Comments on the Congestion Management Proposals of the California ISO[1]

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I. Overview

This paper provides comments on the congestion management proposals of the Staff of the California Independent System Operation (CAISO). The CAISO Staff has been developing these proposals in response to a finding by the Federal Energy Regulatory Commission (FERC) that the California congestion management system is "fundamentally flawed" and a directive by the FERC that the CAISO undertake a comprehensive reevaluation and overhaul of that system.[2] In addressing these congestion pricing issues it has also been necessary to reform the approaches the CAISO uses to mitigate locational market power. The present CAISO congestion proposal is an extensive package of measures that intertwine market power mitigation and congestion management and pricing with the creation of several new markets in which the CAISO will buy energy and reserves.

These comments are largely based on the CAISO proposals as they are described in CAISO documents posted on July 28, 2000.[3] In addition, we have attempted to identify and reflect in our comments the changes in the CAISO proposal that are mentioned or implied by subsequent documents.[4] The CAISO proposals are apparently neither

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[2] FERC Docket No. ER00-555-000 January 7, 2000.

[3] California ISO, Congestion Management Reform Recommendation, July 28, 2000 Revision 1.1 hereafter CAISO CM.

[4] California ISO Memorandum to ISO Board of Governors regarding Congestion Management Reform Recommendation, August 29, 2000, California ISO Comprehensive Market Redesign: ISO Recommendation for Congestion Management Reform, August 29, 2000 (Attachment A to August 29, 2000 Memorandum) hereafter CAISO CMR, California ISO Comprehensive Market Redesign: ISO Recommendation for Congestion Management Reform, August 24, 2000, Guide to Issues Papers, August 29, 2000 (Attachment B to August 29, 2000 Memorandum), Summary Comparison of Current Practices to Recommended Changes, August 26, 2000 (Attachment C to August 29, 2000 Memorandum), Issue Paper on Firm Transmission Rights, August 29, 2000, Issue Paper on Real-Time Dispatch, August 29, 2000, Issue

complete nor final. Rather, there appear to be many important features that are still undefined, explicitly earmarked for further development or changing from draft to draft. It is therefore not possible to fully evaluate the workability or competitive and efficiency impacts of these proposals. We attempt below to identify some of these remaining ambiguities.

The Reform Coalition provided two sets of substantive comments on the CAISO's current congestion management and market power mitigation proposal. On July 2, based on initial verbal descriptions of the CAISO congestion management proposal, the Reform Coalition provided a list of preliminary concerns and ambiguities to be addressed.[5] Few of these concerns or ambiguities were addressed in the CAISO's written proposal. Subsequently, on July 28, the Reform Coalition provided a further more detailed evaluation of the written version of the CAISO proposal.[6] Despite the Reform Coalition's efforts to point out problems at an early stage in the development of the CAISO proposal, the CAISO has made little or no effort to address these problems or even to clarify the ambiguities identified in the Reform Coalition's detailed comments. The comments below are based on the prior comments of the Reform Coalition to reflect the (very limited) evolution of the CAISO proposals.

A useful starting point in evaluating the CAISO congestion management proposal is to return to the concerns expressed by FERC in its January Order that initiated this process. In that order, FERC observed that:

> "We agree with intervenors that there is nothing wrong with prices increasing during times of real scarcity. There is something wrong, however, when the method adopted to manage congestion allows generators to create artificial scarcity in order to create congestion revenues that will be paid to them. We agree with the ISO's assessment that there is a serious flaw in the existing intrazonal management scheme. The existing congestion management approach relies on the existence of a competitive market to determine the cost of managing congestion. Yet the bidding rules allow generators to profit by offering distorted bids that create artificial congestion, and this problem is exacerbated to the extent that market power exists. As intervenors note, the ISO's proposal fails to send price signals to encourage new generators to enter into areas where there are constraints, which could help alleviate any market power that exists. The problem facing the ISO is that the existing congestion management method is fundamentally flawed and needs to be overhauled or replaced. In this respect, the ability of generators to create fictional congestion follows directly on another premise underlying intrazonal congestion management, i.e., that the ISO is required to accept all transmission scheduled without verifying that all of those

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Paper on Local Reliability Service (LRS) and Locational Market Power Mitigation, August 29, 2000, Issue Paper on Commercial Network Model, August 29, 2000, Issue Paper on Locational Pricing Areas, August 29, 2000

[5] "Comments on the CAISO Market Power Mitigation and Congestion Management Proposal", July 2, 2000.

[6] "Comments of the Reform Coalition on the CAISO's July 11, 2000 Draft Proposals for Congestion Management Reform," July 28, 2000.

schedules are feasible. In accepting transmission schedules that bear no resemblance to physical reality, this congestion management scheme creates the opportunities for fictional congestion."[7]

Against these concerns, the fundamental characteristics of the CAISO proposal are:

- If it operates as intended, there will be no price signal in the day-ahead, hour-ahead or real-time markets to encourage generators (or transmission builders or load managers) to enter into areas where there are constraints. Payments in the 2-day-ahead market will be governed by administrative price caps on an indefinite basis and the CAISO will be the only buyer.

- The CAISO will schedule and price transmission use in the day-ahead and hour-ahead markets based on a "commercial network model" that is intentionally inconsistent with the transmission constraints that will and must be enforced in real-time.

Thus, the CAISO proposal actually addresses neither of the FERC concerns that motivated this process. Instead of addressing the FERC concerns, the CAISO proposal creates a series of new problems that represent a step backward from the markets as they existed last January:

- Commitment decisions would be pushed further forward in time;
- Market complexity and operating costs would be increased;
- There would be much higher transactions cost to hedging congestion with FTRs;

We conclude that the basic reform approaches recommended by the CAISO are not likely to support an efficient, competitive electricity market in California. While a few of the many features of the CAISO congestion management proposals are worthwhile, and others appear to be well intended, the CAISO proposals suffer from a systematic failure to address the most fundamental requirements of effective congestion management and efficient pricing. Moreover, although important principles endorsed by the CAISO Staff, such as the commitment to apply the realities of real-time operations to the design of effective reforms, are essentially correct, the reform proposals do not actually implement these important principles, and the shortcomings are important.

II. Overview of the CAISO Proposal

This section describes our understanding of the CAISO's proposed new mechanism for acquiring local reliability services (LRS), while mitigating market power and managing intra- and inter-zonal congestion. The new mechanism would have the CAISO identify and create several new zones (or local reliability areas, or LRAs) in which past experience indicates that there could be market power or intra-zonal congestion. For such zones, the CAISO would purchase sufficient energy and capacity in a two-day-

[7] FERC Docket No. ER00-555-000 January 7, 2000, pp. 10-11.

ahead market to eliminate what is currently managed as intra-zonal congestion. These purchases of energy and capacity would not be limited to purchases from plants that might be capable of exercising market power but could be from any plants within the identified zones.[8] In effect, therefore, the proposed mechanism would attempt to eliminate all congestion within and between such zones and any connecting zones. Given the number of zones where market power or intra-zonal congestion might be present, it appears that the practical effect would be for the CAISO to attempt to purchase enough energy and capacity in the two-day-ahead market to effectively eliminate all congestion within and between the new zones.[9]

With the addition of up to eight new zones, the number of internal California zones would likely be increased to eleven.[10] The generators whose bids were accepted by the CAISO in the two-day-ahead market would be obligated to schedule an ISO-specified level of energy (Minimum Reliability Energy) as well as capacity (i.e. reserves) in the day-ahead market. The obligation to provide energy would be satisfied either by submitting bilateral schedules with loads within the LRA[11] or by bidding into the PX at zero.[12] While market separation rules would be maintained in the day-ahead and hour-ahead markets, they would not be applied in the two-day-ahead market. The CAISO would not use the adjustment bid process in the two-day-ahead market but would instead require generators to offer energy in the day-ahead market that the CAISO would schedule on behalf of loads in the LRAs. Generator bids in the two-day-ahead market would be capped and all generators within the LRA would effectively be required to participate in this market through standing bids.[13] Generators that failed to perform in real time as scheduled in the day-ahead market would be subjected to substantial penalties to ensure specific performance.[14] The level and method of determining the bid caps in the two-day-ahead market is still under consideration, although the ISO apparently favors a flat bid cap for the entire ISO area, with a subsequent true-up of costs to ensure no resource is "undercompensated." The CAISO proposal now emphasizes the "locational market power mitigation aspect of the LRS bid caps," and will "set Bid Caps no higher than needed to provide adequate compensation for LRS…" rather than setting

[8] CAISO CM p. 32. . The discussion below assumes that the two-day-ahead market would not apply to congestion within or between the NP15, SP15 or ZP26 zones as they would exist subsequent to the new LRAs being formed. Recent CAISO documents, however, have indicated that some version of the LRS market would also be applied to the original three (non-LRA) zonal markets in some circumstances. CAISO CMR p. 6 item 31. The CAISO has not described the manner or circumstances in which the LRS requirement would be applied to the existing zones, whether there would be bid caps, who would be subject to bid caps, why they would be subject to bid caps, how the bid caps would be determined, or any other element of the proposal as it relates to the application of the LRS mechanism to existing zones.

[9] While the ISO's originally stated purpose was to use the two-day-ahead market to eliminate only congestion into and within the LRAs, the practical effect of scheduling generation within each new zone in the two-day-ahead market may be to eliminate congestion between the *existing* zones as well. Hence, almost all congestion within California might be subject to the proposed two-day-ahead procurement process.

[10] CAISO CMR p.2.

[11] The ISO has not explained why this generation needs to be coupled with loads within the LRA if scheduled through a bilateral.

[12] CAISO CM p. 32.

[13] CAISO CM pp. 32, 48.

[14] CAISO CM pp. 32, 48-49.

them at a "level high enough to make it attractive for new generator to locate within the LRA…".[15] All generation scheduled to provide energy or capacity in the two-day-ahead market would be paid the market-clearing price in the two-day-ahead market, but there would be a potential unit-specific deduction equal to the lower of the PX price or the individual unit variable costs.

The CAISO illustrated the operation of this system by referring to San Francisco. If the CAISO forecast 900 MW of load in San Francisco, which it could meet in part with 600 MW of imports, the CAISO would acquire 300 MW of energy in the two-day-ahead market. These 300 MW would be paid a "capacity" payment in the two-day-ahead market and would then be obliged to schedule in the day-ahead energy market, in which they would earn the unconstrained energy price if scheduled through the PX or the bilateral contract price if scheduled as a bilateral. With an ISO-specified level of energy from this 300 MW committed to supply load in San Francisco, there would be no congestion into or within the San Francisco zone in the day-ahead market (unless, of course, scheduling coordinators attempted to schedule more than 900 MW of load in the day-ahead market).[16]

The CAISO would therefore use this mechanism to manage intra- as well as inter-zonal congestion affecting the new zones on a two-day-ahead basis, scheduling enough energy in the constrained portion of the zone in the two-day-ahead market to eliminate congestion in the day-ahead market. Although the CAISO may characterize its role in the two-day-ahead market as that of scheduling capacity, the reality is that it is simply purchasing energy (Minimum Reliability Energy) at the two-day-ahead price. To assure the absence of inter- and intra-zonal congestion affecting the new zones, the CAISO could either use conservative assumptions in forecasting real-time loads, inter-zonal schedules, outages and loopflow, or it could use the same LRS procurement procedures in up to three *additional* day-of markets to manage remaining congestion.[17] Because energy scheduled in the new zones could also relieve congestion affecting the existing zones, the ISO would have the discretion to use its LRS procurement and pricing methods repeatedly -- two days ahead as well as on the day -- to attempt to eliminate virtually all congestion in California.

It is our understanding that the CAISO would continue to manage congestion in the day-ahead and hour-ahead markets based on adjustment bids. The CAISO's inter-zonal congestion management software would, however, now reflect the loops in the grid between zones and would solve for inter-zonal transmission prices that are consistent

[15] Issue paper on Local Reliability Service (LRS) and Locational Market Power Mitigation, August 29, 2000, pp.1, 4.

[16] The ISO stated on July 14 that loop flows from transactions scheduled in the day-ahead and hour-ahead markets might create additional inter-zonal congestion that could be managed through the adjustment bid process in the day-ahead and hour-ahead markets.

[17] It is necessary to keep in mind that even if the CAISO proposals work as intended, this would not preclude congestion into LRAs in the day-ahead market. As discussed below, any FTR holder could create congestion by in effect withholding transmission capacity from the day-ahead market through high adjustment bids on day-ahead schedules into the LRA.

with the adjustment bids, given the grid configuration.[18] However, the CAISO's day-ahead inter-zonal congestion management system would be based on a simplified grid model that would treat all generation within a zone as having identical locations.[19] The CAISO's system for managing inter-zonal congestion and imbalance energy in real-time would reflect the actual characteristics of the transmission grid and differences in generator locations, including differences in effectiveness factors, but these differences would not be reflected in imbalance prices. [20]

III. Comments on the CAISO Proposal

The CAISO's proposed creation of eight new local reliability areas (LRAs) is a step in the right direction, and we support this element of the CAISO's proposal. The creation of these new zones (zones are now called local pricing areas, or LPAs in the July 11 proposal) would allow the congestion markets coordinated by the CAISO to provide more accurate locational price signals than is possible under the current three-zone system, provided that prices in those zones are correctly determined.

We further support the CAISO's adoption of a design approach wherein the CAISO's "procedures should manage and price all scarce transmission resources in a consistent manner across all markets, from forward scheduling and procurement of services to real-time operations."[21] Consistent with this, the CAISO observes that the congestion management system "must establish incentives and procedures that will lead to final schedules that are feasible in real time and that represent as closely as possible what Generators and Loads actually intend to produce and consume in real time."[22]

We also support the CAISO's proposal to improve the real-time market by (1) clearing all economic incremental and decremental bids,[23] (2) setting unique prices at boundary points when there is real-time inter-zonal congestion between the boundary point and internal zones, (3) combining effectiveness factors with bid prices to determine which generators to redispatch when there is real-time congestion, and (4) removing the artificial "minimum shift" constraint on its real-time dispatch when there is real-time congestion.[24] Any unnecessary constraints on the real-time dispatch complicate CAISO operations, make real-time balancing and congestion management costs higher than they need to be, and result in anomalous dispatch instructions and prices that make the dispatch incomprehensible to market participants.

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[18] While the CAISO proposal originally provided that the software would include a representation of the external system, it appears that the CAISO is backing off from this. It now says that it will continue discussions with market participants as to whether such a representation is "necessary." Issue Paper on Commercial Network Model, August 29, 2000.

[19] CAISO CM pp. 28-31, 53-54. It is our understanding that the CAISO would continue to implement the congestion management system using inc and dec bids for generators in the various zones, with side constraints to maintain balanced schedule requirements.

[20] CAISO CM pp. 65-70.

[21] CAISO CM p. 26.

[22] CAISO CM p. 27.

[23] CAISO CM pp. 30, 68. This would eliminate the need for the target price methodology.

[24] CAISO CM p. 68.

We support making longer-term FTRs available in the auction as initially proposed by the CAISO.[25] FTRs should be available for purchase over a three-year period as proposed by CAISO, but market participants should be able to purchase them on a year-by-year basis. Moreover, any FTRs not sold in a particular auction should remain available for sale in subsequent auctions.

While as indicated above the CAISO proposal contains a number of good features, based on our current understanding of the CAISO proposal,[26] we believe that the proposal for the creation of a two-day-ahead market is not headed in the right direction and represents a step backward that exacerbates rather than solves existing problems. Moreover, while the creation of additional zones is a constructive step, the way these new zones are implemented within the two-day-ahead market largely eliminates the potential benefits from the creation of the additional zones. Specific concerns regarding the likely operation of the CAISO proposal are as follows:

1. The CAISO's proposal would push the commitment decision further forward in time, introducing more uncertainty and raising costs to load.

2. The CAISO proposal would replace the two-settlement system of financial commitments with a specific performance requirement that would raise costs.

3. The CAISO proposal would undermine a market driven approach to generation investment within transmission constrained regions.

4. The CAISO proposal would undermine a market-driven approach to transmission expansion.

5. The CAISO proposal would undermine load management programs.

6. The CAISO proposal would incorrectly price LRS reserves and energy.

7. The CAISO proposal would inflate costs in the two-day-ahead market when intra-zonal congestion is present.

8. The CAISO's proposal would continue to base schedules and prices on a "simplified commercial model."

9. The CAISO's proposal would reduce the incentive for long-term bilateral transactions between load and generation within transmission constrained regions.

[25] CAISO CM pp. 33, 39-40. It is unclear from the recent comments of the CAISO as to whether it still proposes to award three year FTRs. Issue paper on Firm Transmission Rights, August 29, 2000, p.2,

[26] The comments below are based on the CAISO's July 28 recommendation, its comments at subsequent meetings, and additional documents made available in late August. There are many important elements of the CAISO proposal that are still undefined and the workability and competitive effects of the overall proposal cannot be assessed until these missing elements are described.

10. The CAISO proposal would increase market complexity.

11. The CAISO proposal would lead to increased complexity and uncertainty in using FTRs to hedge congestion costs.

12. The CAISO proposal would likely subsidize wheeling transactions.

13. The CAISO proposal would invite zonal price suppression and price discrimination.

14. The CAISO proposal is poorly structured for creating new zones.

Each of these concerns is discussed in detail below.

1. The CAISO's proposal for a two-day-ahead market would push the commitment decision further forward in time, introducing more uncertainty and raising costs to load.

The CAISO's approach to congestion management would require that the CAISO schedule generation to relieve congestion two days in advance of real-time, introducing more uncertainty relative to the level of load that would actually occur and thereby requiring the CAISO to purchase additional generation to cover load uncertainty. The need to purchase generation further in advance of real-time would, even in isolation from other elements of the CAISO proposal, aggravate existing challenges in forecasting grid loads and raise the cost to load of managing congestion. The cost of managing congestion would likely rise due to the additional margin for error that the CAISO would build into its two-day-ahead load forecast. This added cost would be magnified by the CAISO's specific performance standard for day-ahead schedules, which would require high-cost generation conservatively purchased on a two-day-ahead basis to operate in real-time.[27]

2. The CAISO proposal would raise costs of loads and generators by replacing the two-settlement system of financial commitments with a specific performance requirement.

Because the CAISO proposal does not establish real-time LMP prices, there is no apparent mechanism for using financial incentives to motivate generators to perform in real time as scheduled day ahead to manage intra-zonal congestion. The CAISO has

[27] This effect of the CAISO proposal might be mitigated somewhat by the CAISO's suggestion that it would also operate day-of LRS markets, which could reduce the need for conservative assumptions in the two-day-ahead market. CAISO CM pp. 49, 59. The creation of these additional markets, however, would further complicate the overall market structure and bidding. Moreover, we are concerned about a market structure in which the CAISO does not simply clear the market based on demand and supply bids but exploits its market-clearing role to engage in price discrimination across generators and markets. See item 13 in the text below (re price discrimination).

therefore proposed to impose a specific performance requirement on generators scheduled in the two-day-ahead market.[28]

This approach is undesirable from the standpoint of both generators and loads as it would force unneeded high-cost generation to operate when load conditions diverge from those expected by the CAISO in clearing the two-day-ahead market, rather than establishing financial obligations that could be covered by sellers in the spot market. By raising the cost to generators of meeting load, the CAISO proposal would reduce generator profits and require higher prices to induce needed levels of generation investment. This outcome is not in the interest of either loads or generators.

These effects can be illustrated with a simple San Francisco example. If the CAISO forecast 900 MW of load in the San Francisco LRA, which it could meet in part with 600 MW of imports, the CAISO would acquire 300 MW of energy in the two-day-ahead market. These 300 MW would be paid the market price of capacity for the San Francisco LRA in the two-day-ahead market and would then be obliged to schedule 300 MW of energy in the day-ahead energy market, in which they would earn the PX day-ahead unconstrained energy price or their bilateral contract price. With 300 MW of generation committed to supply load in San Francisco, there would be no congestion on the transmission leading into the San Francisco LRA in the day-ahead market (unless, of course, scheduling coordinators attempted to schedule more than 900 MW of load day ahead).

Suppose, however, that while the CAISO's two-day-ahead load forecast was 900 MW, load was only 700 MW in real time. If the energy cost of the incremental generation within the San Francisco zone was $80/MW, but only $20/MW outside the zone, the least-cost solution would be to reduce generation within the San Francisco zone from the 300 MW scheduled day ahead to 100 MW in real time. Under a system based on locational pricing and financial settlements, this would be the outcome, as generation scheduled in San Francisco in the day-ahead market could cover its forward position at the real-time locational price. Absent real-time LMP prices, the CAISO would, under its proposal, require specific performance by all 300 MW of the generation scheduled day ahead. In the example, this would involve running $80/MW generation within the zone instead of generation located outside the zone with a running cost of $20/MW or less. By forcing generators to cover their forward positions at an artificially high cost, the CAISO

[28] CAISO CM p. 32. Absent such a specific performance requirement, high-cost generators scheduled to run in the two-day-ahead market could choose not to perform in real time, covering their obligation at the zonal price in the hour-ahead market, and requiring the CAISO to pay for additional intra-zonal congestion management in real time. Such a specific performance requirement could in principle be avoided for generation scheduled by the CAISO solely to manage inter-zonal congestion, as the hour-ahead inter-zonal adjustment charges would provide an efficient incentive for performance. This approach does not appear to have been selected by the CAISO, and might be unworkable in practice as it would require a mechanism for determining which generation was required for intra-zonal congestion management and thus subject to specific performance and which generation was required solely for inter-zonal congestion management and thus subject to financial settlements only. It is not clear how such a determination could be made on a consistent non-discriminatory, but non-market basis based on the CAISO's forecasts.

proposal would reduce generator margins at any given price level and artificially increase the price level required to attract new investment.

Moreover, this specific performance standard eliminates or mutes day-ahead and real-time price signals for loads, because if the CAISO's two-day-ahead load forecast is either correct or high, the specific performance standard will cause congestion charges in the day-ahead and real-time market to be zero. This differs from the outcome in day-ahead markets based on financial commitments, in which the day-ahead, hour-ahead and real-time prices would reflect the incremental cost of meeting load within the constrained region, given the resources that were available and flexible within that time frame.

3. The CAISO proposal would undermine a market-driven approach to generation investment within transmission constrained regions.

If the CAISO 2-day-ahead market works as intended, sufficient energy would be scheduled in the 2-day-ahead and day-of LRS process to eliminate transmission congestion within or into any LRA day-ahead, hour-ahead or in real-time. There would therefore be no price signal in any of these markets to indicate the need for returns to generation investment. The only price signal for generation investment within constrained regions would therefore emanate from the LRS markets, in which the buyer is not loads but solely the CAISO. [29]

Moreover, while bid caps are a necessary transition mechanism to mitigate the locational market power of existing generation, the CAISO would apply bid caps to all resources in its LRS markets, even new entrants. There is therefore no apparent mechanism within the CAISO proposal for prices to ever rise to the level required to sustain new entry, if this level exceeds the CAISO bid caps.

Furthermore, last minute changes in the CAISO proposal would further compromise locational price signals for generation investment. The CAISO now apparently intends that bid caps be set at such a low level that annual cost based true-ups would be required to cover the cost of operation for some generating units.[30] If CAISO sets the price caps so low that existing units cannot recover their costs, it is unlikely that new generation investment would be forthcoming. The CAISO observes in its recent proposals that such below cost bid caps would require non-market mechanisms to induce generation investment.[31] It appears therefore that seven months after withdrawing Amendment 24, the CAISO is still focused on non-market mechanisms to induce generation investment

[29] As discussed below in item 9, the CAISO proposal would materially reduce the incentive of loads to enter into long-term contracts with generation owners within constrained regions. In particular, there would be no advantage to a load entering into a long-term contract for the output of a new entrant at a discount from the locational market clearing price, because loads would not pay the locational market clearing price.

[30] Issue Paper on Local reliability Service (LRS) and Locational Market Power Mitigation, August 29, 2000, pp.3-4.

[31] Issue Paper on Local reliability Service (LRS) and Locational Market Power Mitigation, August 29, 2000, p.1

where it is needed. The reality is that this means no mechanism to induce generation investment where it is needed.

4. The CAISO proposal would undermine a market-driven approach to transmission expansion.

As observed above, under the CAISO's proposed approach to market power mitigation and congestion management, day-ahead and real-time zonal prices would generally reflect an absence of congestion, even when substantial congestion existed in the two-day-ahead market and even when there were substantial differences in the cost of meeting incremental load within and outside the constrained regions. This outcome would arise because the CAISO's energy purchases in the two-day-ahead market would be intended to secure enough energy to eliminate congestion at the hypothetical unconstrained zonal price, even though the actual cost and price paid for the energy within the constrained region might considerably exceed the hypothetical unconstrained price. Moreover, the specific performance standard would in effect force these supplies into the zonal supply curve at a zero price. There would therefore be no difference in day-ahead or hour-ahead zonal market prices to signify the economics of transmission expansion, nor would the FTRs that might be awarded to transmission expanders have any value, even when transmission congestion continues to exist in the two-day-ahead market. Instead, locational price differences would be suppressed and transmission expansions could be justified only based on non-market compensation, such as uplift-based payments for investments judged to reduce uplift in the two-day-ahead market. This would place transmission expansions on a fundamentally different and non-market basis relative to generation investments. Because of this lack of market-driven incentives for transmission investment, the CAISO proposal envisions a centralized non-market process.[32]

5. The CAISO proposal would undermine load management programs.

Because the CAISO's proposal would suppress the day-ahead, hour-ahead and real-time market price of energy within transmission-constrained regions, it would materially reduce the incentive for the development of price-responsive load management programs. Pricing systems based on market-clearing energy prices and FTR allocations would reduce the average cost of power to loads in constrained LRAs (through the payment of FTR revenues) while leaving marginal incentives unchanged (all loads would pay the market-clearing price for energy). Under such an FTR-based approach, any load that reduced consumption would save the full market-clearing price of energy. The CAISO approach, on the other hand, would in essence cause loads to pay an average price of energy, reducing the incentive to reduce consumption when the market-clearing price is high because the load would avoid the average cost of energy, not the marginal or incremental cost of energy.

These incentives can be illustrated with the simple example introduced above. Consider an LSE serving 10% of the 900 MW of peak load in the San Francisco LPA. Under the

[32] CAISO CM pp. 77-80.

CAISO's proposal, the LSE would pay $20/MW for energy plus perhaps 10% of the uplift. [33] If it consumed its full 90 MW, it would therefore pay $20 *90 for energy and pay .10 * 300 * $80 for uplift, or $1800 + $2400 = $4200. If this LSE reduced its consumption by 10%, the cost of its energy would decline to $20 *81 + 81/891 * 291 * $80, or $3736.36, for a cost saving of about $464 or $51.5/MW of reduced consumption. If the same LSE paid market-clearing prices for energy but was allocated 10% of the FTRs, its cost of energy would fall to $100 * 81 – $80 * 60 or $3300 if it reduced consumption by 10%, for a saving of $900 or $100/MW.

It should be noted that the example above provides an idealized version of the operation of the CAISO's proposal, as it is not clear how the CAISO would determine the level of load it would need to meet in the two-day-ahead market in an environment with price-sensitive load. If the CAISO had no mechanism for taking account of the impact of load management programs in scheduling energy in the two-day-ahead market and continued to acquire 300 MW of capacity in the two-day-ahead market even though only 891 MW of load would actually appear in the day-ahead market, the cost savings from load management in the day-ahead, hour-ahead and real-time markets would be further reduced.[34]

The treatment of load management is not a detail, but reflects a fundamental defect in the entire approach underlying the CAISO proposal. Market power is managed in the two-day-ahead market based on the load forecasts of the CAISO rather than in the day-ahead or hour-ahead markets based on the bids of LSEs or scheduling coordinators. Thus, if the CAISO were to assume that all load was inelastic in the two-day-ahead market and scheduled energy to meet its load forecast in the two-day-ahead market, then there would be a greatly reduced incentive for load management in the hour-ahead or real-time markets. If, on the other hand, the CAISO were not to schedule energy in the two-day-ahead market to meet load that was known to be price sensitive, then the loads would be exposed not only to the mitigated price but, if market power actually existed, to the unmitigated exercise of market power.

Thus, suppose in the example that the CAISO assumed that there was 9 MW of price-sensitive load in the day-ahead market and only scheduled 291 MW of energy in the two-day-ahead market. If the CAISO were correct, then the price in the day-ahead market would be set by the demand bids of the price-sensitive load. If the CAISO's estimate of the demands of the price-sensitive load were incorrect, however, and only 5 MW of consumption was price sensitive at the day-ahead price, then the day-ahead price paid by all loads could be set by the unmitigated exercise of market power.

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[33] The allocation of uplift costs from the two-day-ahead market was not resolved in the earlier CAISO proposals. See CAISO CM pp. 32-33. More recent documents indicate that the CAISO initially proposes to begin with an allocation based on load within each PTO area, and shifts over five years to an allocation based on load within each LRA. Issue Paper on Locational Reliability Service (LRS) and Locational Market Power Mitigation, August 29, 2000, p.1. If the costs of the two-day-ahead market were allocated in part to customers located outside the LPA, marginal incentives would be further reduced.

[34] If the CAISO was unable to take account of load management programs in the two-day-ahead market, then the cost savings to the hypothetical LSE from reduced real-time consumption would be only $44.24/MW ($20*81MW + 81/891 * 300MW *$80 = $3801.82).

This reflects a fundamental feature of the CAISO proposal in that market power is mitigated and congestion managed without regard to the inputs of loads. Moreover, this is an intrinsic feature of the CAISO approach. It is important that the congestion management and market power mitigation approach adopted for the California market have a mechanism for taking account of the demands of loads. The lack of incentives under the CAISO congestion management for consumers to participate in load management programs and the inability of the CAISO to take account of these programs in scheduling generation is a particularly significant limitation in the current environment. In other documents and forums, the CAISO has attached considerable significance to the development of the very load management or load response programs that would be seriously undermined by the CAISO proposal. [35]

6. *The CAISO proposal would incorrectly price LRS reserves and energy.*

The CAISO proposal allows the CAISO to schedule both energy (Minimum Reliability Energy) and reserves (Contingency Capacity) within the LRAs. Rather than pricing reserves and energy on a market basis, the ISO proposal in effect assumes that the difference between the price of reserves and energy within each LRS is the hypothetical unconstrained zonal price either day-ahead or in real-time. Thus, the revenues of capacity scheduled to generate energy in the 2-day ahead market differs from the revenues of capacity scheduled to provide reserves in the 2-day ahead market by the day ahead PX price which is presumably intended to be the unconstrained price. [36] Similarly, generation scheduled to provide reserves (contingency capacity) that is dispatched to provide energy in real time would be paid the real-time imbalance price which would apparently be calculated as if the LRS was not congested. [37] If generation located within the LRA has higher incremental costs than generation located outside the LRA, then the incremental cost of providing energy in addition to reserves would exceed the payment provided for energy under the CAISO's new pricing system.

7. The CAISO proposal would inflate costs in the two-day-ahead market when intra-zonal congestion is present.

It appears that the capacity payments in the two-day-ahead market would be determined by the highest-cost resource selected within the LRA.[38] If there is intra-zonal congestion present, the CAISO may schedule MRE energy from some resources within the LRA at bids up to the bid cap, at the same time that it does not schedule energy or capacity offered at lower prices at other locations within the LRA. If the bids of resources that are required to operate in order to manage intra-zonal congestion set prices in the two-day-ahead market for the entire zone, prices charged to loads could be considerably inflated.

[35] For example, see Department of Market Analysis, California ISO, Report on California Energy Market Issues and Performance: May-June, 2000, August 10, 2000 pp. ii, 2, 6.
[36] CAISM CM pp. 26, 44-46.
[37] See CAISO CMR p. 8 item 44. This provision is not entirely clear, but it appears to indicate that LRS energy dispatched to eliminate congestion would be compensated based on an imbalance price calculated as if the LRS were not constrained.
[38] CAISO CM p. 47.

This feature of the CAISO proposal might not have a material effect initially, because of the current limited set of flexible units within the LRA, but it would become more burdensome over time as QF contracts expire and new units enter the market. These limitations should be addressed now, rather than putting in place a system that would predictably fail within another year or two.

8. The CAISO's proposal would continue to base schedules and prices on a "simplified commercial model."

Despite the CAISO's reference to the importance of consistency across markets and feasible forward schedules,[39] the CAISO proposes to base day-ahead and hour-ahead inter-zonal schedules and congestion prices on a "simplified commercial network model having one bus to represent each LPA."[40] The operator would then use the real network model to manage intra-zonal congestion in real-time paying resources as-bid prices for intra-zonal congestion management and taking account of actual differences in generation effectiveness factors in the imbalance energy market.[41] This represents an unnecessarily complex system for calculating zonal prices and one that could lead to infeasible schedules and spurious congestion prices when intra- or inter-zonal congestion is present.[42] Moreover, the differences between the simplified commercial model and the full network model would inevitably be exploited by market participants, raising costs for loads and leading to CAISO intervention in, and more restrictions on, the market.

It is noteworthy that while the CAISO intends for its proposal to eliminate the need for real-time constrained-on payments for intra-zonal congestion management by scheduling this generation in the 2-day-ahead market, the CAISO proposal completely fails to address one of the critical problems that lead to the initiation of this process, the real-time constrained-off payments to generators receiving infeasible schedules in the day-ahead market. The potential for these infeasible schedules in the day-ahead market is not addressed by the creation of the 2-day-ahead market, as that market constrains generators on, not off. The infeasible schedules that concerned FERC and the CAISO in the discussion of Amendment 23 arose from the use of a congestion pricing model in the day-ahead market that did not reflect the actual zonal or intra-zonal constraints, a feature

[39] CAISO CM pp. 26-27.
[40] CAISO CM pp. 30, 53-54.
[41] CAISO CM p. 30, 67-68. The ISO uses the term "usual dispatch power flow." The ISO does not describe the features of this model. For purposes of these comments, it is assumed that the "usual dispatch power flow model" represents the full California network including the effects of the WSCC loop. These comments refer to this model as the "real network model".
[42] For example, consider a situation in which there is inter-zonal congestion at the unconstrained price, but at the zonal prices that eliminate inter-zonal congestion there is also intra-zonal congestion in the high priced zone. It is possible that once high cost generation is dispatched to eliminate the intra-zonal congestion, there might be no inter-zonal congestion. The CAISO procedures would apparently attempt to set usage charges for congested interfaces based on the existence of the inter-zonal congestion that would not actually exist. These contradictions would of course be reduced to the extent that the CAISO eliminates all intra-zonal congestion through the schedules in the two-day-ahead market but that has its own problems as discussed above.

of the CAISO congestion pricing system that is preserved by the CAISO proposal.[43] The CAISO proposal, therefore, specifically declines to fix one of the problems that FERC specifically directed the CAISO to fix through this process. Many of the complications that bedevil the CAISO's proposal would be avoided if the CAISO's day-ahead congestion management were based on the real network model and real-time imbalances were settled at locational prices.

The CAISO proposals for dispatching imbalance energy in real-time take several important steps in the right direction. In particular, the CAISO proposes to take account of actual differences in generation constraint impacts in managing imbalance energy in real-time. There are, however, several problems. First, the system for managing real-time inter-zonal congestion based on the fictitious commercial model is inconsistent with the dispatch of real-time imbalance energy based on actual generation constraint impacts. [44] Second, the pricing system for real-time imbalance energy will not be consistent with the dispatch decisions, because the dispatch is to take into account bids and effectiveness factors, while the pricing system will apparently take account only of the marginal bid. Aside from providing inefficient prices, such a pricing system would potentially be vulnerable to gaming. The CAISO proposal for taking account of actual generation constraint impacts in the real-time dispatch is a big step in the right direction, but it needs to be coupled with real-time LMP pricing based on that dispatch.

9. The CAISO's proposal would reduce the incentive for long-term bilateral transactions between load and generation within constrained regions.

Under an FTR-based approach to hedging congestion costs, LSEs entering into bilateral contracts with generators within a transmission-constrained region would avoid the full market-clearing price of energy and thus would have an undiminished incentive to enter into such contracts, compared to buying power in the spot market. Under the CAISO approach, such LSEs would apparently still bear the uplift costs associated with the CAISO's two-day-ahead capacity market and thus would be penalized for entering into bilateral contracts.[45]

This problem can also be illustrated with the preceding numerical example. Suppose that the LSE serving 90 MW of load in the SF LPA entered into a bilateral contract to buy 9 MW of energy at $90/MW. Under a market-clearing price/FTR-based approach, this LSE would incur total costs of $100 * 81 (the cost of PX purchases) + $90 * 9 (the cost of the bilateral contract) – 60 * $80 (FTR revenues) = $4110, for a savings of $90. If this

[43] CAISO CM at pp. 53-54 "For the purpose of Inter-LPA transmission access, all resources within a LPA would be deemed to be at the same 'virtual' location, and the only relevant factors would a resource's LPA and its Adjustment Bid prices. That is, the proposed model will treat all resources in a LPA identically, without locational bias, for the purpose of Inter-LPA access and real time dispatch." The problem is that the CAISO again proposes to deem generator locations to be the same, even when they are different.

[44] CAISO CM pp. 29-30 and 65-70.

[45] This problem could be mitigated if the bilateral contract were to provide for the generator to pay a proportion of its capacity revenues in the two-day-ahead market to the LSE entering into the bilateral contract, but this approach would still complicate the negotiation, evaluation and settlement of bilateral contracts.

LSE were operating under the CAISO approach, it would apparently be worse off as a result of entering into the bilateral: 81 * $20 (PX purchases at unconstrained price) + 9 * $90 (the cost of the bilateral contract) + .1 * $80*291 (its share of two-day-ahead market costs) = $4758. This cost is substantially higher than the cost if this load did not enter into the bilateral contract, even though the bilateral contract price is assumed to be less than the price for which the energy could be purchased in the PX.

This lack of incentive for loads within constrained areas to enter into bilateral contracts is particularly important with respect to the incentives for generation entry. If loads actually pay the locational market price for energy, then they will have an incentive to enter into long-term contracts for energy that would support the construction of new generating capacity within constrained regions. The attraction for the loads would be that they would lock in a price for energy that could be a discount from the expected spot price of that energy. The attraction of such a constraint for the generator would be its ability to lock in a revenue stream to support the funding of its investment, and reduce its vulnerability to changes in economic conditions.

There is no such incentive under the CAISO proposal for loads within the LRS regions to enter into long-term contracts with generators at locationally market clearing prices. The CAISO has asserted that it would place an "emphasis" on self-provision of LRS energy by SCS, but its proposals provide a strong disincentive for self-provision that the CAISO has never addressed.[46] In effect, the only entity that has an economic incentive to enter into a long-term contract for energy with generators within the LRS regions is the CAISO. This is fundamentally inconsistent with the development of a market based electricity market. Moreover, while this deficiency of the CAISO proposal was identified at an early stage in the process,[47] the CAISO has failed to propose any solution.

10. The CAISO proposal would increase market complexity and operating costs.

The CAISO proposes to create one or more additional forward energy/capacity markets. The operation of these additional markets would raise the costs of both the CAISO and market participants. Moreover, the need to bid in these additional CAISO coordinated markets would increase the complexity of participating in these markets for generators (and for loads if the CAISO proposal were modified to somehow include loads). In addition, the mechanism the CAISO proposes for adjusting payments in the two-day-ahead market based on the lower of the PX price or unit-specific variable costs would require that the CAISO and market participants incur the additional costs associated with this reporting system.[48] It is particularly inappropriate to incur these additional costs merely in order to pay low cost generators higher prices than high cost plants. Low cost plants would be sufficiently rewarded for their low costs by their higher margins at any given price level.

[46] Issue paper on Local Reliability Service (LRS) and Locational Market Power Mitigation, August 29, 2000, p.1.
[47] See "Comments on the CAISO Market Power Mitigation and Congestion Management Proposal, July 2, 2000, item 6.
[48] CAISO CM p. 47.

At the July 14 stakeholder meeting, the CAISO staff noted in passing that a principal reason for creating these new markets was that the CAISO did not believe that with the addition of new zones, the existing day-ahead and hour-ahead markets would be able to manage inter-zonal congestion while preserving the market separation rule. Hence, the CAISO has concluded that it must manage inter-zonal congestion by developing still another market in addition to the existing day-ahead and hour-ahead markets. The CAISO staff further stated that the reason for this inability to handle congestion in the day-ahead and hour-ahead markets was the necessity to preserve the market separation rule.[49]

Today, most inter-zonal congestion is managed in the CAISO forward markets through the submission of adjustment bids. The use of these bids allows the CAISO to allocate transmission between zones to those who value it the most, and it also allows the CAISO to define usage charges for inter-zonal paths based on marginal costs. The CAISO's use of these adjustment bids in the day-ahead and hour-ahead markets is subject to the market separation rule. According to the CAISO staff, if the market separation rule were applied to the new inter-zonal congestion between existing zones and the new LRAs, the CAISO fears that it would be unable to manage this congestion through the adjustment bid process because individual scheduling coordinators would not have sufficient generation within the LPAs to provide the required diversity of adjustment bids.

In effect, therefore, the CAISO proposes to incur all of the costs of developing and operating these additional markets merely to sustain the fiction of market separation in the day-ahead and hour-ahead markets, by eliminating market separation in the new two-day-ahead market.[50] There would be significant costs associated with operating the additional markets called for in the CAISO proposal and it would be preferable to modify the market separation rules in the day-ahead and hour-ahead market as required to accommodate the continued operation of the current inter-zonal congestion management system. We believe that many of the costs and complexities involved in implementing the CAISO proposal could thereby be avoided.

11. The CAISO proposal would lead to increased complexity and uncertainty in using FTRs to hedge congestion costs.

The CAISO proposal complicates FTR trading and reduces the ability of market participants to manage congestion cost risk in two ways.

First, the CAISO's proposal would unbundle FTRs from zone-to-zone FTRs into specific constraint FTRs.[51] Market participants seeking to hedge a transaction between Zones A and B would need to acquire FTRs for each constraint affected by that schedule in

[49] See also CAISO CM at p. 56

[50] While the CAISO asserts that its proposal would exclude the CAISO from forward energy markets (pp. 15-17), the reality is that the CAISO, not loads, would be the energy buyer in the two-day-ahead market, and forward bilateral energy contracts would be meaningless, because much of the cost of energy would be the allocation of uplift from the two-day-ahead market.

[51] CAISO CM pp. 33, 41.

proportion to the flows over each constraint associated with its transaction. Multiple FTRs would therefore potentially be required for each transaction in order for traders to hedge their transactions against the potential for transmission usage charges.

The CAISO proposes to assist traders in acquiring the correct FTRs in secondary markets by publishing tables that would display the relevant shift factors for each location relative to each potentially binding inter-zonal constraint.[52] The relevant shift factors would depend on the constraint, the participant's location, and the configuration of the grid. The CAISO proposes to facilitate hedging by publishing a "library" of shift factor tables for numerous grid configurations, including configurations that account for various contingencies, such as important line or generator outages.[53] At the July 13-14 meetings, the CAISO observed that the relevant shift factor table might not be known until very near real time, since contingencies could occur at any time. This means that for traders to use FTRs to completely hedge their position, they might need to trade FTRs on a continuing basis, and sometimes on very short notice, depending on how often and when grid conditions change. While the existence of secondary markets in which market participants are able to adjust their positions by trading constraint hedges might be a useful addition to the market, requiring that all positions be hedged on a continuing basis would raise the cost and complexity of hedging long-term transactions. The CAISO has apparently recognized this. It recently noted that a question of controversy remains as to how to hold FTR owners harmless against "small" changes in shift factors between the original auction date and the day-ahead market. It raises the possibility of using auction proceeds in this regard.[54]

The CAISO has revised its recommendations to exclude the external system (and shift factors) from the looped network model used as the basis for issuing FTRs. It is not clear what considerations provide the basis for this change. The CAISO cites increased scheduling complexity and an unexplained concern about compatibility with WSCC control-area checkout procedures. It is not evident, nor explained, however, what relevance WSCC control-area checkout procedures have to the definition of a financial right. It appears, however, that the CAISO may be pretending that external loops do not exist so as to make the system of interface FTRs less unworkable. This is exactly the kind of "simplification" of the day-ahead market that creates infeasible schedules and that FERC specifically instructed the CAISO to eliminate.

Moreover, it is unclear how the CAISO interface FTR approach would be implemented in the case of constraint nomograms in which the identity of the limiting transmission element varies depending on where the CAISO operates on the nomogram. Would the transmission customer be required to guess where the CAISO would operate in order to acquire the appropriate hedge or would the transmission customer be expected to acquire

[52] The CAISO recently revised its recommendation to exclude the external system (and respective shift factors) from the looped network model used as the basis for issuing FTRs. Issue paper Firm Transmission Rights, August 29, 2000, p.1,
[53] CAISO CM pp. 54-55.
[54] Issue paper on Firm Transmission Rights, August 29, 2000, pp.1,

FTRs over each transmission element included in the nomogram? This issue was raised at an early stage but has apparently not been addressed.

A second problem with the CAISO proposal as it relates to FTRs is that congestion costs may show up in inter-zonal congestion charges that are hedged by FTRs or in the uplift costs associated with the two-day-ahead market that would not be hedged by FTRs. A market participant that buys FTRs would therefore be hedged against congestion costs if the CAISO manages this congestion in the day-ahead market based on adjustment bids, but would not be hedged if the CAISO manages this congestion in the two-day-ahead market and allocates these costs to all scheduling coordinators within the LRA. This unpredictable nature of the congestion cost allocation would complicate hedging strategies by LSEs and place considerable cost impacts on discretionary CAISO actions.

This element of the CAISO proposal is particularly problematic with respect to the efforts to include additional entities, particularly municipal utilities, within the CAISO coordinated market. A system of point-to-point FTRs would enable the existing transmission rights of these entities to be converted into financial rights that would leave these entities at least as well off as they are today, while providing them additional operating flexibility that would likely be of material value. Under the CAISO proposal, however, congestion costs would often be incurred in the two-day-ahead market and would not be hedged by the award of FTRs. It is not reasonable to expect such entities to join the CAISO market if the result would be that they would incur congestion costs that they would not incur by remaining outside the CAISO market.

12. The CAISO proposal would likely subsidize wheeling transactions.

Although the CAISO proposal has not specified a particular cost allocation mechanism for the two-day-ahead market, the inter-temporal structure in which the CAISO attempts to schedule capacity to eliminate congestion before wheeling-through or -out transactions would be known, appears likely to create a situation in which California loads bear the cost of managing congestion to accommodate wheeling-through and –out transactions. This is again an intrinsic feature of the CAISO proposal in which the CAISO would manage congestion and mitigate market power in a time frame in which market participants themselves have not expressed their demands for transmission usage. As would be the case for load management, the CAISO would need either to schedule sufficient generation to accommodate the impact of potential wheel-through transactions or let wheeling-through and -out transaction demand potentially permit the exercise of zonal market power.[55]

[55] If market power existed in providing congestion management between particular zones, and the CAISO scheduled enough energy in the two-day-ahead market to meet California demand but not wheeling-through or -out demand, then the wheeling-through or –out transactions could elevate the prices paid by all loads in the affected zones in the day-ahead market.

13. The CAISO proposal would invite zonal price suppression and price discrimination.

The two-day-ahead market mechanism proposed by the CAISO appears to create a mechanism for price suppression outside the transmission constrained regions. Since energy scheduled by the CAISO in the two-day-ahead market would be required to submit schedules into the day-ahead market, either through bilaterals or through the PX, the dec bid of such energy in the day-ahead market would in effect be zero, but this would not be its true cost. This bidding restriction would result in high-cost generation being scheduled to operate even if lower cost generation was available and the expected constraints were not actually binding in the day-ahead market. The proposed two-day-ahead market would therefore artificially depress day-ahead prices whenever the CAISO overforecasted load within the constrained LPAs in the two-day-ahead market. Moreover, it does not appear that there would be any checks on the ability of the CAISO to use this two-day-ahead market to artificially depress prices in the day-ahead market, not merely within the constrained region but throughout California.

Suppose, for example, that in the two-day-ahead market the CAISO scheduled 300 MW of energy within the constrained LRA to meet the ISO's 900 MW load forecast. Suppose, however, that at the time of the day-ahead market, load is expected to be only 800 MW within this constrained LRA. The 300 MW of high-cost energy scheduled by the CAISO in the two-day-ahead market would apparently nevertheless be required to schedule bilaterals or bid into the PX at zero in the day-ahead market, backing out cheaper generation located outside of the constrained LRA and depressing the unconstrained day-ahead price. The two-day-ahead market concept invites the CAISO to depress day-ahead prices through excessively conservative forecasts of potential congestion management requirements.

In addition, the elements of the CAISO proposal that require standing bids by generators and permit the CAISO to schedule LRS energy both in a two-day-ahead market and one or more day-of markets invite price discrimination by the CAISO in purchasing congestion management energy and capacity. The potential operation of additional LRS markets in a day-ahead or day-of timeframe is not a mere detail, but is an important element of the CAISO proposal that needs to be fully specified and carefully evaluated with respect to its impact on competition and efficiency in the day-ahead and hour-ahead markets. In particular, the potential for CAISO calls of LRS energy after the closing of the day-ahead market would have material impacts on the incentives of LSEs to participate in the day-ahead markets.

14. The CAISO proposal is poorly structured for creating new zones.

The CAISO believes its new LRAs/zones would be sufficient to manage and price congestion efficiently, but it also concedes that additional zones may be needed in the short or long run. We are encouraged that the CAISO proposes to conduct on-going studies regarding different shift factors and price dispersion within each LPA/zone, and to use the results of the studies to support the refinement of zonal boundaries and possibly the creation of new zones. However, the CAISO concedes that there are

significant obstacles to changing zones, including rules intended to ensure that existing FTRs are not undermined and the potential for market opposition from those who might be adversely affected by a change in zonal boundaries.

In particular, we are concerned that the definition of inter-zonal FTRs solely on a zone-to-zone basis[56] would complicate zone splitting in a market in which FTRs have been sold on a three-years-out basis and would also create risks for entities considering joining the CAISO. If the inter-zonal FTRs auctioned by the CAISO were associated with specific origin and destination points, the FTRs would remain invariant to subsequent zone splitting. Moreover, such inter-zonal FTRs associated with specific origin and destination points would assure entities converting firm transmission service to FTRs that they would always remain hedged from their generation resource to their load, regardless of subsequent zone splitting.

As long as the CAISO continues to use zones for congestion management purposes, the efficiency and effectiveness of that approach will depend on the ability of the CAISO to define and maintain appropriate zones that do not hide significant intra-zonal congestion or require the suppression of commercially significant price differences within each zone. We are concerned that the lack of a dependable process for defining new zones on a timely basis will remain a persistent problem for the California market and that the uncertainties created by the lack of specific point-to-point rights will deter participation in the CAISO market by new entities.

IV. Remaining Ambiguities

There continue to be a number of important ambiguities regarding the intended operation of the CAISO proposal. Most of these ambiguities were pointed out in the Reform Coalition's July 28 and July 2 comments, but the CAISO has still not addressed them.

1. Could generators scheduled to provide energy in the two-day-ahead market meet the CAISO's requirements by scheduling bilateral transactions with affiliates?

2. What would be the CAISO's criteria for determining the daily energy and capacity requirements in the two-day-ahead market, and what would be the criteria for the selection of energy and capacity in the two-day-ahead market? In the LARs study, the CAISO identifies each generating unit as having its own "effectiveness factor" on various constraints. Would these unit-specific effectiveness factors be considered in the selection process in the two-day-ahead market? If so, how would they be considered? Would generation units receive the same payment in the two-day-ahead market even if their respective effectiveness factors were completely different?

3. What assumptions would the CAISO make regarding the level of wheeling – through and -out transactions in scheduling energy or capacity in the two-day-ahead market?

[56] Hedging the effect of transfers from one zone to another zone on a specific constraint.

4. How would the costs of the two-day-ahead market be allocated between scheduling transmission use day-ahead or hour-ahead or buying imbalance energy in real-time? If all congestion management costs were incurred in the two-day-ahead market, would any of these costs be allocated to wheeling-through or –out transactions? If congestion management costs were incurred in each of the two-day-ahead, day-ahead, day of, hour-ahead and real-time markets, how would the congestion management costs be allocated across loads in the various markets?

5. What would be the nature of the non-performance penalties for generators scheduled in the day-ahead and two-day-ahead markets? Would there be any mechanism for permitting these generators to cover their day-ahead commitments by buying power from others in the hour-ahead market? Could they submit dec bids in the real-time imbalance market? Suppose that the forecasted intra- or inter-zonal congestion does not exist in a particular hour in real time. Would generators scheduled in the two-day-ahead market be permitted to replace their scheduled capacity/energy with energy from other sources? What would be the financial consequence if a unit scheduled in the two-day-ahead market was forced out in the day-ahead or real-time market?

6. Would distributed generation within the constrained region be eligible to bid in the two-day-ahead market or would participation in the two-day-ahead market be limited to conventional generation?

7. Would the CAISO take account of load management programs and distributed generation in determining its requirements for conventional generation in the two-day-ahead market and if so, how?

8. How would reserves scheduled as contingency capacity be taken in to account in clearing the CAISO ancillary service markets? Would all unloaded capacity or units scheduled in the two-day-ahead market be compensated as contingency capacity?

9. If generation located in a particular LPA were able to relieve intra- or inter-zonal congestion in a different LPA, would this generation be evaluated in the two-day-ahead market, how would it be compensated, and how would its LRS costs be allocated?

10. How would FTRs be defined for nomograms where different constraints may be binding on different parts of the nomogram?

11. How will the CAISO allocate transmission in the day-ahead and hour-ahead markets when, due to the application of a nomogram, it is possible to increase exports at one location if imports at another location are curtailed, or vice versa (see, e.g., the San Diego simultaneous import nomogram)?

12. How would usage charges be calculated for a constrained interface in situations where a nomogram relates internal generation requirements to internal gross load levels?[57]

The CAISO acknowledges in its recommendation that many elements of the proposal remain to be worked out.[58] The missing elements are important components of the CAISO proposal and it cannot be adequately evaluated or its workability assessed until they are fully specified. This is particularly critical with respect to the need for a complete specification of the mechanisms for market power mitigation and the structure of any LRS markets in addition to the two-day-ahead market.

V. Conclusions

The overall CAISO congestion management proposal does not represent a constructive step toward reform of either congestion management or market power mitigation. The problems that need addressing in the California market do not arise from a lack of a two-day-ahead market and will not be solved by creating one, two, three or more additional markets. The creation of these new markets does not address the real problems and would serve only to raise costs and increase market complexity. Moreover, the CAISO proposal fails to address the specific FERC concerns that initiated the congestion management reform process. The need is to reform the existing markets so that they effectively mitigate market power while providing efficient price signals regarding transmission congestion to guide both short-run operating decisions and long-run investment decisions. Both loads and generators would be served by the development of such efficient day-ahead and real-time congestion markets.

[57] The PX has published a paper that shows that in this situation the resulting zonal price in the constrained LRA may be different for generators than for the loads in the same LRA.
[58] CAISO CM pp. 31, 33, 39, 44, 47, 51, 56-57, 59, 76.