CALIFORNIA ISO

August 5, 2003

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

**Re: California Independent System Operator Corporation
        Docket No. ER03-683-003**

Dear Secretary Salas:

Enclosed for electronic filing please find Motion for Leave to File Answer and Answer of the California Independent System Operator Corporation to the Motion to Intervene and Protests Concerning the June 30, 2003 Compliance Filing, submitted in the above-referenced docket.

Thank you for your assistance in this matter.

Respectfully submitted,

Anthony J. Ivancovich
Counsel for The California Independent
  System Operator Corporation

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

California Independent System   )   Docket No. ER03-683-003
  Operator Corporation   )

**MOTION FOR LEAVE TO FILE ANSWER AND ANSWER OF
THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION TO
THE MOTION TO INTERVENE AND PROTESTS CONCERNING THE JUNE
30, 2003 COMPLIANCE FILING**

I. INTRODUCTION AND SUMMARY

On March 31, 2003, the California Independent System Operator Corporation ("ISO")[1] submitted Amendment No. 50 to the ISO Tariff ("Amendment No. 50") in the above-referenced docket. Amendment No. 50 had two purposes: (1) to make market-related changes to the ISO Tariff to provide a means to improve current management of Intra-Zonal Congestion and mitigate local market power; and (2) to make data-sharing changes to the ISO Tariff to allow the ISO to share Generator Outage information with entities operating transmission and distribution systems affected by the Outage.

On May 30, 2003, the Commission issued an Order (103 FERC ¶ 61,265 (2003) ("May 30 Order") concerning Amendment No. 50. In that Order, the Commission (1) rejected the ISO's use of a cost-based proxy bid to Dispatch Generating Units to mitigate Intra-Zonal Congestion, (2) authorized the ISO to Dispatch units using a decremental reference price to mitigate Intra-Zonal Congestion, (3) rejected the ISO's proposal to publish transfer capability limits in

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[1]   Capitalized terms not otherwise defined herein shall have the meaning set forth in the Master Definitions Supplement, Appendix A to the ISO Tariff.

advance, (4) authorized the ISO to share generator outage information with certain affected parties, and (5) directed the ISO to submit a compliance filing in which the ISO should further explain the procedure it intends to utilize in Dispatching Generating Units in dealing with Congestion.

On June 30, 2003, the ISO submitted its Compliance Filing ("June 30 Compliance Filing"). The ISO submitted an Addendum to the June 30 Compliance Filing on July 18, 2003 ("July 18 Addendum"). The July 18 Addendum contained, *inter alia*, details on how the independent entity calculating reference prices, Potomac Economics, Ltd. ("Potomac"), would determine decremental reference prices.

On July 21, in response to the Commission's July 2 notice of filing, various parties[2] submitted filings in response to the June 30 Compliance Filing. Pursuant to Rules 212 and 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. §§ 385.212, 385.213, the ISO hereby requests leave to file an answer, and files its answer, to the motion to intervene and protests submitted in the above-referenced docket.[3] The ISO does not oppose the intervention of the

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[2]   Duke Energy North America LLC and Duke Energy Trading and Marketing L.L.C. (collectively, "Duke") submitted a motion to intervene in response to the June 30 Compliance Filing. Protests concerning the June 30 Compliance Filing were submitted by the following entities: the California Department of Water Resources State Water Project ("SWP"); Coral Power, L.L.C., Energia Azteca X, S. de R.L. de C.V., and Energia de Baja California, S. de R.L. de C.V, and Termoelectrica De Mexali ("collectively, the "Border Generator Group" or "Border"); Duke; the Independent Energy Producers Association ("IEP"); Dynegy Power Marketing, Inc., El Segundo Power, LLC, Long Beach Generation LLC, Cabrillo Power I LLC, Cabrillo Power II LLC, Reliant Energy Power Generation, Inc., Reliant Energy Services, Inc., Mirant Americas Energy Marketing, L.P., Mirant California, LLC, Mirant Delta, LLC, Mirant Potrero, LLC and Williams Energy Marketing & Trading Company (collectively, the "Indicated Generators").
[3]   Some of the parties commenting on the June 30 Filing request affirmative relief in pleadings styled as protests. The ISO is entitled to respond to these requests for relief notwithstanding the labels applied to them. *Florida Power & Light Co.*, 67 FERC ¶ 61,315 (1994). To the extent this answer is deemed an answer to protests, the ISO requests waiver of Rule 213 (18 C.F.R. § 385.213) to permit it to make this Answer. Good cause for this waiver exists here

party that has sought leave to intervene in this proceeding. As explained below,

however, the ISO believes that the June 30 Compliance Filing and July 18

Addendum should be accepted as submitted to the Commission, and as

supplemented in the discussion herein, and that the relief requested in the filings

submitted in opposition to the June 30 Filing should be denied.

II.   ANSWER

A. The ISO's July 18 Addendum Establishes an Appropriate Methodology for Calculating the Decremental Reference Price

Several parties protest the June 30 Compliance Filing on the grounds that

it (1) does not reflect the methodology for calculating reference prices proposed

by Potomac, and (2) inappropriately uses the methodology for establishing

incremental reference prices, as shown in Appendix A to the Market Monitoring

and Information Protocol, to determine decremental reference prices. Duke at 6-

8; Indicated Generators at 3-8; IEP at 2-5; Border at 3-6.

The ISO acknowledges that it failed to include the methodology for

calculating decremental reference prices in the June 30 Compliance Filing and

regrets that oversight. The ISO's July 18 Addendum contains the methodology

for determining reference prices proposed by Potomac. Consequently, apart

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because the Answer will aid the Commission in understanding the issues in the proceeding, provide additional information to assist the Commission in the decision-making process, and help to ensure a complete and accurate record in the case. *See, e.g.*, *Entergy Services, Inc.*, 101 FERC ¶ 61,289, at 62,163 (2002); *Duke Energy Corporation*, 100 FERC ¶ 61,251, at 61,886 (2002); *Delmarva Power & Light Company*, 93 FERC ¶ 61,098, at 61,259 (2000).
        The ISO recognizes that no party has submitted filings in response to the July 18 Addendum, and that pursuant to the Commission's July 22 notice of filing, filings concerning the July 18 Addendum are due August 8. In addition to the present filing, the ISO plans to submit a timely response (as needed) to any filings that are submitted concerning the July 18 Addendum. The ISO hopes that the present filing will, *inter alia*, address questions and concerns that would otherwise be raised for the first time on August 8.

from the modifications to the cost-based reference price calculation step proposed by Border, which the ISO addresses *infra*, this issue has been addressed.

B. The ISO Must Be Able to Consider Effectiveness When Dispatching Units Either Incrementally or Decrementally to Mitigate Intra-Zonal Congestion

In discussing the proposed use of effectiveness factors, the May 30 Order found that Amendment No. 50 "lacks the necessary detail to ensure that the method used to Dispatch units is objective and transparent" and directed the ISO to "further explain the procedure it intends to utilize in dispatching generating units in dealing with congestion." May 30 Order at P 59. In response, the ISO attached Version 7.0 of Operating Procedure M-401 ("M-401") to the June 30 Compliance Filing. M-401 Section 2.3.1 describes how the ISO will determine an "effective price" for incremental Energy by dividing the unit's bid price by its effectiveness factor and then will Dispatch units incrementally in merit order based on effective price. M-401 Section 2.3.2 explains that the ISO will Dispatch units decrementally based only on their effectiveness factors to minimize the volume of Energy that must be Dispatched to alleviate the Congestion.[4]

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[4]   The newest version of M-401, attached to this answer, now Dispatches decremental units in merit order – in decreasing order from highest to lowest – based on effective price. For decremental Dispatch, this effective price is determined by multiplying the unit's decremental price by the effectiveness factor. The effective price for incremental Dispatch is determined by dividing the unit's price by its effectiveness factor. Units are Dispatched incrementally in increasing effective price order and Dispatched decrementally in decreasing effective price order. The ISO initially proposed to consider only the unit's effectiveness factor in Dispatching units decrementally because of concerns that high-price units with relatively low effectiveness factors could be Dispatched too often, causing the ISO to Dispatch far more energy than it required to mitigate the Congestion. The ISO proposes to change this approach in the latest version of M-401 because further analysis indicated it is unlikely that there will be such variation in effectiveness factors and reference levels so that the ISO would Dispatch high-cost, ineffective units.

Nevertheless, several parties assert that the June 30 Compliance Filing did not provide sufficient detail regarding the use of effectiveness factors. Duke at 8-10; IEP at 5.

The Indicated Generators question the ISO's authority to apply effectiveness factors to incremental Dispatch. Indicated Generators at 10. They fail to consider that the May 30 Order directed the ISO to apply a reference price to decremental Dispatch only. *See* May 30 Order at PP 40-41, 54. As explained above, the May 30 Order also directed the ISO to explain the procedure it intends to utilize in Dispatching Generating Units in dealing with Congestion. While it directed the ISO to explain its Dispatch procedures, nowhere did the May 30 Order forbid the ISO from using effectiveness factors when Dispatching units incrementally to manage Intra-Zonal Congestion. Dispatch Protocol Section 8.4 currently provides for the ISO to use effectiveness factors when Dispatching units to manage Intra-Zonal Congestion. Certainly the Commission could not have intended that the ISO Dispatch units to manage Congestion with no regard to effectiveness. Such a conclusion would force the ISO to Dispatch ineffective units needlessly, driving up the costs of managing Congestion as well as driving up the costs of Imbalance Energy required to balance the system following the Dispatch of the ineffective units.

Several protesters argued that the ISO should be required to publish the effectiveness factors of units Dispatched to manage Intra-Zonal Congestion. For example, IEP argues that the Commission should require the ISO to publish all effectiveness factors, and should "publish on a continual basis all elements

[including effectiveness factors] associated with Intra-Zonal Congestion on a daily (hourly) basis." IEP at 5-6. While the ISO believes it is reasonable and appropriate for Scheduling Coordinators to be provided with the effectiveness factors of their own units, the ISO fails to see any justification for why unit effectiveness factors should be made publicly available to all Market Participants. Moreover, publicly providing such information is likely to exacerbate the exercise of local market power as each Market Participant will be able to ascertain its comparative advantage in relieving local congestion and those that have a comparative advantage (i.e. highly effective) will leverage that advantage by submitting high incremental market bids.[5]

The ISO currently does not employ an on-line power flow tool in real time to determine unit effectiveness factors and therefore direct the optimum least-cost Dispatch to mitigate Congestion. The ISO will implement such a tool as part of its ongoing Market Redesign effort.[6] Until then, the ISO must determine effectiveness factors through off-line power flow studies conducted by the ISO's Operating Engineering ("OE") department. OE cannot calculate these effectiveness factors for every possible operating configuration of the ISO Controlled Grid, so OE determines effectiveness factors for (1) known areas of frequent Intra-Zonal Congestion, such as the transmission network around the

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[5]   This is less of a concern for Intra-Zonal Congestion in the decremental direction as dispatch and settlement will be based on decremental reference prices rather than submitted market bids.

[6]   As the Commission is aware, the ISO is proposing to implement Phase 1B of the Market Redesign – a real-time economic Dispatch system and penalties for uninstructed deviations – in early 2004. The ISO has proposed to implement locational marginal pricing using a full network model in Phase 3 sometime after that, but currently does not have a firm proposed date for the implementation of Phase 3. An on-line power flow tool that would account for all network constraints, not just the constraints between Congestion Zones that are currently modeled, would

Pittsburg/Los Medanos generating stations in the Pacific Gas and Electric

Company service area, or the Miguel substation in the San Diego Gas & Electric

Company service area, and (2) various other areas that may experience

Congestion due to transmission construction or maintenance work on an *ad hoc*

basis. OE usually updates these effectiveness factors once or twice a year or as

needed if the network changes (*e.g.*, if a component is taken out of or put into

service). As indicated in M-401, these effectiveness factors are either included in

the relevant area-specific transmission operating procedure or in the outage

ticket created for the transmission work. For security reasons and because of

market power concerns, the ISO does not post its transmission operating

procedures.[7]

C. **The ISO Supports Some of the Border Generator Group's Proposals Regarding Costs While Opposing Others**

1. **Start-Up Costs.** Border proposes that generators that the ISO

   directs to shut down because of Intra-Zonal Congestion be allowed

   to recover their start-up costs similarly to how generators receive

   start-up costs for complying with the must-offer obligation. Border

   at 12. Barring the complete failure of the interconnection process

   (e.g., a case where a generator was allowed to locate in a region

   which cannot accommodate even its minimum load Energy), or

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not be available until Phase 3 was implemented.

[7] The ISO does not publicly post operating procedures that contain market sensitive information or information that could be used to jeopardize the reliability of the ISO Controlled Grid. Transmission Operating Procedures contain both market sensitive information (*e.g.*, effectiveness factors) and reliability information (*i.e.*, information on how the loss of network facilities affects the reliability of the network).

other such unusual circumstance, the ISO does not expect to encounter Intra-Zonal Congestion that requires a Generating Unit to be shut down. Nevertheless, the ISO agrees that in the rare circumstance in which a Generating Unit is ordered to shut down to manage Intra-Zonal Congestion, the generator should be allowed to recover its start-up costs. The ISO therefore agrees that a generator should be paid its start-up costs consistent with Section 2.5.23.3.7.7 of the ISO Tariff when the ISO directs a unit to shut down due to Intra-Zonal Congestion. The ISO is willing to amend its Tariff accordingly.

2. **Gas Costs.** Border proposes that gas costs should be determined using the weighted average of local short-term gas spot sale prices, adjusted for pipeline penalties. Border at 12. Border indicates that the gas cost should be determined by these spot prices because generators that are decremented must sell the gas they procured to back their forward schedules through short-notice distress sales. Further, Border indicates that suppliers will incur balancing penalties for failing to take delivery of their scheduled gas supplies. The ISO agrees that a supplier that arranges a forward schedule and purchases gas to produce electricity that the supplier cannot deliver may not be able to fully optimize its gas procurement costs. Had the Commission approved the proposal in Amendment No. 50 to publish transfer capability limits, suppliers would have known

what Energy schedules were feasible in time to manage their gas procurement and avoid these potential costs. Ironically, it was suppliers who protested this aspect of Amendment No. 50. They argued against publishing these advance limits and asserted that putting into effect the suggestion that suppliers could and should best figure out how to share these limits would expose suppliers to charges of collusion. Since the ISO cannot fix this problem the proper way – by limiting forward schedules – suppliers are now asking to be absolved of the risks of submitting infeasible schedules through the use of a highly specialized gas price measure. The Commission recently acknowledged that gas price indices are subject to manipulation and abuse and found that California spot prices should not be used for price mitigation;[8] the index proposed by Border would be no different. Because the liquidity of this index is unknown, and is likely to be highly volatile, it may be subject to even greater manipulation. The Commission should reject Border's proposal and should allow the ISO to continue to use the monthly bid-week index gas price the Commission has already approved.[9]

The ISO also notes that the Commission rejected the use of cost-based bids for managing Intra-Zonal Congestion because of the

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[8]   *See Commission Staff's March 2003 Final Report on Price Manipulation in Western Markets, Fact-finding Investigation of Potential Manipulation of Electric and Natural Gas Prices*, Docket No. PA-02-2-000, at Pages IV-4 to IV-5.
[9]   *San Diego Gas & Electric Co., et al.*, 95 FERC ¶ 61,418, at 62,560-61 (2001).

potential inaccuracies in determining a unit's variable costs and ordered instead that the CAISO utilize a market-based reference level. Under the decremental reference price developed by Potomac, decremental reference prices will be determined first by decremental market bids accepted during the previous 90 days. Therefore, such bids should reflect what Market Participants believe is their "true" avoided cost of production, mooting the issue of whether the CAISO uses a monthly or daily gas price index. Generators also continue to assert being re-dispatched to manage intra-zonal congestion exposes them to gas imbalance charges and penalties. The ISO acknowledges the risk of incurring gas imbalance charges exists (as does the risk of having to shut down a unit for congestion). Again, this risk primarily exists because a supplier can enter into a forward schedule that they cannot deliver in real-time. But the ISO notes that the two largest gas suppliers in California allow for monthly balancing, except on the days in which flow orders are in effect, and even facilitate imbalance trading for their non-core customers. Suppliers, especially suppliers affiliated with gas trading operations, are expert and experienced at managing such imbalance risks. So while the risk of these charges exists, they are likely to be minimal and manageable. Moreover, since decremental reference prices will be primarily based on

previously accepted decremental bids, such bids should reflect the perceived cost of such risks.

3. **Variable O&M costs.** Border protests the ISO's use of a $6.00/MWh variable O&M charge in determining the cost-based default decremental reference price (step 3 of the methodology). Border indicates that this $6.00/MWh figure is far above a more reasonable value of $2.00 - $2.50/MWh. The ISO employed the $6.00/MWh figure because that was the figure mandated by the Commission for use in determining the cost-based proxy price used in the price mitigation established by the Commission in California in 2001.[10] The Commission selected this figure over the protests of the ISO (which argued in the Docket No. EL00-95 price mitigation proceeding that a value in the range of $2.00/MWh was far more reasonable[11]). Clearly Border is arguing for the best of both worlds – a high figure for variable O&M when they would receive that amount and a low figure when they would have to pay it. A variable O&M charge is derived by (1) identifying those costs that vary with production and (2) determining a rate by totaling those costs and dividing by the expected production volume. If this rate truly reflects actual costs that vary with production, there is no legitimate reason why this charge should be different for incremental Dispatch

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[10]   *San Diego Gas & Electric Co., et al.*, 95 FERC at 62,562-63. *See also San Diego Gas & Electric Co., et al.*, 97 FERC ¶ 61,275,at 62,209 (2001).
[11]   *See* Motion for Clarification and Request for Rehearing of the California Independent System Operator Corporation, Docket Nos. EL00-95-004, *et al.* (filed Aug. 24, 2001), at 22-24.

and decremental Dispatch. The Commission should reject Border's "heads I win, tails you lose" proposal for setting the variable O&M rate.

D. The ISO Attaches a Revised Version of Operating Procedure M-401 To Addresses Parties' Concerns

Parties raise some concerns about aspects of M-401. The Indicated Generators, IEP, and Duke argue that the ISO has not adequately described how it would determine and use effectiveness factors. Indicated Generators at 10; Duke at 8-10; IEP at 5. As discussed *supra*, the ISO believes that the version of M-401 submitted with the June 30 Compliance Filing clearly indicated how the ISO would use effectiveness factors when Dispatching units to manage Congestion.

M-401 is an operating procedure that sets forth how to Dispatch units in real time to manage Intra-Zonal Congestion and therefore does not provide a detailed discussion of how effectiveness factors, which are calculated off-line, are determined. Because the ISO does not currently have an on-line power flow tool that calculates effectiveness factors in real time based on current system conditions, the ISO determines effectiveness factors through off-line power flow studies performed by the ISO's OE department. These power flow studies first model the network as it exists or is expected to exist, including projected load and generation patterns, then simulate the loss of various network components and identify the effect on voltages and line loadings, and finally re-adjust generation and measure the effect of re-Dispatching generation to determine how effective re-Dispatching generation is on relieving the overloaded (i.e.,

Congested) components. Effectiveness factors are communicated to the real-time operating staff through procedures or through outage records in the ISO's logging software. The OE department updates effectiveness factors once or twice a year or as needed if the network configuration changes.

The ISO is currently developing a tool to assist operators in determining which units should be decremented to manage Intra-Zonal Congestion in accordance with the May 30 Order. To ensure the ISO is complying with the requirements of that Order, the ISO will not implement the provisions of the Order until the tool has been completed. Once the tool is completed, the ISO will post and implement the version of M-401 that is attached to this answer. The ISO acknowledges that it inadvertently posted to its web site the version of M-401 that was attached to the June 30 Compliance Filing even though that procedure should not have been implemented because the tool was not yet ready.

The Indicated Generators and Border assert that the ISO must account for a unit's ramp rate when it re-Dispatches units to manage Intra-Zonal Congestion. Indicated Generators at 5-7; Border at 13. The ISO submitted proposed Tariff Amendment No. 54 ("A-54") on July 8, 2003, in Docket No. ER01-1046-000. A-54 will implement a Dispatch process, superior to the ISO's current Dispatch process (which assigns only a single ramp rate to the entire operating range of a generating unit), that accounts for varying ramp rates over the operating range of the unit. Until A-54 is approved and implemented, the ISO can only accommodate a single ramp rate for each unit. However, the ISO is not imposing uninstructed deviation penalties until A-54 is implemented, so to the

extent generating units are unable to follow decremental dispatch instructions due to ramp rate limitations, they will not be subject to uninstructed deviation penalties.

E. The ISO Agrees That In-Sequence Decremental Bids Should Be Used To Manage Intra-Zonal Congestion Where Possible and That Generating Units Dispatched for Intra-Zonal Congestion Should Be Settled at the Lower of the Decremental Bid Reference Price or the Market Clearing Price

Several parties note that proposed Section 7.2.6.1 of the ISO Tariff indicated that the ISO would use decremental reference bids to manage Intra-Zonal Congestion, even when market decremental bids could be used in-sequence. Duke at 4-6; Indicated Generators at 9. The ISO agrees that it should use market decremental bids in sequence *when the ISO has a requirement for decremental Energy*. This treatment of decremental Energy is consistent with the conditions placed on the ISO for Dispatching RMR Units as set forth in Section 4.1(b) of the RMR Contract:

> [The] ISO shall issue Dispatch Notices to meet local reliability needs or manage intra-zonal congestion whenever market bids cannot be used to meet those needs or manage such congestion or such market bids cannot be used to meet those needs or manage such congestion **without taking a bid out of merit order or requiring ISO to decrement another supplier's schedule to accommodate the unit which provided the bid.** [The] ISO may not issue a Dispatch Notice to fill a need for imbalance Energy.

(Emphasis added.)

A situation may arise in which the ISO decrements a unit according to its reference price for an entire hour to manage Intra-Zonal Congestion, and, due to system requirements, Dispatches additional Imbalance Energy in later intervals in that same hour so that the decremental market clearing price drops below the

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level of the reference bid. Under the circumstances in which the market clearing price has dropped below the unit's reference level (but is still above the unit's decremental bid) due to the requirements of the system and not due to any individual Market Participant's behavior while the unit is still at the level it was Dispatched at to manage Congestion, the ISO believes it is appropriate to charge the supplier the market clearing price, not the reference level. This approach, though not explicitly stated in the Tariff, is how the ISO currently settles Energy Dispatched out-of-sequence. Specifically, when the ISO Dispatches a unit out of sequence, but the market clearing price later moves to a level that would put that unit's bid in sequence, the ISO settles that unit at the market clearing price as if it has originally been Dispatched in-sequence. The ISO refers to this settlement as a "market conversion." Currently, though this "market conversion" settlement is in the supplier's favor, Appendix B to the Settlement and Billing Protocol ("SABP"), which sets forth how units Dispatched for Intra-Zonal Congestion are settled, does not expressly set forth this settlement. The ISO offers that it would be willing to modify Appendix B to the SABP to expressly provide for this "lesser of" settlement for decremental out-of-sequence Dispatch or "greater of" settlement for incremental out-of-sequence Dispatch.

F. Though the Decremental Reference Methodology Is to Be Employed on an Interim Basis, There Is No Need to Include Specific Sunset Dates or Conditions

The Indicated Generators argue that "nowhere in the ISO's compliance filing does the ISO recognize the interim nature of the proposed Tariff changes," and that the Commission "may wish to condition the continuing authority granted

under Amendment No. 50 on the ISO's successful and timely implementation of [the Market Redesign]." Indicated Generators at 11. The ISO of course recognizes the interim nature of the Tariff changes that will be superseded by the implementation of a long-term comprehensive solution such as Locational Marginal Pricing, as the ISO acknowledged in Amendment No. 50. *See* Transmittal Letter for Amendment No. 50 at 2. However, the ISO should not be required to impose specific sunset dates or conditions on these Tariff changes. While the ISO has proposed dates by which it plans to have a long-term comprehensive solution in place, it is not currently able to determine those dates with enough precision to allow for specific sunset dates or conditions. Moreover, once the long-term comprehensive solution is in effect, it will be clear that the Tariff changes have thereby been rendered obsolete. At that time, the ISO will be able to propose the deletion of the obsolete Tariff changes.

G. Adjustment Bids Should Not Be Used to Manage Real-Time Congestion

Border notes that the version of M-401 attached to the June 30 Compliance Filing proposed to eliminate Adjustment Bids for use in managing Intra-Zonal Congestion in real time. Border at 10-11. The ISO proposed to do exactly that in A-54, because Adjustment Bids are not suited for use in managing real-time Congestion. As the ISO explained in the A-54 transmittal letter, Adjustment Bids submitted in the forward markets are submitted in inc/dec pairs across a particular transmission interface.[12] The amount that a Scheduling Coordinator is willing to pay to move power across that interface is determined by

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[12]   Transmittal Letter for A-54 at 21.

the relative difference in the inc/dec bids. When the ISO has attempted to use these Adjustment Bids as real-time Energy bids to manage Congestion in real time, Scheduling Coordinators often refuse to perform to these Adjustment Bids as if they were Energy bids. Consequently, the ISO has seldom used Adjustment Bids in real time to manage Congestion. The ISO is not sure why Border represents that "Supplemental Energy or Imbalance Energy Bids from resources external to the ISO control area are seldom if ever useful during the real time hour."[13] While the ISO may not frequently Dispatch such Supplemental Energy bids to manage Intra-Zonal Congestion primarily because Dispatching System Resources often does not appreciably affect Intra-Zonal Congestion, the ISO frequently relies on Supplemental Energy bids to meet its real-time Imbalance Energy requirements. Moreover, to the extent Supplemental Energy bids from resources external to the ISO Control Area are effective in mitigating Intra-Zonal Congestion and are in-sequence, the CAISO will Dispatch such bids before Dispatching internal resources out-of-sequence based on decremental reference prices.[14]

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[13] Border at 11 n.6.

[14] The ISO usually pre-Dispatches (i.e., Dispatches for the operating hour prior to the operating hour) Supplemental Energy Bids from System Resources because of restrictions on changing inter-Control Area schedules in the middle of the hour.

III. CONCLUSION

For the foregoing reasons, the ISO respectfully requests that the

Commission accept the June 30 Compliance Filing and the July 18 Addendum as

submitted to the Commission, and as supplemented in the discussion provided

above.

Respectfully submitted,

_____   _____
Charles F. Robinson   David B. Rubin
  General Counsel   Bradley R. Miliauskas
Anthony J. Ivancovich   Swidler Berlin Shereff Friedman, LLP
  Senior Regulatory Counsel   3000 K Street, NW
The California Independent System   Suite 300
  Operator Corporation   Washington, DC 20007
151 Blue Ravine Road
Folsom, CA 95630

Date: August 5, 2003

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in the above-captioned docket.

Dated at Folsom, California, on this 5th day of August, 2003.

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Anthony J. Ivancovich

		Procedure No.	M-401
CALIFORNIA ISO California Independent System Operator	**OPERATING PROCEDURE**	**Version No.**	7.1
		Effective Date	07/01/03
Real-time Intra-Zonal Congestion Management		**Distribution Restriction: None**	

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	OPERATING PROCEDURE	Procedure No.	M-401
CALIFORNIA ISO California Independent System Operator		Version No.	7.1
		Effective Date	07/01/03
Real-time Intra-Zonal Congestion Management		**Distribution Restriction: None**	

PURPOSE

Sets forth the actions to be undertaken by the CAISO to mitigate Intra-Zonal congestion.

PROCEDURE

Following is a list of instructions for the mitigation of real-time (RT) Intra-Zonal Congestion. When Intra-Zonal Congestion occurs, the RT Generation Dispatchers and Grid Resource Coordinators (GRCs) shall take the following steps to mitigate the Intra-Zonal Congestion. The CAISO approach to mitigate Intra-Zonal Congestion in RT in non-emergency conditions is, in sequence, to:

1. Dispatch in-sequence market bids (incremental or decremental, as required), from any resource, to resolve the Intra-Zonal Congestion.

2. If RMR units can be used to mitigate the Intra-Zonal Congestion, increment RMR units under their RMR contracts or reduce their RMR schedules (not RMR unit market schedules) as needed.

3. Dispatch incremental out-of sequence market bids for intra-zonal congestion that primarily requires incremental energy to alleviate the congestion.

4. Dispatch Incremental Adjustment bids.

5. Dispatch decremental reference bids based on reference level curves for intra-zonal congestion that primarily requires decremental energy to alleviate congestion.

In those instances of insufficient bids, RT mitigation measures may include other steps as outlined in this Operating Procedure.

1. **EMERGENCY OPERATIONS**
   The Shift Manager determines if an emergency exists and controls the situation appropriately. If a transmission congestion emergency exists, it may be necessary to skip steps outlined in this procedure to control the situation. If a transmission congestion emergency arises that jeopardizes the reliable operation of the CAISO Control Area, the CAISO shall immediately take whatever actions are necessary to maintain reliability of the CAISO Control Area. This emergency action includes, if required, direct contact with generating facilities. After the transmission emergency in the congested area has been addressed, the CAISO replaces the emergency actions previously taken with the appropriate steps outlined in this procedure.

   1.1. **Issue a Dispatch Instruction**
      A dispatch instruction is issued to Market Participants to perform as required based on Market Participant Responsibilities, and to comply with Dispatch Instructions (DP 9.2.1) and Response Required by Generators to CAISO Dispatch Instructions (DP 9.4.1).

1.1.1. A dispatch instruction can be issued during a non-emergency event to maintain reliable operation of the CAISO Control Area.

1.1.2. Dispatch instructions are issued by one of the following methods:

A. To the generating resource determined to be the most effective in order to immediately alleviate the transmission congestion emergency.

B. Pro rata (based on the unit's allocated maximum capacity) to all of the units in the congested area, where the allocated maximum capacity is equal to the total transmission capacity multiplied by the ratio of the unit's maximum generation capacity to the total maximum generation capacity in the congested area. For example:

Transmission capacity available = 100 MW

Total maximum generation in congested area = 500 MW

100 MW Unit's Share = 100 MW * (100 MW/500 MW) = 20 MW

If this unit is operating below the 20 MW allocation, the unit is not curtailed in RT. However, if the unit were above 20 MW, the unit would be curtailed back to 20 MW.

2. NORMAL OPERATIONS

The normal <u>sequence</u> for dispatching generation to mitigate Intra-Zonal Congestion shall occur by the use of the following guidelines:

2.1. Dispatch Imbalance Energy Bids – In Sequence

2.1.1. Incremental and decremental RT Imbalance Energy Bids are used in merit order (in sequence via ADS) to increment and decrement the resource(s) required for mitigation of Intra-Zonal Congestion if the following conditions are met:

- The unit satisfies the criteria for mitigating the Intra-Zonal Congestion.
- The unit is the next bid available in sequence in BEEP.
- The unit satisfies the imbalance energy requirement

2.1.2. Incremental and decremental bids are chosen so they do not worsen Intra-Zonal Congestion or create Inter-Zonal Congestion.

2.1.3. Energy bids are exercised in pairs whenever possible (i.e., if bids are available). If a decremental bid is used then an equivalent incremental bid should also be used.

2.1.4. If two or more generating units bid the same bid price, the Generation Dispatcher issues the instruction based on the effectiveness of the unit. Effectiveness factors for normal system conditions are provided by CAISO Operations Engineering personnel. These effectiveness factors are located in the transmission procedures for the specific local reliability area. Otherwise, for specific clearances, the effectiveness factors may be located in the SLIC outage card. The unit with the greatest effectiveness is dispatched first. If two or more units have the same effectiveness factors, then the dispatch instruction is divided pro-rata based on the unit's maximum capacity.

Note: Step 2.1 is implemented until such time that all available Imbalance Energy bids, in-sequence, from local area resources are exhausted.

2.2. Dispatch Reliability Must Run (RMR) Resources

RMR resources are utilized as applicable to maintain the reliability in locally constrained areas (as defined in Attachment A) as per the RMR agreement for that resource. When utilizing RMR resources, the most effective unit should be utilized. However, total annual run-time limitations for selected RMR units (e.g., combustion turbines) should be taken into consideration. Refer to the applicable local area transmission procedure for further direction and possible limitations on specific units.

2.2.1. Incrementing RMR Units

The CAISO shall use the RMR Unit's incremental market bid if that bid is the next bid in sequence. If the incremental market bid is not the next bid in sequence or if the CAISO cannot use this bid without

decrementing another supplier, the CAISO dispatches the RMR unit as needed under that unit's RMR Contract. Attachment A, Reliability Must-Run Solutions, lists the local reliability areas and the transmission facilities that are defined to have RMR solutions.

2.2.2. Decrementing RMR Units

Prior to reducing RMR schedule, utilize reference level bids. See section 2.6

2.3. Use of Effectiveness Factors

Note: Effectiveness factors for normal system conditions are provided by CAISO Operations Engineering personnel. These effectiveness factors are located in the transmission procedures for the specific local reliability area. Otherwise, for specific clearances, the effectiveness factors may be located in the SLIC outage card.

Effectiveness factors are specific to the transmission/generation configuration and may not be immediately available for real-time conditions not previously covered through Operating Procedures or Operations Engineering studies (as would be prepared prior to a scheduled outage). In these cases, effectiveness factors must be considered based on operator experience, and dispatches adjusted as needed based on results.

2.3.1. Incremental Dispatch. For incremental dispatches, effectiveness factors, as available, will be considered in the dispatch of units to mitigate congestion. When available for use, effectiveness factors will be utilized in conjunction with the merit order real time energy bids. The operator will divide the unit's bid price by the effectiveness factor to determine an effective price. The unit will be dispatched in merit order of all units available to alleviate the congestion, based on the effective prices.

For example: Assume unit A with a price of $50 and an effectiveness of 0.5, and unit B with a price of $40 and an effectiveness of 0.25. A's price-effective value is $100/MW, while B's is $160/MW. If incremental dispatch is required, the ISO should dispatch A first, then B.

2.3.2. Decremental Dispatch. For decremental dispatches, effectiveness factors, as available, will be considered in the dispatch of units to mitigate congestion. When available for use, effectiveness factors will be utilized in conjunction with reference level bids. The operator will multiply the unit's reference level price by the effectiveness factor to determine an effective price. The unit will be dispatched in

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merit order of all units available to alleviate the congestion, based on the effective prices.

2.4. Dispatch Imbalance Energy Bids – Out-of-Sequence (OOS) – Incremental Solution

2.4.1. Incremental RT Imbalance Energy Bids may be dispatched Out-of-Sequence, in merit order, based on effective price, via ADS, to increment the resource(s) required for mitigation of Intra-Zonal Congestion if the following conditions are met:

- The unit satisfies the criteria for mitigating the Intra-Zonal Congestion.
- All in-sequence bids that would mitigate the congestion have been exhausted.
- No RMR unit is available for an additional energy dispatch that would mitigate the congestion.

2.4.2. Incremental bids are chosen so they do not exacerbate Intra-Zonal Congestion or create Inter-Zonal Congestion.

2.4.3. Energy bids are exercised in pairs whenever possible (i.e., if bids are available). If an incremental bid is used then an equivalent decremental market bid should also be used to balance the system.

Note: Step 2.4 is implemented until such time that all available OOS Imbalance Energy bids from local area resources are exhausted.

2.4.4. Refer to Operating Procedure M-425 for instruction on Out-of-Sequence (OOS) Dispatch logging procedures for Generation Dispatchers and GRCs**.**

2.4.5. If a resource is energy-limited or has emissions or other environmental constraints it may be skipped at the discretion of the Generation dispatcher.

2.5. Dispatch Incremental Adjustment Bids
When all incremental bids from the Real Time market are exhausted, Adjustment Bids remaining from the DA and HA markets will be utilized, in Merit order, based on effective price.

2.6. Dispatch Decremental Energy Bids – Reference Bids based on Reference Level Curves – Decremental Solution

2.6.1. Potomac Economics will provide decremental reference energy curves for all units within the control area. CAISO will produce a

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merit order list of decremental reference bids from these curves to be utilized for Intra-zonal congestion.

2.6.2. Decrement energy reference bids to decrement the resource(s) required for mitigation of Intra-Zonal Congestion if the following conditions are met:
- The unit satisfies the criteria for mitigating the Intra-Zonal Congestion.
- All in-sequence bids that would mitigate the congestion have been exhausted

2.6.3. Dispatches to alleviate Intra-zonal congestion will be pre-dispatched after the HA market closes but as much before the operating hour as possible utilizing the decremental reference bids

2.6.4. If additional relief is required in Real Time, the operator will utilize the Real Time Reference Level bid stack. System Resources may be available after the close of the Real Time Market and can be taken OOS, in merit order with the reference level bids.

2.6.5. Decremental reference bids are chosen so they do not exacerbate Intra-Zonal Congestion or create Inter-Zonal Congestion.

2.6.6. Energy bids are exercised in pairs whenever possible (i.e. if bids are available). If a decremental reference bid is used, then an equivalent incremental Market bid should also be used to balance the system.

2.6.7. If all effective units are at PMin, and additional MW are required for mitigation, units will be shut down in merit order.

NOTE: Step 2.6 is implemented until such time that all available OOS Reference Energy bids from local area resources are exhausted.

2.7. Decrement RMR Units
The CAISO may reduce an RMR unit's **RMR schedule** as needed to solve intra-zonal congestion after all reference level bids have been exhausted. The CAISO cannot decrement an RMR unit's market schedule under the RMR Contract to manage intra-zonal congestion. The RMR Contract allows the CAISO only to decrement an RMR unit's market schedule to provide Ancillary Services, including voltage support.

2.8. Market Notification

2.8.1. In the event that all of the market bids are exhausted, or it is anticipated that additional bids will be required for the Intra-Zonal Congestion the RT GRC sends out a Market Notice to all Scheduling Coordinators. The Market Notice states that Intra-Zonal Congestion is occurring and that the CAISO is seeking additional Imbalance Energy bids to mitigate the Congestion. The message includes the

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Intra-Zonal path and gives an indication where the incremental bids and decremental bids from System Resources are required. Specific messages may be available in applicable transmission procedures or the following is an example of this market notice:

"Load is increasing on (list path or equipment), in the (list appropriate zone), and requires incremental Energy bids south of the path (or in the zonal location) and decremental System Resource Energy bids for resources north of the path (or in the zonal location). To the extent that Scheduling Coordinators do not respond with sufficient decremental System Resources and incremental Energy bids to mitigate the anticipated Congestion, the CAISO may invoke the other steps in the Intra-Zonal Congestion Management Procedure including making out-of-market requests."

If Out-of Market resources are utilized, at the end of each hour, a follow-up Market Notice is sent out by the RT GRC to the SCs. The purpose of this message is to notify the SCs the range in bid cost required to control Intra-Zonal Congestion over the course of the last hour. The following is an example of this type of market notice:

"For HE__ the CAISO utilized Energy Adjustment Bids, Imbalance Energy Bids, [and resources called out-of-market] in the range of $___ to $____ to control Intra-Zonal Congestion across Path (or in Zonal location)____."

2.8.2. Additional Logging

After sending the Market Notice, the RT GRC creates an appropriate log entry in SLIC. The title of the SLIC log entry shall be "Intra-Zonal Congestion Bid Request" for the request for additional bids and "Market Message – Other" for the pricing notification. The SLIC log entry includes the text message that was sent to the SCs (cut and paste) and the time and date when the Market Notice was sent. It should also include the specific area and the name of the Transmission Owner in which the Intra-Zonal Congestion is located.

3. OOM AND RMT AS NECESSARY

This step may include Dispatch of Out-of-Market (OOM), Regulatory Must Take (RMT), and QF resources. All resources are dispatched in this step through "Out-of-Market dispatch instructions" (via ADS). All market-provided resources and RMR resources should be exhausted prior to this step. RMT resources are dispatched prior to other OOM resources.

3.1. OOM Dispatch for Intra-Zonal Congestion

3.1.1. If RMT resources are exhausted and the congestion remains, issue OOM dispatch instructions.

The Generation Dispatcher issues the instruction based on the effectiveness of the unit. Effectiveness factors are provided by CAISO Operations Engineering personnel for normal system conditions. The unit with the greatest effectiveness is dispatched first. If two or more units have the same effectiveness factors, then the dispatch instruction is divided pro-rata based on the unit's maximum capacity.

3.1.2. If no effectiveness factors are available, the Generation Dispatcher issues OOM dispatch instructions to the units most logically effective for the individual situation.

3.2. OOM Logging for Intra-Zonal Congestion

Refer to Operating Procedure M-425 for instruction on OOM Dispatch logging procedures for Generation Dispatchers and GRCs.

4. RE-DISPATCH ALL RESOURCES AS NECESSARY

If after all available incremental and decremental energy bids are exercised, and RMR options are exhausted, in addition to the other steps in this procedure to mitigate the Intra-Zonal Congestion, and Intra-zonal Congestion is not sufficiently mitigated, the Shift Manager or their designee, directs the re-dispatch of any available resource throughout the system (including requesting help from external Control Areas) as necessary to mitigate the congestion. This may include exporting at one boundary and/or importing at another boundary.

SUPPORTING INFORMATION

Affected Parties

- California ISO
- Market Participants

Responsibilities

Party	Responsibility
CAISO Generation Dispatchers	• Effectively communicate resource adjustment details with GRCs • Call for RMR resources as necessary • Identify resources to dispatch • Log detailed information in SLIC for settlement purposes.
CAISO Grid Resource Coordinators	• Analyze Day Ahead (DA) and Hour Ahead (HA) resource Generator Schedules, Energy Adjustment Bids, Imbalance Energy Bids, and Reference Level bids. • Notify the Manager of Markets as applicable in this procedure • Prioritize Generation Dispatcher submitted resource lists to utilize lowest cost/most effective resources available. • Log Adjustment Bids and Imbalance Bids not dispatched through ADS in OSMOSIS for settlement purposes. • Notify Market Participants of Congestion and Request Bid
CAISO Transmission Dispatchers	• Provide timely, detailed, communication of Intra-Zonal Congestion to Generation Dispatcher, GRC, and Shift Manager as needed. • Assess the severity of the Intra-Zonal Congestion and determine if there is adequate time for the GRC to follow through the optimized low-cost resource adjustment analysis. • Communicate nature and location of constraint, and list resources to utilize and solve the constraint to the GRCs
Manager of Markets	• Coordinate Market Participants activities

Operations Engineering	• Provide Unit Effectiveness factors for congested areas for normal system conditions
	• Provide Outage coordination with acceptable area generation output levels for scheduled outages
Outage Coordination	• Request review by Operation Engineering as needed to determine area limitations
	•
Shift Manager	• Determine Emergency Status of Congested Areas

Policy

CAISO will attempt to minimize Intra-Zonal Congestion prior to RT by invoking existing Interconnection Agreements where applicable, and by requesting the cooperation of Market Participants where no such agreements apply. Where appropriate, and where no RMR units can be used, or where RMR units have submitted bids that are the next bid in merit order, CAISO employs a "market first" policy for RT management of Intra-Zonal Congestion. Intra-zonal Congestion is managed in RT by utilizing Incremental Imbalance Energy bids and Decremental Reference level bids in merit order and based on their effectiveness. Where RMR units are available to increment to mitigate the Intra-Zonal Congestion, and where those RMR units' incremental bids are not the next bids in merit order or where taking an RMR unit's incremental market bid requires that another resource be decremented, the CAISO shall dispatch RMR units under the terms of their RMR Contracts to mitigate RMR Intra-Zonal Congestion. Resources are to be incremented and decremented on either side of the Intra-Zonal Interface to relieve Congestion. Intra-Zonal Congestion management is performed so as not to create Inter-Zonal Congestion. The difference in incremental bid(s) and decremental bid(s) is the Grid Operations Charge associated with the Congestion. In the event there are inadequate bids to resolve the RT Congestion, Reliability Must-Run resources may be utilized under their RMR contracts for incremental re-dispatch. Out-of-market calls are made as a final means of RT mitigation if there is a deficiency in market bids or RMR units. *At no time shall BEEP be split for Intra-zonal Congestion management since it has an adverse impact on prices and does not solve the problem.*

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References

Resources studied in the development of this procedure and that may have an effect upon some steps taken herein include but are not limited to:

- CAISO Tariff   7.2, 7.3, and Dispatch Protocol 9.2.1 and 9.4.1
- CAISO Operating Procedure   S-315   Emergency Overload Mitigation
- CAISO Operating Procedure   M-425   OOM and OOS Dispatch
- CAISO Operating Procedure   T-113   Scheduled and Forced Outages

Definitions

Unless the context otherwise indicates, any word or expression defined in the Master Definitions Supplement to the CAISO Tariff shall have that meaning when capitalized in this Operating Procedure.

Version History

Version	Change	By	Date
1.0	Drafted	Ty Larson	3/31/98
2.0	Revised	Ty Larson	2/8/99
3.1	Updated	Trent Carlson	6/18/99
3.2	Updated	Mike Jackson	7/12/00
4.0	Major revisions to RT, emergency and pre-scheduled outage sections.	Christine Henry	10/13/01
5.0	Various	Christine Henry	12/12/01
5.1	Removed references to the requirement that bids must be competitive, and made other minor changes.	Christine Henry, Mark Willis, Deane Lyon	1/11/02
5.2	ADS II references added	J. Bellnap	8/6/02
5.3	Modification to 5.4., (1).	J. Bellnap	4/14/03
6.0	Removed section 5 for compliance with Amendment 50	J. Bellnap	6/19/03
7.0	Revised procedure to reflect the dispatch of decremental reference bids, and other minor changes for compliance w/Amendment 50	J. Bellnap	7/1/03
7.1	Revised to reflect effective price on OOS dec, and shut down sequence.	J. Bellnap	7/31/03

TECHNICAL REVIEW

Reviewed By Content Expert	Signature	Date
OSAT		
OE&M		
Grid Ops		
Market Ops	Jack Bellnap	7/1/03
Scheduling		

APPROVAL

Approved By	Signature	Date
Director of Grid Operations		
Director of Market Operations	Ziad Alaywan	7/1/03

APPENDIX

Attachment A: Reliability Must-Run Solutions