

February 4, 2002

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

**Re: San Diego Gas & Electric Co., et al.
Docket Nos. EL00-95-047, et al.**

Dear Secretary Salas:

Enclosed is an original and fourteen copies of the Response of the California Independent System Operator Corporation to California Generators' Joint Expedited Request for Clarification, Alternative Request for Rehearing and Related Comments on Judge Birchman's Recommendation Regarding Settlement Reruns. Two copies have been provided to the Presiding Judge. Also enclosed is an extra copy of the filing to be time/date stamped and returned to us by the messenger. Thank you for your assistance.

Respectfully submitted,

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Counsel for the California
Independent System Operator Corporation

Enclosures

cc: Service List
Honorable Bruce Birchman

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

San Diego Gas & Electric Company,)	
Complainant,)	
)	
v.)	Docket Nos. EL00-95-047,
)	EL00-98-044, RT01-85-005,
Sellers of Energy and Ancillary Services)	and EL01-68-008
Into Markets Operated by the California)	(not consolidated)
Independent System Operator and the)	
California Power Exchange,)	
Respondents.)	
)	
(and related dockets))	

**RESPONSE OF THE
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION
TO CALIFORNIA GENERATORS' JOINT EXPEDITED REQUEST FOR
CLARIFICATION, ALTERNATIVE REQUEST FOR REHEARING
AND RELATED COMMENTS ON JUDGE BIRCHMAN'S RECOMMENDATION
REGARDING SETTLEMENT RERUNS**

Pursuant to Rule 213 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission" or "FERC"), 18 C.F.R. § 385.213 (2001), the California Independent System Operator Corporation ("ISO") hereby responds to the California Generators' ("Generators")¹ Joint Expedited Request for Clarification, Alternative Request for Rehearing and Related Comments on Judge Birchman's Recommendation Regarding Settlement

¹ The California Generators consist of subsidiaries of Duke Energy, Dynegy, Mirant, Reliant, and Williams.

Reruns (“Request for Clarification”). Although styled as a “request,” the Generators’ filing is in substance a *motion* for clarification, and therefore the ISO believes this response is permitted under the Commission’s rules.²

I. INTRODUCTION

The Generators request that the Commission clarify that the Commission’s refund methodology, as established in its July 25 Order,³ “provides for the recalculated market clearing prices to be used as a new uniform market clearing price, as opposed to a new supplemental cap imposed on top of prior mitigation measures.” Request for Clarification at 1. Essentially, Generators argue that the Commission’s July 25 and December 19 Orders require that every supplier be paid the mitigated price calculated for each interval during the period from October 2, 2000 through June 20, 2001, *even if* many suppliers *had bid in* and received a price *lower* than the mitigated price during certain intervals. Generators also request that the Commission state that two other issues remain subject to litigation in the refund proceeding: whether units dispatched for Out-of-Market (“OOM”) transactions are eligible to serve as the marginal unit for purposes of determining mitigated prices, and whether incremental or average

² In the event that any portion of this Response is deemed an Answer to a Rehearing Request, the ISO requests waiver of Rule 213 (18 C.F.R. § 385.213) and Rule 713 (18 C.F.R. § 385.713) to permit it to make this Answer. Good cause for this waiver exists here given the nature and complexity of this proceeding and the usefulness of this Answer in ensuring the development of a complete record. See, e.g., *Enron Corp.*, 78 FERC ¶ 61,179, at 61,733, 61,741 (1997); *El Paso Electric Co.*, 68 FERC ¶ 61,181, at 61,899 and n.57 (1994).

³ Order Establishing Evidentiary Hearing Procedures, Granting Rehearing in Part, and Denying Rehearing in Part, 96 FERC ¶ 61,120 (2001).

unit heat rates should be used by the ISO to calculate those mitigated prices.

Request for Clarification at 10-11.

The ISO has already calculated mitigated prices for the refund period and re-run its settlements and billing system applying those prices, and submitted the results to Judge Birchman in the evidentiary hearing proceeding, pursuant to the Commission's direction in its July 25 Order. In doing so, the ISO has excluded OOM transactions from the transactions eligible to determine the marginal unit, has used incremental heat rates, and has applied the mitigated prices in a way that permits sellers to receive *no less* than the prices they actually received during the refund period so long as those prices do not exceed the mitigated prices the ISO has calculated. Because the ISO believes that it has faithfully followed the Commission's directions, it must respond to the Generators' motion, which would have the Commission rule, in effect, that the ISO has misinterpreted the Commission's directives.

As the ISO explains below, the course of the Commission's refund proceeding and relevant orders, starting with the settlement effort before Judge Wagner and continuing through the December 19 order, as well as both the language of and the policy rationale underlying the Commission's various California market mitigation orders, establish that the mitigated price is to be just that -- a price that *mitigates* historical prices that were unjustly and unreasonably *high* -- rather than a price that gives some sellers in some intervals *even more* than they received in the market. The ISO also believes that the Commission's

orders are clear that OOM transactions are not eligible to establish the marginal unit and that incremental heat rates are to be used.

II. ARGUMENT

A. **The Course of the Refund Proceeding, the Commission's Orders, and the Policy Behind the Commission's Market Mitigation Effort All Make Clear That the Mitigated Price Is To Be Applied To *Mitigate* Unreasonably *High* Prices**

The Generators cite to various passages in the Commission's December 19 and July 25 Orders to argue that the mitigated prices were intended to act as substitute market clearing prices, resulting in some sellers receiving higher prices in some intervals than they actually received in the market. While the Commission has not squarely and unambiguously addressed the issue of exactly how the mitigated prices are to be applied in conjunction with the historic market clearing prices and soft caps in place during the refund period, the ISO submits that the very absence of such a definitive statement speaks eloquently against the Generators' position. Their position is contrary to the way the ISO has consistently applied the mitigated prices it has calculated, *with full knowledge of all parties and the Commission*. Their position is also contrary to the Commission's statements and to the very purpose of the proceeding before Judge Birchman.

The ISO has consistently and *explicitly* proposed a refund methodology in which mitigated prices act as a cap on transaction prices during the refund period, rather than as a substitute market clearing price, and the Commission has implicitly adopted that approach and described the refund proceeding in a

manner consistent with that approach. As early as April 9, 2001, in a report filed with the Commission, the ISO explained its position that the mitigated price (or “competitive baseline price”) calculated for real-time energy markets should act as a “cap” on the price paid to suppliers, for purposes of determining refund liability.⁴ This is also the position taken in an analysis prepared by Dr. Eric Hildebrandt of the ISO’s Department of Market Analysis, and submitted in the refund settlement proceeding before Judge Wagner conducted pursuant to the Commission’s directive in its June 19 Order.⁵ Finally, the ISO again explicitly

⁴ Impacts of Market Power in California’s Wholesale Energy market: More Detailed Analysis Based on Individual Seller Schedules and Transactions in the ISO and PX Markets, Filed in Docket Nos. EL00-95, et al. (April 9, 2001) at 11-12:

The excess revenues above competitive levels in the real time market are estimated in this study by first recalculating the actual price of this energy, and then comparing it to the price of the same quantity of energy at the hourly competitive market baseline price . . . First, total real time energy revenues earned by each generating unit (or real time import) are calculated for each hourly dispatch by multiplying the incremental quantity by the hourly real time imbalance energy price:

$$\text{Actual Revenue}_{u,t} = \text{Dispatched MW}_{u,t} \times \text{Real Time Price}_t$$

For purchases made out-of-market or at prices above the “soft cap”, the bid or purchase price of these transactions is used in place of the real time imbalance price. The price of energy at the hourly competitive market baseline price . . . is then calculated as follows

$$\text{Competitive Baseline Revenue}_{u,t} = \text{Dispatched MW}_{u,t} \times \text{Min}(\text{CBP}_t, \text{Real Time Price}_t)$$

The difference between estimated actual revenues and revenues under competitive market conditions represents estimated net revenues in excess of the competitive market baseline.

⁵ Analysis of Payments in Excess of Competitive Market Levels in California’s Wholesale Energy Market (May 2000 – 2001), filed in Docket Nos. EL00-95, et al. (July 9, 2001) at 2 (summarizing the second methodology for determining refunds examined by the ISO in this analysis, in which “payments are *limited* to the actual cost of the highest cost gas-fired unit dispatched in the ISO’s real time imbalance market”) (emphasis added).

articulated the position in the Prepared Direct Testimony of Dr. Eric Hildebrandt, filed on October 9, 2001 in the proceeding before Judge Birchman.⁶

The Commission has never suggested that the ISO's approach to applying calculated mitigated prices is flawed. Indeed, quite to the contrary, the history of the refund proceeding following the Commission's June 19 Order confirms that the Commission has endorsed the ISO's approach. As noted above, following the Commission's June 19 Order, Dr. Hildebrandt submitted refund calculations during the settlement efforts before Judge Wagner that followed the same approach previously filed by the ISO on April 9 – that is, applying the calculated mitigated prices to *reduce* historical prices paid to sellers if they had been above those calculated prices, but *not* to *raise* the historical prices paid to sellers if they had been below the calculated prices. The Chief Judge was well aware of the ISO's approach to applying the mitigated prices when he provided the Commission with his July 12 Report and Recommendation, and he did not criticize that approach. In adopting Judge Wagner's recommendations with certain modifications, the Commission in the July 25 Order nowhere indicated that the ISO's approach was in error. In fact, the Commission characterized the mitigated price as "establish[ing] the maximum price with refunds for transactions over this level." *San Diego Gas & Electric Co. v. Sellers of Energy and Ancillary Services*, et al., 96 FERC ¶ 61,120 (2001) at 61,516. The Commission established the proceeding before Judge Birchman and directed the ISO to calculate mitigated prices for each interval of the refund period and to re-run its

⁶ Prepared Direct Testimony of Dr. Eric Hildebrandt, filed in Docket Nos. EL00-95-045, et al. (October 9, 2001) at 57-59.

settlements and billing system to apply the mitigated prices. *Id.* at 61,520. It was clear from Dr. Hildebrandt's submission, which Judge Wagner had certified to the Commission along with the rest of the record from the settlement conference, that the ISO would use its settled approach in applying mitigated prices when it re-ran its settlements and billing system pursuant to the Commission's directive. The Commission did not suggest that the ISO should change that approach. In re-running its settlements and billing system and submitting the results to Judge Birchman, the ISO has followed the same approach to applying the mitigated price that it has followed *since its initial submission to the Commission in April 2001*.

The ISO's approach is also consistent with the approach adopted by the Commission itself in its March 9, 2000 Order, 91 FERC ¶ 61,245 (2000) ("March 9 Order"). There, the Commission calculated a proxy price, which it referred to as a *market clearing price*, *id.* at 61,863, but which it did *not* use to replace the soft cap then in effect, as the Generators now argue should be done during the refund period. Rather, the Commission, *just as the ISO did under its methodology*, applied the proxy price as an additional "cap" on top of the soft cap then in effect, and required sales above that proxy price cap to be refunded or cost-justified. The Commission repeatedly characterized this approach as a "proxy market clearing price approach." *Id.* Nevertheless, the Commission *did not* conclude that sellers that had bid and been paid at levels *below* this proxy market clearing price should receive additional payments.

The ISO's consistent approach, and the Commission's approach in the March 9 Order, are both guided by the underlying premise of any refund undertaking -- that refunds are due because suppliers received prices that were *too high*. The Commission has proceeded from the same premise consistently since its December 15, 2000 Order, where it found that the dysfunctional California markets created the potential for unreasonably *high* prices. *San Diego Gas & Electric Co. v. Sellers of Energy and Ancillary Services, et al.*, 93 FERC ¶ 61,294 (2000) at 61,998-99 ("Therefore, we reaffirm our findings that unjust and unreasonable rates were *charged* and could continue to be *charged* unless remedies are implemented.") (emphasis added). The Commission's orders have always spoken in terms of refunds owed by sellers, rather than refunds being owed for some sales by sellers, with increased revenues owed from purchasers to sellers for others. For instance, in the December 19 Order, the Commission stated clearly that "[t]his case involves the extent to which *refunds are owed* for sales made in the California PX and ISO spot markets for a defined past period." December 19 Order, slip op. at 41 (emphasis added). Similarly, the Commission noted that it had, in the July 25 Order, "mitigated prices to ensure they are *no higher* than those that would result in a competitive market," *Id.*, slip op. at 7 (emphasis added).

The Commission has never stated or implied that the prices paid to suppliers, in any interval, were unreasonably *low*. Despite the Generators' strained attempt to explain how their interpretation would not yield "negative refunds," Request for Clarification at 7, the reality is that the "clarification" sought

by the Generators would be tantamount to a finding that suppliers failed to collect *just and reasonable revenues* during certain intervals because prices were too low, a finding that has no support in the record or in the Commission's orders.⁷

The Generators suggest that because the prospective mitigation plan requires application of a single calculated market clearing price that is to be applied even if the market would have cleared at a lower price (i.e. the actual bid of the marginal unit is lower than the proxy price), December 19 Order, slip op. at 87, the same should be true for the refund period. Request for Clarification at 5. In fact, however, the Commission's approach to the prospective mitigation plan only serves to demonstrate why the ISO's approach to applying calculated mitigated prices to the refund period is more consistent with the Commission's overall California market mitigation scheme.

In the Commission's Order Accepting in Part and Rejecting in Part Compliance Filings ("Compliance Order"), issued on the same date as the December 19 Order,⁸ the Commission rejected the ISO's proposal to use as the mitigated reserve deficiency MCP the lesser of the proxy price or the actual bid of the gas-fired generating unit with the highest calculated proxy price dispatched by the ISO during a system emergency. In doing so, the Commission emphasized that the methodology for calculating the reserve deficiency MCP under the April 26 and June 19 Orders "retained the use of a single market

⁷ After all, under the ISO's approach, and the Commission's approach in the March 9 Order, a seller always receives at least the amount of its actual bid, and usually more than that (where the market cleared at a price higher than its bid), as long as the bid was not above the calculated proxy price. Presumably sellers bid sufficiently high to cover their costs, but if any seller contends that not paying it more than its bid causes prejudice, that seller always has the option of applying for cost-based pricing throughout the refund period. December 19 Order, slip. op at 74, 89.

clearing price with *must-offer and marginal cost bidding requirements.*" *Id.*, slip op. at 10-11 (emphasis added). However, in the July 25 Order, the Commission refused to apply the must offer requirement to the refund period, in the form of an assumed economic dispatch, 96 FERC ¶ 61,120 at 61,517, and the Commission reaffirmed this holding in the December 19 Order. December 19 Order, slip op. at 68. Without these mechanisms, it would be unreasonable to require that the ISO apply the mitigated prices in such a manner that suppliers will be paid the mitigated price even when that price exceeds their actual bids. This is because, although the Commission did not find "firm evidence" of withholding on the part of suppliers, *see id.*, serious questions remain as to the behavior of suppliers during the refund period that cannot be disregarded. Thus, while it may be unfair to penalize suppliers that generated during this time period and "helped keep the lights on in California," 96 FERC ¶ 61,120 at 61,517, it would be equally unfair to allow suppliers who actually bid lower (and were paid at or below the caps then in effect) to receive higher payments because of a calculated mitigated price that may very well be tainted by withholding or other inappropriate behavior.

B. Only Units That Were Bid Into the ISO's Real Time Market Are Eligible To Set the Mitigated Price

Generators request that the Commission clarify that the issue of whether units engaging in OOM transactions are eligible to serve as the marginal unit "remains subject to litigation in the refund case." Request for Clarification at 10. Based on clear and consistent guidance from the Commission, the ISO has

⁸ 97 FERC ¶ 61,293 (2001).

allowed only units bid into its Real Time Market to serve as the marginal units for calculating both forward-looking mitigated prices and mitigated prices for the refund period. Thus, the ISO has excluded units dispatched pursuant to OOM calls.

In the July 25 Order, dealing with the refund period, the Commission stated that the ISO was to “determine the last unit dispatched (the marginal unit) by selecting from the actual units dispatched in real-time the maximum heat rate of any unit dispatched each hour in *the real-time imbalance market*.” 96 FERC ¶ 61,120 at 61,517 (emphasis added). This statement echoes the Chief Judge in his July 12 Report and Recommendation, where he recommended that the “[m]itigated price [be] based on the marginal cost of the last unit dispatched to meet load in the CAISO’s *real-time market*.” 96 FERC ¶ 63,007 at 65,039-40 (emphasis added). Both the Commission and the Chief Judge were straightforwardly applying to the refund period precisely the approach the Commission had ordered and with which the ISO had complied for the forward-looking mitigation plan. In the April 26 Order, for example, the Commission explained that the proxy price mitigation plan would be based “on the use of *competitive bids* in the ISO auction to replicate *competitive pricing*.” 95 FERC ¶ 61,115 at 61,358.⁹ In the Compliance Order on December 19, addressing various sellers’ arguments, the Commission explicitly stated that units dispatched under OOM calls are *not* eligible to set the mitigated reserve deficiency MCP

⁹ See also *San Diego Gas & Electric Co. v. Sellers of Energy and Ancillary Services, et al.*, 95 FERC ¶ 61,418 at 62,564 (noting that in adopting its market plan, the Commission had “sought to provide prices that emulate closely those that would result in a competitive market”).

going forward, explaining that “the ISO must institute a mechanism that emulates a *competitive market*” and that “[w]e have identified units dispatched through the Imbalance Energy *market* as the marginal units and, thus, they are the only units that can set the mitigated reserve-deficiency MCP.” Compliance Order, slip op. at 18 (emphasis added).

In every one of these orders, whether discussing forward-looking mitigation or the refund period, the Commission has made clear that units dispatched by the ISO through a *market* mechanism are the only units eligible to set the mitigated price. Although there are several categories of Imbalance Energy, the only Imbalance Energy that the ISO dispatches through a market mechanism is that dispatched through its Real Time Market, which is the Imbalance Energy dispatched from bids taken in merit order through the ISO’s BEEP (“balancing energy and ex-post pricing”) software. Calls on units made “out-of-market” – so-called “OOM calls” – are, just as the name implies, dispatches of units *not* made in merit order or through a competitive market mechanism. Thus, consistent with the Commission’s orders, it would have been inappropriate for the ISO to include OOM calls in the calculation of the marginal unit. The Commission again should make clear that the ISO has faithfully complied with its directives.

C. The Commission Has Accepted the ISO's Use of Incremental Heat Rates, Which Is Consistent with Economic Theory

The Generators also request that the Commission clarify that the "average versus incremental heat rate" issue remains open for litigation in the refund proceeding. Request for Clarification at 11. The ISO has consistently taken the position that price mitigation should use incremental rather than average heat rates for purposes of determining the marginal unit, and the Commission has explicitly approved that approach. In the transmittal letter accompanying its May 11 compliance filing on the April 26 Order, the ISO explicitly stated that "[t]he ISO will use the provided average heat rate data to *calculate an incremental heat rate step function* for each gas-fired Generating Unit." Transmittal Letter, Filing in Compliance with the Commission's April 26, 2001 Order, et al., filed in Docket Nos. EL00-95-000, et al. (May 11, 2001) at 7. The ISO reiterated this approach in its May 18, 2001 Status Report updating the Commission on the ISO's progress in implementing the April 26 Order:

Based on the heat and emissions rate information submitted by Generating Units, as required by the Commission, the ISO proposes to calculate the Proxy Prices for gas-fired Generating Units using the following methodology: The ISO will use the provided heat rate data to calculate an incremental heat rate step function for each gas-fired Generating Unit; i.e., the ISO will construct a proxy "bid curve" over the unit's operating range instead of determining a single proxy price using a single operating "point."¹⁰

¹⁰ Status Report to Update the Commission on the California Independent System Operator Corporation's Progress Towards Implementation of the Commission's April 26 Order, filed in Docket Nos. EL00-95-012, et al. (May 18, 2001) at 17-18.

The ISO continued to use incremental heat rates to determine the marginal unit for purposes of calculating mitigated prices pursuant to the June 19 Order, and made it clear from the outset of the evidentiary proceeding before Judge Birchman that it also intended to do so for purposes of calculating the mitigated prices that would be used to determine refund liabilities pursuant to the July 25 Order.¹¹

The ISO had good basis in Commission action to adopt this approach in the context of the refund proceeding. In the June 19 Order, the Commission, commenting on the May 18 Status Report, expressed its approval of the ISO's use of incremental heat rates:

The ISO requested heat and emission rates for eleven different operating points with the first and last operating points representing the unit's minimum and maximum operating level, respectively. As noted by the ISO, by collecting eleven different operating points, the ISO will be able to approximate the actual incremental cost curve of each generating unit and thereby develop representative proxy prices for each unit throughout the unit's operating range.

The ISO's proposal to include the minimum and maximum operating levels for each unit and nine points in between is reasonable.

The Commission's approval of the ISO's incremental approach was implicitly confirmed for the refund period by the July 25 Order. The Chief Judge recommended that the Commission adopt, with only certain modifications, the price mitigation methodology set forth in the June 19 Order for purposes of determining refund liability for past transactions. Nowhere in his recommendation did the Chief Judge suggest that the ISO should depart from its

¹¹ See Calculation of Hourly Mitigated Price Based on the Marginal Gas-Fired Units Dispatched in the ISO's Real Time Market, August 22, 2001. This document is included with this pleading as

use of incremental heat rates to determine the marginal unit. In fact, the Chief Judge tacitly accepted the ISO's incremental methodology, noting that the "CAISO has the actual heat rate for every hour of the last unit dispatched in the CAISO's real-time imbalance energy market" and that these "actual heat rates . . . provide the first step in calculating the cost of the marginal unit." *Report and Recommendation of Chief Judge and Certification of Record*, 96 FERC ¶ 63,007 (2001) at 65,040. Moreover, the analysis submitted by the ISO to Judge Wagner during the refund settlement conference confirmed that the ISO would select the marginal gas-fired unit using incremental heat rates. *Analysis of Payments in Excess of Competitive Market Levels in California's Wholesale Energy Market* (May 2000 – 2001), filed in Docket Nos. EL00-95, et al. (July 9, 2001) at Appendix B. The Commission, in the July 25 Order, did not even hint that the ISO should change course and use average, rather than incremental, heat rates to calculate the marginal unit for each interval during the refund period.

Moreover, there are compelling economic and operational reasons for using incremental heat rates rather than average heat rates. Using incremental heat rates accurately simulates an economic dispatch of units, while the use of average heat rates leads to counterintuitive results, such as distorted price curves. These conclusions are explained in greater detail in Dr. Hildebrandt's Declaration, attached to this pleading as Attachment A. Therefore, the Commission should make clear that the ISO is correct in using incremental heat rates.

Attachment B.

V. CONCLUSION

Wherefore, for the reasons discussed above, the ISO respectfully requests that the Commission deny the Generators' motion.

Respectfully submitted,

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Dated: February 4, 2002

ATTACHMENT A

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

San Diego Gas & Electric Company,)	
Complainant,)	
)	
v.)	Docket No. EL00-95-045
)	
Sellers of Energy and Ancillary Services)	
Into Markets Operated by the California)	
Independent System Operator and the)	
California Power Exchange,)	
Respondents.)	
)	
Investigation of Practices of the California)	
Independent System Operator and the)	Docket No. EL00-98-042
California Power Exchange)	

DECLARATION OF ERIC W. HILDEBRANDT

1. My name is Eric W. Hildebrandt, and I am currently employed as the Manager of Market Investigations for the California Independent System Operator ("ISO").
2. In conjunction with administrative proceedings before Administrative Law Judge Birchman held pursuant to the Commission's July 25 Order, I have submitted Prepared Direct Testimony ("Initial Testimony") and Supplemental Direct Testimony ("Supplemental Testimony") explaining how the ISO arrived at the mitigated price to be used in determining the

amount of refunds due for transactions in the ISO and California Power Exchange ("PX") markets during the refund period. As I have explained in that testimony, the ISO considered only units with bids into the ISO's Real Time Market in determining the marginal unit, and used incremental heat rates of units in determining the marginal unit. I have also estimated the approximate amount of refunds due from sellers if one applies the mitigated price only to reduce prices historically paid above that level, as the ISO has consistently done in all of its analyses, as opposed to applying the mitigated prices as a substitute market clearing price, so that sellers who had bid below that price would be paid additional amounts.

3. Use of average (or "operational") heat rates rather than the incremental heat rates in calculating the mitigated price would lead to results that are counter to basic principles and patterns of marginal costs and electricity pricing in virtually all electricity systems and markets. Specifically, using average heat rates of units dispatched by the ISO results in mitigated prices that significantly exceed marginal costs, and are higher during off-peak periods than in peak periods. These anomalous results can be traced to the simple fact that the average heat rates for steam-fired gas units are extremely high at low levels of output and decrease sharply at higher levels of output, while the incremental heat rates and marginal operating costs of gas-fired steam units typically increase as output is increased.

4. For example, Figure 1 compares the average and incremental heat rates at different operating levels for a gas-fired unit that is eligible to set the mitigated price during many time intervals. If the unit in Figure 1 is dispatched for a small amount of energy above its minimum operating level of 10 MW due to relatively low demand conditions during off-peak periods, its average heat rate would range from about 27,000 MBtu/kWh at its minimum operating level to about 17,000 MBtu/kWh at an operating level of just 26 MW. However, if the same unit was dispatched to operate at a very high level of output (e.g. 150 MW or higher) due to high demand conditions, the unit's average heat rate would be under 10,700 MBtu/kWh.
5. The example depicted in Figure 1 illustrates how a methodology based on average or operational heat rates would result in mitigated prices that systematically exceed the marginal costs of gas-fired units dispatched by the ISO to meet demand in the Real Time Market and are inconsistent with the basic pattern of marginal costs and market prices in virtually all electricity systems, in which marginal costs or market prices increase (rather than decrease) as demand rises during peak periods relative to off-peak periods.
6. I was involved in the settlement conference before Judge Wagner prior to the issuance of the July 25 Order. In that conference, at the request of Judge Wagner, I presented an analysis of payments in excess of competitive market levels in California's wholesale energy market from the period May 2000 through May 2001. In calculating the amount of

payments in excess of competitive market levels, I used the competitive baseline price as a cap on the historical transaction prices. That is, if the competitive price exceeded the historical transaction price; I did not reset the transaction price to the level of the competitive price. This is the same approach that was used in a study by the ISO that had been submitted to the Commission on April 9, 2001, entitled *Impacts of Market Power in California's Wholesale Energy Market: More Detailed Analysis Based on Individual Seller Schedules and Transactions in the ISO and PX Markets*, in Docket Nos. EL00-95-000, et al.

7. Using the July 25 methodology for calculating mitigated prices, and applying the mitigated prices to reduce historical transaction prices but not to raise them, I have estimated that refunds from the categories of sellers identified in the Commission's July 25 Order, for the period October 2, 2000 through June 20, 2001, would approximate a little over \$1 billion for transactions in the ISO's markets.

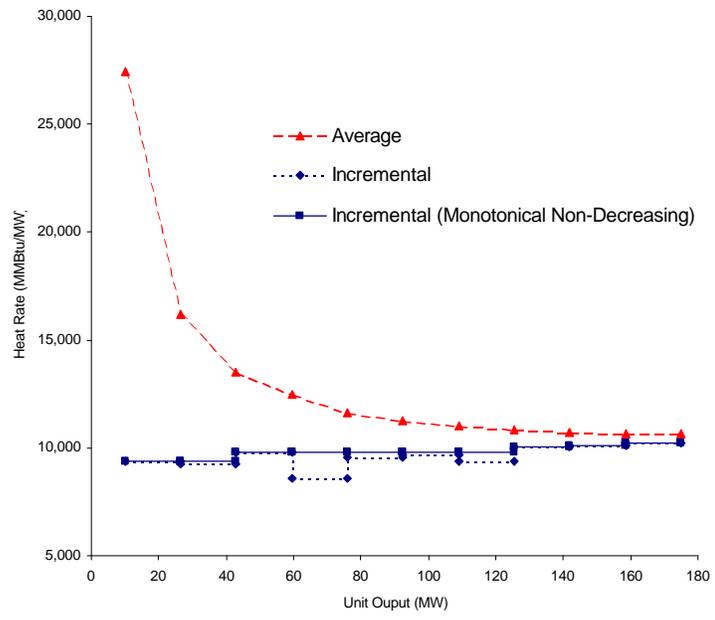


Figure 1

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 dockets.

Dated at Washington, DC, on this 4th day of February, 2002.

Michael Kunselman
(202) 424-7500