Options for Discussion
Steps Necessary to Promote Workably Competitive Wholesale Electric Markets and Safeguard Against Exercise of Market Power
Market Power Mitigation Post-September, 2002
California ISO
(Preliminary Draft Summarizing Key Mitigation Features)
February 27, 2002

Note to Readers

This document represents the current thinking of the ISO staff team working on the Market Design 2002 (MD02) project and the ISO's Department of Market Analysis on how best to foster competition and mitigate market power in the ISO's markets. The primary focus is on the period immediately following the September 30, 2002 expiration of the provisions of FERC's June 19, 2001 order. However, the principles and mechanisms discussed in this paper are also being considered in the context of a comprehensive long-term market design proposal being developed in MD02.

As a preliminary draft, this paper is intended to invite comments and suggestions from ISO market participants and other interested parties. Market power problems in electricity markets are difficult to solve in ways that effectively ensure competitive outcomes without unduly constraining economic behavior. [1] We therefore welcome suggestions on how to improve upon these proposals. Specifically, we would like readers to comment on the questions and issues listed at the end of the paper.

Introduction

Market power mitigation is an indispensable element of electricity markets. Conditions can always arise in a power system such that firms can raise prices considerably above competitive levels even in the absence of scarcity (that would be legitimate for prices to go up). Structural market conditions in California increased the frequency of such occurrences starting in May 2000 and led to several FERC Orders including different measures for market power mitigation that eventually culminated in the June 19th Order. The west-wide market power mitigation plan adopted by FERC on June 19, 2001 is set to expire on September 30, 2002. The CAISO has protested the application of a hard sunset date for ending the west-wide market power mitigation plan and requested that the expiration should be based on a determination that the fundamental structural elements for a workably competitive market are in place rather than an arbitrary date. Unfortunately, in its December 19, 2001 Orders, FERC has denied this request and reaffirmed the September 30, 2002 sunset date. The CAISO remains concerned that the

[1] The definition of market power used in this paper is the ability of a firm to increase the market price above competitive levels. Market power can be exercised by physical withholding (capacity or output from the market) and/or economic withholding (bidding at prices significantly above the marginal cost of production). The overall competitiveness of a market will be determined by how fast potential competitors and/or consumers respond to inhibit a firm's ability to increase the market price.

structural elements necessary to ensure a workably competitive market will not be fully in place on October 1, 2002 and will continue, through all available means, to argue for an extension of the west-wide mitigation plan beyond September 30, 2002. However, in the event FERC does not extend the September 30, 2002 sunset date for west-wide mitigation, the CAISO believes it is prudent to develop an alternative market power mitigation approach. The CAISO's proposed market power mitigation outlined below is designed to protect and foster competition and minimize interference with open and competitive markets while providing proper safeguards against significant market power abuse beyond September 30, 2002. The proposed alternative includes a four step process to achieve these objectives:

I. Market design changes embodied in MD02 and other initiatives[2];
II. Damage control bid cap[3];
III. Resource specific bid screens and mitigation; and
IV. An explicit standard for just and reasonable rates, which if violated would trigger the automatic implementation of a more stringent market power mitigation plan (e.g., re-impose June 19th measures or alternatively, impose cost-based bid caps on only those suppliers found to have exercised market power).

The first three steps of this proposal are consistent with the market power mitigation approaches FERC has authorized for other ISOs. For instance, PJM and the NY ISO have many of the same market design elements being proposed in Step 1 as well as Step 2 Damage Control Bid Cap. Additionally, the NY ISO has the Step 3 protection of resource specific bid screens and mitigation. What is fundamentally missing in the market power mitigation plans for all ISOs is an explicit prospective standard for measuring whether wholesale electricity rates are, over time, just and reasonable. In the event the standard is violated, a pre-authorized market power mitigation plan would be implemented. Such a standard would allow occasional price spikes but on a cumulative basis not cause irreparable damage to the market. A well designed standard would inform all parties when mitigation would be implemented. Thus suppliers could take self correcting steps to avoid provoking mitigation. Consumers also have assurances that once the threshold is exceeded, that rates would be deemed not just and reasonable, and a refund obligation would be in place on a prospective basis. The CAISO believes that the fourth step of the proposal addresses this fundamental deficiency.

This paper provides a discussion of each of these elements and how they collectively provide a comprehensive approach to promote workably competitive markets and mitigate market power.

[2] Specifically, the CAISO's recent FERC filing seeking additional authority to mitigate local market power and seeking penalties for excessive uninstructed deviations.
[3] It is important to note that this is a "bid" cap not a "price" cap. Under a nodal market, there are congestion situations where nodal prices could exceed the bid cap despite the fact that no one bid above the cap. Put differently, it is not possible to implement a "price cap" under a nodal market structure.

Background

Since the beginning of the electricity crisis in Summer 2000, many experts, including the CAISO, have recognized that most of the root causes of supplier market power had more to do with fundamental structural and regulatory deficiencies than with the CAISO market design as embodied in its tariff. It is widely recognized that the crisis was brought on by the following structural deficiencies.

1. No clear obligation to serve load and assure adequate capacity. When tight supply conditions occurred throughout the western region, both reliability and reasonable level of costs were compromised.
2. Lack of forward contracting by the IOUs, which left most of California load exposed to day-ahead and real-time spot market prices;
3. Lack of significant demand response to hourly prices;
4. Inadequate tools to mitigate market power
5. Inadequate transmission capacity in critical areas of the state.

These fundamental deficiencies and a regulatory failure to effectively mitigate market power were the primary drivers behind California's energy crisis. Thus, it is our belief that it was not the California ISO market design that was the key failure in the California energy crisis of 2000. Any market design, even a design such as PJM, would fail with similar structural deficiencies. This is not to say that the CAISO market design was perfect and had no impact on the crisis. We believe there are some deficiencies in the CAISO's current market design, which may exacerbate market power and we are seeking to correct these deficiencies through the MD02 proposal and other design initiatives. Some of the proposed market design changes, which are discussed in more detail below, will help in addressing these fundamental deficiencies but a new CAISO market design, no matter how robust, cannot resolve all of them.

The most effective way for California to protect itself from market power abuse is to address the fundamental structural and regulatory deficiencies. Addressing these deficiencies is a preventive approach that will serve to minimize the occurrence of and exposure to market power abuse. A structural preventive approach will ultimately be much more effective than any attempts to cure an outbreak of persistent market power abuse.

The market power mitigation elements inherent in the CAISO's proposed market design and the additional mitigation measures being proposed here are just one piece of what needs to be a broader strategy to correct the structural deficiencies that enabled suppliers to exercise market power. Correcting these fundamental deficiencies requires a coordinated and concerted effort by the Legislature, the Governor's Office, and all the key state and federal agencies.

In addition, as the CAISO and stakeholders evaluate the merits of various market power mitigation options, it is important to keep in mind the following:

If we adopt market power mitigation measures in the wholesale markets that ultimately slow progress toward correcting the fundamental structural deficiencies that enable suppliers to exercise market power, these measures may, in the long run, actually harm the consumers they were intended to protect. An effective market power mitigation approach must strike a balance between providing adequate safeguards for mitigating market power and ensuring adequate incentives exist for correcting structural deficiencies.

Step 1: Components in MD02 that directly or indirectly mitigate market power in CAISO markets:

1. Available Capacity (ACAP) requirement: This is a critical element that will provide the following market power mitigation benefits:
   - Helps to ensure that sufficient capacity is secured on a monthly basis to serve CAISO Control Area load.
   - Shifts the financial risk of forced outages from Load Serving Entities (LSEs) to ACAP providers, which should reduce physical withholding.
   - Mitigates MW laundering since capacity is committed to serve load in the CAISO Control Area.
   - Provides incentives for LSEs to develop demand-side management as a means of meeting their ACAP obligation.
   - Provides a revenue source for new generation investment.
2. Residual unit commitment will ensure resources with long-start up time are brought on-line to provide adequate supply for a competitive real-time market.
3. New congestion management and local market power mitigation provisions will help curb locational market power.
4. Forward scheduling incentives for LSEs – An ACAP requirement for LSEs will facilitate forward contracting. Additionally, charging residual unit commitment costs to underscheduled loads will encourage LSEs to secure the majority of its needed power from long-term and short-term forward energy markets, not the real-time market.
5. Penalties for generator non-performance - Imposing an uninstructed deviation charge will discourage generation uninstructed deviations. In addition, non-performing generators will be charged a share of Residual Unit Commitment costs and any uplifts associated with above MCP real-time energy purchases.

ACAP Alternatives

The main purpose of the ACAP obligation is to ensure that adequate capacity is committed on a daily basis to meet CAISO system load and reserve requirements and is available to respond to CAISO dispatch instructions to meet system imbalances and local reliability needs. Under the original design of the California restructuring there was no entity with explicit responsibility to ensure adequate capacity. As a result the spot markets of the Power Exchange and the CAISO were vulnerable to market power exercise, and the CAISO frequently faced supply shortages right up to the operating hour. To remedy this problem the proposed ACAP obligation would apply to all Load Serving

Entities (LSEs), thus placing the responsibility on them to procure adequate capacity to meet their expected peak monthly loads plus reserve requirements.
Although the proposed ACAP obligation is essentially an extension of the traditional "obligation to serve" under the integrated utility structure, it would be a completely new element to the California market design. The CAISO therefore believes that the ACAP obligation should be phased in over time. For the ACAP obligation to be effective it requires adequate lead time to enable LSEs to arrange a portfolio of supply arrangements and demand management capabilities to meet their needs. An ACAP requirement imposed without adequate lead time could place the LSEs at a severe disadvantage in negotiating with suppliers.

In the long-term design, each LSE's ACAP obligation would be calculated on a monthly basis as a fixed margin above the next month's forecasted load. The obligation may be different for different types of LSEs (e.g. Vertically Integrated Utilities (VIU)) and will likely be different for different hours of the day. The obligation may be met by a combination of own generation, firm energy contracts (including contracts obtained by the State on behalf of consumers served by the UDCs), capacity contracts, and physical demand management (as opposed to financial arbitrage between the forward and real-time markets). Prior to the start of each month, the LSE would demonstrate to the CAISO that it has secured adequate capacity for the coming month and would be required to identify the relevant "ACAP resources" and associated MW quantities. The LSE would be assessed a penalty for any shortfall.

As the title "Available Capacity" suggests, the ACAP obligation differs from the "Installed Capacity" or ICAP obligation common to the eastern ISOs by virtue of the ACAP's availability requirement. This means that a resource designated as an ACAP resource by a LSE must be fully available to serve control area load (for the amount of contracted capacity) via a combination of firm forward energy schedules plus bids into CAISO markets. In the event of a plant outage or derate other than planned maintenance, the supplier would be responsible for providing a substitute resource or could be charged for replacement energy plus an ACAP shortfall penalty. In addition, if the supplier does not report the outage to the CAISO in a timely manner and is issued a CAISO dispatch instruction, the supplier would be assessed penalties for failing to follow dispatch instructions. In summary, the CAISO verifies each LSE's compliance with the ACAP obligation on a monthly basis based on its demonstration of adequate contracts and designation of specific resources, and then verifies compliance for designated ACAP resources on a daily basis based on their availability.

While the CAISO views the ACAP obligation as a critical design element for mitigating market power, there remains a number of outstanding design and implementation issues concerning the ACAP obligation and at this point it is not clear whether an ACAP element can be fully implemented by September 30, 2002. Therefore, we need to consider if there is an alternative to an ACAP obligation that could provide similar market power mitigation benefits. One alternative is to ask that FERC extend the must-offer requirements of the June 19, 2001 Order beyond September 30, 2002 until such time that the CAISO can develop and implement an ACAP requirement. The Must-Offer

provisions, however, would need to be modified to reflect whatever changes in the design of the CAISO markets that will take effect post September 30, 2002 and implementation issues that are currently being addressed for Vertically Integrated Utilities (VIUs). Specifically, the CAISO plans to have a Residual Unit Commitment process in place on September 30, 2002 and a Day-ahead energy market at some later date (to be determined). To be an effective market power mitigation tool, the Must-Offer provisions should apply to these markets as well. The extended Must-Offer provisions could be implemented such that if a long startup time unit is not self-committed (i.e. has no Day-ahead schedule) and is not on a scheduled maintenance or reported as forced out of service, it will have standing bids (including cost based startup and minimum load bids) in the CAISO's DA energy market (when this market is implemented) and the Residual Unit Commitment process. For VIUs, the Must-Offer provisions will be limited to meeting their own load unless such capacity is bid into the CAISO markets.[4]

It is important to note that the "must offer" requirement as it currently exists would only ensure that all available capacity is scheduled or bid into the market, except as discussed above. It would not guard against physical withholding under the pretext of "forced outages" or against MW laundering . A "must offer" obligation without the west-wide mitigation measures of FERC's June 19th Order and without having imports as price takers would enable Generators to satisfy their must offer obligation by exporting power outside the CAISO Control Area, which could then be resold in the CAISO's real-time market. Although the resource is not being physically withheld, this practice would make it impossible to track down a resource for economic withholding The ACAP mitigates MW laundering and physical withholding without requiring the WSCC system-wide mitigation measures, while allowing the imports to participate competitively in the CAISO markets.

A critical design issue of the Must-Offer provision is whether startup and minimum load costs should be cost-based or bid-based. A cost-based approach ensures generators recover for their operating costs (startup, minimum load, and incremental) but does not guarantee that generators would earn more than that. Allowing a bid-based approach to startup and minimum load costs may make the extension of the Must-Offer provision more acceptable to FERC and generation owners. However, market power may be exacerbated if generators are allowed to change their startup and minimum load costs on a daily basis. One compromise alternative is to allow bid-based startup and minimum load costs but generators could only submit changes to these bids on a bi-annual basis[5]. Under this approach generators will have less of an incentive to submit excessive startup and minimum load costs since these bids will apply for an entire 6-month period and may result in them not being committed in days in which they would benefit from being in the market (unless they self schedule and pay for their own start-up and minimum-load

[4] If bid into the CAISO markets, the VIU will abide by the CAISO Tariff and all CAISO Tariff terms for Participating Generators and Participating Loads. However in a System Emergency, any excess capacity not already bid into the CAISO markets will be available to serve other load in the CAISO Control Area.

[5] This is the approach used in the PJM market where generators can submit their own startup and minimum load costs but once submitted, these costs components are fixed for a 6-month period.

costs). Table 1 provides a summary of the options for startup and minimum load costs along with their pros and cons.

Table 1: Options for Startup and Minimum Load Costs

Option	Pro	Con
1. Cost-based	▪ Minimizes market power (i.e. economic withholding by submitting excessive startup and minimum load costs)	▪ May make extending Must-Offer less acceptable to FERC ▪ Generators may circumvent Must-Offer by declaring their units forced out.
2. Bid-based (Daily)	▪ May be more acceptable to FERC. ▪ Should reduce physical withholding via falsely declaring units forced out.	▪ May exacerbate economic withholding.
3. Bid-based (Semi-annually)	▪ May be more acceptable to FERC. ▪ Should reduce physical withholding via falsely declaring units forced out.	▪ May result in some economic withholding but less so than the daily bid approach.

Under the Must-Offer approach, if the CAISO commits a unit in the residual unit commitment process and that unit: a) does not perform, and b) does not explain its failure to perform via a forced outage ticket, it will be penalized for physically withholding[6]. By itself, this provision may do little to mitigate against physical withholding since a Generator can physically withhold without penalty by simply declaring its unit forced out. However, this provision does provide a strong incentive for unit owners to declare the status of their unit in order to avoid penalties for non-performance. Unit owners that frequently declare their unit forced out of service would be investigated by the CAISO Outage Coordination Office and Department of Market Analysis, particularly if these forced outages are occurring during periods when the unit owner has the ability to raise market prices and financially benefit from the impact on the rest of its portfolio. The CAISO has proposed new tariff provisions that require unit owners to submit fairly extensive reports any time they incur a forced outage. To provide a further deterrent against physical withholding, the CAISO proposes, beginning on October 1, 2002 to count all forced outages against the total capacity the unit can sell as ACAP for a full year beginning on the date that the CAISO implements an ACAP requirement. This

[6] The penalties would include an uninstructed deviation penalty equal to 25% of the real-time MCP and net-negative deviation charges for start-up and minimum load payments and the above MCP portion of any Out-of-Market (OOM) purchases.

would be accomplished by calculating the unit's capacity factor for the period between October 1, 2002 and the date the CAISO implements an ACAP market. These capacity factors would then be applied to the unit's P-max to determine how much capacity can be count towards ACAP[7]. Table 2 compares the market power mitigation effectiveness of this alternative to the ACAP requirement.

Table 2: Comparison of ACAP Requirement to Must-Offer Requirement

Option	Market Power Mitigation Effectiveness
ACAP	1. Holding ACAP resources responsible for forced outages should mitigate against physical withholding and ensure sufficient capacity is available to meet Control Area demand. 2. Since ACAP resources are obligated to serve CAISO load, they will not be able to circumvent bid mitigation through MW laundering.
Must-Offer	1. Should provide some deterrent against physical withholding, particularly if forced outages are counted against future ACAP eligibility. However, it will not provide as strong of a deterrent as ACAP. 2. Since there is no obligation to sell to CAISO Control Area load, any additional bid mitigation could be circumvented by MW laundering.

While either an ACAP requirement or an extension of the must-offer provisions will help to mitigate against physical withholding, they will not mitigate economic withholding. Assuming FERC approves the CAISO's request for bid mitigation under local market power circumstances, the primary concern is how to mitigate against economic withholding in the larger zonal markets. As previously discussed, the most effective way for demand to protect itself against market power in energy spot markets is to: a) manage its exposure to spot market prices by hedging most of its demand through forward contracts, and b) develop price responsive demand products. While California has made substantial progress in reducing its exposure to spot market prices through long-term contracts, there has been little progress made in most Service Areas in developing price responsive demand products. As a consequence, during tight supply periods, some suppliers will likely be able to exercise significant market power through economic withholding. Without price responsive demand, suppliers that are able to exercise market power in the CAISO's real-time market could conceivably set the real-time price at $ 1 million/MWh absent some limit on the maximum bid the CAISO will accept.

Step 2: Damage Control Bid Cap – To mitigate against excessive market power abuse, an overall Damage Control Bid Cap that will limit the maximum bid allowed in the CAISO energy markets, is essential. Since the ACAP will be phased in over time, to

[7] There will likely be other considerations and complexities in determining how much of unit's total capacity can be sold as ACAP, particularly for hydro and other limited energy resources.

protect against market power in the transitional period, we may want to start with a relatively low bid cap and gradually raising it as capacity conditions improve.

In considering additional market power mitigation measures, we have sought to strike a balance between providing the incentives for the development of demand response, new generation, and correction of other structural deficiencies. while at the same time ensuring that safeguards are in place to keep average market prices within a zone of reasonableness. To accomplish this, we propose two additional steps that have the common attributes that: a) the mitigation is only applied when explicit triggers are hit, and b) the mitigation is applied prospectively only.

Step 3: Resource specific bid screens and mitigation – The CAISO proposes to implement individual resource bid screens and mitigation in the Day-ahead and Hour-ahead energy markets (to take effect when the CAISO implements these markets) and the CAISO's real-time energy market. This approach would be very similar to the bid mitigation approach that the New York ISO uses to automatically mitigate bids under predefined circumstances in its Day-ahead energy market and to manually mitigate bids in its Real-time energy market.

This step is intended to protect against certain anticompetitive bidding behavior. For example, in its April 26, 2001 Order, FERC conditioned public utility sellers' market based rates on not engaging in the following type of bidding behavior.

1. Bids into the CAISO markets that vary with unit output in a way that is unrelated to the known performance characteristics of the unit (i.e. hockey stick bidding).
2. Bids into the CAISO markets that vary over time in a manner that appears unrelated to change in the unit's performance or to changes in the supply environment that would induce additional risk or other adverse shifts in the cost basis.

Under the April 26 Order, market participants engaged in this type of behavior are subject to increased scrutiny by the Commission and potential refunds and could have their market-based rate authority subject to further conditions, including prospective revocation of market-based rate authority. To carry these provisions forward beyond September 30, 2002 and make them more enforceable, the CAISO proposes to seek authority, similar to what FERC has granted to the NY ISO, to mitigate a suppliers bids automatically when a supplier's bidding behavior: a) violates explicit anticompetitive thresholds, and b) has a material impact on market prices.

The explicit bidding thresholds will need to be developed, but the general approach is to have fairly generous thresholds in order to balance the desire to mitigate anticompetitive bidding behavior with the risk of incorrectly labeling legitimate changes in bidding behavior as "anticompetitive". Moreover, a generous threshold would allow for price volatility that could help to further the development of price responsive demand products. This is consistent with the NY ISO approach where economic thresholds for energy bids

are set with respect to a "reference level", which is based on historical competitive bids during similar hours, and the threshold is set at a level of 300% increase or $100/MWh, whichever is lower.

Similarly, a fairly generous threshold would need to be applied to determine whether the bids had a "material price effect". For example, the energy market impact threshold used by the NY ISO is whether the bidding behavior resulted in an increase of 200% or $100/MWh, whichever is lower, in the hourly day-ahead or real-time energy Locational Based Marginal Price (LBMP) at any location. If a supplier's bids were found to: a) violates explicit anticompetitive thresholds, and b) have a material impact on market prices, the NY ISO has authority to prospectively impose "default bids" for the supplier for a period of time, not to exceed six months. However, the supplier is still eligible to receive the LBMP. The NY ISO mitigation approach has evolved to the point where they are now able to mitigate bids automatically in their Day-ahead energy market. Under this approach, if the mitigated bids result in a material decline in the LBMP then the mitigated bids and the resulting LBMPs will serve as the final day-ahead market result. If the mitigated bids do not have a material impact on LBMPs, the original bids and the original LBMPs will serve as the final day-ahead market result. Since this automatic process prevents market impact in the day-ahead market, mitigation is not applied beyond the current trade day. Prospective mitigation beyond the trade day is reserved for mitigation that cannot be performed before the market is closed, such as mitigation for physical withholding.

One particular area of concern is how this provision would apply to import bids. Proxy bids or reference levels could be established for imports based on the lower of the mean or the median of an importer's accepted bids over the previous 90 days for similar hours or load levels. However, because there are no mitigation provision to force imports to offer energy into the CAISO's energy markets, as there is with an ACAP or must-offer resource within the CAISO control area, any attempt to mitigate economic withholding may simply cause importers to physically withhold from the CAISO market. Moreover, if the CAISO pursues a price-taker option for importers that bid into the CAISO's real-time market, that would then allow them to submit non-zero energy bids and be pre-dispatched in merit order for the entire hour but not allowed to set 10-minute market clearing prices (i.e. a 10-minute price taker), it may not be necessary to mitigate their real-time energy bids anyway.

The NY ISO approach to market power mitigation could potentially be very resource intensive and before committing to this approach, the CAISO needs to take a hard look at what it would take to implement and operate. An ex-post approach to monitoring hourly bid conduct and impact and mitigating prospectively would require a parallel "off-line" version of the CAISO market software and considerable human resources to maintain the off-line system and to conduct and analyze the data. Alternatively, an Automatic Mitigation Procedure (AMP), similar to the NY ISO Day-ahead mitigation approach, may require significant upfront software development work but once in operation, would be less resource intensive.

Since the CAISO will not have a Day-ahead and Hour-ahead energy market in place on October 1, 2002, the CAISO is currently assessing the feasibility of an AMP for the CAISO's Real-time Energy Market[8]. Applying an AMP within the Real-time market time frame is problematic in that it is simply not feasible to conduct an AMP prior to each 10-minute interval. An alternative would be to run the AMP prior to the operating hour and after the deadline for submitting supplemental energy bids. Once the CAISO has received all energy bids for the operating hour, it could apply the bid screen and price impact test using the forecasted 10-minute imbalances for the next operating hour. If bids fail the "action" screen and have a material "impact" on forecasted real-time energy prices, they would be mitigated. The CAISO will continue to assess the feasibility of this option and will provide an update once the implementation issues of this option are more fully developed.

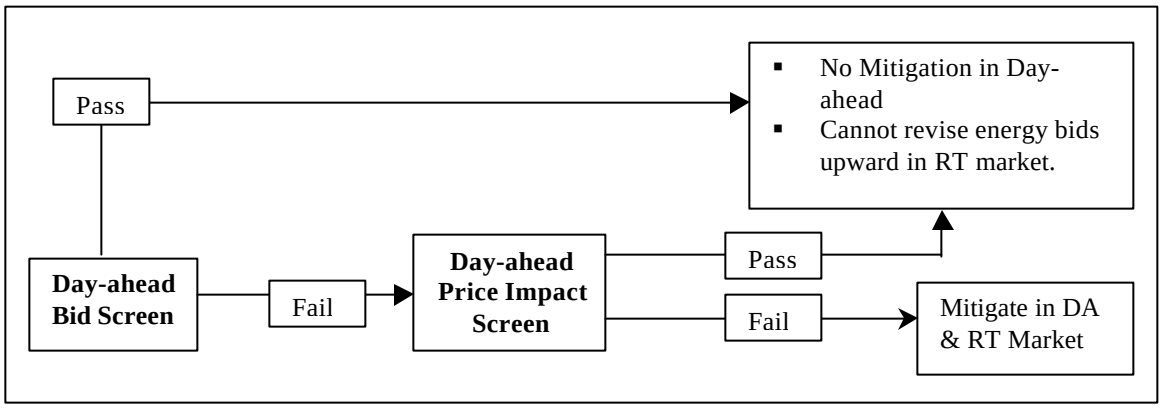
The application of AMPs to the CAISO Day-ahead and Hour-ahead energy markets should be easier to implement than a Real-time market AMP, since there will be more time to run additional procedures. Though the CAISO will not have Day-ahead and Hour-ahead energy markets in place by October 1, 2002, the CAISO is currently evaluating the feasibility of integrating AMPs as part of the Day-ahead and Hour-ahead market design. The CAISO will provide more details as the specific Day-ahead and Hour-ahead market design specifications are developed.

In the event that the CAISO finds it is not feasible to implement an AMP for the Real-time market but is feasible for the Day-ahead market, the Day-ahead AMP would need to be supplemented with other bidding rules to ensure suppliers do not circumvent the AMP by avoiding the Day-ahead market and submitting bids only to the real-time market[9]. An ACAP or Must-Offer provision would require suppliers to bid into the Day-ahead energy market. However, to protect against suppliers revising energy bids upward for capacity that was not selected in the Day-ahead market but offered in subsequent markets (Hour-ahead and Real-time), the CAISO may need a bidding rule that prohibits suppliers from increasing their energy bids from the Day-ahead to Hour-ahead to real-time. Under this approach, if an energy bid passes the 2-part ("action" and "impact") screen but is not selected in the Day-ahead market, the bid owner can revise the bid downward in the real-time market but not upwards. If the bid fails the 2-part screen, the bid will be mitigated in both the Day-ahead and Real-time market. The screening and mitigation process for the Day-ahead market is shown in Figure 1.

[8] The CAISO is also considering the application of AMP in the Residual Unit Commitment (RUC) process. The RUC could be performed as if the CAISO were to procure the net short (i.e., satisfy 100% of the forecast load). Although the RUC prices would be advisory, the "action" and "impact" screens could be applied to mitigate the energy bids of the committed resources that fail both screens.

[9] The CAISO is also exploring the feasibility and merits of implementing AMP in the hour-ahead and real-time market.

Figure 1: DA Automatic Mitigation Procedures (AMP)



The advantage of a bid screen mitigation approach is that it has been approved by FERC and has been applied in actual market operation. However, there are some potential arguments against this approach, which are discussed below in Table 3.

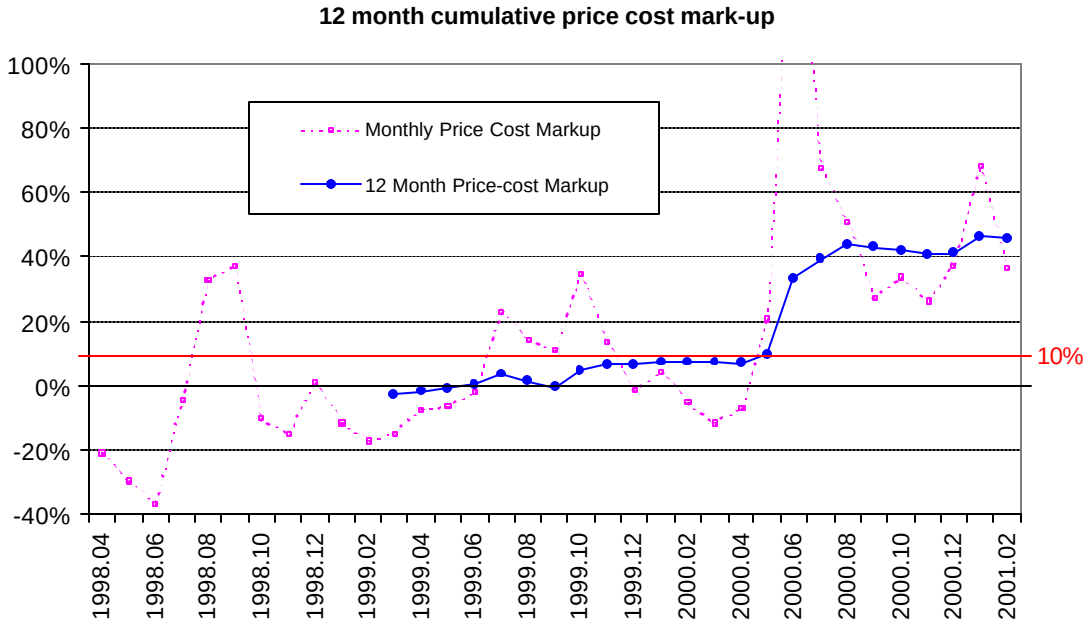
Table 3: Potential Arguments Against a Bid Screen and Mitigation Approach

Potential Argument	Comments

• May require frequent intervention of normal market fluctuations that will not result in uncompetitive market for a sustained period of time.	• NY ISO perspective:
	  • Because high cost CTs are given very high reference levels close to the $1,000 bid cap, during shortages the bid mitigation does not apply.
	  • The mitigation is intended to apply during non-shortage conditions when margins are sufficiently tight enough for the exercise of market power.

▪ Needs complicated software and puts a heavy burden on monitoring staff.	▪ Day-ahead mitigation can be automatic and part of market software. Adding the automatic bid mitigation may not be that difficult and having it automated should reduce burden on monitoring staff.
▪ May not be effective in cases of wide spread and sustained market power unless suppliers have an obligation to bid.	▪ ACAP resources that are not fully obligated to a VIU, would have an obligation to bid and the CAISO may want to extend must-offer to non-ACAP resources. ▪ If ACAP is not adopted on October 1, 2002, a Must-Offer provision may help to reduce economic withholding.
▪ Cannot curb megawatt laundering.	▪ ACAP resources that are not fully obligated to a VIU, would be obligated to serve the remaining CAISO Control Area load. ▪ Could possibly apply bid screens to imports as well.
▪ Difficult to apply the bid screens to imports.	▪ Bid screens could apply to each SC and the bids they submit at a branch group with reference prices based on the bids they submit during competitive hours.
▪ How do you set reference levels for energy-limited resources.	▪ Reference prices are based on the bids they submit during competitive hours.

Step 4: Explicit Criteria for Just and Reasonable Rates to trigger a comprehensive set of measures – Option A. This option calls for temporarily and automatically reinstating FERC's June 19, 2001 mitigation measure if market prices in the California market are found to be not just and reasonable. An objective and explicit standard for just and reasonable rates can be set. This would involve a test using a 12-month rolling price cost markup index that compares actual average market cost to a competitive baseline average cost. The competitive baseline average cost would be based on a very explicit and transparent methodology that calculates the marginal cost of the highest cost unit needed to serve system loads each hour. If the 12-month rolling markup is above 10%, the market should be declared unjust and unreasonable. Having an objective criteria is critical for all parties to know what triggers mitigation. With such a standard, consumers will know that the extent of their exposure to uncompetitive conditions is limited. Suppliers will know the threshold, and be able to self-regulate their behavior in order to preclude intervention, and the FERC will have an objective standard to know when to step in. The following chart illustrates an example of the 12-month rolling index applied to the California market since start-up. As shown, such a standard would have alerted all parties (consumers, regulators, suppliers) that markets had become uncompetitive in May 2000.



Once the market is declared uncompetitive, the CAISO would have the ***pre-authorized option*** from FERC to automatically re-impose the mitigation measure for the CAISO markets as provided in the June 19, 2001 FERC order. To fully implement the comprehensive mitigation contained in the June 19, 2001 Order, FERC would also have to commit to reinstating west-wide bid limits. This measure should be temporary for a duration of 90 days to 6 months, or until the market is found to be restored to a competitive condition. This should give FERC and the CAISO time to develop more permanent mitigation measures.

The Step 4 measure is different from the Step 2 damage control bid caps. This is a uniform bid caps which would be in effect regardless of overall competitiveness of the market. This mechanism is considered a constant safety net to guard against the occasional million dollar bid. The Step 4 measures are a higher level of protection against ***sustained*** market power. However, they will not be invoked if the overall market is competitive. If unexpected conditions result in sustained market power problems with significant impact to the consumer, the measure will be enacted to ensure just and reasonable rates in market outcomes.

Some have expressed doubt whether a 12-month rolling average would work in the first month. The following example shows how it will be applied and indeed could work in the first month of operation. As an example, if during the first month after lifting the FERC June Order, prices in California skyrocket, and average $90/MWh, when the competitive baseline considering gas prices is $30/ MWh, then the 12 month trigger would kick in under the Step 4 measure. This is because the price represents a 200% price mark-up in one month. Therefore, even if all subsequent months were exactly at the competitive level, the index would be 16.6% (200 %/ 12)[10] on a 12 month rolling average basis. Thus it is possible to trigger the index with only one month of performance information.

Step 4: Option B - Selectively Conditioning Market-Based Rate Authority – This approach uses the same bright-line threshold as Option A but once the 10% threshold is exceeded, the CAISO will identify suppliers that actively engaged in the exercise of market power and caused the significant impact. The CAISO would impose temporary mitigation on these suppliers for 90 days or until FERC makes a ruling and imposes long-term sanction including suspending market-based rate authority for the party that abused market power.

The supplier-specific temporary mitigation can be cost- based bidding restrictions in spot markets and the real- time market. It may also give the supplier the option to provide power under long-term contract to California load with FERC review for just and reasonable rates to the extent the supplier is FERC jurisdictional. This will reduce the opportunity for supplier to use MW laundering to bypass the intended mitigation.

This Option is different from Option A, in that it does not impose mitigation to the entire market but focuses on particular supplier(s) responsible for the non-competitive market outcome. This allows bad actors to be targeted while leaving the overall market to function normally. The CAISO believes this option will be preferable if FERC makes a final ruling on a standard for granting market based- rates and the corresponding mitigation. In that case, this measure can be formulated along the lines of the FERC rules for market-based rate authority.

[10] This example assumes the 11-month average market quantities and competitive baselines are the same as the current month (i.e. simple average rather than weighted average). However, the actual index would be based on a weighted average of market prices and competitive baseline prices.

Other Mitigation Options under review

- Extending must-offer obligation to non-ACAP resources – The CAISO does not believe a Must-Offer requirement for non-ACAP generator resources is an onerous obligation that would justify a capacity payment. Unlike ACAP, which comes with an obligation to serve CAISO Control Area load and manage the risk of forced outage penalties, a must-offer resource only has to offer capacity to the market if it is available (i.e. not scheduled or not on a scheduled or forced outage).

- Bid limitations – Energy bids for a particular day can very across hours (i.e. not requiring the same energy bid for all 24 hours) but once submitted, cannot be revised upwards in subsequent markets for the same trade day. This approach would help to mitigate against market power being exercised in the real-time market (i.e. suppliers increasing their bids from day-ahead to hour-ahead, to real-time when they anticipate tight supply conditions).

Time Table for Developing Final Post Sep 30, 2002 Mitigation Plan

Task	Date
1. Release CAISO White Paper on Post Sep 30, 2002 Bid Mitigation to public.	Feb 27, 2002
2. Present Proposal to Board for discussion.	March 14, 2002
3. Stakeholder Meetings to Discuss Mitigation Proposal (as well as ACAP and Comprehensive MD02 Proposal)	March 18-20
4. Present to Board for approval.	April 9, 2002
5. File with FERC	May 1, 2002

Request for Specific Comments

As a preliminary draft, this paper is intended to invite comments and suggestions from ISO market participants and other interested parties. We welcome suggestions on how to improve upon the proposals presented in this paper. Specifically, we would like readers to comment on the questions and issues listed below.

1. What major structural changes you would propose to address the following areas:
    a. Obligation to serve to California load plus reserves and assure adequate supply
    b. Provide incentive for forward contract
    c. Insure resource adequacy (suggested level of reliability or reserves)
    d. Uninstructed deviations
    e. Locational market power mitigation
    f. Please show how your responses to parts (a) through (e) provide adequate assurance for reliable power at reasonable costs
2. If you agree with the major elements of the ISO proposal, would you suggest a different implementation schedule to make it possible for you to adapt your existing systems and infrastructure to accommodate the proposed measures?
3. What are the major elements of the proposed measure that you find problematic? What are suggested alternatives?
4. What are the elements of the proposal that you find important to implement (as is or with minor changes).
5. What changes do you suggest for market power mitigation at large?
6. What changes do you suggest for local market power mitigation?
7. Do you think an Available Capacity Market (ACAP) is the right way to increase supply to serve California load? If yes, how should ACAP be structured to improve reliable operation and induce new investment (demand-side and

generation)? How would you design the ACAP to meet these primary objective? What types of penalties should be put in place for failure to meet ACAP?

8. A damage control cap is prevalent in all ISOs. What is the level of damage control bid cap for energy that you would consider prudent to protect consumers and not deter new generation investment? What factors should determine any change in the level of bid caps? Are bid caps needed on other products (A/S, ACAP, Congestion Usage Charge?)
9. What measures do you suggest to have bidders (with bids in the BEEP stack) honor their bids (not decline) and follow dispatch instructions?
10. What is your opinion about the 12-month rolling average price cost mark up index as a standard of just and reasonable rates? What alternative standard should be considered? Where should the threshold be set to declare the market is not producing just and reasonable prices? What mitigation should be put in place if it is triggered?
11. What do you consider to be the main implementations of the proposed mitigation measures on your existing systems (hardware and software) and personnel?