



Memorandum

To: CAISO Board of Governors
From: Randy Abernathy, VP Customer Relations and Market Services
Nancy Traweek, Director of Market Operations
cc: ISO Officers
Date: February 27, 2001
Re: *Splitting Operating Reserve Energy from Imbalance Energy*

This Memorandum requires Board action.

The following memorandum provides supplementary information requested by the Board of Governors (Board) during the February 21, 2001 Board meeting. It provides a limited cost benefit analysis, draft tariff language, and a response to Sempra Energy's comments regarding the proposed separation of contingency reserve energy from imbalance energy.

1. Cost Benefit Analysis

The proposed separation of contingency reserve energy from imbalance energy will create a substantial reliability and operational benefit with limited impact on total CAISO costs or Ancillary Services (A/S) bid prices.

A. A/S Capacity Volume

The volume of the A/S market, in which spin and non-spin bids are used to maintain operating reserves (OR), has experienced a net 22% reduction from December 1, 2000 to February 20, 2001. The steady decline of A/S bids prompted the CAISO to implement procedures (limiting the dispatch of self-provided spin and non-spin to contingency or emergency conditions only) so that it could ensure participation of additional A/S for OR, thereby avoiding more prevalent rolling blackouts. Recent market changes¹ from December through February played a major role in the reduction of almost 1,000 MW of A/S bids that can be used for OR. Today, resources have either exited the A/S market altogether or shifted to self-provide A/S.

For example, the level of spin and non-spin imports available for OR declined 84% from October 2000 through February 8, 2001 with prices well above the average ex-post prices demonstrating 0% willingness for suppliers to be dispatched. The average amount of imports for OR was between 1500-2000 MW in October and November 2000. Today, less than 100 MW of A/S bids are available from imports.

Furthermore, the self-provided A/S that has substituted for market bids is not anticipated to be available over the long term. Due to anticipated run-off conditions for hydro, the self-provided A/S may only be available for the next six to eight weeks. A declining trend in the self-provided spin is already becoming noticeable.

If the CAISO makes the proposed change, we could anticipate an additional 1,000-2,800 MW² of A/S bids from a number of resources that are water- or emission-limited who are not participating in the A/S market due to current operating procedures³.

¹ December 8, 2000 - DOE Order; December 15, 2000 - FERC Order; January 1, 2001 - FERC ordered \$150 break point in price cap; January 21, 2001 - CAISO initiative for self provided A/S; February 6, 2001 - End of DOE Order

² 800-1,000 MW of in-state energy-limited hydro, 300-400 MW of in-state emission-limited resources, and 1,400 MW of energy-limited hydro from the Northwest.

B. A/S Energy Prices

Table B.1. illustrates the weighted average capacity prices for OR. When imports were present (1,500-2,000 MW in October and November 2000) and there was a robust A/S market, prices were relatively competitive. When uncertainties increased and resources existed the A/S market, the average price rose to \$155/MW in December (prior to the \$150 FERC order break point in January). The average capacity price during execution of the DOE order (December 8, 2000 – February 6, 2001) was \$125/MW. This illustrates how prices are more competitive when volume is robust.

Table B.1.

Operating Reserves (Spin and Non-spin)			
Period	\$/MW Capacity Price	MW	Total A/S Capacity Cost
Oct	12	1,160,505	\$ 14,684,508
Nov	28	1,189,417	\$ 33,701,752
Dec	155	1,290,901	\$201,116,054

With the CAISO's initiative to obtain self-provided A/S to make up for the dramatic decline in A/S market bids, we gained a significant savings in capacity payments. The CAISO does not have to purchase the capacity when Load Serving Entities (LSE) self-provide A/S. It only pays for the energy it procures. While self-provision can reduce A/S procurement costs, only LSEs can self-provide A/S and current self-provision is expected to drop when hydro run-off occurs over the next few months.

The proposed separation of the balance energy stack is expected to reserve the more expensive resources for emergency or contingency purposes, leaving the less expensive resources to be available for imbalance energy. The new resources, which are expected to enter the A/S market because of this separation, are anticipated to have higher energy costs due to energy, emission, or other market (ability to serve 10-minute market) limitations. The CAISO does not envision a significant cost difference in its A/S energy costs.

Additionally, capacity bid prices are expected to become more competitive with a thicker A/S market reducing total capacity procurement costs that would more than likely compensate for any potential increases in A/S energy costs.

C. Real Time Emergencies

For the period 1/1/98 to 2/13/01, the CAISO has declared a number of emergencies due to the lack of required WSCC Operating Reserves (OR).

Table C.1. Total Number of Declared Emergencies for 1998 To February 13, 2001

Emergency⁴	1998	1999	2000	2001 (Up to 2/13)	Total
Stage 1	7	4	55	36	102
Stage 2	5	1	36	35	77
Stage 3	0	0	1	30	31
Total	12	5	92	101	210

³ Current operating procedures create a high likelihood of dispatching the resources irrespective of the bid price and during non-emergency or non-contingency situations.

⁴ **Stage 1 Emergency** Notice is declared by the ISO any time it is clear that an Operating Reserve shortfall (less than MORC minimum) is unavoidable or, when in real-time operations, the Operating Reserve is forecast to be less than minimum after utilizing available resources.

Stage 2 Emergency Notice is declared by the ISO any time it is clear that an Operating Reserve shortfall (less than 5%) is unavoidable or, when in real-time operations, the Operating Reserve is forecast to be less than 5% after dispatching all resources available.

Stage 3 Emergency Notice is declared by the ISO any time it is clear that an Operating Reserve shortfall (less than 1 1/2%) is unavoidable or when in real-time operations, the Operating Reserve is forecast to be less than 1 1/2% after dispatching all resources available.

With these emergencies, the CAISO has experienced \$1.3 million in WSCC fines for the year 2000. Over a third of the sanctions (approximately \$400,000) were generated in December 2000 alone. With the proposed separation of contingency reserve energy from imbalance energy, the CAISO anticipates that it will delay and may even eliminate the constant need to declare emergencies due to insufficient OR. This could lead to a savings of OR penalties up to an amount of \$400,000 monthly.

Additionally, there is significant cost to consumers when firm load is shed. On 1/17/01, 500 MW of firm load was shed for 2 hours and on 1/18/01 1,000 MW of firm load was shed for 1 hour and 500 MW for another 1 hour. Assuming an average cost of \$18,000/MWh for value of service, the total cost due to the two incidents was \$45 million. If a high cost of \$44,000/MWh is used for the value of service, then the total cost due to the two incidents was \$110 million. With the proposed separation of contingency reserve energy from imbalance energy, there may be a lower likelihood of the CAISO having to shed firm load with millions in savings to the state.

Option	Benefit	Cost
A. Status Quo (Rely on voluntary LSE self-provision)	1) Expect a lower volume of capacity procurement creating a significant savings in capacity payments	1) Does not bring additional A/S bids into the market <ul style="list-style-type: none"> ▪ energy-limited hydro ▪ emission-limited resources ▪ imports 2) Ability for LSEs to self-provide may not be sustainable beyond a few months (hydro run-off season) 3) Self-provision is voluntary and not mandatory
B. Separate contingency reserve energy from imbalance energy (allow bids in both stacks to set market clearing price)	1) Brings additional A/S bids into market <ul style="list-style-type: none"> ▪ energy-limited hydro ▪ emission-limited resources ▪ imports 2) Creates a larger, more robust capacity market by as much as 2,800 MW 3) Increases competitive pricing that may lower total A/S procurement costs 4) Option for voluntary self-provision still available	1. Higher capacity procurement costs than relying on voluntary self-provision (albeit temporary only) 2. Same or lower total A/S costs than prior to reliance on self-provision

2. Response to Sempra Energy’s Comments on the ISO’s February 6, 2001 Draft Proposal Market Power Mitigation Plan

On February 15, Sempra Energy submitted comments on proposed market changes recommended by ISO Management. Specifically, Sempra commented on the recommendation to separate energy associated with Operating Reserve bids from those associated with Supplemental Energy and Replacement Reserve bids. Sempra raised two specific issues concerning that proposal. Their issues and the ISO’s responses are as follows:

A. Potential increase in costs

Comment: "Splitting BEEP is going to increase costs by potentially allowing more expensive real-time energy to be dispatched ahead of sometimes cheaper operating reserve energy. This has the effect of circumventing the rational buyer rule because less expensive capacity would not always substitute for more expensive, but lower quality reserves. The increased costs is supposedly offset by an increase in the amount of market-based spin and non-spin capacity from energy-limited sources that do not currently participate in the market because of the fear of actually being called to produce energy. Sempra Energy believes a cost benefit analysis is needed."

Response: There are really two cost-impact issues raised in the above paragraph: (a) impact on real-time energy dispatch costs (first sentence above), and (b) impact on A/S capacity costs (rest of the paragraph). Sempra’s concern on (a) presumes that separating OR energy bids from BEEP would remove resources that currently appear in BEEP. This is not correct. The proposal would not cause cheaper OR energy to be skipped in real time, because that energy does not appear in BEEP today.

In addition, the long-term solution that offers a bid flag for market participants to designate whether they want their A/S energy bids to be included in the BEEP stack will ensure that those resource owners who want to bid competitively to provide imbalance energy can do so. Therefore, we believe that under the voluntary flag approach, there will be no negative impact on the capacity available in BEEP.

A similar argument applies to Sempra's concern about rational buyer. The energy-limited capacity is not available to rational buyer today because it is not bidding into the A/S markets, so it would not be lost to rational buyer under this proposal. The ISO has begun an analysis of the possible savings attributable to having a deeper market for OR. Initial estimates that would allow water- or emission-limited resources to bid into an OR market that will only dispatch under contingencies or emergencies could add an additional 500 - 2,000 mw to the A/S market. Although it is difficult to state with certainty how and at what prices market participants might bid into such a market, it is highly likely that an increase of that magnitude will decrease the MCP for capacity.

B. Incentives for generators to game the system.

Comment: "Splitting BEEP increases the incentive for generators to game the system. For example, a generator can double sell its capacity to two buyers (the ISO and a buyer of energy, outside of CA). Because energy from spin and non-spin is only dispatched by the ISO when a contingency arises, the probability of not being dispatched is relatively high. If the capacity is called on by the ISO, the generator could simply not perform and continue providing its output outside of California. All that would happen is that the generator would not get paid for the capacity by the ISO (no-pay rule) but would be paid by the external buyer. In another words, in many hours/days, the generator could get paid twice for the same capacity."

Response: The CAISO has many different mechanisms that reduce generators propensity to game the system.

- 1) Elimination of payment for non-performance
- 2) No-Pay measures that include:
 - Failure to respond to a dispatch instruction (ADS "decline")
 - Delivering energy from obligated capacity (uninstructed deviations)
 - Failure to deliver energy with ADS "accept" (uninstructed deviations)
- 3) Amendment 33
- 4) Committed Period Penalty
- 5) Unannounced Tests of contingency-only OR

With or without the proposed change, generators that double-sell capacity or that generate uninstructed out of committed OR capacity are subject to penalties through No Pay (i.e., loss of their OR capacity payment). Any uninstructed generation out of committed OR capacity is recorded in the unit's meter data and is detected in the ISO settlement process, where No Pay is applied. Moreover, a generator that sold OR capacity to the ISO in the DA Market and subsequently submitted a balanced schedule for an export of that capacity in the HA Market would need to buy back the previously-sold capacity at the HA price. If, instead, the SC simply implemented an Uninstructed Deviation to export energy using some of the previously sold Operating Reserve capacity, they would be subject to No-Pay penalties. Thus, implementing the proposed change will not create the additional gaming opportunity suggested by Sempra.

3. Draft Tariff Language

The draft tariff language to be filed at FERC after Board approval is under a separate attachment to this memorandum. Once the tariff language is filed, FERC may take up to 60 days to respond unless a waiver is requested. CAISO staff would like to implement this software modification before the summer and estimates a two to three month period for implementation.

4. Recommendations

The CAISO management recommends the adoption of separating contingency reserve energy from imbalance energy. This proposal provides several benefits: The preservation of OR for contingency and emergency use, incentive for capacity-rich but energy-limited resources to provide A/S, incentive for resources external to the ISO control area to provide A/S and comply with external control area regulations, and allows resources that have excess capacity and energy to provide imbalance energy as well as OR energy.

MOVED, that the Board authorize ISO management to file with FERC to give the ISO the authority to modify the Imbalance Energy Market by separating out real time energy procurement for Operating Reserve.