

# SWIDLER BERLIN LLP

Michael Kunselman  
Phone 202.295.8465  
Fax 202.424.7643  
mnikunselman@swidlaw.com

The Washington Harbour  
3000 K Street, N.W., Suite 300  
Washington, D.C. 20007-5116  
Phone 202.424.7500  
Fax 202.424.7647

[www.swidlaw.com](http://www.swidlaw.com)

July 26, 2005

The Honorable Magalie R. Salas  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: Request for Extension of Tariff Authority for “As-Bid” Settlement of  
Pre-dispatched Intertie Transactions  
Docket No. ER05-718-000, Amendment No. 66 to the CAISO Tariff**

Dear Secretary Salas:

Pursuant to Section 205 of the Federal Power Act (“FPA”), 16 U.S.C. § 824d, and Sections 35.11 and 35.13 of the regulations of the Federal Energy Regulatory Commission (“Commission”), 18 C.F.R. §§ 35.11, 35.13, the California Independent System Operator Corporation (“CAISO”)<sup>1</sup> respectfully submits for filing, in accordance with the Commission’s “Order on Tariff Filing”, 111 FERC ¶ 61,008 (2005) on April 7, 2005 (“A66 Order”) an original and five copies of its proposal to maintain the “as-bid” settlement rules for settling intertie transactions (import/export bids) as the longer-term solution to remain in effect beyond the September 30, 2005 sunset date specified in the A66 Order.

Since its Amendment No. 66 filing, the CAISO has spent more than three months studying the effectiveness of the “as-bid” settlement rules and meeting with stakeholders to discuss alternatives. In light of the effectiveness of the “as-bid” solution, based on evidence incurred to date, and the need to focus the CAISO’s resources on achieving the goal of the CAISO’s Market Redesign and Technology Upgrade (“MRTU”) project of implementing a locational marginal pricing (“LMP”) market design as of February 2007, the CAISO has concluded

---

<sup>1</sup> Capitalized terms not otherwise defined herein are defined in the Master Definitions Supplement, CAISO Tariff Appendix A, as filed August 15, 1997, and subsequently revised.

that retaining the “as-bid” solution as the longer-term solution until implementation of MRTU is “just and reasonable” and the best alternative available to the CAISO.<sup>2</sup> The CAISO will include as part of its November 2005 MRTU Tariff filing a long-term methodology for settling intertie bids in the Hour Ahead Scheduling Process (HASP), which under the current MRTU timeline would become effective as of February 2007. Between now and the start-up of the MRTU markets the CAISO will continue to monitor the effectiveness of the “as-bid” solution and will propose corrective action to the Commission if necessary.

Because the tariff language implementing the “as-bid” methodology has already been filed with, and approved by, the Commission on an interim basis, the CAISO is not herein re-filing that identical language. Instead, the CAISO respectfully requests that the Commission extend the effectiveness of those tariff provisions, indicating that they will continue to apply as of October 1, 2005 until such time as the CAISO exercises its rights under section 205 of the FPA by filing to implement an alternative methodology, or is directed by the Commission to replace the “as-bid” methodology pursuant to a finding made under Section 206 of the FPA that the “as-bid” rule is not (or is no longer) just and reasonable.

## I. BACKGROUND

During the early months of 2005, the CAISO observed that the combination of the pre-dispatching of import/export bids and the “bid or better” settlement rule, implemented as part of Phase 1B of MRTU in October 2004, along with variations between the real-time market clearing price and the projected price used to clear import/export bids at the interties, created an incentive for Scheduling Coordinators to bid in a manner that dramatically increased uplift costs incurred by the CAISO. As described by the CAISO in its March 23 Amendment No. 66 filing, this situation came about because, pursuant to Phase 1B, the CAISO pre-dispatches import/export bids at least forty minutes prior to real-time based on the intersection of an incremental and decremental price/quantity curve. However, under the “bid or better” settlement rule, which guaranteed that System Resources received the better of their bid price or the real-time Market Clearing Price (“MCP”), when the real-time MCP diverged from the price at which import/export bids were pre-dispatched, the difference was reflected as additional uplift costs that the CAISO must allocate to Market Participants.<sup>3</sup> Exacerbating this problem is the manner in which these uplift costs

---

<sup>2</sup> As explained further below, the Commission granted the CAISO’s request for clarification that the CAISO would be permitted to file to continue using the “as-bid” methodology if it concluded that that methodology represented the best solution going-forward.

<sup>3</sup> Attachment A to this filing contains a more detailed discussion of the manner in which these uplift costs are created, and includes graphical examples illustrating this phenomenon.

are allocated. Under the CAISO Tariff, uplift charges are allocated first to Scheduling Coordinators based on their net negative uninstructed deviations and then to all metered demand (excluding pre-dispatched export transactions). Thus, Scheduling Coordinators submitting import/export bids are not financially responsible for the uplift costs created when those bids are cleared, creating an incentive for those Scheduling Coordinators to submit large volumes of overlapping incremental and decremental bids, which the CAISO would then clear, despite the fact that during many intervals the CAISO had no need for additional energy from System Resources in real-time in order to meet load in the CAISO Control Area.

To address this problem, the CAISO filed, on March 23, 2005, Amendment No. 66 to the CAISO Tariff, in which the CAISO proposed, on an interim basis, to settle pre-dispatched import/export bids for incremental and decremental energy on an "as-bid" basis. Under this modification, pre-dispatched suppliers would be paid (or pay the CAISO) their original bid price, rather than the greater (or lesser) of their bid and the ex post real-time MCP. Because of the magnitude of uplift costs being incurred by the CAISO under the "bid or better" settlement rule,<sup>4</sup> the CAISO requested that the Commission consider Amendment No. 66 on an expedited basis.

On April 7, 2005, the Commission issued an order approving Amendment No. 66,<sup>5</sup> effective from March 24, 2005, as requested, until the earlier of (a) September 30, 2005, or (b) the effective date of a tariff filing providing a long-term solution filed by the CAISO and accepted by the Commission. The Commission explained that if no proposed tariff amendment has been filed to become effective by September 30, 2005, then on October 1, 2005, the Amendment No. 66 provisions will sunset, and those tariff sections will revert to their pre-Amendment No. 66 versions. The Commission also ordered the CAISO to monitor and file weekly reports on the market impacts and effectiveness of the "as-bid" settlement rule, specifically (a) whether the liquidity of bids at the interties is diminished, and (b) the extent to which the "as-bid" rule caused bidders to change the level of their bids to the expected clearing price, and the resulting effect on the overall costs to customers from both of these possible problems. Finally, the Commission directed the CAISO to present to the Commission, within 30 days from the date of this order, the CAISO's plan (including milestones) for addressing the problems identified in this order.

---

<sup>4</sup> Between the implementation of Phase 1B and March 22, 2005, the CAISO estimates that about \$33.6 million in uplift costs were incurred, approximately \$18.5 million of which were attributable to the "overlapping" incremental and decremental bids that were cleared, but netted out so that no net energy was provided or received from the CAISO System. In the month prior to the filing of Amendment No. 66, the uplift associated with overlapping incremental and decremental bids for market clearing reached approximately \$10.5 million, averaging nearly \$400,000 per day.

<sup>5</sup> 111 FERC ¶ 61,008 (2005) ("A66 Order").

The CAISO sought clarification and rehearing of the A66 Order. Specifically, the CAISO asked the Commission to clarify that the CAISO would not be precluded from proposing, as its preferred “longer-term solution” to the problem of clearing overlapping intertie bids, retention of the interim “pay as-bid” payment methodology. The CAISO also requested rehearing of the Commission’s requirement that the CAISO implement a “long-term solution” to the problem of overlapping intertie bids by September 30, 2005, and requiring the CAISO to reinstate the “bid or better” methodology for settling intertie transactions unless such a solution is filed to become effective by September 30, 2005. The CAISO explained that it could not implement the leading alternative to the “as-bid” option, settling predispatched bids based on a uniform pre-dispatch market clearing price, by the sunset date of October 1, 2005, and estimated that it might not be able to do so until March 2006. The CAISO also explained that any longer-term solution would likely be modified or entirely replaced by MRTU Release 1, which is scheduled to be implemented on February, 2007. Moreover, the CAISO stated that reverting to the “bid or better” settlement methodology during the period between October 1, 2005, and the date on which the longer-term solution is implemented would be highly detrimental to Market Participants.

On May 20, 2005, the Commission issued its order on rehearing and clarification of the A66 Order.<sup>6</sup> The Commission granted the CAISO’s request for clarification that the CAISO is not precluded from proposing the retention of the current “as-bid” payment methodology, and noted “[w]hen the CAISO makes that filing, the Commission will consider it on its own merits.” However, the Commission denied the CAISO’s request for rehearing of the September 30, 2005 sunset date for Amendment No. 66. The Commission noted that the approval of Amendment No. 66 was made on an expedited basis due “in part, based on the CAISO’s commitment that it would conduct a full stakeholder process and be able to shortly file a solution that was developed through that process,” and that it would hold the CAISO to that commitment. *Id.* at P 16.

## II. RATIONALE FOR EXTENSION OF AS-BID AUTHORITY

### A. Stakeholder Process Post-Amendment No. 66

Since the approval of Amendment No. 66, the CAISO has conducted an extensive stakeholder process in order to determine the best longer-term solution to the problem of settling import and export bids from System Resources for the

---

<sup>6</sup> 111 FERC ¶ 61,235 (2005) (“A66 Rehearing Order”). In this order, the Commission also approved Amendment No. 69 to the CAISO Tariff, which made several minor modifications to the Tariff language proposed in Amendment No. 66, in order to correctly implement the “as-bid” methodology.

period between October 1, 2005 and implementation of the CAISO's new LMP market design in February 2007.

The CAISO has conducted several stakeholder meetings and calls to discuss and solicit input on this issue. On April 28, 2005, the CAISO held a stakeholder meeting to discuss various pre-dispatch settlement options under review, update Market Participants concerning the performance of the CAISO markets under the "as-bid" settlement rule, and outline potential modifications to settlement provisions relating to how pre-dispatch costs are allocated.

On May 20, 2005, the CAISO held a follow-up stakeholder conference call to discuss the information requested at the April 28 meeting for which the CAISO had posted informational white papers in advance of the call. The four areas of discussion were: 1) description of pricing during the hourly pre-dispatch process, 2) description of generation deviation and its effect on Imbalance Energy requirements, 3) discussion of allocation of hourly pre-dispatch uplift costs and 4) discussion of bid revenue adequacy using pre-dispatch prices.

On May 27, the CAISO held one final stakeholder discussion in which the CAISO discussed its evaluation of the options and its recommended approach. During this discussion, the CAISO advised Market Participants that it planned to request CAISO Board approval to file with the Commission to continue using the "as-bid" methodology to settle import/export bids from System Resources after the September 30, 2005 Amendment No. 66 sunset date.

Through this stakeholder process, the CAISO and Market Participants considered a number of potential longer-term solution options. These options are summarized in the table included as Attachment A to this filing. Of these various options, two in particular received the most support from Market Participants, the CAISO, and the Market Surveillance Committee ("MSC"):<sup>7</sup> (1) setting a pre-dispatch market clearing price that all import and export bids from System Resources would be settled against<sup>8</sup>; or (2) retaining the "as-bid" methodology, under which System Resources that are dispatched are paid their bid price. For the following reasons, the CAISO believes that of these two, retaining the "as-bid" methodology would be the most appropriate longer-term solution to remain in place until February 2007:

---

<sup>7</sup> As part of this process, the CAISO requested that the MSC provide a recommendation as to the most appropriate longer-term solution for settling intertie bids. The MSC participated in the stakeholder process, and provided, on June 24, 2005 an opinion endorsing the continuation of the "as-bid" methodology. This opinion is included as Attachment B to this filing, and was also filed separately with the Commission on June 27, 2004 in this docket.

<sup>8</sup> As detailed in the table included as Attachment A, the CAISO and Market Participants examined three sub-alternatives to this option. For purposes of this filing letter, references to the "pre-dispatch market clearing price" option refer to what is set forth as Option 1b in Attachment A, under which pre-dispatched bids would receive a pre-dispatch market clearing price plus an uplift

- As shown in the weekly reports prepared by the CAISO's DMA detailing the implementation of Amendment No. 66, the "as-bid" methodology has worked extremely well in curbing the problems observed with settling import and export transactions using the "bid or better" rule.
- The "as-bid" settlement rule offers most of the same benefits as a "pre-dispatch market clearing price" methodology.
- Based on the CAISO's experience operating under the "as-bid" methodology, the potential downsides to the "as-bid" methodology are not significant.
- The "as-bid" methodology requires no additional expenditure of resources or time to implement, while implementing the "pre-dispatch market clearing price" methodology would prove costly, and in any event, could not be put in place prior to the Spring of 2006, only to be displaced entirely by the implementation of MRTU Release 1 in February 2007.

In addition, a couple of Market Participants proposed new potential solutions during the stakeholder process. Bonneville Power Administration ("BPA") felt strongly that the objective of the longer-term solution should not necessarily be that a System Resource recover its bid price, but rather that it be compensated the value of the energy delivered. Therefore, BPA suggested that the CAISO should adopt a system that differentiates between those intertie bids that were pre-dispatched to meet real-time imbalance energy needs and those that were pre-dispatched as a result of market clearing in the pre-dispatch run (*i.e.* the overlapping bids where import/export quantities net out). According to BPA, the portion of bids dispatched for imbalance energy needs should be settled based on a "bid or better" settlement rule with uplifts allocated according to the benefits received from that energy, while the portion of bids identified as pre-dispatched as a result of pre-dispatch clearing should be settled at the pre-dispatch clearing price. In response, the CAISO analyzed the BPA alternative and discussed it with the MSC. The CAISO concluded, however, that BPA's suggestion would not prove practicable under the circumstances, because there is not an easy and transparent way to determine if a bid was pre-dispatched due to market clearing versus imbalance energy needs. Furthermore, the CAISO determined that the level of effort required to implement the BPA's proposed alternative would be even greater than that necessary to implement the pre-

---

payment in case of rare circumstances in which the pre-dispatch price was insufficient to allow a pre-dispatched System Resource to recover its bid price.

dispatch market clearing option, which as noted above, could not be accomplished until the spring of 2006.

Sempra Energy Trading (“Sempra”) advocated a pricing approach that is similar to that which was in place prior to the implementation of MRTU Phase 1B, where any pre-dispatch energy is settled strictly at the real-time price with no guarantee that the applicable System Resources will recover their bid prices. The CAISO does not believe such an approach is appropriate, however, because of the uncertainty that it would create with respect to whether suppliers would be able to recover their costs, and would likely reduce the level of imports that would be made available to the CAISO Market. Prior to the implementation of MRTU Phase 1B, the amount of energy bid into the CAISO Markets from imports was significantly less than current levels, even after taking into account the implementation of the “as-bid” methodology. Finally, the CAISO disagrees with Sempra’s contention that the CAISO’s real-time market is an appropriate market for parties throughout the west to procure firm energy from. Rather, the primary purpose of the CAISO’s real-time market is to provide the means for the CAISO to balance its System due to differences between forward market schedules and actual real-time load.

**B. Continuation of the “As-Bid” Methodology for Settling Pre-Dispatched Intertie Bids is Just and Reasonable and is the Best Option in Light of All Considerations**

**1. The “As-Bid” Rule Has Worked and Continues to Work Well and Solves the Problems Identified with the “Bid or Better” Settlement Rule**

As the CAISO explained in the Amendment No. 66 filing, the combination of the pre-dispatch of import/export bids, the “bid or better” settlement rule, and the variance between real-time market clearing prices and the predicted price for pre-dispatched bids, created an incentive for Scheduling Coordinators representing System Resources to bid in large quantities of offsetting incremental and decremental energy, which in turn led to a substantial increase in the magnitude of uplift costs incurred by the CAISO, even when the CAISO had no need for energy from resources outside the CAISO Control Area to meet load within the CAISO Control Area.

The "as-bid" methodology has worked extremely well in curbing this phenomenon. The amount of overlapping incremental and decremental bids cleared by the CAISO dropped dramatically as soon as the CAISO moved from the "bid or better" settlement rule to the "as-bid" settlement rule. As detailed in the weekly DMA reports on the implementation of Amendment No. 66, since the effective date of Amendment No. 66, an average of only about 26 MW of off-setting incremental and decremental bids have been pre-dispatched each hour, as opposed to an average of about 600 MW per hour in the month prior to implementation of Amendment No. 66.

Moreover, as shown in the weekly DMA reports, costs incurred by the CAISO associated with clearing the market by dispatching overlapping incremental and decremental bids from System Resources have been essentially eliminated under the "as-bid" settlement rule, because revenues received by the CAISO for decremental bids pre-dispatched to clear the market meet or exceed payments for off-setting incremental bids pre-dispatched to clear the market.<sup>9</sup> As noted in the CAISO's Amendment No.66 filing, the costs attributable to clearing of overlapping (or off-setting) incremental and decremental bids averaged about \$400,000 per day in the month prior to Amendment No. 66. In other words, although the export and import quantities off-set each other, or netted-out, sellers/buyers were still entitled to be paid (or pay) their "bid or better" creating the uplift charge even though no energy was generated for the overlapping quantity. Thus, the implementation of the "as-bid" methodology has resulted in an estimated savings to the CAISO Markets of about \$400,000 per day.

Additional analysis comparing the performance of the CAISO's import/export market under the "bid or better" and "as bid" settlement rules is included in the DMA White Paper entitled "CAISO Import/Export Market Performance Under 'As-Bid' versus 'Bid-or-Better' Settlement Rules," which is attached to this filing as Attachment C.

---

<sup>9</sup> See, e.g., *Report on Market Impacts of Amendment 66: "As-Bid" Settlement of Pre-dispatched Inter-tie Bids for Real Time Energy*, filed in Docket No. ER05-718 (July 15, 2005) at 5. After the change to the "as-bid" settlement rule, minor net costs from market clearing have resulted from the fact that the methodology used to calculate net costs is based on the total overall average price for all incremental and decremental energy pre-dispatched in hour. Thus, when incremental energy exceeds decremental energy pre-dispatched, the weighted average price per MWh of incremental energy may exceed the weighted average price of all decremental bids pre-dispatched. In practice, market clearing would be revenue neutral or produce a small positive net revenue. However, due to the very small volume of off-setting inc and dec bids pre-dispatched under the "as-bid" rule any net revenues from clearing the market on an "as-bid" basis have been minimal.



For these reasons, the CAISO submits that the “as-bid” methodology implemented in Amendment No. 66 has proven, and continues to prove, *extremely effective in curbing the excessive costs that resulted from the intersection of the “bid or better” settlement rule for settling pre-dispatched intertie transactions under MRTU Phase 1B.*

## **2. The “As-Bid” Rule Shares the Most Important Features of a Pre-Dispatch MCP Solution**

The “bid or better” settlement rule and the process of clearing the market for incremental and decremental energy from bids received from System Resources (beyond projected CAISO imbalance needs) were designed to increase system reliability by increasing the participation in, and efficiency of, the CAISO’s import markets. However, the “bid or better” settlement rule resulted in excessive cost related to bids that were pre-dispatched simply to clear the market. Both the “as-bid” and the “pre-dispatch market clearing price” options prevent the incurrence of uplift costs that would be allocated to CAISO rate payers *stemming from the process of clearing intertie bids for incremental and decremental energy beyond the level needed for projected CAISO system imbalance energy needs.* Under a “pre-dispatch market clearing price” approach, the same pre-dispatch market clearing prices would be used to settle incremental and decremental intertie bids pre-dispatched to clear the market (beyond projected CAISO imbalance needs). Thus, the revenues from any decremental bids pre-dispatched to clear the market would cover the payments associated with any incremental bids pre-dispatched as part of the market clearing process and there would be no “uplift” charges. However, the “pre-dispatch market clearing price” option is not superior to the “as-bid” option in this regard, because the “as-bid” settlement rule also guarantees that revenues from any decremental bids pre-dispatched to clear the market at least equal (or even exceed) the payments associated with any incremental bids pre-dispatched as part of the market clearing process.

*In addition, both the “as-bid” and “pre-dispatch market clearing price” methodologies would ensure that System Resources recover the full bid price of any incremental energy bids pre-dispatched by the CAISO (and pay no more than the bid price of pre-dispatched decremental energy bids).<sup>10</sup> Thus, both of these methodologies ensure that System Resources will be able to cover their operating costs. Moreover, both settlement solutions would provide the opportunity for System Resources to receive prices in excess of their costs. The*

---

<sup>10</sup> In order to ensure full bid recovery using clearing prices generated by the CAISO’s Real-Time Market Application (“RTMA”) software, the pre-dispatch market clearing price option provides that supplement payments be made, *if necessary, to ensure full bid price recovery of incremental energy bids (or payment of no more than the bid price of pre-dispatched decremental energy bids).*

“pre-dispatch market clearing price” provides for such a result when the pre-dispatch market clearing price exceeds a supplier’s bid price for incremental energy. Under the “as-bid” methodology, System Resources could receive prices in excess of their costs based on the market value of energy by incorporating expectations of the real-time MCPs into their bid prices.

**3. The Potential Downsides of the “As-Bid” Settlement Rule Have Not Been Observed in Practice, and are Unlikely to Present a Significant Problem Going-Forward**

At the time Amendment No. 66 was implemented, the CAISO, Market Participants, and the Commission recognized that there might be some potential downsides to the “as-bid” settlement rule. Specifically, the CAISO noted that under the “as-bid” rule, import/export bid prices might reflect expectations of prices rather than marginal costs, which could lead to market inefficiencies. In addition, in the A66 Order, the Commission expressed concern that the implementation of “as-bid” would lead to a reduction in the sufficiency and liquidity of intertie bids from System Resources. For these reasons, the Commission directed the CAISO’s DMA to prepare and file weekly reports examining the impact of the “as-bid” methodology.

To date, the CAISO has filed fifteen weekly reports detailing the consequences of the implementation of the “as-bid” methodology. Additional analysis comparing the performance of the CAISO’s import/export market under the “bid or better” and “as bid” settlement rules is included in the DMA White Paper entitled “CAISO Import/Export Market Performance Under ‘As-Bid’ versus ‘Bid-or-Better’ Settlement Rules,” which is attached to this filing as Attachment C.

These reports show that none of the concerns expressed with respect to the “as-bid” methodology have materialized. First, the CAISO has not experienced any problems in terms of bid sufficiency or liquidity of incremental or decremental energy import bids since the switch to an “as-bid” settlement rule. In fact, as shown in weekly DMA reports, the volume of incremental energy bids has consistently been higher this year than during the comparable period in 2004. Also, the volume of lower priced incremental energy bids has also increased since the switch to the “as-bid” methodology.

Second, there is no indication that the average prices paid for pre-dispatched incremental energy during the period after the implementation of the “as-bid” settlement methodology have increased based on price expectations by suppliers. Generally, average prices for pre-dispatched incremental energy from imports have tracked those observed prior to the implementation of Amendment No. 66. Although there have been several weeks in which the average price for pre-dispatched incremental energy has increased, those price increases have

accompanied similar increases in the ex post MCP in the CAISO's real-time market, as well as the weighted average price reported for hourly spot market transactions in bilateral markets (using data available through the Powerdex Weekly Subscription Service). This suggests that these price increases have not been the result of any potential inefficiencies inherent in the "as-bid" methodology. Additionally, although data shows that intertie bid prices for incremental energy have increased relative to bilateral spot market prices during peak periods, as shown in the DMA Whitepaper included as Attachment C, when additional payments above bid prices received under the "bid or better" settlement rule are included in the analysis, effective bid prices for incremental energy from imports have declined since the implementation of Amendment No. 66, relative to bilateral spot market prices.<sup>11</sup>

Moreover, given the makeup of the CAISO's markets, and the timing of this filing in conjunction with the CAISO's ongoing MRTU market redesign process, the CAISO does not anticipate that the potential downsides of the "as-bid" methodology will present a significant problem going forward. First, as the MSC noted in its June 24, 2005 opinion, the possible inefficiencies introduced by the "as-bid" methodology are not particularly significant because the amount of net imports that are pre-dispatched by the CAISO before the start of the real-time market is but a small fraction of the total CAISO System load.<sup>12</sup> Therefore, any possible inefficiencies resulting from System Resources bidding in an effort to predict real-time market clearing prices would constitute only a fraction of total production costs on a small fraction of total supply.

In addition, as the CAISO noted in its request for clarification and rehearing of the A66 Order, the "as-bid" methodology (or any longer-term solution implemented under the CAISO's current market structure) would be effective only until February 2007, when the CAISO implements MRTU Release 1. Rather than develop a long-term methodology for settling intertie bids under MRTU as part of the instant proceeding, the CAISO intends to craft and implement a more permanent long-term solution to be included as part of the Hour-Ahead Scheduling Process ("HASP"), which is one of the core design elements that will be implemented in February 2007 as part of MRTU Release 1.<sup>13</sup> Currently, the CAISO is engaged in a stakeholder process in the context of the MRTU proceeding to determine the best methodology for settling intertie bids

---

<sup>11</sup> See Attachment C at 17-18.

<sup>12</sup> Attachment B at 5.

<sup>13</sup> In the Commission's July 1, 2005 "Order on Further Amendments to the California Independent System Operator's Comprehensive Market Redesign Proposal," 112 FERC ¶ 61, 013 (2005) at PP 69-70, the Commission indicated that the CAISO would file the "long-term" solution to settling intertie bids in the Amendment No. 66 proceeding. The CAISO intends to request clarification of that order to confirm that the long-term solution to settling intertie bids will be developed and implemented as part of the MRTU process.

under HASP. This methodology will be filed by the CAISO as part of its MRTU Tariff filing, to be made in November 2005. Although the CAISO's experience with the "as-bid" methodology, and the stakeholder process in the present proceeding, will be instructive in developing the methodology to be used under MRTU, the substantial market and operational changes introduced by MRTU Release 1, including the move to a LMP congestion management approach, the creation of an integrated forward market, and the integration of intertie pre-dispatch into the HASP, necessitate the development and implementation of a new solution for settling intertie bids. Therefore, any potential inefficiencies resulting from the application of the "as-bid" settlement rule are not likely to be of significant duration, because the CAISO fully intends to implement the optimal methodology for settling intertie bids as part of MRTU Release 1, which is scheduled to go into effect in February 2007.

Finally, as the MSC notes, the entire reason for the CAISO's pre-dispatching of imports is based on the CAISO's desire to accommodate the timing of import practices within real-time system operations in a manner that encourages imports. To the extent that importers are able to dynamically schedule their imports to respond to ISO real-time dispatch instructions, however, their supply will be unaffected by the "as-bid" rule (or any other rule *implemented to accommodate the pre-dispatch process*) because those supplies will settle in the same manner as internal resources and be paid the Real-Time MCP. Therefore, importers have the option to mitigate any potential downside to the "as-bid" settlement rule by taking advantage of the ability to schedule dynamically by entering into an agreement to do so with the CAISO. Thus, the "as-bid" settlement rule also has the benefit of encouraging importers to pursue dynamic scheduling arrangements with the CAISO, which both the CAISO and the MSC believe will enhance the long-term efficiency of the CAISO markets.<sup>14</sup> Significantly, the two parties who have expressed the most concern with respect to the issue of settling intertie transactions, BPA and Powerex, have both entered into agreements to allow them to dynamically schedule their transactions with the CAISO, which should mitigate their concerns about the impact of the "as-bid" settlement rule.

#### **4. The Time, Effort and Cost of Developing and Implementing an Alternative Solution to the "As-Bid" Rule are Not Justified**

First and foremost, the relevant time-frame for the longer-term solution is from October 1, 2005, the current sunset date for the "as-bid" solution, to February 2007, when the CAISO's LMP MRTU market design is implemented. Because the CAISO is already operating under the "as-bid" methodology, continuing to operate under this methodology after September 30, 2005 will not

---

<sup>14</sup> Attachment B at 5.

involve any additional implementation costs or allocation of resources. On the other hand, the implementation of a "pre-dispatch market clearing price" option, or any other of the options considered during the stakeholder process, would require significant resources and time to implement. The CAISO estimates that implementing a "pre-dispatch market clearing option" would take at least 6-8 months, and would require a budget of approximately \$600,000, in addition to the use of internal CAISO resources. *One of the complicating features of implementing a "pre-dispatch market clearing price" option in particular is that the CAISO would need to develop and execute a new pre-dispatch pricing run. This effort was not originally anticipated when the CAISO first examined the feasibility of this option. Devoting substantial resources to a solution that would be in effect for less than a year is not cost effective in light of the effectiveness of the "as-bid" solution and the commitment to develop a long-term solution as part of the LMP MRTU design to be filed in November 2005 and implemented in February 2007.*

Additionally, implementing alternative options would require the extensive utilization of internal CAISO staff time and resources that are currently scheduled to work on settlement conversion projects and, most importantly, the implementation of MRTU Release 1 by February 2007. Thus, implementation of alternative options would result in the incurrence of significant opportunity costs in terms of having to delay work on these other projects. The most direct impact of attempting to implement an alternative to the "as-bid" methodology would be to the Settlement and Market Clearing (SaMC) project timeline, which is a critical part of the MRTU Release 1 implementation process. The SaMC Phase 1 project is currently scheduled to begin parallel operations in December 2005 and last three months, and will go "live" in the first quarter of 2006. The modifications necessary to implement an alternative option, in particular the "pre-dispatch market clearing price" methodology, would require either the postponement of SaMC Phase 1 parallel operations, or the postponement of the alternative intertie settlement option modifications until after SAMC Phase 1 cutover in the first quarter of 2006. Given the February 2007 MRTU Release 1 implementation date, neither of these options is desirable.

### III. COMMUNICATIONS

Communications regarding this filing should be addressed to the following individuals, whose names should be placed on the official service list established by the Secretary with respect to this submittal:

Charles F. Robinson  
Sidney Mannheim Davies  
The California Independent System  
Operator Corporation  
151 Blue Ravine Road  
Folsom, California 95630

J. Phillip Jordan  
Michael Kunselman  
Swidler Berlin LLP  
3000 K Street, N.W.  
Washington, D.C. 20007  
Tel: (202) 424-7516

Tel: (916) 351-4400  
Fax:(916) 608-7296

Fax: (202) 424-7647

#### **IV. SERVICE**

The CAISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission, the California Electricity Oversight Board, all parties with effective Scheduling Coordinator Service Agreements under the CAISO Tariff and all parties to Docket No. ER05-718. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO Home Page.

#### **V. ATTACHMENTS**

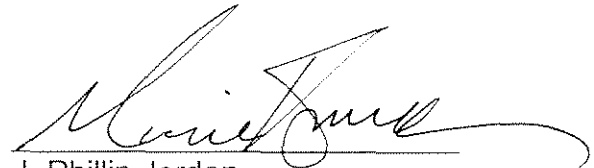
The following documents, in addition to this letter, support this filing:

- |              |   |
|--------------|---|
| Attachment A | Table of Intertie Settlement Options Considered in the CAISO's Stakeholder Process                                      |
| Attachment B | June 24, 2005 MSC Opinion "Medium Term-Solution to Clearing Intertie Bids in the Real-Time Energy Market"               |
| Attachment C | DMA Whitepaper entitled "CAISO Import/Export Market Performance Under 'As-Bid' Versus 'Bid-or-Better' Settlement Rules" |
| Attachment D | Notice of this filing, suitable for publication in the Federal Register (also provided in electronic format).           |

Two extra copies of this filing are also enclosed. Please stamp these copies with the date and time filed and return them to the messenger. Please feel free to contact the undersigned if you have any questions concerning this matter.

Respectfully submitted,

Charles F. Robinson  
General Counsel  
Sidney Mannheim Davies  
Senior Regulatory Counsel  
The California Independent  
System Operator Corporation  
151 Blue Ravine Road  
Folsom, CA 95630  
Tel: (916) 351-4400  
Fax: (916) 608-7296

A handwritten signature in black ink, appearing to read "J. Phillip Jordan", written over a horizontal line.

J. Phillip Jordan  
Michael Kunselman  
Swidler Berlin LLP  
3000 K Street, N.W., Suite 300  
Washington, D.C. 20007  
Tel: (202) 424-7516  
Fax: (202) 424-7643

# **ATTACHMENT A**



**Table 1. Summary of Proposed Solutions  
For Pre-dispatch and Settlement of Intertie Issue (Phase1B)**

Option	Avoid Cost Shift to Rate Payers	Ensure Bid or Better for the Intertie Bids	Ease of Implementation	Market Efficiency
<b>Option 1a.</b> Settle pre-dispatch at average of quarter hour prices with no uplift	YES	Yes, except possibly under rare conditions.	Easiest (moderate impact on RTMA; low to moderate impact on settlement software)	No obvious gaming incentives
<b>Option 1b.</b> Settle pre-dispatch at average of quarter hour prices with uplift to ensure bid cost recovery	Yes, except possibly under rare conditions.	YES	Moderate impact on RTMA; moderate impact on settlement software	No obvious gaming incentives
<b>Option 1c.</b> Settle pre-dispatch INC at the minimum of quarter hour prices with uplift to ensure bid cost recovery; Settle pre-dispatch DEC at the maximum of quarter hour prices with uplift to ensure bid cost recovery	YES (can result in some surplus from intertie settlements for rate payers)	Guarantees bid or better (but the "better" is not as good as that under Option 2)	Minimal to no impact on RTMA; moderate impact on settlement software	No obvious gaming incentives
<b>Option 2.</b> Pay and charge pre-dispatch as bid (Current short-term solution)	YES (can result in some surplus from intertie settlements for rate payers)	Guarantees the bid but not better	No impact on RTMA; moderate impact on settlement software	Can lead to bidding based on expectation of clearing prices (market inefficiency)
<b>Option 3:</b> Implement Activity Rule Prohibiting Submission of Inc and Dec Bids with Overlapping Prices for Imports	NO (Eliminates opportunity for a single SC to shift costs but does not eliminate potential cost shifting that may occur due to overlap between different SCs)	YES	Moderate: to high impact Significant changes to SI validation rule necessary, Settlements would still need to make some modifications to cost allocation of uplift costs.	May still be possible for multiple entities to create overlapping bids.

<p><b>Option 4:</b> Base Uplift Payments of Net of Export/Import Supplemental Energy Quantities by Each SC</p>	<p>NO. (Eliminates opportunity for a single SC to shift costs but does not eliminate potential cost shifting that may occur due to overlap between different SCs)</p>	<p>YES. However, it unclear which bid or portion of bid will be eligible for bid cost recovery after netting INC and DEC MW for a single SC.</p>	<p>Minimal impact to SI and RTMA, Moderate impact to Settlement due to need to implement netting rules</p>	<p>NO. May create new gaming opportunities when the INC and DEC bids are at two different locations and there is transmission congestion between the locations.</p>
<p><b>Option 5:</b> Pre-dispatch Interties Bids Based Only on ISO System Demand/Do Not Clear All Overlapping Inc and Dec bids</p>	<p>YES</p>	<p>YES</p>	<p>High impact to RTMA and eliminate opportunity to optimize the quantity of pre- dispatched intertie bids with 5-minute Dispatchable resources.</p>	<p>May reduce regional market efficiency and may eliminate opportunities to resolve transmission congestions efficiently</p>
<p><b>Option 6:</b> Settle pre- dispatched interties at 5-minute real- time MCP with no bid-cost recovery mechanism</p>	<p>YES</p>	<p>NO</p>	<p>No changes necessary to RTMA. Minimal changes necessary to settlement system</p>	<p>Reduces Market Efficiency: This approach will return intertie settlement to pre- Phase 1B approach that would reduce quantity of intertie bids due to inability to control price risk.</p>

## **ATTACHMENT B**

## **Medium-Term Solution to Clearing Intertie Bids in the Real-Time Energy Market**

by

**Frank A. Wolak, Chairman; Brad Barber, Member;  
James Bushnell, Member; Benjamin F. Hobbs, Member  
Market Surveillance Committee of the California ISO**

**June 24, 2005**

### **1. Introduction**

We have been asked to provide a recommendation for a medium term solution for settling intertie bids under the Real Time Market Application (RTMA) market design until the Market Redesign and Technology Upgrade (MRTU) is implemented in February of 2007. The Department of Market Analysis (DMA) has documented that the initial “bid-or-better” mechanism for settling bids into the ISO’s real-time energy market resulted in more than \$33 million in total uplift payments between the start of the RTMA market on October 1, 2004, and March 23, 2005, the date the bid-or-better mechanism was suspended by the Federal Energy Regulatory Commission (FERC) in response to the ISO’s Amendment 66 filing.<sup>1</sup> Of these total uplift payments, more than \$18 million was attributable to the clearing of DEC bids with bid prices above INC bid prices resulting in no net energy being delivered to or withdrawn from the California ISO control area.<sup>2</sup>

FERC set a sunset date of September 31, 2005, when it approved the current pay-as-bid mechanism on April 7, 2005. The ISO has implemented a stakeholder process to assess various “medium term” options to be implemented between September 31, 2005, and February 2007, when MRTU is expected to be in place. Long-term options for the settlement of interties under MRTU are part of ongoing discussions of the Hour Ahead Scheduling Process (HASP). On May 7, 2005, the ISO filed a request for clarification/rehearing on the Amendment 66 decision for settling interties. In this filing, the ISO informed FERC that a pre-dispatch market-clearing price solution—the ISO’s Option 1—could not be implemented until Spring of 2006, approximately one year before MRTU is expected to be implemented. The ISO also requested clarification on whether pay-as-bid could be considered as a medium term option until MRTU was implemented. On May 20, 2005, FERC ruled that pay-as-bid could be considered as an option. However, it also ruled that if the ISO did not propose an acceptable medium term solution, the current pay-as-bid mechanism would be replaced by the previous bid-or-better mechanism.

We have discussed the settlement of intertie bids at both the March and May Market Surveillance Committee (MSC) meetings and received stakeholder input at those times. In addition, several MSC members have had extensive individual discussions with staff of the DMA and various stakeholders. MSC members also participated in the stakeholder meetings dealing with these issues.

---

<sup>1</sup> Cover letter for Amendment 66 to the California ISO Tariff, Docket No. ER05-718-000, March 23, 2005, p. 5.

<sup>2</sup> Ibid. p.5.

We strongly support the current pay-as-bid mechanism as the preferred medium term solution until the MRTU is implemented in February 2007. However, we should immediately emphasize that this does not imply that we support a pay-as-bid mechanism for settling interties under MRTU. In fact, a major factor in our preference for maintaining the pay-as-bid mechanism until MRTU is implemented has to do with any medium term solution only being in place for a short period of time, which implies the need to balance the relative expense of any proposed solution against the relative benefits of that solution over the period of time the solution will be in place. The remainder of this opinion details our reasons for this recommendation.

## 2. Background

The incentive to create uplift payments under the original implementation of RTMA was caused by two aspects of how intertie bids are treated in the settlement process.

- 1) The ISO pre-dispatches intertie bids prior to the start of the settlement hour to meet their expected imbalance energy needs. Besides procuring or selling the net imports necessary to balance real-time supply and demand within the ISO control area, this process also clears all INC bids and DEC bids both within and across scheduling coordinators (SCs). This is necessary because there was often a significant quantity of DEC bids offered at prices higher than the prices offered for INC bids. This clearing process can therefore allow a substantial quantity of megawatt-hours (MWhs) to be bought and sold at an intertie with no change in the resulting net imports into or out of California.
- 2) The original settlement rules paid or charged INC or DEC bids from inter-ties pre-dispatched based on projected system conditions on a "bid-or-better" basis. Specifically, if the price in the ISO's real time market is lower than the bid price for pre-dispatched incremental bids, in addition to being paid the real-time price, the suppliers are paid an uplift payment equal to the difference between their bid price and the real-time price. The net effect then is that the INC suppliers are paid their bid. A similar mechanism operates on the DEC side of the market. If the real-time price is higher than the bid price for DEC bids pre-dispatched by the ISO, these suppliers are refunded the difference between the real-time price and their bid. Thus, on net, they are only charged their bid price for an accepted DEC bid, rather than the real-time price.

As an example, if an import INC bid of \$50/MWh is cleared against an import DEC bid of \$60/MWh, but the real-time price is either over \$60/MWh or under \$50/MWh, an uplift is required. For instance, a real-time price of \$70/MWh means that the DEC bid is refunded \$10/MWh from the real-time price, while a real-time price of \$35/MWh would instead imply a \$15/MWh uplift payment to the INC bid. Both of those situations result in the CAISO paying out money without any change in net power flows into California.

Over the October 2005 to March 2005 period, average prices in the real-time market diverged from the average bid prices from the INC and DEC energy bids on interties that have been pre-dispatched by the ISO. These problems contributed to the high uplift payments mentioned above for the current "bid-or-better" settlement system. However,

even if average prices and average bid prices from the INC and DEC energy bids were equal, the bid-or-better mechanism would still create a “free option” for an intertie bidder to receive the higher of its bids or the market-clearing price on one side of any overlapping INC and DEC bids on the intertie. In short, the incentive to submit overlapping bids would still exist even if there were no expected difference between the average pre-dispatch price and the real-time price.

This problem has been created by the ISO’s attempt to reconcile two competing needs. One is the need for imports to transact in advance of real-time as firm energy purchases that remain constant over the hour. This need conflicts with the other need of operators to balance system conditions on a 5-minute basis.

The wholesale energy market operates under the principle that transactions are made between buyers and sellers. The ISO does not play a direct role in those transactions until real-time, when the need to continually balance the system makes it necessary for the ISO to play the role of proxy buyer and seller. These real-time transactions undertaken by the ISO are allocated to market participants ex post. Thus the general blueprint for electricity market operations is that participants make all forward transactions and all real-time transactions are instigated by the ISO.

The problem stems from the fact that importers that are unable to schedule dynamically cannot wait until the real-time market is run in order to participate in it. Intertie conventions for those unable to schedule dynamically necessitate an advance (45 minute) commitment of a constant energy import or export quantity over the hour. Thus if the ISO operators are to purchase these imports (or sell exports) they need to “pre-dispatch” these bids prior to real-time market operation. Even though these transactions are made before the real-time market is run, the portion of inter-tie bids that are pre-dispatched under RTMA is determined based on the projected market clearing price in the real-time market. However, if the real-time imbalance forecast is wrong, the actual real-time price could be lower than the pre-dispatch price used to determine the amount of intertie bids accepted. If imports were settled at the real-time price alone, they could have their \$50 offer accepted by the ISO, only to find that the real-time price ended up at \$20—thereby earning \$30/MWh less than they expected when their offer was accepted. The problem—which existed prior to RTMA—discourages market participation by importers that were unable to schedule dynamically to bid into the real time market. To avoid this problem, the ISO implemented a settlement rule under RTMA that guaranteed that imports receive their “bid-or-better” price. This is the higher of their bid price or the actual ISO spot price.

The fundamental problem is that the ISO is committing to a price at the interties for the entire hour when the real-time market sets prices every five minutes and settles on a ten-minute basis. There are three general ways for the ISO to address this problem in the medium-term. Each solution eliminates the linkage between the real-time price and the payments to importers who need to commit in advance:

- **Option 1:** Establish an alternative 45-minute-ahead market with its own market-clearing settlement price.
- **Option 2:** Continue the Amendment 66 pay-as-bid system for imports.

- **Option 3:** Accept only imports from firms willing to dynamically schedule their imports, thereby committing to respond to ISO real-time dispatch instructions or to paying imbalance penalties if they cannot respond to those instructions.

### 3. Medium Term Solutions Under Consideration

The ISO has formulated a number of proposed medium term solutions through the stakeholder process.<sup>3</sup> The Bonneville Power Administration (BPA) has also submitted its own proposed solution. The two solutions receiving the most support from the ISO are: Option 1, which would set pre-dispatch market-clearing prices that all tie bids would be settled against, and Option 2, which would continue the current pre-dispatch pay-as-bid mechanism.

Options 1 and 2 share many important features. Both would continue to integrate the pre-dispatch purchases of imports roughly 45 minutes ahead of each operating hour with the available supply of resources within the ISO control area that are dispatchable on a 5-minute basis within the operating hour. Option 3 would treat imports symmetrically with resources within the ISO control area in the real-time market. Inertie bids could be dispatched at the start of the hour (or anytime within the hour) and supply a fixed amount of output during the hour. However, these resources would be subject to imbalance energy charges to the extent that they fail to respond to additional dispatch instructions during the hour. Both Options 1 and 2 would establish separate, pre-dispatch market prices that will generally differ from real-time prices. By setting prices in advance, the ISO avoids the problem of making a commitment to buy (or sell) power before it actually knows the price.

Unless more import capacity is willing and able to schedule dynamically, Option 3 could significantly shrink the supply of imports willing to sell to the California market. Although we find Option 3 very appealing and encourage the ISO consider it as a long-term solution under MRTU, the question of which of the two remaining options to favor boils down to the following issues, the theoretical efficiency benefits of uniform price markets versus the additional costs to implement such a system for a relatively short period of time.

#### *Inefficiencies of Pay-As Bid Market*

The main argument in favor of Option 1 over Option 2 is that it pays a single market-clearing price. The concern over pay-as-bid stems from the potential inefficiencies caused when different market participants hold different beliefs (or information) about the market. In a perfectly competitive uniform-price market, it is unilaterally profitable for firms to bid their incremental costs. In a pay-as-bid market, firms must try to guess the market clearing-price (the highest accepted bid) and bid as close to it as possible, as long as the price is above their costs, without being shut out of the market by bidding too high.

Inefficiencies can also arise when firms have different ideas about what the market-clearing price will be. Firm A, which has low cost generation units, could expect a high price

---

<sup>3</sup> Summary of Proposed Solutions for Pre-dispatch and Settlement of Inertie Issues, posted on April 13, 2005, at <http://www.caiso.com/docs/2005/04/14/2005041412094722924.pdf>

and therefore would submit a relatively high bid. Firm B may have higher cost generation than firm A, but actually submits a lower offer bid than firm A, because it thinks the market clearing price will be lower. The end result of this could be that firm B supplies electricity instead of firm A, despite the fact that firm B is more expensive.

Several other potential problems with pay-as-bid markets have been previously noted.<sup>4</sup> For example, in the long run the burden of forecasting energy prices can raise the cost of entering these markets, and lead to consolidation of suppliers, thereby reducing competition. In contrast, in a uniform pricing regime, small suppliers would not have to invest in price forecasting capabilities and can simply bid their marginal costs.

While we believe that these potential inefficiencies are real, we do not believe they are particularly significant in this instance for two reasons. First, the amount of net imports that are pre-dispatched before the start of the real-time market is a small fraction of total ISO load. The “physical” volume of this market (*i.e.* the portion of pre-dispatch volume purchased to meet actual California ISO needs as opposed to clear against other pre-dispatch bids) has averaged in the range of 363 MW since October 2005. It is this physical volume that would be impacted by any misallocation of production. This constitutes less than 1.5% of total ISO end-use consumption. Thus any productive inefficiency resulting from a pay-as-bid rule would constitute a fraction of total production costs on a small fraction of total supply. Second, the pay-as-bid settlement is very likely to be a temporary solution to be replaced when MRTU comes on line. Therefore, the long-term consequences of pay-as-bid markets are unlikely to be relevant. We find it implausible that firms would undertake major institutional or organizational changes in response to a temporary feature of a relatively modest-sized market.

It is important to remember that the entire system of pre-dispatching imports is necessitated by the willingness of the ISO to accommodate the timing of import practices within real-time system operation in a manner that encourages imports. To the extent that importers are able to dynamically schedule their imports to respond to ISO dispatch instructions, their supply will be unaffected by the pre-dispatch rule because these suppliers could settle just like any other internal resource, or be paid as-bid in the pre-dispatch process. Consequently, imports have the option to mitigate any negative impacts of pay-as-bid settlements by choosing to schedule dynamically. Therefore, Option 2 also encourages importers to schedule dynamically; something we believe will enhance the long-term efficiency of the California market.

### *Costs of Alternative Solutions*

As noted earlier, the ISO has determined that implementing a market-clearing price mechanism for settling intertie bids cannot be implemented until at least Spring of 2006. In contrast, the ISO is currently settling interties as-bid with no evident negative reliability or economic consequences. The MWh amount of import and export bids that results in a net zero schedule (*i.e.*, the extent of purely financial settlement of imports and exports) into

---

<sup>4</sup> See for example, Cramton, Peter, Kahn, Alfred, Porter, Robert, and Tabors, Richard (2000). Blue Ribbon Panel Report: “Pricing in the California Power Exchange Electricity Market: Should California Switch from Uniform Pricing to Pay-as-Bid Pricing?”



California declined dramatically on the day the pay-as-bid settlement mechanism was implemented.<sup>5</sup> Implementing a market-clearing price mechanism would require software changes and significant testing, and as is the case with any new market rule, there is always the potential for unintended consequences.

According to the CAISO, implementation of an alternative pre-dispatch settlement, such as that encompassed in the California ISO's Option 1 or in the proposal by BPA, would entail a commitment of significant time and resources. The ISO estimates that Option 1 would take at least 6 to 8 months to implement at a cost of approximately \$600,000 in addition to the use of internal ISO resources.<sup>6</sup> In addition to financial resources, the development of an alternative pre-dispatch settlement scheme would involve non-trivial amounts of stakeholder and CAISO staff time that would otherwise be focused on the more pressing problems of implementing MRTU and resource adequacy provisions. We believe that this time is better spent on the long-term design of the market, rather than transient issues that affect only a very small fraction of the energy transacted in California.

### 3. Conclusion

We recognize the finite resources available to the CAISO and market participants in California. These resources are best employed if they are focused on the timely implementation of long-term solutions to the most significant problems facing the California market. The implementation of an alternative settlement scheme for the pre-dispatch of intertie sales is neither a significant nor long-term problem in California. The inefficiencies associated with the current pay-as-bid system are theoretically plausible, but rough calculations and common sense argue that they cannot be large. Furthermore, any alternative solution would take nearly a year to develop and be in place for only about a year after that, and it is not guaranteed to perform any better than the current pay-as-bid solution. Given the out-of-pocket and opportunity costs involved in developing an alternative, we feel that the continuation of the current system is clearly the best choice among the available alternatives.

---

<sup>5</sup> "Settlement for Pre-Dispatched Intertie Bids" Presentation by Eric Hildebrandt at the Market Surveillance Committee Meeting, May 24, 2005, p. 10.

<sup>6</sup> "Memorandum to ISO Board on Modification of Settlement for Pre-Dispatched Bids from Interties," by Mark Rothleder, Director of Market Operations, and Anjali Sheffrin, Director of Market Analysis, June 8, 2005, p. 4.

## **ATTACHMENT C**

## CAISO Import/Export Market Performance Under “As-Bid” versus “Bid or Better” Settlement Rules

### I. Background

In Amendment No. 66, the California Independent System Operator (“CAISO”) proposed to modify the CAISO Tariff so that bids for incremental and decremental energy on inter-ties with neighboring control areas that are pre-dispatched by the CAISO are settled under an *as-bid* rule. With this modification, bids would be settled at their original bid price, rather than being settled under the *bid or better* rule in effect since October 1, 2004.<sup>1</sup>

In its April 7, 2005 order on Amendment No. 66, the Federal Regulatory Energy Commission (“Commission”) approved the *as-bid* settlement rule effective as of March 24 until the earlier of September 30, 2005 or the effective date of a long-term solution filed and accepted by the Commission.<sup>2</sup> The Commission also ordered the CAISO’s Department of Market Analysis (“DMA”) to file weekly reports on the market effects of these interim tariff provisions, including “the liquidity and sufficiency of bids at the inter-ties” until the earlier of the effective date of a future tariff change implementing a long-term solution or September 30, 2005.

The CAISO’s DMA has submitted weekly reports pursuant to the above directive in the Commission’s Order on Amendment 66. Three key findings are highlighted in these reports:

- The volume of offsetting incremental and decremental energy bids pre-dispatched by the ISO to clear the market (beyond the level of bids that would be pre-dispatched to meet net ISO imbalance energy) has been dramatically reduced under the *as-bid* settlement rule. Since the effective date of Amendment 66, an average of only about 26 MW of off-setting inc and dec bids have been pre-dispatched each hour, as opposed to an average of about 600 MW per hour in the month prior to implementation of Amendment 66.
- The additional costs incurred for off-setting incremental and decremental energy bids pre-dispatched by the ISO to clear the market have been eliminated under the *as-bid* settlement rule, because revenues received by the CAISO for dec bids pre-dispatched to clear the market meet or exceed payments for off-setting inc bids pre-dispatched to clear the market. As noted in the ISO’s Amendment 66 filing, total uplift costs incurred prior to the ISO’s March 23 filing were estimated at \$33.6 million, with about \$18.6 million of these uplift costs attributable to clearing of overlapping (or offsetting) inc and dec bids under Phase 1b. Costs attributable to clearing of overlapping (or offsetting) inc and dec bids averaged about \$400,000 per day in the month prior to Amendment 66.

---

<sup>1</sup> Under the *bid or better* settlement rule, inter-tie bids for incremental energy pre-dispatched by the CAISO prior to each operating hour were paid the higher of their bid price or the *ex post* real time market clearing price. Inter-tie bids for decremental energy pre-dispatched by the CAISO paid the lower of their bid price or the *ex post* real time market clearing price. See Amendment No. 66 Transmittal Letter.

<sup>2</sup> *California Independent System Operator Corporation*, 111 FERC ¶ 61,008 (2005) (“Amendment 66 Order”).

- To date, the CAISO has not experienced problems in terms of bid insufficiency or liquidity of incremental energy import bids since the switch to an *as-bid* market under Amendment 66. The volume of incremental energy bids has typically been higher this year than during the comparable period in 2004, and has consistently been well in excess of the quantity of bids actually pre-dispatched.<sup>3</sup>

The remaining sections of this report provide a more detailed analysis of market performance under the *as-bid* versus *bid or better* settlement rule. Sections II and III specifically address suggestions for the type of analysis that should be performed by the ISO made by Powerex in its June 8, 2005 protest to the ISO's most recent market redesign filing.<sup>4</sup>

**Section I** compares the costs and revenues of incremental and decremental energy pre-dispatched by the ISO relative to bilateral market price indices before and after Amendment 66. Key findings of this analysis are summarized below:

- Results of this analysis indicate that performance of the ISO import/export market has improved under the *as-bid* settlement rule, as the cost of real time imports by the ISO has decreased and revenues from exports have increased relative to bilateral market prices. Under the *as-bid* settlement rule the cost of net incremental energy pre-dispatched by the ISO has exceeded the bilateral price index by \$6.24, compare to a difference of about \$21/MWh under the *bid-of-better* settlement rule. Meanwhile, the analysis indicates that revenues received for net decremental energy pre-dispatched by the ISO were about \$15/MWh lower than bilateral price index prior to Amendment 66, but were only \$12.52 less than the bilateral price index since Amendment 66.
- Section I also illustrates how the approach used to calculate costs for net energy pre-dispatched by the ISO for system needs that appears to be proposed by Powerex ignores the additional costs incurred by the ISO for off-setting incremental and decremental bids that were pre-dispatched to clear the market under the *bid or better* settlement rule. Ignoring the costs incurred from clearing the market under the *bid or better* settlement rule significantly underestimates the actual cost of net imports pre-dispatched for ISO system needs, and overestimates revenues for net exports pre-dispatched for ISO system needs. Nevertheless, as shown in Section 2, the methodology that appears to be proposed by Powerex still shows that performance of the ISO import/export market has improved under the *as-bid* settlement rule, as reflected in a lower cost of real time imports and an increased in revenues from exports relative to bilateral market prices.

Section III compares the bid prices for incremental and decremental energy at relative to bilateral market price indices before and after Amendment 66. Key findings of this analysis are summarized below:

- Under the *bid or better* settlement rule, bidders would be expected to assess the *expected value* of the additional payments received when the ex post MCP exceeds their bid price,

---

<sup>3</sup> e.g. See *Report on Market Impacts of Amendment 66: "As-Bid" Settlement of Pre-dispatched Inter-tie Bids for Real Time Energy*, Prepared by the Department of Market Analysis, California Independent System Operator, July 22, 2005, pp. 9-14.

<sup>4</sup> Protest of Powerex Corp (herein referred to as "Powerex"), filed on June 8, 2005 in protest of the ISO's Comprehensive Market Redesign Proposal, May 13, 2005, Docket No. ER02-1656-026.

and incorporate the *expected value* of these payments into their bidding strategy by offering supply at a lower bid price than they would offer under a pure *as-bid* settlement rule, *ceterus paribus*. However, in addition to causing suppliers to bid lower than in an *as-bid* market, the additional uplift payments received under the *bid or better* settlement rule represent *additional costs to procure energy under the bid or better settlement rule*. For these reasons, any comparison of inter-tie bid prices under the *as-bid* and *bid or better* settlement rules should account for the impact of these additional uplift payments on bid prices and imbalance energy payments.

- In order to account for the impact of uplift payments under the *bid or better* settlement rule on bid prices for incremental energy, this study first converts incremental bids submitted under the *bid or better* settlement rule to an *effective bid price*, equal to the higher of the bid price or the actual ex post MCP for the corresponding hour. For decremental bids, the effective bid price under the *bid or better* settlement rule is equal to the lower of the bid price or the actual ex post MCP for the corresponding hour. For bids submitted while the *bid or better* settlement rule was in effect, these effective bid prices reflect what each bid actually would be paid (or pay) if pre-dispatched by the ISO. No such adjustment is appropriate for bids submitted under the *as-bid* settlement rule, because bids are simply settled based on their actual bid price.
- Results of this analysis indicate that bid prices for imports have increased and decremental bid prices have decreased relative to bilateral market prices since the switch from the *bid or better* to the *as-bid* settlement rule. However, when uplift payments above bid prices received under the *bid or better* settlement rule are included into the analysis, effective bid prices for imports have declined relative to the bilateral spot market prices since Amendment 66. Effective bid prices for decremental energy, meanwhile, have decreased since the *as-bid* settlement went into effect.

Finally, it should be noted that the various indicators of export/import market performance are likely affected by a variety of other factors beyond the *bid or better* or *as-bid* settlement rules, ranging from market and operational conditions within the CAISO system to supply and demand conditions throughout the western states. However, results of the various analyses summarized in this report indicate that the overall performance of the ISO import/export market has improved since the *bid or better* settlement rule was replaced by the *as-bid* settlement rule.

## II. Cost Impacts of Amendment 66

Powerex contends that pre-Amendment 66 costs cited by the ISO in previous filings and reports overestimate the savings attributable to Amendment 66 for two reasons. First, Powerex contends that the pre-Amendment 66 costs cited by the ISO overstate the net costs incurred from the *bid or better* rule since it does not account for any benefits that may result from the extent to which the *bid or better* rule resulted in attracting “a deeper and more competitive set of offers to buy and sell energy at various interties”, which can be used to meet ISO imbalance energy needs. (Powerex at 11).<sup>5</sup> Second, Powerex contends that the pre-Amendment 66 costs cited by the ISO also overstate the savings from Amendment 66 since there has been better convergence between price projections used in the pre-dispatch process and the actual ex-post MCP for each operating hour since Amendment 66.

Finally, Powerex goes on to suggest that “a more meaningful measure of pre-dispatch energy transaction ‘savings’ due to implementation of Amendment 66 would be to compare the “pre-dispatch premium”, defined as the difference between:

1. The net price paid by the ISO for pre-dispatched incremental energy (or the price for decremental energy sold by the ISO); and
2. The Real Time bilateral prices prevailing each hour (as approximated by the Bilateral Hourly spot Index published on a subscription basis by POWERDEX).

Powerex further indicates that the net price should be calculated separately for incremental and decremental bids, and should include the sum of all costs divided by the total volume of MWs pre-dispatched for both system demand and market clearing.

While DMA agrees that the concept of comparing the cost and revenues from incremental and decremental energy pre-dispatched by the ISO to a bilateral price index in order to assess changes in relative prices over time, DMA disagrees with the manner in which Powerex appears to suggest that the cost and revenues from incremental and decremental energy pre-dispatched by the ISO should be calculated. Specifically, the approach suggested by Powerex appears to ignore the additional net costs incurred by the ISO under the *bid or better* settlement rule when the ISO pre-dispatched large volumes of *offsetting incremental and decremental bids* to clear the market. This aspect of Powerex’s suggested approach differs from the manner in which net costs have been calculated in various ISO reports in that net costs reported by DMA include *uplift costs incurred due to offsetting incremental and decremental energy bids* dispatched to clear the market.

---

<sup>5</sup> Powerex’s filing actually refers to these benefits as benefits of “the market clearing function of Phase 1b,” and does not actually refer to the “bid or better” settlement rule. Since Amendment 66 did not remove the market clearing function of Phase 1b, but simply replaced the “bid or better” settlement rule with an “as bid” settlement rule, we assume that Powerex actually meant to say that the “bid or better” settlement rule would result in a “a deeper and more competitive set of offers to buy and sell energy at various interties” than the “as bid” rule.

For example, as described in Appendix A of the ISO's first weekly report on Amendment 66, during hours when the ISO is a net purchaser of pre-dispatched energy (i.e. when total incremental energy bids pre-dispatched exceed any decremental energy pre-dispatched), DMA's reports calculate cost for incremental energy pre-dispatched by the ISO by taking total net costs and dividing by total net incremental energy pre-dispatched:

$$\text{Net Incremental Energy Purchased}_t = \text{Maximum}(0, \text{Total Inc MW}_t - \text{Total Dec MW}_t)$$

$$\text{Net Cost}_t = \text{Total Inc Payments}_t + \text{Total Dec Payments}_t$$

$$\text{Net Cost of Incremental Energy}_t = \frac{\text{Net Cost}_t}{\text{Net Incremental Energy Purchased}_t}$$

Similarly, during hours when the ISO is a net seller of pre-dispatched energy (i.e. when total decremental energy bids pre-dispatched exceed any incremental energy pre-dispatched), DMA's reports calculate cost for decremental energy pre-dispatched by the ISO by taking total net revenues and dividing by total net decremental energy pre-dispatched:

$$\text{Net Decremental Sales}_t = \text{Maximum}(0, \text{Total Dec MW}_t - \text{Total Inc MW}_t)$$

$$\text{Net Revenues}_t = \text{Total Inc Payments}_t + \text{Total Dec Payments}_t$$

$$\text{Net Revenue from Decremental Energy}_t = \frac{\text{Net Revenues}_t}{\text{Net Decremental Sales}_t}$$

Under this approach, extra net costs associated with uplift payments for off-setting incremental and decremental energy bids dispatched to clear the market (rather than for ISO system demand for either incremental or decremental energy each hour) are accounted for as part of the net price paid (or received) by the ISO for pre-dispatched incremental (or decremental) energy.

However, it appears that Powerex's suggested approach would not include these uplift costs, and would instead calculate the costs and revenues from incremental and decremental energy pre-dispatched, respectively, based on a gross basis each hour, as reflected in the equations below:

$$\text{Gross Cost of Incremental Energy}_t = \frac{\text{Incremental Energy Costs}_t}{\text{Gross Incremental Energy Purchased}_t}$$

$$\text{Gross Revenue from Decremental Energy}_t = \frac{\text{Decremental Energy Revenues}_t}{\text{Gross Decremental Energy Sold}_t}$$

The difference between these two methodologies is further illustrated in Figure 1, which shows calculations for two hypothetical hours under both approaches. As shown in this example, calculating pre-dispatched energy on a gross basis as suggested by Powerex tends to *underestimate* the purchase cost of pre-dispatch energy and *overestimate* the revenues from decremental energy under the *bid or better* settlement rule in cases where off-setting bids are pre-dispatched to clear the market and the ex post real time price is then either higher or lower than the bid price of energy pre-dispatched to clear the market.

In Hour 1 of the example shown in Figure 1, the ISO is a net purchaser of 500 MWh of pre-dispatched incremental energy, but also pre-dispatches another 500 MWh of incremental energy (at a bid price of \$50/MWh) and 500 MWh of decremental energy (at a bid price of \$55/MWh) to clear the market. During this hour, the ex post real time price ends up to be \$25/MWh, so that the 500 MWh of incremental energy pre-dispatched to clear the market is paid the \$50/MWh bid price, while the 500 MWh of decremental energy (bid at \$55/MWh) is charged only \$25 MWh. Under DMA's methodology, the net cost of the 500 MWh of net incremental energy pre-dispatched by the ISO in Hour 1 is \$75 (the \$50 bid price for incremental energy, plus a \$25 loss on the 500 MWh of off-setting incremental and decremental bid pre-dispatched to clear the market). Under Powerex's approach, however, the price for incremental energy reflect only the \$50 bid price for 1,000 MWh of gross incremental energy pre-dispatched).

In Hour 2 of the example shown in Figure 1, the ISO is a net seller of 500 MWh of pre-dispatched decremental energy, but also pre-dispatches another 500 MWh of incremental energy (at a bid price of \$50/MWh) and 500 MWh of decremental energy (at a bid price of \$55/MWh) to clear the market. During this hour, the ex post real time price again ends up to be \$25/MWh, so that the 500 MWh of incremental energy pre-dispatched to clear the market is paid the \$50/MWh bid price, while the 500 MWh of decremental energy (bid at \$55/MWh) is charged only \$25 MWh. Under DMA's methodology, the net revenue from the 500 MWh of net decremental energy pre-dispatched by the ISO in Hour 2 is \$0, while Powerex's approach results in revenue of \$25/MWh for decremental energy.

When results of Hours 1 and 2 in Figure 1 are combined, Powerex's methodology results in an incremental energy price significantly lower than the net cost calculated by DMA's approach (\$50 versus \$75), and a decremental price that is higher than the net revenue calculated by DMA's approach (\$25 versus \$0). Figure 2 shows results for the same example, except under the assumption that the ex post real-time price ends up to be higher (rather than lower) than the pre-dispatch bid prices (\$75 versus \$25). As illustrated in these examples, the approach suggested by Powerex tends to *underestimate* the purchase cost of pre-dispatch energy and *overestimate* the revenues from decremental energy under the *bid or better* settlement rule. This difference between the two methodologies is further evident in the comparison of results of the analysis of actual market data provided in the following section.



Figure 1. Calculation of Pre-Dispatch Energy Costs on Gross vs. Net Basis

Example #1: Ex Post MCP = \$25/MWh

	<u>Powerex Approach (Gross)</u>		<u>DMA Approach (Net)</u>	
<b>Hour 1</b>				
	Inc	Dec	Inc	Dec
Predispatched Bids (MW)	1,000	-500	500	0
Bid Price (\$/MWh)	\$50	\$55		
Ex-Post MCP (\$/MWh)	<b>\$25</b>	<b>\$25</b>		
Bid or Better Price (\$/MWh)	\$50	\$25		
Payment (\$)	\$50,000	-\$12,500	\$37,500	
Avg. Pre-dispatch Price (\$/MWh)	\$50	\$25	\$75	n/a
<b>Hour 2</b>				
	Inc	Dec	Inc	Dec
Predispatched Bids (MW)	500	-1,000	0	-500
Bid Price (\$/MWh)	\$50	\$55		
Ex-Post MCP (\$/MWh)	<b>\$25</b>	<b>\$25</b>		
Bid or Better Price (\$/MWh)	\$50	\$25		
Payment (\$)	\$25,000	-\$25,000		\$0
Avg. Pre-dispatch Price (\$/MWh)	\$50	\$25	n/a	\$0
<b>Weighted Average Price (Hours 1 - 2)</b>	<b>\$50</b>	<b>\$25</b>	<b>\$75</b>	<b>\$0</b>

Figure 2. Calculation of Pre-Dispatch Energy Costs on Gross vs. Net Basis

Example #2: Ex Post MCP = \$75/MWh

	<u>Powerex Approach (Gross)</u>		<u>DMA Approach (Net)</u>	
<b>Hour 1</b>				
	Inc	Dec	Inc	Dec
Predispatched Bids (MW)	1,000	-500	500	0
Bid Price (\$/MWh)	\$50	\$55		
Ex-Post MCP (\$/MWh)	<b>\$75</b>	<b>\$75</b>		
Bid or Better Price (\$/MWh)	\$75	\$55		
Payment (\$)	\$75,000	-\$27,500	\$47,500	
Avg. Pre-dispatch Price (\$/MWh)	\$75	\$55	\$95	n/a
<b>Hour 2</b>				
	Inc	Dec	Inc	Dec
Predispatched Bids (MW)	500	-1,000	0	-500
Bid Price (\$/MWh)	\$50	\$55		
Ex-Post MCP (\$/MWh)	<b>\$75</b>	<b>\$75</b>		
Bid or Better Price (\$/MWh)	\$75	\$55		
Payment (\$)	\$37,500	-\$55,000		-\$17,500
Avg. Pre-dispatch Price (\$/MWh)	\$75	\$55	n/a	\$35
<b>Weighted Average Price (Hours 1 - 2)</b>	<b>\$75</b>	<b>\$55</b>	<b>\$95</b>	<b>\$35</b>

Tables 1 and 2 summarize results of the analysis of pre-dispatch costs relative to bilateral market price indices before and after Amendment 66 based on net energy dispatched and gross energy dispatched, respectively. As suggested by Powerex, the difference between pre-dispatch prices and bilateral prices are based on the hourly bilateral spot market price index developed by Powerdex on a subscription basis. Analysis of prices for pre-dispatched incremental energy bids are based on peak Hours Ending 13-20, while prices for pre-dispatched decremental energy bids are based on off-peak Hours Ending 1-8, as suggested by Powerex.<sup>6</sup>

As shown in Table 1, the cost of net incremental energy pre-dispatched by the ISO exceeded the bilateral price index by an average of \$20.77/MWh, compared to a price difference of only \$6.24 since the *as-bid* settlement rule has been in effect. As shown in Table 2, the relative cost of gross incremental energy pre-dispatched, calculated as suggested by Powerex, also decreased since implementation of Amendment 66. The cost of gross incremental energy pre-dispatched by the ISO exceeded the bilateral price index by an average of \$7.49/MWh, compared to a price difference of only \$5.14 since the *as-bid* settlement rule has been in effect. Thus, both these methodologies indicate that costs for incremental energy have dropped under the *as-bid* settlement rule relative to bilateral prices.

Meanwhile, as shown in Table 1, DMA's analysis shows that the revenues received for net decremental energy pre-dispatched by the ISO was about \$14.81/MWh lower than bilateral price index prior to Amendment 66, but were only \$12.52 less than the bilateral price index since Amendment 66. However, as shown in Table 2, using the approach suggested by Powerex, the revenues from gross decremental energy pre-dispatched by the ISO have dropped relative to the bilateral price index since implementation of Amendment 66. Under the *bid or better settlement rule*, revenues from gross decremental energy pre-dispatched by the ISO averaged about \$8.60/MWh less than the bilateral price index, compared to a difference of about to \$11.91/MWh since the switch to the *as-bid* settlement rule.

---

<sup>6</sup> Powerex, p. 12-13.

**Table 1. Costs for Net Pre-Dispatched Energy (DMA Approach)**

Month	<u>Incremental Energy</u>			<u>Decremental Energy</u>		
	Avg. Pre-Dispatch Cost	Bi-lateral Index	Difference	Avg. Pre-Dispatch Revenue	Bi-lateral Index	Difference
October-04	\$57.64	\$45.29	\$12.35	\$33.20	\$42.91	(\$9.72)
November-04	\$66.01	\$53.09	\$12.92	\$37.65	\$46.09	(\$8.44)
December-04	\$59.22	\$50.57	\$8.65	\$39.24	\$48.40	(\$9.16)
January-05	\$58.96	\$47.76	\$11.20	\$26.31	\$46.96	(\$20.65)
February-05	\$69.07	\$48.18	\$20.89	\$20.16	\$42.78	(\$22.62)
March-05*	\$102.00	\$51.16	\$50.85	\$2.66	\$45.24	(\$42.58)
Total (Bid or Better)	\$69.65	\$48.88	\$20.77	\$31.21	\$46.03	(\$14.81)
April-05*	\$59.25	\$52.32	\$6.92	\$38.19	\$48.29	(\$10.09)
May-05	\$43.33	\$36.61	\$6.72	\$14.55	\$29.46	(\$14.91)
June-05	\$42.41	\$37.27	\$5.14	\$28.05	\$39.32	(\$11.27)
July-05	\$47.32	\$40.53	\$6.80	\$22.47	\$30.75	(\$8.28)
Total (As-Bid)	\$50.26	\$44.02	\$6.24	\$23.87	\$36.39	(\$12.52)

**Table 2. Cost for Gross Pre-Dispatched Energy (Powerex Approach)**

Month	<u>Incremental Energy</u>			<u>Decremental Energy</u>		
	Avg. Pre-Dispatch Cost	Bi-lateral Index	Difference	Avg. Pre-Dispatch Revenue	Bi-lateral Index	Difference
October-04	\$54.55	\$45.79	\$8.76	\$37.90	\$44.25	(\$6.35)
November-04	\$54.27	\$49.79	\$4.48	\$41.20	\$46.72	(\$5.52)
December-04	\$52.92	\$49.51	\$3.41	\$41.56	\$48.42	(\$6.86)
January-05	\$54.58	\$47.43	\$7.14	\$38.42	\$46.90	(\$8.48)
February-05	\$53.95	\$46.95	\$7.00	\$37.14	\$45.25	(\$8.11)
March-05*	\$61.06	\$50.70	\$10.35	\$36.40	\$49.66	(\$13.26)
Total (Bid or Better)	\$56.02	\$48.53	\$7.49	\$38.69	\$47.29	(\$8.60)
April-05*	\$58.29	\$52.12	\$6.17	\$38.83	\$48.39	(\$9.56)
May-05	\$42.43	\$37.63	\$4.80	\$15.44	\$29.86	(\$14.42)
June-05	\$42.39	\$37.85	\$4.54	\$29.17	\$39.59	(\$10.42)
July-05	\$44.95	\$41.60	\$3.35	\$24.46	\$32.91	(\$8.45)
Total (As-Bid)	\$49.24	\$44.09	\$5.14	\$24.97	\$36.88	(\$11.91)

\* Data for March 1-24 included in March '05 "Bid or Better" period. Data for March 25-31 included in April "As-Bid" period.

### III. Inter-Tie Energy Bid Prices

This section compares bid prices for energy over inter-ties submitted to the CAISO before and after Amendment 66, which replaced the “bid or better” settlement rule with an “as-bid” settlement rule for inter-tie energy bid pre-dispatched by the ISO.

The analysis compares cumulative bid prices for incremental energy at different import supply levels (or points on the supply curve of inter-tie energy bids) to hourly prices reported for bilateral transactions at major regional trading hubs.<sup>7</sup> The basic approach is similar to the methodology suggested by Powerex in its protest of the ISO’s most recent MRTU filing.<sup>8</sup> Powerex’s filing suggests that a more meaningful analysis of inter-tie bids prices for incremental energy before and after Amendment 66 *could be done by examining the following data since implementation Phase 1b on October 1, 2004 to present:*

- For peak hours (HE13-HE20), the Weighted Average Hourly Bid Price of each of the first 500 MW, 1000 MW, 1500, MW and 2000 MW of inc bid available to the ISO less the Hourly Real Time Bilateral Price.<sup>9</sup>

Powerex states that such analysis would illustrate the bid premiums for ISO imbalance energy intertie bids relative to the bilateral market prices, and that such analysis would provide a more reliable evaluation of whether the competitiveness of intertie bids submitted to the ISO has been affected by Amendment 66.

While the approach suggested by Powerex may be appropriate for assessing trends in bid prices under the *as-bid* settlement rule, this approach ignores a key difference between the *bid or better* and *as-bid* settlement rules that affects the way suppliers would bid as well as the costs ultimately paid for pre-dispatched imbalance energy. Specifically, under the *bid or better* settlement rule bidders would be expected to assess the expected value of the additional payments received when the ex post MCP exceeds their bid price, and incorporate the expected value of these payments into their bidding strategy by offering supply at a lower bid price than they would offer under a pure *as-bid* settlement rule, *ceteris paribus*. Therefore, in order to be used to compare bid prices under these two different settlement rules, the approach suggested by Powerex must be modified to account for the additional payments above bid prices that result under the *bid or better* settlement rule when the ex post MCP exceeds the bid prices for pre-dispatched inter-tie bids.

---

<sup>7</sup> Bilateral prices are based on the Bilateral Hourly Spot Index published on a subscription basis by POWERDEX, an independent energy information company that publishes wholesale power indices in the WECC.

<sup>8</sup> Protest of Powerex Corp (herein referred to as “Powerex”), filed on June 8, 2005 in protest of the ISO’s Comprehensive Market Redesign Proposal, May 13, 2005, Docket No. ER02-1656-026.

<sup>9</sup> For decremental bids, Powerex suggests a similar analysis, but indicates that only off-peak hours (HE01-08) should be used (Powerex, p. 13).

## Methodology

### *Bid Prices under "As-Bid" Settlement Rule*

The approach for assessing inter-tie bid prices under the *as-bid* settlement rule is illustrated numerically in Table 3 and graphically in Figures 3a through 4. Key steps in this methodology include the following:

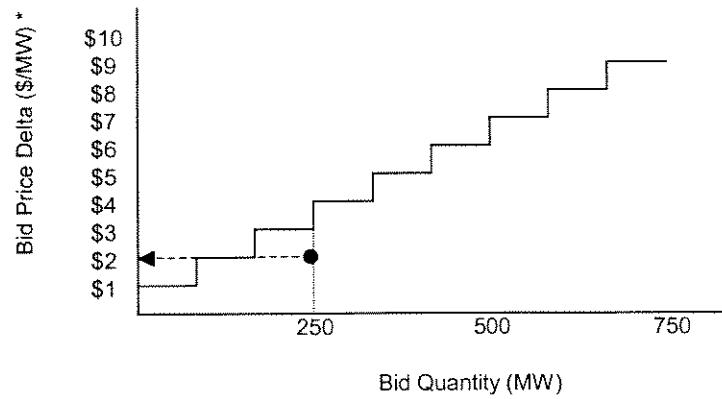
1. First, bid prices for each inter-tie bid (Table 3 Column A) are compared to a reported price index for hourly bilateral spot market transactions (Table 3 Column A). The difference between the bid price and the reported bilateral price index represents the *bid price delta* (Table 3 Column C) for each bid segment.
2. The supply of intertie bids is then sorted based on the bid price delta in ascending order.
3. The cumulative bid cost delta is then calculated at different import supply levels (Table 3, Column D through G).
4. The average inter-tie supply cost that would be paid at different import levels is then calculated by dividing total cumulative bid costs by the total cumulative bid quantity (Table 3, Column H)
5. Finally, the average supply cost at standard points on the supply curve (250 MW, 500 MW, 750 MW, etc) are retained in order to create a time series for use in statistical analysis of changes in inter-tie bid prices relative to the reported bilateral price index over time.

The process is depicted graphically in Figures 3a through 4. Trends in decremental bid prices can also be examined using this same basic methodology, with the exception that the decremental bid curve is created by sorting decremental bids on the bid price delta in descending (rather than ascending) order.

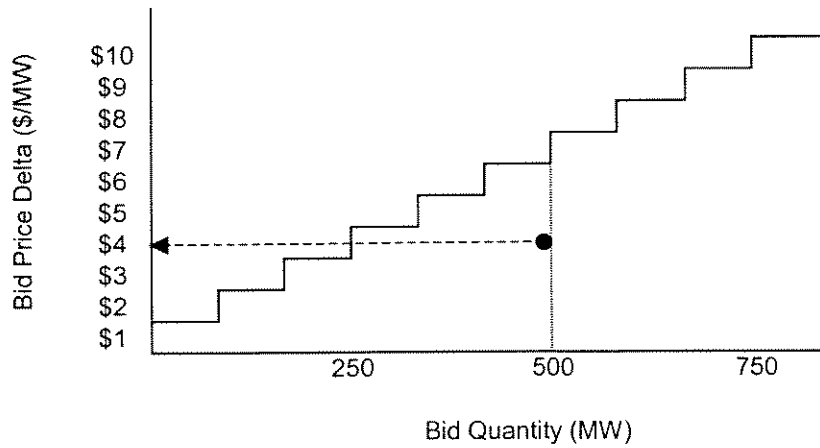
**Table 3. Illustrative Example Calculation of Average Bid Price Delta  
For Inter-tie Bids Under "As-Bid" Settlement Rule**

Bid Price \$/MW (A)	Reported Bilateral Price \$/MW (B)	Bid Price Delta \$/MW (C) = (A) - (B)	Bid Segments		Cumulative		
			Bid Quantity MW (D)	Bid Cost Delta \$ (E=C x D)	Bid Quantity MW (F)	Bid Cost Delta \$ (G)	Average Bid Price Delta \$/MW (H) = (G) / (F)
			\$41	\$40	\$1	83	\$83
\$42	\$40	\$2	83	\$167	167	\$250	\$1.50
\$43	\$40	\$3	83	\$250	<b>250</b>	<b>\$500</b>	<b>\$2.00</b>
\$44	\$40	\$4	83	\$333	333	\$833	\$2.50
\$45	\$40	\$5	83	\$417	417	\$1,250	\$3.00
\$46	\$40	\$6	83	\$500	<b>500</b>	<b>\$1,750</b>	<b>\$3.50</b>
\$47	\$40	\$7	83	\$583	583	\$2,333	\$4.00
\$48	\$40	\$8	83	\$667	667	\$3,000	\$4.50
\$49	\$40	\$9	83	\$750	<b>750</b>	<b>\$3,750</b>	<b>\$5.00</b>
\$50	\$40	\$10	83	\$833	833	\$4,583	\$5.50

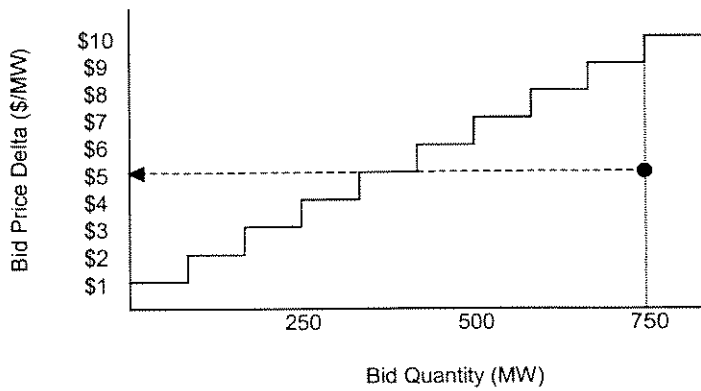
**Figure 3a. Calculation of Average Bid Price Delta for 250 MW Quantity Level**



**Figure 3b. Calculation of Average Bid Price Delta for 500 MW Quantity Level**

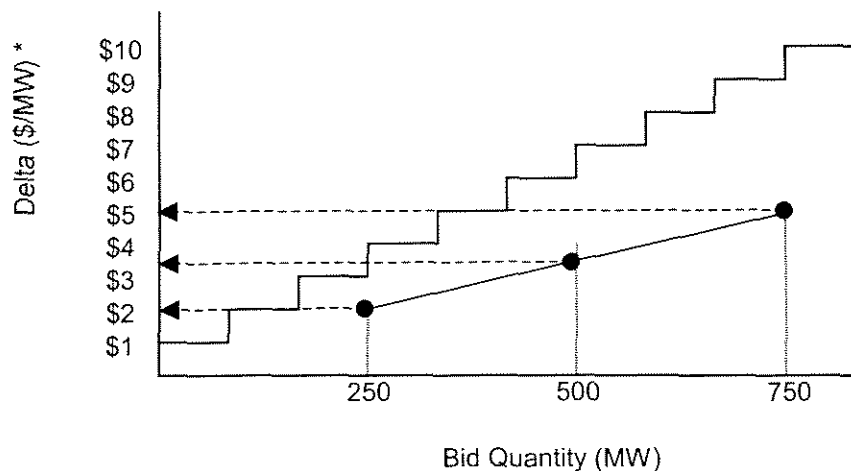


**Figure 3c. Calculation of Average Bid Price Delta for 750 MW Quantity Level**





**Figure 4. Average Bid Price Deltas for 250, 500 and 750 MW Quantity Levels Under “As-Bid” Settlement Rule**



\* Delta = Difference Between Bid Price and Reported Hourly Bilateral Price at Nearest Trading Hub (Powerdex)

### *Bid Prices under Bid or Better Settlement Rule*

Under the *bid or better* settlement rule bidders would be expected to assess the expected value of the additional payments received when the ex post MCP exceeds their bid price, and incorporate the expected value of these payments into their bidding strategy by offering supply at a lower bid price than they would offer under a *pure as-bid settlement rule, ceteris paribus*. In addition to causing suppliers to bid lower, these additional payments received under the *bid or better settlement rule* represent additional costs to procure energy under the *bid or better settlement rule*. For these reasons, any comparison of inter-tie bid prices under the *as-bid* and *bid or better* settlement rules should account for the impact of these additional payments on bid prices and imbalance energy payments.

The methodology used to assess bid prices under the *as-bid* settlement rule can be modified to account for payments in excess of bid prices made under the *bid or better settlement rule* by including the actual ex post level of additional payments in the bid prices. Table 4 and Figures 5 and 6 illustrate this modification using the sample example presented in Table 3.

**Table 4. Illustrative Example Calculation of Average Bid Price Delta For Inter-tie Bids Under “Bid or Better” Settlement Rule**

Pre-Dispatch Bid Price \$/MW (A)	Ex Post MCP \$/MW (B)	Effective Bid Price \$/MW (C)	Reported Bilateral Price \$/MW (D)	Bid Price Delta* \$/MW (E) = (C) - (D)	Bid Segments		Cumulative		Average Delta \$/MW (J) = (I) / (H)
					Bid Quantity MW (F)	Bid Cost Delta \$ (G = E x F)	Bid Quantity MW (H)	Bid Cost Delta \$ (I)	
\$41	\$44	\$44	\$40	\$4	83	\$333	83	\$333	\$4.00
\$42	\$44	\$44	\$40	\$4	83	\$333	167	\$667	\$4.00
\$43	\$44	\$44	\$40	\$4	83	\$333	<b>250</b>	<b>\$1,000</b>	<b>\$4.00</b>
\$44	\$44	\$44	\$40	\$4	83	\$333	333	\$1,333	\$4.00
\$45	\$44	\$45	\$40	\$5	83	\$417	417	\$1,750	\$4.20
\$46	\$44	\$46	\$40	\$6	83	\$500	<b>500</b>	<b>\$2,250</b>	<b>\$4.50</b>
\$47	\$44	\$47	\$40	\$7	83	\$583	583	\$2,833	\$4.86
\$48	\$44	\$48	\$40	\$8	83	\$667	667	\$3,500	\$5.25
\$49	\$44	\$49	\$40	\$9	83	\$750	<b>750</b>	<b>\$4,250</b>	<b>\$5.67</b>
\$50	\$44	\$50	\$40	\$10	83	\$833	833	\$5,083	\$6.10

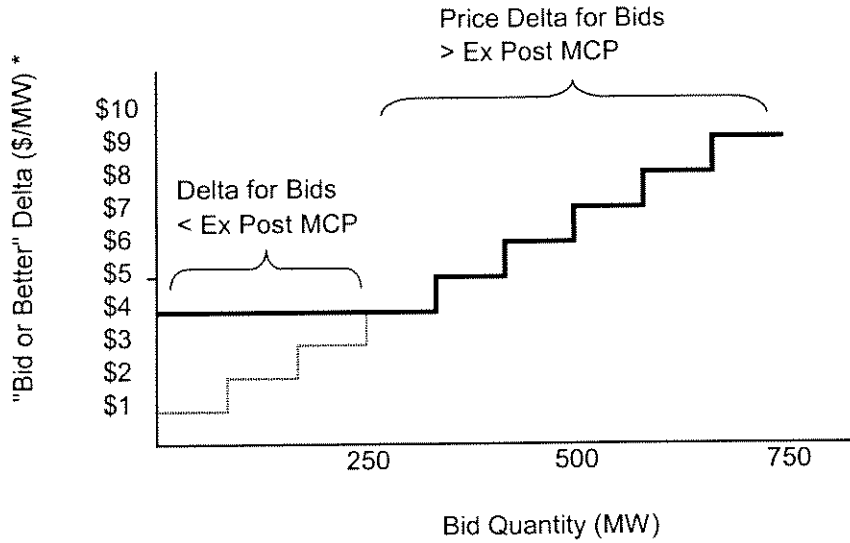
As shown in Table 3 and Figure 4, the key modification made to assess bids under the *bid or better* settlement rule is to first calculate an *effective bid price* for each inter-tie bid for incremental energy, representing the maximum of:

- The actual bid price
- The actual *ex post* Market Clearing Price (“MCP”)

In this example, for instance, if the *ex post* MCP was \$44, the effective bid price for all incremental bids less than \$44 would be equal to the \$44 *ex post* MCP, while the effective bid price for all incremental bids above the \$44 *ex post* MCP would be equal to the actual bid price. In other words, the effective bid price represents the actual price that would have been paid for each bid if it had been dispatched.

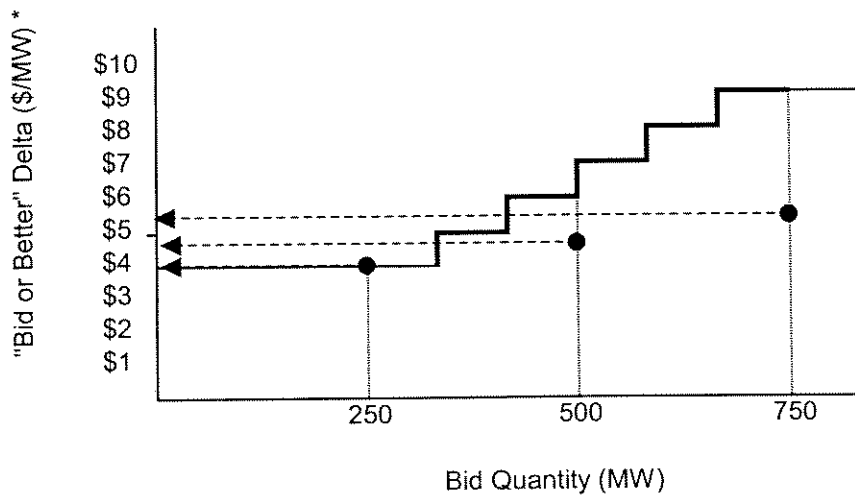
As illustrated in Figure 5, incorporating the actual price paid for each bid under the *bid-or-better* settlement system can have a significant impact on result of the analysis of import bid prices at different levels of supply. While the actual level of additional payments in excess of bid prices under the *bid or better* settlement system is uncertain at the time bids are submitted, suppliers would be expected to incorporate the expected value of these additional payments into their bidding strategies.

**Figure 5. Calculation of Bid Price Deltas Under “Bid or Better” Settlement Rule**



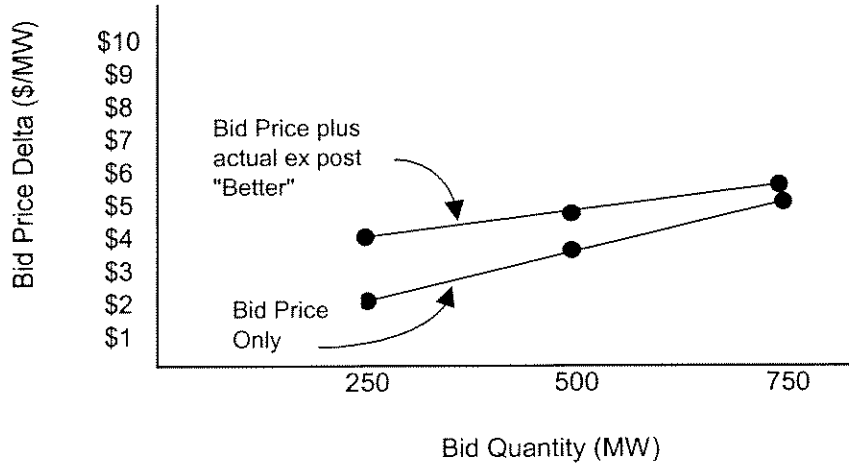
\* Delta = Difference Between (a) Maximum of Bid Price or ExPost MCP and (b) Bilateral Price at Nearest Trading Hub (Powerdex)

**Figure 6. Average Bid Price Deltas for 250, 500 and 750 MW Quantity Levels Under “Bid or Better” Settlement Rule**



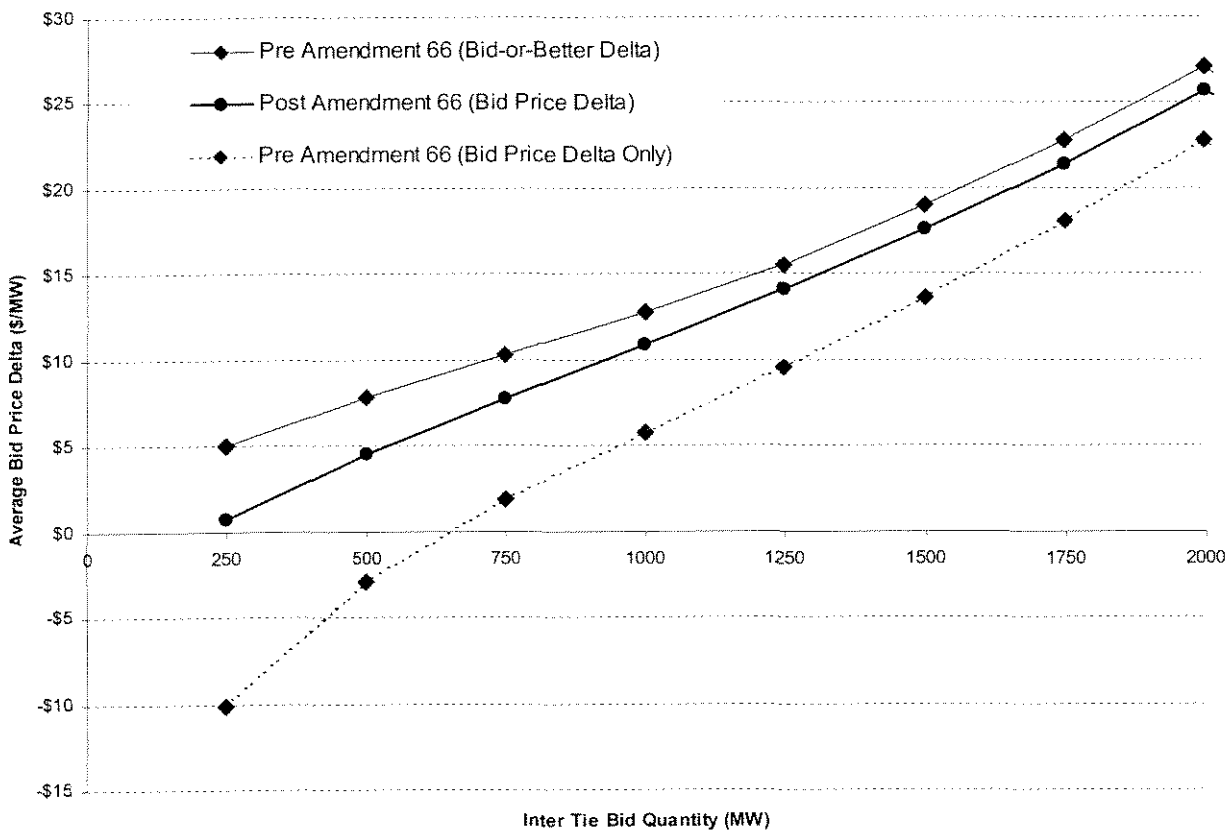
\* Delta = Difference Between (a) Maximum of Bid Price or ExPost MCP and (b) Bilateral Price at Nearest Trading Hub (Powerdex)

**Figure 7. Comparison of Average Bid Price Deltas Under Methodologies for “As-Bid” and “Bid or Better” Settlement Rule**

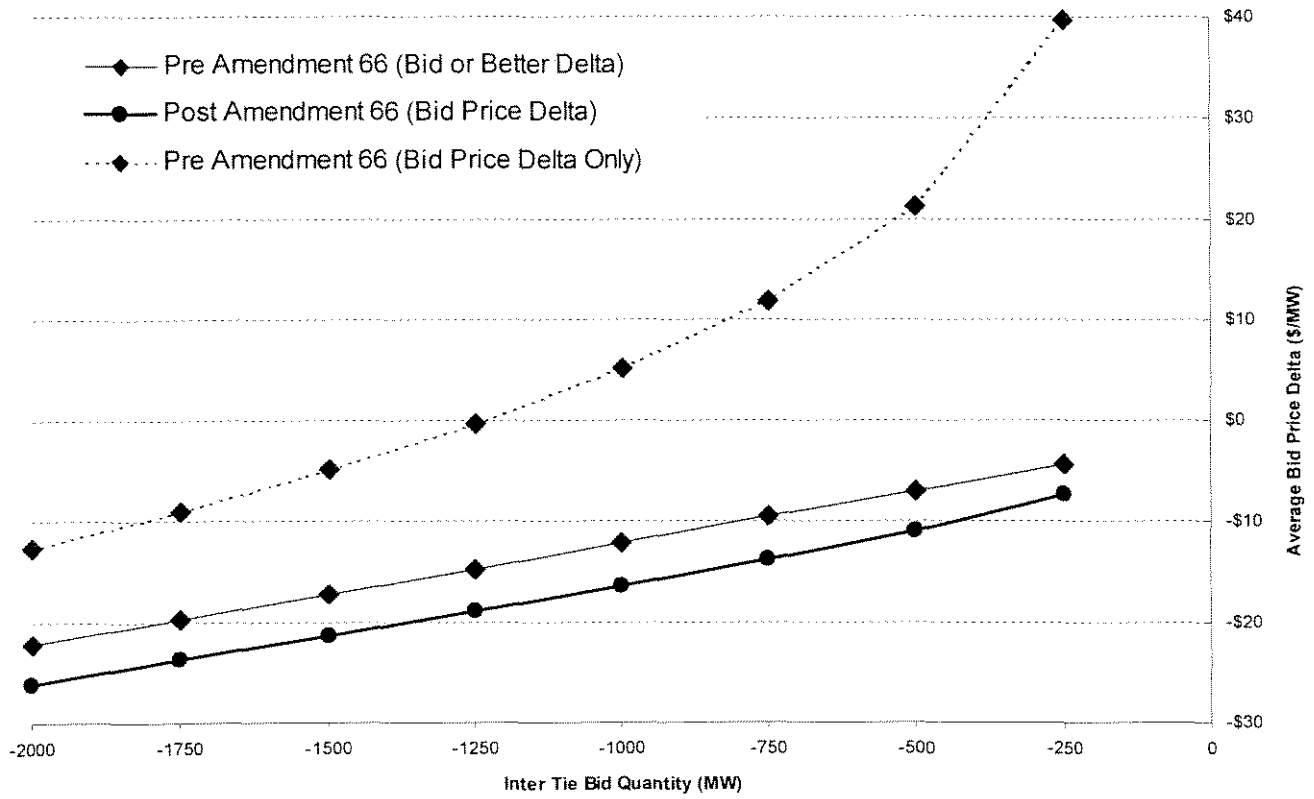


As shown in Figure 6, inter-tie bid prices for incremental energy during peak periods have increased relative to the bilateral spot market price index since the change from a *bid or better* to an *as-bid* settlement rule under Amendment 66. However, when additional payments above bid prices received under the *bid or better* settlement rule are included into the analysis, effective bid prices for incremental energy on interties relative to the bilateral spot market price index have declined since Amendment 66. Effective bid prices for decremental energy, meanwhile, have decreased since the *as-bid* settlement went into effect.

**Figure 6. Comparison of Average Bid Price Deltas for Incremental Energy  
“Bid or Better” and “As-Bid” Settlement Rules**



**Figure 7. Comparison of Average Bid Price Deltas for Decremental Energy  
 “Bid or Better” and “As-Bid” Settlement Rules**



## IV. Conclusion

Finally, it should be noted that the various indicators of export/import market performance are likely affected by a variety of other factors beyond the *bid or better* or *as-bid* settlement rules, ranging from market and operational conditions within the CAISO system to supply and demand conditions throughout the western states. However, results of the various analyses summarized in this report indicate that the overall performance of the ISO import/export market has improved since the *bid or better* settlement rule was replaced by the *as-bid* settlement rule.

- To date, the CAISO has not experienced problems in terms of bid insufficiency or liquidity of incremental energy import bids since the switch to an *as-bid* market under Amendment 66. The volume of incremental energy bids has typically been higher this year than during the comparable period in 2004, and has consistently been well in excess of the quantity of bids actually pre-dispatched.
- The extra costs associated with offsetting incremental and decremental energy bids pre-dispatched by the ISO to clear the market (beyond the level of bids that would be pre-dispatched to meet net ISO imbalance energy) have been dramatically reduced under the *as-bid* settlement rule.
- Even when the cost and revenues of import/exports bids pre-dispatched by the ISO are assessed based on gross imports/export bids dispatched, as proposed by Powerex, rather than net imbalance energy pre-dispatched for ISO system demand, market performance seems to have improved under the *as-bid* settlement rule, with prices for pre-dispatched imports/exports tracking more closely with reported prices in bilateral markets.
- Bid prices for incremental energy from imports have increased and bid prices for decremental energy for export have decreased since implementation of Amendment 66 relative to bilateral market prices. However, this would be expected under an *as-bid* settlement rule, as participants adjust their bids to compensate for the expected value from uplift payments they previously received under the *bid or better* settlement rule. When the actual value of the additional benefits received under the *bid or better* settlement rule are incorporated into the analysis, bid prices for incremental energy imports and decremental energy exports both appear to have decreased moderately.

I, Eric Hildebrandt, PhD declare under penalty of perjury, that I am the Manager of Analysis and Mitigation of the CAISO's Department of Market Analysis and that I prepared the foregoing document entitled "CAISO Import/Export Market Performance Under 'As-Bid' versus 'Bid-or-Better' Settlement Rules" and the analysis and assertions contained in that document are true and correct to the best of my knowledge.

Executed on July 25, 2005 in Folsom, California.



A handwritten signature in cursive script, appearing to read "E. Hildebrandt", is written over a horizontal line.



## **ATTACHMENT D**

NOTICE OF FILING SUITABLE FOR PUBLICATION  
IN THE FEDERAL REGISTER

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System ) Docket No. ER05-718-000  
Operator Corporation )

Notice of Filing

[ ]

Take notice that on July 26, 2005, the California Independent System Operator Corporation (CAISO) tendered for filing a proposal to maintain the "as-bid" settlement rules for settling intertie transactions, as contained in Amendment No. 66 to the CAISO Tariff, beyond the September 30, 2005 sunset date specified by the Commission in its order approving Amendment No. 66, 111 FERC ¶ 61,008 (2005) ("A66 Order"). This proposal is made in response to the Commission's requirement in the A66 Order that the CAISO develop and file with the Commission a "long term" solution to the problem of settling intertie transactions.

The CAISO states that this filing has been served upon the Public Utilities Commission, the California Energy Commission, the California Electricity Oversight Board, and all parties with effective Scheduling Coordinator Agreements under the CAISO Tariff, as well as all parties of record in the Amendment No. 66 docket (ER05-718).

Any person desiring to intervene or to protest this filing should file with the Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, D.C. 20426, in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, *but will not serve to make protestants parties to the proceeding*. Any person wishing to become a party must file a motion to intervene. All such motions or protests should be filed on or before the comment date, and, to the extent applicable, must be served on the applicant and on any other person designated on the official service list. This filing is available for review at the Commission or may be viewed on the Commission's web site at <http://www.ferc.gov>, using the **eLibrary** (FERRIS) link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, please contact FERC

Online Support at [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov) or toll-free at (866)208-3676, or for TTY, contact (202)502-8659. Protests and interventions may be filed electronically via the Internet in lieu of paper; see 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's web site under the "e-Filing" link. *The Commission strongly encourages electronic filings.*

Comment Date: \_\_\_\_\_