California Independent
System Operator Corporation

March 18, 2011

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

Re: California Independent System Operator Corporation
Docket No. ER11-____- 000
Tariff Revision and Request for Expedited Treatment

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act[1] and Sections 35.11 and 35.13 of the Commission's regulations,[2] the California Independent System Operator Corporation (ISO) respectfully submits for filing an amendment to the ISO Tariff. This amendment proposes a modified market settlement rule to remedy the observed exploitation of the existing bid cost recovery tariff rules, causing an unexpected market outcome. The ISO requests expedited treatment.

The ISO's bid cost recovery mechanism was created to ensure that where the ISO commits a resource, that resource will at least recover its fixed start-up and minimum load costs. Where a resource's energy market revenues are insufficient to cover those costs, the bid cost recovery mechanism provides resources with a make-whole payment. Under the ISO's existing bid cost recovery tariff rules, the ISO subtracts (nets) the market revenues a resource receives from the resource's accepted bid costs to ensure that the bid cost recovery mechanism does not result in over payment of start-up, minimum load, and submitted energy bid costs. The current tariff rules require the ISO to consider market revenues for the delivered portions of the day-ahead schedule in calculating the market revenues the resource earned from the integrated forward market (IFM), which is part of the day-ahead market. Recently, the ISO has observed the use of a specific bidding practice that forces the ISO to schedule a resource in the IFM at a high MW level and then to dispatch the resource at a much lower level in the real-time market. Under the current settlement system,

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1 16 U.S.C. § 824d.

2 18 C.F.R. §§ 35.11 & 35.13 (2010).

this bidding practice results in significant overpayment of bid cost recovery. This practice was in effect over the past seven months, resulting in an increase in bid cost recovery payments of over fifty percent. While the amount of overpayment of bid cost recovery is relatively small compared to the overall $9 billion market, the amount of bid cost recovery associated with the bidding practice represents 43 percent of $ 132 million in total bid cost recovery payments from the August 2010 through February 2011 time period.

The ISO proposes to modify Section 11.8.2.2 of its tariff. This section currently requires the ISO, for purposes of bid cost recovery, to calculate IFM market revenues based on delivered portions of the day-ahead schedule. The ISO's proposed revision specifies that, for resources that are dispatched at lower levels in the real-time than in the day-ahead, calculation of IFM market revenues used to offset bid costs will be based on scheduled portions as opposed to delivered portions. The proposed rule change applies only in cases when a resource's real-time market dispatch is lower than its day-ahead market schedule. Consistent with the Commission's September 2006 Order, the ISO does not propose to base other aspects of bid cost recovery on measures other than delivered energy.[3] The ISO also proposes amendments to clarify how the delivered portions of a resource's schedules or dispatches are determined. These clarifications help eliminate any potential ambiguity regarding the bid cost recovery calculations.

The ISO requests expedited consideration of the proposed amendment under the procedures described in the Commission's *Guidance Order on Expedited Tariff Revisions for Regional Transmission Organizations and Independent System Operators*.[4] The ISO also requests waiver of the sixty-day notice requirement under Section 35.11 of the Commission's Regulations. As described further below, good cause exists for expedited consideration and waiver of the sixty-day notice requirement. The ISO's proposed amendment provides a just and reasonable settlement rule that immediately eliminates the profitability of the identified bidding practice, which if continued would exaggerate IFM bid cost recovery and create unexpected outcomes in the performance of the ISO's day-ahead and real-time markets. Prompt action is necessary both to revise the tariff prospectively to remove a resource's ability to benefit from the observed bidding practice and to avoid material adverse impact to the operations of the ISO markets.

Finally, the ISO proposes to conduct a stakeholder process to provide stakeholders an opportunity to comment and raise any further changes or refinements to the ISO's proposed tariff amendments. The Commission's expedited resolution of this initial filing will enable stakeholders and the ISO to

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[3] *Cal. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274 (2006), *order on reh'g*, 119 FERC ¶ 61,076 (2007) (September 2006 Order).

[4] 111 FERC ¶ 61,009 (2005) ("Guidance Order").

consider any additional changes in a timely manner for complete resolution within 90 to 120 days after the Commission's order accepting this filing. The Commission should, therefore, grant the ISO the requested relief and allow it to proceed with mitigation of the identified market issue and adoption of revised market rules to avoid further adverse market outcomes.

I. BACKGROUND AND DISCUSSION OF MARKET ISSUE

A. Description of the ISO Market and Bid Cost Recovery

On April 1, 2009, the ISO began operations of its locational marginal price (LMP) based energy and ancillary services market.[5] Under the LMP-based market design, the ISO runs day-ahead and real-time energy and ancillary services markets. In these markets, supply and certain demand resources may submit economic bids that specify a price as well as self-schedules, which consist of price-taking schedules of megawatt hours (MWh) without a specified price. If resources are scheduled, dispatched or awarded in any of the ISO markets, they are paid the market clearing LMP for energy, and the ancillary services marginal price for ancillary services provided pursuant to schedules, awards, or dispatches.

Scheduling coordinators submit bids for resources in the form of energy and ancillary services bid curves, which indicate to the ISO the price at which the scheduling coordinator is willing to provide the relevant service, and the MWh amounts offered at that price. In some cases, a resource is needed for reliability but its bid does not clear the market. In order to ensure that the resource remains available, the ISO will commit the resource and essentially guarantee payment of the submitted bid price for the affected ranges.

The bid cost recovery mechanism is incorporated in a settlements process by which the ISO ensures that scheduling coordinators: 1) recover their start-up and minimum load costs for resources that are committed by the ISO, and are not otherwise self-committed by the scheduling coordinator; [6] and 2) recover the cost of their accepted energy or ancillary service bids above minimum load. The bid cost recovery rules are set forth in Section 11.8 of the ISO tariff. This section also provides the mechanisms by which all such costs are allocated to scheduling coordinators in each of the respective ISO markets. Bid cost recovery only applies to the ISO day-ahead market, which includes the IFM and

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[5] The ISO's tariff amendment in support of this new market design was conditionally accepted by the Commission in its September 2006 Order, subject to certain compliance requirements.

[6] Minimum load and start-up costs are bid into the ISO markets as based on either the resources registered or proxy demands, which are fixed for each month. *See* Section 30.4 of the ISO Tariff. The ISO is in the process of amending these sections to provide more flexibility in bidding such costs. *See* http://www.caiso.com/23d9/23d9c75e22ab0.html#27cbddd035020.

the residual unit commitment (RUC) processes, and the real-time market.[7] Bid cost recovery is provided for both energy and ancillary services products.

Under the ISO tariff, all internal generators, participating loads, proxy demand resources, and resource-specific system resources[8] are eligible for recovery of their start-up and minimum load costs through the bid cost recovery process, subject to additional conditions discussed further below. System resources that are not resource-specific cannot recover start-up and minimum load bid costs from the ISO.[9]

All generating units and participating loads are eligible for recovery of their energy and ancillary services bids, and RUC bids, if any, as well as the minimum load and start-up bid costs. System resources are also eligible for bid cost recovery for their energy bids, to the extent their market revenues over the trading day are insufficient to recover such costs. But not all system resources are eligible for recovery of start-up and minimum load bid costs. Only those system resources that are representative of actual physical external resources, and are registered as such with the ISO, are eligible to submit start-up and minimum load bids. All other system resources must submit zero-bids for start-up and minimum loads.

Furthermore, in any given interval, such resources are only eligible for recovery of their start-up and minimum load bid costs to the extent that they are committed by the ISO in that interval. Therefore, if a resource is self-committed in a given interval (*i.e.*, it is providing energy pursuant to a self-schedule, or self-provided ancillary services), that resource is not eligible for bid cost recovery for its start-up and minimum load costs during those intervals. Resources that are self-committed are presumed to either be willing to operate as price-takers or are operating pursuant to a bilateral contract through which the resources likely receive compensation for their start-up and minimum load costs. It would thus be redundant and inefficient to provide further compensation to recover those costs through the ISO markets. These rules are described further below and are contained in Section 11.8.1 of the ISO's tariff.

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[7] Bid cost recovery does not apply to bids submitted to Congestion Revenue Rights auctions.

[8] Internal generators refers to generating units, including multi-stage generating resources. Resource-specific system resources refer to import system resources that signed a Resource-Specific System Resource Agreement and identified a specific physical resources associated to the designated system resource.

[9] These include, for example, import resources that are just net interchanges not tied to a specific external generator.

Rationale for Bid Cost Recovery

In clearing the ISO markets, the ISO considers submitted start-up and minimum load bid costs in optimizing for the least-cost commitment or dispatch of resources. However, while scheduling coordinators submit three part bids, which include start-up, minimum load and the energy bid costs, only the energy bid cost is able to set the LMP. That is, the market clearing LMP only reflects the marginal costs of energy based on the variable energy bids, and not the fixed start-up and minimum load costs. If, however, a resource is committed or dispatched by the ISO, and it performs consistent with that commitment, the ISO assumes that the resource would have not incurred the fixed start-up and minimum load costs but for the ISO's commitment or dispatch. Although a resource committed by the ISO is not paid less than its energy bid price, there is no guarantee that the extra revenues it receives for its energy (including minimum load energy) at the applicable LMP will cover its start-up and minimum load costs. Therefore, the ISO provides a mechanism for recovering such costs. The payment for these costs is effectuated through essentially an uplift payment to the affected resources to compensate the resource for its fixed costs. In the absence of this uplift payment, scheduling coordinators would likely internalize these costs in their energy bids. By providing the opportunity to submit and recover these costs separately from the energy bid, the ISO is able to better ensure that the LMP derived through the market clearing process is the marginal cost of providing energy on the ISO system, as opposed to also reflecting the fixed costs of providing service.

In clearing the energy and ancillary services markets, energy bids are selected through a least cost process within a given time horizon. For example, in IFM the bids are selected with a view to minimize costs, including energy bid costs, through all hours of the applicable operating day. Throughout any given operating day, however, the resource may be subject to inter-temporal constraints such as ramping rates, minimum run times, and minimum up times. Consequently, while a resource's energy or ancillary services bid may set the price in one interval in which the ISO commits the resource, it may not be marginal (*i.e.*, its energy bid price is above the market clearing price) in other intervals of that day during which it must also run in order to be available at the required hour as a result of its ramp rate limitations. This is particularly common in the real-time market where resources are dispatched on shorter time intervals, of five minutes, and ramp rates may prevent them from reaching an otherwise optimal economic operating point in five minutes.

In its initial February 9, 2006 MRTU tariff filing, the ISO proposed that a resource not receive a bid cost recovery payment for a settlement interval if its uninstructed deviations during that Settlement Interval exceed a certain

threshold.[10] The Commission denied the application of a threshold bandwidth to bid cost recovery amounts, finding that the ISO should guarantee recovery of such costs associated with energy actually delivered, but should not provide such payments to resources for deviations from their schedules or dispatch instructions. The Commission found that when a resource's energy bid exceeds the LMP, it is not appropriate to provide an uplift payment to cover the revenue gap for energy that is not actually produced when instructed. Specifically, the Commission stated:

> [A] resource that starts up and provides more energy than is instructed by the ISO should retain the original recovery calculated by the ISO in the day-ahead market, since the spot market would be receiving the full amount of energy (and more) that it agreed to pay for in the day-ahead market. However, the resource should not be eligible for any additional bid cost recovery associated with its additional, uninstructed output. Thus, the resource is paid only for scheduled energy, and is not paid for any energy in excess of its schedule. Units that are committed in the day-ahead market, and do not start-up, should not receive any bid cost recovery payments.[11]

Application of Bid Cost Recovery based on Delivered Amounts

Based upon the Commission's findings, the ISO filed revised tariff language that eliminated the application of the tolerance bandwidth previously proposed, and incorporated the principle that bid cost recovery is provided only for resources with energy actually delivered. The ISO noted that the changes were "consistent with the Commission's requirement that resources 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."[12] The Commission approved the revised tariff language, including the application of the tolerance bandwidth only to the minimum load cost calculations.[13] The ISO also developed the metered energy adjustment factor used in the application of the bid cost recovery amounts to determine, in any given interval, whether the resource was actually delivering energy for the scheduled or dispatched amounts based on its metered data.

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[10] Specifically, for purposes of calculating bid cost recovery, a resource's eligible costs for a Settlement Interval was going to be zero if the amount of uninstructed imbalance energy attributed to that resource during that Settlement Interval is in excess of the greater of: (a) five (5) MWh divided by the number of Settlement Intervals in the Trading Hour; or (b) 3% of its maximum capacity divided by the number of Settlement Intervals in a Trading Hour.

[11] September 2006 Order, at P 516.

[12] *Cal. Indep. Sys. Operator Corp.*, Compliance Filing, FERC Docket No. ER06-615-000, at 16 (Nov. 20, 2006).

[13] *Cal. Indep. Sys. Operator Corp.*, 105 FERC ¶ 61,313 at P 96 (2007).

The ISO developed two metered energy adjustment factors to use in determining the delivered portions of schedules and dispatches. First, the day-ahead metered energy adjustment factor was developed to determine the portions of the day-ahead schedule actually delivered in real-time, taking into consideration the resource's metered energy. The factor is calculated as follows: The factor is 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. Second, the real-time metered energy adjustment factor used for the purposes of determining the portions of a scheduling coordinator's relevant dispatch instruction actually delivered in the real-time, taking into consideration the resource's metered energy. The factor is bounded by 1 or 0, and is 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. These factors are fully described in the ISO's Business Practice Manual on Settlements and Billing and were developed to accomplish the requirement in the ISO tariff that bid costs and market revenue accounting is on the basis of delivered portions.[14]

When the ISO originally filed its tariff in support of the LMP-based market design, the ISO did not specify that in accounting for the market revenues it would look at the delivered portions of the schedules or dispatches. However, prior to the start of its new market design, through testing and simulations the ISO determined that in some cases accounting for revenues for all scheduled energy posed a potential for under-recovery. Therefore, the ISO adopted the practice of accounting for market revenues based on delivered portions and included this requirement in its tariff before the start of its new market design.[15]

Netting of Market Revenues

The bid cost recovery mechanism is not intended to duplicate market revenues obtained through market sales. Therefore, bid cost recovery payments ultimately depend on whether the market revenues for each eligible resource in each ISO market are sufficient to cover the resource's costs. This determination is made by first calculating market revenues, and next applying a series of sequential netting rules, both described further below.

Netting market revenues against costs for a 24-hour period is appropriate. In all of the ISO market processes, the constraints that result in prices in some intervals being insufficient for certain resources to recover their bid costs

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[14] This Business Practice Manual is available at: https://bpm.caiso.com/bpm/bpm/doc/000000000000536.

[15] *Cal. Indep. Sys. Operator Corp.*, , FERC Docket No. ER09-918-000 (Mar. 30, 2009).

ultimately results in a less economic solution overall than where the constraint had not been present. However, a resource that might be constrained in some intervals will be provided an opportunity to benefit in other intervals that increase the price, or both the price and the amount of infra-marginal energy dispatched and settled from that resource. It is thus appropriate, if a resource is being compensated via an uplift payment when the resource is extra-marginal (*i.e.*, not recovering its costs), that the resource internalize such payments before spreading such costs to the rest of the market. Since the effects of a constrained resource has impacts beyond one interval or one hour, and the fact that the optimization horizon is continuously shifting from one hour to the next, a 24-hour netting period for purposes of calculating bid cost recovery is reasonable.[16]

Minimum Load costs are Registered or Proxy Costs

The ISO's market system bases unit commitment decisions on a unit's fixed start-up and minimum load bid costs, plus bid costs for energy above minimum load that may be scheduled in the market if the unit is committed. As noted above, these fixed start-up and minimum load costs are guaranteed recovery through the bid cost recovery mechanism. Market participants bidding in generating resources submit their start-up and minimum load costs to the ISO Master File. Those costs are then static for 30 days but can be changed thereafter. Market participants can specify one of two options for the start-up and minimum load values they have in the ISO Master File: (1) the proxy cost option; or (2) the registered cost option. Under the proxy cost option, start-up costs are comprised of two elements: an indexed value that changes daily depending on the natural gas price (or, for units for which that is not applicable, on the energy price), and a fixed natural gas transport adder. Minimum load costs under the proxy cost option are calculated in similar fashion, with an additional operations and maintenance (O&M) adder. Under the registered cost option, market participants can submit start-up and minimum load values up to 200% of the calculated proxy-cost value. The registered cost option gives market participants the ability to specify costs for the unit that take into account their assessment of any additional costs that may be associated with starting up the unit and operating at minimum load.

II. DESCRIPTION OF EVENTS LEADING TO PROPOSED AMENDMENT AND MARKET ISSUES

In January 2011, the ISO observed that the total bid cost recovery uplift payments for December 2010 were $16 million, whereas the total monthly payments previously fluctuated between $5 million and $11 million. Throughout January 2011, the ISO observed that the uplift amounts continued to increase, and ultimately surpassed $20 million. Upon closer analysis, the ISO preliminarily

[16] *See Cal. Indep. Sys. Operator Corp.*, 105 FERC ¶ 61,091 at P 94 (2003) (Commission approved 24-hour netting approach for bid cost recovery under the ISO's current market design).

concluded that the increase was likely due to the application of the metered energy adjustment factor to the IFM bid cost and market revenue calculations. The ISO continued to analyze uplift calculations for February 2011.

In mid-February, the ISO's Department of Market Monitoring (DMM) observed that several resources were obtaining abnormally large IFM bid cost recovery payments since the start of the year. This contributed significantly to the general increase in total day-ahead bid cost recovery amounts. DMM staff also observed that the minimum load costs for at least some of these units were changed in January 2011 from the proxy costs option to the registered costs option. The result was that the minimum load costs for these units almost doubled, which, combined with a specific bidding practice, further inflated the total bid cost recovery amounts.

In March, DMM and the ISO continued the analysis, and worked together to determine the root cause of the substantial increase in bid cost recovery, and the market behavior of the specific resources that appeared to contribute to the increased uplift payments. Based on this analysis, the ISO determined that the use of a particular bidding practice, in conjunction with the application of the metered energy adjustment factor to the calculation of market revenues used to offset bid costs, resulted in overpayment of bid cost recovery amounts to specific resources and contributed significantly to the increased overall bid cost recovery amounts for August 2010 through February 2011.

Bidding Practice Exaggerating Bid Cost Recovery Uplift Amounts

The ISO has observed a specific bidding practice that exaggerates the bid cost recovery uplift upon the application of the tariff rule, requiring that the ISO account for market revenues used to offset bid costs recovery based on delivered portions of the day-ahead schedule, as opposed to the scheduled amounts. Through this bidding practice, parties are able to force their resources to get committed and scheduled at a relatively high level of energy in the IFM by submitting extremely negatively-priced energy bids. By then submitting significantly higher priced bids in the real-time market, their resources are dispatched at a much lower level or at minimum load in the real-time. This results in the under accounting of IFM market revenues, and over payment of bid cost recovery to resources scheduled in the day-ahead market. This bidding practice is described more fully in Mr. Rothleder's testimony.[17]

The bid cost recovery uplift amounts under the bidding practice have exceeded the market revenue earned by similarly situated resources participating in the ISO market. As illustrated in Figure 2 in the Rothleder Testimony, in the

[17] Exhibit ISO-No.1, at 18:2-20:8.

last four months of 2010, the total bid cost recovery amount started to increase to levels substantially above historical levels.[18]

This bidding practice is further exacerbated by registration of minimum load costs at a high level.[19] While the registration of minimum load costs for resources engaged in this bidding practice are significantly higher than most resource's minimum load costs, the resource is able to force commitment in the day-ahead market by submitting energy bids as low as the bid floor, of *minus* $30 dollars. As Mr. Rothleder explains, the combined high minimum load costs and the negative bid price results in an effective price much lower than most other bids, which results in the complete commitment of the resource in the IFM.[20] Both these actions are permitted under the ISO tariff market rules, as they allow parties to participate in the ISO market in a manner that appropriately reflects their costs, and do not in and of themselves pose an issue. However, an adverse impact of the bidding practice results from the additional actions taken by scheduling coordinators engaging in this practice that creates an under-accounting of offsetting market revenues in the bid cost recovery payments. Mr. Rothleder provides a numerical example that reflects this bidding and commitment behavior observed over the past seven months.[21]

After the resource has been fully committed in the IFM, the resource then bids in the real-time market at a price slightly above the expected clearing price. As demonstrated by Mr. Rothleder, bidding just above the LMP causes the real-time market to determine that it is economic to dispatch the resource below the resources' day-ahead schedule and forces the ISO to dispatch the resource down to its minimum load in the real-time.[22] The resource need not guess precisely where prices will clear in the real-time, so long as the clearing price is below the bid price.[23] This bidding practice is profitable only because of a tariff rule that the ISO account for market revenues used to offset bid costs.

As discussed above, the ISO determines the market revenues used to offset bid costs based on delivered portions. This is the portion of a resource's day-ahead schedule actually provided by generating electricity in the real-time market. The ISO accounts for these delivered portions using the day-ahead metered adjustment factor. Generally, the metered energy adjustment factor for the day-ahead market accounts for the portion of the day-ahead scheduled energy actually delivered in the real-time. The day-ahead metered energy

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[18] *Id.* at 17:23-18:1.

[19] As described above, the ISO permits the registration of minimum load costs as high as 200 percent of the resource's proxy costs.

[20] Exhibit ISO-No.1, at 18:15-19:4.

[21] *Id.* at 18:2-20:8.

[22] *Id.* at 19:10-19:14.

[23] *Id.* at 25:4-26:8.

adjustment factor is based on the ratio of metered energy *minus* minimum load compared to the day-ahead scheduled energy *minus* minimum load.

The ISO determined that under certain conditions, the principle of basing the market revenue account on the delivered portions under-accounts for market revenue earned.[24] In addition, accounting for delivered portions below the resource's minimum load through the use of the day-ahead metered energy adjustment factor, can result in the failure to account for market revenue of delivered portions. Both of these deficiencies result in undercounting revenues when bid costs are netted, with the end result being inflated bid cost recovery payments. This occurs in two ways.

First, under the bidding practice discussed above, resources force the ISO market to dispatch the resource to minimum load in the real-time. The resource performs at its minimum load as instructed by the ISO in the real-time and therefore does not pay for uninstructed imbalance energy at the real-time price, but at the same time keeps the market revenues earned in the day-ahead for scheduled portions.

Second, because the ISO applies the tolerance band to determine whether the resource is entitled to minimum load costs, the resource is paid its minimum load costs, having reached their minimum load within the applicable tolerance band. In calculating the market revenues, the use of the day-ahead metered energy adjustment factor nullifies the revenue earned from delivery of its minimum load energy because the day-ahead metered energy adjustment factor goes to zero. The day-ahead metered energy adjustment factor goes to zero because in the real-time the resource performs at its minimum load.[25] Essentially, the application of the metered energy adjustment factor results in the exclusion of market revenues associated with the day-ahead schedule that should be used to offset the bid costs in cases where the resource submits a bid to decrement from its day-ahead schedule, the resource has been decremented by the ISO from its day-ahead schedule, or the resource's real-time schedule is otherwise below its day-ahead schedule.

Mr. Rothleder explains that this observed bidding practice exacerbates these two deficiencies in accounting for IFM related market revenues. For the months of January 2010 through August 2010, bid cost recovery payments ranged from $3 million to $7 million. After August 2010, the percentage of total

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[24] *Id.* at 11:7-11:15.

[25] The ISO applies the metered energy adjustment factor to the calculation of the bid costs to ensure, consistent with the Commission's September 2006 Order, that bid cost recovery uplift is paid for portions of the day-ahead schedule actually delivered and is not paid for those portions that are not. But for the determination of whether the resource is "on," the ISO employs the tolerance band. The ISO then applies the metered energy adjustment factor to the revenue side to ensure that the revenues with delivered portions are captured.

bid cost recovery attributable to the two metered energy adjustment factor deficiencies described above increased substantially and begin to account from $ 8 million to $24 million of total bid cost recovery through the month of February 2011.

This market outcome is not sustainable because it erodes the functions the day-ahead market was designed and developed to perform and distorts market clearing prices.[26] The bidding practice appears to be incentivized by the opportunity to obtain significant payment for fixed costs regardless of whether or not the resource actually delivers energy. Because the bidding practice would result in forcing the ISO to commit resources in the day-ahead market based on costs that do not reflect the physical and economic requirements of the resource, the ISO will produce infeasible schedules in the real-time. In addition, market clearing prices in the day-ahead market will no longer reflect the marginal cost of doing business on the ISO grid. The continued existence of the opportunity for over collect bid cost recovery will continue to incentivize the practice, and continue to increase bid cost recovery payments, which are paid for by ISO load and exports.

III. PROPOSED AMENDMENT

The ISO proposes to amend its tariff rule in Section 11.8.2.2 requiring that the ISO calculate the IFM market revenues for purposes of offsetting bid cost recovery payments based on the delivered portions of the day-ahead schedule. As discussed above, this rule creates the unintended incentive for parties to bid in such a way that exaggerates their bid cost recovery outcome. The bidding practice further results in commitment of resources at their full capacity in the day-ahead market with the resources being dispatched only at or near their minimum load in the real-time. The proposed rule effectively mitigates the financial incentive for engaging in this practice and eliminates excessive payments for bid cost recovery that is ultimately borne by ISO load and exports. The proposed rule change applies only to the specific case in which the resource is dispatched below its day-ahead schedule in the real-time. The ISO does not propose any other changes to the bid cost recovery be based on delivered energy as articulated in the Commission's September 2006 Order.

The ISO also proposes additional clarifications to the tariff that describe more specifically how the delivered portions of a resource's schedules or dispatches are determined. These clarifications help eliminate any potential ambiguity regarding the bid cost recovery calculations.

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[26] Exhibit ISO-No.1, at 26:13-27:12.

A. Proposed Change in Rule that IFM Market Revenue be Accounted for based on Delivered Portions

The ISO proposes to modify, for limited cases only, the requirement in section 11.8.2.2 that the ISO account for day-ahead schedule energy market revenue used to net IFM bid cost recovery payments based on the delivered portions of the day-ahead schedule. The specific case (which was discussed above) involves the ISO dispatching a resource in the real-time below its day-ahead schedule. The proposed rule change is limited to the case the ISO has identified as causing substantial increases in the payment of bid cost recovery. The proposed tariff changes below will ensure that in such cases the ISO calculates the IFM market revenues based on the day-ahead scheduled energy, regardless of the lower levels to which the resource is dispatched in the real-time. In cases where the resource is dispatched at the same level as the day-ahead schedule or is incremented above their day-ahead schedule the ISO proposes to continue to calculate the IFM market revenues based on the delivered portions. Consistent with its rights and obligations under Section 39.1 and 39.3.1 of the ISO tariff, the ISO's new rule mitigates for the distortion of prices and uplift charges caused by a specific observed bidding practice.

Under the new rule, when a resource is dispatched at a level below its day-ahead schedule or the resource submits a real-time self-schedule below the day-ahead schedule, the ISO will base the IFM market revenues associated with portions of the day-ahead schedule above minimum load based on the scheduled amounts as opposed to the delivered amounts. This change is necessary because, as discussed by Mr. Rothleder, in such situations it is necessary to capture revenues associated with the day-ahead scheduled energy.[27] Despite the explicit real-time instruction from the ISO (or the resource's submittal to "buy back" in the real-time) to reduce the resource's output, the resource will be fully compensated for the day-ahead scheduled amounts. The lesser delivery in the real-time will not be considered as uninstructed given the cleared self-schedule or the ISO's decremental dispatch. Therefore, the resource essentially retains the day-ahead revenue, which should be considered to offset any calculated bid costs incurred by the resource.

As Mr. Rothleder explains, this rule is not necessary in cases where the ISO increments the resource in the real-time or the resource self-schedules the resource to higher levels in the real-time.

B. Proposed Tariff Amendments to Clarify Determination of Delivered Portions

The ISO also proposes additional changes to its tariff to eliminate any ambiguity regarding the way in which the ISO determines the applicable

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[27] Exhibit ISO-No.1, at 28:1-28:11.

delivered portions of the day-ahead scheduled energy or energy dispatched in the real-time. To reflect the principle of providing bid costs based on delivered portions, the ISO has used the term "delivered" before the applicable amounts. For example:

- In section 11.8.2, which describes the IFM Bid Cost Recovery Amount, the ISO specifies that "[t]he 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." (*emphasis added*)

- In section 11.8.2.1.5, in which the ISO describes the IFM Energy Bid Cost, the ISO specifies that "[t]he IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, for any Settlement Interval is set to zero for any portion of the Day-Ahead Schedule that is not *delivered* from the otherwise Bid Cost Recovery Eligible Resource that has metered Generation below its Day-Ahead Schedule; any portion of the Day-Ahead Schedule that is actually *delivered* remains eligible for IFM Energy Bid Cost Recovery. [*emphasis added*]

The term delivered was added to the various subsections of section 11.8 in response to the Commission's September 2006 order conditionally accepting the ISO's tariff in support of its new LMP-based market design in which the Commission rejected the use of the tolerance band for determining whether or not a resource was entitled to specific bid cost recovery.

Concurrently, as described above the ISO developed the day-ahead and real-time metered energy adjustment factor, which it used to calculate the delivered portions of the day-ahead schedule or the real-time dispatch, respectively. The ISO did not include the definition of these metered adjustment factors in the ISO tariff as they were intended to serve as tools for calculating the delivered portions. The ISO now proposes to include this detail in the tariff to eliminate any ambiguity in the filed rate for the respective calculation of delivered portions.

The ISO first proposes to add two new definitions: the Day-Ahead Metered Energy Adjustment Factor and the Real-Time Metered Energy Adjustment Factor. These adjustment factors will continue to be defined and calculated as they have been since the start of the ISO's LMP-based market design on April 1, 2009. The proposed definitions to be included in the tariff reflect the meaning of these terms as currently defined in the ISO's Business Practice Manual for Settlements. Accordingly, the ISO proposes to define the Day-Ahead Metered Energy Adjustment Factor as: a factor calculated for the purposes of determining the portions of a Scheduling Coordinator's relevant Day-Ahead Schedule actually delivered in the real-time, taking into consideration the resource's metered

energy. The factor is calculated as follows: The factor is 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 also proposes to state that the Real-Time Metered Energy Adjustment Factor: Is a factor calculated for the purposes of determining the portions of a Scheduling Coordinator's relevant Dispatch Instruction actually delivered in the real-time, taking into consideration the resource's metered energy. The factor is calculated as follows: The factor is bounded by 1 or 0, and is 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. These definitions describe the design of the day-ahead metered adjustment factor as contained in the ISO tariff.

The ISO then proposes to add in each of the applicable sections the reference to either the Day-Ahead Metered Energy Adjustment Factor or Real-Time Metered Energy Adjustment Factor as appropriate. For example, the ISO proposes to add the following sentence "For purposes of determining the delivered MWhs, the ISO will apply the Day-Ahead Metered Energy Adjustment Factor."

With respect to the portions of the day-ahead schedule and dispatched energy at or below the minimum load, the ISO proposes to retain the principle in the tariff that this portion will be based on delivered energy.[28] However, the ISO proposes to add language clarifying that the ISO will use the tolerance band to determine whether or not the market revenues are captured.

The application of the same tolerance band used to determine whether the resource is entitled to minimum load cost recovery is a more effective means of capturing the delivered portions of the minimum load energy. Moreover, the application of the tolerance band for the purposes of accounting for market revenue is consistent with prior Commission orders approving the application of the tolerance band to determine whether a resource obtains minimum load cost payments. The ISO will adopt this practice to ensure that minimum load energy

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[28] This principle is reflected in Section 11.8.2.2, which states:

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 where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load, the MWh is negative, 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. [*emphasis added*]

actually delivered is captured.[29] For this purpose, the ISO determines the resource is "on" if "*its metered Energy in a Settlement Interval is equal to or greater than the difference between its Minimum Load Energy and the Tolerance Band."* Otherwise, the resource does not receive its minimum load costs.

Consistent with this determination, rather than applying the day-ahead metered energy adjustment factor in calculating the IFM market revenue associated with minimum load energy, the ISO will include the market revenues associated with the minimum load energy portions if the resource's metered energy in a settlement interval is equal to or greater than the difference between its minimum load energy and the tolerance band.

This change in practice will not change the pre-existing tariff requirement that the market revenues be accounted for delivered portions. The ISO proposes to clarify Section 11.8.2.2 as follows:

11.8.2.2 IFM Market Revenue

In the case of a Multi-Stage Generating Resource, the CAISO will calculate the market revenue at the Generating Unit or Dynamic Resource-Specific System Resource level.

11.8.2.2.1 Instructed Imbalance Energy Greater Than Zero

For any Settlement Interval in a CAISO IFM Commitment Period in which the resource's Instructed Imbalance Energy is greater than zero (*i.e.*, the resource is dispatched by CAISO in real-time higher than the Day-Ahead Schedule) the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of~~: (1)~~ the following three products.

(1) The product of the delivered MWh~~,~~ in the relevant Day-Ahead Schedule above the higher of the total day-ahead self-schedules and the Minimum Load submitted to the IFM in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load~~,~~ the MWh is negative)~~,~~ and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the Day-Ahead Metered Energy Adjustment Factor.

[29] Under section 11.8.2.1.2, in addition to meeting other requirements, a resource is paid its IFM minimum load costs if the resource is determined to be "on."

(2) The product of delivered MWh in the relevant Day-Ahead Schedule for portions at or below the Minimum Load submitted to the IFM~~;~~ and the relevant LMP divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2;

~~(3)~~ The~~(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. ~~In the case of a Multi-Stage Generating Resource, the CAISO will calculate the market revenue at the Generating Unit or Dynamic Resource-Specific System Resource level.~~

11.8.2.2.2 Instructed Imbalance Energy Equal to or Below Zero

For any Settlement Interval in a CAISO IFM Commitment Period in which the resource's Instructed Imbalance Energy is equal to or less than zero (*i.e.*, the resource is dispatched by CAISO in real-time at or lower than the Day-Ahead Schedule) the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of the following three products.

(1) The product of the scheduled MWh in the relevant Day-Ahead Schedule above the higher of the total day-ahead self-schedules and the Minimum Load submitted to the IFM in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load the MWh is negative), and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour.

(2) The product of delivered MWh in the relevant Day-Ahead Schedule for portions at or below the Minimum Load submitted to the IFM and the relevant LMP divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the

CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2;

(3) 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.

The ISO will adopt the same practice for purposes of determining the real-time market revenues associated with the real-time minimum load energy. Therefore, the ISO proposes to make a similar change to Section 11.8.4.2.1 to clarify the determination of real-time market revenues.

The resource will continue to receive its minimum load cost if it meets the requirements in Section 11.8.2.1.2 and 11.8.4.1.2 if it reaches its minimum load subject to the tolerance band. However, as described by Mr. Rothleder, the capture of the market revenues for minimum load energy will ensure that the resource is not over compensated for such costs by paying the resource for both the registered minimum load cost and the LMP for the associated minimum load energy. If the resource's market revenue for such portions more than covers the registered minimum load cost, the resource should not be receiving payment for these costs. This is a long standing principle of the ISO's bid cost recovery mechanism and necessary to ensure that the bid cost recovery mechanism continues to serve as a mechanism to ensure recovery of bid costs.

IV. EFFECTIVE DATE

Pursuant to Section 35.11 of the Commission's regulations,[30] the ISO requests that the Commission waive its notice requirements for the proposed amendment, accept it for filing, and permit it to become effective on March 19, 2011. Good cause exists for granting this waiver.

The proposed tariff amendment eliminates the potential for continued unexpected market outcomes resulting from a bidding practice and existing market rule deficiency that result in exaggerated payments to resources for bid cost recovery uplift. The ISO normally follows a robust stakeholder process to develop such market rule changes. In this case, however, because the described unexpected market outcome can be exacerbated if engaged in by multiple scheduling coordinators, it is necessary to immediately eliminate any incentive to engage in such activity. The proposed amendments immediately put

[30] 18 C.F.R. § 35.11.

in place a tariff rule that eliminates the opportunity for excessive bid cost recovery amounts that would incentivize the bidding practice.

The proposed amendment consists of simple settlement rules that are narrowly tailored to eliminate the opportunity for excessive bid cost recovery amounts associated with the observed bidding practice. The solution, while setting forth a just and reasonable rate, is also intended to undergo further scrutiny during a stakeholder process to be conducted during the ninety days after the Commission's issuance of an order accepting the proposed tariff amendment. The purpose of the post-filing stakeholder process is to provide stakeholders an opportunity to comment on the ISO's proposed solution and recommend any further proposed changes. After the completion of the stakeholder process, the ISO will either: 1) report to the Commission the outcome of the stakeholder process and advise that no further changes will be proposed; or 2) file any tariff revisions consistent with the outcome of the stakeholder process. This post-filing process will provide stakeholders ample opportunity to review and propose revisions to the ISO's tariff amendments.

V. REQUEST FOR EXPEDITED TREATMENT AND SHORTED COMMENT PERIOD

In order to permit the proposed amendment to become effective on March 19, 2011, or as soon thereafter as possible, the ISO requests expedited tariff revision procedures pursuant to the Guidance Order, including a shortened comment period. In the Guidance Order, the Commission stated that a request by an Independent System Operator for expedited treatment of a tariff revision should clearly demonstrate that a rule change is required due to a flaw, why action is necessary in the market, and that the proposed tariff revision will correct the flaw.[31] A proposed tariff amendment qualifies for expedited treatment if the flaw meets the following criteria:

(1) it materially adversely impacts the market (due to the unanticipated workings of the tariff or unanticipated actions by market participants);

(2) it requires prompt action to prospectively revise the tariff to remove the ability to cause such material adverse impacts; and

(3) it is susceptible to a clear-cut revision or interim tariff revision or market rule.[32]

The proposed amendment qualifies for expedited treatment, in that it removes the opportunity to utilize a bidding practice that leads to unexpected

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[31] Guidance Order at P 2.

[32] *Id.*

results, with a material adverse impact to the ISO markets. First, the market rule addressed by the amendments to section 11.8.2.2 has led to approximately $57 million in bid cost recovery payments that would not have been earned but for the identified bidding practice. Moreover, the use of the observed bidding practice eliminated by the proposed amendment leads to inefficiencies in market dispatch. The costs of these inefficiencies are borne by the entire market. Second, prompt action is necessary to ensure full participation in the ISO's proposed stakeholder process, to follow after this filing. While the proposed tariff amendment eliminates the incentive to engage in the identified bidding practice, the ISO agrees to engage in a post-filing stakeholder process to consider whether any further refinements should be made to the proposed rule. Finally, the identified bidding practice is remedied by the proposed tariff rule. As described above, the ISO is proposing discrete, clear-cut tariff amendments that will remedy the flaw and ensure that resources will not be given unwarranted uplift payments where they are decremented from their day-ahead schedule in the real-time market.

The Guidance Order explains that the Commission will "expeditiously determine whether the reasons presented warrant expedited treatment," and if they do warrant expedited treatment, the Commission will promptly issue a notice and establish an expedited comment period from the date of the notice.[33] The ISO requests a comment date not later than fourteen days after the date of this filing. This will allow the Commission to issue an order within thirty days of this filing, thereby enabling the ISO to commence its post-filing stakeholder process.

VI. COMMUNICATIONS

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

[33] *Id.* at P 4. The Guidance Order states that the Commission expects that, in three to five business days, it would issue a notice that establishes an expedited comment period.

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pursuant to 18 C.F.R. § 203(b)(3).

V. SERVICE

The Guidance Order requires that the Independent System Operator post the filing on its website and send an e-mail notification to each market participant. The ISO has posted the filing on the ISO's website and provided e-mail notice all parties with effective scheduling coordinator Service Agreements under the ISO tariff, as well as the California Public Utilities Commission and the California Electricity Oversight Board.

V. ATTACHMENTS

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

Attachment A	Revised ISO Tariff sheets that incorporate the proposed changes described above
Attachment B	The proposed changes to the ISO Tariff shown in black-line format
Attachment D	Exhibit ISO-No.1: Prepared Direct Testimony of Mr. Mark Rothleder

VI. CONCLUSION

For all the foregoing reasons, the Commission should establish a shortened comment period on the instant filing, issue an order on the filing by May 2, 2011 or as soon thereafter as possible, and accept the proposed amendments to become effective on March 19, 2011. Please feel free to contact the undersigned if you have any questions concerning this matter.

Respectfully submitted,

By: /s/ Anna McKenna

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Attorneys for the California Independent
System Operator Corporation

Dated: March 18, 2011

Attachment A – Clean Tariff

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

March 18, 2011

* * *

11.8.2.1.5 IFM Energy Bid Cost

For any Settlement Interval, the IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, shall be the integral of the relevant Energy Bid submitted to the IFM, if any, from the higher of the registered Bid Cost Recovery Eligible Resource's Minimum Load and the Day-Ahead Total Self-Schedule up to the relevant MWh scheduled in the Day-Ahead Schedule, divided by the number of Settlement Intervals in a Trading Hour. The IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, for any Settlement Interval is set to zero for any portion of the Day-Ahead Schedule that is not delivered from the otherwise Bid Cost Recovery Eligible Resource that has metered Generation below its Day-Ahead Schedule; any portion of the Day-Ahead Schedule that is actually delivered remains eligible for IFM Energy Bid Cost Recovery. The delivered portions of the Day-Ahead Schedule for this calculation are determined using the Day-Ahead Metered Energy Adjustment Factor. The CAISO will determine the IFM Energy Bid Cost for a Multi-Stage Generating Resource at the Generating Unit or Dynamic Resource-Specific System Resource level.

* * *

11.8.2.2 IFM Market Revenue

In the case of a Multi-Stage Generating Resource, the CAISO will calculate the market revenue at the Generating Unit or Dynamic Resource-Specific System Resource level.

11.8.2.2.1 Instructed Imbalance Energy Greater Than Zero

For any Settlement Interval in a CAISO IFM Commitment Period in which the resource's Instructed Imbalance Energy is greater than zero (*i.e.*, the resource is dispatched by CAISO in real-time higher than the Day-Ahead Schedule) the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of the following three products.

(1) The product of the delivered MWh in the relevant Day-Ahead Schedule above the higher of the total day-ahead self-schedules and the Minimum Load submitted to the IFM in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load the MWh is negative), and the relevant IFM LMP,

divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the Day-Ahead Metered Energy Adjustment Factor.

(2) The product of delivered MWh in the relevant Day-Ahead Schedule for portions at or below the Minimum Load submitted to the IFM and the relevant LMP divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2;

(3) 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.

11.8.2.2.2 Instructed Imbalance Energy Equal to or Below Zero

For any Settlement Interval in a CAISO IFM Commitment Period in which the resource's Instructed Imbalance Energy is equal to or less than zero (*i.e.*, the resource is dispatched by CAISO in real-time at or lower than the Day-Ahead Schedule) the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of the following three products.

(1) The product of the scheduled MWh in the relevant Day-Ahead Schedule above the higher of the total day-ahead self-schedules and the Minimum Load submitted to the IFM in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load the MWh is negative), and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour.

(2) The product of delivered MWh in the relevant Day-Ahead Schedule for portions at or below the Minimum Load submitted to the IFM and the relevant LMP divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2;

(3) 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.

11.8.2.2.3 Resource Self-Committed

For any Settlement Interval in a IFM Self-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 above the greater of Minimum Load and Self-Scheduled Energy, 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. The delivered portions of the Day-Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2.

* * *

11.8.4.1.5 RTM Energy Bid Cost

For any Settlement Interval, the RTM Energy Bid Cost for the Bid Cost Recovery Eligible Resource except Participating Loads shall be computed as the sum of the products of each Instructed Imbalance Energy (IIE) portion, except Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, MSS Load Following Energy, Ramping Energy Deviation and Regulating Energy, with the relevant Energy Bid prices, if any, for each Dispatch Interval in the Settlement Interval. The RTM Energy Bid Cost for a Bid Cost Recovery Eligible Resource except Participating Loads for a Settlement Interval is set to zero for any undelivered Real-Time Instructed Imbalance Energy by the Bid Cost Recovery Eligible Resource. Any Uninstructed Imbalance Energy in excess of Instructed Imbalance Energy is also not eligible for Bid Cost Recovery. The delivered Real-Time Instructed Imbalance Energy for this calculation are determined using the Real-Time Metered Energy Adjustment Factor. For a Multi-Stage Generating Resource the CAISO will determine the RTM Energy Bid Cost based on the Generating Unit or Dynamic Resource-Specific System Resource level.

*** * ***

Appendix A
Master Definition List

* * *

- Day-Ahead Metered Energy Adjustment Factor
Is a factor calculated for the purposes of determining the portions of a Scheduling Coordinator's relevant Day-Ahead Schedule actually delivered based on the meter, taking into consideration the resource's metered energy. The factor is calculated as follows: The factor is 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).

* * *

- Real-Time Metered Energy Adjustment Factor
Is a factor calculated for the purposes of determining the portions of a Scheduling Coordinator's relevant Dispatch Instruction actually delivered based on the meter, taking into consideration the resource's metered energy. The factor is calculated as follows: The factor is bounded by 1 or 0, and is 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.

* * *

Attachment B – Marked Tariff

California Independent System Operator Corporation

Fifth Replacement FERC Electric Tariff

March 18, 2011

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11.8.2.1.5 IFM Energy Bid Cost

For any Settlement Interval, the IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, shall be the integral of the relevant Energy Bid submitted to the IFM, if any, from the higher of the registered Bid Cost Recovery Eligible Resource's Minimum Load and the Day-Ahead Total Self-Schedule up to the relevant MWh scheduled in the Day-Ahead Schedule, divided by the number of Settlement Intervals in a Trading Hour. The IFM Energy Bid Cost for Bid Cost Recovery Eligible Resources, except Participating Loads, for any Settlement Interval is set to zero for any portion of the Day-Ahead Schedule that is not delivered from the otherwise Bid Cost Recovery Eligible Resource that has metered Generation below its Day-Ahead Schedule; any portion of the Day-Ahead Schedule that is actually delivered remains eligible for IFM Energy Bid Cost Recovery. The delivered portions of the Day-Ahead Schedule for this calculation are determined using the Day-Ahead Metered Energy Adjustment Factor. The CAISO will determine the IFM Energy Bid Cost for a Multi-Stage Generating Resource at the Generating Unit or Dynamic Resource-Specific System Resource level.

* * *

11.8.2.2 IFM Market Revenue

In the case of a Multi-Stage Generating Resource, the CAISO will calculate the market revenue at the Generating Unit or Dynamic Resource-Specific System Resource level.

11.8.2.2.1 Instructed Imbalance Energy Greater Than Zero

For any Settlement Interval in a CAISO IFM Commitment Period in which the resource's Instructed Imbalance Energy is greater than zero (*i.e.*, the resource is dispatched by CAISO in real-time higher than the Day-Ahead Schedule) the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of~~: (1)~~ the following three products.

(1) The product of the delivered MWh~~,~~ in the relevant Day-Ahead Schedule above the higher of the total day-ahead self-schedules and the Minimum Load submitted to the IFM in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load~~,~~ the MWh is negative)~~,~~ and the relevant IFM LMP,

divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the Day-Ahead Metered Energy Adjustment Factor.

(2) The product of delivered MWh in the relevant Day-Ahead Schedule for portions at or below the Minimum Load submitted to the IFM~~;~~ and the relevant LMP divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2;

(3) The~~(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. ~~In the case of a Multi-Stage Generating Resource, the CAISO will calculate the market revenue at the Generating Unit or Dynamic Resource-Specific System Resource level.~~

11.8.2.2.2 Instructed Imbalance Energy Equal to or Below Zero

For any Settlement Interval in a CAISO IFM Commitment Period in which the resource's Instructed Imbalance Energy is equal to or less than zero (*i.e.*, the resource is dispatched by CAISO in real-time at or lower than the Day-Ahead Schedule) the IFM Market Revenue for a Bid Cost Recovery Eligible Resource is the algebraic sum of the following three products.

(1) The product of the scheduled MWh in the relevant Day-Ahead Schedule above the higher of the total day-ahead self-schedules and the Minimum Load submitted to the IFM in that Trading Hour (where for Pumped-Storage Hydro Units and Participating Load operating in the pumping mode or serving Load the MWh is negative), and the relevant IFM LMP, divided by the number of Settlement Intervals in a Trading Hour.

(2) The product of delivered MWh in the relevant Day-Ahead Schedule for portions at or below the Minimum Load submitted to the IFM and the relevant LMP divided by the number of Settlement Intervals in a Trading Hour. The delivered portions of the Day-

Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2;

(3) 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.

11.8.2.2.3 Resource Self-Committed

For any Settlement Interval in a IFM Self-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 above the greater of Minimum Load and Self-Scheduled Energy, 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. The delivered portions of the Day-Ahead Schedule in this case are determined based on the CAISO's determination that the resource was "On" for the applicable Trading Hour as described in Section 11.8.2.1.2.

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11.8.4.1.5 RTM Energy Bid Cost

For any Settlement Interval, the RTM Energy Bid Cost for the Bid Cost Recovery Eligible Resource except Participating Loads shall be computed as the sum of the products of each Instructed Imbalance Energy (IIE) portion, except Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, MSS Load Following Energy, Ramping Energy Deviation and Regulating Energy, with the relevant Energy Bid prices, if any, for each Dispatch Interval in the Settlement Interval. The RTM Energy Bid Cost for a Bid Cost Recovery Eligible Resource except Participating Loads for a Settlement Interval is set to zero for any undelivered Real-Time Instructed Imbalance Energy by the Bid Cost Recovery Eligible Resource. Any Uninstructed Imbalance Energy in excess of Instructed Imbalance Energy is also not eligible for Bid Cost Recovery. The delivered Real-Time Instructed Imbalance Energy for this calculation are determined using the Real-Time Metered Energy Adjustment Factor. For a Multi-Stage Generating Resource the CAISO will determine the RTM Energy Bid Cost based on the Generating Unit or Dynamic Resource-Specific System Resource level.

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Appendix A
Master Definition List

* * *

- Day-Ahead Metered Energy Adjustment Factor
Is a factor calculated for the purposes of determining the portions of a Scheduling Coordinator's relevant Day-Ahead Schedule actually delivered based on the meter, taking into consideration the resource's metered energy. The factor is calculated as follows: The factor is 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).

* * *

- Real-Time Metered Energy Adjustment Factor
Is a factor calculated for the purposes of determining the portions of a Scheduling Coordinator's relevant Dispatch Instruction actually delivered based on the meter, taking into consideration the resource's metered energy. The factor is calculated as follows: The factor is bounded by 1 or 0, and is 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.

* * *

Attachment C – Testimony of Mark Rothleder
California Independent System Operator Corporation
Fifth Replacement FERC Electric Tariff
March 18, 2011

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	**Docket Nos. ER11-____**

PREPARED DIRECT TESTIMONY
OF
MR. MARK ROTHLEDER

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	**Docket No. ER11-____-___**

PREPARED DIRECT TESTIMONY
OF
MR. MARK ROTHLEDER

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Mark Rothleder. My business address is 250 Outcropping Way, Folsom, California 95630.

Q. By whom and in what capacity are you employed?

A. I am the Director of Market Analysis and Development for the California ISO. Prior to this role, I was a Principle Market Developer for the ISO in the lead role in the implementation of market rules and software modifications related to the ISO's Market Redesign and Technology Upgrade (MRTU). Since joining the ISO over thirteen years ago, 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.

Q. Please describe your professional and educational background.

A. I am a registered Professional Electrical Engineer in the state 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, Transmission Planning and Substation Design.

Q. Have you previously testified before the Commission?

A. Yes I have previously testified in the following matters: In FERC Docket No. EL00-95-045, I testified to the process by which the ISO calculated incremental heat rates for gas-fired generating units associated with generators that are subject to price mitigation in the ISO's markets pursuant to the Commission's Market Mitigation Orders. In Docket No. ER06-615, I explained the ISO's role in ensuring resource adequacy. In Docket ER08-1113 I provided panel testimony regarding Integrated Balancing Authority Area.

Q. What is the purpose of your testimony in this proceeding?

A. I will discuss the need to address and mitigate an unintended settlement opportunity created by the current bid cost recovery mechanism, aggravated by an indentified bidding practice.

I. Description of the ISO's Bid Cost Recovery Mechanism

Q. What is the bid cost recovery mechanism?

A. The bid cost recovery mechanism is a series of market rules and calculations that together serve as the mechanism for ensuring resources are paid for their unrecovered start-up and minimum load bid costs if committed or dispatched by the ISO and are guaranteed recovery of their energy bid costs. The bid cost recovery mechanism performs four main functions: 1) calculates the applicable bid costs covered for the resource if dispatched or committed by the ISO; 2) determines the applicable market revenues earned by the resource; 3) offsets the calculated bid costs by the market revenue earned by the resource to determine bid cost recovery uplift paid to the resource; and 4) allocates out the total bid cost recovery uplift paid to all resources to ISO load and exports.

Q. How does the ISO calculate the applicable bid costs to be paid to a resource?

A. The bid costs include both the start-up costs of a resource and the minimum load costs, as well as the energy or ancillary services bid costs. The unrecovered start-up and minimum load bid costs are paid to resources only for intervals in which the resource was dispatched or

committed by the ISO. The unrecovered energy or ancillary services bid costs are calculated and paid if for a given interval the resource is dispatched or committed at prices below the bid price included in their bid for the relevant interval. This ensures that the resource is not paid lower than their submitted bid price.

Q. Are the bid costs paid in above and beyond market revenues earned by the resource?

A. No. The ISO guarantees recovery of the resource's unrecovered bid costs only to the extent their market revenues do not cover these costs. Resources scheduled in the day-ahead market are settled at the locational marginal price (LMP) cleared in the integrated forward market (IFM) for all the energy scheduled, regardless of delivery in the day-ahead. Similarly, resources dispatched in the real-time are settled at the applicable LMP cleared in the real-time dispatch run of the real-time market. To the extent these market revenues meet or exceed the bid costs, there are no unrecovered bid costs and thus no need to compensate the resource under the bid cost recovery mechanism above and beyond what the resource earned from the market. Therefore, the calculated bid costs for a given resource are offset 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 over the 24 hour period of a trade day.

Q. With respect to the IFM bid costs, does the ISO pay these bid costs associated with all energy scheduled in the IFM?

A. No. The ISO pays for the bid costs associated with portions of the day-ahead scheduled energy that are actually delivered. For energy that is not actually delivered as measured by the metered delivery the ISO does not guarantee recovery of bids costs for the resource. Minimum load costs are paid only to the extent that the ISO can determine that the resource is actually on-line in the applicable trading hour. This determination is made on the basis of the resource actually reaching its minimum load within a given trading hour, subject to a tolerance band which establishes the resource to be on so long at the resource reaches within the higher of 5 MW or 3% of the resource's minimum load. Similarly, start-up costs are only paid to the extent the resource actually starts up within the applicable commitment period.

Q. How does the ISO determine delivered portions of the day-ahead schedule for the purposes of determine what portion of the day-ahead scheduled energy the resource will receive energy bid cost recovery?

A. The ISO compares the metered energy for a given resource relative to its day-ahead schedule and has developed a tool called the day-ahead Metered Energy Adjustment Factor (MEAF) that determines the portion of day-ahead schedule issued by the ISO for a specific resource that is actually delivered based on their metered energy. The day-ahead MEAF formula is part of the settlements charge code calculations contained in

the ISO Business Practice Manual (BPM) for Settlements and Billing. Below is an excerpt of the definition contained in that BPM:

IF

(TotalDayAheadExpectedEnergyIncludingSRE $_{BrtuT'I'M'F'S'hif}$ – DayAheadEnergyBelowBidCurve $_{BrtuT'I'M'F'S'hif}$) = 0

AND

DispatchIntervalMeteredQuantityForMeteredAdjFactor $_{BrtuT'I'M'F'S'hif}$ <> 0

THEN

DAMeteredEnergyAdjustmentFactor $_{BrtuT'I'M'F'S'hif}$ = (1 - DispatchIntervalDeemedDeliveredInterchangeWheelEnergyFlag $_{BrtuT'I'M'F'S'hif}$)

ELSE

DAMeteredEnergyAdjustmentFactor $_{BrtuT'I'M'F'S'hif}$ =

(1 - DispatchIntervalDeemedDeliveredInterchangeWheelEnergyFlag $_{BrtuT'I'M'F'S'hif}$) * BADispatchIntervalResouceNonRMREnergyRatio $_{BrtuT'I'M'F'S'hif}$ *

MIN (1,

MAX (0,

(DispatchIntervalMeteredQuantityForMeteredAdjFactor $_{BrtuT'I'M'F'S'hif}$ –

DayAheadEnergyBelowBidCurve $_{BrtuT'I'M'F'S'hif}$)/

(TotalDayAheadExpectedEnergyIncludingSRE $_{BrtuT'I'M'F'S'hif}$ –

DayAheadEnergyBelowBidCurve $_{BrtuT'I'M'F'S'hif}$)))

In words, the day-ahead MEAF is 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. It reflects the portion of the scheduled energy above the greater of the resources self-schedule and it 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. As a simple example, if only 80 percent of the energy scheduled above minimum load in the day-ahead schedule is ultimately delivered in the real-time based on the metered generation, the ISO pays energy bid cost recovery to 80 percent of the scheduled energy. Accordingly, the ISO determines the energy bid cost recovery amounts that would apply for the energy scheduled in the day-ahead schedule and applies the day-ahead MEAF.

Q. How does the ISO determine the IFM market revenue used to offset the IFM calculated bid costs for a given interval?

A. The ISO calculates all the market revenues earned by the resource for a given trading hour by summing up the product of the resource's MWhs scheduled in the day-ahead schedule actually delivered multiplied by the applicable LMP. The ISO applies the day-ahead MEAF to this calculation to capture the IFM market revenue associated only with the delivered portions of the day-ahead schedule. The ISO adopted this practice during market implementation when the ISO translated what is meant to provide bid cost recovery to the delivered energy. In addition, prior to start of the new ISO market, during market simulation the ISO observed that in certain

real-time scenarios a resource was observed to have 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 more appropriate to apply the MEAF to both the energy revenues and costs because in real-time a resource's uninstructed deviations would be settled via uninstructed imbalance energy settlement. However, as I describe below, in making this conclusion for real-time bid cost recovery, the ISO inappropriately concluded that it was also correct to apply the day-ahead MEAF to the day-ahead revenues in all cases.

Q. Do these same principles apply in the calculation of bid cost recovery amounts for energy dispatched in the real-time?

A. Yes, the ISO applies essentially the same principles to determine a resource's bid costs based on the real-time unit commitment or dispatch. But in the real-time, the ISO guarantees the energy bid costs only for the delivered energy dispatched or committed in the real-time. However, in real-time a resource can be dispatched above or below it day-ahead schedule level and as a result the real-time MEAF is determined relative to the delivered portions of the real-time instructed energy. Therefore, the ISO 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 formula is part of the settlements charge code calculations contained in the BPM for Settlements and Billing. Below is an excerpt of the definition contained in that BPM:

IF (TotalExpectedEnergyFiltered $_{BrtuT'I'M'F'S'hif}$ –

TotalDayAheadExpectedEnergyIncludingSRE $_{BrtuT'I'M'F'S'hif}$ –
DispatchIntervalRTSelfScheduleEnergy $_{BrtuT'I'M'F'S'hif}$) = 0
AND
DispatchIntervalMeteredQuantityForMeteredAdjFactor $_{BrtuT'I'M'F'S'hif}$ <> 0
THEN
RTMarketMeteredEnergyAdjustmentFactor $_{BrtuT'I'M'F'S'hif}$ = (1 -
DispatchIntervalDeemedDeliveredInterchangeWheelEnergyFlag
$_{\mathbf{BrtuT'I'M'F'S'hif}}$)
ELSE
RTMarketMeteredEnergyAdjustmentFactor $_{BrtT'I'M'F'S'hif}$ =
(1 - DispatchIntervalDeemedDeliveredInterchangeWheelEnergyFlag
$_{BrtuT'I'M'F'S'hif}$) *
BADispatchIntervalResouceNonRMREnergyRatio $_{BrtuT'I'M'F'S'hif}$ *
MIN [1,
MAX (0,
(DispatchIntervalMeteredQuantityForMeteredAdjFactor $_{BrtuT'I'M'F'S'hif}$ –
TotalDayAheadExpectedEnergyIncludingSRE $_{BrtuT'I'M'F'S'hif}$ –
DispatchIntervalRTSelfScheduleEnergy $_{\mathbf{BrtuT'I'M'}F'S'\mathbf{hif}}$) /
(TotalExpectedEnergyFiltered $_{\mathbf{BrtuT'I'M'F'S'hif}}$ –
TotalDayAheadExpectedEnergyIncludingSRE $_{BrtuT'I'M'F'S'hif}$ –
DispatchIntervalRTSelfScheduleEnergy $_{\mathbf{BrtuT'I'M'}F'S'\mathbf{hif}}$))]

Q. Please describe how start-up and minimum load bid costs are determined for each resource.

A. Accordingly, section 30.4 and 39.6.1.6 of the tariff, start-up costs can either be based on a proxy cost or registered cost. The registered cost is limited to a maximum of 200% of the proxy cost. Parties are allowed to register up to 200% of the proxy-based minimum load costs to account for

costs that are directly incorporated into the proxy based cost calculation. In addition the principle of the bid cost recovery mechanism is that only unrecovered portions of such registered costs will be recovered.

II. Issues Observed with the Use of Delivered Portions in Calculating IFM Market Revenue

Q. How does the day-ahead MEAF perform in determining the delivered portions of a resource's day-ahead schedule?

A. Generally, the day-ahead MEAF is effective in determining the portions of the day-ahead schedule that is actually delivered in real-time. However, the ISO has found that in cases where the resource is instructed below the resource's day-ahead schedule in real-time and the resource's metered delivery is less than the resource's day-ahead schedule , the application of the day-ahead MEAF results in the failure to account for delivered portions of the day-ahead schedule below the minimum load.

Q. Can you please provide an example?

A. Yes. At this point, it is helpful for me to set up an example of a specific resource, which I will use throughout my discussion of the issues identified. Assume a resource with a maximum capacity (*i.e.*, PMax) of 400 megawatts. The resource has registered its minimum load at 100 megawatts. Assume also that the resource is scheduled in the day-ahead at its full capacity at 400 MWs (*i.e.*, the resource receives a day-ahead schedule for 400 MWs based on its submitted bid above minimum load and is paid for those 400 megawatts at the IFM LMP, which for the purpose of my example is assumed to be $35/MWh. As I described the

day-ahead MEAF above, I included in the definition of the day-ahead MEAF the treatment of self-schedule energy. 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). As a resource is scheduled in the day-ahead at or above its minimum load, the resource is scheduling energy and under the ISO tariff Section 11.2 is paid the LMP for all their energy scheduled in the day-ahead schedule, including the energy scheduled for portions below their minimum load regardless of delivery. Going back to the example, if in the real-time, the resource operates at its scheduled 400 megawatts, the day-ahead MEAF will be equal to 1 (*i.e.*, (400-100)/(400-100)). If the day-ahead MEAF is equal to 1, the use of the MEAF performs well when applied to the lower portions of the minimum load energy in the day-ahead schedule. The resource's IFM market revenue for the purpose of offsetting the resource's costs in the bid cost recovery Mechanism for portions at or below the minimum load will be equal to $3,500 (*i.e.*, 100 MWh * $35 * 1). For portions above the minimum load, the IFM market revenues will be equal to $10,500 (*i.e.*, 300 MWh * $35 * 1), for a total sum of $14,000. In this case, the day-ahead MEAF of 1 allowed the ISO to calculate the IFM market revenues for the entire day-ahead schedule. However, let us now assume that instead of performing for their entire day-ahead schedule, the resource's

meter is instead at 200 megawatts in the real-time. In this case, the resource's day-ahead MEAF will be equal to 0.67 (*i.e.*, (300 – 100)/(400-100)). In using the day-ahead MEAF to calculate the resource's IFM market revenues contribution to bid cost recovery calculations, the ISO will determine the following IFM market revenues: The resource's IFM market revenue at or below the minimum load will be equal to $2,345 (*i.e.*, 100 MWh * $35 * 0.67). For portions above the minimum load, the IFM market revenues will be equal to $7,035 (*i.e.*, 100 MWh * $35 * 0.67), for a total sum of $9,380. Recall that the total day-ahead market revenues earned were equal to $14,000 and will remain so regardless of metered delivery. Therefore,while the resource is receiving full payment for its scheduled energy we are only accounting for a portion of it energy revenue in the Bid Cost Recovery calculation. Now suppose the resource operates to its minimum load (100 MWs) in the real-time instead of delivering its full day-ahead schedule. The day-ahead MEAF will be 0 (*i.e.*, (100 – 100)/(400-100)). The IFM market revenues calculated for purposes of offsetting the resource's bid costs will be zero. This last case poses a particular problem because even if the resource delivered only up to its minimum load, the day-ahead MEAF essentially nullifies these values in the calculation of market revenue for the portions of the day-ahead schedule that was actually delivered (*i.e.*, in this case only minimum load energy was delivered).

Q. Please explain why you say that this last scenario poses a particular problem?

A. The ISO intended to use the day-ahead MEAF for the purposes of calculating the delivered portions of the day-ahead schedule above minimum load. When a resource delivers at least its minimum load energy, the ISO pays the LMP for that scheduled minimum load energy through the settlement of the day-ahead schedule. So in the last scenario, the resource delivered a portion of the day-ahead schedule. But applying the day-ahead MEAF which was determined from the energy delivered and scheduled above minimum load to the delivered minimum load energy (day-ahead MEAF<1) results in the under accounting of those revenues associated with the delivered portions of the day-ahead schedule.

Q. What is the implication of this under accounting of revenues?

A. This results in less market revenue to offset a resource's bid costs, which, everything else held equal, would result in over-payment of bid cost recovery to the resource.

Q. How does the day-ahead MEAF perform in accounting for the delivered portions of the day-ahead schedule above minimum load?

A. As illustrated by my example above, the day-ahead MEAF will not capture the full day-ahead revenue when the resource is dispatched by the ISO in real-time below its day-ahead schedule level. This is inappropriate because it under-accounts for the fact that resource will receive energy settlement for its full day-ahead schedule, including the portions of the

day-ahead schedule that were not actually delivered. In this scenario, being that the resource was explicitly dispatched down by the ISO in real-time, the resource's real-time revenues and costs for the resource are also accounted for in the bid cost recovery calculation.

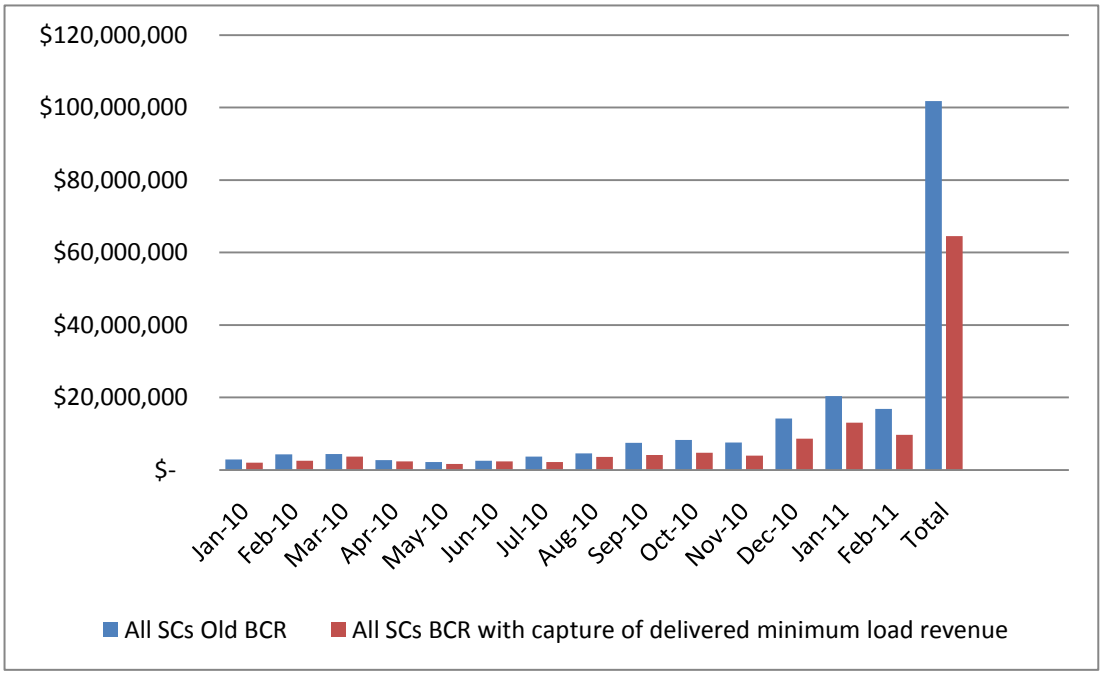
Q. Please explain the implication of using the day-ahead MEAF in determining the delivered portions of the day-ahead schedule above the minimum load.

A. As described above, the day-ahead MEAF appropriately accounts for IFM market revenues associated with the delivered portions of the day-ahead schedule but does not account for the revenue associated with the undelivered portions. 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 not 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 as I explain below, the use of delivered portions for IFM market revenue accounting, poses a different problem that causes exaggerated bid cost recovery payments to resources engaging in a specific bidding practice.

Q. Do you have anecdotal evidence of these two deficiencies?

A. Yes, below in figure 1 I demonstrate the total bid cost recovery amounts over the past 14 months. As illustrated by the red portions of the bar charts, if the day-ahead MEAF had not been used to account for delivered minimum load energy, the total bid cost recovery paid out would be approximately 36% percent less than what was actually paid. Note this does account for the second deficiency that under accounts for revenues the day-ahead scheduled energy above minimum load that is not delivered.

Figure 1: Impact of Under Accounting for Delivered Minimum Load Revenue



III. Bidding Practice Exaggerating Bid Cost Recovery Payments

Q. Has the deficiency in the use of the day-ahead MEAF you identify above been the cause of substantial overpayment of bid cost recovery in the ISO's markets?

A. No. As illustrated by the diagram below, and as I indicated above, bid cost recovery has been affected by the under-recovery of delivered energy for portions of the day-ahead schedule below the minimum load, but the under-recovery, on its own, has not caused a substantial amount of bid cost recovery payments prior to August 2010

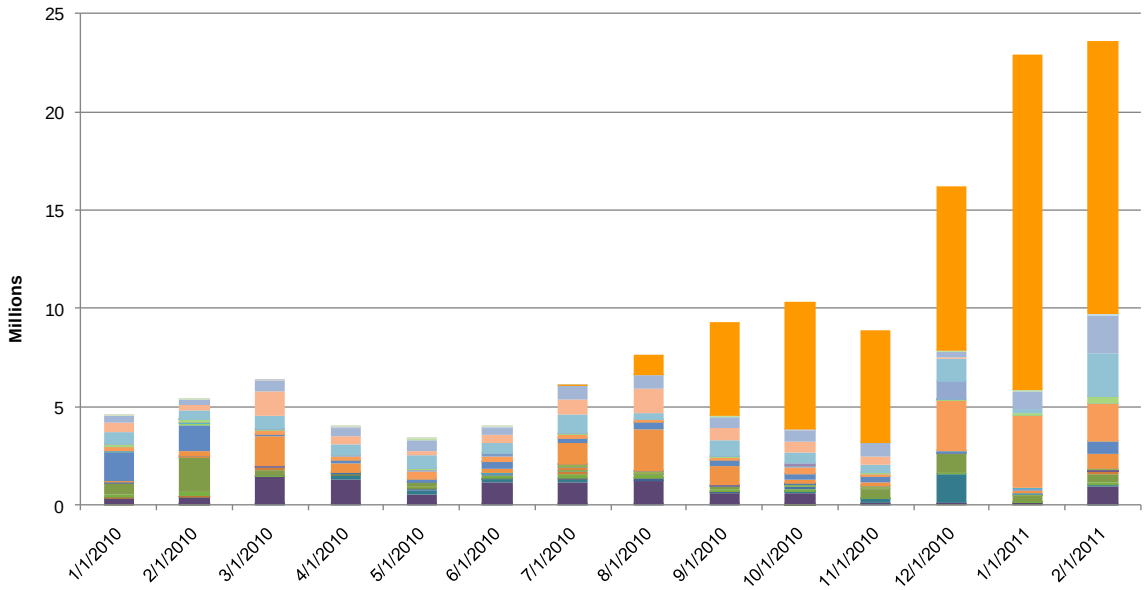
Q. In figure 2 you show a marked increase in bid cost recovery since August 2010. What is the cause of this increase?

A. The marked increase is due to a bidding practice that compels the ISO to commit a resource in the day-ahead market and then force the resource to be dispatched to minimum load in the real-time.

Q. Have you identified resources engaging in this bidding practice?

A. Yes. We have been able to identify that since August 2010, a number of resources have been bid into the market using this practice and that those resources have received substantially higher payments for bid cost recovery than previously received by the same resources when they were not bid into the market using the identified bidding practice. In figure 2, the bid cost recovery payment for resources that were bid into the ISO market pursuant to the observed bidding practice are represented in orange. Resources engaging in this practice earned over 50 percent of total bid cost recovery over the months of August 2010 through February 2011.

Figure 2: Total Bid Cost Recovery Paid to Resources January 2010 through February 2011.



Q. Please describe the observed bidding practice.

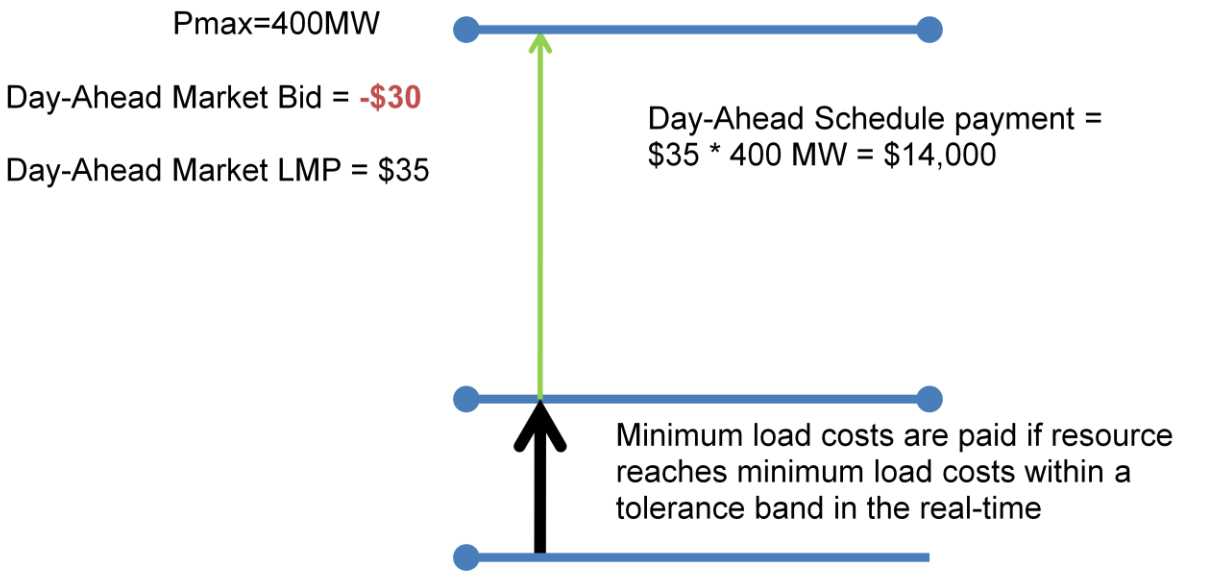
A. The bidding practice consists of a combined set of actions that has in most instances resulted in the overpayment of bid cost recovery to resources scheduled in the ISO's day-ahead market, but that have been dispatched in real-time down to minimum load.

Q. Please explain further.

A. I will explain the bidding practice through an example, using the same example generator I discussed above. In the first instance, the resource registers the maximum minimum load cost permissible under the ISO tariff (*i.e.*, 200 percent of their proxy costs, or their fuel rate). Assume for the sake of this example that there are no start-up costs. The resource then bids into the IFM at negative $30/MWh, the lowest bid the ISO permits. The negative bid submitted by the resource represents to the IFM that the resources is willing to pay the ISO $30/MWh to be dispatched. The IFM

considers the resource's high minimum load costs, but because of the negative energy bid price, the resource's effective price is $2.5/MWh at full load of 400MW. This compels a commitment by the IFM market and the resource is issued a day-ahead schedule for the resource's full capacity of 400 MW. The illustration below in figure 3 illustrates the impact of this practice to the IFM. The resource is paid $14,000 for its day-ahead scheduled energy.

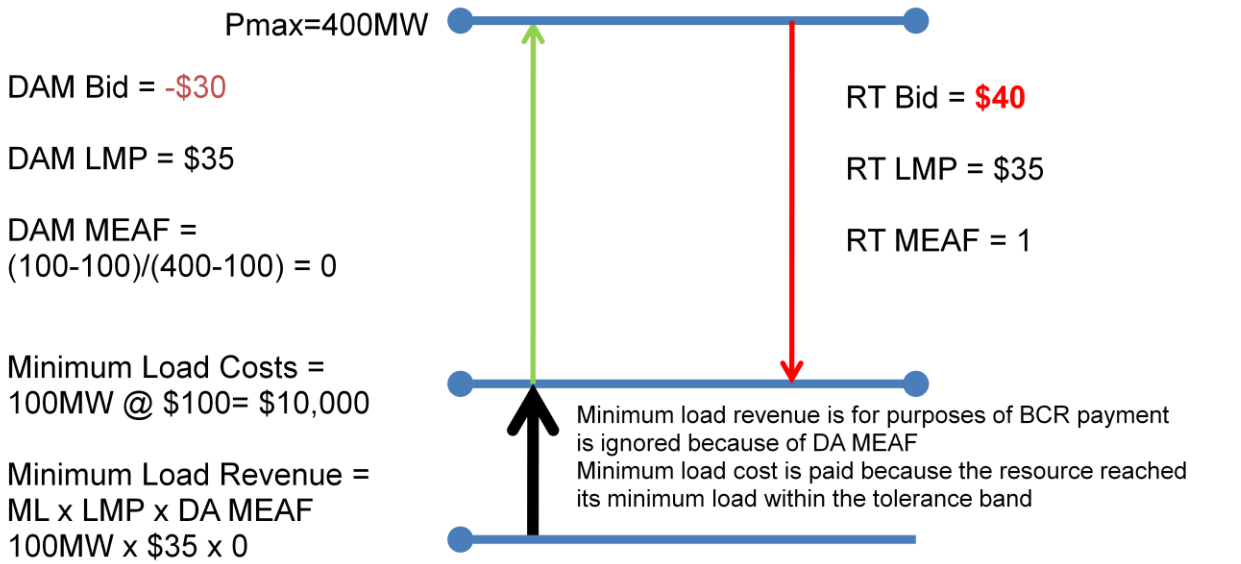
Figure 3: Day-Ahead Market Bidding Practice and Impact on the IFM Market



Now assume the resource bids the capacity committed in the day-ahead back into the real-time market at a positive $40/MWh. The market clears at $35/MWh and the resource is dispatched down through the real-time market. As a result, it is dispatched down to its minimum load in the real-time. Figure 4, below, illustrates the total market impact of this practice.

The resource is dispatched down to its minimum load because at the $40 bid price it is economic to decrement the resource from its day-ahead schedule. As described earlier the resource's day-ahead MEAF goes to 0. The minimum load costs are being fully considered in the bid cost recovery because the resource reached its minimum load within the applicable tolerance band. Note that that the real-time MEAF is 1 because the resource went to its minimum load as instructed.

Figure 4: Real-Time Bidding Practice and Overall Impact on the IFM

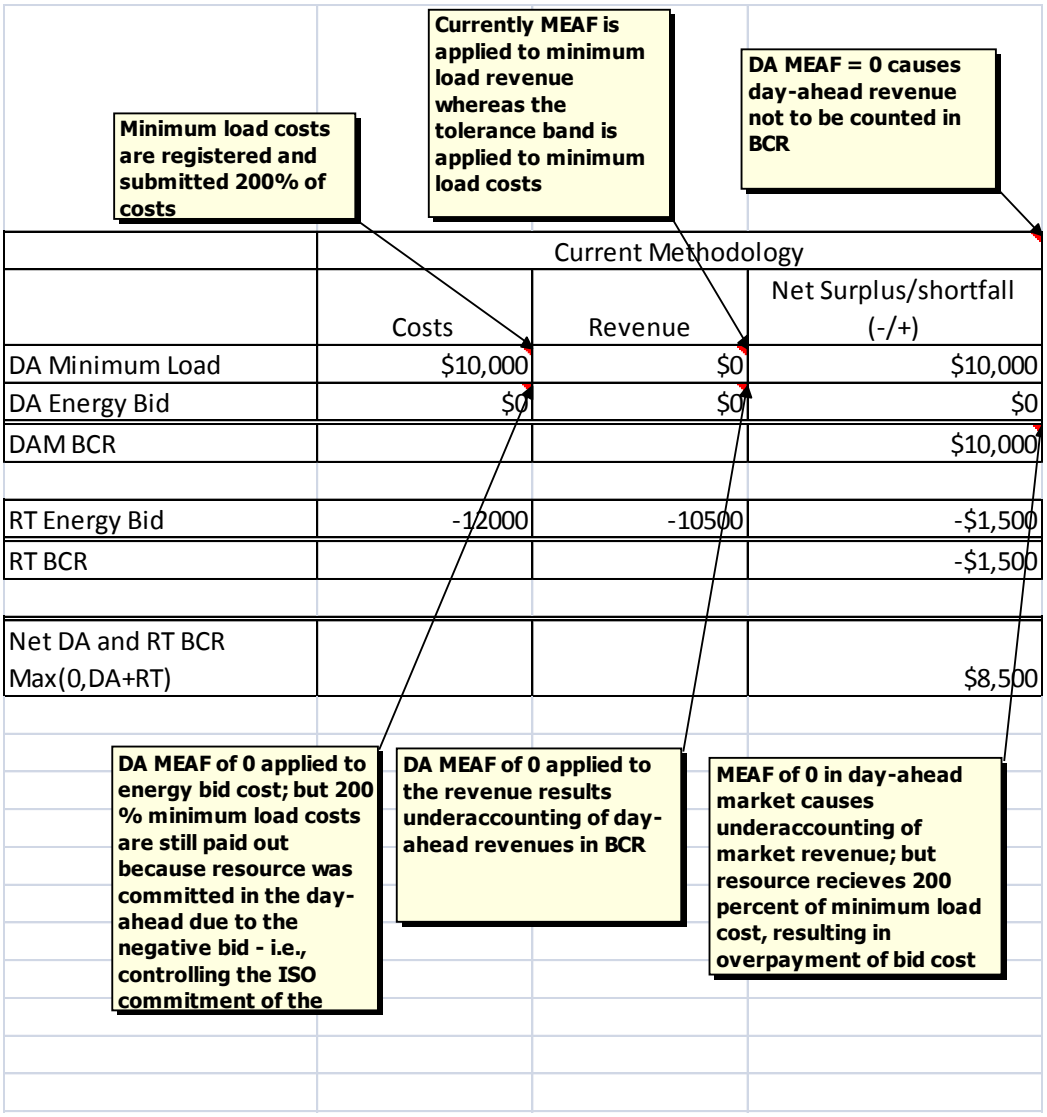


Q. Please explain the settlement outcome under this bidding practice?

A. In figure 5 below, I illustrate the settlement outcome for the resource under the current tariff rule and using the day-ahead MEAF to account for IFM market revenues with the delivered portions of the day-ahead schedule

below the minimum load. As indicated above the resource's minimum load cost of $10,000 is fully considered in the Bid Cost Recovery because the resource reached its minimum load, as illustrated in the "Costs" column for the "DA Minimum Load" row of figure 5. On the other hand, because the resource's day-ahead MEAF is driven down to zero, the IFM market revenues associated with both the minimum load energy and scheduled energy above minimum load accounted for are zero, as illustrated in the "Revenue" column of Figure 5. In real-time the resource's energy bid costs for its resources real-time 300 MW dispatch instruction below its Day-Ahead schedule to minimum load are accounted for are $-12,000 (*i.e.,* $40 * -300). These are offset by the market real-time revenues earned of -$10,500 ($35 x 300 MW), resulting in a total bid cost recovery payment of $8,500 to the resource, in addition to the market revenues obtained through the day-ahead schedule. Recall that their minimum load costs were $10,000 which is 200% of its proxy based minimum load costs of $5,000. However, in this case the resource was actually compensated a total of In this case the resource was paid $22,500, which represents its $8,500 Bid Cost Recovery in addition to its payment for the full day-ahead energy schedule $14,000, while it has incurred actual cost of $5,000 based on its proxy based costs, which are the only costs the resource incurred given that it never moved above its minimum load energy.

Figure 5: Settlement Outcome under Existing Tariff Rules and Practice



Q. Is the resource selling back its day-ahead scheduled energy into the real-time market when it is decreased to its minimum load?

A. In a sense it is. In real-time the resource is offering to sell-back its day-ahead position based on a bid of $40/Mwh. If the real-time price is below this real-time bid level, the resource will not be dispatched above it minimum load in real-time.

Q. Please explain why the resource does not lose money in this scenario?

A. The resource does not lose money in this scenario because the resource is able to recovery it minimum load costs which are registered at 200% of proxy costs while at the same time recovery its full day-ahead revenue for the full day-ahead schedule. Since the day-ahead MEAF is zero as a result of the real-time dispatch to minimum load, resources accounting for the day-ahead revenue associated with the day-ahead scheduled energy is zero and therefore the through their bid cost recovery they are compensated for minimum load costs up to 200 percent of their proxy costs and the full day-ahead revenue they receive for their day-ahead schedule, with some offsetting revenue from real-time sell-back.

Q. Is this an expected outcome of the workings of the IFM market?

A. No. Resources are committed in the IFM if there is a need to actually commit the resource because it is expected to be needed in the real-time. In this case, the resource through its day-ahead bids compel itself to be committed and scheduled at maximum output, with the apparent intent to have the ISO dispatch resource to a level not above minimum load in real-time.

Q. Would you parties to engage in this practice but for the bid cost recovery outcome?

A. No. But for the fact that the resources received a substantial pay out under bid cost recovery, in most instances I do not believe that the resources' bidding practice of bidding negative would be economic. The increase of minimum load costs to 200 percent along with the bid cost

recovery outcomes, appears to provide the incentive for this practice. Had the resource bid in the day-ahead market consistent with the resources actual energy costs, the resource would have likely not been committed and dispatched in the day-ahead market because it would have not been economic to do so. Looking at the example above, if the ISO had calculated IFM market revenues based on scheduled portions, as opposed to delivered portions, the resource would not have recovered any bid cost recovery payment. Figure 6 illustrates that based on the same example used above, the resource would obtain no bid cost recovery. This example is illustrated by: 1) applying a tolerance band approach of 1 to the minimum load revenue and 2) not applying MEAF to the revenue associated with the energy bid above minimum load, which results in no pro-ration of the IFM market revenues obtained by the resources per their day-ahead schedule. This is in contrast to the $8,500 obtained with the current methodology.

Figure 6: Market revenues Accounting Based on Scheduled Portions of Day-Ahead Schedule

	Based on Market Revenues for Scheduled Portions of the Day-Ahead Schedule		
	Costs	Revenue	Net Surplus/Shortfall (-/+)
DA Minimum Load	$10,000	$3,500	$6,500
DA Energy Bid	$0	$10,500	-$10,500
DAM BCR			-$4,000
RT Energy Bid	-12000	-10500	-$1,500
RT BCR			-$1,500
Net DA and RT BCR Max(0,DA+RT)			$0

DA MEAF = 1 means that all the market revenues associated with the day-ahead schedule are accounted for both portions above and below the minimum load

Q. Is there any risk that the resource will lose money engaging in this practice?

Q. To benefit from this bidding practice, how much above the LMP does the market participant have to bid in the real-time?

A. The resource needs to be bid in just above the LMP cleared in the real-time market. The smaller the difference between a resource's bid in real-time and the ultimate LMP the less real-time revenue is contributed to the bid cost recovery. In this example the resource has expressed a willing to buy-back energy from its day-ahead position at a price of $40/MWh. However, since LMP cleared at $35, the resource is able to buyback for

$5 less than its bid. Therefore relative to its bid, the resource earned at net $1,500 ($5 x 300MW) revenue from it real-time dispatch.

Q. Do they always have to be right about where the LMP clears in the real-time to benefit from this practice?

A. No. To the extent they are wrong in estimating the expected real-time price they may reduce their ultimate bid cost recovery but actual data indicates that the ultimate real-time revenue contribution is not sufficient to offset the registered minimum load costs.

Q. Why is the potential for others to engage in this practice pose a problem?

A. If the ISO does not change the bid cost recovery rules the incentive for parties to bid this way will persist.

Q. Does greater participation in this bidding practice pose a problem?

A. Yes. If other resources began bidding this way, the LMPs set through the IFM would begin to be distorted as they would no longer reflect the marginal cost of serving load. The ISO adopted the new LMP-based market with the intent of producing feasible day-ahead schedules and producing LMPs that reflect the marginal cost of doing business in the ISO market. If resources engage in the bidding practice discussed above, the IFM market will serve as a mechanism for loading resources, based on their start-up and minimum load bid costs that may or may not reflect their true fixed costs, nor would their negative bid reflect their variable costs. This may result in infeasible schedules in the day-ahead, forcing the ISO

to rely on the real-time market to ensure feasible dispatches are issued. This would shift the day-ahead market from a market predominantly settled based on LMP and shift the predominant settlement to bid cost recovery and eliminate the benefit of the day-ahead market and could hamper the ISO's ability to balance the system in real-time. The ISO's day-ahead prices would also cease to be good indicators of energy and congestion on the ISO system. For example, in the example above, if more and more resources were bid in under this practice, the day-ahead price cleared in the day-ahead market would drop down to closer to $2.5/MWh, which is not reflective of the marginal price of production but is being distorted for the resource to receive it minimum load costs which are not reflect in the marginal price of energy.

Q. Is there a threshold at which this practice would be sustainable for the market?

A. It is difficult to determine such a threshold, but it is not appropriate to allow the ISO's market to be tested in this way. Even with a small number of units scheduled under this practice, there is already evidence of erosion of the ISO market. The resources engaged in this manner are able to force the IFM to load them up the real-time at their full capacity, whether they are needed or not. The cost of doing so is fully spread to load through bid cost recovery. This eliminates the locational price signals the ISO intended to adopt by developing its LMP-based market.

IV. Proposed Solution

Q. Is there a solution to this problem?

A. Yes, the solution is to eliminate the incentive to engage in this practice by changing the accounting rules for market revenues used to offset bid cost recovery. The ISO tariff currently requires that in accounting for IFM market revenues used to offset bid costs, the ISO must account for the revenues associated with the delivered portions. As illustrated above, instead of basing the accounting of IFM market revenues on delivered portions of the day-ahead schedule, if the ISO modifies the rule so that in some cases the IFM market revenues accounting will be based on the scheduled amounts in the day-ahead schedules, as opposed to the delivered portions, the bid cost recovery over-payment will be eliminated.

Q. How will this new rule be implemented?

A. The ISO would change its market rule such that if in the real-time a resource is dispatched to lower levels than their day-ahead schedule, the resource's IFM market revenues accounting will be based on the day-ahead scheduled amounts as opposed to the delivered portions of the day-ahead schedule. This change would require a change to section 11.8.2.2 of the ISO tariff. For all other cases, the settlement rule that the IFM market revenue accounting is based on delivered portions of the day-ahead schedule will remain the same. In addition, the ISO will change the way in which it captures the revenue associated with the delivered portions of the day-ahead schedule at or below minimum load. Having discovered, as I discuss above, the shortcomings of the use of day-ahead

MEAF to account for market revenues with delivered portions of the day-ahead schedule, it is necessary to use a tool that does. It is appropriate to use the tolerance band to determine whether those revenues should be captured. As I discuss above, the use of the tolerance band results in the proper accounting of delivered portions. This is no change from the principle already contained in Section 11.8.2.2 of the ISO tariff that the ISO account market revenues associated with delivered portions of the day-ahead schedule.

Q. How does this change eliminate the unexpected market outcome you describe above?

A. Essentially, it ensures that IFM market revenues are accounted for correctly to adequately offset bid costs. This essentially eliminates the opportunity for the exaggerated bid cost recovery that incentivizes the bidding practice I describe above.

Q. Does this change eliminate the opportunity for resources not engaging in the bidding practice to receive bid cost recovery payments?

A. No, it does not. The rule is narrowly tailored to eliminate the opportunity of benefiting from overpayment of bid cost recovery but does not result in the unfair nullification of bid cost recovery where that recovery is appropriate. To ensure that the rule eliminates the opportunity for the unexpected market behavior I describe above and to mitigate for any unintended

consequences, ISO staff carefully reviewed a comprehensive set of scenarios that could result in the current observe anomaly.

Q. Please describe the scenarios you reviewed and your conclusions.

A. The scenarios consist of possible outcomes under the ISO's proposed tariff change and the ISO's use of the tolerance band to determine delivered portions of the minimum load portions of the day-ahead schedule. The scenarios can be grouped into 2 categories, with sub-scenarios for each category.

Q. Please describe the first category.

A. The first category consists of scenarios in which the resource is dispatched in real-time by the ISO above the day-ahead schedule level.

Sub-scenario 1.1: Under this scenario the resource's metered output is greater than or equal to the real-time dispatch level. This results in a day-ahead day-ahead MEAF of 1, which is applied to the day-ahead costs and revenue accounting, and a real-time MEAF of 1, which is applied to the real-time cost and revenue. Under this scenario, the resource will have the full bid cost recovery eligibility for both day-ahead and real-time since the resource has delivered all expected energy for day-ahead and real-time. Furthermore, under this this scenario the current tariff language and the proposed amendment to the tariff would result in the same bid cost recovery payments.

Sub-scenario 1.2: Under this scenario the resource's metered output is is between the total expected energy in and the day-ahead scheduled

energy greater. Under this scenario the day-head MEAF is 1 and is applied to day-ahead bid costs payment and the revenue accounting, and the real-time MEAF is between 0 and 1 and is applied to the real-time bid cost payment and revenue accounting. Under this scenario, the resource will have the full bid cost recovery eligibility for the day-ahead since it delivers fully the energy scheduled in the day-ahead schedule. For real-time, the resource's energy delivered above day-ahead schedule is considered as incremental energy in real-time and is subject to bid cost recovery. The real-time MEAF, which is between 0 and 1, will be used to apply to both real-time revenue accounting and bid cost payment. Again, under this scenario the current and the proposed changes to the market revenue accounting rules results in the same bid cost recovery.

Sub-scenario 1.3: Under this scenario the resource's meter delivery is between the day-ahead schedule and the minimum load. Under this scenario the day-ahead MEAF is between 0 and 1, which is applied to the day-ahead bid cost payment and market revenue accounting, and the real-time MEAF is zero, which is applied to the real-time bid cost payment and market revenue accounting. Under this scenario, the resource will be provided the bid cost recovery for the full day-ahead scheduled energy. The day-ahead bid-in energy in the area between the day-ahead and the meter is charged back to the resource at the real-time LMP through settlement of the resources uninstructed imbalance energy (UIE). Because of this charge there is no unjust gain from the payment of the

day-ahead scheduled energy, and therefore under the current and the proposed market revenue accounting rules, the day-ahead revenue associated with the day-ahead energy that is not delivered due to uninstructed deviations is not accounted for as market revenue when calculating the day-ahead bid cost recovery. Note costs or revenue associated with UIE are not factored in to the bid cost recovery calculations and, therefore, when a resource deviates below its day-ahead schedule without an explicit instruction from the ISO, the UIE settlement for energy offsets the resource's settlement of its day-ahead energy schedule. Under this scenario, the day-ahead MEAF is between 0 and 1 will be applied to both day-ahead energy bid cost and energy revenue. In this case the real-time MEAF is zero since this resource negatively deviates below the day-ahead schedule instead of following the real time market dispatch instructions. The application of the real-time will result in no real-time bid cost recovery payment for the resource. Finally, under this scenario because the ISO is going to start using the tolerance band to determine the accounting of IFM market revenues, the bid cost payment would be different than they are using the day-ahead MEAF to captured the delivered portions of the minimum load energy because the ISO will now capture all the delivered minimum load energy as contemplated under the ISO tariff instead of only the minimum load energy multiplied by the day-ahead MEAF. The real-time bid cost recovery will not be different than it is under the current approach. Overall, assuming the day-ahead

LMP is positive, the total bid cost recovery will be less than it is the current approach as a result of the revenue associated the day-ahead minimum load energy being accounted for.

Sub-scenario 1.4: Under this scenario the meter is at 0 MW. The day-ahead MEAF is 0, which is applied to the day-ahead bid cost payments and revenue accounting, and the real-time MEAF is 0, which is applied to the real-time bid cost payment and market revenue accounting. Under this scenario, the resource has not delivered any day-ahead or real-time energy; therefore there is no bid cost recovery for any day-ahead or real-time. Day-ahead and real-time MEAFs are zero. Finally, under the current and the proposed changes the bid cost recovery results are the same.

Q. Please explain the category 2 scenarios you considered.

A. These consist of scenarios in which in the real-time market the resource is dispatched ***below*** its day-ahead schedule amounts.

Sub-scenario 2.1: Under this scenario the resource's meter is above the day-ahead scheduled level. Under this scenario the day-ahead MEAF is 1, which is applied to the day-ahead bid cost payments and market revenue accounting, and the real-time MEAF is 0, which is applied to the real-time bid cost payments and market revenue accounting. Under this scenario, since this resource increments from the day-ahead schedule instead of decrementing consistent with the real-time market dispatch, there is no day-ahead bid cost recovery for any real-time energy delivered above instructed levels. Since this resource does deliver above the day-

ahead schedule, the entire day-ahead bid in energy is subject to bid cost recovery. Furthermore, under this scenario the current and the proposed changes the bid cost recovery results are the same.

Sub-scenario 2.2: Under this scenario the resource's metered delivery is between the day-ahead schedule level and real-time instructed level. Under this scenario the day-ahead MEAF, applied to the day-ahead bid cost payment and revenue accounting, is between 0 and 1, and the real-time MEAF, applied to the real-time bid cost payments and revenue accounting, is between 0 and 1. Under this scenario, since this resource delivered only a portion of the decremental energy that real-time market instructs, only the delivered portion of the real-time decremental energy is subject to bid cost recovery. Regarding day-ahead energy, this resource only incurs the cost up to the delivered amount. However the resource continues to receive the full amount of the day-ahead revenue based on the day-ahead schedule through its day-ahead energy settlement. Therefore, the day-ahead bid cost associated with the delivered energy amount will then be used to compare to the entire day-ahead revenue amount for day-ahead bid cost recovery purposes. Under the new rule, the day-ahead MEAF, which is between 0 and 1 is only applied to the day-ahead bid cost payment and is not applied to the market revenue accounting. Under this scenario, the resource using the proposed approach, the resource's full revenue associated with the minimum load energy and the energy associated with the day-ahead schedule above

minimum load are accounted for in the bid cost recovery calculation. The account of the day-ahead costs will not change from current approach. The real-time bid cost recovery does not change under the proposal. Overall the total bid cost recovery is reduced due to the accounting of the day-ahead energy revenue.

Sub-scenario 2.3: Under this scenario the resource's meter is between the real-time instructed level and the minimum load. Under this scenario the day-ahead MEAF, applied to the day-ahead bid cost payment and market revenue accounting, is between 0 and 1, and the real-time MEAF, applied to the real-time bid cost payment and market revenue accounting, is 1. Under this scenario, since this resource delivered the entire decremental energy that real-time market instructs it to, the entire instructed decremental energy is subject to real-time bid cost recovery. Regarding day-ahead energy, this resource only incurs the costs up to the delivered amount. However the resource continues to receive the full amount of the day-ahead revenue based on the day-ahead schedule through its energy day-ahead energy settlement. Therefore, the day-ahead bid cost associated with the delivered energy amount will then be used to compare to the entire day-ahead revenue amount for day-ahead bid cost recovery purposes. Under this principle, the day-ahead MEAF which is between 0 and 1 but only applied to the day-ahead bid cost and is not applied to the energy revenue. Under this scenario, the resource using the proposed approach, the resource's full revenue associated with

the minimum load energy and the energy associated with the day-ahead schedule above minimum load are accounted for in the bid cost recovery calculation. The account of the day-ahead costs will not change from current approach. The real-time bid cost recovery does not change under the proposal. Overall the total BCR is reduced due to the accounting of the day-ahead energy revenue.

Sub-scenario 2.4: Under this scenario the resource's meter is at 0 MW. Under this scenario the day-ahead MEAF, applied to the day-ahead bid cost payment and market revenue accounting, is between 0 and 1, and the real-time MEAF, applied to the real-time bid cost and revenue accounting, is 1. Under this scenario, since this resource delivered the entire decremental energy that real-time market instructs to, the entire instructed decremental energy is subject to bid cost recovery. Therefore real-time MEAF will be 1. Regarding day-ahead energy, this resource only incurs the cost up to the meter amount (zero in this case). However the resource continues to receive the full amount of the day-ahead revenue based on the day-ahead schedule through its energy day-ahead energy settlement Therefore, the day-ahead bid cost associated with the delivered energy amount will then be used to compare to the entire day-ahead revenue amount for day-ahead bid cost recovery purpose. Under this principle, the day-ahead MEAF is zero but only applied to the day-ahead bid cost, i.e., effectively no bid day-ahead bid cost recovery and is not applied to the energy revenue. Furthermore, under this scenario the

current and the proposed changes the bid cost recovery results are the same.

XI. Conclusion

Q. Does this conclude your declaration?

A. Yes, it does.

I affirm under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge, information, and belief.

Mark Rothleder

Executed this 18th day of March, 2011.