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March 14, 2005

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

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SECRETARY  
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FEDERAL ENERGY  
REGULATORY COMMISSION

**Re: *California Independent System Operator Corporation***

**Docket No. ER02-1656-021,  
ISO Response to Request Contained in the February 10, 2005 Guidance  
Order on Conceptual Proposal for Honoring Existing Transmission  
Contracts for Further Explanation on the "Perfect Hedge" Approach with  
Settlement Examples.**

Dear Secretary Salas:

On December 8, 2004, the California Independent System Operator Corporation ("CAISO") submitted for filing in the referenced docket its Proposal for Honoring Existing Transmission Contracts Under The California Independent System Operator Corporation's Amended Comprehensive Market Design Proposal ("ETC Proposal"). On February 10, 2005, the Federal Energy Regulatory Commission ("Commission") issued a Guidance Order on Conceptual Proposal for Honoring Existing Transmission Contracts ("February 10 Order"). In the February 10 Order, the Commission requested that the CAISO provide additional details on the "perfect hedge" approach for settlement of ETC schedules. The instant filing is intended to comply with the Commission's directives in the February 10 Order. In particular, this compliance filing includes settlement examples and answers to the questions posed by the Commission.

## **I. Background**

In the February 10 Order on Conceptual Proposal for Honoring of Existing Transmission Contracts, the Commission found "the CAISO's concept of the 'perfect hedge' appealing because it would provide financial protection to ETC rights holders against any congestion charges that may arise under the LMP design." (*Paragraph 61.*)

However, Commission stated in the February 10 Order that “the CAISO’s ‘perfect hedge’ lacks sufficient detail even at this conceptual stage regarding exactly how the mechanics of the ‘hedge’ would work, including the settlement and allocation of those costs that would result from the implementation of the ETC Proposal.”

The Commission requested “that the CAISO file with the Commission within 30 days of the date of issuance of this order additional details on the ‘perfect hedge’ approach, including responses to the issues discussed above. The CAISO should prepare examples with sufficient detail to ensure that the filing is comprehensive.” (*Paragraph 62.*)

## **II. Introduction**

At a public meeting on September 27, 2004 that was attended by stakeholders involved in the development of the Conceptual Proposal for treatment of ETCs under MRTU, the CAISO explained the “perfect hedge” concept for settling and allocating ETC-related congestion costs. The CAISO’s presentation and question-and-answer session that followed included examples how the proposal would work. The CAISO’s December 8, 2004 Transmittal Letter summarized one of these cost allocation examples.

The instant compliance filing contains a more detailed explanation of the mechanics of the “perfect hedge,” along with specific settlement examples, as directed by the Commission in its February 10 Order.

The theoretical examples presented in this filing illustrate the settlement of charges for ETC schedules with a particular focus on the reversal of congestion charges or credits using the “perfect hedge” mechanism. For these examples, transmission losses are not covered by the “perfect hedge” and are charged to the Scheduling Coordinator for the ETC holder. The possible need for any special treatment of losses associated with ETC schedules under MRTU will be discussed later this year as part of the stakeholder process for development of MRTU tariff language. As for other settlement charges, ETC schedules currently are, and under MRTU will continue to be, exempt from Wheeling Access charges. ETC schedules also currently receive exemption from the Congestion Management component of the Grid Management Charge (“GMC”). The structure of the Congestion Management bucket of GMC, which is based on energy flows across interzonal interfaces will change under MRTU, so any potential exemptions for GMC charges will be determined within a stakeholder process examining the entire GMC.

## **III. Explanation of the “Perfect Hedge”**

The CAISO emphasizes that the mechanics of the “perfect hedge” will shield the ETC rights holder from congestion charges for valid ETC schedules under locational marginal pricing. The CAISO will fully reverse the congestion charges (or payments in the event an ETC schedule creates counter-flows) associated with valid Day-Ahead ETC schedules and post-Day-Ahead ETC schedule changes.

As previously explained in the Transmittal Letter to the December 8, 2004 Filing, the “perfect hedge” mechanism employs two separate devices to prevent the congestion charge reversal for ETC schedules from having adverse financial impacts on non-ETC grid users and CRR holders. One device pertains to the Day-Ahead market and the other pertains to post-Day-Ahead ETC schedule changes. To reiterate, from the perspective of the ETC rights holder, both devices give the same result – the ETC rights holder would pay no congestion costs for Day-Ahead schedules or post-Day-Ahead changes to schedules that are confirmed to be consistent with the terms of the existing contract.

### **1. Day-Ahead Settlement**

The mechanism for implementing the “perfect hedge” is to offset exactly any Day-Ahead congestion charges that would be associated with Day-Ahead scheduled energy for a valid ETC on an hourly basis, as if it were charged for Day-Ahead congestion. This would have required the ETC holder to have an amount of CRRs exactly equal to the “perfect hedge.” While the “perfect hedge” does not require any accounting of the CRRs for the ETC holder, since there is an exact offset of congestion charges, the “perfect hedge” must be accounted for in the simultaneous feasibility test that allocates CRRs to non-ETC holders.

To minimize the potential for adverse financial impacts of the Day-Ahead “perfect hedge” on holders of CRRs (which are settled based on Day-Ahead prices), the CAISO will set aside CRR obligations that correspond to the ETC holders’ expected utilization of their rights for the purpose of performing the simultaneous feasibility optimization that is used for allocating CRRs to eligible parties and auctioning CRRs to the rest of the market. To make it perfectly clear, these ETC CRRs (which the Commission referred to as “paper” CRRs) are never actually released to any party. Rather, they serve as a placeholder in the CRR simultaneous feasibility test to prevent the CAISO from allocating or auctioning too many CRRs to other parties that would in practice turn out to be under-funded as a result of the “perfect hedge.”

To look at this another way, these “paper” CRRs are the CAISO’s estimate (with input from the ETC holders) of the CRRs the ETC holders would have requested if the CAISO did not create the “perfect hedge” mechanism, and instead was intending to charge ETC holders for congestion and allocate them CRRs to hedge their congestion exposure. Thus, just as the CAISO intends to do for non-ETC load-serving entities, the CAISO would create a set of CRRs that are estimated to provide an effective – but not excessive – hedge against the congestion charges that are expected to arise from ETC holders’ use of the grid but will not – under the “perfect hedge” – actually be collected by the CAISO. These “paper” ETC CRRs will then be modeled in the simultaneous feasibility test as if they were pre-allocated to ETC holders, so that the CRRs allocated or auctioned to other parties will be revenue adequate even though the “perfect hedge” exempts ETC schedules from paying any congestion charges.

To reiterate, the “paper” CRRs associated with ETCs will not be allocated or released to any entity. Thus, within the Day-Ahead settlement process there would be no cash flow

for these “paper” ETC CRRs because no congestion charges would be collected from ETC schedules nor paid to any holder of the “paper” ETC CRRs.

The CAISO would, of course, maintain an accounting record of the Day-Ahead ETC congestion charges that are reversed under the “perfect hedge,” as well as the hypothetical CRR revenue stream that would correspond to the “paper” ETC CRRs, because this will serve as important information to enable the CAISO to adjust the quantity of “paper” ETC CRRs as needed to accurately offset the “perfect hedge.” However, no revenues will be created for either the “perfect hedge” or the “paper” ETC CRRs, and thus no Scheduling Coordinator accounts would be debited or credited.

In Paragraph 61 of the February 10 Order, the Commission sought clarification of two issues related to settlement in the Day-Ahead market. These questions are addressed immediately below. Questions raised by the Commission regarding post-Day-Ahead settlement are discussed in the next section.

**a) Question #1**

The first clarification requested by the Commission in the February 10 Order is “whether revenues from the ‘paper CRRs’ flow to the neutrality account or are maintained in a separate account.”

As discussed above, there would be no dollar flows associated with the “paper” CRRs. No accounting entries are necessary because no revenues will be paid or received for congestion associated with ETC schedules in the Day-Ahead Market, and no entity receives a payment or charge associated with the “paper” CRRs.

The CAISO intends for the settlement statements of a Scheduling Coordinator representing an ETC rights holder to show – through an explicit line item – that whatever congestion charge is created by a valid ETC schedule is exactly reversed. This would demonstrate that ETC rights holders are fully protected, during each settlement interval, from congestion costs that arise from the exercise of their contract rights.

**b) Question #4**

Item (4) within paragraph 61 of the Guidance Order sought clarification regarding “how many CRRs should be withheld from the CRR allocation process in order to implement the ‘perfect hedge.’” The February 10 Order noted “that excess revenues from the ‘paper CRRs’ could serve to further reduce those costs associated with post day-ahead ETC schedule changes. It is also unclear how and to whom these costs are assigned.”

The CAISO, in consultation with stakeholders over the next several months, is currently undertaking the second iteration of the complex network assessment of the quantity of CRRs to be used in the optimization and simultaneous feasibility model. Therefore, the precise amount of CRRs that would be created for ETC usage but not allocated has yet to be determined. However, the CAISO’s intent is to create as many “paper” CRRs as are

necessary to offset the congestion charges expected to accrue to ETC schedules and to mirror the pattern of transmission usage by holders of those ETCs that will remain in force upon implementation of MRTU in 2007. The CAISO emphasizes that this criteria for the creation of “paper” CRRs associated with ETCs is the same as other CRRs that are destined for allocation to LSEs. Specifically, the CAISO’s objective is to reflect the actual usage of the grid so that the bundle of CRRs that is created will accurately reflect the congestion costs associated with each party’s use of the grid.

The CAISO notes that, based on the approach described above, there would be no “excess revenues” from the “paper” ETC CRRs as the Commission suggests, because there would be no revenues at all from these CRRs. Thus, there would be no surplus funds that could flow from the Day-Ahead market over to the Real-Time settlement to reduce the cost of applying the “perfect hedge” to post-Day-Ahead ETC schedule changes.

## **2. Post Day-Ahead Settlement**

In the February 10 Order, the Commission raised two questions pertaining to post-Day-Ahead settlement. These are discussed in this section. To set the framework for this discussion, one should first consider the situation without ETCs. In the Real-Time settlement, the CAISO collects congestion charges determined by the difference between the amount of money charged to Real-Time load and export deviations versus the amount of money paid to supply and import deviations, after covering the cost of losses. In contrast to the Day-Ahead settlement, there are no “Real Time CRRs” that would be entitled to the Real-Time congestion revenues. Yet these revenues create revenue non-neutrality for the CAISO that must be cleared in an appropriate manner. For every settlement interval, the CAISO will calculate the net total congestion revenues (or debits if applicable). This amount regardless of whether it is a credit or debit will then be allocated to Real Time control area load and exports.

When the CAISO incorporates ETCs into the scenario, we introduce the fact that ETC rights holders are entitled to submit post-Day Ahead ETC schedule changes into the HASP, or even after the HASP if their contracts allow, and not have to pay congestion costs. The “perfect hedge” will reverse all congestion charges associated with these post-Day Ahead ETC schedule changes, thereby reducing the amount of funds flowing into the neutrality account that is dedicated to Real-Time congestion settlement, relative to the amount of money that would have been collected if the ETCs were actually charged. To compensate for this impact of the “perfect hedge,” the CAISO proposes to exclude ETC schedules from receiving any refund of money from Real-Time congestion revenues. Thus, ETC schedules will neither pay into nor receive any refund from the Real-Time Congestion neutrality account. To the extent this offset does not balance exactly, any net cost of the Real Time “perfect hedge” will be allocated uniformly across all Real Time non-ETC metered demand.

Below, the CAISO discusses the two specific questions raised by the Commission.

**a) Question #2**

Item (2) in Paragraph 61 of the February 10 Order, the Commission inquires “whether congestion costs that result from valid post Day-Ahead ETC schedule changes will be paid for by surpluses in the neutrality account (which includes only congestion surpluses from the Real-Time market).”

As indicated above, the total congestion settlement in Real-Time (after reversing the Real-Time congestion charges/credits from ETC schedules) will normally be positive or in certain instances could be negative (for example during transmission outages). In either case, the net total congestion revenues or charges in real time will be distributed to non-ETC metered demand for every settlement interval. ETC rights holders would be neither harmed nor benefited by real-time congestion costs.

**b) Question #3**

In question (3) in paragraph 61, the Commission asked “whether the real-time congestion revenues that accrue to the neutrality account will be sufficient to cover the costs associated with ETC holders’ scheduling changes following the day-ahead market.”

The CAISO expects that the collection of all non-ETC Real-Time congestion charges will normally produce a positive balance for every settlement interval. It is possible, however, under very unusual circumstances, for the net total congestion settlement in Real-Time to be a net charge instead of net revenue. For example, if there were congestion only on a derated path and there were no congestion elsewhere, the result could be a net congestion charge during a limited number of settlement intervals. However, the CAISO believes these would be rare occurrences and that for the majority of settlement intervals, and certainly over a long-term basis, this neutrality account will have positive funds to disburse.

To summarize, the net congestion settlement amount, whether it is a charge or revenue, would be allocated to non-ETC metered demand. Under most situations this should be a positive amount and non-ETC demand will not be adversely affected.

**IV. ETC “Perfect Hedge” Examples**

In paragraph 62 of the February 10 Order, the Commission requested that the CAISO provide examples of how the “perfect hedge” mechanism will function. These examples are provided below.

**A. Example A**

This simple example assumes a balanced ETC schedule from the point of injection to the ETC sink. Under the Market Redesign, all ETC schedules will be submitted to the

CAISO as equally balanced between two points.

- This ETC has transmission rights of 120 MW from the injection point A to the ETC sink B. (Total ETC Entitlement for (A-to-B) = 120 MW.)

#### Day-Ahead Settlement

- The balanced Final Day-Ahead schedule for this ETC is 100 MW injection at A and 100 MW withdrawal at B. This schedule is fully accepted due to the scheduling priority given to ETCs.
- The Day-Ahead LMP at point A is \$40. The Day-Ahead LMP at point B is \$50, of which \$9 is the congestion charge and \$1 is the cost of marginal losses from A to B.
- The congestion charge for this ETC schedule [100 MW \* (-\$9) = -\$900] is reversed. No entity pays or receives payment for this congestion. The “paper” CRRs held in concept by the CAISO is assumed to hedge this congestion.

#### Real-Time Settlement

- Real-Time settlement includes the Hour Ahead Scheduling Process (HASP) and any post-HA schedule changes in accordance with the terms of the ETC.
- The ETC holder submits a balanced 20 MW increase injection at A and withdrawal at B, thus utilizing the full allowance of its contractual rights.
- The Real-Time LMPs and MW quantities remain constant across the six 10-minute intervals of the operating hour.
- The Real-Time LMP is \$40 at point A and \$52 at point B, of which \$11 is the congestion charge and \$1 is the cost of marginal losses from A to B.
- The congestion charge on the settlement statement for this ETC schedule [20 MW \* (-\$11) = \$220] is reversed.

### **B. Example B**

This more detailed example shows the reversal of congestion charges from ETC schedules in the Day-Ahead and post Day-Ahead market when the ETC’s post Day-Ahead schedule is reduced or increased. The cost allocations also are shown under each scenario. This example also compares settlement statements between an ETC Schedule and two non-ETC Schedules.

This example assumes a balanced ETC schedule from the point of injection to the ETC sink. ETC schedules will be submitted to the CAISO as equally balanced between two points.

- This is a 2-node network with total transfer capability of 1,000 MW from A to B.
- There are three Scheduling Coordinators: SC1, SC2 and SC3.
- SC2 has a 100 MW ETC from A to B.

### Day-Ahead Settlement

- The final Day-Ahead schedules breakdown as follows:
  - SC1 = 550 MW injection at node A and 400MW withdrawal at node B
  - SC2 = 100 MW injection at node A and 100 MW withdrawal at node B
  - SC3 = 400 MW injection at node A and 500 MW withdrawal at node B
  
- The system losses of 50 MW are served by SC1 and are included in its final Day Ahead schedule at node A.
- The total injections at node A = 1,050 MW. Total withdrawals at node B = 1,000 MW.
- The LMPs at node A break down into the following marginal cost components: Marginal Energy ( $MCE_A$ ) = \$40, Marginal Congestion ( $MCC_A$ ) = \$0, and Marginal Loss ( $MCL_A$ ) = \$0.
- The LMPs at node B break down into the following marginal cost components: Marginal Energy ( $MCE_B$ ) = \$40, Marginal Congestion ( $MCC_B$ ) = \$9, and Marginal Loss ( $MCL_B$ ) = \$4.
- Node A is assumed to be the reference bus; i.e.,  $MCC_A$  and  $MCL_A$  = \$0, so that the congestion and loss components of the LMP at any other node X represent the costs of congestion and losses, respectively, of moving one MWh of energy from node A to node X.
- 900 MW of CRR obligations associated with the A-B network have been allocated in the following quantities: SC1 = 400 MW and SC3 = 500 MW
- 100 MW of CRR obligations have been “retained” by the ISO in accordance with the Day-Ahead “perfect hedge” device.
- A positive/negative settlement translates as a Payable to ISO/Payable to SC.
- A positive/negative MW schedule corresponds to an injection/withdrawal into/out of the A-B network.

### Day-Ahead Energy Settlement

| SC           | Source MW | $MCE_A$ | Source \$  | Sink MW | $MCE_B$ | Sink \$  | Total \$         |
|--------------|-----------|---------|------------|---------|---------|----------|------------------|
| SC1          | 550       | \$40    | (\$22,000) | (400)   | \$40    | \$16,000 | (\$6,000)        |
| SC2          | 100       | \$40    | (\$4,000)  | (100)   | \$40    | \$4,000  | \$0              |
| SC3          | 400       | \$40    | (\$16,000) | (500)   | \$40    | \$20,000 | \$4,000          |
| <b>Total</b> |           |         |            |         |         |          | <b>(\$2,000)</b> |

The balance of (\$2,000) is offset by a debit adjustment to the CRR Balancing Account in the Day-Ahead market. This amount represents the actual cost of losses.



Day-Ahead Congestion Settlement

| SC    | Source MW                | MCC <sub>A</sub> | Source \$ | Sink MW | MCC <sub>B</sub> | Sink \$ | Total \$ |
|-------|--------------------------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | 550                      | \$0              | \$0       | (400)   | \$9              | \$3,600 | \$3,600  |
| SC2   | 100                      | \$0              | \$0       | (100)   | \$9              | \$900   | \$900    |
| SC2   | Perfect Hedge Adjustment |                  |           |         |                  |         | (\$900)  |
| SC3   | 400                      | \$0              | \$0       | (500)   | \$9              | \$4,500 | \$4,500  |
| Total |                          |                  |           |         |                  |         | \$8,100  |

Note that SC1 and SC3 get charged a total of \$8,100 for Day-Ahead congestion. SC2's congestion costs of \$900 is reversed. So SC2 does not incur congestion costs.

Day-Ahead CRR Obligation Accrual

| SC    | Source MW                | MCC <sub>A</sub> | Source \$ | Sink MW | MCC <sub>B</sub> | Sink \$   | Total \$  |
|-------|--------------------------|------------------|-----------|---------|------------------|-----------|-----------|
| SC1   | 400                      | \$0              | \$0       | (400)   | \$9              | (\$3,600) | (\$3,600) |
| ISO   | 100                      | \$0              | \$0       | (100)   | \$9              | (\$900)   | (\$900)   |
| ISO   | Perfect Hedge Adjustment |                  |           |         |                  |           | \$900     |
| SC3   | 500                      | \$0              | \$0       | (500)   | \$9              | (\$4,500) | (\$4,500) |
| Total |                          |                  |           |         |                  |           | (\$8,100) |

Note that \$8,100 is payable to SC1 and SC3 who hold CRR obligations and this is fully funded by the Day-Ahead congestion revenue, as demonstrated in the box above. Also note that the "paper" ETC CRRs are not settled.

Day-Ahead Loss Settlement

| SC    | Source MW | MCL <sub>A</sub> | Source \$ | Sink MW | MCL <sub>B</sub> | Sink \$ | Total \$ |
|-------|-----------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | 550       | \$0              | \$0       | (400)   | \$4              | \$1,600 | \$1,600  |
| SC2   | 100       | \$0              | \$0       | (100)   | \$4              | \$400   | \$400    |
| SC3   | 400       | \$0              | \$0       | (500)   | \$4              | \$2,000 | \$2,000  |
| Total |           |                  |           |         |                  |         | \$4,000  |

Note that all SCs including the ETC holder pay for the marginal loss costs which is \$4,000 in this case.

CRR Balancing Account Activity (for CAISO internal tracking)

| Description              | Debit   | Credit    | Total     |
|--------------------------|---------|-----------|-----------|
| DA Energy Settlement     | \$2,000 | \$0       | \$2,000   |
| DA Congestion Settlement | \$0     | (\$8,100) | (\$8,100) |
| DA CRR Obligation Payout | \$8,100 | \$0       | \$8,100   |
| DA Loss Settlement       | \$0     | (\$4,000) | (\$4,000) |
| Total                    |         |           | (\$2,000) |

In this particular example, the difference between the marginal loss revenues and the actual cost of losses is \$2,000 which represents the over-collection of marginal losses in the Day-Ahead market. This amount will be paid to the CRR Balancing Account. The CRR Balancing Account will be used to reduce or eliminate potential congestion revenue shortfall of CRR holders. This CRR Balancing Account will be cleared monthly and yearly. Any surplus funds in the CRR Balancing Account at the time of the yearly clearing will be paid to PTOs in proportion to their Transmission Revenue Requirement.

Real Time – Case 1 (ETC holder reduces schedule post Day-Ahead)

This example illustrates settlement when the ETC schedule is decreased in the post-Day-Ahead timeframe, which may extend up to 20 minutes before Real Time if the terms of the contracts allow.

- The Real-Time LMPs and metered quantities are constant across the six 10-minute intervals of the trade hour.
- The differentiation of imbalance energy as either Instructed or Uninstructed Energy will be ignored in this example.
- The LMPs at node A and B break down into the following marginal cost components:  $MCE_A = \$40$ ,  $MCC_A = \$0$ ,  $MCL_A = \$0$ ,  $MCE_B = \$40$ ,  $MCC_B = \$11$  and  $MCL_B = \$4$ . Node A is assumed to be the reference bus.
- The ETC holder (SC2) submits a valid post Day-Ahead balanced reduction of 20 MW at A and B.
- Deviations are based on the following schedule and meter data:

| SC    | Node | Schedule | Meter Data | Deviation |
|-------|------|----------|------------|-----------|
| SC1   | A    | 550      | 580        | 30        |
| SC1   | B    | (400)    | (430)      | (30)      |
| SC2   | A    | 100      | 80         | (20)      |
| SC2   | B    | (100)    | (80)       | 20        |
| SC3   | A    | 400      | 390        | (10)      |
| SC3   | B    | (500)    | (490)      | 10        |
| Total |      | 50       | 50         | 0         |

- Note that total injections at node A of 1050 MW and total withdrawal at node B of 1000 MW remain the same as in the Day-Ahead.

Real-Time Energy Settlement

| SC    | Source MW | MCE <sub>A</sub> | Source \$ | Sink MW | MCE <sub>B</sub> | Sink \$ | Total \$ |
|-------|-----------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | 30        | \$40             | (\$1,200) | (30)    | \$40             | \$1,200 | \$0      |
| SC2   | (20)      | \$40             | \$800     | 20      | \$40             | (\$800) | \$0      |
| SC3   | (10)      | \$40             | \$400     | 10      | \$40             | (\$400) | \$0      |
| Total |           |                  |           |         |                  |         | \$0      |

In this example, since the total net injection at A and withdrawal at B is the same as in the Day-Ahead market, the net Real-Time energy settlement is zero and no adjustment to the Metered Demand is required.

Real-Time Congestion Settlement

| SC    | Source MW                | MCC <sub>A</sub> | Source \$ | Sink MW | MCC <sub>B</sub> | Sink \$ | Total \$ |
|-------|--------------------------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | 30                       | \$0              | \$0       | (30)    | \$11             | \$330   | \$330    |
| SC2   | (20)                     | \$0              | \$0       | 20      | \$11             | (\$220) | (\$220)  |
| SC2   | Perfect Hedge Adjustment |                  |           |         |                  |         | \$220    |
| SC3   | (10)                     | \$0              | \$0       | 10      | \$11             | (\$110) | (\$110)  |
| Total |                          |                  |           |         |                  |         | \$220    |

SC2's Real-Time congestion revenues of \$220 are reversed and credited to non-ETCs in proportion to their Metered Demand as shown below:

$$SC1 = (\$220) * 430/920 = (\$102.83)$$

$$SC3 = (\$220) * 490/920 = (\$117.17)$$

where Non-ETC Metered Demand = 430 MW + 490 MW. = 920 MW.

So, SC1 and SC3 receive the real time congestion revenues.

Real-Time Loss Settlement

| SC    | Source MW | MCL <sub>A</sub> | Source \$ | Sink MW | MCL <sub>B</sub> | Sink \$ | Total \$ |
|-------|-----------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | 30        | \$0              | \$0       | (30)    | \$4              | \$120   | \$120    |
| SC2   | (20)      | \$0              | \$0       | 20      | \$4              | (\$80)  | (\$80)   |
| SC3   | (10)      | \$0              | \$0       | 10      | \$4              | (\$40)  | (\$40)   |
| Total |           |                  |           |         |                  |         | \$0      |

No adjustment to the Metered Demand Account is required.

Real Time – Case 2 (ETC holder increases schedule post Day-Ahead)

This example illustrates settlement when the ETC schedule is increased in the post-Day-Ahead timeframe, which may extend up to 20 minutes before Real Time if the terms of the contracts allow.

Modifications to the RT assumptions are as follows:

- SC2 has a 120 MW ETC from A to B.
- The ETC holder (SC2) submits a valid post Day-Ahead balanced increase of 20 MW at A and B.
- Deviations are based on the following schedule and meter data:

| SC    | Node | Schedule | Meter Data | Deviation |
|-------|------|----------|------------|-----------|
| SC1   | A    | 550      | 540        | (10)      |
| SC1   | B    | (400)    | (390)      | 10        |
| SC2   | A    | 100      | 120        | 20        |
| SC2   | B    | (100)    | (120)      | (20)      |
| SC3   | A    | 400      | 390        | (10)      |
| SC3   | B    | (500)    | (490)      | 10        |
| Total |      | 50       | 50         | 0         |

- Note that total injections at node A and node B remain the same as in the Day-Ahead.

Real-Time Energy Settlement

| SC    | Source MW | MCE <sub>A</sub> | Source \$ | Sink MW | MCE <sub>B</sub> | Sink \$ | Total \$ |
|-------|-----------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | (10)      | \$40             | \$400     | 10      | \$40             | (\$400) | \$0      |
| SC2   | 20        | \$40             | (\$800)   | (20)    | \$40             | \$800   | \$0      |
| SC3   | (10)      | \$40             | \$400     | 10      | \$40             | (\$400) | \$0      |
| Total |           |                  |           |         |                  |         | \$0      |

No adjustment to the Metered Demand is required.

RT Congestion Settlement

| SC    | Source MW                | MCC <sub>A</sub> | Source \$ | Sink MW | MCC <sub>B</sub> | Sink \$ | Total \$ |
|-------|--------------------------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | (10)                     | \$0              | \$0       | 10      | \$11             | (\$110) | (\$110)  |
| SC2   | 20                       | \$0              | \$0       | (20)    | \$11             | \$220   | \$220    |
| SC2   | Perfect Hedge Adjustment |                  |           |         |                  |         | (\$220)  |
| SC3   | (10)                     | \$0              | \$0       | 10      | \$11             | (\$110) | (\$110)  |
| Total |                          |                  |           |         |                  |         | (\$220)  |

SC2's real time congestion charges of \$220 are reversed and the net total real time congestion charges are debited to the Non-ETCs (in this case SC1 and SC3) in proportion

to their Metered Demand as shown below:

$$SC1 = \$220 * 390/880 = \$97.5$$

$$SC3 = \$220 * 490/880 = \$122.5$$

$$\text{where Non-ETC Metered Demand} = 390 \text{ MW} + 490 \text{ MW} = 880 \text{ MW}$$

RT Loss Settlement

| SC    | Source MW | MCL <sub>A</sub> | Source \$ | Sink MW | MCL <sub>B</sub> | Sink \$ | Total \$ |
|-------|-----------|------------------|-----------|---------|------------------|---------|----------|
| SC1   | (10)      | \$0              | \$0       | 10      | \$4              | (\$40)  | (\$40)   |
| SC2   | 20        | \$0              | \$0       | (20)    | \$4              | \$80    | \$80     |
| SC3   | (10)      | \$0              | \$0       | 10      | \$4              | (\$40)  | (\$40)   |
| Total |           |                  |           |         |                  |         | \$0      |

No adjustment to the Metered Demand is required.

This example does not show any loss revenues in Real-Time since the assumption was that the total injections of 1050 MW at A and total withdrawal of 1000 MW at B do not change between Day-Ahead and Real-Time, although the individual SC's schedule changes. Basically, SC1 and SC3 are re-dispatched post Day-Ahead to accommodate SC2 (the ETC Holders) schedule change post Day-Ahead. If there were any Real Time loss revenues those revenues would have been paid to all metered demand including the ETCs.

**C. Example C**

This example demonstrates how the “perfect hedge” would be applied to an ETC schedule under a special scenario in which ETC rights are from an injection point to a grid location that is not the ETC sink.

Day-Ahead Settlement

- An ETC has transmission rights of 100 MW from the injection point A to withdrawal point B, but the actual ETC sink (load) is at point C. In this case the ETC holder will be charged for congestion from node B to node C.
- The balanced Final Day-Ahead schedule for this ETC is 100 MW injection at A and 100 MW withdrawal at C.
- The Day-Ahead LMP at point A is \$40. The Day-Ahead LMP at point B is \$50, of which \$9.50 is the congestion charge and \$.50 is the cost of marginal losses from A to B. The Day-Ahead LMP at point C, which is the ETC schedule's sink, is \$53, of which \$12 is the congestion charge and \$1 is the marginal losses from A to C.
- Under the Day-Ahead Energy Settlement, the ETC holder gets charged: 100 MW \* (\$53) – 100 (\$40) = \$13000, but would receive a credit of 100 MW \* (\$9.5) or (\$950) for congestion costs between node A and B.

### Real-Time Settlement

- The ETC holder submits a balanced 20 MW increase injection at A and withdrawal at C.
- The Real-Time LMPs and MW quantities remain constant across the six 10-minute intervals of the operating hour.
- The Real-Time LMP is \$40 at point A and \$52 at point B, of which \$11.50 is the congestion charge and \$.50 is the cost of marginal losses from A to B. The Real-Time LMP at point C is \$55 of which \$14 is the congestion charge and \$1 is the marginal losses from A to C.
- Under RT Energy Settlement, ETC holder gets charged:
- $20 \text{ MW} * (\$55) - 20 (\$40) = \$300$ , but would receive a credit of  $20 \text{ MW} * (\$11.5)$  or (\$230) for congestion costs between node A and B.

The cost allocation methodology here is the same as previous examples.

Thus, in Example C the congestion charges between A and B are reversed, but the ETC holder is charged for congestion costs between B and C. The same logic would apply for special scenarios in which the submitted schedule goes from A to C, but the ETC rights are from B to C, i.e., the source of the ETC schedule is not within the ETC rights. In this case, the ETC holder would be charged for any congestion between A and B, but the congestion charges between B and C would be reversed.

#### **IV. Conclusion**

Attachment A to this filing contains a form of notice of this filing suitable for publication in the Federal Register, along with a computer diskette containing the Notice. Two additional copies of this compliance filing are enclosed to be date-stamped and returned to our messenger. The CAISO is serving copies of this filing on all parties on the official

service list for the captioned docket. In addition, the CAISO is posting this filing on the CAISO Home Page. If there are questions concerning the filing, please contact the undersigned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'DRubin', written over a horizontal line.

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**ATTACHMENT A**



NOTICE SUITABLE FOR PUBLICATION  
IN THE FEDERAL REGISTER

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System ) Docket No. ER02-1656-021  
Operator Corporation )

Notice of Filing

[ ]

Take notice that, on March 14, 2005, the California Independent System Operator Corporation (ISO) submitted a filing to comply with the Commission's February 10, 2005 order in the captioned docket, 110 FERC ¶ 61,113. In particular, the ISO has provided additional information to allow the Commission and the parties to evaluate the ISO's "perfect hedge" proposal which is an element of the ISO's proposed treatment of existing contracts under the ISO's Market Redesign and Technology Upgrade.

The ISO states that this filing has been served upon all parties on the official service list for the captioned docket. In addition, the ISO has posted this filing on the ISO Home Page.

Any person desiring to intervene or to protest this filing should file with the Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, D.C. 20426, in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a motion to intervene. All such motions or protests should be filed on or before the comment date, and, to the extent applicable, must be served on the applicant and on any other person designated on the official service list. This filing is available for review at the Commission or may be viewed on the Commission's web site at <http://www.ferc.gov>, using the **eLibrary** (FERRIS) link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, please contact FERC Online Support at [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov) or toll-free at (866) 208-3676, or for TTY, contact (202)502-8659. Protests and interventions may be filed electronically via the Internet in lieu of paper; see 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's web site under the "e-Filing" link. The Commission strongly encourages electronic filings.

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