

126 FERC ¶ 61,147
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Acting Chairman;
Sudeen G. Kelly, Marc Spitzer,
and Philip D. Moeller.

California Independent System
Operator Corporation

Docket No. ER09-240-000

ORDER ON TARIFF REVISIONS

(Issued February 19, 2009)

1. On November 4, 2008, the California Independent System Operator Corporation (CAISO) filed a revision to its Market Redesign and Technology Upgrade (MRTU) tariff. The CAISO states that this tariff amendment represents the culmination of a stakeholder process regarding the review of the numerical values to be assigned to certain parameters of the MRTU optimization software. The tariff revision reflects the CAISO's proposal to modify a tariff provision that requires the market clearing software to exhaust all economic bids before engaging in any adjustments to submitted self-schedules. The tariff revisions set forth rules and parameters under which the CAISO will relax transmission constraints, procure ancillary services, or adjust the schedules of priority self-scheduling entities when economically or operationally sensible, rather than procuring additional resources through economic bids. This will ensure optimization software solutions that represent both sound economics and good utility practice. This order conditionally accepts the CAISO's proposed tariff revisions.

I. Background

2. The CAISO initially filed its MRTU tariff on February 9, 2006 in Docket No. ER06-615. Since that date, through a series of Commission orders, compliance filings and stakeholder processes, the CAISO has further defined numerous aspects of MRTU and revised its software requirements.

3. One fundamental purpose behind the MRTU program is to minimize the total system costs necessary to balance energy supply and demand and procure ancillary services, all while subject to certain constraints (transmission line limits, generator ramp rates, system energy balance, etc.). Further, MRTU design relies on economic supply and demand bids to set applicable market prices. But market software testing has proved

that an inflexible reliance solely on economic bids may lead to potentially extreme dispatch results and concomitant high prices. Specifically, a particular provision in the current MRTU tariff requires that all submitted economic bids be exhausted before utilizing other options to relieve system congestion.¹ These other options include, but are not limited to an ability to: (1) adjust self-schedules; (2) relax transmission constraints; and (3) relax the energy balance constraint. These are termed non-priced quantities because, much like economic bids, each is available to the CAISO to relieve congestion or system contingencies, but unlike economic bids, none have an associated price.

4. Under the current MRTU tariff, economic bids that are largely ineffective at relieving congestion will be used before the CAISO has the ability to adjust non-priced quantities to relieve congestion. This exhaustion of effective economic bids can result in extreme market prices for congestion relief. To remedy this potential market inefficiency, the CAISO has submitted this filing. The CAISO's proposal would allow for non-priced quantities to be adjusted before all economic bids are exhausted, thereby preventing excessive upward pressure on prices in the market optimization software. The CAISO proposes a means for valuing the use of these non-priced quantities, values or parameters that will ensure that the MRTU software will minimize total system costs while maintaining system requirements.

5. The CAISO states that the parameters for non-priced quantities addressed in this filing have numerical values that are pre-set by the CAISO in the market optimization software. Those market software parameters are used to guide the software through the adjustment of the non-priced quantities in the course of clearing the CAISO market.²

6. In order to operate the CAISO's locational marginal price-based market, the market optimization software is designed to combine the economics of the market with the physics of operating the integrated grid in a reliable manner. The CAISO's MRTU software is designed to accomplish this objective by utilizing two separate dispatch runs, called a "scheduling run" and a "pricing run." The two runs are utilized in each of the

¹ "In performing its optimization, the [Integrated Forward Market] first tries to complete its required functions utilizing Economic Bids without adjusting Self-Schedules, and adjusts Self-Schedules only if it is not possible to balance Supply and Demand and manage Congestion with available Economic Bids." MRTU Tariff Section 31.3.1.1.

² Examples of market inputs for non-priced quantities are the flow limits on transmission lines, requirements for procurement of ancillary services and self-schedules submitted by price takers, i.e. existing transmission contracts, transmission ownership rights and converted rights. *See* CAISO transmittal letter at 2.

CAISO's major market processes, including the integrated forward market, the residual unit commitment, the hour-ahead scheduling process, the real-time unit commitment and the real-time dispatch.³

7. During the scheduling run, the MRTU market optimization software determines the appropriate energy schedules for supply and demand and ancillary service procurement. The pricing run then determines the appropriate prices for the energy and ancillary services schedules produced by the scheduling run.

8. According to the CAISO, the two-run process is necessary to facilitate the market's ability to rely primarily on economic bids in determining the ultimate dispatch, and to refrain from adjusting self-schedules unless further use of economic bids would lead to a departure from prudent operating practice. To this end, the CAISO indicates that it is necessary to set the parameters for non-priced quantities at extreme levels in the scheduling run, levels that would not be appropriate for the ultimate establishment of settlement prices, which occurs in connection with the pricing run.⁴ Take, for instance, a congested line during the scheduling run. The CAISO could continue accepting economic bids that sequentially increase in cost, even bids that provide minimal congestion relief, in an attempt to relieve the congestion. Alternatively, the CAISO could forego accepting ever-increasing economic bids when the system costs reach a certain level, and instead adjust a non-priced parameter (such as temporarily relaxing the transmission constraint that is creating the congestion and causing the software to accept ever-increasing bids), which would limit the increase in overall system costs.

9. Currently, the MRTU tariff does not contemplate these market software parameters, and instead contains sets of steps and priorities to guide the CAISO in the event that feasible energy schedules cannot be produced in the forward market using only economic bids. If a transmission constraint cannot be resolved using economic bids to adjust load at the aggregation point, the tariff directs the CAISO to work through three steps in attempting to resolve the constraint.⁵ These steps include (1) employing ancillary services bids from capacity under a must offer obligation, (2) relaxing the transmission constraints to the extent that this is consistent with certain rules, and (3) adjusting load distribution factors to minimize the amount of load curtailed.

³ Testimony of Dr. Lorenzo Kristov at 9 – 10.

⁴ *Id.* at 10.

⁵ MRTU Tariff section 31.3.1.3.

10. Should load need to be curtailed to produce feasible schedules, the MRTU tariff lists the scheduling priority order for load in the forward market.⁶ Load with the lowest priority is curtailed first in attempting to produce feasible forward market schedules. Economic bids have the lowest priority, while self-schedules of existing contracts have relatively high priority.

II. The CAISO's Filing

A. The CAISO's Proposed Changes

11. As discussed above, the current MRTU tariff incorporates an inflexible provision that requires the market clearing software to exhaust all economic bids before adjusting transmission constraints or self-schedules. The CAISO states that it is necessary to revise this inflexible rule because market simulation results have demonstrated that it could lead to market solutions that are not well founded in either economics or good utility practice.⁷ The CAISO proposes to adopt new rules and parameter values that the CAISO asserts will: (1) implement just and reasonable MRTU scheduling priorities, including utilizing economic bids as far as possible before adjusting self-schedules; (2) ensure that the scheduling parameters necessary to implement those scheduling priorities do not unduly impact settlement prices; (3) facilitate the creation of feasible and operationally prudent schedules and dispatch; and (4) ensure a least-cost solution by avoiding unnecessarily expensive re-dispatch solutions when an adjustment of a non-priced quantity can result in a lower cost to the system.

12. Specifically, the CAISO proposes to introduce the concept of "ineffective economic bids." Ineffective economic bids would comprise those bids that, while available, are deemed to be an unacceptable means of relieving a constraint because the per-MW cost of using such bids exceeds the parameter for adjusting a non-priced quantity.⁸

13. The CAISO also proposes to adopt the following five new scheduling and pricing parameters:

(1) For the scheduling run, to indicate to the CAISO market software when to relax an internal transmission constraint rather than continue to adjust supply or demand economic bids or non-priced quantities, the CAISO will use a value of \$5,000

⁶ MRTU Tariff section 31.4.

⁷ CAISO transmittal letter at 2.

⁸ *Id.* at 10.

per MWh in both the integrated forward market and the real-time market as the scheduling parameter;

(2) Also for the scheduling run, in the integrated forward market, the CAISO will set the value of the scheduling parameter associated with self-schedules submitted under existing rights (i.e., existing transmission contracts, transmission ownership rights and converted rights) to a level higher than the scheduling parameter associated with internal transmission constraints to ensure that existing transmission contracts, transmission ownership rights and converted rights self-schedules are not adjusted in the day-ahead market;⁹

(3) For the pricing run, when there is a shortage of supply to meet load in the real-time market, the CAISO will use the applicable energy bid cap as already reflected in the MRTU tariff (initially \$500 per MWh, increasing to \$1000 per MWh in two annual steps) as the pricing parameter floor for calculating five-minute interval prices;

(4) For the pricing run, when a transmission constraint is relaxed to achieve a feasible market solution, the CAISO will use the energy bid cap as reflected in the MRTU tariff as the pricing parameter for calculating energy prices in the integrated forward market and the real-time market;

(5) For the pricing run, when an ancillary service procurement requirement cannot be fully met in the day-ahead market or the real-time market, the CAISO will use the ancillary services offer cap as already reflected in the MRTU tariff (\$250 per MWh) as the pricing parameter for determining the price of meeting the insufficient ancillary service.

B. Load Aggregation Point Demand Clearing Compliance

14. In addition to resolving issues related to the current MRTU requirement that the market clearing software exhaust all economic bids before engaging in any adjustments to submitted self-schedules, the CAISO states that this filing responds to certain compliance issues as previously directed by the Commission.¹⁰ Specifically, the Commission directed the CAISO to:

⁹ *Id.* at 11.

¹⁰ *Cal. Indep. Sys. Operator Corp.*, 119 FERC ¶ 61,313 (2007) (June 25, 2007 Order)

- A. provide further details about the impact of proposed transmission constraint violation penalty levels in the integrated forward market;
- B. submit revised tariff language clearly indicating that the penalty is not a financial penalty in the traditional sense;
- C. clarify what constitutes an effective economic bid for purposes of determining when the CAISO would relax transmission constraints;
- D. articulate what the provision does;
- E. explain how the provision works in practice;
- F. explain the practical and financial effect of the provision on the market participants; and,
- G. provide detailed answers to the questions raised by commenters concerning this provision.¹¹

III. Notice and Responsive Pleadings

15. Notice of the CAISO's filing was published in the *Federal Register*, 73 Fed. Reg. 69,629 (2008), with interventions or protests due on or before November 25, 2008. In response, the entities listed in Appendix A filed notices or motions to intervene, including protests or comments as noted.

16. State Water Project and Metropolitan filed answers. The CAISO filed a motion for leave to answer and answer to comments and protests. SMUD filed a motion for leave to answer and answer to the CAISO's answer.

IV. Discussion

A. Procedural Matters

17. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2008), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.

18. Rule 214(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 214(a)(2) (2008), prohibits an answer to a protest or another answer unless otherwise

¹¹ *Id.* P 162-164.

ordered by the decisional authority. We will accept the answers filed by the CAISO, State Water Project, Metropolitan and SMUD because they provided information that assisted us in our decision-making process.

B. Substantive Matters

19. This order conditionally accepts the CAISO's proposed tariff revisions. The current MRTU tariff provisions require the CAISO's market optimization software to exhaust all economic bids before either relaxing a transmission constraint or procuring additional ancillary services. By this tariff filing, the CAISO proposes to adopt new guidelines or parameters to determine when it is appropriate to adjust these non-priced quantities, rather than simply continuing to utilize every economic bid that is received.

20. We find that the parameters proposed by the CAISO are just and reasonable. It is important for the CAISO to make use of economic bids to the maximum extent practicable. However, in order to operate the grid prudently, it may be necessary at times to utilize other resources, such as procurement of additional ancillary services or the relaxation of transmission constraints to avoid unwisely relying on economic bids. The CAISO's proposed parameters represent a reasonable balancing of these competing interests.

21. In addition, it is important to protect priority users such as existing transmission rights, transmission ownership rights and converted rights customers from unfair degradation of their contractual rights as recognized by the CAISO and approved by the Commission. The CAISO's proposal is just and reasonable in its treatment of existing transmission rights, transmission ownership rights and converted rights customers. By adopting for these customers a scheduling parameter in the integrated forward market that is greater than that associated with relaxing transmission constraints or acquiring additional ancillary services, the CAISO's proposal provides these customers with reasonable protection, i.e., it ensures that preexisting contract rights are honored in almost all scenarios.

1. **Discrepancies Between Scheduling Run and Pricing Run Parameters**

a. **Scheduling Run and Pricing Run Parameters**

22. As described above, under MRTU, the CAISO's optimization for each market¹² occurs in two steps; a scheduling run and a pricing run. The scheduling run determines dispatch schedules, while the pricing run determines the prices associated with those schedules.

23. For the scheduling run, the CAISO proposes that its market software be programmed to relax an internal transmission constraint when a total system cost of \$5,000 per MWh of congestion relief has been reached.¹³ This scheduling parameter is applicable in both the integrated forward market and the real-time market.

24. For the pricing run, when a transmission constraint is relaxed to achieve a feasible market solution, the CAISO will use the energy bid cap as reflected in the MRTU tariff (currently \$500 per MWh, increasing in two steps to \$1,000 per MWh), as the pricing parameter floor for calculating energy prices in both the integrated forward market and the real-time market. This pricing parameter represents the minimum price when congestion is relieved using non-priced quantities.

25. The CAISO states that the \$5,000 per MWh value is only used for scheduling run purposes and is designed to approximate the point where prudent grid operators would ordinarily find that further reliance on economic bids would lead to resource adjustments not consistent with good utility practice. This scheduling parameter was not previously in the MRTU tariff and the CAISO states that it is necessary to meet compliance

¹² The process described occurs in the CAISO's pre-integrated forward market (market power mitigation/reliability requirement determination), integrated forward market, residual unit commitment, hour-ahead scheduling process, real-time unit commitment and real-time dispatch markets.

¹³ In this context, total system cost of congestion relief can be defined as the total cost of accepting additional economic bids to relieve congestion. For example, if the economic bid to relieve one MWh of congestion offered 10 additional MWh of energy, bid at \$490/MWh and each MWh is 10 percent effective at relieving the congestion, total system cost would be \$4,900/MWh for total congestion relief. Because the scheduling run parameter for relaxing an internal transmission constraint is \$5,000/MWh, the economic bid would be accepted. If the total system cost calculated in this manner exceeds \$5,000/MWh, the internal transmission constraint would be relaxed instead.

directives.¹⁴ Additionally, the CAISO states that inclusion of this parameter is necessary to implement the priority of existing transmission contract, transmission ownership right and converted right self-schedules by setting the scheduling parameter for self-schedules associated with such rights higher than the scheduling parameter for internal transmission constraint relaxation.¹⁵

b. WPTF's Protest

26. WPTF's protest concerns the discrepancy that exists between the scheduling run parameter for relaxing transmission constraints (\$5000 per MWh) and the associated pricing run parameter (initially \$500 per MWh).¹⁶ Additionally, WPTF states that the most pressing issue is the \$500 per MWh pricing run parameter, which it claims is too low. WPTF states that the pricing run parameter should be held at \$1,500 per MWh, the level that the CAISO originally proposed in its stakeholder process.¹⁷

27. WPTF argues that since the market simulation with \$1,500 per MWh as the pricing parameter produces prices that are higher than the new \$500 per MWh pricing parameter, the adoption of the new pricing parameter amounts to price suppression. WPTF states that this provision would distort the real cost of these constraints and thus perpetuates existing inefficiencies. Specifically, WPTF argues that the \$500 per MWh pricing parameter does not discourage self-scheduling and thus impedes the ability of the CAISO to obtain as many economic bids as possible. WPTF is concerned that relaxing a transmission constraint to access more energy is not good utility practice, is indicative of a system in crisis and that higher prices should be the alternative.¹⁸

28. Finally, WPTF objects to the \$500 per MWh pricing parameter because of the Commission's directive that the CAISO should implement scarcity pricing provisions within a year of MRTU start-up, which WPTF states does not mean that the CAISO must wait a full year before implementing pricing parameters that accurately reflect supply shortages. WPTF states that scheduling and pricing run parameters should increasingly reflect the value of constraint violations. WPTF states that the relaxation of constraints by the CAISO impacts market pricing because the scheduling run parameters signal the

¹⁴ CAISO transmittal letter at 13.

¹⁵ *Id.*

¹⁶ WPTF Protest at 3.

¹⁷ *Id.* at 3-4.

¹⁸ *Id.* at 7-8.

CAISO's limit on its willingness to pay to enforce constraints. As a result, WPTF proposes that the Commission should require the CAISO to gradually bring its scheduling run prices into line with its pricing run prices.¹⁹

29. WPTF also states that the Commission should require the CAISO to fully disclose instances of adjustments to non-priced quantities. According to WPTF, it will not be readily apparent when the CAISO has relaxed constraints and the CAISO should be required to issue quarterly reports detailing the extent to which adjustments were used.²⁰

30. Dynegy states that it supports WPTF's protest, but offers no additional comment.

c. Citigroup's Comments

31. Citigroup states that, due to its extensive testing in the CAISO market simulation and involvement in the parameter tuning initiative,²¹ it has uncovered what it believes are major issues with parameter tuning. Citigroup takes issue with the CAISO's use of bid caps as pricing parameters. Citigroup argues that the CAISO "either should not use the bid caps as pricing parameters, or else the bid caps (particularly the soft bid floor²²) should change to allow for economic bidding to the scheduling run parameters."²³

32. Citigroup states that the CAISO may be misapplying the -\$30 per MWh soft bid floor as a mitigation tool for generic import self-schedules. Citigroup asserts that once the scheduling run price is less than -\$549.99 per MWh (which indicates the curtailment of generic import self-schedules), the CAISO mitigates the pricing run price to -\$30 per MWh. However, Citigroup states, when generic import self-schedules are not curtailed

¹⁹ *Id.* at 9-10.

²⁰ *Id.* at 11.

²¹ The parties refer to the process that is being implemented by the CAISO's filing in this docket as "uneconomic adjustment" or "parameter tuning."

²² Energy bids in the CAISO markets of less than -\$30/MWh are not eligible to set any locational marginal price. If the CAISO dispatches a resource with an energy bid of less than -\$30/MWh, the scheduling coordinator, on behalf of the resource, will be eligible to receive the bid price upon submission of detailed information justifying the cost components of the bid to the CAISO and the Commission. The CAISO will pay the scheduling coordinator for amounts in excess of -\$30/MWh upon Commission acceptance of justifying cost components. (*See* MRTU Tariff Section 39.6.1.4).

²³ Citigroup comments at 4.

and the scheduling run price clears between -\$30 per MWh and -\$549.99 per MWh, the pricing run price clears at or near the scheduling run price. According to Citigroup, this results in less extreme prices during extreme transmission conditions, and more extreme prices during less extreme conditions.²⁴ Citigroup argues that by using the soft bid floor as a mitigation level, the CAISO is sending inaccurate price signals. Citigroup makes a similar argument for exports; that the mitigation of export-self schedules can lead to more extreme prices when transmission is under less extreme conditions.²⁵

33. Citigroup proposes two alternative solutions to these issues surrounding the curtailment of self-schedules. One proposed solution involves requesting that the Commission clarify what constitutes an adequate justification for submitting bids that are lower than the soft bid floor. Specifically, Citigroup proposes that bids lower than the soft bid floor be deemed justified for any of the following reasons: (1) to arbitrage price differentials; (2) to hedge risk; (3) to mitigate losses; (4) to flatten out or open up a position; (5) to meet performance obligations; (6) to comply with contractual obligations; or (7) to execute client instructions or otherwise react to that participant's view of the market at any given time.²⁶

34. Citigroup's second, and preferred proposed solution suggests allowing market participants to economically bid to the scheduling price run without restrictions and enable those economic bids to set the locational marginal price.²⁷ Citigroup contends that during market simulations it has observed that prices often clear between -\$30 per MWh and -\$550 per MWh for imports and argues that, at those price levels market participants may be willing to reduce imports or exports to reduce congestion. However, since market participants cannot currently bid lower than -\$30 per MWh without having to justify the bid to the Commission, Citigroup states that the CAISO may be foregoing a more economic solution to the market as a whole by adjusting self-schedules in lieu of accepting lower economic bids.

35. Citigroup contends that by having a bid cap and a soft bid floor, yet setting the pricing parameters and price caps in such a manner that locational marginal prices higher than the bid cap, or lower than the bid floor can occur, the CAISO is essentially collapsing the traditional pricing tools of energy and congestion, as well as line losses

²⁴ *Id.*

²⁵ *Id.* at 5.

²⁶ *Id.* at 7.

²⁷ *Id.*

into the locational marginal price.²⁸ Citigroup contends that if the bid floor and bid cap are intended to solve for congestion in reaching locational marginal price, the levels of the MRTU energy bid cap and bid floor should be adjusted to reflect that fact. Finally, Citigroup urges the CAISO to allow market participants adequate time to test the market parameters so that they can test and verify results.

d. The CAISO's Answer

36. In response to WPTF, the CAISO states that the use of the \$500 per MWh energy bid cap parameter in the pricing run does not suppress settlement prices. According to the CAISO, this is true because the pricing parameter acts as a floor rather than a ceiling. The CAISO cites its witness, Dr. Kristov, who testified that the only time there would be a difference between the \$1,500 per MWh parameter and the \$500 per MW parameter would be if the last economic re-dispatch signal was between the two.²⁹ Thus, the CAISO's concern is that by setting the pricing parameter at \$1,500 per MWh the possibility would exist that a settlement price would be arrived at for purely administrative reasons at a level that is above the amount that demand is allowed to bid in the energy market. In this regard the CAISO points out that it is important to remember that actual settlement prices can exceed the pricing parameter.

37. The CAISO further states that separating scheduling and pricing run parameters is necessary and provides sufficient disincentives for self-scheduling. The CAISO notes that the relatively high scheduling parameter is driven by the need to ensure that the market software prefers economic bids over self-schedule adjustment in conducting its dispatch and to facilitate prioritization among self-schedules when they must be adjusted. However, since the scheduling run parameters are far outside the range of allowable economic bids, using those parameters in setting the market settlement prices would not allow market participants to bid their economic preferences in response to the prices that would result.

38. The CAISO opposes WPTF's request that the Commission mandate a definitive timetable for increasing both the scheduling and pricing parameters and the convergence of the two. The CAISO notes that the pricing parameters for the real-time and integrated forward market correspond with the bid caps and have previously been approved by the Commission to increase on a three-year schedule, starting at \$500 per MWh, increasing to \$750 per MWh in the second year, and to \$1,000 per MWh in the third year. The CAISO indicates that it is unwilling to commit to an increase in those bid caps to \$5,000 per MWh before the market has even been launched.

²⁸ *Id.* at 9.

²⁹ CAISO answer at 4. *See* Testimony of Dr. Lorenzo Kristov at 26-32.

39. In objecting to a forced convergence of the scheduling run parameters and the pricing run parameters, the CAISO reiterates its policy concerns. The CAISO states that lowering the scheduling run parameter from \$5,000 per MWh would result in too frequent relaxation of transmission constraints, or would undermine the tariff priority sequence among differing self-schedules. The CAISO indicates an intent to monitor the effectiveness of the parameters over time and explore with stakeholders the raising of bid caps when that appears to be warranted.

40. The CAISO rejects both of Citigroup's proposed solutions as infeasible. The CAISO also asserts that Citigroup's comments amount to a collateral attack on the Commission-approved bid floor.

41. The CAISO states that Citigroup's first option amounts to a suggestion that when the scheduling run parameter is reached, the scheduling parameter should apply to settlements. The CAISO describes this as a jettisoning of the pricing run parameter. The CAISO contends that it is inappropriate to use the scheduling run parameter in this circumstance because its purpose was solely to establish the tariff-based scheduling priorities in the optimization and create the necessary price separation between various actions. Use of the separate scheduling and pricing parameters strikes a balance between allowing meaningful price signals to reflect conditions that trigger the adjustment of non-priced quantities, yet avoids extreme market impacts on market participants.

42. As to Citigroup's second alternative, the CAISO asserts that, in essence it constitutes a request to lower the bid floor. The CAISO notes that the bid floor is Commission-approved³⁰ and not at issue in this proceeding.

e. Commission Determination

43. The Commission agrees with the CAISO that, for purposes of the initial operation of the MRTU market, the proposed scheduling and pricing parameters, which would permit the adjustment of non-priced quantities as alternatives to the use of ineffective supply or demand economic bids, are just and reasonable. The purpose of the CAISO's proposed tariff revisions in this matter is to maintain the balance between ensuring maximum utilization of economic bids and prudent operation of the CAISO's grid. It would be unreasonable to continue to require the exhaustion of all economic bids before adjusting non-priced quantities.

44. We further agree that it is reasonable to use separate parameter values for the scheduling and pricing runs. The scheduling run parameter value is appropriately set to a

³⁰ *Citing Cal. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274, at P 1019-1021 (2006).

value which is high enough to avoid the frequent relaxation of those constraints. However, it would be inappropriate to use these scheduling run parameters as pricing run parameters.

45. Whereas the scheduling run parameter represents a limit on the willingness of the CAISO to pay for re-dispatch costs, the pricing run parameter is the floor on the price of constraint relaxation. As CAISO witness Kristov testifies, when a constraint is relaxed, the price of constraint relaxation used in setting locational marginal prices is the price of the last accepted MWh of congestion relief before re-dispatch costs exceeded the scheduling parameter.³¹ The pricing run parameter only affects this cost of constraint relaxation when the price of the last accepted MWh of re-dispatch is lower than the pricing run parameter.

46. As an example, if the least-cost economic bid available to relieve a congested constraint costs \$3,500/MWh, the economic bid will be accepted. If congestion still exists and the next least-cost economic bid available to relieve the constraint costs \$4,600/MWh, this economic bid will also be accepted. However, if congestion still exists and the next least-cost economic bid available to relieve the constraint costs \$5,500/MWh, the economic bid will not be accepted, and the software will instead choose to relax the constraint as the \$5,000/MWh scheduling parameter for constraint relaxation was exceeded. In the pricing run, \$4,600/MWh will be the system cost of congestion relief associated with that constraint, since this was the last accepted economic bid prior to relaxing the constraint. So, the discrepancy between the scheduling run and pricing run parameters allows economic signals to determine the price of constraint relaxation. Setting the pricing run parameter equal to the scheduling run parameter would therefore inappropriately and artificially raise prices.

47. We find that the CAISO's proposed \$500 pricing run parameter is an appropriate floor for the price of constraint relaxation. It is consistent with the highest level that an entity can economically bid and otherwise allows the economic signals from available economic re-dispatch options to determine the price of constraint relaxation. WPTF's proposal to set the pricing run parameter at \$1,500 would have little effect on prices, as the price of constraint relaxation is likely to be higher than \$1,500.³² Further, it is not a more reasonable or supportable parameter than the CAISO's proposed parameter; it is simply an arbitrarily higher figure.

48. We agree with Citigroup that prices should reflect actual market conditions. However, this is not the only relevant factor that the Commission has considered when

³¹ See Testimony of Dr. Lorenzo Kristov at 30.

³² *Id.* at 33.

determining the appropriate structure of the MRTU market. The Commission also has an obligation to ensure that prices are not excessive. To this end, we have approved price and bid caps for the MRTU market. These caps restrict prices, and may, in some circumstances, dampen price signals, but they are needed to ensure that prices do not become excessively high.

49. Here, the CAISO's pricing run parameter appropriately reflects the bid cap. Allowing the price for the reduction of self-schedules to rise above the bid cap would set the value of their reduction at an arbitrarily high level, since it would be beyond the level at which any resource can economically bid. While it is true that allowing resources to bid at levels higher than the bid cap would eliminate the need for this pricing run parameter to reflect the bid cap, these occasional inconsistencies in price signals do not justify such a drastic departure from the current MRTU market structure.

2. Minimum Effectiveness Threshold

a. Powerex's Comments

50. Powerex notes that the CAISO's proposal is to loosen the requirement that the integrated forward market utilize all economic bids before adjusting non-priced quantities. In order to accomplish that objective, the CAISO has introduced the concept of ineffective economic bids. Ineffective economic bids are those bids that are not deemed to be acceptable for relieving a particular transmission constraint because the per-MW cost of using such bids would exceed the parameter for adjusting a non-priced quantity.³³

51. Additionally, Powerex explains that the CAISO proposes to establish a scheduling parameter of \$5,000 per MWh, at which point the software will relax a transmission constraint rather than accept an otherwise economic bid. However, Powerex indicates that the CAISO has not proposed to establish a minimum effectiveness threshold in its tariff. Powerex specifically references the testimony of Dr. Kristov, providing an example of a 10 percent effectiveness threshold, yet noting that this is neither an upper nor a lower bound on effectiveness and that the software could accept bids from resources with lower percentages of effectiveness.³⁴

52. Powerex argues that the CAISO should establish a minimum effectiveness threshold in its tariff. Powerex states that without such a threshold the software is not prevented from accepting economic bids with extremely low effectiveness. For example,

³³ Powerex comments at 5.

³⁴ *Id.* at 5-6, citing Testimony of Dr. Lorenzo Kristov at 20-21.

Powerex states that at the proposed parameter setting of \$5,000 per MWh, it would be possible for the software to accept a bid of 1000 MWh of power bid at \$5 per MWh. Powerex states that this could leave the CAISO short on power in the day-ahead market, and more reliant on processes like residual unit commitment to acquire necessary power.

53. Additionally, Powerex notes that the CAISO has placed the parameter for adjusting existing transmission contracts, transmission ownership rights and converted rights self schedules above that of relaxing transmission constraints. Powerex states that it understands the protection given to existing rights-holders. However, Powerex would like the CAISO to clarify the treatment of existing rights-holders in the event that a transmission line is de-rated below the contractual capacity of the rights-holders on that line. Powerex is concerned that, should this occur, power would be re-dispatched to make the existing rights-holder whole at the expense of non-existing transmission contract customers. Powerex states that the Commission should require the CAISO to clarify that this is not the case.

b. The CAISO's Answer

54. The CAISO agrees with Powerex that without an effectiveness threshold, i.e. a lower limit on effectiveness, the market software could accept significant quantities of low-price energy bids to achieve a small amount of congestion relief on a particular constraint. The CAISO states that the MRTU software does in fact have a lower effectiveness setting which can be set by the CAISO.³⁵

55. The CAISO states that the lower limit is currently set at 0.5 percent effectiveness (0.005), which prevents the optimization from adjusting the schedule of a resource that is less effective at relieving congestion on a given restraint as a means to relieve congestion on that constraint. The CAISO further states that the software's factory setting effectiveness threshold is 0.01 percent effectiveness (0.0001), and that for most of the market simulation processes the effectiveness threshold was left at this factory setting. Only recently has the CAISO increased the threshold.³⁶ The CAISO further states that it intends to perform further analysis to determine an appropriate start-up setting and to include a description of the effectiveness threshold in the business practice manual no later than 45 days prior to go-live for the MRTU.

56. In response to Powerex's concerns regarding the treatment of existing rights in the instance of a transmission line de-rate, the CAISO initially states that it fully honors existing rights without reserving specific internal transmission capacity for those rights.

³⁵ CAISO answer at 20.

³⁶ *Id.* at 20-21.

As a result, the CAISO states that, because there is no explicit reservation of capacity for existing rights, in most cases it is not appropriate to limit those rights when internal transmission facilities are de-rated. The CAISO further states that where the CAISO is informed through transmission rights and transmission curtailment instructions that rights under a transmission ownership right, existing transmission contract or converted right are dependent on a specific internal transmission facility, the CAISO systems will appropriately reduce the rights in accordance with the transmission rights and transmission curtailment instructions when that facility is de-rated.³⁷

c. Commission Determination

57. Effectiveness is a necessary criterion in determining whether an economic bid should be considered for relieving congestion on the CAISO grid. For the reasons cited by Powerex, we agree that adoption of an effectiveness threshold is necessary, and note that the CAISO has acknowledged the need for an effectiveness threshold, while indicating that it continues to examine precisely what that threshold should be.

58. Consistent with our policy, as implemented through the rule of reason, we find that the effectiveness threshold is a provision that significantly affects rates, terms and conditions of service, and thus, must be filed for Commission approval and made a part of the CAISO's MRTU tariff.³⁸ Accordingly, we direct the CAISO to make a compliance filing within 30 days from the date of this order to include tariff revisions stating the effectiveness threshold.

59. We agree with the CAISO that the treatment of existing rights in the event of a transmission line de-rate is adequately and appropriately addressed by the fact that there is no reservation of capacity for existing rights and the matter of treatment of existing rights in the event of such a transmission line de-rate is adequately addressed through transmission rights and transmission curtailment instructions.

³⁷ *Id.* at 16, citing section 16.4.5 of the MRTU tariff.

³⁸ *See City of Cleveland v. FERC*, 249 U.S. App. D.C. 162, 773 F.2d 1368, 1376 (D.C. Cir. 1985) (finding that utilities must file “only those practices that affect rates and service significantly, that are reasonably susceptible of specification, and that are not so generally understood in any contractual arrangement as to render recitation superfluous”). *See also Cal. Indep. Sys. Operator Corp.*, 122 FERC ¶ 61,271, at P 16 (2008) (finding that the determination of whether provisions included in the CAISO's business practice manual must be filed with the Commission and made a part of the CAISO's MRTU tariff is determined through the “rule of reason”).

3. Compensating Injections

a. SMUD's Comments

60. SMUD raises concerns over the use of what the CAISO terms “compensating injections” in the CAISO’s market model, specifically that compensating injections might have the effect of lowering the priority of SMUD’s self-schedules. According to SMUD, some internal schedules within the CAISO made feasible by the availability of SMUD transmission capacity might result in the curtailment of SMUD self-schedules.³⁹ Specifically, SMUD states that as it understands the term, compensating injections assume, in determining the feasibility of particular schedules, that some of the actual power flows will occur on SMUD’s transmission system without compensation.

61. SMUD states that, if failure to calculate compensating injections adversely affects locational marginal prices, then the injections would have an effect on locational marginal prices both inside the CAISO and at the interties.⁴⁰ SMUD contends that if the CAISO is using compensating injections to “represent flows across the CAISO boundary that are not produced by schedules within the CAISO market and Balancing Authority Area,”⁴¹ SMUD is entitled to understand exactly how these are calculated and what impacts they may have on SMUD’s interties, prices and self-schedules. SMUD points out that the issue of compensating injections was discussed in the certification audit of the CAISO’s integrated forward market and its real-time nodal market structure performed by Science Applications International Corp. (Science Applications).⁴² According to SMUD, Science Applications found that the concept of compensating injections had been addressed in one section of the tariff relating to the hour ahead scheduling process, but not in another section of the tariff relating to the real-time market. Science Applications requested that the CAISO conform the two sections of its tariff.

62. SMUD requests that, because resolving misunderstandings regarding compensating injections would also clarify whether the CAISO’s use of injections affects the priority of self-schedules, the Commission should condition its acceptance of the CAISO’s filing on the CAISO’s agreement to: (1) meet with stakeholders to discuss the

³⁹ SMUD comments at 3.

⁴⁰ *Id.* at 5.

⁴¹ See “CAISO Responses to Questions [From] Integrated Balancing Authority Areas,” posted February 16, 2008, www.caiso.com/1f6e/1f6e122cc51310.pdf at 28.

⁴² Science Applications International Corp. “Certification of Integrated Forward Market-Real Time Nodal (IFM-RTN),” <http://www.caiso.com/1fc5/1fc5d12b5460.html>.

issue and clarify how compensating injections operate, and (2) amend its tariff, as needed, to incorporate these clarifications and to provide assurance that self-schedules are not adversely affected.⁴³

b. The CAISO's Answer

63. The CAISO's answer describes the use of compensating injections. The CAISO states that compensating injections is a term used to refer to the process in the real-time market software to account for loop flow impacts from external sources and sinks on the CAISO grid in real-time. The CAISO states that within the CAISO balancing authority area, resources must schedule at their actual physical locations. However, for resources outside the CAISO balancing authority area, imports and exports are scheduled at scheduling points that are not necessarily the actual physical location in the other balancing authority area, for which the CAISO typically does not know the location anyway.⁴⁴

64. The CAISO further states that unscheduled flow, or loop flow, is caused by interchange transactions involving external loads, as well as external power flows that may be unrelated to interchange transactions with the CAISO. The CAISO indicates that it performs loop flow calculations to supplement market scheduling data, and to match the actual real-time metered power flows that are observed at the CAISO boundary. It is these loop flow calculations that are otherwise known as compensating injections.⁴⁵ The CAISO indicates that compensating injections may result in a re-dispatch to address a binding constraint resulting from the combination of scheduled flows and compensating injection flows. According to the CAISO, this results in more accurate dispatch and pricing, but does not impact scheduling by SMUD at its interties. The CAISO points out that it can only control its internal re-dispatch, not external power flows, and that the parameter filing in this docket does not propose any changes to currently effective processes that involve compensating injections.

65. Finally, the CAISO acknowledges that Science Applications did refer to compensating injections in its audit. According to the CAISO, Science Applications noted the language regarding accounting for loop flows that was present in the CAISO's tariff in the hour ahead scheduling process section 33.2 and questioned whether the same language should appear in the real-time section. The CAISO indicates that the fact that detailed language describing its accounting for loop flow did not occur in the real-time

⁴³ SMUD comments at 7.

⁴⁴ *Id.* at 22-23.

⁴⁵ *Id.* at 23.

section of its tariff was a matter of oversight that occurred when its tariff was revised to separate the hour-ahead scheduling process section from the real-time market section. The CAISO indicates that it intends to submit a filing adding language to the real-time market section of its tariff to address unscheduled flow, which will include the modeling of compensating injections. The CAISO states that the practice of modeling compensating injections is not altered by the setting of parameters in this docket and does not affect the ability of the CAISO to honor established priorities for self-schedules.

c. SMUD's Answer to the CAISO

66. SMUD's answer to the CAISO's answer reiterated its concern that compensating injections could cause SMUD's self-schedules to be curtailed at the interties. SMUD states that it is concerned that loop flow onto SMUD's transmission system from external CAISO resources may increase the risk that SMUD's self-schedules will be curtailed at SMUD ties. SMUD describes loop flows as essentially undisclosed and uncompensated injections onto its transmission system.⁴⁶

67. In describing the way loop flow on the SMUD transmission system relates to the CAISO's parameter tuning adjustments, SMUD expresses concern over the CAISO's reliance on the notion that parameter tuning will preserve the relative priority of self-schedules. SMUD asserts that the objective of parameter tuning is to improve the absolute level of assurance that self-schedules not be curtailed.⁴⁷ SMUD then expresses a concern that the CAISO may be relying on loop flows over the SMUD transmission system, which in SMUD's view could increase the likelihood of its self-schedules being curtailed. SMUD's proposed solution is to require the CAISO to bid any "injections" as a self-schedule at SMUD/CAISO intertie points so that if there is a need to cut self-schedules, those schedules will be cut on a *pro rata* basis.⁴⁸

d. Commission Determination

68. The Commission finds that the treatment of compensating injections as presented by SMUD is beyond the scope of this proceeding. Compensating injections are a device used to reflect actual, physical results in the real-time market in order to ensure that prices accurately reflect flows of energy from outside the CAISO balancing authority area. We agree with the CAISO that, for purposes of the parameter tuning tariff revisions, it is not necessary to identify the specific resource that contributes the loop

⁴⁶ SMUD answer at 2.

⁴⁷ *Id.* at 3-4.

⁴⁸ *Id.* at 4.

flow at interties, nor would it be possible for the CAISO to do so without sufficient modeling information submitted by SMUD.

69. This proceeding involves the CAISO's implementation of rules and parameters that appropriately balance maximizing the use of economic bids in settling the CAISO's market against the need for the CAISO to operate the grid prudently and efficiently. Establishing parameters and rules that prioritize between the use of economic bids and adjustment of non-priced quantities is unaffected by the effects of loop flows in real-time. This is true regardless of the direction that loop flows take between the CAISO grid and the SMUD transmission system. Similarly, establishing parameters that prioritize among the categories of non-priced quantities, i.e. existing transmission contracts, transmission ownership rights, converted rights, release of transmission constraints or revised procurement of ancillary services, is also unaffected by the effects of loop flow in real-time.

70. The particular rules and parameters established in this proceeding will not have an effect on loop flows that occur in real time. Similarly, because the loop flows and related compensating injections only occur in real time, they will not have an impact on SMUD's ability to schedule at the interties in the integrated forward market.

4. Adequacy of the CAISO's Analysis

71. The CAISO's transmittal letter contains a background section⁴⁹ that describes the development of its filing in this docket. The CAISO explains that when first filed, the MRTU tariff provided that in performing its optimization, the integrated forward market tries to clear the market utilizing economic bids without adjusting self-schedules and adjusts self-schedules only if it is not possible to balance supply and demand and manage congestion with economic bids.⁵⁰ Additionally, the CAISO states that the initial MRTU tariff filing provided the relative priorities that would be enforced in the event that non-priced quantities or self-schedules needed to be modified.

72. Thus, the CAISO states that the initial purpose of the instant filing in this docket is to amend or revise the MRTU tariff to include several market parameters. Specifically, the CAISO states that having concluded the bulk of its market simulation and analysis of the scheduling and pricing parameters with its stakeholders, and based on the results of that market simulation and analysis, the CAISO has determined the appropriate set of parameters that should govern adjustments to non-priced quantities by its market

⁴⁹ CAISO transmittal letter at 4-6.

⁵⁰ *Id.* at 4.

optimization software.⁵¹ The CAISO seeks approval in this docket of rules and parameters to govern its market optimization software in consideration of the treatment of price-taker self-schedules submitted by scheduling coordinators, as well as certain constraints such as transmission flow limits and ancillary services procurement requirements.

a. Protests and Comments Regarding Adequacy of Analysis

73. PG&E states that during the stakeholder process, several parties who hold existing transmission contracts, transmission ownership rights or converted rights raised concerns that the MRTU optimization process could reduce the firmness of their scheduling rights in the day-ahead market and expose them to financial costs that would diminish the value of their existing contracts. PG&E acknowledges that the CAISO's proposed MRTU tariff modifications ensure that existing transmission contracts, transmission ownership rights and converted rights self-schedules are not adjusted in the day-ahead market by increasing the integrated forward market parameter values used for existing transmission contracts, transmission ownership rights and converted rights self-schedules up to a value above the parameter value for relaxing internal transmission constraints of \$5,000 per MWh.⁵²

74. PG&E asserts that the CAISO did not conduct an analysis that fully evaluated the market impacts of this approach and requests that the Commission order the CAISO to conduct that analysis prior to the adoption of any revision to the MRTU tariff.

75. SoCal Edison expresses a concern that is virtually identical to that of PG&E on this issue. SoCal Edison states that it has yet to see any analysis from the CAISO that would confirm that the proposed scheduling run parameters will preserve the relative priority of existing transmission contracts, transmission ownership rights and converted rights contracts. SoCal Edison further states that it has not seen any analysis describing the impact that adoption of the CAISO's proposed scheduling run parameters might have on the remainder of the market by preserving the existing transmission contracts, transmission ownership rights and converted rights priorities. Finally, SoCal Edison states that it is concerned that the adoption of the CAISO's proposed scheduling run parameters may provide existing transmission contracts, transmission ownership rights and converted rights, but most particularly existing transmission rights with a scheduling priority that is superior to their original contractual entitlement.⁵³ SoCal Edison requests

⁵¹ *Id.* at 6.

⁵² PG&E comments at 3-4.

⁵³ SoCal Edison comments at 3.

that the Commission require the CAISO to perform an analysis and provide stakeholders with a side-by-side comparison of market results using the original scheduling run parameter values and the values proposed in the CAISO's current filing.

76. Western voices a continuing concern about the impacts that parameter tuning may have on self-schedules. Western's concerns are associated with existing transmission contracts and transmission ownership rights. Western indicates that it is difficult to determine whether the CAISO's current proposal will offer adequate protection for existing transmission contracts and transmission ownership rights because it has been unable to verify the results of the CAISO's market simulation activities.⁵⁴ NCPA presents similar concerns. NCPA indicates that it supports the CAISO's goal of setting parameters to preserve the rights of existing transmission contracts, transmission ownership rights, and converted rights by giving them all priority over other self-schedules. However, NCPA states that it is concerned because it lacks both hard data and the ability to assess whether the CAISO has selected the right parameter levels.⁵⁵ NCPA requests that the Commission make the entire MRTU implementation subject to refund.⁵⁶

b. Answers of Metropolitan and State Water Project

77. Responding to SoCal Edison's concern specifically regarding the relative priority that existing transmission contracts would receive under the CAISO's proposal, Metropolitan states that scheduling priorities in the integrated forward market have been established for some period of time and asserts that SoCal Edison's concerns in this docket constitute an impermissible collateral attack on the prior Commission orders accepting section 31.4 of the MRTU tariff.⁵⁷ State Water Project agrees with Metropolitan, noting that while SoCal Edison and PG&E profess to be concerned about the extent of the study that underlies the CAISO's proposal, SoCal Edison and PG&E's comments appear to be no more than an impermissible collateral attack on the CAISO's proposal to preserve scheduling priorities for existing transmission contracts, transmission ownership rights and converted rights self-schedules.⁵⁸

⁵⁴ WPTF comments at 3.

⁵⁵ NCPA comments at 4.

⁵⁶ *Id.* at 7.

⁵⁷ Metropolitan answer at 2.

⁵⁸ State Water Project answer at 2.

78. State Water Project goes on to request that the Commission “make clear” the obligation of SoCal Edison and PG&E to honor the contractual rights of existing transmission contracts, transmission ownership rights and converted rights, and to explicitly recognize the priorities established among the various existing transmission contracts, transmission ownership rights and converted rights when submitting to the CAISO their transmission reservation and transmission curtailment instructions.⁵⁹

c. The CAISO’s Answer

79. In response to SoCal Edison and PG&E’s request that the CAISO demonstrate through additional simulations that the existing transmission contract protection proposal produces reasonable results, the CAISO explains that it is already obligated to honor the existing rights of existing transmission contracts, transmission ownership rights and converted rights differently than all other uses of the grid. The CAISO states that this parameter tuning proposal does not alter the priority treatment of self-schedules, rather it only ensures that the already-established relative priority between existing transmission contract, transmission ownership right and converted right self-schedules and other self-schedules will be maintained and not eroded by the congestion management measures adopted in the integrated forward market.

80. In addition, in direct response to SoCal Edison and PG&E’s requests that the CAISO be directed to conduct additional analysis, the CAISO states that it has already implemented the proposed scheduling parameters for existing transmission contracts, transmission ownership rights and converted rights in the market simulation software and that the results are available to market participants. The CAISO states that it will continue to monitor the market simulation results, as well as the actual market results to assess any impacts on locational marginal prices that might be attributable to the higher scheduling priority accorded to existing rights self-schedules.

d. Commission Determination

81. The Commission finds that the protection given to existing transmission contracts, transmission ownership rights and converted rights in the instant filing is appropriate, and is consistent with the prior approved protection currently given to those rights. As asserted by Metropolitan and State Water Project, the priority order among self-schedules has been established by section 31.4 of the CAISO’s MRTU tariff, and it is not altered by this parameter tuning filing. Meanwhile, PG&E and SoCal Edison offer no evidence from the market simulation data already made available to them to support the notion that adopting the CAISO’s proposed scheduling parameters for existing transmission contracts, transmission ownership rights and converted rights in the day-ahead market

⁵⁹ *Id.* at 3-4.

somehow confers to those existing rights holders a scheduling priority that is superior to their original contractual entitlement.

82. In response to claims that the CAISO did not conduct enough analysis of the proposed parameter values, the Commission finds that the analysis conducted by the CAISO is sufficient. As the CAISO points out in its answer, market simulations have been run utilizing the proposed scheduling parameters, and have been made available to market participants.⁶⁰ Neither PG&E, Western, nor SoCal Edison has identified irregularities in the results of those market simulation runs that support a finding that the CAISO's proposal is unjust and unreasonable. While such simulations cannot perfectly predict actual market conditions, they represent a reasonable substitute when hard data on the price effects of the new market is unavailable. Moreover, the CAISO has committed to continually evaluate the parameters in the future, both before and after the MRTU "go-live" date. We expect the CAISO to follow through on its commitment. We find the CAISO's proposed parameter levels to be just and reasonable.

83. The Commission will not order that the MRTU tariff provisions be subject to refund. Parties seeking Commission action must, at a minimum, make specific allegations and provide some basis to question the reasonableness of an accepted tariff.⁶¹ The Commission has interpreted the burden under section 206 of the Federal Power Act (FPA)⁶² to require a customer to provide some basis to question the reasonableness of the overall rate level, taking into account changes in all cost components and not just the challenged component.⁶³ NCPA does not explain how the priority given to existing rights would affect the justness and reasonableness of the whole tariff. Moreover, as the CAISO states, setting the market subject to refund would be impractical because of the complexity of the changes implemented by the whole set of MRTU tariff provisions.

84. In response to State Water Project's request that the Commission order SoCal Edison and PG&E to comply with CAISO tariff provisions, the Commission finds that

⁶⁰ See California ISO: MRTU Market Simulation: Integrated Market Simulation - Update 2 (IMS-U2).

⁶¹ See, e.g., *Algoma Group v. Wis. Pub. Serv. Corp.*, 61 FERC ¶ 61,265, at 61,959 (1992).

⁶² 16 U.S.C. § 824e (2006)

⁶³ See *Ameren Servs. Co. v. Midwest Indep. Transmission Sys. Operator, Inc.*, 121 FERC 61,205, at n.25 (2007) (citing *Sithe/Independence Power Partners, L.P. v. FERC*, 165 F.3d 944, 951 (D.C. Cir. 1999)).

such a directive is not necessary. PG&E and SoCal Edison are obligated to follow the CAISO tariff, and have shown no indication that they do not intend to do so.

5. Claims of Undue Discrimination

a. State Water Projects Comments

85. State Water Project states that it is currently the only source of demand response in CAISO markets.⁶⁴ According to the Participating Load Agreement between the CAISO and State Water Project, State Water Project's pump loads offer 3,225 MW of available participating load capacity, consisting of 1,871 MW of pumping capacity and 1,354 MW of pump-generation capacity.⁶⁵ One of State Water Project's primary concerns in this proceeding is the treatment of its participating load with respect to the parameter tuning mechanism. State Water Project argues that the nature and scope of the CAISO's planned employment of participating load is unknown to State Water Project. As a result, State Water Project claims that the CAISO has failed to meet the Commission's directive⁶⁶ to fully explain the "practical and financial effect" of its parameter tuning proposal. According to State Water Project, the CAISO should be directed to more clearly articulate the effect of parameter tuning with respect to State Water Project's participating load.⁶⁷

86. State Water Project also argues that the CAISO intends to reverse its commitment never to engage in involuntary adjustments or dispatch of participating load.⁶⁸ Particularly, State Water Project argues that because MRTU treats load aggregation point load as a whole, which cannot feasibly be adjusted or curtailed, the burden of such adjustment or curtailment falls exclusively on the nodally-settled participating load that State Water Project provides. State Water Project further argues that what it perceives as

⁶⁴ State Water Project comments at 7.

⁶⁵ *Id.* at 8, citing *Cal. Indep. Sys. Operator Corp.*, Docket No. ER08-1203, Participating Load Agreement Atch. B (July 1, 2008).

⁶⁶ *See Cal. Indep. Sys. Operator Corp.*, 119 FERC ¶ 61,313, at P 163 (2007) ("...we direct the CAISO to clearly articulate in the compliance filing transmittal letter: (1) what the revised provision does; (2) how the provision works in practice; (3) the practical and financial effect of the provision on the market participants; and (4) detailed answers to the questions raised by commenters.").

⁶⁷ State Water Project comments at 12.

⁶⁸ *Id.* at 17.

the CAISO's resistance or inability to adjust load aggregation point load at nodes or geographically meaningful sub-load aggregation points is "a manifestation of pervasive problems associated with scheduling and managing intra-zonal congestion at the load aggregation point levels," and does not justify undue discrimination against participating load because it happens to be settled nodally.⁶⁹ State Water Project asserts that its participating load will be singled out for adjustment, rather than equally effective load aggregation point load, because load scheduled at the load aggregation point is not cost-effective to curtail or adjust.

87. Because of this perceived inequity in nodal versus load aggregation point settlement, State Water Project asserts numerous arguments in which it claims that it will be subject to disparate treatment, claiming, among other things: (1) undue discrimination; (2) the creation of barriers to demand response and violation of Commission Order No. 719, specifically asserting that the CAISO's parameter tuning proposal will result in discouraging demand response resources;⁷⁰ (3) that if it is unable to decline an involuntary CAISO dispatch or denial of transmission service the result leads to an increased risk of damage to water management structures;⁷¹ and, conversely, (4) that if it is able to decline a CAISO dispatch instruction that result may increase the risk of tariff violations and Commission investigations.⁷²

88. Alternatively, State Water Project asserts that, should its transmission service be involuntarily denied or its participating load curtailed, the CAISO should: (1) develop financial compensation mechanisms for the curtailed participating load amount, including cost recovery for loss of water or damage to water operations; (2) exempt participating load from all CAISO reliability costs, resource adequacy requirements, and from any other costs or responsibilities imposed on loads that receive firm service.

⁶⁹ *Id.* at 20.

⁷⁰ *Id.* at 23-25, citing *Wholesale Competition in Regions with Organized Markets*, 73 Fed. Reg. 12,576 (Mar. 7, 2008), FERC Stats. & Regs. ¶ 32,682, at P 38 (2008) (NOPR).

⁷¹ *Id.* at 26. Specifically, "Increasing pumping without regard to the flow of water in [State Water Project's] system of reservoirs and aqueducts could cause flooding or dewatering of an aqueduct, which in turn would severely damage the aqueduct's structural integrity."

⁷² *Id.* at 26-27. Specifically, "[f]ailure to comply with CAISO operating orders can result in sanctions up to \$10,000 under the tariff. Failure to comply also may expose a participating load to potential FERC market and reliability investigations whose penalties could be as much as \$1 million / day."

89. Finally, State Water Project requests that the Commission order the CAISO to move quickly to develop sub-load aggregation points “to address myriad and significant problems resulting from use of excessively large [load aggregation points] for scheduling and intra-zonal congestion management.”⁷³

b. The CAISO’s Answer

90. The CAISO argues that State Water Project’s concerns about the disparate treatment of nodal and load aggregation point load are beyond the scope of this proceeding. The CAISO states that adjustment of non-priced quantities did not create and does not change the relevant feature of the integrated forward market discussed in State Water Project’s comments.⁷⁴ The CAISO states that issues surrounding the different treatment of nodal and load aggregation point load were debated and incorporated into the MRTU tariff long before the current proceeding.⁷⁵

91. The CAISO argues that the disparate treatment of nodal and load aggregation point load does not constitute undue discrimination. The CAISO asserts that the fact that participating load is scheduled and settled nodally, unlike most other loads⁷⁶ was largely adopted at the insistence of State Water Project. The CAISO states that a claim of undue discrimination under the FPA must rest on the premise that two entities are being treated differently when they are in fact so similarly situated that disparate treatment is unfair. The CAISO then submits that participating load is in a separate class from other load and that it is treated fairly under the CAISO’s proposal. According to the CAISO, participating load, by definition, is capable of participating in the CAISO energy and ancillary services market like a generating resource and as a result is scheduled at its actual physical location at locational prices, a feature of participating load that the CAISO believes is operationally significant and belies a claim of undue discrimination.⁷⁷

92. In response to State Water Project’s assertions that the parameter tuning filing proposal discourages demand response, the CAISO states that it does not. The CAISO argues that this proceeding does not modify the MRTU design features regarding scheduling of participating load and load aggregation point load in the integrated forward

⁷³ *Id.* at 37.

⁷⁴ CAISO answer at 9.

⁷⁵ *Id.* at 10.

⁷⁶ *Id.*

⁷⁷ *Id.*

market. As a result, the CAISO suggests that State Water Project should look to another forum to raise these matters.⁷⁸

93. The CAISO notes that State Water Project's pleading relies on numerous references to real-time conditions and the potential curtailment of its right to firm transmission service. However, the CAISO points out that, under the MRTU tariff, load is only curtailed in real-time in the case of a system emergency. The CAISO states that the real-time market sees load in the form of a fixed load forecast, and cannot distinguish between load aggregation points and nodal load. Thus, the CAISO states that participating load that has not offered to provide energy or ancillary services will be not dispatched in the real-time market.⁷⁹ The result of this situation is that the demand response attributes of participating load are not damaged due to parameter tuning, and the dangers asserted by State Water Project do not present legitimate concerns.

94. The CAISO points out that participating load by definition is capable of participating in the CAISO energy and ancillary services markets like a generating resource. The CAISO notes that, as a result, participating load is scheduled at its actual physical location and settled based on locational prices, which is comparable treatment to generating resources. In fact, according to the CAISO it is this unique characteristic of participating load as contrasted with default load aggregation point load that could result in self schedule adjustment occurring in the integrated forward market. That is, because participating load is scheduled at its physical location rather than across a range of locations, the possibility exists that adjusting a participating load self schedule will be relatively more effective at relieving a constraint than adjusting load aggregation point load. Therefore, when faced with the situation, the market optimization software will choose to adjust a participating load self schedule because it relieves a constraint more effectively.⁸⁰

95. The CAISO states that the fact that the differing treatment between nodal and load aggregation point load exists only in the integrated forward market has two important implications. First, curtailment in the integrated forward market merely means that some part of the self schedule does not clear the integrated forward market and must be acquired in the real-time market. The CAISO states that this carries financial, but not

⁷⁸ *Id.* at 13.

⁷⁹ *Id.* at 11.

⁸⁰ *Id.* at 9.

operational risk.⁸¹ Second, the fact that load may be adjusted only in the integrated forward market will avoid the array of disastrous results that State Water Project claims.

96. Furthermore, the CAISO argues that the risk of a State Water Project self schedule being adjusted in the integrated forward market is relatively low. The CAISO notes that a large portion of State Water Project's participating load is served by existing transmission contracts, which the CAISO's parameter tuning proposal protects against adjustment in the integrated forward market. The CAISO further states that, even in the integrated forward market an adjustment to State Water Project's participating load will only occur if (1) the system is sufficiently constrained that self-schedule adjustment is called for, and (2) an adjustment to State Water Project's self schedule is more effective than other options.⁸²

97. With regard to State Water Project's concerns about the conflict between its energy needs and other duties such as State Water Project's water pumping obligations, the CAISO states that this is already addressed in the tariff.⁸³ The CAISO notes that section 22.13 of the MRTU tariff states "[n]othing in this CAISO Tariff is intended to permit or require the violation of federal or California law concerning hydro-generation and Dispatch, including but not limited to fish release requirements, minimum and maximum dam reservoir levels for flood control purposes, and in-stream flow levels."

98. In response to calls that the CAISO commit to pursue a more granular load aggregation point settlement, the CAISO notes that the Commission has already ordered the CAISO to develop sub-load aggregation points for MRTU Release 2. The CAISO states that it has not wavered from that commitment.

c. Commission Determination

99. State Water Project petitioned for its participating load to receive nodal treatment as opposed to zonal treatment to account for the fact that when it submits bids to provide energy through self-curtailment, it is acting more like a generator and therefore should be paid a locational (nodal) price. Given the unique nature of participating load in this regard, the fact that the CAISO's market optimization software also treats participating load nodally in determining optimal scheduling in the integrated forward market is appropriate. Because State Water Project's participating load can act as either a load or a generating resource, it is unique and not similarly situated to other market participants.

⁸¹ *Id.* at 11-12.

⁸² CAISO answer at 13.

⁸³ *Id.* at 14.

We find that the CAISO's proposal treats State Water Project's participating load in a manner that is appropriate in both circumstances. Therefore, we reject State Water Project's argument regarding undue discrimination.

100. With respect to State Water Project's argument seeking a clear explanation of when or how participating load may be denied transmission service through schedule adjustments or dispatch in order to protect load aggregation point loads, we find that these concerns have been sufficiently addressed by the CAISO. The Commission agrees with the CAISO because State Water Project confuses the integrated forward market conditions with real-time circumstances. State Water Project appears to believe that the instant parameter tuning filing will lead to the real-time curtailment of its participating load on a discriminatory basis, but, as explained by the CAISO, this belief is unfounded. State Water Project's participating load will continue to receive the same firm transmission service that it currently receives through the CAISO markets. Other than an instance of a system emergency, the only possibility of an adjustment to a participating load self-schedule would be through the integrated forward market. An adjustment in the integrated forward market would, at most result in the participating load having to procure a portion of its submitted self-schedule load through the real-time market, rather than all of it clearing the integrated forward market. Further, as noted by the CAISO, a large portion of State Water Project's participating load is served through existing transmission contracts, which offer protection against adjustments in the integrated forward market. For these reasons, we find State Water Project's argument misplaced.

101. For reasons stated above, we find the assertions brought forth by State Water Project regarding creating barriers to demand response to be outside the scope of this proceeding. As the CAISO stated, the subject matter of this proceeding was the implementation of MRTU design features that have been approved regarding the scheduling in the integrated forward market of participating load and default load aggregation point load. We find that the CAISO's proposal treats State Water Project's participating load in a fair manner and is just and reasonable. If the design features that State Water Project raises are found to be problematic for developing demand response applications in the CAISO markets, this would best be addressed through the ongoing demand response stakeholder process. According to the CAISO, it has worked with interested stakeholders to comply with the Commission's directive to develop proposals for integrating demand response resources into the MRTU markets and its schedule provides for the enhancements to demand response participation in the MRTU tariff to be filed in 2009.⁸⁴ Further, in conjunction with its compliance obligation under Order No.

⁸⁴ CAISO Demand Response Integration Working Group Meeting Introduction & Overview (December 12, 2008). The CAISO's timeline can be found at: <http://www.caiso.com/209b/209b856053f80.pdf>.

719,⁸⁵ the CAISO and its stakeholders will work to strengthen competition in its market, including the use of demand response.

102. With respect to State Water Project's remaining arguments regarding the ability to decline a CAISO dispatch instruction, and other financial or legal ramifications that would arise from real-time curtailment or adjustment of State Water Project's participating load, we find that these concerns are adequately addressed based on the CAISO's response that absent a system emergency, real-time load is never curtailed. Additionally, as noted by the CAISO, its existing MRTU tariff contains provisions to protect State Water Project from the risks of a forced dispatch or curtailment affecting State Water Project's ability to comply with its water pumping obligations.⁸⁶

103. Regarding the level of granularity of load aggregation points, the Commission continues to find that the CAISO's commitment to develop increased granularity through the development of sub-load aggregation points for MRTU Release 2 is a sufficient timeline to address State Water Project's concerns.

6. The CAISO's Revised Approach to Clearing Load Aggregation Point Demand

104. The CAISO proposes new provisions to section 31.3.1.3 of its tariff, designed to revise the mechanism utilized to clear load aggregation point demand. The CAISO states that the load aggregation point demand clearing mechanism contained in its initial MRTU filing was predicated on preliminary evaluations of its market optimization software, from which it initially concluded that under certain circumstances it would be unable to clear load aggregation point demand.⁸⁷ Based on the results of market simulations and testing conducted in assessing the configurable parameters of the market simulation software, the CAISO has revised its opinion and submits tariff language under which load aggregation point demand clearing occurs entirely within the market optimization process of the integrated forward market.

105. The CAISO explains that the load aggregation point demand clearing process previously involved three steps of discrete tests and optimization re-runs and was performed in the pre-integrated forward market phase. Under the newly filed tariff provisions, the scheduling parameters are configured in such a manner as to replicate

⁸⁵ *Wholesale Competition in Regions with Organized Electric Markets*, Order No. 719, FERC Stats. & Regs. ¶ 31,281 (2008).

⁸⁶ CAISO answer at 14.

⁸⁷ CAISO transmittal letter at 21.

steps one and two of the previous process, but performs the analysis in the context of the integrated forward market optimization rather than in the pre-integrated forward market phase.⁸⁸ The CAISO states that it has configured the parameters in such a manner that the market optimization software will arrive at a feasible solution by either calling on ancillary services or relaxing transmission constraints as appropriate.

106. Consistent with this approach, the CAISO states that it has set the parameter on internal transmission constraints that would affect load aggregation point demand at \$5,000 per MWh. As a result, the optimization would accept an economic supply bid priced at the bid cap of \$500 per MWh that is at least 10 percent effective in relieving the binding constraint. As a result, if the first step of releasing self-provided ancillary services within the load pocket does not yield sufficient energy to relieve the constraint, the integrated forward market scheduling run will relax the constraint. During the pricing run, the pricing parameter of \$500 per MWh will be used for the amount of constraint relaxation up to the amount relaxation level determined in the scheduling run.

107. The CAISO determined that the third step from the current section 31.3.1.3 would be unduly costly and difficult to implement.⁸⁹ Based on market simulation the CAISO determined that it is likely that steps one and two, as internalized in the integrated forward market, would both be sufficient to clear the load aggregation point demand. As a result, the CAISO omitted the provision for step three in its revised tariff.⁹⁰

a. Comments of SoCal Edison and PG&E

108. Both SoCal Edison and PG&E object to removing the language from section 31.3.1.3 of the CAISO tariff that allows the CAISO to modify the load distribution factors on a nodal basis in the integrated forward market in order to minimize the amount of load curtailed. Both SoCal Edison and PG&E indicate that they are not convinced that the expected effectiveness of the first two steps in section 31.3.1.3 will eliminate the need to adjust load distribution factors in order to obtain a reasonable solution.⁹¹

⁸⁸ *Id.*

⁸⁹ Section 31.3.1.3 provides for a process in the software that would permit modifying some load distribution factors for the load aggregation point so that demand within the load pocket can be reduced without reducing demand across the entire load aggregation point.

⁹⁰ CAISO transmittal letter at 22.

⁹¹ SoCal Edison comments at 4. PG&E comments at 5-6.

109. In addition to expressing general concern about the expected effectiveness of the first two steps in section 31.3.1.3, PG&E indicates that it believes the results of recent market simulations support a finding that the CAISO may need to be able to adjust load distribution factors in the integrated forward market in order to reach a reasonable solution. PG&E asserts that it appears that certain segments of the grid less than 230 kV may be more susceptible to the impacts of load distribution factor errors and estimates, possibly resulting in “phantom” transmission constraints. PG&E contends that these results could result in systemic upward pricing bias.⁹²

b. The CAISO’s Answer

110. In its answer, the CAISO emphasizes two reasons why the Commission should reject SoCal Edison and PG&E’s request to reinstate language allowing the CAISO to modify load distribution factors as a means to clear load aggregation point demand. The CAISO states that under the approach it has adopted, a transmission constraint is relaxed if the re-dispatch costs reach the level of the specified scheduling parameter. Thus, the CAISO asserts that no situation could arise under which adjusting load distribution factors would be necessary, because the transmission constraint would already have been relaxed and no binding constraint would remain in the integrated forward market.

111. The other reason identified by the CAISO is that it would be necessary to configure the integrated forward market to adjust load distribution factors before relaxing a transmission constraint. The CAISO states that this would undermine the principle of fixed load distribution factors, which it indicates it adopted in response to the number one market design issue in the independent assessment undertaken at the introduction of MRTU by the consultant LECG.

c. Commission Determination

112. The Commission finds the CAISO’s proposed solution to revising section 31.3.1.3 of its tariff to be just and reasonable. The load distribution factors represent a just and reasonable means of representing the distribution of demand across the various nodes comprising a load aggregation point. Thus, it is reasonable that demand reductions that are needed within the market clearing process should occur in the same fixed proportions. As Dr. Kristov points out in his testimony, allowing the software to adjust nodal demand bids independently would result in both economic and operational distortions, because the extent of load reductions would vary based on the relative locational marginal pricing at each node. The result would be that individually calculated nodal demand reductions would not yield the appropriate demand reduction over the entire load aggregation point since some default load aggregation point load may be scheduled at a price that it was not

⁹² PG&E comments at 6.

willing to bear, while some default load aggregation point load would be unscheduled despite a willingness to pay the resulting price. Additionally, resource allocation would likely be distorted.⁹³

113. The CAISO's proposed solution to this issue in this docket involves the use of scheduling parameters to adjust non-priced quantities, specifically the use of self-provided ancillary services or relaxation of the constraint, as means to address the issue of a potential large reduction in default load aggregation point demand being necessary to obtain a relatively small amount of congestion relief.

114. Implicit in the CAISO's proposal is the notion that under current circumstances, relaxing a transmission constraint should take priority over the possible adjustment of load distribution factors as a means of relieving congestion. We agree. Since the only way to preserve the CAISO's ability to adjust load distribution factors involves adopting a methodology that would reverse that priority, i.e., require load distribution factors to be adjusted before a transmission constraint could be relaxed, we find the CAISO's proposed tariff modifications to be just and reasonable.

7. Compliance with the Commission's June 25, 2007 Order

115. The June 25, 2007 Order in part directed the CAISO to provide further details about the impact of the proposed penalty levels in the integrated forward market.⁹⁴ The Commission noted that the CAISO had taken the position that the penalty was simply a mathematical device for relaxing constraints, but found further details regarding the impact to be necessary.

116. We find that by this filing the CAISO has complied with this requirement of the June 25, 2007 Order. The CAISO's tariff revisions and filed testimony explain in sufficient detail the levels at which scheduling and pricing parameters will be set at MRTU start-up. The CAISO's tariff revisions and filed testimony also provide sufficient detail regarding the manner in which scheduling and pricing parameters will impact settlement in clearing the market in the integrated forward market and the real-time market. Except as otherwise noted in the body of this order, we find the CAISO's proposed scheduling and pricing parameters to be just and reasonable.

117. The June 25, 2007 Order also directed the CAISO to resubmit revised tariff language that clearly indicates that the penalty is not a financial penalty in the traditional

⁹³ Testimony of Dr. Lorenzo Kristov at 40-41.

⁹⁴ June 25, 2007 Order, 119 FERC ¶ 61,313 at P 162.

sense and clarify what constitutes an effective economic bid.⁹⁵ In addition, the June 25, 2007 Order directed the CAISO to clearly articulate in the compliance filing transmittal letter: (1) what the revised provision does; (2) how the provision works in practice; (3) the practical and financial effect of the provision on the market participants; and (4) detailed answers to the questions raised by commenters.

118. We find that the CAISO has complied with this directive of the June 25, 2007 Order. By removing references to “penalties” and instead specifying just and reasonable scheduling and pricing parameter levels and explaining the usage and impacts of those parameters, the CAISO has mooted our requirement to indicate that the penalty is not a financial penalty in the traditional sense. Additionally, we find the CAISO’s definitions of the terms “effective economic bid” and “ineffective economic bid” provide adequate certainty.

119. We also find the descriptions of what the revised provision does, how the provision works in practice and the practical and financial effects of the provision on the market participants to be adequate. The CAISO’s transmittal letter,⁹⁶ in conjunction with the filed testimony of Dr. Lorenzo Kristov, provides a sufficiently detailed description of the process of relaxing a transmission constraint, as well as the practical and financial impacts of implementing the CAISO’s revised tariff provisions. Specifically, the CAISO makes it clear that with the scheduling parameter set at \$5,000 per MWh, the market optimization software will relax a transmission constraint rather than seeking a re-dispatch solution at a cost that exceeds that \$5,000 per MWh of constraint relief level. As a result, the amount of energy by which the transmission constraint is relaxed will be priced at the energy bid cap.

120. We also find that the CAISO’s transmittal letter addresses the questions raised by commenters in connection with the June 25, 2007 Order in sufficient detail to comply with the relevant directives of the June 25, 2007 Order.⁹⁷ In its transmittal letter, the CAISO explains that constraints will be relaxed and concomitant pricing in effect at five-minute intervals and only when such relaxation is part of the market solution as identified in the market optimization process.⁹⁸ The CAISO further explains that only constraints that are binding when the scheduling parameters are violated will be relaxed. We agree with the CAISO that by eliminating the ability to adjust load distribution factors, the

⁹⁵ *Id.* P 163.

⁹⁶ CAISO transmittal letter at 6-17.

⁹⁷ June 25, 2007 Order, 119 FERC ¶ 61,313 at P 163.

⁹⁸ CAISO transmittal letter at 23-24.

remaining questions concerning “step 3” of the originally filed tariff language have been mooted.⁹⁹

121. Finally, we find that the stakeholder process and market simulations undertaken by the CAISO in preparation for this tariff revision are sufficient to comply with the related directives in the June 25, 2007 Order.¹⁰⁰

The Commission orders:

(A) The CAISO’s tariff revisions are conditionally accepted for filing as discussed in the body of this order, effective upon implementation of the MRTU tariff.

(B) The CAISO is hereby directed to submit a compliance filing within 30 days of the date of this order, as discussed in the body of this order.

(C) The CAISO’s tariff revisions submitted in compliance with the June 25, 2007 Order, are accepted for filing as discussed in the body of this order, effective upon implementation of MRTU. We direct the CAISO to make an informational filing specifying the effective date of the tariff sheets being accepted herein prior to the implementation of MRTU.

By the Commission. Commissioner Kelliher is not participating.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

⁹⁹ *Id.* at 2.

¹⁰⁰ June 25, 2007 Order, 119 FERC ¶ 61,313 at P 164.

Appendix A
Parties Filing Motions/Notices of Intervention, Comments or Protests
Docket No. ER09-240-000

The listed parties have filed motions to intervene in Docket No. ER09-240-000. A short-name reference to a party, shown in parentheses after the full name, indicates the party also filed comments or a protest.

1. The Cities of Anaheim, Azusa, Banning, Colton, Pasadena and Riverside, California
2. The Cogeneration Association of California and the Energy Producers and Users Coalition
3. Dynegy Morro Bay, LLC and Dynegy Moss Landing, LLC (Dynegy)
4. Imperial Irrigation District (Imperial)
5. Mirant Energy Trading, LLC, Mirant Delta, LLC and Mirant Potrero, LLC
6. Modesto Irrigation District
7. Northern California Power Agency (NCPA)
8. NRG Power Marketing LLC, Cabrillo Power I LLC, Cabrillo Power II LLC, El Segundo Power LLC, and Long Beach Generation LLC
9. Pacific Gas and Electric Company (PG&E)
10. City of Santa Clara, California and the M-S-R Public Power Agency
11. Southern California Edison Company (SoCal Edison)
12. The City and County of San Francisco (San Francisco)
13. J.P. Morgan Ventures Energy Corporation
14. Golden State Water Company
15. The Alliance for Retail Energy Markets
16. Western Area Power Administration (Western)

17. Powerex Corp. (Powerex)
18. Sacramento Municipal Utility District (SMUD)
19. Western Power Trading Forum (WPTF)
20. Citigroup Energy, Inc. (Citigroup)
21. Transmission Agency of Northern California (TANC)
22. California Department of Water Resources State Water Project (State Water Project)
23. Metropolitan Water District of Southern California (Metropolitan)