

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

California Independent System	)	Docket No. EL12-____
Operator Corporation	)	
	)	
	)	

**PETITION FOR DECLARATORY ORDER**

The California Independent System Operator Corporation (“ISO”) files this Petition for a Declaratory Order to resolve issues concerning the ISO’s settlement of bid cost recovery payments for April 1, 2009, through March 25, 2011.<sup>1</sup> The ISO requests that the Commission confirm that the ISO should resettle the bid cost recovery payments during that period because the original settlements were inconsistent with the applicable ISO tariff provisions.

**I. EXECUTIVE SUMMARY**

The ISO seeks the Commission’s approval for the resettlement of bid cost recovery payments from start-up of the current ISO markets on April 1, 2009 through March 25, 2011 (“the Resettlement Period”). The ISO’s original settlement of bid cost recovery payments during the Resettlement Period was inconsistent with the ISO tariff due to a flaw in the ISO’s application of the tariff. This flaw was revealed when a market participant’s market behavior aggravated the market impact of the flaw, bringing it to the attention of the ISO. Upon Commission approval, the ISO intends to rectify the improper financial payments resulting from the flawed application of its tariff and to issue settlements

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<sup>1</sup> The ISO submits this petition pursuant to Rule 207 of the Commission’s Rules of Practice and Procedure, 18 C.F.R. § 385.207.

consistent with bid cost recovery provisions of the ISO tariff in effect since April 1, 2009. If, however, the Commission denies this request, the ISO will reverse the prior resettlement of the bid cost recovery amounts for the trading days from August 1, 2010 to March 25, 2011 that were already recalculated and resettled.<sup>2</sup>

Through the bid cost recovery mechanism, the ISO ensures that resources committed or dispatched by the ISO fully recover their start-up and minimum load bid costs, and energy bid costs. Under ISO tariff section 11.8<sup>3</sup> the ISO makes energy bid cost recovery payments only for energy actually delivered and *only* to the extent that costs are *unrecovered*. To do so, the ISO must net bid costs against payments made to qualifying resources for delivered energy. Moreover, during the relevant period, section 11.8.2.2 required that the market revenue component of the bid cost recovery payment was to take into account “delivered [megawatt hours], in the relevant Day-Ahead Schedule.” Similarly, Section 11.8.4.2 required that the ISO account for the delivered energy associated with the instructed minimum load energy.

To facilitate the calculation of energy actually delivered relative to the amount of energy scheduled or dispatched, the ISO developed a settlement calculation tool called the metered energy adjustment factor (“MEAF”). Two separate and different MEAFs were developed – one for the day-ahead market, and one for the real-time market. The day-ahead MEAF measures delivered portions relative to the energy scheduled in the day-ahead market. The real-time

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<sup>2</sup> All initial and any future recalculations of the ISO market settlements are subject to interest for the differences in charges and payments as required by the ISO tariff Section 11.29.10.2.

<sup>3</sup> All section references are to the ISO tariff, unless otherwise noted.

MEAF measures the delivered portions of the instructed portions of the resource's energy bid curve.

During the Resettlement Period, in order to calculate the day-ahead energy payments for delivered energy, the ISO applied the day-ahead MEAF to the entirety of day-ahead energy revenues – both the minimum load and the above-minimum load revenues – even though the MEAF was calculated based solely on above-minimum load schedules and deliveries. This application of the day-ahead MEAF to the entire bid curve was flawed, and failed to account for, and net, the entirety of the revenues received for energy up to the resource's minimum load (or minimum operating point). Certain market participants exploited this flaw. As a result of these practices and the flaw, the ISO significantly overpaid supply through their bid cost recovery and overcharged demand. A similar issue arose with the application of the real-time MEAF to the real-time instructed energy, which also resulted in the under-accounting of real-time market revenues.

When the practices and flaw were identified, the ISO further determined that the application of the MEAF in certain cases was inconsistent with tariff section 11.8, including section 11.8.2.2 and 11.8.4.2. This conclusion is further supported by Commission directives in orders prior to start-up of the new markets. Consequently, resettlement of bid cost recovery payments for the Resettlement Period is appropriate to properly apply the filed rate.

## **II. BACKGROUND**

This petition involves a flaw in the way the ISO calculated bid cost recovery payments during the proposed Resettlement Period. Bid cost recovery is the mechanism by which the ISO ensures that resources committed or dispatched by the ISO fully recover their start-up and minimum load bid costs and energy bid costs. During this period, the ISO's use of the MEAF to calculate bid cost recovery payments for portions of the energy bid curve below the resource's minimum load failed to account for all delivered energy from a resource that was scheduled day-ahead or dispatched by the ISO in real-time, as required by the tariff, this resulted in overpayments to resources.

### **A. Bid Cost Recovery**

To understand the impact of the flaw as compounded by the exploitation by certain market behavior it is important to consider how the bid cost recovery provisions of the ISO tariff are designed. Under the ISO's market design, scheduling coordinators submit three-part supply bids that separately identify the resource's energy bid, the start-up costs and minimum load costs.<sup>4</sup> The ISO pays unrecovered start-up and minimum load bid costs only for intervals in which the ISO commits a resource, and also only to the extent the resource's market revenues are not sufficient to cover these costs; *i.e.*, the ISO pays only unrecovered costs. The ISO pays minimum load costs only to the extent that it

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<sup>4</sup> The ISO interacts with scheduling coordinators for all resource transactions, but for ease of reference, references to "resources" in this filing will include references to scheduling coordinators acting on behalf of resources.

can determine that the resource is online.<sup>5</sup> Similarly, the ISO pays start-up costs only to the extent that the resource actually starts up within the applicable commitment period.<sup>6</sup>

A resource incurs energy bid costs if the resource is dispatched or committed at prices below the bid price included in its bid for the relevant interval. This ensures that the resource is not paid lower than its submitted bid price. The ISO pays energy bid costs only to the extent the resource's market revenues do not cover their costs. In addition, the ISO pays bid cost recovery only for delivered energy, which may differ from scheduled or instructed energy.<sup>7</sup> The ISO compensates resources for energy dispatched in real-time at the applicable real-time market clearing price. To the extent these market revenues meet or exceed the bid costs for a resource, there are no unrecovered bid costs and thus there is no need to compensate the resource under the bid cost recovery mechanism.

Therefore, to determine the total amount the resource may receive for its unrecovered bid cost, the ISO offsets the calculated bid costs for a given

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<sup>5</sup> The ISO deems the resource to be online for the applicable trading hour if the resource reaches its minimum load (or minimum operating capability) as registered in the ISO master file for the specific resource within a given trading hour, subject to a tolerance band. The tolerance band affords some flexibility in both the upward and downward direction by qualifying the resource as online and having reached its minimum load when the ISO is able to establish through telemetry that the resource is operating at a level that differs from its minimum load or operating capability by no more than the higher of 5 MW or 3 percent of the resource's normal maximum operating capability. ISO Tariff § 11.8.2.1.2 and Appendix A.

<sup>6</sup> ISO Tariff § 11.8.2.1.1.

<sup>7</sup> ISO Tariff § 11.8.2.1.5. Although resources must, in real-time, make available the energy included in their day-ahead schedules, the ISO does not necessarily dispatch all of that energy.

resource by the market revenue costs.<sup>8</sup> During the Resettlement Period, section 11.8.2.2 stated that the market revenue component of the bid cost recovery payment was to take into account “delivered [megawatt hours], in the relevant Day-Ahead Schedule.”

The ISO proposed the bid cost recovery mechanism in its February 9, 2006 tariff filing to implement its proposed new market design. The ISO proposed to withhold bid cost recovery payments for resources whose uninstructed deviations exceed a tolerance band. The Commission accepted most of the ISO’s proposals regarding bid cost recovery.<sup>9</sup> With regard to under-deliveries of day-ahead energy, however, the Commission ruled, “[r]esources that fall short of day-ahead dispatch instructions should only be guaranteed the recovery of costs associated with the energy actually provided, and should not receive payments for deviations from dispatch instructions. . . . Units that are committed in the day-ahead market, and do not start-up, should not receive any bid cost recovery payments.”<sup>10</sup> The ISO subsequently submitted revisions to section 11.8 to limit bid cost recovery to the amounts associated with delivered energy, which the Commission later accepted.<sup>11</sup>

Just prior to the start of the new market design, the ISO engaged PricewaterhouseCoopers to audit whether the ISO’s settlement and market clearing software calculated quantities and prices in compliance with the tariff.

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<sup>8</sup> The ISO calculates this, first at the interval level and ultimately based on all market revenues earned by the resource across all of the ISO markets.

<sup>9</sup> *Cal. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274 at PP 491-539 (2006).

<sup>10</sup> *Id.* at P 516.

<sup>11</sup> *Cal. Indep. Sys. Operator Corp.*, 119 FERC ¶ 61,313 (2007).

The audit results revealed that the then-existing section 11.8.2.2 was inconsistent with the manner in which day-ahead market revenues were calculated under the settlement configuration codes.<sup>12</sup> This prior version of section 11.8.2.2 did not limit the calculation of market-day-ahead revenues to those associated with actual delivered amount of energy, which meant that the bid cost recovery calculation would take into account revenues based on total scheduled day-ahead energy. In contrast, the configuration code used for determining day-ahead bid cost recovery payments took into account only that portion of day-ahead revenues that was associated with delivered portions of the energy bid curve. In a March 30, 2009 filing, two days prior to the implementation of the new market design, the ISO proposed to revise section 11.8.2.2 to be consistent with the practice reflected in the configuration, *i.e.*, such that the ISO should take into account only market revenues associated with the delivered portions of the day-ahead schedule.<sup>13</sup> At that time, the ISO failed to recognize that, as discussed below, the manner in which it used the MEAF did not account for all such revenues associated with the minimum load energy.

### **B. The Metered Energy Adjustment Factor**

The MEAF was developed prior to start-up of the new market design as a settlement calculation tool used for multiple purposes, including the purpose of limiting the bid cost recovery to delivered amounts only, *i.e.* to implement the revised tariff sections. The MEAF identifies the ratio of the scheduled energy

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<sup>12</sup> As noted above, section 11.8.2.2 sets forth the calculation of market revenues used to offset the bid cost recovery eligible amounts for resources committed in the IFM.

<sup>13</sup> The Commission accepted the revision of section 11.8.2.2 in a letter order of May 27, 2009 in Docket No. ER09-918.

above the resource's self-schedule and its minimum load to the delivered energy above a resource's self-schedule and its minimum load.<sup>14</sup> Under the business practice manual for billing and settlements developed at the time (and in effect during the Resettlement Period), the ISO used the day-ahead MEAF to compare the portion of metered energy above the resource's minimum load and self-schedule for a given resource to its portion of the day-ahead schedule above the resource's minimum load and self-schedule.

Also under the business practice manual for billing and settlements, for day-ahead schedules, the ISO applied the day-ahead MEAF to the day-ahead market revenues in order to determine the portion of the day-ahead energy revenues that would be netted against bid costs.<sup>15</sup>

The ISO's intent was to use the MEAF to capture the delivered energy portions of the energy bid curve. However, at the time the ISO implemented the MEAF, the ISO did not realize that the use of the MEAF was flawed as it fails to accurately account for market revenues associated with below-minimum-load energy. Similarly, the real-time MEAF was to calculate the market revenues associated with the delivered energy below the resource's minimum load as

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<sup>14</sup> The day-ahead MEAF is defined as bounded by 1 or 0, and is the ratio of the resource's (a) Metered Energy *minus* the Day-Ahead Self-Scheduled Energy *minus* the Day-Ahead Minimum Load Energy *minus* the Standard Ramping, and (b) the Day-Ahead Scheduled Energy *minus* the Day-Ahead Self-Scheduled Energy *minus* the Day-Ahead Minimum Load Energy.

The ISO has also developed a real-time MEAF that compares the metered generation to the dispatched amount above or below the amount scheduled in the day-ahead market. The real-time MEAF is also bounded by 1 or 0, and is defined as the ratio of the resource's (a) metered energy minus day-ahead scheduled energy minus standard ramping minus real-time self-scheduled energy, and (b) total expected energy minus day-ahead scheduled energy minus standard ramping minus real-time self-scheduled energy.

<sup>15</sup> ISO Tariff § 11.8.2.1.5. Prior to March 26, 2011, the use of the MEAF was set forth in the business practice manual for billing and settlements rather than the ISO Tariff.

required by Section 11.8.4.2. By applying the MEAF to revenues associated with minimum load energy in both markets, the ISO failed to net the full amount of market revenues against bid cost recovery payments.<sup>16</sup>

**C. The March 21, 2011 Filing, April 5, 2011 Technical Bulletin, and May 4, 2011 Order.**

Early in 2011, the ISO identified a bidding practice that some market participants were using to manipulate and maximize bid cost recovery payments by exploiting the flaw in the application of the tariff. During its investigation of this behavior, the ISO concluded that the practice of applying the day-ahead MEAF to the revenues for delivered minimum load day-ahead energy was inconsistent with the requirements of section 11.8.2.2 then in effect because it failed to account for significant portions of the market energy revenues, i.e., locational marginal price (“LMP”) payments, received by a resource in connection with the minimum load portion of its day-ahead schedule.<sup>17</sup>

On March 21, 2011, the ISO submitted tariff amendments to (1) address the identified bidding practice that aggravated the flawed use of the MEAF, and (2) clarify certain portions of the tariff relating to bid cost recovery. The ISO also explained to the Commission its conclusion that – aside from the bidding practice in question – the ISO’s prior practice of applying the MEAF to all day-ahead revenues, including minimum load revenues, erroneously took into account only a portion of, rather than all of the minimum load revenues. As part of its March

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<sup>16</sup> In the March 30, 2009, filing, the ISO stated its erroneous belief that the application of the day-ahead MEAF, as set forth in the business practice manual, properly limited the calculation of market revenues to the revenues for delivered amounts.

<sup>17</sup> The erroneous application of day-ahead MEAF affected not just market participants employing the suspect bidding practice, but rather all resources qualifying for bid cost recovery that failed to deliver the entirety of their day-ahead schedules.

2011 tariff amendments, the ISO included provisions setting forth with greater specificity the manner in which it would account for day-ahead revenues associated with minimum load but it did not modify the same policy principle contained in the tariff – that the ISO would capture the market revenues with the delivered portions of the day-ahead energy bid curve, including portions below the resource’s minimum load.<sup>18</sup> As the ISO explained, it added the additional explanation in the tariff to eliminate any potential confusion as to how the delivered portions are captured in light of the issues it faced in March 2011. On April 5, 2011, the ISO issued a technical bulletin announcing its intention to resettle previously settled bid cost recovery payments to correct this error.

On May 4, 2011, the Commission issued an order accepting the proposed tariff revisions, effective March 26, 2011.<sup>19</sup> With regard to the April 5 Technical Bulletin, the Commission stated:

The Commission makes no finding with regard to any such resettlements. Under FPA section 205, all public utilities are required to file rates, charges and give timely prior notice before any proposed rates and charges can become effective. To the extent that CAISO did not follow its tariff and CAISO determines that any surcharges or resettlements are necessary, CAISO must file with the Commission prior to any action to request authority and explain its proposal with amounts and details.<sup>20</sup>

**D. The June 3, 2011, Filings and December 2, 2011, Order**

On June 3, 2011, the ISO filed a motion for clarification or, in the alternative, request for rehearing of the May 4 Order. The ISO requested

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<sup>18</sup> Among other matters, the ISO revised the tariff such that it took into account day-ahead revenues associated with all scheduled energy, not just delivered energy. See § 11.8.2.2.1.2 of the current ISO Tariff.

<sup>19</sup> *Cal. Indep. Sys. Operator Corp.*, 135 FERC ¶ 61,110 (“May 4 Order”).

<sup>20</sup> *Id.* at P 27 (footnotes omitted).

clarification that the statement in the May 4 Order, quoted above, does not require utilities always to obtain prior Commission authority in order to correct computational errors that result in charges contrary to the filed rate. In the alternative, the ISO requested rehearing.<sup>21</sup>

On December 2, 2011, the Commission granted clarification and denied the rehearing request.<sup>22</sup> In that order, the Commission clarified that not all resettlements require filings with the Commission. The Commission explained that the general authority that independent system operators have under the filed rate doctrine allows automatic resettlements to address administrative errors, such as data input errors, or software malfunctions.<sup>23</sup> The Commission concluded, however, that because the proposed resettlements constituted a departure from the application of the MEAF that had been set forth in the ISO's business practice manual, they represented a change in the manner in which the ISO interpreted the terms of its tariff through the business practice manual. The Commission thus concluded that the proposed resettlement was well beyond the correction of an administrative error.<sup>24</sup>

The Commission further stated that neither the filed rate doctrine nor the terms of the ISO tariff permit the ISO automatically to resettle payments when the ISO is "reinterpreting the application of its tariff," as with the proposed

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<sup>21</sup> On the same date, the ISO filed a request for a limited, one-time waiver of section 11.8, to allow it to refrain from resettling certain bid cost recovery payments during the period from April 2009 through July 2010, as discussed in the technical bulletin. The ISO initially proposed to only resettle amounts from August 2010 through March 2011, when the over-collection of bid cost recovery payments was most pronounced.

<sup>22</sup> *Cal. Indep. Sys. Operator Corp.*, 137 FERC ¶ 61,810 ("December 2 Order").

<sup>23</sup> *Id.* at P 24.

<sup>24</sup> *Id.* at P 22.

resettlements.<sup>25</sup> The Commission noted that, “while the proposed change and resettlement may, in fact, be a reasonable interpretation of the tariff in effect at the time, it is different from the way in which the terms of the tariff were previously applied through the business practice manual.”<sup>26</sup> The Commission also held that “[d]etermining whether such an interpretation is reasonable would be the subject matter of the required filing to resettle the past bid cost recovery calculations.”<sup>27</sup>

### **III. REQUEST FOR DECLARATORY ORDER**

Consistent with the December 2 Order, the ISO seeks Commission approval for resettlement of bid cost recovery during the Resettlement Period. This resettlement is based upon the ISO’s flawed application of the MEAF to the minimum load energy portions of the scheduled or instructed energy for purposes of measuring revenues to be used to offset minimum load costs for the Resettlement Period. The ISO’s application of the MEAF was inconsistent with the only reasonable reading of the ISO’s tariff. The ISO asks that the Commission confirm that the ISO tariff requires that the ISO recalculate and resettle bid cost recovery payments that were calculated using the erroneous practice.

As discussed below, although the settlement practice during this period was in the business practice manual, it was plainly contrary to the plain language

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<sup>25</sup> *Id.* at P 21.

<sup>26</sup> *Id.* at P 22.

<sup>27</sup> *Id.* at n33.

of the ISO tariff and thus constituted an inappropriate and unreasonable application of the ISO tariff.

**A. Application of the MEAF to Minimum Load Energy Miscalculates the Delivered Energy.**

The application of the day-ahead MEAF to minimum load energy in the calculation of bid cost recovery payments was a flawed application of the ISO tariff. Section 11.8.2, in effect at the time, specified that day-ahead bid costs eligible for bid cost recovery (“Unrecovered Bid Cost Uplift Payments”) are the algebraic difference between the bid costs and the day-ahead market revenues.<sup>28</sup> Section 11.8.2.2 provided that the market revenues for the day-ahead market comprised the sum of (1) the product of the *delivered* megawatts of energy in the day-ahead schedule and the day-ahead LMP and (2) the product of the ancillary services award and the ancillary services market price.<sup>29</sup> The ISO’s use of the day-ahead MEAF to calculate “the *delivered* megawatts of energy in the day-ahead schedule” produced a result that was not in fact equal to the product of the

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<sup>28</sup> The day-ahead market is the integrated forward market (“IFM”). Section 11.8.2 provided in relevant part:

For purposes of determining the IFM Unrecovered Bid Cost Uplift Payments as determined in Section 11.8.5, and the purposes of allocating Net IFM Bid Cost Uplift as described in Section 11.8.6.4 the CAISO shall calculate the IFM Bid Cost Shortfall or the IFM Bid Cost Surplus as the algebraic difference between the IFM Bid Cost and the IFM Market Revenues for each Settlement Interval. . . . The Energy subject to IFM Bid Cost Recovery is the actual Energy delivered in the Real-Time that is within the Day-Ahead Schedule for each eligible resource

<sup>29</sup> Section 11.8.2.2 provided in relevant part:

For any Settlement Interval in a CAISO IFM Commitment Period the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of: (1) the product of the delivered MWh, in the relevant Day-Ahead Schedule in that Trading Hour . . . , and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour; and (2) the product of the IFM AS Award from each accepted IFM AS Bid and the relevant Resource-Specific ASMP, divided by the number of Settlement Intervals in a Trading Hour.

*delivered* megawatts of energy in the day-ahead schedule and the day-ahead LMP, as required by section 11.8.2.2.

To understand the error, it is important to keep in mind that energy schedules consist of up to three components: minimum load energy, self-scheduled energy, and energy above these amounts. The ISO pays unrecovered bid costs for minimum load according to the minimum load bid and for energy according to the energy bid for the amounts above minimum load and scheduled energy.<sup>30</sup>

The error in the use of the day-ahead MEAF stemmed from the fact that the MEAF is the ratio of delivered energy *above minimum load and self-schedules* to scheduled energy *above minimum load and self-schedules*. As explained in the accompanying declaration of Mr. Mark Rothleder, under the business practice manual prior to March 26, 2011, in order to offset market revenues, the ISO applied this ratio to the resource's entire market revenues, *including those for minimum load*. This mismatch caused an undercount of minimum load revenues.

**B. Application of the MEAF to Minimum Load Energy Over-Compensates Resources that Deliver Less than the Energy Scheduled Day-Ahead.**

While Mr. Rothleder provides a more robust explanation of the workings of bid cost recovery and the role the day-ahead MEAF plays in that mechanism, the following simplified example illustrates the error in applying the day-ahead MEAF

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<sup>30</sup> As noted above, the ISO also pays unrecovered start-up costs, but this is not relevant to the issues presented here.

to the minimum load energy portions of the energy bid curve when calculating market revenues for the resource.<sup>31</sup>

Consider a resource with a minimum load of 100 megawatts (MW). The resource is scheduled day-ahead to deliver 400 megawatt-hours (MWh). In real-time, it delivers 300 MWh (100 MWh minimum load energy and 200 MWh above minimum load). The MEAF is thus 0.66:  $(300 \text{ MWh delivered} - 100 \text{ MWh minimum load} = 200 \text{ MWh}) / (400 \text{ MWh scheduled} - 100 \text{ MWh minimum load} = 300 \text{ MWh})$ .

Suppose the LMP is \$45. In the day-ahead market, a resource receives payment for all scheduled energy along the entire bid curve.<sup>32</sup> In other words, the resource is compensated for energy delivered as minimum load energy as well as energy delivered above the minimum load or minimum operating point for the resource. Therefore, the actual revenues for the resource would be  $400 \text{ MWh} \times \$45 = \$18,000$ . The revenues attributable to delivered energy would be  $300 \text{ MWh} (100 \text{ MWh minimum load energy} + 200 \text{ MWh above minimum load}) \times \$45 = \$13,500$ . Under the plain language of the ISO Tariff effective at the time, \$13,500 should have been offset against (subtracted from) bid costs in order to determine unrecovered bid costs.

As described further by Mr. Rothleder, applying the day-ahead MEAF to the total actual revenues (\$18,000), the ISO thus determined it would offset only \$12,000 ( $\$18,000 \times 0.66$ ) against bid costs in order to determine unrecovered bid costs. This \$1500 reduction is patently inconsistent with the plain language of

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<sup>31</sup> This simplified example assumes no self-scheduled energy.

<sup>32</sup> If the resource does not deliver the schedule energy, it must buy it back in real-time.

the ISO tariff, discussed above, because it completely ignores the market revenues earned for the 100 MWh of minimum load energy scheduled in the day-ahead, even though the resource delivered that minimum load energy. Also, it is inconsistent with the intent of the September 21, 2006 Order and the related provisions of the ISO Tariff, because the bid cost recovery tariff provisions are intended to provide payments to resources only to the extent market revenues do not cover the applicable bid costs.

Further assume that the resource had a minimum load cost of \$10,000<sup>33</sup> and had bid the energy at \$50.<sup>34</sup> The resource's bid costs for the delivered energy in the above example would be \$20,000: \$10,000 minimum load costs + (\$50 x 200 MWh above minimum load = \$10,000). Under the ISO Tariff, therefore, the resource's unrecovered bid costs would have been \$6,500 (\$20,000 - \$13,500). Under the MEAF, set forth in the business practice manual, the resource would have been paid \$8,000 (\$20,000 - 12,000) an overpayment of \$1500 compared to the tariff requirement. The MEAF settlement methodology in the business practice manual thus resulted in potential overpayments to resources.

As also explained by Mr. Rothleder, the overpayments increase dramatically when the resources deliver only minimum load or slightly more energy. As the delivered energy approaches minimum load, the MEAF

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<sup>33</sup> Under section 30.4 of the ISO tariff, resources have two options for establishing minimum load costs: a registered cost or a proxy cost. The registered cost is limited to a maximum of 200% of proxy costs.

<sup>34</sup> An energy bid consists of a bid curve, but for the purposes of this example, assume no difference in the bid for the scheduled and delivered amounts.

approaches zero, and, as a result, the market revenues to be netted against bid cost recovery also approach zero.

**C. Application of the MEAF to Minimum Load Energy Is Inconsistent with the ISO Tariff and Commission Precedent.**

The results of the above examples cannot be reconciled with the plain meaning of section 11.8.2.2 in effect at the time. The issue is thus not one of conflicting tariff interpretations, but rather a flaw in applying the tariff – *i.e.*, the misapplication of the tariff through an erroneous and unintended calculation set forth in the MEAF. The plain language of the tariff requires the ISO to capture revenues associated with delivered portions of the resource’s scheduled or dispatched energy. Because the MEAF methodology failed to achieve this result, was a flawed implementation of the ISO tariff.<sup>35</sup> This error only came to light, however, when the ISO investigated the bidding practice exploiting this flaw, which prompted the March 21 filing.<sup>36</sup>

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<sup>35</sup> The MEAF described in the business practice manual in effect prior to March 26, 2011, was not the result of an interpretation of the ISO tariff that concluded that allowing for significant under-accounting of market revenues was sufficiently consistent with the tariff that clearly required that revenues associated with delivered energy be accounted for. Rather, immediately preceding the implementation of the ISO’s current market design, the ISO developed the MEAF to calculate the portion of a resource’s day-ahead schedule or instructed energy that is not delivered, for the purposes of settling the bid cost recovery amounts consistent with the ISO Tariff. In response to a market participant’s request, ISO staff determined it was necessary to apply the day-ahead MEAF in its calculation of market revenues for comparable treatment in its provision of minimum load costs. Unfortunately, the expedited pre-market launch testing of this procedure did not reveal the ineffectiveness of the use of the day-ahead MEAF in the context of calculating day-ahead market revenues associated with portions of day-ahead scheduled energy below the minimum load portions of the day-ahead schedule, prior to adopting that practice. The result was the application of the day-ahead MEAF that resulted in settlements that were inconsistent with the ISO Tariff.

<sup>36</sup> The MEAF remains an appropriate tool for determining the amount of delivered megawatts above minimum load and self-schedules. Its definition and use were added to the ISO tariff in the amendments approved in the May 4 Order. See § 11.8.2.1.5 of the current ISO tariff.

To the extent that the provisions in the business practice manual for settlements and billing regarding the day-ahead metered data adjustment factors conflicted with Section 11.8 of the tariff (or any other tariff section), the tariff section must take precedence as the filed rate. Under the filed rate doctrine, “[a party] can claim no rate as a legal right that is other than the filed rate, whether fixed or merely accepted by the Commission.”<sup>37</sup> Consistent with this principle, the Commission itself has held that an independent system operator’s tariff must be followed in the event that a business practice manual or other related document not approved by the Commission conflicts with the tariff accepted by the Commission.<sup>38</sup> The ISO tariff also specifies that, in the event of an inconsistency, the tariff take precedence over business practice manuals.<sup>39</sup>

Although the ISO does not believe that the Commission should find any ambiguity in the previously effective version of Sections 11.8.2.2 or 11.8.4.2, even if one were found, the Commission should resolve such ambiguity in accordance with the intent of these tariff provisions and the Commission’s order approving them, as explained herein. The ISO’s corrected application of the tolerance band, as opposed to the MEAF, to account for the delivered portions is more consistent with the fundamental design of the bid cost recovery mechanism as accepted by the Commission “to calculate the bid cost recovery payment by netting any market revenues received by the resource over a 24-

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<sup>37</sup> *Montana-Dakota Util. Co. v. Nw. Pub. Serv. Co.*, 341 U.S. 246, 251 (1951).

<sup>38</sup> *Midwest Indep. Transmission Sys. Operator, Inc.*, 118 FERC ¶ 61,212, at P 95 (2007); *ISO New England, Inc.*, 113 FERC ¶ 61,157, at P 18 (2005).

<sup>39</sup> See § 1.3.2(k); see also *Cal. Indep. Sys. Operator Corp.*, 122 FERC ¶ 61,271, at P 111 n.66 (2008).

hour period against any unrecovered costs in any interval.”<sup>40</sup>

Failure to correctly apply Section 11.8.2.2 and 11.8.4.2 for the Resettlement Period will result in substantial overpayments to resources for bid cost recovery, much of which is the result of a bidding practice designed to exploit the flaw and to maximize bid cost recovery payments, notwithstanding market revenues received in the day-ahead market. The corollary of these overpayments is overcharges to load that are not consistent with maintaining a reasonable balance between allowing resources to recover their costs of complying with ISO directives and ensuring just and reasonable prices. Although the misapplication of the tariff, through the MEAF, did not affect locational marginal prices (which do not change in the resettlement), it unjustly and unreasonably provided certain resources a double payment – through both market revenues and bid cost recovery – and imposed additional uplift charges on load as a result.

The Commission has previously rejected tariff interpretations that would result in such unjust and unreasonable results.<sup>41</sup> For example, the Commission has accepted the New York Independent System Operator’s interpretation of a tariff provision as consistent with the purpose of its market rules and further noted that an alternative interpretation proposed by another party could “provide incentives for manipulating the market price” and “thus could lead to unjust and

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<sup>40</sup> See *Cal. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274 at PP 492, 504 (2006).

<sup>41</sup> See *Tex. E. Transmission Corp.*, 49 FERC ¶ 61,395 (1989).

unreasonable results.”<sup>42</sup> Similar considerations support the ISO’s request that the Commission permit resettlement to correctly apply section 11.8.2.2.

For these reasons, the ISO requests that the Commission confirm that the ISO’s settlement of day-ahead bid cost recovery for the Resettlement Period – from April 1, 2009, through March 25, 2011 – was inconsistent with the ISO Tariff, and permit the ISO to resettle day-ahead bid cost recovery payments during that period.

#### **IV. RECALCULATION OF BID COST RECOVERY SETTLEMENT AMOUNTS**

The ISO believes data on the resettlement authority requested in this petition will assist the Commission in understanding the scope of these issues. When it issued the April 5 technical bulletin, the ISO believed it was necessary to immediately proceed with resettlements of day-ahead bid cost recovery payments to correctly apply its filed rate to capture delivered energy portions of the energy bid curve. The resettlements affected approximately 138 resources.

##### **A. The ISO Sought to Resettle the Market in an Efficient and Expeditious Manner.**

As noted above, the erroneous application of the MEAF to the revenues from minimum load energy came to the ISO’s attention, when a market participant began exploiting this flaw to its advantage. The ISO determined that this application of the MEAF was contrary to the filed rate and the Commission’s order approving such filed rate and began resettling the market as soon as practicable. As indicated in table 1, the ISO began recalculating settlement

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<sup>42</sup> *Long Island Power Auth. v. N.Y. Indep. Sys. Operator, Inc.*, 118 FERC ¶ 61,109 at PP 34, 39 (2007).

statements prior to the Commission’s May 4, 2011 Order. This resettlement covered three out of the eight months that the ISO had announced it would recalculate in April 2011.<sup>43</sup>

Table 1; Recalculation of Settlement Statements Initiated in April 2011

<b>Trade Dates</b>	<b>Settlement Statement</b>	<b>Dates Resettlement began and ended</b>
December 29, 2010 through February 24, 2011	T+76 Business Days	April 19 through June 13, 2011
February 25 through March 25, 2011	T+38 Business Days	April 20 through May 18, 2011

Upon receiving the Commission’s December 2, 2011 order, the ISO evaluated its next steps. The ISO anticipated a relatively short period of uncertainty regarding the final settlement, because the ISO planned to seek a declaratory order in early 2012. The ISO recognized it would ultimately need to perform final settlements in accordance with any Commission order on this petition. The ISO therefore concluded that it could avoid confusion and significant unnecessary administrative burden and costs (borne by market participants) if it awaited a Commission directive rather than immediately resettling the amounts that had already been resettled using the corrected methodology, The ISO also made the choice to complete the resettlement rather

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<sup>43</sup> The ISO conducts its resettlements through a series of recalculation statements that capture updated information, including resolved disputes over time. In April of 2011, the corrections were implemented in the settlement system by setting the effective date for the corrected code configurations at August 1, 2010. Once the effective date is set, any subsequent recalculation statements that occur after that change is made, and that include the affected trading days, will be calculated using the modified methodology. For example, in this case the resettlements were reflected in the settlement statement that is issued 76 business days after the applicable trading day for December 29, 2010 through February 24, 2011. The period from February 25 through March 25, 2011 was captured in the settlement statement that is issued 38 business days after the applicable trading day.

than ceasing the ongoing resettlement activities and reversing the resettlements for certain periods before the Commission acted on this petition to avoid the confusion that would result from a truncated collection and mid-stream reversal of the charges. Unfortunately, due to a number of intervening matters, the filing was delayed. It is important to note, however, that interest will apply to any resettlements and the delay will not harm nor unjustly enrich any market participants.

More specifically, on February 8, 2012, the ISO was scheduled to commence the issuing the 18-month recalculation settlement statement (*i.e.*, the resettlement statements issued 18 months after the applicable trading day) that captured the affected trading days of August 1, 2010 through December 28, 2010. In order to cease the recalculation, the ISO would have had to again change the effective dates of the settlement code first changed in April 2011. The result of such a further change would have been a patchwork of resettlement statements with differing calculations over different sub-parts of the August 2010 to March 2011 period for the same tariff requirement. Had the ISO not proceeded with the 18-month settlement recalculation under the approach originally adopted in April 2011, the ISO would have to issue a special recalculation statement to capture the changes for the months of August 1, 2010 through December 2010 and then potentially resettle portions of that period yet again if the Commission were to grant the requested relief.

In addition, the 18- month statements would have resulted in complications in the settlement of charges under the tariff changes regarding the

use of the MEAF that became effective on March 25, 2011. For example, to cease the recalculation, the ISO would have needed to reinsert the old code and make it effective up until the effective date of the tariff revisions. On the other hand, having resettled the payment associated with the bid cost recovery flaw in the 18-month statement, the ISO would be able to proceed with the going forward changes more efficiently, without creating any confusion concerning the applicable codes in the settlements system. If, however, the Commission rejects this petition, the ISO will simply undo the recalculation it triggered in April of 2011 by re-inserting the old settlements configuration, making it effective April 1, 2009, and issuing the appropriate resettlement statements. This would result in the restoration of any prior recalculated statements for the eight months the ISO has already resettled. As noted, the ISO will calculate Interest on any resettlements in response to the Commission's order in this proceeding.

**B. The Financial Impact of the Flawed Application of the ISO Tariff Is Significant.**

The financial impact of the flawed application of the MEAF to revenues from minimum load energy is significant. During the Resettlement Period – from April 1, 2009 to March 25, 2011 – the amount of bid cost recovery payments that would be made to resources under resettlement using the MEAF methodology to calculate the minimum load energy revenue used to offset the bid cost recovery payments is approximately \$208,855,499.<sup>44</sup> If the ISO uses the tolerance band to

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<sup>44</sup> In order to estimate the impact of the calculation error, the ISO had to recalculate the settlement amounts outside the settlement systems to determine the amounts that were paid to resources under the erroneous methodology and those paid using the corrected methodology. Therefore, the amounts provided herein are not the exact settlement amounts that would actually accrue in a settlement re-run were the Commission to order any re-calculations of the settlement statements.

calculate the delivered minimum load energy, to correctly apply the tariff, resources would be paid approximately \$156,795,983.45. Thus, market participants were initially overpaid approximately \$52 million under the erroneous methodology for accounting for minimum load energy revenue (See Table 2 below).

**Table 2: The estimated bid cost recovery differences related to the above graph for April 2009 through March 2011.**

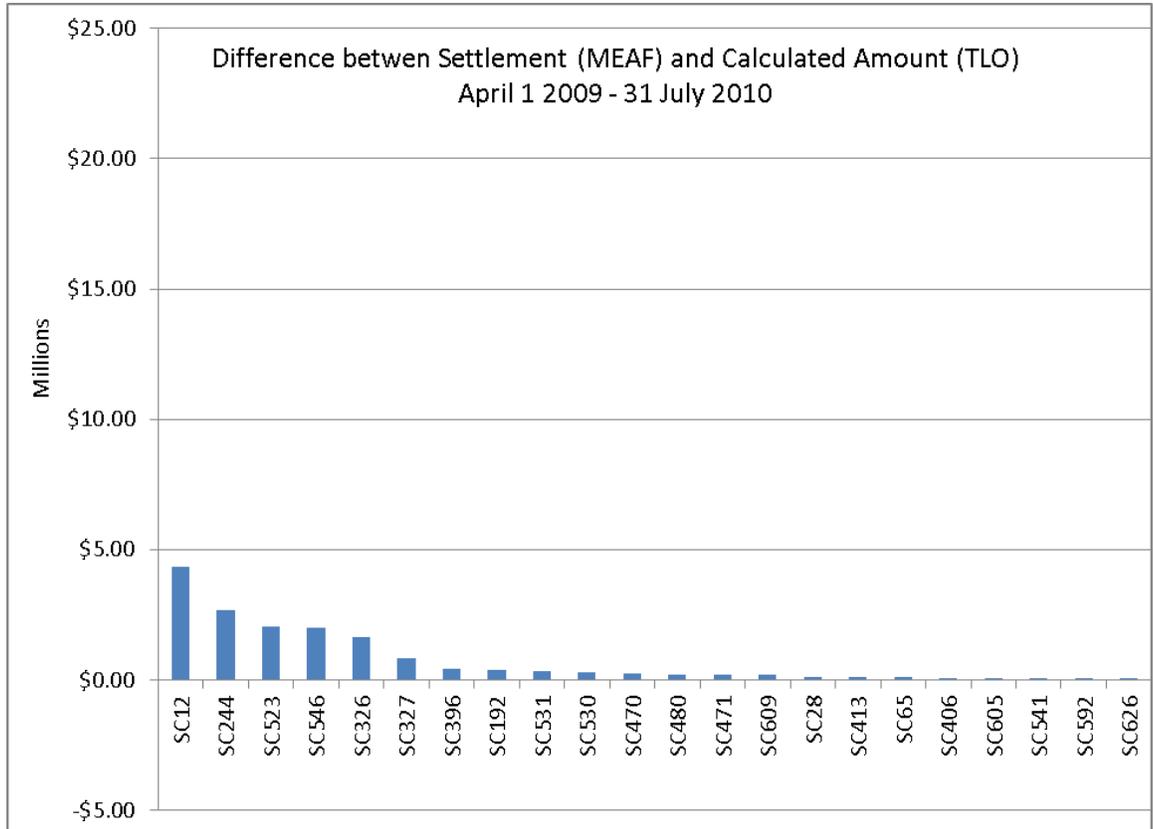
Month - Year	Using DA MEAF	Using Tolerance Band	Difference
Total April 1, 2009 - March 25, 2011	\$208,855,499	\$156,795,983	\$52,059,515
Total April 1, 2009 - July 31, 2010	\$90,634,737	\$73,920,509	\$16,714,228
Total August 1, 2010 - March 25, 2011	\$118,220,762	\$82,875,474	\$35,345,288

As discussed above, in April 2011, upon discovering the error, the ISO began resettling the bid cost recovery past amounts using an accounting method consistent with the intent of the tariff and the Commission’s prior orders. From March 25, 2011 going back to August 1, 2010, the ISO resettled the bid cost recovery payments amounting to approximately \$35 million, which was reallocated back to the ISO’s measured demand (metered internal load and exports). The ISO has not yet resettled bid cost recovery amounts from April 1, 2009 to July 31, 2010. Such resettlements would amount to \$16 million in payments returned to the ISO’s metered load and export schedules.<sup>45</sup>

<sup>45</sup> Although the ISO previously sought different treatment concerning resettlement of bid cost recovery payments for the period prior to August 2010, the ISO is now requesting authority for resettlements back to April 1, 2009.

Figure 1 illustrates the distribution of the impact of the flaw in using the MEAF in calculating delivered minimum load energy. The figure shows that the miscalculation impacted 32 scheduling coordinators for by amounts exceeding \$5000, with four of those scheduling coordinators bearing the brunt of the impact.

**Figure 1: Impact of the Flawed Application of the MEAF**



Therefore, the resettlement adjusted the bid cost recovery for overpaid resources and the allocation of those payments to measured demand. The corrected resettlements also reduced bid cost recovery uplift charges to load that were previously higher. It did not, however, affect the LMPs for the period in question.

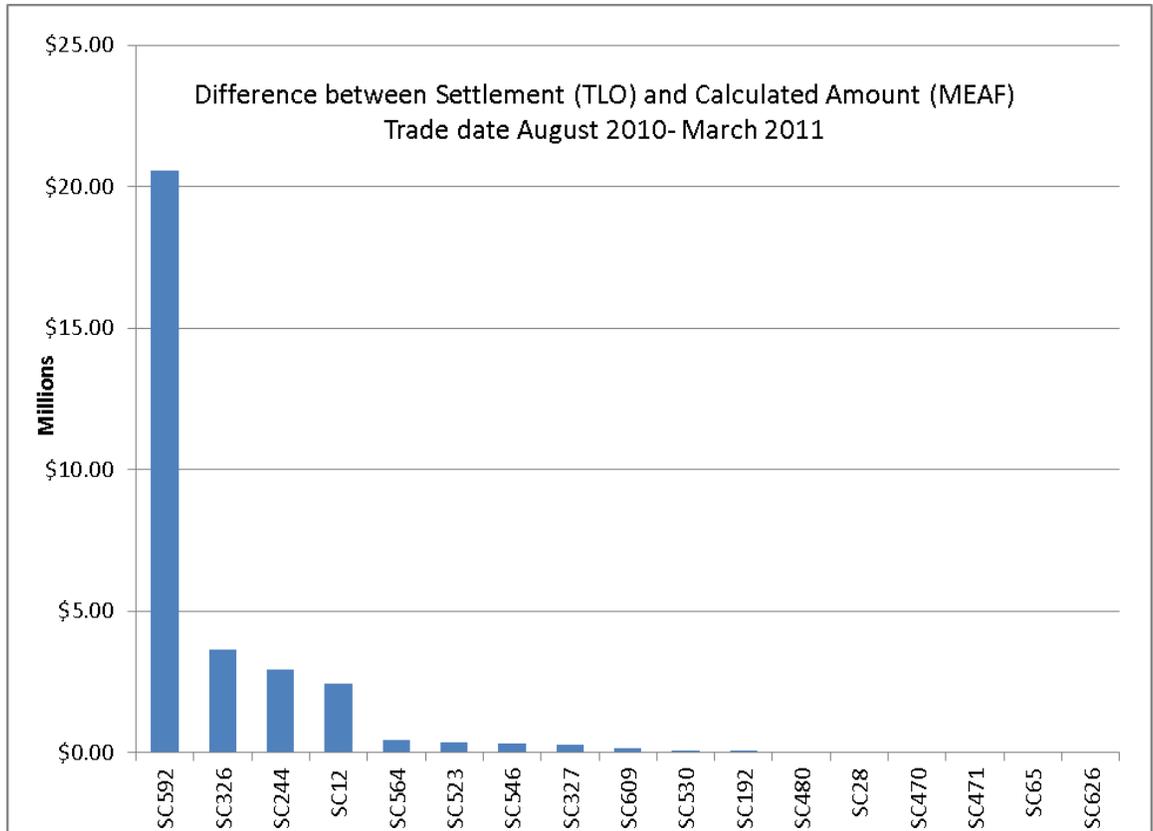
**C. Commission Approval is Appropriate to Resettle Trading Days More Than 36 Months Prior to the Resettlement.**

In acting on this petition, the ISO requests the Commission to approve resettlements back to April 2009. Section 11.29.8.4.7 prevents the ISO from issuing corrected settlement statements beyond thirty-six months from the applicable trading day, unless authorized by the Commission or directed by the ISO Board. If the Commission grants the ISO's requested petition as of September 1, 2012, authorization would be necessary in order to resettle the erroneous amounts prior to November 1, 2009. Therefore, the ISO requests that, in addition to the requested declaratory relief, the Commission also grant the ISO authority to re-run the settlements back to April 1, 2009 through an unscheduled recalculation settlement statement.

In the event the Commission denies the requested relief, and rules that there should be no resettlement from the application of the original MEAF, the ISO asks that the Commission also find that the ISO should reverse the resettlements it previously conducted for the August 1, 2010 through March 25, 2011 period, so that the ISO can proceed to process all resettlements per the upcoming recalculation statement schedule provided below.

As illustrated in Figure 2 below, the resettlement of any calculated amounts will affect only a handful of scheduling coordinators because for the Resettlement Period, the bulk of the costs associated with the flaw was aggravated by certain bidding behaviors that have since been neutralized.

**Figure 2**



## **V. COMMUNICATIONS**

The ISO requests that all correspondence, pleadings and other communications concerning this filing be served upon the following:

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## **VI. ATTACHMENTS**

Attached is the Declaration of Mark A. Rothleder.

## **VII. SERVICE**

The ISO has served copies of this filing upon the California Public Utilities Commission and all parties with effective scheduling coordinator service agreements under the ISO tariff. In addition, the ISO has posted this filing on its website.

## VIII. CONCLUSION

For the reasons set forth above, the ISO requests that the Commission confirm that the ISO's settlement of day-ahead bid cost recovery from April 1, 2009, through March 25, 2011 was inconsistent with the provisions of the ISO Tariff and that it is appropriate for the ISO to resettle day-ahead bid cost recovery payments during that period.

Respectfully submitted,

/s/ Michael E. Ward  
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**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**DECLARATION OF MARK A. ROTHLEDER ON BEHALF OF THE  
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

I, Mark A. Rothleder, hereby declare as follows:

1. I am employed as Executive Director of Market Analysis and Program Development for the California Independent System Operator Corporation (“ISO”). My business address is 250 Outcropping Way, Folsom, CA 95630.
2. As Executive Director of Market Analysis and Program Development, I play a lead role in the design and implementation of ISO market rules and operating procedures, and the evaluation of the market’s performance.
3. I have been employed at the ISO in various positions since July 1997. Prior to my current position, I was the Director of Market Analysis and Development for the California ISO. Before that, I was a Principle Market Developer for the ISO in the lead role in the implementation of market rules and software modifications. I also played a lead role in designing many of the aspects of the ISO’s revised market design, implemented on March 31, 2009. Since joining the ISO, I have worked extensively on implementing and integrating the approved market rules for California’s competitive Energy and Ancillary Services markets and the rules for congestion management, real-time economic dispatch, and real-time

market mitigation into the operations of the ISO balancing authority area. I have also held the position of Director of Market Operations.

4. I am a registered Professional Electrical Engineer in the state of California. I hold a B.S. degree in Electrical Engineering from the California State University, Sacramento. I have taken post-graduate coursework in Power System Engineering from Santa Clara University and earned an M.S. in Information Systems from the University of Phoenix. I have co-authored technical papers on aspects of the California market design in professional journals and have frequently presented to industry forums. Prior to joining the ISO in 1997, I worked for eight years in the electric transmission department of Pacific Gas & Electric Company, where my responsibilities included operations engineering, and transmission planning and substation design.
5. The purpose of my declaration is to provide evidentiary support for the Petition for a Declaratory Order that the ISO is filing with regard to its procedures for calculating bid cost recovery energy payments during the period from April 1, 2009 through March 25, 2011. I will explain the manner in which, during that period, the ISO's calculation of net energy revenues for the purpose of determining bid cost recovery payments differed from the methodology specified in the ISO Tariff. I will also explain the events that led up to the implementation of this erroneous practice and the consequences of the error.

***Bid Cost Recovery***

6. The bid cost recovery provisions of the ISO ensure that resources committed or dispatched by the ISO are able to recover their start-up and minimum load, energy, and ancillary services bid costs. The ISO pays unrecovered start-up and minimum load bid costs only for intervals in which the ISO commits a resource and the resource is actually online. The ISO pays a resource's unrecovered minimum load, start-up, ancillary service and energy bid costs. A resource's energy bid costs refer only to energy dispatched by the ISO above minimum load.
7. In the day-ahead market, resources are financially bound for the energy included in their day-ahead schedules. The ISO, however, does not dispatch resources day-ahead and only does so in real-time, which may result in a lower dispatch in the real-time than was scheduled in the day-ahead schedule. Under section 11.8.2.2 of the ISO Tariff, the ISO pays energy bid costs only for the portion of the day-ahead schedule that is actually delivered pursuant to an ISO dispatch. In addition, the ISO only pays bid costs to the extent the resource's market revenues are not sufficient to cover these costs; i.e., the ISO pays only unrecovered costs.
8. Under the ISO Tariff, resources scheduled in the day-ahead market are settled at the locational marginal price ("LMP") cleared in the integrated forward market for all the energy scheduled, regardless of actual delivery of the energy scheduled in the day-ahead. Resources dispatched in real-time are settled at the applicable LMP cleared in the real-time dispatch run

of the real-time market. To the extent the resource does not deliver the energy scheduled in the day-ahead and dispatched in the real-time, the resources effectively buys that share of the energy from the real-time market by being charged the real-time LMP. Similarly, if a resource over-delivers, it is paid the real-time LMP. To the extent these market revenues meet or exceed the bid costs for a resource, there are no unrecovered bid costs and thus there is no need to compensate the resource under the bid cost recovery mechanism. To determine bid cost recovery, the ISO offsets the calculated bid costs for a given resource by the market revenue costs, first at the interval level and ultimately based on all market revenues earned by the resource across all of the ISO markets. During the period relevant to this petition, section 11.8.2.2 of the ISO Tariff stated that the market revenue component of the bid cost recovery energy payment was to take into account “delivered [megawatt hours], in the relevant Day-Ahead Schedule.” Similarly, the section 11.8.4.2 of the ISO Tariff requires that the ISO calculate the market revenues for the minimum load portions of the energy bid curve based on “the delivered MWh at or below the resource’s Minimum Load submitted to the Real-Time Market.”

9. The ISO’s implementation of the bid cost recovery mechanism involves four steps: 1) calculation of the applicable bid costs covered for the resource if dispatched or committed by the ISO; 2) determination of the applicable market revenues earned by the resource; 3) offsetting the calculated bid costs by the market revenue earned by the resource to

determine the amount of unrecovered bid cost recovery uplift paid to the resource; and 4) allocation out the total bid cost recovery uplift paid to all scheduling coordinators according to the rules for the particular market. The ISO's erroneous practice that is the subject of the Petition for a Declaratory Order concerned the determination of the applicable market revenues to be used for the offset.

***Calculation of Net Day-Ahead Market Energy Revenues***

10. During the period from April 1, 2009, through March 25, 2011, the ISO used a pre-calculation – the metered-energy adjustment factor (“MEAF”) – in order to limit the bid cost recovery to delivered amounts of energy. Under the business practice manual for billing and settlements in effect during that period, the ISO used the MEAF to compare the portion of metered energy above the greater of the resource's minimum load and self-schedule for a given resource to its portion of the day-ahead schedule above the resource's minimum load and self-schedule. The MEAF identifies the ratio of the scheduled energy above the resource's self-schedule and its minimum load to the delivered energy above the resource's self-schedule and its minimum load.
11. In more technical terms, the day-ahead MEAF is bounded by 1 or 0, and is the ratio of the resource's (a) metered energy minus the maximum of the day-ahead self-scheduled energy minus the day-ahead minimum load energy minus the standard ramping, and (b) the day-ahead scheduled energy minus the day-ahead self-scheduled energy minus the day-ahead

minimum load energy. It identifies the portion of the scheduled energy above the resources self-schedule and its minimum load from the dispatched bid curve delivered based on the meter and can be applied to the energy bid cost calculations so that energy bid cost is paid for delivered portions and not paid for the undelivered portions of the day-ahead schedule. A formula similar to the calculation of the MEAF, but not identical, was developed for the real-time market that measures the amounts of energy delivered based on the meter as compared to the dispatched energy.

12. Under the business practice manual during the period at issue, for day-ahead schedules, the ISO also used the MEAF to calculate the day-ahead energy market revenues earned by the resource for a given trading hour. The ISO summed up the products in each billing interval of the resource's megawatt hours scheduled in the day-ahead schedule actually delivered and the applicable LMP. The ISO then applied the day-ahead MEAF to the entire product of this calculation in order to determine portion of the day-ahead energy revenues that would be netted against bid costs.
13. For example, using the MEAF as described above, if a resource in real-time delivers only 80 percent of the energy above minimum load in the day-ahead schedule, the ISO paid energy bid cost recovery for 80 percent of the scheduled energy after deducting 80 percent of the market revenues.

14. The ISO adopted this use of the MEAF practice during implementation of its new market design. During market simulation, prior to start of the new ISO market, the ISO observed that in certain real-time scenarios a resource had an incentive to deviate from the ISO instructions to increase its bid cost recovery. As a result, in these cases, the ISO determined that it was appropriate to apply the MEAF to both the energy revenues and bid costs because, in real-time, a resource's uninstructed deviations would be settled via uninstructed imbalance energy settlement.<sup>1</sup>

***Inconsistency Between ISO Tariff and Business Practice Calculating Net Day Ahead Energy Revenues in Use Prior to March 25, 2012.***

15. As I discuss below, the ISO has concluded that the use of the MEAF to calculate net day-ahead energy revenues is not consistent with section 11.8.2.2, as in effect during the relevant period.
16. Section 11.8.2 of the ISO Tariff in effect at the time specified that day-ahead (“Integrated Forward Market” or “IFM”) bid costs eligible for bid cost recovery (“Unrecovered Bid Cost Uplift Payments”) are the algebraic difference between the bid costs and the day-ahead market revenues.<sup>2</sup>

Section 11.8.2.2 provided that the market revenues for the day-ahead

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<sup>1</sup> Although the resource would be paid for the 20 percent of its day-ahead energy that was not delivered, it would have to buy back that amount of energy in the real-time market. See ISO Tariff § 11.5.4.

<sup>2</sup> Section 11.8.2.  
For purposes of determining the IFM Unrecovered Bid Cost Uplift Payments as determined in Section 11.8.5, and the purposes of allocating Net IFM Bid Cost Uplift as described in Section 11.8.6.4 the ISO shall calculate the IFM Bid Cost Shortfall or the IFM Bid Cost Surplus as the algebraic difference between the IFM Bid Cost and the IFM Market Revenues for each Settlement Interval. . . . The Energy subject to IFM Bid Cost Recovery is the actual Energy delivered in the Real-Time that is within the Day-Ahead Schedule for each eligible resource.

market comprised the sum of (1) the product of the delivered megawatts of energy in the day-ahead schedule and the day-ahead LMP and (2) the product of the ancillary services award and the ancillary services market price.<sup>3</sup> The ISO's use of the MEAF to calculate the former produced a result that was not in fact equal to the product of the delivered megawatt of energy in the day-ahead schedule and the day-ahead LMP, as required by section 11.8.2.2.

17. To understand the error, it is important to keep in mind that energy schedules consist of up to three components: minimum load energy, self-scheduled energy, and energy above these amounts. The ISO pays unrecovered costs for minimum load according to the minimum load costs and for energy according to the energy bid for the amounts above minimum load and scheduled energy.<sup>4</sup>
18. The error in the use of the day-ahead MEAF documented in the business practice manual at the time stemmed from the fact that the MEAF is the ratio of delivered energy *above minimum load and self-schedules* to scheduled energy *above minimum load and self-schedules*. In other

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<sup>3</sup> Section 11.8.2.2 provided in relevant part:  
For any Settlement Interval in a ISO IFM Commitment Period the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of: (1) the product of the delivered MWh, in the relevant Day-Ahead Schedule in that Trading Hour . . . , and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour; and (2) the product of the IFM AS Award from each accepted IFM AS Bid and the relevant Resource-Specific ASMP, divided by the number of Settlement Intervals in a Trading Hour.

<sup>4</sup> As noted above, the ISO also pays unrecovered start-up costs, but this is not relevant to the issues presented here.

words, minimum load revenues are not considered in the calculation of the MEAF. Under the business practice manual prior to March 26, 2011, in order to offset market revenues, the ISO applied this ratio to the resources entire market revenues, *including those for minimum load*. This mismatch caused an under-accounting of revenues associated with delivered minimum load energy. Indeed, as the resources delivered energy approaches minimum load, the MEAF approaches zero; as a result, the offsetting revenues approach zero. At a MEAF of zero, none of the resource's market revenues would be netted against bid costs. This resulted in an inconsistency between the tariff requirements and the actual settlements. In many cases, over the 2009-2011 period in question, resources actually delivered minimum load energy, but the application of the MEAF to capture the delivered energy in accounting the market revenues resulted in the nullification of revenue associated with minimum load energy. This further resulted in the erroneous discounting of the minimum load energy when calculating the bid cost recovery payments for resources, thereby overpaying resources for bid cost recovery during those times.

19. The following simplified examples illustrate this issue. For the purposes of the examples I provide herein, I am going to assume there are no self-schedules, which further simplifies the definition of the day-ahead MEAF as follows: (metered energy *minus* minimum load energy) *divided by* (day-ahead schedule energy *minus* minimum load energy).

20. Consider a resource with a minimum load of 100 megawatts (MW). The resource is scheduled day-ahead to deliver 400 megawatt-hours (MWh). Also assume that the LMP is \$45/MWh and the resource bids its energy at \$50 and has minimum load costs of \$10,000.<sup>5</sup>
21. For Example #1 assume that, in the real-time, the resource operates at its scheduled 400 MW. The resource's actual market revenues will therefore be \$18,000 (400 MW \* \$45/MWh). Its bid costs for the delivered energy are \$25,000 (\$10,000 minimum load + (300MW \* \$50/MWh)). Under the ISO Tariff, it would receive bid cost recover of \$7,000 (\$25,000 - \$18,000).
22. Under these circumstances, the use of the MEAF performs well when applied to both the lower and upper portions of the day-ahead schedule. The day-ahead MEAF will be equal to 1.0, *i.e.*, (400 MW delivered - 100 MW minimum load)/(400 MW scheduled - 100 MW minimum load).
23. For the purposes of offsetting, the resource's IFM market revenue for delivered energy at or below the minimum load would be equal to \$4,500 (*i.e.*, 100 MWh \* \$45/MWh \* 1.0). For portions above the minimum load, the IFM market revenues for offsetting would be equal to \$13,500 (*i.e.*, 300 MWh \* \$45/MWh \* 1.0). The sum would be \$18,000.
24. The resource's bid costs were \$25,000 (\$10,000 minimum load costs + (300 MW above minimum load \* \$50/MWh)). When the revenues of

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<sup>5</sup> Under section 30.4 of the ISO Tariff, resources have two options for establishing minimum load costs: a registered cost or a proxy cost. The registered cost is limited to a maximum of 200% of proxy costs.

\$18,000 are netted against the bid costs of \$25,000, the resource receives \$7,000, the same as under the plain language of the tariff.

25. For example #2, assume the resource delivers only 300 MWh (100 MWh minimum load energy and 200 MWh above minimum load). In the day-ahead market, a resource receives payment for all scheduled energy.<sup>6</sup> The resource's actual market revenues will therefore be \$13,500 (300 MW \* \$45/MWh). Its bid costs for the delivered energy are \$20,000 (\$10,000 minimum load + (200MW \* \$50/MWh)). Under the ISO Tariff, it would receive bid cost recovery of \$6,500 (\$20,000 - \$13,500).
26. Under these circumstances, the manner in which the ISO applied the MEAF during the period in question would not produce a result consistent with the tariff result. The MEAF would be 0.67: (300 MWh delivered – 100 MWh minimum load = 200 MWh) / (400 MWh scheduled – 100 MWh minimum load = 300 MWh).
27. The resource's day-ahead offsetting market revenue for delivered energy at or below the minimum load would be equal to \$3,000 (*i.e.*, 100 MWh \* \$45/MWh \* .67). For portions above the minimum load, the IFM offsetting market revenues would be equal to \$9,000 (*i.e.*, 300 MWh \* \$45/MWh \* 0.67), for a total sum of \$12,000.
28. Therefore, under the business practice manual in effect at the time in question, which reflected the ISO's practice, the ISO would have paid the

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<sup>6</sup> As noted, a resource must buy back any deviation from its day-ahead schedule in real-time.

resource \$8,000 (\$20,000 – \$12,000), an overpayment of \$1,500 compared to the tariff methodology. This \$1,500 overpayment is patently inconsistent with the plain language of the ISO Tariff discussed above because the full 100MW of minimum load energy was indeed delivered.

29. If on the other hand, the MEAF were applied only to revenues for energy above minimum load, then the result would be consistent with the tariff result. The offsetting market revenues for delivered energy at or below the minimum load would be equal to \$4,500 (*i.e.*, 100 MWh \* \$45/MWh). For portions above the minimum load, the IFM offsetting market revenues would be equal to \$9,000 (*i.e.*, 300 MWh \* \$45/MWh \* 0.67), for a total sum of \$13,500. This is the same result produced by the plain language of the tariff.
30. I mentioned earlier that as the delivered energy approaches the greater of self-schedule and minimum load, the MEAF and, accordingly, the offset, approach zero. This is best illustrated by a resource that, despite a day-ahead energy schedule, operates only a minimum load. For example #3, assume the resource delivers only its 100 minimum load. The resources actual market revenues will therefore be \$4,500 (100 MW \* \$45/MWh). Its bid costs for the delivered energy are \$10,000 minimum load costs. Under the ISO Tariff, it would receive bid cost recovery of \$5,500 (\$10,000 - \$4,500).
31. Using the business practice manual methodology in place during the period at issue, the MEAF would be 0.0: (100 MWh delivered – 100 MWh

minimum load = 0 MWh) / (400 MWh scheduled – 100 MWh minimum load = 300 MWh).

32. The resource's day-ahead offsetting market revenue for delivered energy at or below the minimum load would be equal to \$0 (*i.e.*, 100 MWh \* \$45/MWh \* 0.0). For portions above the minimum load, the IFM offsetting market revenues would be equal to \$0 (*i.e.*, 0 MWh \* \$45/MWh \* 0.0), for a total sum of \$0.
33. Therefore, under the business practice manual in effect at the time in question, which reflected the ISO's practice, the ISO would have paid the resource \$10,000. In other words, contrary to the ISO Tariff, its market revenues associated with the delivered minimum load energy would be completely ignored.
34. If on the other hand, the MEAF were applied only to revenues for energy above minimum load, then the offsetting market revenues for delivered energy at or below the delivered minimum load would be equal to \$4,500 (*i.e.*, 100 MWh \* \$45/MWh). For portions above the minimum load, the IFM offsetting market revenues would be equal to \$0 (*i.e.*, 0 MWh \* \$45/MWh \* 0.0), for a total sum of \$4,500. This is the same result produced by the plain language of the tariff.
35. As illustrated by these examples, the day-ahead MEAF, as formerly used by the ISO, did not capture the full day-ahead revenue when the resource is dispatched by the ISO in real-time below its day-ahead schedule level. Because it is calculated based on deliveries of scheduled energy above

minimum load, it fails to account for the fact that resource will receive energy settlement for its full day-ahead schedule, including the portions of the day-ahead schedule below delivered minimum load.

36. In the last scenario where the resource goes to its minimum load and the day-ahead MEAF is zero, the application of the MEAF to the upper portions of the day-ahead scheduled energy curve does capture the market revenues associated with undelivered energy scheduled above the resource's minimum load in the day-ahead schedule since none was actually delivered above those portions. For these upper portions of the resource's energy curve, this is performing as designed. But its use for the delivered portions at or below minimum load causes exaggerated bid cost recovery payments.

I declare, under penalty of perjury, that the foregoing statements are true and correct.

Executed this 8<sup>th</sup> day of June, 2012, in Folsom, California.

/s/ Mark A. Rothleder  
Mark A. Rothleder