Straw Proposal

Post-Five Day Price Corrections

March 4, 2010

Post-Five Day Price Corrections

Prepared for Discussion on a Stakeholder Call – March 11, 2010

1 Introduction

The ISO Tariff section 35.3 and section 8 of the BPM for Market Operations provide for the ISO to make price corrections beyond the five-day price correction time horizon under limited circumstances. Specifically, section 35.3 provides that prices will be considered final after the price correction time horizon has expired, "for purposes of [this] Section 35 once the price correction process for that Trading Day has ended, except that the ISO may adjust, recalculate, or otherwise correct such prices after the conclusion of the price correction process to the extent authorized by the provisions of the ISO Tariff other than this Section 35." In essence, this tariff provision enables the ISO to adjust prices if they have been found to have been calculated inconsistently with its tariff provisions so that they are consistent with the rates, terms and conditions of service specified in its Tariff.

The price correction time horizon is described in the Business Practice Manual (BPM) for Market Operations as the period of time during which the ISO starts and ends its price validation process. The ISO started its new market design with the time horizon set to 8 days after the Trading Day the price is released and has since changed it to 5 days as reflected in the BPM for Market Operations. The setting of this time horizon is intended to notify market participants of the time during which posted prices may be subject to change because the ISO is still conducting its price validation and correction process. After this time, the ISO does not continue to validate and correct prices and does not change posted prices as a result of such procedures. However, under limited circumstances, the ISO may find after the expiration of this time horizon that prices were not calculated as prescribed by the ISO Tariff. In such cases, section 35.3 of the ISO Tariff is intended to provide the ability to change prices after the five day period to ensure that the ISO applies the rates on file with the Federal Energy Regulatory Commission (FERC).

Since the start of the new market design on April 1, 2009, there have been a small number of instances in which prices were corrected outside of the price correction time horizon. While the ISO has notified the market of these changes when they were made and why they were necessary, the ISO has not previously published the guidelines it uses to evaluate whether a price correction is warranted after the expiration of the price correction time horizon. The ISO is undertaking this initiative to address market participants' concerns regarding uncertainty around post-price correction time horizon changes and their need for price finality. Through this initiative, the ISO will work with stakeholders to discuss guidelines for post-price corrections time horizon changes, and provide more definition and clarity into instances of these price corrections.

2 Process and Timetable

The purpose of the present *Straw Proposal* is to provide Stakeholders with the ISO's recommended policy given the written comments submitted by Stakeholders, and our analysis. The proposed timeline for the Stakeholder initiative culminates in taking a policy recommendation to the CAISO

Board of Governors in May, 2010. The table below summarizes the key steps in the stakeholder process on refinements to processes relative to post-five day price corrections.

February 5, 2010	*Issue Paper* Posted
February 12	Conference call
February 19	Comments due *
March 4	*Straw Proposal* Posted
March 11	Conference call
March 22 (Note – new date)	Comments due *
April 1	*Draft Final Proposal* Posted
April 8	Conference call
May 17	Presentation to ISO Board of Governors

* Please e-mail comments to post5pc@caiso.com

3 Key Criteria for Evaluating Potential Solutions

This section provides some key evaluation criteria the ISO believes are important. Stakeholders are invited to identify other criteria that should be considered in assessing policy options for the determination of whether or not a price correction will be made after the price correction time horizon.

- The policy developed to assess the appropriateness of making a post- price correction time horizon price change should prescribe price corrections that are consistent with the rates, terms and conditions of service specified in the ISO Tariff;

- Policy with respect to evaluating the appropriateness of a post-price correction time horizon should result in consistent decisions to make those price corrections; and

- The policy should balance the need for price certainty outside the price correction time horizon against the importance of continued verification that prices are correct and consistent with the ISO Tariff, also taking into consideration the feasibility of reaching corrected prices.

4 Description of the Issues

Since the start of the new market design on April 1, 2009, there have been isolated instances in which prices were corrected outside of the price correction time horizon. The ISO has recently published a Technical Bulletin describing the price changes it has made to date outside the price correction time horizon.[1]

With respect to the ISO's practices within the price correction time horizon, based on its review of its activity over the past ten months as reflected in the Technical Bulletin, the ISO does not see the need to propose any changes to that process at this time. The ISO's attempts to improve and refine its processes before running the markets and in its price validation period has resulted in the significant reduction of the instances in which a price correction has been necessary even within the price correction time horizon as illustrated in the Technical Bulletin posted on January 20, 2010. Therefore, this initiative is focused on better defining the instances in which the ISO would actually conduct a price correction outside the price correction time horizon.

4.1 Current ISO Practices

To date, the ISO has used two principles in determining whether a price correction beyond the five-day price correction time horizon is warranted:

Consistency with the ISO Tariff

The first threshold that must be met is whether the uncorrected price would be inconsistent with any part of the ISO Tariff. This is an important principle that resides in section 35.3 of the ISO Tariff. Section 35.3 is based on the need to balance the ISO's responsibility to apply the rates on file with FERC and market participants' need for certainty that after a specified time prices will no longer change. Therefore, in its prior stakeholder efforts on the price correction process in 2007 before the start of the ISO's new market design, the ISO sought to strike this balance by establishing that, within a certain period of time after the market run, the ISO will conduct its price validation and correction process to ensure that the prices the ISO posts and upon which it settles are consistent with the ISO Tariff requirements. That time period is what is referred to as the price correction time horizon. After that time, market participants should expect that the ISO will not make price changes resulting from such price validation procedures. However, the ISO recognized then and continues to recognize that even past the price correction time horizon it is possible that the ISO or market participants may detect errors in the calculation of prices that render them inconsistent with the ISO Tariff requirements. Accordingly, section 35.3 provides the ISO authority to change prices past the price correction time horizon if necessary, and only if, the prices as published are otherwise inconsistent with tariff provisions that explicitly dictate how prices should be calculated.

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1 The Technical Bulletin describing current practices is available at the following link: http://www.caiso.com/2724/2724e6e14e940.pdf

Based on these principles, the ISO has sought to restrict price changes after the price correction time horizon and has elected to exercise its authority under section 35.3 only to the extent necessary to render prices consistent with explicit tariff requirements that mandate how a price should be calculated.

Feasibility of Recalculating Prices

Since the start of the ISO's new market design and the implementation of its new price correction processes, the ISO has restricted price corrections outside the price correction time horizon to those that violated specific tariff requirements regarding the way in which prices should be calculated. Section 35.3 is intended to enable the ISO to recalculate prices in a manner that is consistent with the tariff to the extent that doing so is feasible and reasonable given the nature of the error identified.

There is an important distinction between upstream tariff requirements that may impact a market solution and those tariff requirements that speak specifically to the price calculations made <u>after</u> the market run is completed. While upstream errors or misapplications can render prices inconsistent with tariff requirements, an attempt to arrive at the "correct price" would require the ISO to construct a hypothetical re-run of the entire market. Such exercises have proven in many cases to be virtually infeasible due to the following operational and market realities:

- Once the ISO has run a market procedure such as the IFM or the RTM, dispatches and schedules have been set and energy is delivered and consumed based on those schedules. It is impossible to re-run the market series and instruct a correction of the deliveries after the fact based on the dispatch or schedule would result from the "correct" run. Even if the ISO were to re-settle the market based on the "corrected prices" the resettlement would have to be on the previously scheduled and delivered or consumed MWh quantities;
- The ISO runs a series of integrated markets, which result in a final energy and ancillary services markets settlement based on the various outcomes of the interim market before the final real-time market is run each day. For example, were the ISO to find an error in the calculation of the IFM market outcome and prices, re-running the IFM alone would not suffice to truly render the total market outcome consistent with the corrected market input. Without a complete re-run, the imbalance markets in the real-time would be inconsistent with the re-run IFM markets thereby creating further inaccuracies; and
- To the extent that the ISO can run studies to evaluate the price impact of the error without a re-run of the underlying market, at best the ISO can only achieve an approximation of the margin of impact on the prices. Although one possible avenue is to make adjustments based on the margin of differences, such techniques yield only approximations, and not actual corrections. Moreover, even these approximations can be infeasible depending on the scope and depth of the error.

The inherent inaccuracies of reconstructing market outcomes may produce less favorable settlement outcomes than not making any corrections at all. In addition, bid cost recovery for resources for which the reconstructed hypothetical dispatch is different than the original dispatch may result in uplift that would outweigh the benefits of the change. On the other hand, if the pricing error is merely a pricing calculation error and thus does not require a hypothetical reconstruction of a market run, in the interest of applying the filed rate, and depending on the scope of impact of the error as discussed further below, the ISO would consider correcting the price.

An example of the application of these principles is the price corrections the ISO made upon discovering that the ISO had miscalculated the weighting factors of the trading hub prices.[2] There, the error in the weighting calculation were readily rectified by recalculating the trading hub prices so that the prices were calculated consistent with the ISO Tariff requirements regarding the specific method for calculating the weights. Subsequently, the ISO was able to integrate the correction into the settlements recalculations statements so that inter-scheduling coordinator trades and congestion revenue rights were settled on the correct trading hub prices.

Scope and breadth of market impact

Out of recognition for the need for price certainty and the finality of prices after the price correction time horizon, ISO Tariff section 35.3 does not mandate that the ISO actually make a price correction. Therefore, the ISO has the authority to make such changes, but is not required to do so. This implies that the ISO consider certain factors to making such changes. The ISO has, therefore, considered a second threshold that speaks to the breadth of the impact the incorrect price has on the market. Since the launch of the new market, the ISO has utilized the following general parameters to determine whether or not a price error has a market impact broad enough to warrant a post-five day price correction:

- Number of Scheduling Coordinators or Market Participants Impacted: To the extent possible, the ISO evaluates the number of market participants impacted by the error. A small number of market participants impacted by a specific pricing error may not warrant a price correction beyond the price correction time horizon.
- Total Financial Impact: Depending on the nature and location of the pricing error, the financial impact to market participants may vary. In some instances of pricing errors, the ISO has therefore attempted to calculate the total cost difference based on total schedules cleared at the corrected and uncorrected prices. To the extent feasible, the ISO calculated the percentage change in total costs based on the uncorrected and corrected prices and determines the percentage impact on the market.

Processing Issues

It is also important to consider, as noted in the Price Validation Technical Bulletin posted on January 20, 2010, that in some instances, what appeared to be price corrections outside the price correction time horizon were in fact republication of original validated prices. This was due to processing issues that the ISO experienced after the start of its new market. These processing issues have been largely resolved. None-the-less, the ISO recognizes that, given the complex nature of the systems it operates, it is possible that system and processing errors may occur in the future. Thus, it is important to consider sufficient flexibility so that, in the event of such processing errors, the needed changes in posted prices can be made. The important factor to consider in these types of republications is that there is no actual change in prices.

2 See Technical Bulletin posted at: http://www.caiso.com/23c2/23c2e30e1b7c0.pdf.

4.2 Current Practices at Other ISOs

Other ISOs and RTOs, with the exception of PJM, do not have authority to make price correction after the expiration of their price correction time horizons without FERC direction. Below is a brief summary of the practices at other ISOs and RTOs:

- The New York Independent System Operator (NYISO) has a price correction time horizon of three calendar days. Price corrections outside this timeframe will only be done at the direction of the FERC or by a court of competent jurisdiction.[3] The NYISO is the only ISO/RTO that has made filings with the Commission upon discovering an error outside the timeframe allowed for price corrections. The NYISO was ordered to make a number of tariff revisions designed to improve reporting to the Commission and to stakeholders.
- Southwest Power Pool (SPP) has a price correction time horizon of five calendar days. Price corrections outside this window require FERC approval.
- The Midwest Independent System Operator (MISO) has a price correction time horizon of 5 calendar days for LMP errors and 5 business days in the case of Ex Post LMP errors.
- ISO New England (ISO-NE) has a price correction time horizon of 3 business days.
- The PJM Interconnection (PJM) currently has no provision in place to limit the timeframe in which it can make price corrections.

5 Consideration for Post- Price Correction Time Horizon

As discussed above, in considering whether the ISO should make a price correction after the expiration of the price correction time period, the market must balance the need for price certainty against the need to apply the prices on file with the Commission. In this section, we discuss the various considerations to be made in more clearly defining the guidelines to be used for price corrections beyond the price correction time horizon.

Settlement Disputes

Settlement statements are published at T+7B, T+38B, T+76B, T+18M, T+35M and T+36M. Disputes may be submitted for a price related issue on the T+7B or the T+38B statement while only incremental changes, or differences from the last statement, may be disputed on the other published statements. Disputes submitted for items identified on any of these statements that are valid are generally resolved on the next available settlement statement. However, in some cases, additional time is necessary for the ISO to properly research and resolve some complex issues.[4]

The ISO recognizes that the price dispute process is a necessary and important one and will maintain such requirements in its tariff to ensure that the prices and rates paid by or to market participants are consistent with the terms of the ISO Tariff. It is possible that valid corrections to market prices will occur through this process because market participants may find that the ISO calculated prices incorrectly. It is possible that, through this process, the ISO will discover that the error impacted prices applied to other market participants. Currently, under the new sunset

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1 Services Tariff, Attachment E, Section C at Third Revised Sheet No. 422

4 See the Settlements and Billing BPM available at the following website: https://bpm.caiso.com/bpm/bpm/version/000000000000010

provision in the tariff, such dispute-driven changes are only possible within three years of the market clearing with the vast majority being identified and fixed by the T+76B statement. When accepting disputes, the ISO has in the past applied the same treatment to other similarly situated market participants.

In evaluating guidelines for price corrections outside the price correction time horizon, it is important to consider whether such price corrections should be tied to the settlement dispute process. In the event that the resolution of a dispute leads the ISO to discover an erroneous price outside the price correction time horizon, could the ISO grant the disputing party's dispute and fix that party's settlement while not undertaking a market-wide price correction? It is reasonable that, should the ISO discover a pricing error that effects parties other than the disputing party, the ISO would actually apply the guidelines for making price corrections outside the price correction time horizon at that time. For example, outside of the dispute process, after the price correction time horizon has elapsed, no price corrections be made unless those certain guidelines are met.

Finality of Prices

An important factor to consider is whether there is the need to define a sunset after the expiration of the price correction time horizon, after which the ISO would no longer make any price corrections. For example, the ISO's guidelines for price corrections beyond the price correction time horizon may be tied the settlement statement schedule. For example, the ISO Tariff provides that parties may dispute any item as late as the deadline for the Recalculation Settlement Statement published at T+38B. Beyond that statement, only incremental changes or differences from the last statement may be disputed.

Processing Issues

As discussed in the ISO Technical Bulletin, it is possible that certain posted prices may have appeared to change after the price correction time horizon due to processing issues. While the ISO has worked to reduce such instances, it is not inconceivable that such reposting of prices can occur again due to data processing issues. The ISO recommends that changes related simply to processing errors, due to factors such as data upload problems, may be made after the five day price correction time horizon, and no later than any cut-off point the ISO might adopt as discussed above.

Prices Inconsistent with Tariff Requirements

Tariff Section 35.3 speaks only to situations in which prices are calculated in a manner that is inconsistent with Tariff requirements. Specifically, "the CAISO may adjust, recalculate, or otherwise correct such prices after the conclusion of the price correction process to the extent authorized by the provisions of the CAISO Tariff other than this Section 35."

Occurrences that are commonly thought of as pricing errors generally fit into two categories: those requiring a full re-run of the market, and those requiring only a settlement re-calculation. Examples of circumstances that would necessitate a full re-run of the market would include input issues such as modeling errors and bid transfer errors. The ISO continues to believe that price corrections should not include the type of changes that require a re-run of the entire market.

In the event that the ISO discovers a market problem that renders the market outcomes inconsistent with the ISO Tariff, the ISO will notice the market of the mistake and undertake an analysis of the impact of the error in these circumstances which – regardless of its outcome – will be shared with market participants.[5] As discussed above, it should be noted that analyses of the market impact of errors in this category are inherently imperfect since a full re-run of the market will yield different prices and different quantities dispatched. Thus no precise "before and after" analysis can be performed.

The ISO continues to believe that section 35.3 should in large part apply to the second category of price corrections that consist of instances in which the pricing error requires only a settlement re-calculation in order to render the pricing outcome consistent with the tariff requirements

In the event of this latter category of errors in which prices were calculated in a manner inconsistent with the ISO Tariff, the ISO recommends that there be thresholds relative to the impact of the market to determine whether or not the market will be re-settled based on the corrected prices. Again, the ISO will notice the market and describe the error, and provide the results of the analysis. The recommended thresholds will be determined through this stakeholder process.

Limited look-back

In certain instances, the pricing error may have gone back an extended period of time before the error was detected. This brings to light the question of whether the ISO should make price corrections outside the price correction time horizon only within a certain look-back period. Is a price correction beyond a certain time period desirable, even if it makes the price consistent with the tariff would be "stale" after a certain time period during which parties have conducted other transactions based on those market outcomes? The ISO will work with stakeholders in considering whether a limited look-back period is appropriate and if so, how far back in time it should go. The decision about whether to adopt a look-back period must consider the interest of price certainty over the need to provide the filed rate.

Keep 5-day price correction time horizon rather than moving to a three-day process

Since the adoption of the new price correction procedures, the ISO has improved its price correction processes, and is confident that these procedures can reliably conduct the necessary price validation within the current five day price correction time horizon. The BPM for Market Operations specifies that the ISO will be moving towards a three day price correction time horizon after one year of experience with the new market design. The ISO believes that, at this time, it is more prudent to retain the five day period. As it strives to provide more price certainty outside the price correction time horizon, shortening the time horizon may unnecessarily result in more need to change prices outside that time period. The ISO therefore proposes to retain the five day time horizon.

5 A full inventory of such market notices is provided in the Price Validation Technical Bulletin, published to the ISO website on January 20, 2010.

6 Stakeholder Feedback

In the written comments provided on the Issue Paper, there were several common issues brought forward by Stakeholders. Following is a summary of the comments for those specific issues:

Price corrections after the five-day price correction time horizon

On the subject of whether or not to make changes to prices after the five-day price correction time horizon, Stakeholders were divided. Two Stakeholders indicated that post-five day price corrections should never be made; one of these two Stakeholders stressed the need for price finality. Another Stakeholder was strongly in support of always making price corrections without a sunset or other limiting policy. The remaining four comments received expressed support for the ISO making post-five day price corrections in some circumstances, while recognizing that developing firm criteria to identify those circumstances is difficult at best.

Look-back provision for price corrections

Again, Stakeholders were divided on the question of the extent to which the ISO should have a look-back window in which to make retro-active changes. While three Stakeholders expressed support for a very wide window, others were adamant about the importance of price finality. One Stakeholder provided extensive discussion of the need for price finality in the context of the settlement of bilateral agreements.

Length of the price-correction time horizon

The ISO recommended staying with its current five-day price correction time horizon during which we perform our price validation process. Although the plan was to move to a three-day window, shortening the time horizon may unnecessarily result in an increased need to change prices outside that time period. Stakeholders were supportive of this recommendation, though several requested that a date for the move to a three-day window be provided.

Price correction recommendations to the ISO Board of Governors

Two Stakeholders suggested that the ISO seek approval from its Board of Governors for price corrections after the close of the price correction time horizon. The ISO agrees that there is a role for its Board in providing transparency into post-five day price corrections. This will be discussed further in the following section with details the ISO's *Straw Proposal.*

7 Straw Proposal

The ISO proposes to retain in its Tariff with some clarification the requirement that the only price corrections permissible after the price correction time horizon will be those that are necessary to render the prices consistent with an explicit tariff requirement regarding how the price is determined. The ISO further proposes to modify its Tariff to explicitly limit the scope of post-five day price corrections so that it is clear that upstream, market input errors – for examples, incorrect or missing data, software execution problems, erroneous transmission constraints – that would necessitate a hypothetical reconstruction of market outcomes will *not* be part of the ISO's post-five day price correction authority. It is proposed that the ISO's post-five day price correction authority be limited to those instances in which a potential correction to prices would not require such a re-run of the ISO market.

As potential price corrections are subsequently discussed in this *Straw Proposal*, please note that they are thus considered to be of the type that would require post-market, or downstream, recalculations of prices only.

The reposting of prices due to processing issues is not considered a price correction. In the event that the need to repost prices is discovered, the ISO will prepare an addendum to the weekly price correction report. This addendum will provide an explanation of the processing issue, and will include detail as to the impacted intervals.

In the event that, through ongoing analysis or a settlement dispute, the ISO discovers outside the 5-day price correction time horizon that prices were calculated in a manner inconsistent with our Tariff, the ISO proposes to follow the process outlined in the steps below:

- The ISO will perform an analysis of the impact of the potential price correction. This analysis will be based on the number of impacted intervals, the number of impacted market participants, and – as feasible – the dollar value impact to market participants, and the skewness of the impact by sector and/or participant. It is important to stress that any analysis and subsequent recommendation will be guided and informed by the degree to which the analysis is feasible (and therefore the extent to which it is accurate as opposed to an estimate), and upon the administrative burden of the analysis and price correction. As such, the ISO will explain any limitations of the analysis and also provide an assessment of the feasibility and administrative burden of making the price correction; and

- The ISO will prepare and post a Technical Bulletin providing the market with the results of this analysis as well as our initial recommendation. The Technical Bulletin and the ISO's recommendation as to whether or not a price correction is feasible and warranted based on the considerations listed above will be discussed on the Market Issues call or in a similar forum. If the analysis or recommendation is revised after the discussion with Stakeholders, the ISO will post a revised Technical Bulletin.

<u>In addition to the process described above, after considering Stakeholder input the ISO proposes the following policies:</u>

- The ISO proposes to establish a look-back period limited to 60 days. In other words, the ISO will not change prices that are older than 60 days. The 60 days will extend back from the date from which – going forward – the ISO is able either to fix the problem or to correct the prices due to the problem during the price correction time horizon. This time-frame allows enough time for a price correction to be made in response to a settlement dispute. The look-back period is limited to 60 days out of recognition of the importance of price finality, while not undermining the intentions of the settlement dispute process;

- The ISO commits to revisiting the question of whether to go from a 5-day price correction window to a 3-day price correction window by April 1, 2011. At that time, we will justify our decision either way. Note that, this timeframe will provide the ISO will the five-day window for the price validation process which will need to be adapted and tested after the implementation of several major market enhancements including Convergence Bidding;

- In the event that the need for a resource-level price correction is detected through the dispute process, and to the extent that the ISO can identify similarly situated parties, we will endeavor to apply the price correction to those other parties based on impact and feasibility;

- The ISO commits to posting corrected resource-level prices identified through the dispute process on OASIS so that published prices match those used for settlement. In addition, we commit to include information on which intervals were changed as part of the weekly price correction sheet. The ISO currently has in development an OASIS change that will provide additional details of price corrections.[6] This new functionality has a target deployment of Q2/Q3 of 2010. In the meantime, to the extent that the ISO makes post-five day price corrections or changes due to processing issues we will add a section to our weekly price correction report to provide Stakeholders with that additional information; and

- The ISO will strive to include any corrected prices in the T+76 Days settlement. This may not be feasible in the case that extensive analysis is needed. None-the-less, the settlement statement will include all corrected prices no later than T+18 months.

8 Next Steps

The ISO will conduct a conference call to review this *Straw Proposal* on Thursday March 11, 2010 from 1:00 p.m. to 3:00 p.m. The ISO appreciates stakeholder comments and discussion on the issues raised within this paper as well as other issues that should be examined. Please send your comments by close of business on March 22, 2010 to post5pc@caiso.com.

[6] More detail on the OASIS message log enhancements can be found in the January 20, 2010 Price Validation Technical Bulletin posted at http://www.caiso.com/23c2/23c2e30e1b7c0.pdf