest that the distribution of returns is likely not symmetric between virtual demand and supply positions (implying that the distribution of returns has more skewness than the normal distribution).

Second, the normal distribution implies a particular shape to the distribution of returns relative to the mean, so that a single statistic, the variance, can describe the entire shape of the distribution, including the probability of events in the tail of the distribution. The normal distribution does not necessarily apply to the distribution of the difference between day-ahead and real-time prices, particularly given the nature of virtual supply returns. The possibility that virtual trading returns are not normally distributed suggests using measures in addition to the calculated standard deviation to measure the dispersion of returns, because the standard deviation may not fully describe the tails of the distribution of returns.

Given the variety of conflicting theoretical possibilities, the historical virtual trading return data provide useful information regarding the actual inter-temporal pattern of loss-producing surprises, the distribution of virtual trading returns and the appropriate multiple. The issue is basically whether there is a correlation across successive day-ahead markets of large virtual trading losses and whether any such correlation tends to end with the second or third day. We have examined this by calculating the distribution of returns across the same hour on multiple days. Several features of NYISO markets and of virtual trading returns affected our approach to this empirical assessment.

First, it is possible that the volatility of virtual trading returns and correlation in losses may vary by zone and time of year. The potential for large differences between day-ahead and real-time prices, which give rise to virtual trading losses could, for example, be related to the zone for which the virtual demand or supply offer applies or the time of year. Similarly, the magnitude of the potential losses may differ between virtual demand bids and virtual supply offers. The analysis of historical virtual trading returns therefore examines possible differences in the correlation in losses over days by region, by month and season, and distinguishing between losses for virtual supply offers and for virtual demand bids.

Second, although the NYISO has been operating and calculating day-ahead and real-time LMP prices since November 1999, there are potential limitations in utilizing some of the historical data for the proposed analysis. First, given the many software changes affecting the determination of real-time prices implemented between November 1999 and the end of July 2000, it would probably not be informative to study the dispersion between day-ahead and real-time prices during this early period. Second, it is anticipated that the implementation of load pocket modeling in New York City beginning in the summer of 2002 may have materially increased the volatility of real-time prices in New York City, potentially making comparisons of day-ahead to real-time price differences in this Zone based on data from the pre-2002 summers unreliable as an indicator of prospective price dispersion. Third, implementation of SMD on February 1, 2005 led to a number of potentially significant changes in the NYISO energy markets, particularly reserve shortage pricing east of Central East, that would likely increase real-time price volatility. These changes impact the reliability of virtual trading return analysis based on data from prior years, as return data from prior periods may understate the current and prospective volatility of virtual trading returns. Fourth, because of the many real-time price corrections and software design changes impacting the February and March 2005 periods, findings regarding the dispersion of virtual trading returns during this period may not generalize to other periods.

While there were *ex ante* reasons to anticipate that there would be greater price volatility in Zone J in the period since June 2002, we found that this does not appear to have been the case.⁵ We have therefore analyzed the pattern of historical returns separately for the SMD period (April 2005-November 2005) and pre-SMD periods (September 2000-January 2005).

Third, an important feature of the virtual trading returns which directly and indirectly affects the empirical analysis in a number of ways is, as noted above, the potential non-normal distribution of virtual trading returns. We have applied tests to the NYISO virtual trading returns data over a number of periods and the hypothesis that the returns are normally distributed can be rejected at more than the 99.5% confidence level. The observed returns exhibit both too much skewness and kurtosis⁶ for the underlying distribution of virtual trading returns to be normal. These tests are described and reported more fully in Appendix B. Data on the means, median and shape of the tails are reported in Appendix C.

The non-normality of virtual trading returns is important because much statistical theory is premised on normal distributions. While the assumption of normal distributions is not essential for statistical analysis of the means of distributions, because similar asymptotic (large sample) results can be derived without requiring normal distributions, this is not the case for analysis relating to the variance of distributions. For these statistics, the assumption that the distribution or error term is normally distributed can be critical to the results, and assuming normality when the underlying distribution is not normal can result in material errors.⁷

Our analysis of the correlations of virtual trading returns, as shown below, therefore reports measures based on conventional standard deviation calculations for the NYISO historical virtual trading returns, and also reports a number of other measures of the shape of the distribution of returns. The data suggest that the standard deviation must be carefully interpreted in using it to infer the dispersion and correlation in virtual trading returns because the returns are not normally distributed, exhibiting both skewness and kurtosis. These are not abstract technical details. The degree of skewness in virtual trading returns is inextricably linked to the potentially different distribution of returns to virtual supply and virtual demand bids, and the degree of kurtosis is inextricably linked with the risk of loss to the NYISO and its market participants from uncollateralized virtual trading positions.

Given these considerations, we have taken several approaches to measuring the pattern of virtual trading returns over multiple day periods. First, we have calculated the returns to a virtual trading position taken in the same hour of two on-peak successive days, i.e., Monday and Tuesday, Tuesday and Wednesday, Wednesday and Thursday, and Thursday and Friday. This calculation did not include Friday and Saturday returns because Saturday is off-peak, nor did it

⁵ Return data reported separately for the September 2000-May 2002 and June 2002-January 2005 periods are set forth in Appendix A.

⁶ That is, for a distribution with a given standard deviation, more of the returns are very close to the mean than would be the case for a normally distributed random variable, but also more of the returns are out in the extremes of the tail of the distribution than would be the case for a normally distributed random variable with the same variance.

⁷ See for example, Henry Scheffe, *The Analysis of Variance*, 1959, pp.334-345; Maurice Kendall and A. Stuart, *The Advanced Theory of Statistics*, Vol. 2, 1979, pp.492-496.

combine Friday and Monday returns because the days are not successive. Second, we compared the distribution of these returns to the distribution of single on-peak day hourly returns using several measures, the ratio of the calculated standard deviation (Table 2, appended); the ratio of the 1% loss (virtual supply loss) threshold over two days to the similar one-day threshold (Table 3, appended); the ratio of the 3% loss (virtual supply loss) threshold over two days to the similar one-day threshold (Table 4, appended); the ratio of the 5% loss (virtual supply loss) threshold over two days to the similar one-day threshold (Table 5, appended); the ratio of the 95% loss (virtual demand loss) threshold over two days to the similar one-day threshold (Table 6, appended); the ratio of the 97% loss (virtual demand loss) threshold over two days to the similar one-day threshold (Table 7, appended); and the ratio of the 99% loss (virtual demand loss) threshold over two days to the similar one-day threshold (Table 8, appended).

While a single statistic such as the standard deviation would describe the impact of correlated returns if the distribution of returns were known to be normal, we have observed above that the distribution of returns is not normal. We have therefore based our conclusions on analyses applied to several distinct regions of the distribution of returns (1, 3, 5% tails) on both sides of the distribution of returns.

We calculated the same measures based on the returns to a given hour on three successive on-peak days, Monday to Wednesday, Tuesday-Thursday, and Wednesday-Friday (also set forth in Tables 2 to 8). We calculated these measures separately for both the pre-SMD and SMD periods, separately for the western zones (A-E), the eastern zones (F-I), New York (Zone J) and Long Island (Zone K), and by month and season.

As a generalization, the calculated standard deviations for the pre-SMD period generally suggest little correlation in virtual trading returns, while the calculated standard deviations for the SMD period suggest that the standard deviations of the two- and three-day returns are too large relative to the one-day standard deviation for the day-to-day returns to be uncorrelated, particularly for the virtual trades in the eastern zones. The measures calculated for the 1% and 3% tails of the distribution of returns suggest even more strongly that the returns in the tail of the distribution are correlated both in the pre-SMD and SMD periods and across all zones. These data suggest that for most of the periods and locations there is a correlation of returns over successive days, but it is less than perfect so the overall loss over three days tends toward about twice the loss at the given probability level on the first day. As a generalization, the data suggest that the tail of the two-day loss distribution tends to be about 1.7 to 1.8 times the value in the similar single day loss distribution and the tail of the three-day loss distribution tends to be about 2 to 2.2 times the value in the similar single-day loss distribution. While there is relatively limited data on virtual trading returns under SMD operation, the pattern of correlation in losses over multiple days appears fairly consistent over both the SMD and pre-SMD periods.

A further complication affecting the determination of the appropriate multiple is that the actual timing of collateral calls, collateral posting, and day-ahead markets for on-peak periods is impacted by weekends. The current NYISO practice is to analyze virtual trading returns and make collateral calls during the weekend, with collateral due at 4:00 p.m. Monday for collateral calls on Friday, Saturday and Sunday. Weekend markets are off-peak and typically have lower volatility of virtual trading returns than weekdays, so potential virtual trading losses over weekends would be much lower than during the week.

Figure 9 portrays the more complex pattern of collateral calls and posting times resulting from weekends. The top portion of Figure 9 shows that the day-ahead market for each operating day is run on the day prior to each operating day, seven days a week. Any call for additional collateral would be made on the day following the operating day, also seven days a week. The last row in the top portion of Figure 9 shows the days on which additional collateral would be due. For collateral calls made on Tuesday, Wednesday and Thursday, the collateral must be posted on the next calendar day, which is also the next business day. Collateral for calls made on Friday, Saturday and Sunday, however, need not be posted until 4:00 p.m. on Monday, the next business day. The bottom half of Table 9 shows, for each weekday on which a loss triggering a collateral call is assumed to occur, the additional days for which virtual trading positions could be taken, and losses potentially incurred, before additional collateral would have to be posted.

Figure 9
On-Peak Collateral Calls and Weekends

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
Tuesday DAM	Wednesday DAM	Thursday DAM	Friday DAM	Saturday DAM	Sunday DAM	Monday DAM	Tuesday DAM	
	Monday Losses Call	Tuesday Losses Call	Wednesday Losses Call	Thursday Losses Call	Friday Losses Call	Saturday Losses Call	Sunday Losses Call	
		Monday Collateral Due	Tuesday Collateral Due	Wednesday Collateral Due			Thursday- Saturday Collateral Due	Sunday Collateral Due

Losses Prior to Cutoff

Monday Tuesday Wednesday Thursday	Tuesday Wednesday Thursday Friday	Wednesday Thursday Friday Saturday	Thursday Friday Saturday Sunday Monday Tuesday	Friday Saturday Sunday Monday Tuesday				
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Figure 9 shows that while there is a potential under current NYISO timelines for virtual traders to incur losses over four or more days before being denied access to the day-ahead market, only virtual trades on Monday and Tuesday can result in virtual trades over more than three successive on-peak days (with potential correlations between successive days) before the posting of additional collateral is required. The pattern of NYISO exposure to virtual trading losses portrayed in Figure 9 is complex and varies day-to-day but given the observed correlations, the NYISO's potential exposure to a total virtual trading losses over the period prior to virtual trader being cutoff from the day-ahead market is at least twice the Day 1 loss at a given probability level. Collateral calls triggered by losses on Monday, Tuesday and Wednesday would have the potential for three or four days of on-peak losses to be incurred against the collateral, while collateral calls triggered by losses on Thursday could potentially lead to four days of on-peak losses plus two days of weekend losses to be covered by the collateral. Friday collateral calls would result in potential exposure to three days of on-peak losses plus two weekend days. Since the current NYISO policies do not provide for collateral calls until the

virtual trader has lost 50% of its collateral, the NYISO's current collateral practices could result in a virtual trader incurring total losses to be covered by collateral that would be three or more times the loss in a given day at a given probability level.

III. CONCLUSION

Given the existing market timelines, existing NYISO collateral call and posting timelines, the existing 50% collateral call threshold, and the empirical correlation in virtual trading returns over successive days, the appropriate collateral multiple should be at least two.

Table 2
Standard Deviation of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Standard deviation of Day-Ahead - Real-Time Prices on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	21.77		25.29		35.97		35.67	
February	22.53		27.56		28.63		29.85	
March	24.33		26.99		49.20		30.29	
April	16.31	20.65	33.74	21.59	44.63	35.34	43.43	24.46
May	15.83	25.05	31.81	22.50	39.27	17.21	42.92	24.85
June	12.69	52.93	27.77	73.84	32.39	82.52	38.45	96.50
July	43.11	31.38	52.93	117.25	54.69	148.00	58.53	162.93
August	58.38	90.79	71.00	110.01	74.60	121.09	75.55	150.42
September	23.05	31.07	25.67	35.75	36.80	53.15	33.43	61.44
October	12.76	38.14	14.27	53.45	17.52	67.78	19.08	67.43
November	16.40		22.07		25.84		25.55	
December	34.88		37.49		42.46		37.74	
Summer Avg	38.06	58.37	50.57	100.37	53.90	117.20	57.51	136.62
Winter Avg	26.39		30.11		35.69		34.42	
Rest of Year Avg	18.11	28.72	25.76	33.32	35.54	43.37	32.45	44.54
Year Avg	25.17	41.43	33.05	62.06	40.17	75.02	39.21	84.00

Standard deviation of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	30.70		36.97		54.86		57.16	
February	32.62		39.51		40.40		46.40	
March	32.80		36.87		63.18		42.35	
April	24.25	29.94	53.64	34.00	70.63	59.64	64.71	37.42
May	24.33	30.61	42.60	28.82	51.08	23.98	58.09	35.73
June	18.59	64.68	42.32	91.33	50.03	109.23	61.01	153.37
July	53.26	40.10	69.19	197.66	70.35	250.44	85.09	276.21
August	93.56	140.36	108.41	175.63	111.43	196.15	124.73	253.01
September	34.18	48.61	38.31	55.11	59.03	91.08	51.43	88.62
October	20.26	53.77	26.08	79.65	32.43	108.95	34.27	97.14
November	24.78		32.21		38.08		38.89	
December	46.29		49.71		57.89		50.27	
Summer Avg	55.14	81.71	73.30	154.87	77.27	185.27	90.28	227.53
Winter Avg	36.54		42.06		51.05		51.28	
Rest of Year Avg	26.76	40.73	38.29	49.39	52.40	70.91	48.29	64.73
Year Avg	36.30	58.30	47.99	94.60	58.28	119.93	59.53	134.50

Standard deviation of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	37.18		44.36		72.28		71.28	
February	39.20		48.29		50.27		59.76	
March	40.48		46.40		75.69		52.20	
April	29.05	37.55	66.20	45.02	86.76	80.68	74.48	46.19
May	31.47	35.26	53.37	34.02	64.50	28.55	73.36	42.88
June	23.12	78.39	54.59	127.11	64.73	159.88	84.41	220.36
July	62.78	47.40	84.71	259.55	83.57	328.36	106.47	355.46
August	109.18	173.45	127.31	229.97	133.69	259.73	171.25	333.29
September	39.63	62.93	44.72	70.06	78.14	119.13	64.89	112.32
October	25.73	59.00	35.21	101.95	44.84	133.40	47.32	123.78
November	31.39		36.33		45.30		44.91	
December	55.95		60.38		72.40		63.21	
Summer Avg	65.02	99.75	88.87	205.54	94.00	249.33	120.71	303.04
Winter Avg	44.11		51.01		64.98		64.75	
Rest of Year Avg	32.96	48.69	47.04	62.76	65.87	90.44	59.53	81.29
Year Avg	43.76	70.57	58.49	123.95	72.68	158.53	76.13	176.32

Table 2 (continued)
Standard Deviation of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of standard deviations of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHIpresmd	FGHIsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.41		1.46		1.52		1.60	
February	1.45		1.43		1.41		1.55	
March	1.35		1.37		1.28		1.40	
April	1.49	1.45	1.59	1.57	1.58	1.69	1.49	1.53
May	1.54	1.22	1.34	1.28	1.30	1.39	1.35	1.44
June	1.46	1.22	1.52	1.24	1.54	1.32	1.59	1.59
July	1.24	1.28	1.31	1.69	1.29	1.69	1.45	1.70
August	1.60	1.55	1.53	1.60	1.49	1.62	1.65	1.68
September	1.48	1.56	1.49	1.54	1.60	1.71	1.54	1.44
October	1.59	1.41	1.83	1.49	1.85	1.61	1.80	1.44
November	1.51		1.46		1.47		1.52	
December	1.33		1.33		1.36		1.33	
Summer Avg	1.45	1.40	1.45	1.54	1.43	1.58	1.57	1.67
Winter Avg	1.38		1.40		1.43		1.49	
Rest of Year Avg	1.48	1.42	1.49	1.48	1.47	1.63	1.49	1.45
Year Avg	1.44	1.41	1.45	1.52	1.45	1.60	1.52	1.60

Ratio of standard deviations of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHIpresmd	FGHIsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.71		1.75		2.01		2.00	
February	1.74		1.75		1.76		2.00	
March	1.66		1.72		1.54		1.72	
April	1.78	1.82	1.96	2.09	1.94	2.28	1.72	1.89
May	1.99	1.41	1.68	1.51	1.64	1.66	1.71	1.73
June	1.82	1.48	1.97	1.72	2.00	1.94	2.20	2.28
July	1.46	1.51	1.60	2.21	1.53	2.22	1.82	2.18
August	1.87	1.91	1.79	2.09	1.79	2.14	2.27	2.22
September	1.72	2.03	1.74	1.96	2.12	2.24	1.94	1.83
October	2.02	1.55	2.47	1.91	2.56	1.97	2.48	1.84
November	1.91		1.65		1.75		1.76	
December	1.60		1.61		1.71		1.68	
Summer Avg	1.71	1.71	1.76	2.05	1.74	2.13	2.10	2.22
Winter Avg	1.67		1.69		1.82		1.88	
Rest of Year Avg	1.82	1.69	1.83	1.88	1.85	2.09	1.83	1.82
Year Avg	1.74	1.70	1.77	2.00	1.81	2.11	1.94	2.10

ABCDE refers to Zones A, B, C, D, and E

FGHI refers to Zones F, G, H, and I

J refers to the New York City Zone

K refers to the Long Island Zone

"presmd" refers to the period from September 2000 to January 2005

"smd" refers to the period from April 2005 to October 2005

Table 3
1st Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

1st percentile of Day-Ahead - Real-Time Prices

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-61.01		-89.99		-153.19		-101.62	
February	-87.48		-117.87		-127.48		-119.11	
March	-54.80		-67.41		-144.01		-114.50	
April	-39.57	-66.92	-133.82	-99.24	-184.57	-142.20	-155.23	-112.98
May	-56.52	-49.85	-99.12	-52.70	-147.79	-52.51	-145.25	-124.85
June	-32.93	-189.58	-56.82	-396.42	-85.34	-457.76	-115.09	-436.04
July	-84.74	-61.59	-165.42	-566.85	-205.31	-604.40	-171.74	-761.82
August	-79.70	-412.98	-213.35	-396.08	-260.46	-441.60	-245.27	-549.05
September	-60.16	-100.38	-66.37	-104.04	-150.10	-95.33	-126.18	-232.07
October	-39.07	-195.08	-47.35	-237.02	-68.18	-275.50	-80.73	-247.20
November	-58.38		-66.99		-95.53		-75.76	
December	-68.94		-76.19		-101.82		-83.95	
Summer Avg	-65.79	-221.38	-145.20	-453.12	-183.70	-501.25	-177.37	-582.30
Winter Avg	-72.48		-94.68		-127.50		-101.56	
Rest of Year Avg	-51.42	-103.06	-80.18	-123.25	-131.70	-141.38	-116.28	-179.28
Year Avg	-60.27	-153.77	-100.06	-264.62	-143.65	-295.61	-127.87	-352.00

1st percentile of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-91.97		-121.68		-213.24		-145.04	
February	-128.21		-188.49		-172.98		-176.17	
March	-97.84		-105.02		-239.37		-129.63	
April	-64.55	-100.99	-254.90	-125.41	-340.38	-242.68	-268.53	-126.79
May	-91.35	-68.47	-172.74	-71.03	-211.54	-68.86	-233.10	-156.85
June	-37.40	-206.78	-160.12	-429.98	-190.53	-495.07	-245.52	-630.30
July	-159.54	-96.79	-334.08	-1,149.09	-349.97	-1,481.76	-310.67	-1,534.25
August	-155.95	-800.03	-409.69	-815.47	-416.55	-924.73	-481.69	-1,053.57
September	-84.73	-127.02	-114.35	-150.95	-200.44	-152.25	-188.91	-275.40
October	-63.74	-212.04	-79.53	-285.33	-100.93	-470.63	-116.50	-308.32
November	-86.82		-115.26		-166.48		-148.23	
December	-158.11		-166.66		-202.81		-157.43	
Summer Avg	-117.63	-367.87	-301.30	-798.18	-319.02	-967.19	-345.96	-1,072.71
Winter Avg	-126.10		-158.94		-196.34		-159.55	
Rest of Year Avg	-81.50	-127.13	-140.30	-158.18	-209.86	-233.61	-180.82	-216.84
Year Avg	-101.68	-230.30	-185.21	-432.47	-233.77	-548.00	-216.78	-583.64

1st percentile of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-105.37		-141.48		-260.86		-170.92	
February	-173.83		-203.38		-215.77		-221.25	
March	-106.51		-139.10		-281.09		-146.19	
April	-121.08	-105.74	-318.59	-181.61	-459.75	-484.21	-261.94	-151.62
May	-137.83	-67.57	-218.42	-70.71	-243.70	-61.03	-276.71	-163.53
June	-42.50	-179.48	-266.43	-584.26	-270.81	-668.13	-362.82	-812.15
July	-240.33	-61.95	-380.42	-1,394.13	-385.02	-1,863.88	-415.97	-1,999.29
August	-378.84	-1,050.90	-479.41	-1,218.03	-480.19	-1,755.27	-636.03	-2,067.19
September	-91.93	-138.59	-117.64	-138.32	-291.18	-160.19	-251.91	-315.77
October	-84.74	-208.28	-106.38	-410.62	-154.99	-587.26	-168.86	-470.71
November	-108.91		-161.27		-185.52		-177.01	
December	-171.32		-175.27		-219.90		-223.47	
Summer Avg	-220.56	-430.78	-375.42	-1,065.47	-378.67	-1,429.09	-471.61	-1,626.21
Winter Avg	-150.17		-173.38		-232.18		-205.21	
Rest of Year Avg	-108.50	-130.05	-176.90	-200.32	-269.37	-323.17	-213.77	-275.41
Year Avg	-146.93	-258.93	-225.65	-571.10	-287.40	-797.14	-276.09	-854.32

Table 3 (continued)
1st Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of 1st Percentiles of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.51		1.35		1.39		1.43	
February	1.47		1.60		1.36		1.48	
March	1.79		1.56		1.66		1.13	
April	1.63	1.51	1.90	1.26	1.84	1.71	1.73	1.12
May	1.62	1.37	1.74	1.35	1.43	1.31	1.60	1.26
June	1.14	1.09	2.82	1.08	2.23	1.08	2.13	1.45
July	1.88	1.57	2.02	2.03	1.70	2.45	1.81	2.01
August	1.96	1.94	1.92	2.06	1.60	2.09	1.96	1.92
September	1.41	1.27	1.72	1.45	1.34	1.60	1.50	1.19
October	1.63	1.09	1.68	1.20	1.48	1.71	1.44	1.25
November	1.49		1.72		1.74		1.96	
December	2.29		2.19		1.99		1.88	
Summer Avg	1.79	1.66	2.08	1.76	1.74	1.93	1.95	1.84
Winter Avg	1.74		1.68		1.54		1.57	
Rest of Year Avg	1.59	1.23	1.75	1.28	1.59	1.65	1.56	1.21
Year Avg	1.69	1.50	1.85	1.63	1.63	1.85	1.70	1.66

Ratio of 1st Percentiles of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.73		1.57		1.70		1.68	
February	1.99		1.73		1.69		1.86	
March	1.94		2.06		1.95		1.28	
April	3.06	1.58	2.38	1.83	2.49	3.41	1.69	1.34
May	2.44	1.36	2.20	1.34	1.65	1.16	1.91	1.31
June	1.29	0.95	4.69	1.47	3.17	1.46	3.15	1.86
July	2.84	1.01	2.30	2.46	1.88	3.08	2.42	2.62
August	4.75	2.54	2.25	3.08	1.84	3.97	2.59	3.77
September	1.53	1.38	1.77	1.33	1.94	1.68	2.00	1.36
October	2.17	1.07	2.25	1.73	2.27	2.13	2.09	1.90
November	1.87		2.41		1.94		2.34	
December	2.49		2.30		2.16		2.66	
Summer Avg	3.35	1.95	2.59	2.35	2.06	2.85	2.66	2.79
Winter Avg	2.07		1.83		1.82		2.02	
Rest of Year Avg	2.11	1.26	2.21	1.63	2.05	2.29	1.84	1.54
Year Avg	2.44	1.68	2.26	2.16	2.00	2.70	2.16	2.43

ABCDE refers to Zones A, B, C, D, and E

FGHI refers to Zones F, G, H, and I

J refers to the New York City Zone

K refers to the Long Island Zone

"presmd" refers to the period from September 2000 to January 2005

"smd" refers to the period from April 2005 to October 2005

Table 4
3rd Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

3rd percentile of Day-Ahead - Real-Time Prices

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-35.04		-49.22		-84.37		-58.60	
February	-25.53		-32.58		-62.47		-64.99	
March	-27.14		-33.73		-81.03		-54.35	
April	-25.94	-18.99	-53.05	-43.02	-92.72	-72.11	-72.58	-46.86
May	-31.81	-33.68	-52.77	-32.91	-54.89	-30.39	-77.37	-78.07
June	-17.62	-63.76	-34.33	-128.52	-35.17	-208.36	-73.14	-235.53
July	-30.98	-18.93	-46.82	-64.84	-60.05	-184.02	-90.85	-288.07
August	-31.66	-136.48	-80.24	-161.00	-91.41	-157.67	-114.13	-320.27
September	-27.40	-72.33	-31.28	-72.18	-42.00	-85.54	-72.40	-158.72
October	-26.49	-91.94	-29.28	-145.79	-34.29	-177.04	-48.05	-176.84
November	-31.18		-37.94		-53.43		-46.05	
December	-35.97		-40.92		-56.41		-55.23	
Summer Avg	-26.75	-73.06	-53.80	-118.12	-62.21	-183.35	-92.71	-281.29
Winter Avg	-32.18		-40.91		-67.75		-59.61	
Rest of Year Avg	-28.33	-54.24	-39.68	-73.48	-59.73	-91.27	-61.80	-115.12
Year Avg	-28.90	-62.30	-43.51	-92.61	-62.35	-130.73	-68.98	-186.34

3rd percentile of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-41.30		-63.38		-119.78		-103.72	
February	-43.20		-88.36		-103.75		-126.69	
March	-41.51		-54.14		-109.75		-97.26	
April	-37.13	-28.64	-102.88	-82.64	-158.87	-125.89	-115.90	-99.86
May	-46.75	-36.38	-77.85	-44.35	-83.78	-44.64	-138.70	-100.50
June	-23.95	-97.75	-50.27	-216.17	-65.54	-336.57	-143.70	-489.10
July	-53.20	-34.32	-104.23	-457.63	-132.41	-585.35	-181.73	-873.81
August	-44.48	-405.09	-141.98	-396.61	-163.35	-374.12	-192.04	-634.11
September	-38.24	-103.88	-48.30	-102.56	-112.08	-140.22	-134.90	-221.67
October	-41.87	-155.13	-47.89	-192.50	-57.57	-292.98	-85.72	-217.82
November	-42.13		-51.37		-83.33		-78.53	
December	-51.19		-57.56		-76.45		-92.31	
Summer Avg	-40.54	-179.05	-98.83	-356.80	-120.43	-432.01	-172.49	-665.67
Winter Avg	-45.23		-69.77		-99.99		-107.57	
Rest of Year Avg	-41.27	-81.01	-63.74	-105.51	-100.90	-150.93	-108.50	-159.96
Year Avg	-42.08	-123.03	-74.02	-213.21	-105.55	-271.40	-124.27	-376.70

3rd percentile of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-49.52		-84.14		-151.46		-121.99	
February	-62.54		-106.33		-119.61		-172.88	
March	-57.04		-67.79		-163.42		-106.73	
April	-45.78	-40.27	-158.64	-93.99	-210.07	-183.95	-145.09	-116.71
May	-61.60	-48.07	-113.28	-48.71	-185.27	-44.46	-198.93	-132.96
June	-30.37	-128.29	-76.10	-365.40	-114.46	-479.08	-218.14	-728.85
July	-84.29	-35.50	-202.14	-831.13	-200.70	-1,185.08	-276.11	-1,323.75
August	-50.36	-490.39	-207.58	-552.60	-231.92	-702.04	-306.09	-890.54
September	-49.74	-125.69	-61.27	-123.23	-160.50	-132.29	-174.95	-265.99
October	-52.84	-172.31	-58.75	-218.49	-87.67	-324.67	-103.99	-291.74
November	-53.56		-65.22		-113.08		-98.12	
December	-70.50		-76.24		-129.54		-119.05	
Summer Avg	-55.01	-218.06	-161.94	-583.04	-182.36	-788.73	-266.78	-981.05
Winter Avg	-60.85		-88.90		-133.54		-137.97	
Rest of Year Avg	-53.43	-96.59	-87.49	-121.10	-153.34	-171.34	-137.97	-201.85
Year Avg	-55.68	-148.65	-106.46	-319.08	-155.64	-435.94	-170.17	-535.79

Table 4 (continued)
3rd Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of 3rd Percentiles of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHIpresmd	FGHIsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.18		1.29		1.42		1.77	
February	1.69		2.71		1.66		1.95	
March	1.53		1.61		1.35		1.79	
April	1.43	1.51	1.94	1.92	1.71	1.75	1.60	2.13
May	1.47	1.08	1.48	1.35	1.53	1.47	1.79	1.29
June	1.36	1.53	1.46	1.68	1.86	1.62	1.96	2.08
July	1.72	1.81	2.23	7.06	2.20	3.18	2.00	3.03
August	1.40	2.97	1.77	2.46	1.79	2.37	1.68	1.98
September	1.40	1.44	1.54	1.42	2.67	1.64	1.86	1.40
October	1.58	1.69	1.64	1.32	1.68	1.65	1.78	1.23
November	1.35		1.35		1.56		1.71	
December	1.42		1.41		1.36		1.67	
Summer Avg	1.52	2.45	1.84	3.02	1.94	2.36	1.86	2.37
Winter Avg	1.41		1.71		1.48		1.80	
Rest of Year Avg	1.46	1.49	1.61	1.44	1.69	1.65	1.76	1.39
Year Avg	1.46	1.97	1.70	2.30	1.69	2.08	1.80	2.02

Ratio of 3rd Percentiles of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHIpresmd	FGHIsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.41		1.71		1.80		2.08	
February	2.45		3.26		1.91		2.66	
March	2.10		2.01		2.02		1.96	
April	1.76	2.12	2.99	2.18	2.27	2.55	2.00	2.49
May	1.94	1.43	2.15	1.48	3.38	1.46	2.57	1.70
June	1.72	2.01	2.22	2.84	3.25	2.30	2.98	3.09
July	2.72	1.88	4.32	12.82	3.34	6.44	3.04	4.60
August	1.59	3.59	2.59	3.43	2.54	4.45	2.68	2.78
September	1.82	1.74	1.96	1.71	3.82	1.55	2.42	1.68
October	1.99	1.87	2.01	1.50	2.56	1.83	2.16	1.65
November	1.72		1.72		2.12		2.13	
December	1.96		1.86		2.30		2.16	
Summer Avg	2.06	2.98	3.01	4.94	2.93	4.30	2.88	3.49
Winter Avg	1.89		2.17		1.97		2.31	
Rest of Year Avg	1.89	1.78	2.21	1.65	2.57	1.88	2.23	1.75
Year Avg	1.93	2.39	2.45	3.45	2.50	3.33	2.47	2.88

ABCDE refers to Zones A, B, C, D, and E

FGHI refers to Zones F, G, H, and I

J refers to the New York City Zone

K refers to the Long Island Zone

"presmd" refers to the period from September 2000 to January 2005

"smd" refers to the period from April 2005 to October 2005

Table 5
5th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

5th percentile of Day-Ahead - Real-Time Prices

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-24.92		-34.55		-56.83		-48.28	
February	-17.30		-24.42		-30.50		-49.90	
March	-19.78		-24.42		-45.83		-39.26	
April	-19.48	-8.66	-31.12	-23.03	-54.34	-54.69	-49.77	-36.67
May	-24.26	-16.27	-39.11	-16.96	-41.45	-18.87	-64.22	-57.74
June	-11.96	-36.94	-23.42	-62.83	-30.22	-95.43	-57.94	-173.72
July	-22.48	-11.72	-28.68	-27.20	-38.06	-40.90	-65.78	-207.97
August	-22.14	-85.00	-39.08	-111.63	-56.11	-139.63	-78.88	-256.12
September	-20.85	-57.78	-23.08	-55.97	-27.14	-70.81	-58.21	-128.99
October	-18.88	-57.64	-21.68	-89.50	-28.22	-141.98	-36.14	-140.86
November	-21.67		-25.11		-37.44		-36.39	
December	-26.79		-30.63		-34.51		-44.88	
Summer Avg	-18.86	-44.55	-30.39	-67.22	-41.46	-91.99	-67.53	-212.60
Winter Avg	-23.00		-29.87		-40.61		-47.68	
Rest of Year Avg	-20.82	-35.09	-27.42	-46.37	-39.07	-71.59	-47.33	-91.07
Year Avg	-20.87	-39.14	-28.77	-55.30	-40.05	-80.33	-52.47	-143.15

5th percentile of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-30.49		-45.05		-95.26		-74.52	
February	-22.80		-45.94		-68.05		-101.11	
March	-28.65		-37.55		-73.44		-69.76	
April	-26.94	-13.00	-51.28	-37.59	-97.06	-95.63	-84.32	-64.15
May	-39.12	-29.68	-55.59	-28.33	-61.86	-30.31	-106.92	-80.98
June	-18.45	-70.86	-37.08	-139.65	-46.98	-216.13	-103.34	-383.22
July	-29.97	-18.40	-56.45	-239.51	-73.77	-419.21	-125.52	-675.95
August	-28.97	-209.52	-72.29	-207.01	-89.69	-224.18	-134.90	-465.68
September	-29.24	-89.77	-34.14	-84.61	-52.54	-116.09	-103.69	-180.64
October	-32.64	-89.35	-36.98	-134.76	-44.16	-174.94	-66.24	-188.49
November	-30.77		-33.76		-54.03		-59.90	
December	-40.36		-45.03		-60.14		-71.91	
Summer Avg	-25.79	-99.59	-55.27	-195.39	-70.15	-286.51	-121.25	-508.28
Winter Avg	-31.21		-45.34		-74.48		-82.51	
Rest of Year Avg	-31.22	-55.45	-41.55	-71.32	-63.85	-104.24	-81.80	-128.57
Year Avg	-29.86	-74.36	-45.93	-124.49	-68.08	-182.36	-91.84	-291.30

5th percentile of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	-28.57		-55.11		-122.40		-93.84	
February	-29.17		-69.87		-92.70		-136.94	
March	-32.61		-49.64		-105.60		-86.54	
April	-33.16	-21.18	-81.91	-50.55	-126.98	-141.74	-107.34	-95.91
May	-49.74	-31.50	-76.74	-29.15	-83.18	-32.86	-155.97	-107.58
June	-21.13	-90.52	-49.25	-215.65	-70.82	-294.34	-166.85	-539.83
July	-39.53	-16.45	-95.43	-405.34	-115.62	-590.96	-196.64	-904.97
August	-37.24	-373.04	-139.36	-407.80	-152.81	-455.31	-193.08	-668.91
September	-34.70	-118.79	-44.26	-107.05	-87.23	-119.66	-137.55	-240.96
October	-40.46	-85.74	-49.44	-173.67	-65.13	-282.69	-88.60	-232.28
November	-39.99		-45.48		-73.21		-78.80	
December	-47.01		-58.92		-79.11		-98.59	
Summer Avg	-32.63	-160.00	-94.68	-342.93	-113.08	-446.87	-185.52	-704.57
Winter Avg	-34.91		-61.30		-98.07		-109.79	
Rest of Year Avg	-38.44	-64.30	-57.91	-90.11	-90.22	-144.24	-109.13	-169.18
Year Avg	-36.11	-105.32	-67.95	-198.46	-97.90	-273.94	-128.40	-398.63

Table 5 (continued)
5th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of 5th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHIpresmd	FGHIsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.22		1.30		1.68		1.54	
February	1.32		1.88		2.23		2.03	
March	1.45		1.54		1.60		1.78	
April	1.38	1.50	1.65	1.63	1.79	1.75	1.69	1.75
May	1.61	1.82	1.42	1.67	1.49	1.61	1.66	1.40
June	1.54	1.92	1.58	2.22	1.55	2.26	1.78	2.21
July	1.33	1.57	1.97	8.81	1.94	10.25	1.91	3.25
August	1.31	2.46	1.85	1.85	1.60	1.61	1.71	1.82
September	1.40	1.55	1.48	1.51	1.94	1.64	1.78	1.40
October	1.73	1.55	1.71	1.51	1.56	1.23	1.83	1.34
November	1.42		1.34		1.44		1.65	
December	1.51		1.47		1.74		1.60	
Summer Avg	1.37	2.24	1.82	2.91	1.69	3.11	1.80	2.39
Winter Avg	1.36		1.52		1.83		1.73	
Rest of Year Avg	1.50	1.58	1.52	1.54	1.63	1.46	1.73	1.41
Year Avg	1.43	1.90	1.60	2.25	1.70	2.27	1.75	2.03

Ratio of 5th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHIpresmd	FGHIsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.15		1.60		2.15		1.94	
February	1.69		2.86		3.04		2.74	
March	1.65		2.03		2.30		2.20	
April	1.70	2.44	2.63	2.19	2.34	2.59	2.16	2.62
May	2.05	1.94	1.96	1.72	2.01	1.74	2.43	1.86
June	1.77	2.45	2.10	3.43	2.34	3.08	2.88	3.11
July	1.76	1.40	3.33	14.90	3.04	14.45	2.99	4.35
August	1.68	4.39	3.57	3.65	2.72	3.26	2.45	2.61
September	1.66	2.06	1.92	1.91	3.21	1.69	2.36	1.87
October	2.14	1.49	2.28	1.94	2.31	1.99	2.45	1.65
November	1.85		1.81		1.96		2.17	
December	1.75		1.92		2.29		2.20	
Summer Avg	1.73	3.59	3.12	5.10	2.73	4.86	2.75	3.31
Winter Avg	1.52		2.05		2.41		2.30	
Rest of Year Avg	1.85	1.83	2.11	1.94	2.31	2.01	2.31	1.86
Year Avg	1.73	2.69	2.36	3.59	2.44	3.41	2.45	2.78

ABCDE refers to Zones A, B, C, D, and E

FGHI refers to Zones F, G, H, and I

J refers to the New York City Zone

K refers to the Long Island Zone

"presmd" refers to the period from September 2000 to January 2005

"smd" refers to the period from April 2005 to October 2005

Table 6
95th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

95th percentile of Day-Ahead - Real-Time Prices

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	34.48		35.29		36.62		50.16	
February	27.45		26.78		25.02		29.78	
March	25.10		27.75		25.50		30.74	
April	18.72	23.73	23.41	25.46	27.32	34.57	24.74	26.81
May	19.08	21.81	23.01	26.13	27.03	26.88	29.41	10.40
June	24.30	30.29	29.64	44.85	36.84	44.62	38.95	71.24
July	20.83	30.98	30.12	40.49	31.85	40.83	32.41	33.74
August	54.95	31.76	55.51	63.12	48.32	64.19	46.82	87.53
September	18.73	40.64	21.12	55.11	22.11	107.15	18.51	63.97
October	18.66	37.36	19.40	53.08	22.40	66.59	17.94	65.85
November	18.83		20.60		19.21		21.92	
December	28.00		29.11		25.21		24.33	
Summer Avg	33.36	31.01	38.42	49.49	39.00	49.88	39.39	64.17
Winter Avg	29.98		30.39		28.95		34.76	
Rest of Year Avg	19.85	30.89	22.55	39.95	23.93	58.80	23.88	41.76
Year Avg	25.76	30.94	28.48	44.03	28.95	54.98	30.48	51.36

95th percentile of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	55.55		56.39		70.34		89.25	
February	49.18		47.92		42.14		45.36	
March	46.62		52.37		40.18		53.31	
April	29.02	37.45	37.10	42.69	45.49	56.29	44.25	49.59
May	30.58	35.45	38.44	43.91	46.98	40.65	40.68	18.11
June	38.63	57.78	50.38	86.54	65.60	83.65	58.52	111.02
July	37.15	56.08	55.90	66.92	51.41	64.36	58.28	46.46
August	95.91	55.15	93.47	103.85	83.84	90.30	86.59	159.00
September	30.71	72.44	34.06	92.85	38.66	200.61	37.70	109.29
October	31.17	65.92	33.38	98.95	38.88	121.81	33.64	115.10
November	31.65		35.54		34.74		35.92	
December	50.79		52.33		45.46		37.51	
Summer Avg	57.23	56.33	66.58	85.77	66.95	79.44	67.80	105.49
Winter Avg	51.84		52.21		52.65		57.37	
Rest of Year Avg	33.29	52.81	38.48	69.60	40.82	104.84	40.91	73.02
Year Avg	43.91	54.32	48.94	76.53	50.31	93.95	51.75	86.94

95th percentile of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	75.19		72.73		93.43		122.75	
February	69.00		64.79		56.15		54.47	
March	61.99		71.27		54.09		69.14	
April	37.65	55.27	51.85	61.05	58.85	74.04	55.19	69.91
May	39.19	47.94	49.48	61.38	60.53	56.59	50.68	25.07
June	52.28	80.06	67.06	123.44	94.68	110.28	77.77	131.88
July	62.63	88.65	81.91	87.37	70.63	80.59	68.08	58.98
August	110.69	64.46	110.45	118.87	115.37	115.26	101.04	173.20
September	39.63	97.38	43.58	120.30	47.70	272.80	47.81	166.19
October	40.90	82.21	44.06	136.35	51.59	160.63	43.73	156.10
November	42.17		46.62		44.49		49.68	
December	65.02		68.54		61.15		45.87	
Summer Avg	75.20	77.72	86.47	109.89	93.56	102.04	82.30	121.35
Winter Avg	69.74		68.69		70.24		74.36	
Rest of Year Avg	43.59	70.70	51.14	94.77	52.88	141.01	52.70	104.32
Year Avg	58.03	73.71	64.36	101.25	67.39	124.31	65.52	111.62

Table 6 (continued)
95th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of 95th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.61		1.60		1.92		1.78	
February	1.79		1.79		1.68		1.52	
March	1.86		1.89		1.58		1.73	
April	1.55	1.58	1.58	1.68	1.67	1.63	1.79	1.85
May	1.60	1.63	1.67	1.68	1.74	1.51	1.38	1.74
June	1.59	1.91	1.70	1.93	1.78	1.87	1.50	1.56
July	1.78	1.81	1.86	1.65	1.61	1.58	1.80	1.38
August	1.75	1.74	1.68	1.65	1.74	1.41	1.85	1.82
September	1.64	1.78	1.61	1.68	1.75	1.87	2.04	1.71
October	1.67	1.76	1.72	1.86	1.74	1.83	1.87	1.75
November	1.68		1.73		1.81		1.64	
December	1.81		1.80		1.80		1.54	
Summer Avg	1.72	1.82	1.73	1.73	1.72	1.59	1.72	1.64
Winter Avg	1.73		1.72		1.82		1.65	
Rest of Year Avg	1.68	1.71	1.71	1.74	1.71	1.78	1.71	1.75
Year Avg	1.70	1.76	1.72	1.74	1.74	1.71	1.70	1.69

Ratio of 95th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	2.18		2.06		2.55		2.45	
February	2.51		2.42		2.24		1.83	
March	2.47		2.57		2.12		2.25	
April	2.01	2.33	2.21	2.40	2.15	2.14	2.23	2.61
May	2.05	2.20	2.15	2.35	2.24	2.11	1.72	2.41
June	2.15	2.64	2.26	2.75	2.57	2.47	2.00	1.85
July	3.01	2.86	2.72	2.16	2.22	1.97	2.10	1.75
August	2.01	2.03	1.99	1.88	2.39	1.80	2.16	1.98
September	2.12	2.40	2.06	2.18	2.16	2.55	2.58	2.60
October	2.19	2.20	2.27	2.57	2.30	2.41	2.44	2.37
November	2.24		2.26		2.32		2.27	
December	2.32		2.35		2.43		1.89	
Summer Avg	2.25	2.51	2.25	2.22	2.40	2.05	2.09	1.89
Winter Avg	2.33		2.26		2.43		2.14	
Rest of Year Avg	2.20	2.29	2.27	2.37	2.21	2.40	2.21	2.50
Year Avg	2.25	2.38	2.26	2.30	2.33	2.26	2.15	2.17

ABCDE refers to Zones A, B, C, D, and E

FGHI refers to Zones F, G, H, and I

J refers to the New York City Zone

K refers to the Long Island Zone

"presmd" refers to the period from September 2000 to January 2005

"smd" refers to the period from April 2005 to October 2005

Table 7
97th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

97th percentile of Day-Ahead - Real-Time Prices

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	39.18		40.57		49.18		62.12	
February	34.12		34.50		29.85		37.86	
March	31.88		36.47		34.83		36.16	
April	22.85	27.86	27.47	28.42	34.35	39.77	29.54	31.05
May	21.55	24.81	25.11	29.54	30.88	28.29	36.99	12.44
June	28.19	40.03	35.66	52.68	43.29	48.01	45.60	84.28
July	27.97	34.33	38.52	47.19	39.03	45.55	44.80	51.13
August	75.05	39.70	75.31	83.36	67.82	74.89	69.83	106.56
September	22.81	43.60	24.06	63.38	28.28	119.99	28.05	72.77
October	21.64	43.00	22.56	60.44	25.90	74.59	22.48	72.16
November	21.96		23.64		22.32		25.86	
December	33.71		34.89		28.78		30.90	
Summer Avg	43.74	38.02	49.83	61.08	50.05	56.15	53.41	80.66
Winter Avg	35.67		36.65		35.94		43.63	
Rest of Year Avg	23.78	34.82	26.55	45.45	29.43	65.66	29.85	47.11
Year Avg	31.74	36.19	34.90	52.14	36.21	61.58	39.18	61.48

97th percentile of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	64.58		66.65		92.41		114.80	
February	66.47		65.14		51.58		61.36	
March	60.29		67.86		49.87		62.83	
April	34.27	43.46	45.92	46.66	56.22	62.29	53.14	53.07
May	34.34	41.73	42.38	48.93	52.84	46.47	49.50	19.78
June	43.70	62.70	61.12	95.23	77.75	88.59	71.73	136.31
July	51.87	66.27	73.24	78.64	63.20	78.62	75.32	57.22
August	128.28	61.64	130.36	124.72	122.16	115.62	132.65	187.91
September	36.64	75.73	39.72	103.02	44.99	207.36	48.60	130.33
October	35.27	76.38	38.75	105.92	46.15	126.55	40.20	119.57
November	36.63		41.40		40.65		47.35	
December	58.72		61.29		51.04		43.05	
Summer Avg	74.62	63.54	88.24	99.53	87.70	94.28	93.23	127.15
Winter Avg	63.26		64.36		65.01		73.07	
Rest of Year Avg	39.57	59.33	46.01	76.13	48.45	110.67	50.27	80.69
Year Avg	54.25	61.13	61.15	86.16	62.40	103.64	66.71	100.60

97th percentile of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	84.29		85.46		126.90		156.04	
February	91.18		87.09		72.46		74.52	
March	80.35		90.36		72.55		83.33	
April	45.67	75.90	60.66	65.31	67.97	88.21	64.22	72.26
May	42.35	59.07	57.26	73.80	68.00	61.45	62.07	28.09
June	56.85	87.41	81.28	136.62	115.87	117.21	89.76	166.19
July	78.84	100.26	106.12	117.62	81.46	91.52	92.50	66.17
August	139.53	79.04	145.02	138.04	147.02	138.50	171.50	193.82
September	46.67	104.22	49.36	132.96	56.58	276.52	57.16	182.54
October	46.51	88.68	51.80	151.80	60.88	164.71	49.36	166.64
November	48.91		54.05		53.31		61.39	
December	77.49		81.38		70.46		58.98	
Summer Avg	91.74	88.90	110.81	130.76	114.78	115.74	117.92	142.06
Winter Avg	84.32		84.64		89.94		96.51	
Rest of Year Avg	51.74	81.97	60.58	105.97	63.22	147.72	62.92	112.38
Year Avg	69.89	84.94	79.15	116.59	82.79	134.02	85.07	125.10

Table 7 (continued)
97th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of 97th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.65		1.64		1.88		1.85	
February	1.95		1.89		1.73		1.62	
March	1.89		1.86		1.43		1.74	
April	1.50	1.56	1.67	1.64	1.64	1.57	1.80	1.71
May	1.59	1.68	1.69	1.66	1.71	1.64	1.34	1.59
June	1.55	1.57	1.71	1.81	1.80	1.85	1.57	1.62
July	1.85	1.93	1.90	1.67	1.62	1.73	1.68	1.12
August	1.71	1.55	1.73	1.50	1.80	1.54	1.90	1.76
September	1.61	1.74	1.65	1.63	1.59	1.73	1.73	1.79
October	1.63	1.78	1.72	1.75	1.78	1.70	1.79	1.66
November	1.67		1.75		1.82		1.83	
December	1.74		1.76		1.77		1.39	
Summer Avg	1.71	1.67	1.77	1.63	1.75	1.68	1.75	1.58
Winter Avg	1.77		1.76		1.81		1.67	
Rest of Year Avg	1.66	1.70	1.73	1.68	1.65	1.69	1.68	1.71
Year Avg	1.71	1.69	1.75	1.65	1.72	1.68	1.70	1.64

Ratio of 97th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	2.15		2.11		2.58		2.51	
February	2.67		2.52		2.43		1.97	
March	2.52		2.48		2.08		2.30	
April	2.00	2.72	2.21	2.30	1.98	2.22	2.17	2.33
May	1.97	2.38	2.28	2.50	2.20	2.17	1.68	2.26
June	2.02	2.18	2.28	2.59	2.68	2.44	1.97	1.97
July	2.82	2.92	2.75	2.49	2.09	2.01	2.06	1.29
August	1.86	1.99	1.93	1.66	2.17	1.85	2.46	1.82
September	2.05	2.39	2.05	2.10	2.00	2.30	2.04	2.51
October	2.15	2.06	2.30	2.51	2.35	2.21	2.20	2.31
November	2.23		2.29		2.39		2.37	
December	2.30		2.33		2.45		1.91	
Summer Avg	2.10	2.34	2.22	2.14	2.29	2.06	2.21	1.76
Winter Avg	2.36		2.31		2.50		2.21	
Rest of Year Avg	2.18	2.35	2.28	2.33	2.15	2.25	2.11	2.39
Year Avg	2.20	2.35	2.27	2.24	2.29	2.18	2.17	2.03

ABCDE refers to Zones A, B, C, D, and E

FGHI refers to Zones F, G, H, and I

J refers to the New York City Zone

K refers to the Long Island Zone

"presmd" refers to the period from September 2000 to January 2005

"smd" refers to the period from April 2005 to October 2005

Table 8
99th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

99th percentile Day-Ahead - Real-Time Prices

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	54.18		55.38		83.17		91.03	
February	45.01		46.63		38.86		51.47	
March	46.32		49.48		52.34		44.36	
April	33.24	45.57	37.35	35.29	46.81	53.05	50.00	41.67
May	25.64	30.39	33.57	35.52	42.04	32.79	45.26	15.74
June	38.95	49.14	53.00	69.66	69.94	60.64	60.59	92.78
July	43.80	46.67	59.25	65.65	60.56	63.01	95.16	70.56
August	118.23	60.95	111.06	110.26	102.77	87.64	144.40	202.86
September	33.41	49.03	34.08	84.11	35.23	146.43	54.46	84.35
October	26.57	54.71	28.15	67.78	31.20	86.74	40.92	81.85
November	26.61		28.06		28.05		34.81	
December	41.68		44.36		38.92		43.06	
Summer Avg	66.99	52.25	74.44	81.86	77.76	70.43	100.05	122.07
Winter Avg	46.96		48.79		53.65		61.85	
Rest of Year Avg	31.96	44.93	35.12	55.68	39.28	79.75	44.97	55.90
Year Avg	44.47	48.07	48.36	66.90	52.49	75.76	62.96	84.26

99th percentile of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	85.52		88.68		154.48		152.73	
February	83.95		88.05		69.29		77.98	
March	83.88		90.19		71.50		79.18	
April	52.00	145.96	61.66	66.25	66.38	89.17	68.50	92.72
May	39.81	52.36	50.19	61.19	60.83	52.55	66.07	32.24
June	56.95	76.63	84.50	122.90	107.09	98.27	95.42	182.84
July	79.51	81.62	113.79	123.21	108.39	90.34	193.63	62.10
August	352.45	96.83	196.92	148.87	187.14	146.68	459.90	285.09
September	52.09	81.51	51.75	124.60	62.95	250.39	79.04	161.33
October	44.87	88.27	49.74	119.25	52.64	134.61	53.99	130.07
November	46.01		51.59		52.98		63.29	
December	78.45		78.45		67.32		57.36	
Summer Avg	162.97	85.03	131.74	131.66	134.21	111.76	249.65	176.68
Winter Avg	82.64		85.06		97.03		96.02	
Rest of Year Avg	53.11	92.03	59.19	92.82	61.21	131.68	68.34	104.09
Year Avg	87.96	89.03	83.79	109.47	88.42	123.14	120.59	135.20

99th percentile of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days

Month	ABCDEpresmd	ABCDEsmd	FGHlpresmd	FGHlsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	117.40		111.85		212.30		228.35	
February	114.41		116.97		92.89		104.94	
March	112.79		123.63		102.77		112.79	
April	60.89	207.36	76.71	167.34	91.91	141.50	96.14	183.01
May	47.40	74.38	70.70	85.16	78.26	65.54	78.18	39.96
June	68.36	293.12	115.22	162.23	130.44	141.14	129.33	190.99
July	148.90	228.51	156.95	156.12	109.42	121.15	183.23	89.22
August	401.58	93.73	236.02	169.20	205.19	159.84	665.33	302.82
September	58.04	110.99	59.98	172.47	71.44	304.24	70.96	223.31
October	58.37	119.71	64.21	168.67	68.48	172.16	60.39	179.49
November	58.42		68.33		78.04		82.40	
December	101.71		113.31		93.22		78.66	
Summer Avg	206.28	205.12	169.40	162.52	148.35	140.71	325.96	194.34
Winter Avg	111.17		114.04		132.80		137.32	
Rest of Year Avg	65.98	128.11	77.26	148.41	81.82	170.86	83.48	156.44
Year Avg	112.36	161.11	109.49	154.46	111.20	157.94	157.56	172.69

Table 8 (continued)
99th Percentile of Day-Ahead - Real-Time Prices
All On-Peak Hours Pre-SMD and SMD Periods

Ratio of 99th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 2 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	1.58		1.60		1.86		1.68	
February	1.87		1.89		1.78		1.52	
March	1.81		1.82		1.37		1.78	
April	1.56	3.20	1.65	1.88	1.42	1.68	1.37	2.23
May	1.55	1.72	1.50	1.72	1.45	1.60	1.46	2.05
June	1.46	1.56	1.59	1.76	1.53	1.62	1.57	1.97
July	1.82	1.75	1.92	1.88	1.79	1.43	2.03	0.88
August	2.98	1.59	1.77	1.35	1.82	1.67	3.18	1.41
September	1.56	1.66	1.52	1.48	1.79	1.71	1.45	1.91
October	1.69	1.61	1.77	1.76	1.69	1.55	1.32	1.59
November	1.73		1.84		1.89		1.82	
December	1.88		1.77		1.73		1.33	
Summer Avg	2.43	1.63	1.77	1.61	1.73	1.59	2.50	1.45
Winter Avg	1.76		1.74		1.81		1.55	
Rest of Year Avg	1.66	2.05	1.69	1.67	1.56	1.65	1.52	1.86
Year Avg	1.98	1.85	1.73	1.64	1.68	1.63	1.92	1.60

Ratio of 99th Percentiles of Day-Ahead - Real-Time Prices for the same hour on 3 successive trading days / hour on a single trading day

Month	ABCDEpresmd	ABCDEsmd	FGHpresmd	FGHsmd	Jpresmd	Jsmd	Kpresmd	Ksmd
January	2.17		2.02		2.55		2.51	
February	2.54		2.51		2.39		2.04	
March	2.44		2.50		1.96		2.54	
April	1.83	4.55	2.05	4.74	1.96	2.67	1.92	4.39
May	1.85	2.45	2.11	2.40	1.86	2.00	1.73	2.54
June	1.76	5.96	2.17	2.33	1.87	2.33	2.13	2.06
July	3.40	4.90	2.65	2.38	1.81	1.92	1.93	1.26
August	3.40	1.54	2.13	1.53	2.00	1.82	4.61	1.49
September	1.74	2.26	1.76	2.05	2.03	2.08	1.30	2.65
October	2.20	2.19	2.28	2.49	2.19	1.98	1.48	2.19
November	2.20		2.44		2.78		2.37	
December	2.44		2.55		2.40		1.83	
Summer Avg	3.08	3.93	2.28	1.99	1.91	2.00	3.26	1.59
Winter Avg	2.37		2.34		2.48		2.22	
Rest of Year Avg	2.06	2.85	2.20	2.67	2.08	2.14	1.86	2.80
Year Avg	2.53	3.35	2.26	2.31	2.12	2.08	2.50	2.05

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