

I. EXECUTIVE SUMMARY

A. AUDIT OBJECTIVE AND METHODOLOGY

This report by Vantage Consulting, Inc. (Vantage) was in response to the Federal Energy Regulatory Commission (FERC or Commission) request for a proposal (Solicitation Number FERC02RMT22071, dated October 9, 2001) to perform an Operational Audit of the California Independent System Operator (CAISO).

The stated purpose of this Operational Audit was to have an independent entity identify all appropriate steps for prospective improvements in California markets, including what improvements can be made to help the CAISO in effectively performing its increasing responsibilities. Consequently, this audit was performed to determine the areas, if any, in which the CAISO could enhance its effectiveness in fulfilling its responsibilities to operate the transmission system under its control and administer certain real-time energy markets. The scope of our audit did not include, or consider, what fundamental changes should be made to the California market structure beyond improvements to the CAISO.

Vantage's audit responded to the stated objectives by developing a work plan to address the scope as detailed in the RFP. The work plan was developed based upon the current Tariff and incorporated all ISO Tariff revisions approved by the FERC up to and beyond Amendment 36. Vantage also utilized a team of experienced consultants who met all the requirements of the project.

B. GENERAL APPROACH

AUDIT PERIOD

The audit was to cover the period between October 2000 and October 2001. This 12 month period encompassed a broad range of events within the California energy industry. While addressing this period, we were cognizant of changes that have occurred since that time and our report reflects many of these changes.

INTERVIEWS AND INFORMATION ANALYSIS

A total of 75 interviews were conducted, many of which had multiple interviewees. In total, we estimate that over 125 key industry personnel were interviewed as part of the audit. The interviews included:

- Approximately 25 CAISO employees, including all officers. In addition, three meetings with the entire officer group were held.
- Two members of the current Board of Governors (BOG), including the chairman.
- The Executive Director of the Electric Oversight Board (EOB).
- An officer of the California Energy Resource Scheduling (CERS), the purchasing arm of the California Department of Water Resources(CDWR).

- The California Public Utility Commission (CPUC), including the chairperson and representatives of other Commissioners, legal, strategy and electricity groups.
- All three California Investor Owned Utilities (PG&E, SCE, and SDG&E).
- Meeting/feedback from two consumer groups in California.
- Multiple meetings or phone conferences with representatives of the largest energy suppliers, including Mirant, Duke, Reliant, Dynegy, and Calpine. (Enron was unavailable).
- Representatives of the Independent Energy Producers Association.
- Representatives of the Municipal Energy Association.
- Scheduling Coordinators(SC) from a number of the smaller energy suppliers.
- Representatives of other Independent System Operators.
- Representatives of the FERC, including personnel from the Complaints and Enforcement groups.

We estimate that over ten thousand pages of material were reviewed as part of this audit. Much of this consisted of public information, including:

- CAISO Tariffs, amendments, and procedures which are on their web site.
- Copies of CAISO related audits, studies, and reports which are on their web site.
- FERC orders, complaints, and responses on issues relating to the CAISO, as well as all other ISO's.
- Reports, magazine and newspaper articles, and other documents that expressed opinions or analysis regarding the CAISO and industry structure in general.

OTHER AUDITS

Given the timeframe for our work, we did not attempt to duplicate the work of other audits during the same period. For example, PriceWaterhouseCoopers (PwC) conducted a number of audits and attestation or assertion assignments for the CAISO that were extremely relevant. These included annual financial audits, Operational Audits of real time activities, and a SAS-70 attestation of the billing system. In addition, the FERC staff conducted on-site facilitation sessions to resolve technical questions.

REPORT LAYOUT

The layout for this report was developed after all field work and drafts were complete. The final format is intended to provide three things.

- An executive summary that provides the reader with a concise description of the project, its results, and recommendations.
- A basic foundation of audit findings, conclusions, and basic recommendations that the CAISO, FERC staff, and other stakeholders may find of value in the future.
- A set of global recommendations with an implementation plan that summarizes the need for a broad based plan for fixing the system.

To achieve these objectives, we have organized the report in the following manner.

Chapter 1 - Executive Summary - Provides a description of audit objectives, process, conclusions, and recommendations.

Chapter 2 - Background - Provides the reader with enough history and statistical background to understand the environment during the audit period.

Chapter 3 - Governance and Organization - Addresses major structural issues such as the independence of the Board of Governors (BOG), culture of the CAISO, stakeholder view of the CAISO, Market Analysis, and monitoring activities.

Chapter 4 - Operations - Consists of the results of auditing all of the operating and tariff related elements of the CAISO.

Chapter 5 - Resolution Process - Provides a set of global recommendations, illustrates the conflicting elements of the industry, and outlines a plan for overall resolution.

Chapter 6 - Glossary - Provides descriptions of key technical and regulatory terms used in the report.

Findings and recommendations are numbered as follows. Findings refer to the chapter, eg. III-F1 refers to the first finding in *Chapter 3*. Recommendations are similarly numbered with an R, eg. IV-R4 is the 4th recommendation in *Chapter 4*.

AUDITING STANDARDS

We followed our own internal guidelines, which require performing this study in accordance with Generally Accepted Government Auditing Standards (GAGAS) as contained in the Comptroller General Office's "Government Auditing Standards" related to issues of management economy, efficiency, and effectiveness as applicable to public utilities (the "Yellow Book"), and the standards as set forth in the National Association of Regulatory Utility Commissioners' "Consultant Standards and Ethics for Performance of Management Analysis."

LEGAL AND REGULATORY CONCERNS

In conducting this audit, our consultants reviewed numerous complaints, filings, orders, requests for rehearing, and other legal or regulatory documents. We referenced various portions of the documents but made no judgment as to the legal position or validity of any positions or conclusions. In fact, we do not take into account the statutory hurdles or legal steps that may be required to implement the recommendations we have made.

CONFIDENTIALITY

Many of the documents we were provided by the CAISO were considered confidential. We have been careful not to include any confidential data in our report and have returned all source information to the CAISO.

In conducting interviews of personnel at the CAISO, we agreed that personnel below the officer level would not be quoted directly in the report. This was offered in order to get full cooperation from all employees. In the case of officers at the CAISO and other outside parties, we have quoted directly but not included references to the source in the body of the report except for a few rare cases.

TIMEFRAME

This audit was conducted on an expedited basis. Key dates include:

- Project award on November 6, 2001
- Kick-off meeting with FERC on November 7, 2001
- Request for information November 10, 2001
- Initial meeting with CAISO on November 15, 2001
- Project team on-site in Folsom, CA for interviews on November 26, 2001
- Verification of factual data with CAISO on January 3, 2001
- Draft report to FERC Staff on January 9, 2001
- Final Report to FERC Commissioners on January 25, 2001

Project Team

The names of the project consultants and areas they addressed are shown below.

Consultant	Position	Areas Addressed
Walt Drabinski, BSEE, MBA	Project Director	Governance, creditworthiness, organization, relationship among parties, culture
Chuck Buechel, BS, MA Econ.	Senior Consultant	Market design, relationship among parties, governance
Richard Mazzini, BEE, MSNE	Senior Consultant	Stakeholder involvement, dispute resolution, transmission design, municipal interaction, culture, resolution process
Robert Chilton, BSES, MA, Econ.	Senior Consultant	Governance, stakeholder input
Mark Fowler, BSME, MBA	Senior Consultant	Information technology, communication
Marie Davidson, BA, MBA, VCPA	Support Consultant	Financial issues, accounting practices, pricing, settlements

C. SPECIFIC RECOMMENDATIONS

This is a comprehensive list, summarizing all sections of this report. Obviously, it would be impossible to implement all recommendations over the same time frame. Therefore, these recommendations would need to be prioritized. Not all recommendations can be implemented by FERC. Many will require cooperation and actions by various California regulators and agencies.

- III-R1** Establish a new and independent Board of Governors, along with a formal Stakeholder Committee. (Refer to Findings III-F1, III-F2, III-F3, III-F4 and III-F8.)
- III-R2** Develop a plan for creating an independent board that meets all needed criteria. (Refer to Findings III-F5, III-F6, III-F7, III-F9 and III-F10.)
- III-R3** Define in very certain terms the role of the Department of Market Analysis (DMA) and strengthen its independence by implementing procedures permitting it to bypass its regular reporting relationship and report directly and simultaneously to the CEO, the BOG, or FERC. (Refer to Findings III-F14 and III-F15.)
- III-R4** Examine options for addressing long-term market analysis of the entire WSCC. (Refer to Finding III-F16.)
- III-R5** Modify the mission of the CAISO to reflect an appropriate role in the electric market of California and the west. (Refer to Finding III-F17.)
- III-R6** Implement specific management programs to change the culture and processes at the CAISO so that they address the needs of stakeholders. (Refer to Findings III-F18, III-F19, and III-F20.)
- III-R7** Improve communication between FERC and the CAISO by increasing on-site presence and facilitation of communications with stakeholders. (Refer to Findings III-F21 and III-F22.)
- IV-R1** Establish formal procedures for following up on the findings and recommendations from the operational audits and other formal audits and reviews. (Refer to Findings IV-F1 and IV-F4.)
- IV-R2** Conduct further analysis into the benchmarking data and develop specific action plans to address those areas of high costs. (Refer to Finding IV-F9.)
- IV-R3** In concert with users and in coordination with overall corporate business plans, develop a formal strategic IT plan. (Refer to Finding IV-F10.)
- IV-R4** Implement efforts to return the CAISO to a creditworthy level. (Refer to Finding IV-F24.)
- IV-R5** Support financial and creditworthiness restructuring activities vis-à-vis SCE. (Refer to Finding IV-F24.)
- IV-R6** Implement a short term means for PG&E to return to creditworthiness. (Refer to Finding IV-F24.)
- IV-R7** Simplify the settlements process as part of an overall market redesign. (Refer to Findings IV-F19, IV-F20, and IV-F21.)

- IV-R8** Establish a direct reporting relationship between the Controller's office and the Board of Governors. (Refer to Finding IV-F25.)
- IV-R9** Enhance control over off-line calculations in the settlements process. (Refer to Finding IV-F21.)
- IV-R10** Develop an approach to accomplish a comprehensive market reform that includes effective input from stakeholders. (Refer to Findings IV-F29, IV-F33, IV-F31, IV-F32, and IV-F33.)
- IV-R11** Pursue additional steps at FERC to prohibit generating companies from engaging in any anticompetitive behavior. (Refer to Finding IV-F34.)
- IV-R12** Re-initiate efforts in future market design to bring public power into the fold of an integrated California solution. (Refer to Finding IV-F35.)

D. GLOBAL RECOMMENDATIONS

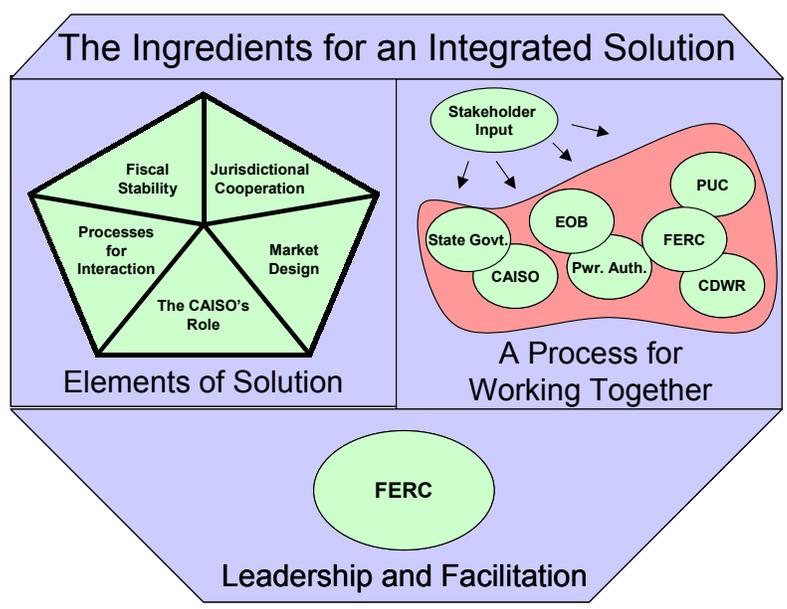
Chapter V of the report provides the framework for identifying the resolution categories and the interaction of problems. The five categories include:

- Fiscal Stability
- Jurisdictional Cooperation
- Process for Interaction
- CAISO's Role
- Market Design

It also identifies a set of five global recommendations. *Exhibits I-1* and *Exhibits I-2* below illustrate the interaction and global recommendations.

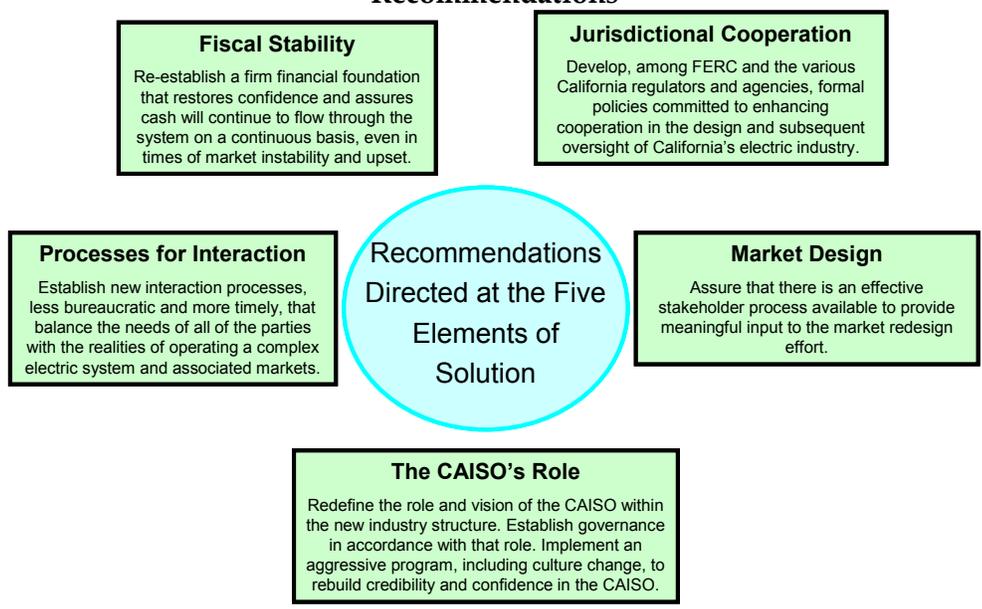
Operational Audit of California ISO

**Exhibit I-1
Solution Integration**



Operational Audit of California ISO

**Exhibit I-2
Global
Recommendations**

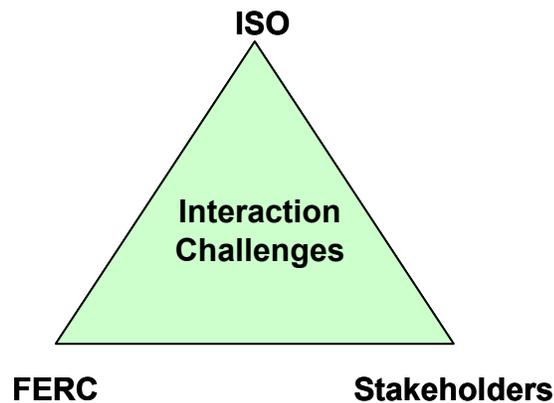


A solution that restores confidence in the system and places the industry on a sound footing that facilitates future efficiencies for consumers is essential. To suggest that the leaders of the industry are unaware of this challenge, or are not addressing it, would be a serious disservice. Actually, the contrary is true, as evidenced by the hard work of customers, as well as many relevant organizations, including but not limited to, FERC, the State of California and CDWR, the California PUC, and the CAISO. We doubt that anyone can argue with this objective, yet many might question if it is indeed achievable in the current environment.

We believe a solution is possible, but only through a broad-based, coordinated process that effectively integrates the interests of all the parties. *Exhibit I-3* illustrates the process for interaction needed in order to address the challenges the CAISO is facing. *Exhibit I-4* provides our view of the forces affecting an integrated solution.

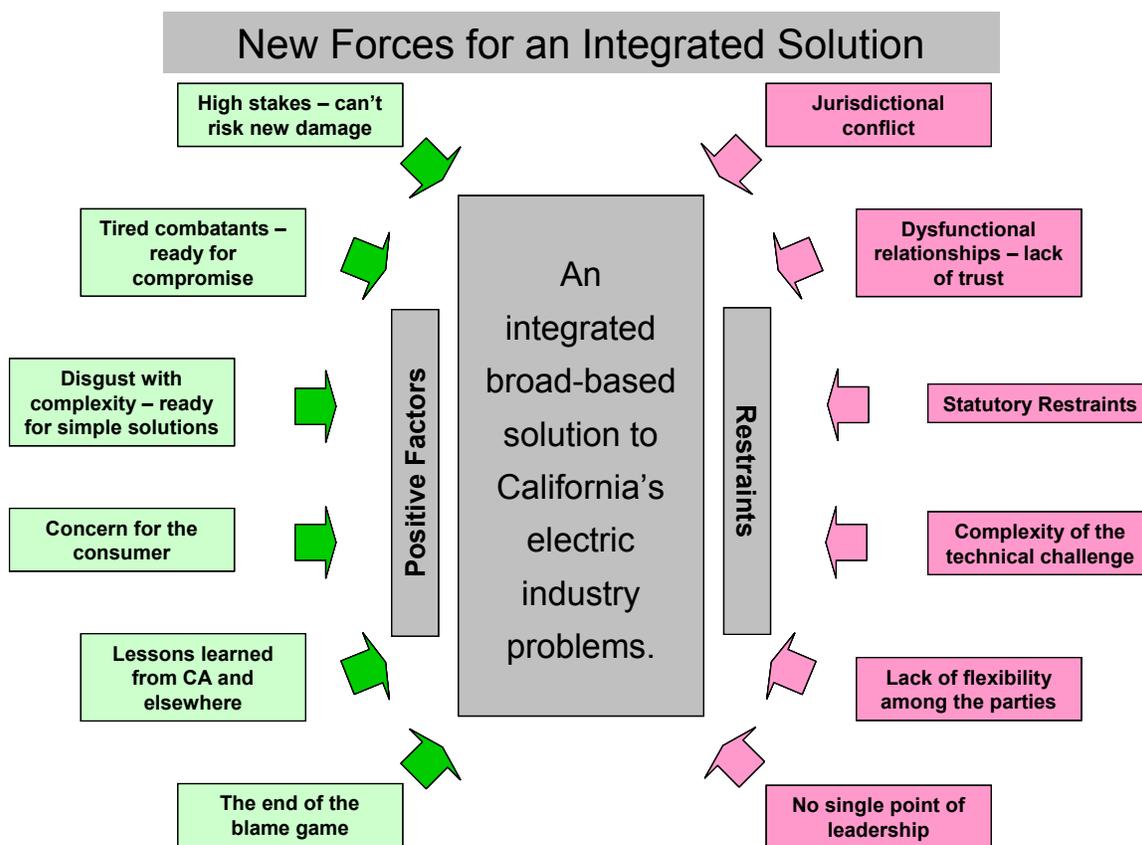
Operational Audit of California ISO

Exhibit I- 3 Process For Interaction



Operational Audit of California ISO

Exhibit I- 4 Integrated Solution



E. AUDIT FINDINGS

There are a number of very specific findings in *Chapters 3 and 4* of the report that must be understood in order to comprehend the depth and scope of the problems in California and the need for a comprehensive far-reaching solution. Some of the major findings excerpted from the report include:

Governance and Independence

One of the linchpin issues that needs to be resolved is governance of the CAISO and the perception of an inherent lack of independence that is unique to a single state ISO. In virtually every interview this was a major topic and is clearly the root cause of many other communication, culture, and trust problems. Until it is resolved, there is no hope for a comprehensive solution. Some of the findings we have made relative to this include:

- Almost all parties agree that the original BOG, which was made up of stakeholders, was very effective until the crisis hit in mid-2000. (*Finding III-F1*)
- The BOG became a divided group, incapable of making major decisions by the fall of 2000. (*Finding III-F2*)
- The FERC's December 15, 2000 order to abolish the stakeholder BOG and replace it with an independent BOG was based on its earlier orders. (*Finding III-F3*)
- FERC's position on the CAISO was based on overall policy and its history on other related decisions. (*Finding III-F4*)
- FERC's December 15, 2000 order provided a specific set of steps and attributes for establishing a new, independent Board Of Governors for the CAISO. (*Finding III-F5*)
- On January 17, 2001, the California State Legislature and the Governor passed AB5X in a Special Session of the legislature, forming a new Board of Governors. (*Finding III-F6*)
- The current BOG has served its purpose during the recent crisis, however, it is not the appropriate governing body going forward. (*Finding III-F7*)
- Despite the best intentions of the new BOG to be fair and independent, the net result of their inception was a loss of independence by the CAISO. (*Finding III-F8*)

Lack of a Stakeholder Process

The demise of the stakeholder board and the perception of the new board have significantly stymied the input of stakeholders in resolving complex issues. Some of the related findings include:

- A formal stakeholder input process no longer exists and the informal process is ineffective. (*Finding III-F9*)
- The committee structure to support operations, as required by the CAISO tariff, is not in place. This would appear to be both a further cause and outgrowth of the stressed stakeholder processes. (*Finding III-F10*)

CAISO Organizational Issues

Our review of the CAISO organization concerned itself with the effectiveness of the organization, morale issues, turnover, and other problems that are likely to be encountered when an organization is under stress. Overall, we were impressed with how well the organization functioned under the incredible stress placed on it. Despite all of the problems, accusations, investigations, and changes to the industry, the employees and management have maintained a professional approach and demeanor. The Chairman of the BOG stated in an interview that after one month on the job he was convinced that the current management team was the right one and our audit supports that assertion. Some specific findings include:

- In March 2001, the CAISO was reorganized to better reflect grid operation activities, the settlement process, and other market activities. (*Finding III-F11*)

- There are genuine concerns at the CAISO about employee morale. (*Finding III-F12*)
- Turnover at the CAISO for the last two years has been reasonable but remains a concern. (*Finding III-F13*)

Stakeholder Concerns with Market Monitoring

As stated earlier, there are serious problems with the relationship between the CAISO and its stakeholders. To some degree this is to be expected with all the litigation and large numbers of dollars involved. However, our consultants have tried to take these “corporate” positions into account and have concluded that the problems go beyond that. The issues raised about the current Department of Market Analysis and the Market Monitoring Committee are illustrative of this problem.

- Many stakeholders believe the Department of Market Analysis (DMA) is, at a minimum, not independent, and at the extreme, co-opted by management, the BOG, and the Governor. (*Finding III-F14*)
- Due to its location in the CAISO organization, the DMA cannot easily by-pass management and report its findings to the CEO, Board, or FERC. (*Finding III-F15*)
- The MMC has been largely ineffective recently due to current vacancies on the committee. (*Finding III-F16*)

CAISO Culture and Processes

We note serious concerns with the ways the CAISO now interacts with stakeholders. Again, much of this is reactive to the stress and litigation underway, however, its resolution will be key to long-term progress.

- The current mission of the CAISO does not meet the requirements of the current California energy markets. (*Finding III-F17*)
- Operation of the California electric system and the associated markets has, in many cases, become an elaborate legal process rather than a business and electric utility operations process. (*Finding III-F18*)
- The problems of the past two years have contributed to an internal culture within the CAISO that is not fully compatible with the effective execution of its mission. (*Finding III-F19*)
- The CAISO’s relations with Scheduling Coordinators (SC) are such that many SCs would rather not do business with the CAISO, and those with a choice have indeed withdrawn. (*Finding III-F20*)
- The CAISO does not provide sufficient visibility and transparency with respect to much of its workings, including market decisions, operations, and market analyses. (*Finding III-F21*)
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Compliance With Tariff

While we were concerned with the CAISO’s compliance with all tariff provisions in the real time market, we recognized that issues such as the CERS’ involvement as a creditworthy

buyer resulted in a broad range of technical violations. We also recognized that these issues were examined by both the CAISO's auditor, PriceWaterhouseCoopers (PwC) and the CAISO itself. Further, the actions that resulted in technical violations of the tariff appear to have ceased and are no longer a problem. Therefore, we relied on the results of the previous work to address this topic.

- The 2001 Operational Audit was noteworthy for the large number of CERS related tariff violations it identified. *(Finding IV-F1)*
- CAISO management recognized the potential problems created by CERS and appropriately initiated on its own behalf a review of CERS-related transactions. *(Finding IV-F2)*
- CAISO management and legal department initiated their own investigation of the transactions CERS was entering into in order to assure that all transactions were appropriately documented and issues were fairly resolved. *(Finding IV-F3)*
- The CAISO does not have a well-developed procedure for responding to the findings in the PwC Operational Audits. *(Finding IV-F4)*

Our consultants did audit several other aspects of the tariff and have developed a number of findings and related recommendations:

Posting

- The CAISO complies with the posting requirements of the tariff. *(Finding IV-F5)*

IT Issues

- Much of the CAISO IT costs can be traced to the complexity of the operation, including the settlement process. *(Finding IV-F6)*
- The ongoing reorganization of IT is a very good step in addressing the concerns of the user community. *(Finding IV-F7)*
- IT costs cannot be significantly reduced until the MCI/WorldCom contract expires. *(Finding IV-F8)*
- After factoring out the MCI/WorldCom contract costs, CAISO IT costs in most areas are reasonable. *(Finding IV-F9)*
- CAISO IT currently lacks fundamental strategic plans and operational metrics necessary to manage the business. *(Finding IV-F10)*
- The CAISO's requirements for a reliable functional backup facility are being suitably met by the Alhambra facility. *(Finding IV-F11)*

Financial and Accounting

- The CAISO's books and records associated with the grid management charge are maintained in accordance with tariff requirements. *(Finding IV-F12)*
- In its 2002 GMC filing, the CAISO is altering two of the three service categories. *(Finding IV-F13)*
- Rates for two of the GMC service categories are increasing substantially for 2002. *(Finding IV-F14)*

- The CAISO's reserve requirement is set at the level specified in the CAISO tariff. *(Finding IV-F15)*
- In contrast to many peer ISO's, the CAISO financed all of its transition costs; thus financing costs are higher for the CAISO than other ISO's. *(Finding IV-F16)*
- The CAISO's loss of a creditworthy bond rating prevented it from issuing bonds in 2001 and constrained its capital spending. *(Finding IV-F17)*
- Requirements for creditworthiness are clearly detailed in existing tariffs and subsequent amendments. *(Finding IV-F18)*
- The complexity of the CAISO's operations results in a highly detailed, complex settlements process. *(Finding IV-F19)*
- The volume of transactions has resulted in a higher level of staffing for client services, including the settlement function, than at other ISO's. *(Finding IV-F20)*
- Manual settlement transactions add a level of vulnerability to the settlement process. *(Finding IV-F21)*
- A review of the most recent annual statements indicates concerns regarding the CAISO's ability to continue as a going concern. *(Finding IV-F22)*
- The most recent year-to-date financial statements portray a stronger financial position than the 2000 annual financial statements. *(Finding IV-F23)*

Creditworthiness Issues

Another major issue that must be resolved for a successful restructuring of the California energy system is creditworthiness of the major stakeholders. Our approach here was to examine the current status of each major stakeholder with problems and then to provide some broad recommendations as to required actions.

- The lack of creditworthiness on the part of the key parties inhibits long-term solutions to the California energy crisis. *(Finding IV-F24)*
- Since the appointment of the current Board of Governors, the CAISO has not had a CAISO Audit Committee in place, and there is currently no direct reporting mechanism between the Controller's office and the Board. *(Finding IV-F25)*
- The CAISO has estimated and is collecting funds for the FERC annual charges. *(Finding IV-F26)*
- The CAISO has recently begun collecting payments owed by CERS and has escrowed approximately \$31 million (at the time of the report), pending resolution of a payment issue by the FERC. *(Finding IV-F27)*

Complexity of Market Design

The current market design is complex and unworkable. The CAISO is once again initiating a project to consider design alternatives. Our audit provides feedback from many parties on the importance of getting the rules right and including all stakeholders in the process. Some of the related findings include:

- The dispute resolution process seems to be functioning, but is seriously burdened by the volume of disputes and the complexity of the bidding and settlement processes. *(Finding IV-F28)*

- The operational and market issues identified above should be given careful consideration in efforts to redesign markets. *(Finding IV-F29)*
- Comprehensive market reform is necessary to restore viable, transparent electricity markets in California. *(Finding IV-F30)*
- To develop a viable comprehensive market reform, it will be necessary to first revitalize an effective stakeholder process. *(Finding IV-F31)*
- There is broad agreement that CAISO would be better served if all LSE's were required to procure adequate capacity reserves. *(Finding IV-F32)*
- The structure of the current market design is overly complex and leads to many operational, communications, and cost issues. *(Finding IV-F33)*

Generators and Municipal Power Findings

During our discussions, the issue of the image of the generators and of municipal powers involvement arose. We have included some details on the issues as well as recommendations for consideration.

- Public perceptions have damaged the image of the generators and, therefore, the public's confidence in the market as a whole. *(Finding IV-F34)*
- The public power sector, which represents a substantial amount of California supply, load, and transmission, should be an integral part of any industry design that purports to optimize California's resources. *(Finding IV-F35)*

II. BACKGROUND

This Chapter of the report provides general background for the reader in order to better understand the circumstances that confronted the CAISO, the other market participants, and the stakeholders during the period of our audit. We view it as a backdrop that catalogs the events during the audit period, as well as before and after. This perspective is necessary to fully appreciate the situation that developed and to comprehend how to resolve the problems in the future.

A. HISTORY

The following discussion provides some of the key events and dates associated with the recent history of the CAISO and restructuring in California.

In response to high electricity prices, efforts began in earnest in 1994 to restructure the California electric industry. The CPUC held extensive hearings and negotiations before issuing its final restructuring order in 1995. This led to the enactment of Assembly Bill 1890 by the California legislature in September 1996. AB 1890 included the following key points:

- The creation of the CAISO and the PX by January 1998
- The initiation of direct access
- The creation of the EOB
- A competitive transition charge for the recovery of IOU stranded costs
- A 10 percent rate reduction for residential and small commercial customers
- A rate freeze for all customers

In April 1996 the IOU's submitted filings at the FERC that conveyed operational control of transmission facilities to the CAISO. In addition, the filings sought the authority to sell energy at market-based rates through the PX and approval of the framework for the establishment of the CAISO. In March 1997, the CAISO and the PX submitted filings for Phase II of the restructuring proposal. The submissions included governance and organizational documents, an Operating Agreement and Tariff, and a Transmission Control Agreement. In an October 30, 1997 order, the FERC conditionally authorized the limited operation of the CAISO and PX. The CAISO and PX commenced operation on March 31, 1998.

Shortly after the commencement of operation, the CAISO witnessed large price variations for certain ancillary services and did not receive adequate bids for other services. Neither of these observations were consistent with the operation of efficient markets. In response, FERC ordered the CAISO to propose a comprehensive redesign of its ancillary services markets. Ultimately, after additional proceedings, the CAISO requested authority to establish a price cap of \$250 per MWh for ancillary services and imbalance energy until November 15, 1999. On September 17, 1999, the CAISO filed for a one-year extension of the price caps that included the option for raising or lowering the caps given certain conditions.

The price cap could be raised to \$750/MWh (and was, from October 1, 1999 through June 30, 2000.)

During the summer of 2000, prices in the wholesale electricity market jumped dramatically. In fact, the PX's constrained day-ahead price (NP 15) peaked at \$1,099/MWh on June 28, 2000. Prices in the CAISO's real time imbalance market neared or reached the \$750 cap twice in May and eight times in June. The CAISO lowered the price cap to \$500 on July 1, 2000. On August 7, 2000 the CAISO further reduced the cap to \$250/MWh. The CAISO declared system emergencies 39 times between May and August. On June 14, due to local voltage instability and the lack of adequate transmission capacity to transport electricity into the San Francisco Bay area, the ISO ordered Pacific Gas and Electric to initiate rotating outages for specified blocks of customers in the Bay Area. This outage was totally unrelated to the systemic, statewide challenges which followed.

As the year progressed, the price of natural gas at the California border rose from \$2/MMBtu to \$6/MMBtu. Due to the extensive use of existing gas fired units, the price of NOx emission allowances increased from \$6/lb to over \$40/lb. Studies by the CAISO, PX and the CAISO's Market Surveillance Committee found that the price increases were caused by flawed market structures and an insufficient supply of power. The studies also concluded that although market conditions created the potential for abuses of market power, no one group unduly influenced prices.

The 2000 power crisis undermined the financial viability of two of California's largest IOU's and ultimately led to the bankruptcy filing of PG&E. High purchase power costs could not be flowed through because of the retail rate freeze. Operationally, the crisis challenged the ability of the ISO to meet its responsibility to "keep the lights on." Numerous times throughout the crisis it was necessary for the ISO to issue alerts and warnings, or declare emergencies, based on the availability of reserves and the possibility of a blackout. Perhaps the challenge to the ISO can best be understood by noting that a Stage Three Electrical Emergency (blackout is next) was in existence from January 16, 2001 through February 16, 2001, 32 consecutive days, including two days in which ISO operators were forced to order rotating blackouts for a limited duration to prevent a total collapse of the grid.

As a result of both the financial and the resultant supply issues, the state was prompted to enter the market. The state quickly became the largest power buyer in the California market. This power purchasing was performed by CERS which is a division of CDWR. This activity was approved in special session by the California legislature. In addition, a new Board was established by the Governor. The new Board ordered the CAISO to work with CERS. All of these circumstances imposed greatly on the CAISO. In its efforts to maintain reliability and "keep the lights on," the CAISO was forced to make some special accommodations for CERS. Another consequence of this crisis has been numerous tariff and complaint filings before FERC, as well as investigations and orders by FERC to restore the California power market.

B. RELEVANT FERC ORDERS

Some of the more important FERC orders that were issued during the period of our audit are identified and briefly summarized in this section of this report. The significance of the orders clearly indicates the commitment of FERC to resolving the problems in California.

On November 1, 2000 in Docket No. EL00-95-000, FERC proposed several remedies to address problems in the California wholesale power markets. The requirement for the IOU's to only buy and sell through the PX was eliminated. A penalty charge for deviations in scheduling of more than 5 percent was established. The establishment of independent, non-stakeholder Boards for the CAISO and the PX was required. The CAISO was ordered to submit a congestion management reform proposal. Further, price mitigation efforts were initiated.

On December 8, 2000 the FERC in Docket No. ER01-607-000 strengthened the "must offer" component of the CAISO tariff. The revision implemented a penalty provision for refusal by a generator to operate in response to CAISO dispatch instruction during system emergency.

On December 15, 2000 the FERC adopted most of its November order's recommendations with further remedies for the California markets. The salient features of this order were

- 25,000 MW of IOU owned generation or contracts were brought back under CPUC regulation and made available to be sold to retail customers.
- The IOU's were encouraged to move the purchased power needs out of the spot market and into bilateral long-term contracts.
- The IOU's were encouraged to adopt a balanced portfolio of contracts to mitigate cost exposure.
- The PX's rate schedules were terminated.
- A price benchmark for long-term electric supply contracts was established.
- A breakpoint of \$150/MW was put into effect for an interim period.
- The Stakeholder Board was to be replaced based on a procedure ordered by FERC.

In an order issued on March 9, 2001, the FERC ordered refunds for certain sales during January 2001 or provide cost support to justify the price. On April 6, 2001, the FERC addressed issues of creditworthiness as required in the CAISO tariff. In an April 26, 2001 order, the FERC addressed issues related to the \$150 breakpoint, outage coordination, "must offer" obligation of participating generators, the development of demand response mechanisms by the load serving entities, and required the CAISO to file an RTO proposal by June 1, 2001.

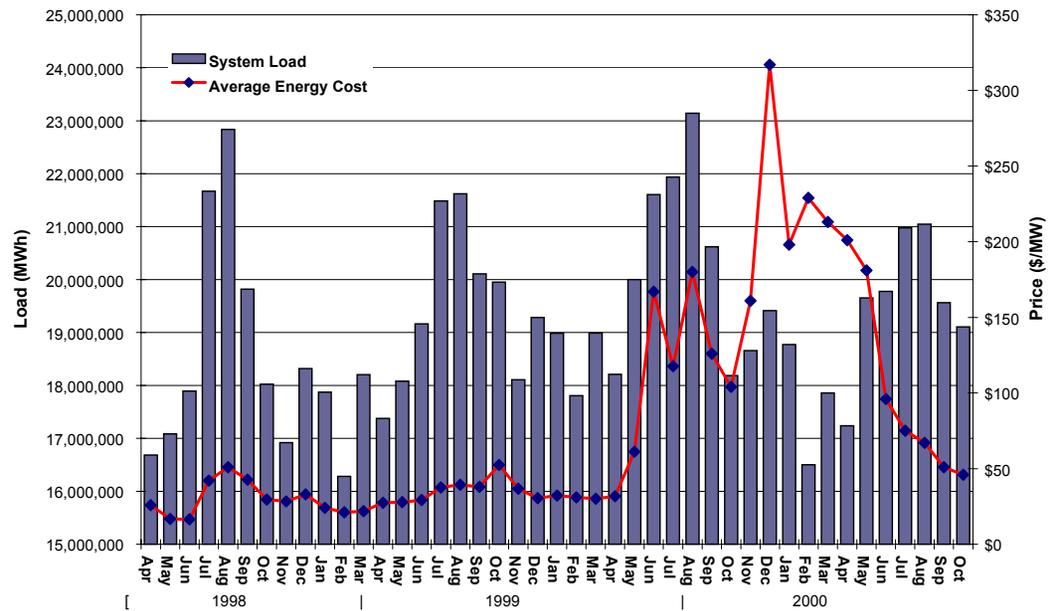
California was clearly one of the primary focuses of FERC. After trying very diligently to accommodate the California approach to electric industry restructuring, the FERC was now also stepping up to try and resolve the problems.

C. KEY STATISTICS

The following tables were developed based on information regularly presented to the Board of Governors (BOG). The information is presented to visually illustrate the power crisis of 2000 and the subsequent return to more normal prices and operating environment.

Operational Audit of California ISO
Exhibit II-1

System Load and Average Energy Costs



Operational Audit of California ISO

Exhibit II- 2

Overall Energy Costs for 2001

	ISO Load (GWh)	Forward Energy (GWh)*	Est Forward Energy Costs (MM\$)**	RT Energy Costs (MM\$)***	A/S Costs (MM\$)****	Total Energy Costs (MM\$)	Total Costs of Energy and A/S (MM\$)	Avg Cost of Energy (\$/MWh)	A/S Cost (\$/MWh Load)	A/S % of Energy Cost	Avg. Cost of Energy & A/S (\$/MWh Load)
JAN-01	18,770	16,950	\$ 2,710	\$ 756	\$ 247	\$ 3,466	\$ 3,713	\$ 185	\$ 13.15	7.1%	\$ 198
FEB-01	16,503	14,876	\$ 2,657	\$ 917	\$ 198	\$ 3,574	\$ 3,772	\$ 217	\$ 12.00	5.5%	\$ 229
MAR-01	17,857	16,744	\$ 2,736	\$ 881	\$ 181	\$ 3,616	\$ 3,797	\$ 203	\$ 10.14	5.0%	\$ 213
APR-01	17,237	16,267	\$ 2,537	\$ 755	\$ 178	\$ 3,292	\$ 3,471	\$ 191	\$ 10.34	5.4%	\$ 201
MAY-01	19,651	18,351	\$ 2,771	\$ 601	\$ 176	\$ 3,372	\$ 3,548	\$ 172	\$ 8.97	5.2%	\$ 181
JUN-01	19,777	19,468	\$ 1,598	\$ 111	\$ 187	\$ 1,709	\$ 1,896	\$ 86	\$ 9.48	11.0%	\$ 96
JUL-01	20,976	20,599	\$ 1,458	\$ 54	\$ 71	\$ 1,513	\$ 1,583	\$ 72	\$ 3.37	4.7%	\$ 75
AUG-01	21,048	21,571	\$ 1,329	\$ 34	\$ 50	\$ 1,363	\$ 1,414	\$ 65	\$ 2.38	3.7%	\$ 67
SEP-01	19,562	19,562	\$ 958	\$ 19	\$ 19	\$ 977	\$ 996	\$ 50	\$ 0.97	1.9%	\$ 51
OCT-01	19,105	19,395	\$ 854	\$ 10	\$ 15	\$ 864	\$ 878	\$ 45	\$ 0.77	1.7%	\$ 46
NOV-01	17,707	18,028	\$ 774	\$ 10	\$ 12	\$ 784	\$ 796	\$ 44	\$ 0.68	1.5%	\$ 45
Total 2001	208,194	201,810	20,382	4,148	1,334	24,530	25,865				
Avg 2001	18,927	18,346	1,853	377	121	2,230	2,351	121	7	5.4%	\$ 124

* Sum of hour-ahead scheduled quantities

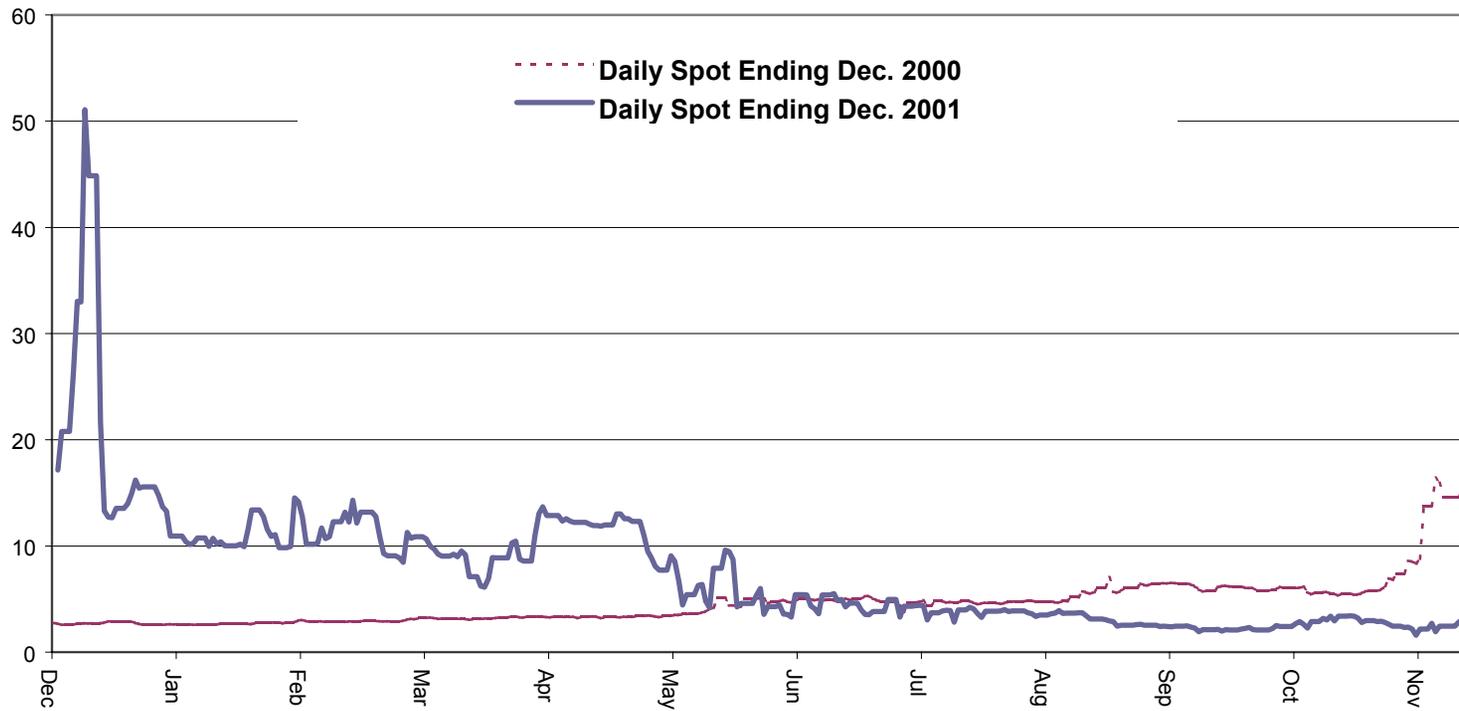
** Includes UDC (cost of production), estimated CDWR costs, and other bilaterals priced at hub prices

*** Includes OOM, dispatched real-time paid MCP, and dispatched real-time paid as-bid

**** Including ISO purchase and self-provided A/S priced at corresponding A/S market price for each hour, less Replacement Reserve Refund

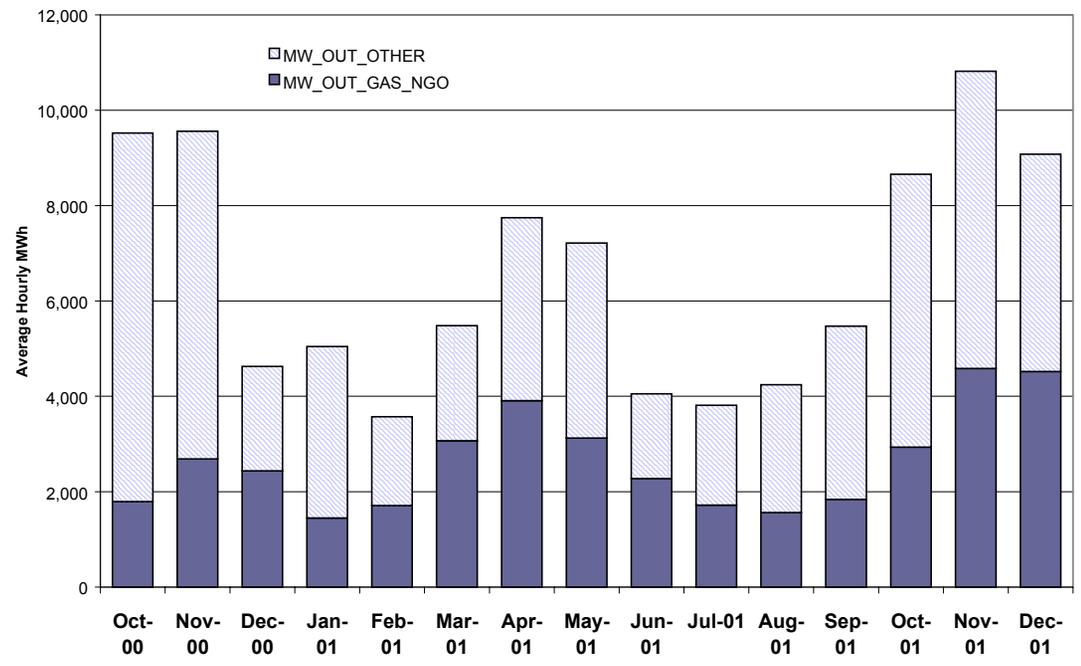
Operational Audit of California ISO
Exhibit II- 3

Natural Gas Spot Prices - 2000 vs. 2001
(\$/MMBtu at PG&E Citygate)



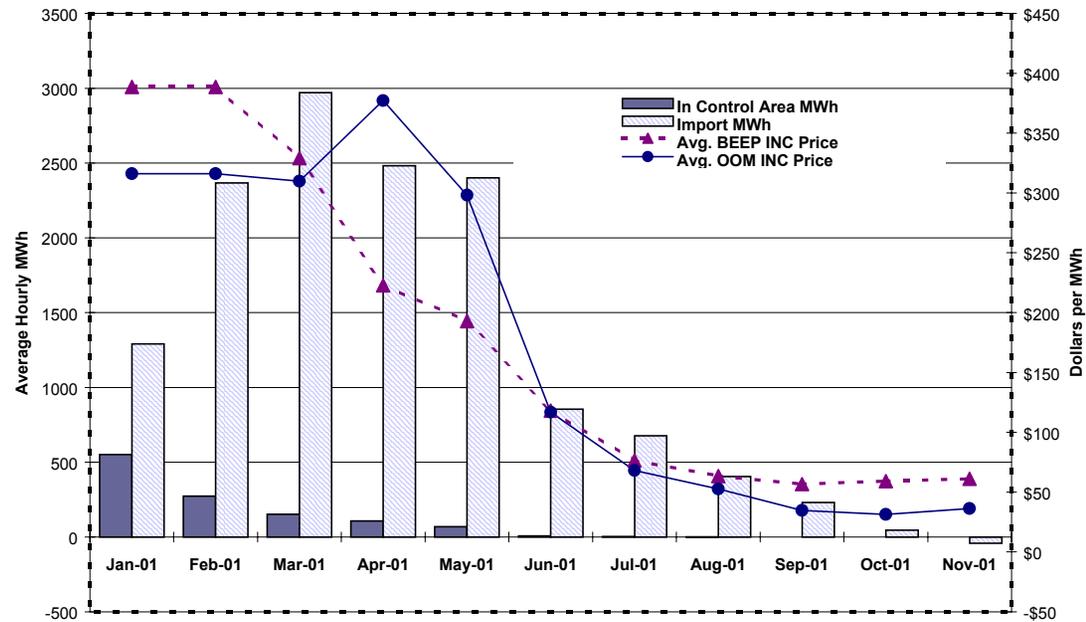
Operational Audit of California ISO
Exhibit II- 4

Average Hourly Outages by Month



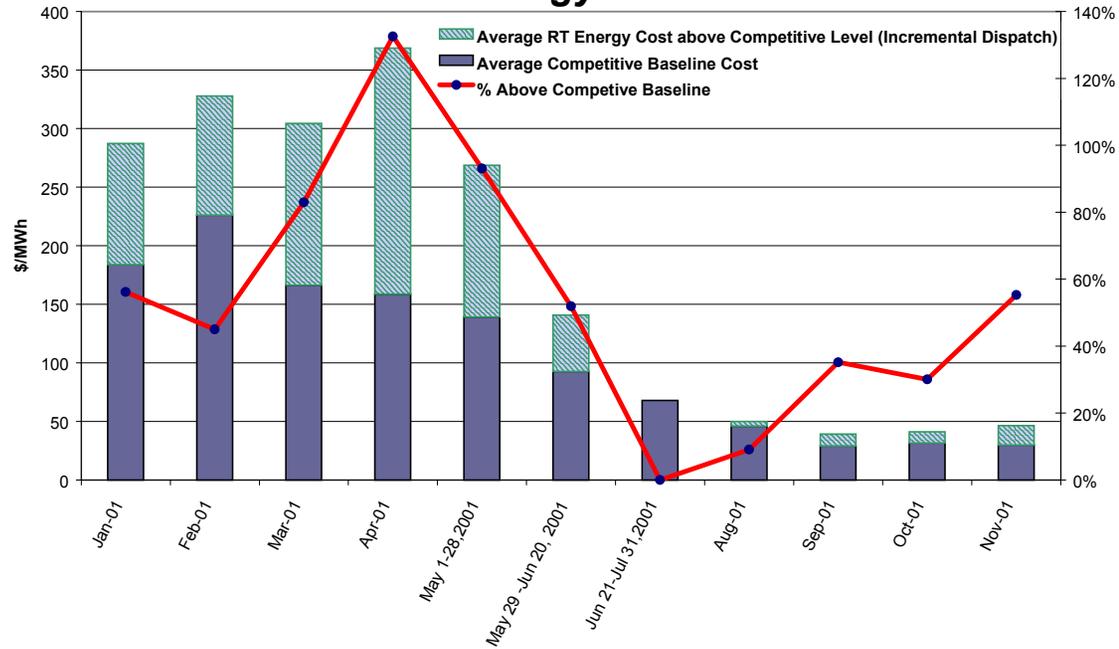
Operational Audit of California ISO
Exhibit II- 5

Significant Reduction in CERS OOM Volume and Lower Average Prices



Operational Audit of California ISO
Exhibit II- 6

**Moderate Price/Cost Markup in Real-Time
 Energy Market**



III. GOVERNANCE AND MANAGEMENT

A. CAISO GOVERNANCE

INDEPENDENCE

The issues of governance and independence from the State have been debated and argued from the CAISO's inception. It became readily apparent when this audit was initiated that two questions must be answered. First, has the CAISO been an independent organization that served all stakeholders in a fair, even-handed manner while achieving its overall objectives? Secondly, if the CAISO is not truly independent, were parties harmed in any measurable manner?

We attempted to address these questions by a number of means. First, we met with all senior management employees of the CAISO and two members of the Board of Governors (BOG), including the Chairman. In each interview, we asked how the structure of the original stakeholder board, and then revised BOG (1/17/01) worked? How did it serve the stakeholders? Was it independent of influence from stakeholders, regulators, and politicians? We then addressed the same questions to almost every stakeholder we interviewed, state and federal regulators, representatives of CDWR, and the EOB.

In addition to these interviews, we reviewed various decisions the BOG was faced with during the last 18 months, responses to complaints by the CAISO, actions by CAISO management, and other decisions, or lack thereof, to determine whether there were specific instances where independence was lacking.

Finally, we conducted a review of how the FERC has spoken on issues of governance and how governance was addressed at other ISO's.

The following findings are the basis for our general and specific recommendations with respect to governance and CAISO independence.

EFFECTIVENESS

III-F1 Almost all parties agree that the original BOG, which was made up of stakeholders, was very effective until the crisis hit in mid-2000.

The initial development of the CAISO needed clear, expert, and independent input from the many parties who would later be part of the process. The original members of the BOG brought great expertise on every element that made up the function of the CAISO. During this developmental period, and during the early months of operation, the board members left their corporate hats at the door and made decisions that were in the best interest of the CAISO.

III-F2 The BOG became a divided group, incapable of making major decisions by the fall of 2000.

Once the problems of the summer of 2000 occurred and the CAISO struggled to make changes to its rules and tariffs in order to respond, many of the Board members began to take the positions of their corporate or advocacy group. The net result was that the BOG became ineffective. Major changes could not achieve a majority vote, paralyzing the CAISO management and seriously constraining the options available to it.

III-F3 The FERC's December 15, 2000 Order to abolish the stakeholder BOG and replace it with an independent BOG was based on its earlier orders.

In the wake of the serious market dysfunctions and pricing abnormalities in California that occurred in 2000, the Commission issued an order on July 26, 2000, ordering a staff fact-finding investigation and issued a subsequent order on November 1, 2000, finding that electric market structure and market rules in California were seriously flawed and proposed a number of remedies. In its November 1, 2000 Order the Commission specifically addressed, among other things, the governance of the ISO. The Commission concluded that the then-existing CAISO stakeholder Governing Board had difficulty reaching decisions on complex and divisive issues, was not able to resolve problems on a timely basis, and was ineffective. The Order also noted that the Governing Board had come under undue pressure from various sources, and expressed concern that the Board was subject to influence from market participants, thereby undermining the independence of the Board. The Commission stated that unless the Board is able to resolve matters in a timely manner and is independent from market participants, then the reasonableness of rates, terms or conditions of service under its jurisdiction cannot be assured, and concluded that the stakeholder Board must be modified. The Commission stated that the operation of the interstate transmission grid must be controlled by an expert board free from the influence of any market participant or market segment. The Commission indicated similar concerns about the independence of the PX Board. Subsequently, the FERC, in its December 15, 2000 order abolished the stakeholder board and required the establishment of an independent board.

III-F4 FERC's position on the CAISO was based on overall policy and its history on other related decisions.

In the wake of its Orders 888 and 889, the Commission issued orders approving the establishment of a number of independent system operators (ISO's) as part of its effort to restructure the electric power industry to foster competitive electricity markets. To further that objective, the Commission subsequently issued its Order No. 2000 in December 1999 calling upon transmission-owning utilities to create Regional Transmission Organizations (RTO's) and to transfer control of grid operations to these RTO's.

FERC on Independence

In its Order No. 2000, the Commission established four minimum characteristics of an RTO. One of the characteristics identified was independence. Specifically, Order No. 2000 establishes the following independence requirement:

“The [RTO] must be independent of any market participant. The [RTO] must include, as part of its demonstration of independence, a demonstration that it meets the following: (i) the [RTO], its employees, and any non-stakeholder director must not have financial interests in any market participant; (ii) the [RTO] must have a decision-making process that is independent of control by any market participant or class of participants; (iii) the [RTO] must have exclusive and independent authority under section 205 of the Federal Power Act.... to propose rates, terms, and conditions of transmission service...”

Moreover, the Commission adopted the principle that independence is the bedrock upon which an ISO must be built, and emphasized that this principle must also apply to RTO's, whether they are ISO's, transcos, or variants thereof. The Commission also affirmed the principle that an RTO needs to be independent in both perception and reality. The Commission indicated that the overall purpose of the independence standard is to ensure that an RTO will provide transmission service and operate the grid in a non-discriminatory manner.

For ISO's that typically do not have ownership interests, the Commission indicated that the effect of ownership interests on the independence of the ISO is generally not an issue. The Commission, therefore, stressed the importance of a decision-making process for ISO's that is independent of control by any market participant or class of participants, leading to an emphasis on governance issues. The Commission indicated that the emergence of for-profit RTO's will raise the additional issue of how ownership of the RTO by market participants could affect the independence of the RTO's decision-making process. The Commission generally defined market participants, from whom independence must be assured, as entities whose economic or commercial interests are likely to be significantly affected by an RTO's decisions and actions. The Commission's specific definition of a market participant also includes entities that, either directly or through an affiliate, sell or broker electric energy, or provide transmission or ancillary services to the RTO. The Commission further affirmed that the RTO, its employees, and any non-stakeholder directors must not have any financial interests in market participants.

FERC on Governance

With respect to Governing Boards, in its Order No. 2000 the Commission declined to impose specific, detailed requirements, noting that RTO's may take different forms that require different governance approaches; the experience to date has been largely limited to ISO's that operate, but do not own transmission facilities, and, therefore, may not be applicable for Transco or other for-profit transmission enterprises; and that even among ISO's there are different governance models and that it is premature to conclude that one form of governance is clearly superior. Order No. 2000 does acknowledge that the dominant governance model employed for ISO's is the two-tiered model employed by PJM, ISO-NE, and MISO, in which the top tier consists of a non-stakeholder board that has final decision-making authority and the lower tier that consists of advisory committees of stakeholders that make recommendations to the non-stakeholder board. Alternative ISO governance approaches acknowledged by the Commission include the NYISO's two-tiered approach which provides for shared decision-making between a non-stakeholder board and a

stakeholder management committee, the CAISO's use of a board consisting of both stakeholder and non-stakeholder representatives, and the Texas restructuring law requirement that the ERCOT ISO have a pure stakeholder governing board.

In lieu of mandating detailed governance requirements for RTO Boards, the Commission indicated that RTO governance proposals will be judged on a case-by-case basis against the overarching standard that its decision-making process must be independent of individual market participants and classes of participants. Moreover, the Commission provided some general guidance for RTO governance models, admittedly based upon ISO governance arrangements it had previously reviewed. For a governing board consisting of classes of market participants, the Commission indicated that it expects that no one class would be allowed to veto a decision reached by the rest of the board and that no two classes could force through a decision that is opposed by the rest of the board. For a non-stakeholder board, the Commission opined that it must not become isolated, and indicated that both formal and informal mechanisms must exist to ensure that stakeholders can convey their concerns to the board. Finally, for stakeholder committees that advise or share authority with a non-stakeholder board, the Commission indicated the importance of balanced representation on the stakeholder committees so that no one class dominates the recommendations or decisions.

FERC on State Involvement

Regarding the role of state agencies, the Commission encourages active and full state commission participation in the formation and development of RTO's. However, the Commission notes that once an RTO becomes operational, most states as well as other commenting industry sector representatives, had indicated their belief through comments that it would be inappropriate for a state official, whether a state commission representative or some other state employee, to serve as a voting member of an RTO board or governing body. The reasons cited include: that it would create a conflict between the state official's duties as an RTO governing board member and state-level regulatory or legal responsibilities; that it would be difficult for an official of one state to represent interests of other states where such interests conflict; and the solution of having voting members from each state could lead to large and unwieldy boards for multi-state RTO's. However, while acknowledging considerable merit to this point of view, in its Order No. 2000 the Commission declined to impose a prohibition against state officials serving as voting members of an RTO board. In doing so, the Commission opined that it would be premature to institute such a prohibition at that time and indicated that there may be special circumstances in some regions that would render such a proposal to be in the public interest.

FERC on Filing Rights

A final issue raised in Order No. 2000 regarded the RTO characteristic of independence concerned filing rights under section 205 of the Federal Power Act. The Commission concluded that RTO's, in order to ensure their independence from market participants, must have independent and exclusive rights to make section 205 filings to the FERC that apply to the rates, terms, and conditions of transmission service. The one exception to this exclusive

right is that the Commission indicated that transmission owners should be permitted to make section 205 filings solely for the purpose of establishing their transmission revenue requirements, by which the level of payments that the RTO will make to the transmission owners would be established. The RTO will, in turn, make section 205 filings to recover the costs of these payments to transmission owners from transmission customers.

III-F5 FERC's December 15, 2000 Order provided a specific set of steps and attributes for establishing a new, independent Board Of Governors for the CAISO.

Independent Board Makeup

The Commission proposed in its November 1, 2000 Order that the then-current CAISO and PX stakeholder boards be replaced with non-stakeholder boards within 90 days. The Commission indicated that it will require that the non-stakeholder boards consist of seven voting members with the President (or CEO) as a voting member and that the six other voting members are to be selected by the then-current boards from a slate of candidates prepared by an independent consultant, who would be selected by the then-sitting CEO. The Commission further indicated that the non-stakeholder boards should include members with experience in corporate leadership at the director or board level or professional expertise in either finance, accounting, engineering, or utility law or regulation. In addition, the PX board should include members with expertise in areas of commercial markets and trading, and the CAISO board should include members with experience in the operation and planning of transmission systems.

State Involvement in Selection Process

After taking comments on its November 1, 2000 Order, on December 15, 2000, the Commission issued an Order Directing Remedies for California Wholesale Electric Markets. In that Order the Commission noted the apparent unanimous support for replacing the CAISO Governing Board with a non-stakeholder board, but also noted that numerous parties argued for a role on the part of the State of California in selecting successor board members. The Commission stated that State selection of all board members is not reasonable, but that the State may have an appropriate role in board selection as long as the independence of the board members can be assured. The Commission required that the CAISO Governing Board be replaced with a non-stakeholder board composed of members that are independent of market participants. The Commission indicated its intent to establish further on-the-record procedures to discuss with state representatives the selection process for the new CAISO board. The Commission, acknowledging certain State/Federal jurisdictional conflicts, directed that the then-current CAISO Governing Board turn over its decision-making power and operating control to the management of the ISO on January 29, 2001, but that they continue functioning as members of a stakeholder advisory committee. The Commission further directed that if no consensus is reached within 90 days of that date concerning the Board selection process, then the procedures set forth in its November 1, 2000 Order will be carried out. The Commission indicated that the stakeholder advisory committee would provide input to ISO management until such time as a new board is seated, or until April 27, 2001, whichever came sooner. The advisory committee's role was to provide suggestions and recommendations to the ISO management, and provide other

information as requested by ISO management. The Commission indicated that standing committees of the Board may continue to function by reporting to ISO management.

III-F6 On January 17, 2001, the California State Legislature and the Governor passed AB5X in a Special Session of the legislature, forming a new Board of Governors.

The net effect of this legislation was the forced removalⁱ of all of the existing BOG and the replacement with a five person BOG selected by the Governor, approved by the EOB, and confirmed by the legislature. The State's position was that its citizens were being impacted by the energy crisis and were putting up billions of dollars to assure the lights stayed on and, therefore, needed to control the activities of the CAISO. There were further arguments that the new BOG met most of the requirements of the FERC order of 12/15/00. We do not intend to re-argue the merits of whether the new BOG was legal and appropriate, instead this audit addresses whether it was independent and whether it was effective.

III-F7 The current BOG has served its purpose during the recent crisis, however it is not the appropriate governing body going forward.

Given the financial problems with the two largest utilities, skyrocketing gas and electric prices, the likelihood of blackouts, and the State's belief that FERC had not been aggressive enough, it is difficult to criticize the State for taking the actions it did. The new BOG members were essentially drafted by the Governor for this assignment, and have no prior utility experience. They took their job seriously and were expected to act as an interim Board while the crisis was resolved. The current Chairman of the BOG indicated that the first order of business the new BOG had to address was whether the existing CAISO management team should be retained. The other major objective was to assure that the CAISO did everything possible to assist the CDWR as it assumed its role as creditworthy buyer of energy.

Regardless of the legality of the Governor naming a BOG, the almost universal reaction of the industry was that the CAISO was no longer independent. From that time on, suppliers, LSE's and other control areas assumed that all actions of the CAISO were directed and/or approved by the Governor's office or his appointees. With the exception of other State agencies, none of the stakeholders or other parties we interviewed believed that the CAISO could ever be independent under this arrangement. Without even assessing specific actions of the new BOG, it was apparent that there was an overwhelming perception that the BOG was not independent.

Other, more long-term problems that are not being addressed are market reformation, long term strategic planning, and future involvement with RTO's and other market driven organizations. The current board, in its caretaker role, does not appear inclined to address

ⁱ / Each of the existing BOG members received notice from the Attorney General that they would be in violation of State law and subject to substantial fines if they did not resign within three days. Needless to say, members resigned.

these long term issues. Many of these issues will require in-depth work by stakeholder groups and then, careful, informed consideration by the BOG.

III-F8 Despite the best intentions of the new BOG to be fair and independent, the net result of their inception was a loss of independence by the CAISO.

Ultimately the real test of how effective the Governor's Board was are the results of its tenure. Despite fair and strong leadership by its Chairman and professional efforts by its members, the overall results have led to a series of major problems. One measure of the effectiveness of this board is the view by virtually all of the officers at the CAISO that the current BOG is not independent or effective on long-term issues. They identified the following as evidence of the lack of independence and effectiveness:

- Pressure to provide the CDWR/CERS personnel with access to the operating floor and key market information
- The lack of significant or meaningful long-term planning
- The lack of progress on ongoing projects such as the Congestion Management Reform
- A general lack of understanding of some complex issues that need to be addressed
- Discontinuance of formal Board committees such as the Audit Committee

The overwhelming consensus of the other stakeholders is that the BOG is not independent. Their perception, whether real or not, is that the Governor has complete control over the BOG and thus the actions of the CAISO. This perceived lack of independence is one of the primary reason for the demise in the effectiveness of the stakeholder process.

III-F9 A formal stakeholder input process no longer exists and the informal process is ineffective.

The demise of the stakeholder board also effectively resulted in the cessation of a formal input process for stakeholders. While stakeholder input is still sought on some issues, it is not as formal as before, and there are no means for votes to be conducted nor assurance that the BOG receives its input. Management has assured us that stakeholder views are provided as issues, are discussed and that stakeholders are welcome to speak at the public portion of the meetings. In fact, during interviews with several of the parties, there was discussion of how the CAISO would initiate a process for stakeholder input to review proposed operational or tariff changes. However, the process was often characterized by the stakeholders as an exercise in futility because the CAISO would often file or proceed as it wanted, ignoring the stakeholder input. One of the reasons cited by the outside parties for this breakdown in communications was the lack of independence of the Board. Their perception was that the Board's control had become so strong that the technical staff at the CAISO could not honor their commitments to the stakeholder process.

The lack of stakeholder input was an especially strong issue with almost all stakeholders. The general view is that the CAISO management really doesn't listen to stakeholders. It is perceived that CAISO's position is firm from the start and no amount of argument or input

will change it. As a result, many groups have reduced stakeholder input and have instead simply decided to rely on the regulatory complaint process for resolving issues. (Further discussion on this topic appears later under discussions of culture and communications.)

CAISO management argues that there is still a strong, although non-structured, stakeholder process. They claim that issues are heard and there are changes to the CAISO positions as a result of the process. They also express frustration, stating at one point that 110 stakeholder meetings were held on an issue without consensus.

Regardless of the degree of informal stakeholder meetings or the perceptions of success by stakeholders or the CAISO, there is clearly no formal process in place for addressing major technical issues and providing useful input to the BOG.

RELEVANT FERC ORDERS

The Commission has issued a number of Orders during the past year that have provided further guidance to its views with respect to the necessary traits of ISO's and RTO's to ensure independence. These ISO and RTO traits concerning independence that the Commission has opined upon in the past year are summarized in *Exhibit III-1*.

Operational Audit of California ISO

Exhibit III- 1 ISO and RTO Independence Traits

Comparative Criteria	PJM	NYISO ¹	ISO-NE ²	MISO	Grid Florida	Grid South
Gov. Bd.	Made-up of independent members.	Made-up of independent members.	Made-up of independent members	Made-up of independent members.	Made-up of independent members.	Made-up of independent members.
Number of Members	7 Members, plus non-voting President	9 selected Members. Board selects 10 th (ISO Pres)	9 selected members plus ISO President	7 Members, plus voting President	9: 8 chosen by Committee. Chair chosen by 1 st 8	7 Members ; 6 outside selected by Comm.
Who Selects	Members Committee	Selection Committee comprised of 16 members	Nominating Committee. 10 members from 5 sectors	Members by majority. One vote per member	Board Selection Comm. Rep's from 6 sectors	Board Selection Committee. Rep's from 5 sectors
Candidate Search	Outside Search Consultant	Outside Search Consultant	Outside Search Consultant	Outside Search Consultant	Outside Search Consultant	Outside Search Consultant
Stakeholder Committee	Yes. Members Comm.	Yes. Management Committee	Yes. Advisory Committee	Yes. Stakeholder Advisory Comm.	Yes. Stakeholders Advisory Comm.	Yes. Stakeholders Advisory Comm.
Makeup of Stakeholder Committee	All members. State Consumer Advocates voting ex-officio. State PUCs non-voting	All members. Consumer advocate votes in sector. State PUC non-voting	20 stakeholders (not necessarily members). Incl. State PUC, Cons Advoc.	23 members; 9 stakeholder groups, include consumer groups and PUCs	13 reps from same sectors as Board Selection Comm. Incl. 1 Pub. Counsel rep	Rep's of five sectors
Who Selects Stakeholder Committee	Each member designates its own rep	Each member designates its own rep	Board	Each sector designates its own reps	Each sector designates its own reps	Each sector designates its own reps

Voting Responsibilities	5 Sector voting. Member selects sector. One member one vote. Non-binding recs to Board	5 sector voting approx 20% each. One member one vote. (See note below)	Advise only. Approval authority rests with NEPOOL Management Committee. (See note below)	Non-binding recs to Board via reports and minority reports	Non-binding recs. to Board with majority vote. Minority view also be presented.	5 sector voting. Each sector 20% of vote. 2/3 vote to pass non-binding recs to Board
ISO on BOG?	Yes. Chairman	Yes. President	Yes. CEO	Yes. President	Yes. Chairman	Yes. Chairman
State on BOG?	No	No	No	No	No	No
BOG Filing Power?	Yes	Not complete ³	Not Complete ⁴	Yes	Yes	Yes
RTO Status	Approved	Non-compliant ⁵	Non-compliant ⁶	Approved	Approved	Approved

Exhibit Notes:

- ^{1/} The NYISO structure summarized in the exhibit reflects the current ISO structure, which the NYISO requested with certain proposed supplementation in its Order No. 2000 compliance filing to be deemed in compliance with Order No. 2000. This request was not approved.
- ^{2/} The ISO-NE structure summarized in the exhibit reflects the current ISO-NE structure, as well as elements of the hybrid proposal contained in its Order No. 2000 compliance filing. The proposed structure for the ISO was found to satisfy the Commission's independence criteria in all other respects, the proposal was found to not be in compliance with Order No. 2000, due to retained decision-making powers residing with NEPOOL Management Committee, which is comprised of market participants.
- ^{3/} Delegation of considerable responsibility to various committees composed of market participants, and decision-making would continue to be shared between the non-stakeholder board and a stakeholder Management Committee.
- As is currently the case approval of NEPOOL Management Committee, consisting of market participants, would continue to be required under the proposal for changes to market rules
- NYISO requested approval of its current ISO structure as meeting the minimum RTO requirements of Order No. 2000
- ISO-NE requested a determination that a proposed, new hybrid transmission entity satisfies the Commission's Order No. 2000 RTO requirements

III-F10 The committee structure to support operations, as required by the CAISO tariff, is not in place. This would appear to be both a further cause and outgrowth of the stressed stakeholder processes.

The tariff contemplates a Grid Operations Committee, defined as “a committee appointed by the CAISO Governing Board pursuant to Article IV, Section 4ⁱⁱ of the CAISO Bylaws to advise on additions and revisions to its rules and protocols, tariffs, reliability, and operating standards, and other technical matters.”

The original ISO Tariff provided for a Technical Advisory Committee (“TAC”). The original ISO Bylaws also provided for a TAC. The responsibilities for the TAC were not consistent between the Tariff and the Bylaws. In December 1997, all duties required under the Tariff for the Technical Advisory Committee were delegated to ISO management with oversight by the Grid Operations Committee. In November, 1998, the Tariff was amended to remove references to the TAC and to substitute the Grid Operations Committee. In August, 1999, the ISO Bylaws, at Article IV, Section 4, were amended to remove all references to the TAC.

Specific assignments for the Grid Operations Committee as set forth in the Tariff include:

- Coordination of “activities relating to the CAISO controlled grid”
- Consideration of “suggestions for changes to the CAISO protocols”
- Development of “ancillary service standards to determine reasonableness, cost effectiveness, and adherence to national and WSCC standards”.
- Input to Maintenance Outage planning procedures
- Input to the outage notification procedure

The Grid Operations Committee functioned as an active committee of the ISO (stakeholder) BOG until the Board was disbanded in January 2001. The new Board has not formed-nor appointed- any committees to perform the functions originally discharged by committees formed under the previous Board.

Our discussions with stakeholders failed to elicit any real concerns or impacts from the demise of the Grid Operations Committee. Yet, it stands as another element of the currently damaged stakeholder process, and this indifferent attitude on the part of the stakeholders may simply be a reflection of the low expectations that the committee, if still standing, would produce any constructive results in the current climate.

We offer no specific recommendation on this matter with the assumption that it will be dealt with when the governance structure and associated stakeholder processes are addressed. However, we do offer the general observation that, in a climate of independence and cooperation, a formalized structure of technical and advisory committees comprised of stakeholders and ISO/RTO personnel has proven to be an important and successful

ⁱⁱ It appears that this tariff reference to the Bylaws is dated, as the referenced section addresses the Audit Committee. Presumably the intent here was consistent with Article IV, Section 2, which allows the Board to appoint various advisory committees.

component of other ISO's and RTO structures and can provide a forum for issue-solving on a collaborative, bottom-up basis. Such a structure has the potential to supplant the current climate at the CAISO wherein solutions to problems are perceived to be handed down in a top-down manner from the CAISO management, and stakeholder input largely takes the form of litigation.

III-R1 Establish a new and independent Board of Governors, along with a formal Stakeholder Committee. (Refer to Findings III-F1, III-F2, III-F3, III-F4, III-F8.)

As with the original Stakeholder Board, the recent Governor's Board, has had a finite life, which must come to an end. The first step to resolving the many problems at the CAISO, in particular the perception of independence from the State, and the California energy industry more generally, is to create an independent, "corporate type" of Board of Governors which consists of qualified professionals that do not have any financial or political ties to any of the parties. In conjunction with the establishment of a new Board, a Stakeholder Advisory Committee must be formed to address and resolve complex issues based on input from all parties. The organization, structure, voting principles, and responsibilities proposed here are based on a thorough research of recent FERC ISO-related approvals. The basis for much of our proposed model is the characteristics present at other ISO's which is summarized above in *Exhibit III-1*.

III-R2 Develop a plan for creating an independent board that meets all needed criteria. (Refer to Findings III-F5, III-F6, III-F7, III-F9, and III-F10.)

We are providing a basic approach to selecting a new BOG. This approach can be modified in many respects, however, we caution that it ultimately must result in a BOG that is independent in the eyes of all stakeholders and the management and employees of the CAISO. Our suggestion is to first create a Stakeholders' Advisory Committee (SAC) that consists of a representative for each group or sector of the market participants including the State, as a non-voting member. CAISO management and the current BOG could be responsible for this activity. Representation and voting on the SAC would appropriately and equitably reflect the significance of the group or sector. The SAC would develop an acceptable voting procedure and specify the percentage of vote required to take action. Second, the SAC and BOG would review possible candidates to serve as a professional search firm. The FERC could serve as the final arbiter of the search firm selection to assure the fairness of the selection. Third, the search firm would select up to 12 candidates for appointment to the new BOG. The candidates must not have any affiliation with the market participants. In this context, which involves a single-state ISO, we would include the State of California in the definition of a market participant. The existing BOG would select three candidates from the 12 selected for appointment to the new BOG. The SAC would select three candidates from the remaining nine for selection to the new BOG. The CEO of the CAISO would serve as the seventh member of the Board.

Although many details of our suggestion need to be resolved, we believe the approach suggested here will assure the appointment of an independent BOG and re-establish an effective stakeholder process. The new BOG will also have the buy-in of all of the market participants since they have all had a contribution to its composition. This includes the State, which has a legitimate interest given its substantial financial stake in the market.

California will have a role through the participation of the existing BOG and, potentially, the SAC if deemed appropriate. Most important, however, the new board will have no stakeholder affiliations or pre-dispositions and will be able to restore the confidence of all market participants in the even-handedness of the ISO.

B. ORGANIZATION

CAISO 2001 REORGANIZATION

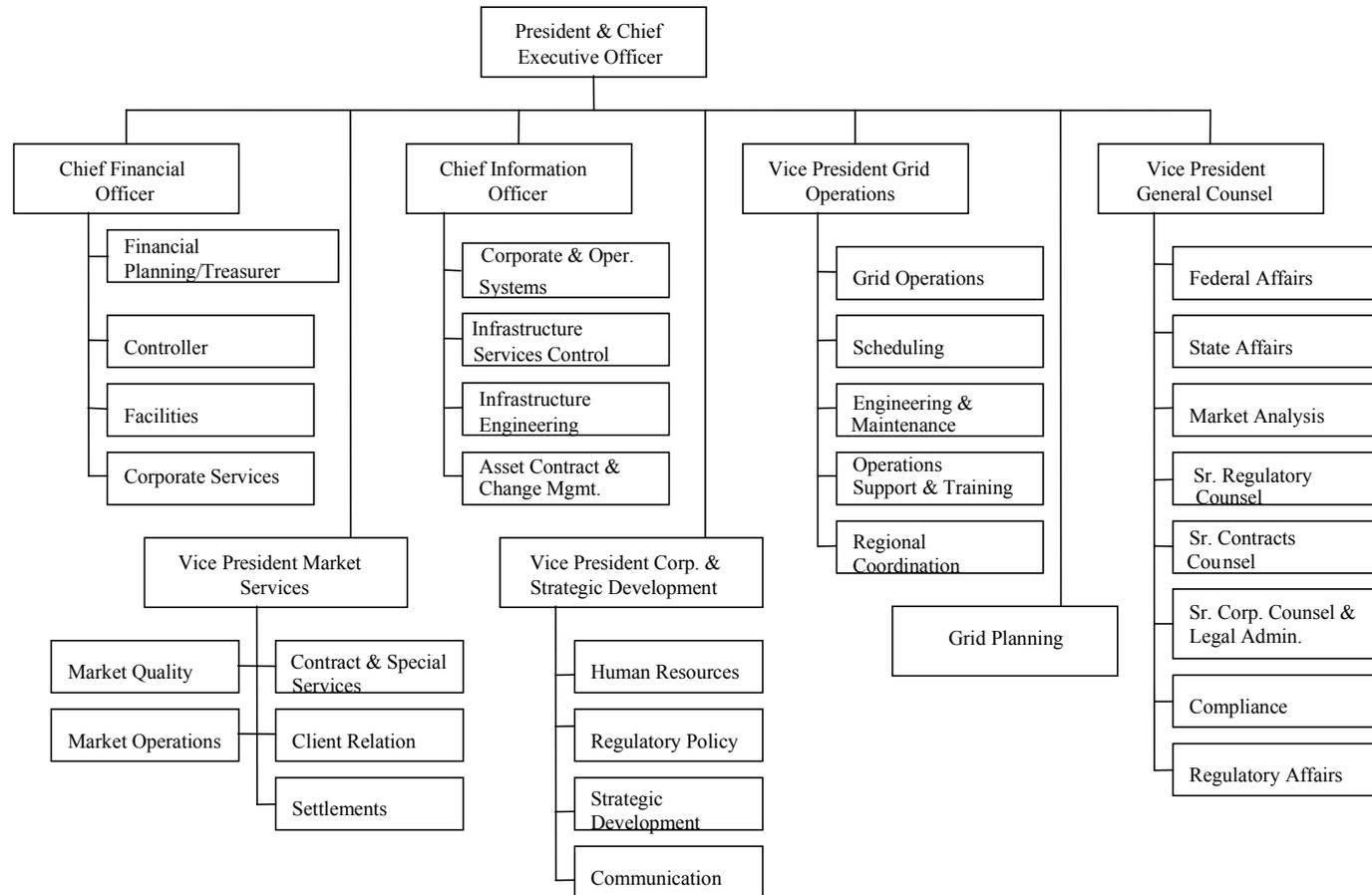
III-F11 In March 2001, the CAISO was reorganized to better reflect grid operation activities, the settlement process, and other market activities.

This reorganization resulted in a number of significant shifts in personnel and responsibility. These included:

- Formation of the Market Services Department, which aligned Client Services, Settlements, Market Operations, and Market Quality in one department
- Transfer of certain IT functions which had been resident within operations, to the corporate IT Department.
- Establishment and staffing of a Strategic Planning and Policy Office
- Realignment of various corporate support functions

The new organization is shown in *Exhibit III-2* below.

Operational Audit of California ISO
Exhibit III- 2
CAISO 2001 Reorganization



TURNOVER & MORALE

III-F12 There are genuine concerns at the CAISO about employee morale.

Throughout our discussions with CAISO senior and mid-level management, we heard about potential morale problems. These stemmed from

- Uncertainty about the economic stability of the CAISO
- A view that the BOG's control of management has compromised independence
- Concerns that employees could end up working for the state
- Incentive pay issues
- Office space quality
- A lack of appreciation for the efforts expended
- A general concern that the restructuring effort in California, which many feel a part of, has failed.

There is a genuine concern for morale and potential turnover at the CAISO by management. First of all, the employees genuinely work as a team and consider each other family. Further, the employees at the CAISO are some of the brightest, hardest working employees one could assemble. We do not believe any auditor could fault the problems at the CAISO on the quality or work ethic of the employees. Many left secure positions with utilities and other well established organizations to be part of the California restructuring movement. Why? Because they wanted to be a part of a historic change that would break up the monopolies that had long stymied innovation in the electricity industry. They also strongly believed that the ISO would foster competition, eventually leading to lower consumer costs and, most importantly, give Californians the freedom to make choices in their power purchasing.

III-F13 Turnover at the CAISO for the last two years has been reasonable but remains a concern.

Based on concerns we had about problems with morale, we investigated turnover rates during the last two years. During 2000, it was 12.9% for the year and in 2001 it was 11.4%. These levels do not appear to be unreasonable given the large number of high-tech employees and the number of available jobs at CERS, other ISO's and energy trading companies. The numbers would have been even less, except for the loss of about 10 employees to CERS when it was being established and staffed.

There are still concerns on the part of CAISO management that any number of events could trigger a mass exodus of employees. These include a takeover of the ISO by the State, which is universally feared, budget cuts that curtail bonuses or merit pay increases, or fund limitations that prevent the acquisition of more office space for employees.

MARKET OVERSIGHT ISSUES

The Department of Market Analysis (DMA) currently reports to the General Counsel at the CAISO. This reporting relationship became effective in mid 2000. Previously, the DMA reported to the Vice President of Grid Operations. The department currently consists of a

Director and 12 employees. DMA perceives its role to be to monitor the electricity market in the CAISO control area and get early warning signals for impending market problems. If it is determined that potential problems exist, DMA would develop possible ways to resolve the problems. To perform this function, DMA provides independent analysis for use by the CAISO on major issues, it provides feedback to FERC on problems it identifies, and it produces monthly analysis for presentation to the Board and CAISO stakeholders. In addition, DMA supports the CAISO's litigation positions through analysis, presentations, or expert witness testimony.

III-F14 Many stakeholders believe the Department of Market Analysis (DMA) is, at a minimum, not independent, and at the extreme, co-opted by management, the BOG, and the Governor.

The Director and 12 employees report to the Vice President, General Counsel. Under the Director, Market Analysis, there resides a Manager, Market Monitoring (with 3 reports), Senior Policy Analyst/Market Surveillance Committee Liaison, Manager, Analysis/Mitigation (with 1 report), and a Manager, Market Investigation (with 1 report).

The issue of independence, function, purpose, and capability of DMA arose during almost all of the interviews we conducted. DMA was one of the focal points whenever we discussed the independence of the CAISO. Although many of those interviewed felt that the DMA was staffed with highly professional personnel that are well intentioned in their efforts, there was a concern regarding the independence of DMA. It is difficult, however, to measure this feedback because many of those we spoke with are in the midst of litigation with the CAISO over huge sums and the DMA is a primary analytical and litigation support tool in these cases. What we did hear without bias, however, is that this department should function as the "eyes and ears of FERC" in California. Invariably the other parties would raise the issue of how could the DMA maintain its independence while at the same time supporting the CAISO's litigation positions in complaints before the FERC.

III-F15 Due to its location in the CAISO organization, the DMA cannot easily by-pass management and report its findings to the CEO, Board, or FERC.

The independence of the DMA is further compromised by its location in the CAISO organization. The DMA's normal reporting relationship is through the General Counsel. The DMA cannot easily circumvent this reporting relationship and go directly to the CEO, Board, or FERC with the results of its analysis and evaluation of the electricity markets in California. Further, the channels of communication with the FERC are not currently as open as the Director would like.

In addition to the DMA's efforts, the CAISO's markets are also reviewed and evaluated by the Market Monitoring Committee (MMC). The MMC consists of three outside economists, although two of the positions are vacant at this time. The purpose of the MMC is to provide the perspective of an unaffiliated, independent, "academic" economic research resource as a supplement to the DMA's oversight and monitoring activities.

III-F16 The MMC has been largely ineffective recently due to current vacancies on the committee.

The effectiveness of the MMC has been weakened by the recent vacancies on the committee. It is expected that the vacancies will be filled soon. However, until the vacancies are filled, the effectiveness of the MMC will continue to be attenuated.

Concerns were also expressed that the MMC needs to have its domain increased to cover all of the WSCC in order to address all of the market which has an impact on California. A more regionalized MMC could also monitor the activities of the ISO's. In this instance, the MMC would be selected by a regional advisory committee to which it would report although it would have the option to report directly to FERC.

III-R3 Define in very certain terms the role of the Department of Market Analysis (DMA) and strengthen its independence by implementing procedures permitting it to bypass its regular reporting relationship and report directly and simultaneously to the CEO, the BOG, or FERC. (Refer to Findings III-F14 and III-F15.)

The role of the DMA needs to be clearly defined and communicated to the Director of the department. Also, procedures should be established so that when circumstances warrant, the analysis and evaluations of DMA can be provided to the CEO, the BOG, or FERC without being concerned that it has betrayed the General Counsel or the CAISO. Examples include cases where management or the BOG of the CAISO have taken positions which the DMA believes compromise its independence or disregard FRC requirements. Although this may help re-establish the perceived independence of DMA, further efforts may be needed to establish an effective, independent market monitoring function for the western market in the future.

III-R4 Examine options for addressing long-term market analysis of the entire WSCC. (Refer to Finding III-F16.)

Ideally, there should be an entity that monitors the market activities of the load serving entities and the suppliers, as well as the CAISO's compliance with its tariffs. Since the western market is broader than just California, the scope of the market monitoring should extend to the entire WSCC reliability area. To assure the independence of this entity, one possibility would be for this entity to report to a regional governance board. The regional governance board could be composed of one member elected by the ISO and the states in the region, another member elected by the suppliers, and a third member elected by the other two members. This approach would assure independence. It would also ensure that there would be "buy-in" from those monitored. In addition, since this entity would most likely not be considered a regulated utility, it could more easily communicate and work in cooperation with FERC.

C. CORPORATE CULTURE

MISSION

The CAISO's mission, prior to the problems in California energy markets, had been simply stated as "reliability through markets." This mission statement supported the CAISO's mission to ensure reliable transmission system and Control Area operation; to ensure open and non-discriminatory transmission access; to facilitate and rely on competitive markets; and to innovate through consensus. This mission demonstrated the CAISO's commitment to maintaining reliability or often more simply stated as "keeping the lights on" and then relying on competitive markets to provide reasonably priced power. The CAISO's mission also committed it to promote a vibrant stakeholder process that would lead to consensus decisions. However, the spike in electricity prices during the summer of 2000 and the eventual need for the state to more actively participate in the markets raised serious doubts about relying on robust competitive markets to provide reasonably priced energy and jeopardized the stakeholder process. The relationships between the CAISO and the various entities have become very litigious. The resulting legal maneuvering and positioning have strained communications.

With the arrival of the current BOG, the mission of the CAISO was modified "to provide safe, reliable electric transmission services to all Californians within its control at the lowest reasonable cost." This revised mission is a direct reflection of the increased involvement of the CDWR and the commitment of state funds to the electricity markets in California. Unfortunately, the perception of several of the other parties is that this revised mission clearly demonstrates the Governor's and State's control of the Board and, therefore, the CAISO. Put simply, while the role of a system operator should be to maintain reliability and to facilitate functional, competitive markets,ⁱⁱⁱ the current CAISO mission statement, which emphasizes 'least cost,' smacks of a command and control approach more akin to a regulatory body operating in a regulated industry than an independent system operator. Such a view from the top of the organization is not conducive to, and indeed could be considered counter to, the creation of competitive markets.

In addition, it should be pointed out that during the past year and one-half the CAISO and its staff have been consumed by investigations, hearings, and subpoenas. They have been consumed in the sense that not only has their attention been diverted to these matters but also they have literally had to expend thousands of man-hours in responding to interrogatories and data requests. This has certainly contributed to the evolution of the CAISO's culture from one of being open and forthcoming to a culture that resorts instead to more of a closed, "bunker mentality."

ⁱⁱⁱ / See, for example, the vision statement and objectives of PJM.

III-F17 The current mission of the CAISO does not meet the requirements of the current California energy markets.

With the arrival of the current BOG, the mission of the CAISO was modified. The revised mission explicitly acknowledges cost, whereas the initial mission relied on competitive markets to make sure costs were reasonable. There appears to be a dichotomy between the mission the CAISO has now adopted and the realities of what California was trying to accomplish.

Similarly, the CAISO mission differs from other ISO's throughout the nation. This difference is simply "cost." The CAISO believed that if they maintained reliability at any cost, the "market" would drive prices to the lowest cost possible. While many would argue that this is true in a functioning market, it has not proven to be true in California.

III-R5 Modify the mission of the CAISO to reflect an appropriate role in the electric market of California and the west. (Refer to Finding III-F17.)

The CAISO should have a broader and clearer vision. The previous vision's vague reference of reliability through markets does not clearly articulate the role of the CAISO in developing and maintaining a robust, transparent market for electricity. This lack of clarity has led to frustration for market participants and also CAISO employees. This frustration has now been amplified by the perception that the state is controlling the CAISO. A broader, clearer vision will be an important ingredient for the CAISO to re-establish its industry leadership, to set priorities, to reach consensus, to promote employee morale, and to reduce turnover of personnel.

The revised vision must expand beyond reliability and recognize cost also. The revised vision also needs to recognize that the market in the west is larger than California and that the larger market can certainly have an impact on the California market. The vision should also include the need to work together with stakeholders to maintain a reliable transmission grid and develop efficient markets. Finally, the vision needs to convey the fact that the CAISO must readily supply information about its decisions and actions so that the markets can properly respond.

III-F18 Operation of the California electric system and the associated markets has, in many cases, become an elaborate legal process rather than a business and electric utility operations process.

Our observations suggest that the *business* of generating electricity, operating a reliable electric system, and maintaining a market for the purchase and sale of power seems to have been transformed into an elaborate *legal* process in California, adding considerable inefficiencies and threatening operating reliability. We observed this first-hand, as virtually no activities of substance seem to occur without the watchful eyes of attorneys, including what once were rather simple day-to-day operating decisions.

During our review, we observed that legal oversight was pervasive in all aspects of CAISO business. Examples include:

- Discussions between CAISO and generator attorneys on whether or not dispatch instructions would be followed.
- Repeated examples of market participants and CAISO personnel reaching agreements that were later reversed, apparently by the participants or the CAISO's legal staff.
- Initial contacts for market participants were, in almost all cases, members of the legal staff.
- Participants were often required to contact their attorneys first.
- Communications often have the aura of the discovery process.

The extensive litigation has, of course, been an unfortunate but inevitable outcome of several factors, including the industry's problems and FERC's rules. The resulting focus on legal questions overlays an already heavily bureaucratic system that is not particularly conducive to a rapid-fire, day-to-day operating environment. These constraints have played a large role in the inability of key industry players to work together and, unless mitigated, are sure to constrain the overall solution process.

Unfortunately, the trend is toward more complexity and conflict. Again, conflict may be necessary in many instances, but an "all conflict, all the time" environment is fatal to the robust, healthy market desired by all parties.

Our comments are not to be construed as critical of the legal establishment, which did not cause California's problems and is sure to be a critical part of the solution. Rather, we suggest that the challenge of operating a large electric system cannot be effectively met via a complex and never-ending series of legal proceedings. In an environment where momentary decisions can quite literally translate into enormous economic consequences; and, if the lights go out, loss of life, a more immediate and trustworthy process is essential.

For these reasons, we believe that the new industry structure must also include a new approach to the legal and bureaucratic governing processes that balances the rights of the participants with the realities of operating a complex electric system.

III-F19 The problems of the past two years have contributed to an internal culture within the CAISO that is not fully compatible with the effective execution of its mission.

We have noted throughout this report a dysfunctional relationship among the CAISO and its stakeholders. We have further stated that this relationship has deteriorated to the extent that many players believe the CAISO is a critical part of the industry's problem. Our audit suggests that there is a basis for these concerns, founded on the interactions among the participants. Even while considering that many of the stakeholders interviewed are in litigation with the CAISO, their **direct quotes** are worth noting:

- "The CAISO seems incapable of listening. They seem to make no effort to understand the other guy's concerns and problems. They lack a cultural receptivity to change."

- “The CAISO consists mostly of former IOU employees and, therefore, has that embedded culture.”
- “The CAISO is subordinate to three groups: the Board, Legal, and Market Analysis, and this characterizes all their dealings.”
- “There are two conflicting cultures within the CAISO. The operating people are practical, cooperative, and honest. The market people, including Legal and DMA, go their own way - non-communicative, defensive, anxious to litigate everything - a garrison mentality. The CAISO, via DMA, functions with a “gotcha” mentality.”
- “The CAISO, via DMA, is biased. They are too suspicious. Rather than ask, they assume the worst. (But they have recently started to seek our opinion.)”
- “The CAISO’s history precludes it from seeing the need for and accepting change. Its culture is hopelessly embedded in operations. It is governed by politics and not free to seek optimum solutions.”
- “Communications with the CAISO are horrible - they don’t talk to us - we often hear about their concerns directly from FERC. DMA is ineffective and ill-motivated - a police state. They study things for months with no communications then play ‘gotcha’.”

Surely there is room for debate on all of these observations, but the overwhelming flavor of the stakeholders’ perceptions seems nonetheless clear. They are convinced the CAISO has a serious cultural problem that, until fixed, precludes the CAISO from a credible leadership role.

III-F20 The CAISO’s relations with Scheduling Coordinators (SC) are such that many SC’s would rather not do business with the CAISO, and those with a choice have indeed withdrawn.

Although the most compelling reason has been the credit situation, most Scheduling Coordinators (SC) also cite the difficulty in doing business with the CAISO, and correction of the credit issues will not change their outlook. Needless to say, SCs exposed to the recent credit problems decline to transact with the CAISO where they have a choice. But discussions with selected SC’s indicate their reticence goes well beyond the credit issue. SC’s complain about the inability to trust prices, the CAISO’s frequent shifts in position, fluid rules, overly complex processes, lack of CAISO independence, CAISO’s apparent rejection of the neutral market manager role, the ten-minute market conflict, and a lack of visibility on CAISO market decisions. With the exception of the pricing and visibility issues, each of these concerns has been discussed elsewhere in this report.

III-F21 The CAISO does not provide sufficient visibility and transparency with respect to much of its workings, including market decisions, operations, and market analyses.

Several of the stakeholders have expressed their concern that the CAISO has proceeded in a rough shod manner over many of their concerns. As a result, there is a regular influx of petitions and complaints at FERC for clarification and resolution instead of a constructive communication and resolution of problems prior to the filing of complaints. Management

and employees at the CAISO feel like they have been bombarded by complaints and subpoenas. In response, the CAISO has evolved into a more defensive mode of operation that often requires legal clearance and approval before operational issues can be resolved. In some instances the stakeholders stated that they felt like the CAISO staff was just not forthcoming with the reasons for its actions. For example, the stakeholders often referred to cases in which they were instructed to modify the output of their units but the CAISO would not provide the reasons. When questioned about the concern of stakeholders that their input is often ignored or that the CAISO was not forthcoming with the real reasons for a request, the CAISO management indicated that often times they moved significantly from their original position but not as far as the stakeholders wanted and thus the stakeholders viewed this as ignoring their comments. However, if the CAISO really believes that competitive markets should be relied on to provide reasonably priced power, it must also understand that good information that is readily communicated to the interested parties is essential for the development of truly competitive markets. The CAISO must support the transparency of the market.

The ten minute market issue is an example of a technical matter that has been debated vigorously for some time. It is not our intention to rehash this controversial decision or to discuss its qualities. Rather, the issue represents an excellent example of stakeholder frustration and their perception that the CAISO makes decisions in a vacuum. Furthermore, they believe that once a decision is made the CAISO can stonewall any changes, even when the decision is proven wrong. The ten minute market issue seems to have done more damage to the CAISO's reputation with its stakeholders than any other market design issue – we were unable to find a single party outside of the CAISO that supports it.

Most interviews we conducted with stakeholders contained some negative reference to the ten minute market issue. One offered it as an example of CAISO arrogance, noting that the CAISO “ran roughshod over everyone” on this issue. It demonstrates that the players “have very real and justified due process concerns.”⁵⁴ Another characterized the ten minute market as a nightmare, noting that the CAISO was the only entity in favor of it.⁵⁵ And one participant characterized the ten minute market as failed theory and claimed the CAISO lacked practical analysis in their proposals.⁵⁶

The broad spectrum of concerns does not bode well for the future of CAISO operations and strongly supports the notion that a program of substantial change is required. We received consistent feedback from market participants that the quality of market information from the CAISO was neither timely nor adequate. A frequent complaint was visibility on market decisions, such as reasons for going Out Of Market (OOM). “There is a complete lack of visibility as to how the CAISO makes market decisions.” Others stress that the CAISO's decisions on system dispatch are opaque, including how the cost of system dispatch is determined. Also, we received anecdotal feedback from several SC's telling of their making decisions based on certain prices quoted by the CAISO, only to learn at the time of settlement that the price was many times that quoted.

On the positive side, the CAISO seems sensitive to the issue. Although not discussed in our meetings with the CAISO, an SC reported that the CAISO conducted a focus group(s) to

answer the question “What must we do to get you back?” This was seen as a positive step by the CAISO in improving the stakeholder process.

III-R6 Implement specific management programs to change the culture and processes at the CAISO so that they address the needs of stakeholders. (Refer to Findings III-F18, III-F19, and III-F20.)

As an **independent** system operator, the CAISO should have a mutual interest in the concerns and needs of all the participants in the electricity market in California. A massive internal effort and a change in culture are required by the CAISO to reach out to its stakeholders and rebuild its relationships. Based on the comments we received in interviews, a change to an independent, professional Board should be the first step in the effort to re-establish relations with the parties. The Board should insist on knowing the position of each of the stakeholders on any issue that it must decide, and should re-institute an organized process, through a committee structure, to elicit stakeholder input. Next, the CAISO must more clearly define its role in the electricity market and carefully communicate that role to all employees and the market participants. In its role of promoting efficient and transparent markets, the staff of the CAISO needs to better understand the importance of providing consistent information on a regular basis to all market participants. Finally, the CAISO needs to re-examine its growing reliance on legal staff with regards to operational decisions. Whether the increased involvement of legal is in response to the actions of the other parties or a decision by the CAISO to be more aggressive in its dealings with the parties, the fact is that it has severely hampered communications between the CAISO staff and the other parties.

III-R7 Improve communication between FERC and the CAISO by increasing on-site presence and facilitation of communications with stakeholders. (Refer to Finding III-F21 and III-F22.)

On September 24 and 25, 2001, FERC staff held a technical conference at the CAISO. At the meeting the FERC staff facilitated a discussion of several operational issues that had arisen in California. During our audit, several interviewees referred to these meetings as a constructive forum for discussing and understanding issues and for attempting to suggest possible solutions. Unfortunately, subsequent to this meeting there was a retreat by several of the parties from things that appeared to be agreed to during the meetings. As best we can gather, the retreat from agreed positions was a concern that agreement may jeopardize positions in other outstanding legal or regulatory proceedings. Nevertheless, there is an important lesson to be gleaned from this exercise. The commitment of FERC’s resources and the presence and willingness of the FERC staff to facilitate this type of meeting generated a better understanding of the problems. This understanding is an important first step in resolving some of the concerns for moving back to robust markets for electricity in California. We recommend that the CAISO work with FERC staff to convene similar meetings in the future. This will provide a forum to improve communications among the parties, provide first hand knowledge and feedback, and give better direction on a more timely basis.

In the long run, as an independent Board is established, the corporate culture is changed, and as confidence of the stakeholders in the CAISO is restored, the need for FERC-led

facilitation services may recede and the goal would be to have the CAISO step in to serve that role.

IV. OPERATIONS

A. COMPLIANCE WITH TARIFF

PWC AUDITS

PriceWaterhouseCoopers LLP (PwC) has performed various audits, assertions, and special studies for the CAISO for years. As required by Section 12.2.2 of the tariff, an annual operational audit is performed. The general purpose of the operational audit is to determine if the CAISO is complying with its procedures as published in its tariff or on its website. We reviewed the PwC operational audits for the last few years. The methodology is to determine the level of compliance by closely monitoring the activities of the control room for a few week period. After reviewing the previous reports and observing the quality and comprehensiveness of those reports, and also knowing that the most recent audit conformed to the same period as the audit period for our study, we determined that there was no reason for us to perform a similar audit. Instead, our audit focused more on governance and management issues, the communications and interactions of the stakeholders, as well as operational and market issues.

IV-F1 The 2001 Operational Audit was noteworthy for the large number of CERS related tariff violations it identified.

The 2001 PwC Operational Audit was of particular interest because of the operating environment that existed in California during 2000 and 2001. The 2000 power crisis undermined the financial viability of two of California's largest IOU's. These events prompted the state to step in. It quickly became the largest power buyer in the California market. This power purchasing was performed by CERS, which is a division of CDWR. This activity was approved in special session by the California legislature. In addition, a new Board was established by the Governor. The new Board ordered the CAISO to work with CERS since the state was providing financial backing for the CAISO's efforts to "keep the lights on." All of these circumstances imposed greatly on the CAISO. In its efforts to maintain reliability and "keep the lights on," the CAISO was forced to make some special accommodations for CERS, which resulted in several non-compliance findings in the PwC Operational Audit.

The PwC Operational Audit for 2001 was completed on November 20, 2001, and recently posted on the CAISO website. The overall objective of the report and PwC's assertion was to report on the level of conformity of the actual operating practices at the CAISO relative to the CAISO's Operating Procedures. The audit focused on three core operational functions as agreed to by the CAISO management. The audited functions were

- real time dispatch
- ancillary services management
- reliability must run unit dispatch.

Audit results for the 2001 audit determined that 64 procedural elements from within the tariff were relevant. Two of the procedural elements were not evaluated since no actions relative to these elements occurred. Consequently, 62 elements were assessed with the following results:

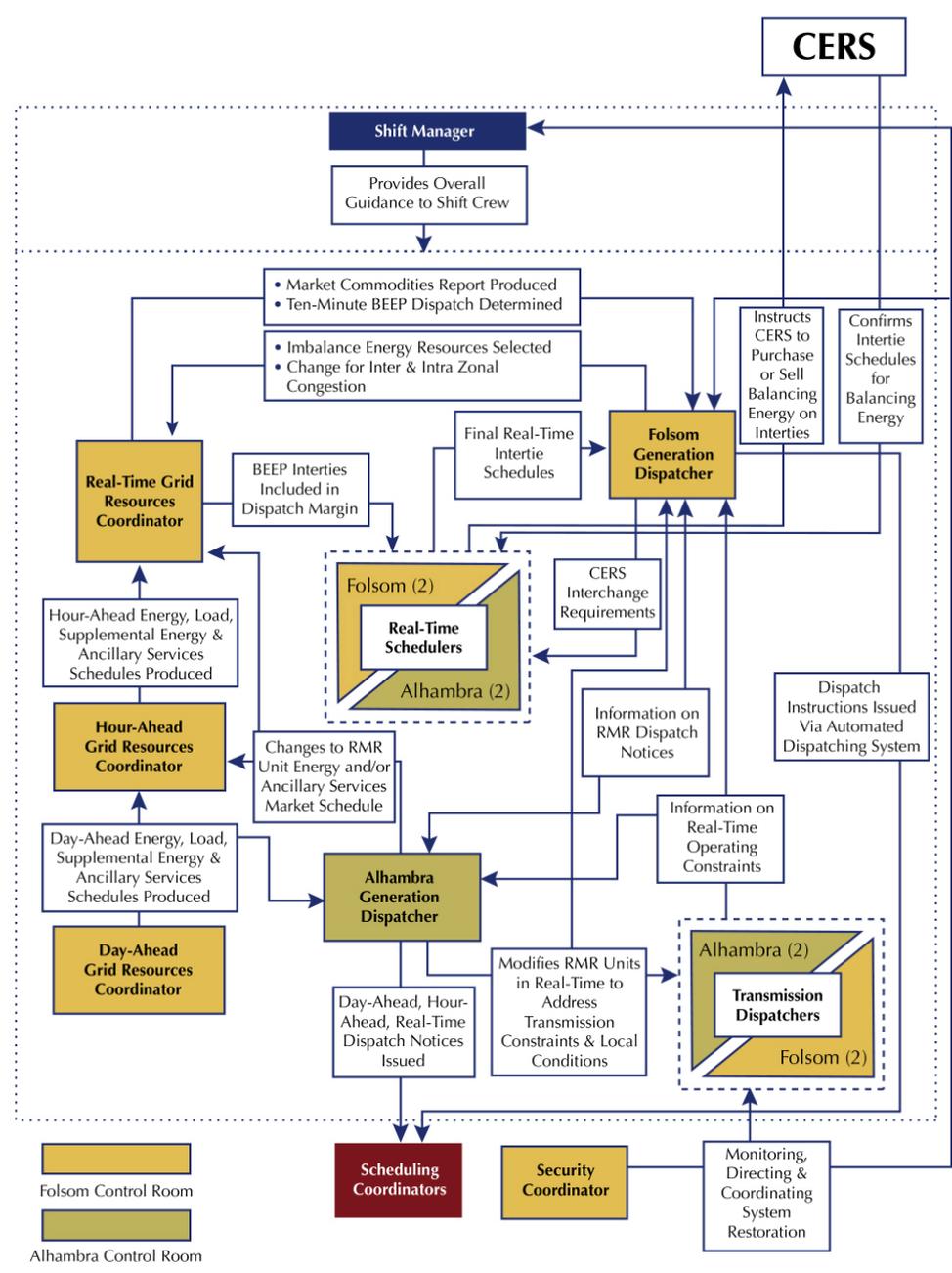
- 31 were determined to be fully compliant.
- The other 31 non-compliant elements were classified as one of the following:
 - current practice does not comply with Operating Procedure (24)
 - practice is not performed in a consistent manner (3)
 - no Operating Procedure was available (4)

The real time dispatch function had the highest percentage of non-compliance findings and as expected, many of those involved CERS-related activities. The involvement of CERS was very well illustrated in the last Operational Audit in a flow chart titled Diagram 1 on page 67 of the report. It is provided below to show the complexity of the process on the operating room floor and CERS insertion into that process.

Operational Audit of California ISO

Exhibit IV- 1 Control Room Roles and Responsibilities

Diagram 1: Folsom and Alhambra Control Room Roles and Responsibilities



IV-F2 CAISO management recognized the potential problems created by CERS and appropriately initiated on its own behalf a review of CERS-related transactions.

Well before the fall-2001 audit itself, the CAISO management was warned of problems with the CERS on-site presence in a letter to one of the BOG members from a consultant. This letter, dated April 13, 2001, and titled "Impacts on Costs and Reliability of DWR/CERS Scheduling Practices" warns of potential problems and need for quantification and an analysis of reliability impacts.^{iv}

According to Mike Florio, BOG member and President of The Utility Reform Network (TURN), CAISO management received a copy of the memo, which in fact was illustrating issues that were already public. Management's public response concluded "that it was better to work with CERS to get them familiar with the ISO's scheduling protocols than to spend time quantifying their mistakes."^v

IV-F3 CAISO management and legal department initiated their own investigation of the transactions CERS was entering into in order to assure that all transactions were appropriately documented and issues were fairly resolved.

Despite the willingness to work with CDWR/CERS to keep the lights on, CAISO management did take appropriate action to review complex transactions by CDWR/CERS and prepare for any potential fallout or litigation. In February, the CEO of the CAISO instructed the legal department to begin the process of examining all transactions during the period in question. To get a baseline prior to CERS purchases, all transactions beginning November 15, 2000, were examined and this practice was carried forward for transactions through May 15, 2001. The stated purpose, according to the CAISO, was to determine if all records of sales between suppliers and CERS were accurately recorded. PwC, which had audited the CAISO's operations and finances, assisted with the review. A total of seventeen specific transaction types were reviewed in detail. The specifics of these reviews, which were prepared for the General Counsel, are protected under attorney client privilege rules and were not specifically reviewed as part of this audit.

IV-F4 The CAISO does not have a well-developed procedure for responding to the findings in the PwC Operational Audits.

As part of this audit, our consultants looked at the results of the PwC audits for 1998, 1999, 2000, and 2001. In addition to reviewing the specific procedures for the audits, their findings, and recommendations, we tried to determine whether recommendations were implemented and whether the results of the audit and implementation were communicated to stakeholders. Our review showed

^{iv} / Memo to Mike Florio, ISO Board Governor from Eric Woycik

^v / Interview with Florio and 1/4/02 e-mail on topic

- In the past, the PwC Operational Audit results have been presented to the Board and action plans responding to the findings have been developed.
- Occasionally, the action plans and an update on their status is presented to the Board.
- There is no regular schedule for presentation to the Board.
- Based on our interviews, there was no apparent consequence for not resolving a finding.
- More recently, the stakeholder involvement in the follow-up to the audit has been limited to reviewing whatever is presented to the Board in public session and posted on the CAISO website. The only opportunity for a stakeholder to comment is at the Board meeting.

IV-R1 Establish formal procedures for following up on the findings and recommendations from the operational audits and other formal audits and reviews. (Refer to Findings IV-F1 and IV-F4.)

The CAISO is a non-profit, public entity. Given its role in the market, its activities should be apparent and visible to all interested parties. For instance, the CAISO publishes the PwC Operational Audit on its website for all participants to review immediately after the audit is approved by the Board. This is consistent with the CAISO's commitment to keep its stakeholders informed. Likewise, there should be a corollary commitment by the CAISO to make its response to the audit publicly available. However, there is no regular schedule for responding, nor is there a process for including stakeholder input.

The CAISO should establish procedures that require the development of an action plan that responds to the findings in the operational audits. The development and reporting on the status of the action plan should allow for comments from the stakeholders when appropriate. The procedures should also include a regular schedule for presentation of the update to the action plans to the Board or, in the alternative, the Audit Committee of the Board if one is re-established. The Board should make it clear that it expects the CAISO to follow-up on the findings in a meaningful and timely manner.

B. INFORMATION TECHNOLOGY

DIRECTION AND APPROACH

The review of CAISO Information Technology (IT) examines the operations from various levels. At a detailed level, there was a review of compliance of the CAISO with tariff requirements. This addresses the operation of WeNET and the internet and various reporting requirements as outlined in the proposal. Also specific issues and concerns that were raised during interviews and document review were subjected to a more detailed review. The reader should note that although the proposal addressed compliance through the WeNET, much of the posting information is now provided through the internet on the CAISO web site under the OASIS tab.

At a more macro level, those issues that are systemic to the entire organization and for which IT is only one part were reviewed. In this section we review the future structure and operational issues of IT that must be addressed on a going forward basis in concert with other findings and recommendations in this audit.

This IT review was not meant to duplicate the efforts and detailed review of the SAS 70 review last conducted by PwC.

COMPLIANCE WITH TARIFF REQUIREMENTS

Section 6 of the Tariff has very specific requirements for internet information postings. This information was originally posted on the WeNET but has been subsequently migrated to the CAISO site at www.CAISO.com. WeNET remains the communications backbone for direct, secure communications with SC's and other market entities.

IV-F5 The CAISO complies with the posting requirements of the tariff.

Postings are made to the CAISO website to comply with tariff requirements. Within the website at www.CAISO.com, OASIS can be reached by clicking on the OASIS tab or directly by going to <http://oasis.caiso.com/>.

Specifically, the ISO is required to provide non-discriminatory access to information concerning the status of the ISO Controlled Grid by posting that information on the public access sites on the internet (formerly on the WeNET). The ISO minimum posted information includes:

Advisory Information

The following may be provided over such time scales as the ISO may in its discretion decide:

- (a) Future Planned Transmission Outages
- (b) Generator Meter Multipliers

The ISO posts Future Planned Transmission Outages each night at 1800 hours. The information includes currently known transmission outages scheduled for the next 30 days. This information is available at oasis.caiso.com under the Forecasts tab under the line heading of Line and Equipment Outages.

The ISO posts Forecasted Generator Meter Multipliers each night at 1800 hours for the 8th day out. Hour Ahead Meter Multipliers are posted with the Hour Ahead market information at approximately 1 ½ hours prior to the start of the operating hour. This information is available at oasis.caiso.com/ under the System Resources Tab. The information is available in a query for the hour ahead. Other information available in this table includes Load and System Schedules, Tie Meter Multipliers, and UDC losses. A report on Generator Meter Multipliers for a maximum of eight days is available in query format at oasis.caiso.com under the Forecasts Tab.

Day-Ahead and Hour-Ahead Information:

- Total forecast demand by UDC
- Inter-Zonal Congestion price per congested path (Total Regulation and Reserve Service)
- Capacity reservation cost by zone
- Total capacity of Inter-Zonal Interfaces
- Available capacity of Inter-Zonal Interfaces

This information is available at oasis.caiso.com under the Transmission Tab except the UDC forecast which is located under the System Load Tab.

Ex Post Information

- Date
- Hour
- Hourly Ex Post Price.

This information is posted at oasis.caiso.com/ under the Ex-Post Tab.

Usage Charges for Inter-Zonal Interfaces

This information is available at oasis.caiso.com under the Transmission Tab.

Bulletin Board for Market Participants

Oasis serves as a “bulletin board” in the public domain via the System Operating Messages section of the web site. This is accessed from the main oasis.caiso.com/ page by clicking on the Operating Messages text. The web site also serves as a bulletin board for current pricing information which is presented as a screen scroll. Scheduling Coordinators have a separate workspace (Scheduling Coordinators Workspace -SCW or Scheduling Interface -SI) for information transference. The SCW is accessible only to Certified Scheduling Coordinators.

Communication of Market Orders

Communication of market orders is carried out primarily through the SI. Voice communication is also sometimes used and the Automated Dispatch System is used for direct control.

Information to Market Participants Regarding the ISO Controlled Grid

This information is posted on the web site under the transmission and forecast sections of OASIS with the exception of Voltage Control parameters which are provided through the SI.

Information to be Provided By Connected Entities to the ISO

Connected entities are required to provide contact information to the ISO and keep this information current. The actual information, retention policies and practices and the frequency of updates is not defined by tariff. ISO maintains these records as follows:

“The ISO Control Room Operators and Administrative Assistants maintain, in the Rolm Communication System, both primary and back-up numbers for the TOC’s. Both a “hard copy” and electronic version of these records are maintained.. Real Time Fax numbers are programmed into the Fax Machine on the Room Floor. The Administrative Assistants for Grid Operations assist in maintaining these records. Additionally, there is a “1-800 Bridge” number that the CAISO Shift Manager can initiate with the TOC’s in the event of an emergency. The Primary Contacts at the TOC are the Shift Managers or “Seniors” at each TOC. The Transmission dispatchers at each TOC are considered to be secondary contacts to be used as needed.”

Failure or Corruption of the WeNET

CAISO has a policy and procedure in place to address failure of the WeNET. It should also be noted that the WeNET had redundancy built into the infrastructure of the system. In the event of failure or data corruption, CAISO procedures are designed to carry on the basic functions required to maintain the grid via fax and phone communications.

SYSTEMIC ISSUES

IV-F6 Much of the CAISO IT costs can be traced to the complexity of the operation including the settlement process.

There are two primary drivers of the costs of the CAISO. It is important to look at these issues from a high level downward rather than being absorbed in the details of individual cost components. When reviewed from this level, there are two overwhelming drivers of IT costs at the CAISO. The first of these is the existing contract with MCI/WorldCom for a communications network that was designed for a capacity which is an order of magnitude of 1,000 times larger than what is required. The current number of users accessing the system is roughly 1,000. The original RFP warned potential suppliers,

“the possibility exists that the network will be required to support 4 to 10 million connections by 2003.”

Further, the RFP stated,

“Bidders must detail their plans for scaling the network to meet this demand including the technology, operational, managerial, and financial aspects of these plans.”(emphasis in original)

It is pointless to criticize the capacity decisions made at the time which were based upon the best information available and operating in truly uncharted territory. It is important to note

the enormous impact that this contract has on the overall IT costs. The current MCI/WorldCom contract requires payments of roughly \$30 million annually. It is estimated that this amount could be right-sized to between \$5-10 million annually depending on contract terms and other conditions. This is against an annual IT budget of approximately \$77 million. Obviously, rightsizing this contract in 2004 will produce an immediate and very substantial reduction in IT costs. Unfortunately, CAISO's repeated efforts to renegotiate this contract have only resulted in comparatively minor cost reductions, and the contract will apparently remain in place throughout the term.

The second major driver of costs which can be traced to controllable factors is the complexity of the market operations and the settlements process. As noted in the Finance section of this chapter, the settlements process at CAISO is enormously complex. Underlying this complex operation and process are systems and tables which must be constantly updated and maintained in an environment of redundant systems and in most cases in a "cannot fail" priority setting. It is difficult to place a reliable dollar amount on the extra costs being incurred as a result of this complexity because of the current budget and costing mechanisms. However, Vantage is comfortable with the assertion that personnel and costs can be reduced by reducing the complexity of the market and settlements process which drives the need for the systems and supporting resources.

TACTICAL ISSUES AND CONCERNS

IV-F7 The ongoing reorganization of IT is a very good step in addressing the concerns of the user community.

A number of issues and concerns were raised in the course of this audit regarding IT. Vantage does not wish to demean these issues as secondary or minor, but they are, in fact, dwarfed in importance to IT costs associated with the existing MCI/WorldCom communications contract and the complexity of the settlements process in terms of costs and personnel. The comments and issues can generally be grouped into three categories.

- IT personnel are not knowledgeable in the area of business operation in which they operate.
- IT costs are too high.
- IT personnel are not responsive to the user community.

During the course of the audit, the CAISO IT was reorganizing the Operations Applications and Corporate and Enterprise Application groups into sections which more closely align with a customer group. Each section will have a specific alignment with a customer or customers, and an associated group of applications and assigned activities. This should clarify responsibilities and help with at least two of the three recurring issues as follows.

The comment that IT personnel are not knowledgeable in the business operations is common in organizations and is often accurate. Until the recent economic downturn in the IT industry, it was especially difficult to recruit and maintain IT personnel, let alone those with particular industry knowledge. While the new organization will not by and of itself fix

this problem, a more closely aligned user/service provider relationship as envisioned will certainly provide better opportunities for IT personnel to learn the actual business of the CAISO.

The new organization should also improve the responsiveness of the IT community to the users. Much of the criticism in this regard seemed to stem from the movement of the IT personnel from the user community to a centralized IT organization. While numerous arguments can be made for and against a centralized IT organization, the more important issue is the responsiveness of the IT personnel, irregardless of the actual organization in which they reside. No centralized organization will give the user community the access and control over IT resources that having “in-house” personnel can provide. However, the new user focused organization will improve the access and point of contact issues while still maintaining a centralized IT. This should allow user groups to focus on their core business processes.

IV-F8 IT costs cannot be significantly reduced until the MCI/WorldCom contract expires.

The third issue frequently arising during the audit was the cost, or more accurately, the perceived cost of the CAISO IT organization. While ancillary issues such as employee growth in the IT area were also mentioned, these issues were minor compared to the cost of the MCI/WorldCom contract.

The single largest cost available for reduction without a decrease in service is the existing MCI/WorldCom contract for the communications infrastructure. As discussed, this contract has been reviewed by CAISO for opportunities to modify, and negotiations have been attempted with MCI/WorldCom with only relatively minor cost reductions achieved. As such, it appears that CASIO must live with this contract until expiration.

IV-F9 After factoring out the MCI/WorldCom contract costs, CAISO IT costs in most areas are reasonable.

CAISO participated in a benchmarking study that examined peer costs in a number of areas including Applications Development, Applications Support, Centralized Systems and Servers, Distributed Computing, IT Help Desk, and Wide Area Data Network. The metric provided is high level which is arguably the only level at which benchmarking provides valid results. Benchmarking is fraught with problems if the results are micro analyzed, but such studies are very good at “order of magnitude” comparisons.

The results of the study are confidential, but certain conclusions can be drawn and reported. Based on the reported findings of the benchmarking, CAISO costs are within 25 percent of the peer average in Applications Development and considerably below the highest peer level. In Application Support, CAISO costs are considerably above the peer average but still well below the highest peer. In Centralized Systems and Servers, CAISO is actually below the peer average (which may be partially the result of the oversized communications network). Data on Distributed Computing appears to be inaccurate or incomplete and was discarded for purposes of our review. CAISO Help Desk costs appear to be double the peer average, but here again a caveat must be added concerning the accuracy of the data.

CAISO costs also appear to be high in the area of Wide Area Networks (which again would be consistent with the over sized communications network).

Although source data was not available at a detailed enough level to draw detailed conclusions, it appears that while overall CAISO costs are reasonable after factoring out the MCI/WorldCom contract, CAISO does have some specific cost areas which require attention.

IV-R2 Conduct further analysis into the benchmarking data and develop specific action plans to address those areas of high costs. (Refer to Finding IV-F9.)

Certain costs in the benchmarking study are questionable. These have been specifically identified and called to the attention of CAISO. After factoring in any data corrections and the MCI/WorldCom contract, CAISO should develop specific action plans to address those areas of high cost (controllable) which, at a minimum, appear to be Applications Support and the Help Desk function.

IV-F10 CAISO IT currently lacks fundamental strategic plans and operational metrics necessary to manage the business.

At the time of the audit, IT had little or no cost or manpower statistics below the department level and no strategic IT plan. In the case of the costs and manpower statistics, such data would have been difficult to accurately obtain under the old organization structure without direct charging to each application. Under the new organization structure, costs will be much more easily collected by user community and application.

Although there is no strategic IT plan at this point, the new CIO does have both short and long term formal(written) plans which include development of IT strategy plans among other plans. The plans also include development, collection, and analysis of key operating metrics.

IV-R3 In concert with users and in coordination with overall corporate business plans, develop a formal strategic IT plan. (Refer to Finding IV-F10.)

Initiatives are already underway to begin gathering data in a more useful manner that will tell CAISO levels of performance and costs by causation. This base data, in this form, allows a more detailed forward strategic look because costs can be more readily tied to specific applications, service levels, etc.

IT has already begun to develop short and intermediate term plans. The next step is a strategic plan that is coordinated with all areas of the CAISO operation. Of course, fundamental to this, are decisions on market design and the ongoing role of the CAISO in the California markets.

The strategic plan as envisioned would incorporate, at a minimum, personnel and costs, goals and objectives, service objectives, migration plans from in house to contractor resources (or the reverse), and the impact on a cost basis of the planned reductions in the communications network (as soon as that data is available).

IV-F11 The CAISO's requirements for a reliable functional backup facility are being suitably met by the Alhambra facility.

The tariff requires the CAISO to establish suitable backup control facilities remote from the Folsom facilities and capable of maintaining CAISO operations in the event the Folsom facilities become inoperable. This requirement has taken on a renewed significance and urgency in the wake of September 11.

Our discussions with operations management, and visit to the backup center in Alhambra, suggest that this critical element of system operation is being well cared for. Adequate facilities appear to be in place and are being maintained and updated appropriately. Personnel are trained in the emergency assumption of new duties. Also, Folsom personnel have facilities at Alhambra to which they can relocate in an emergency. Finally, various groups test the facilities on an ongoing basis.

C. PRICING

IV-F12 The CAISO's books and records associated with the grid management charge are maintained in accordance with tariff requirements.

Section 8.1 of the CAISO's tariff states that the CAISO shall maintain a set of financial statements and records in accordance with the FERC's Uniform System of Accounts. Costs which are to be included in the grid management charge are further defined. Section 8.2.2 of the CAISO's tariff defines operating costs as "budgeted annual operating costs, which shall include all staffing costs including remuneration of contractors and consultants, salaries, benefits and any incentive programs for employees, costs of operating, replacing and maintaining CAISO systems, lease payments on facilities and equipment necessary for the CAISO to carry out its business, and annual costs of financing the CAISO's working capital and other operating costs."

Section 8.2.3 of the CAISO's tariff defines financing costs as "the financing costs that are approved by the CAISO Governing Board, including capital expenditures that may be financed over such period as the CAISO Governing Board shall decide. Financing Costs shall also include the CAISO start up and development costs outstanding to the credit of the CAISO Memorandum Account plus any additional start up or development costs incurred after the date of Resolution E-3459 (July 17, 1996), plus any additional capital expenditure incurred by the CAISO in 1998 ("Start Up and Development Costs"). The amortized amount to be included in the Grid Management Charge shall be equal to the amount necessary to amortize fully all Start Up and Development Costs over a period of five years, or such longer period as the CAISO Governing Board shall decide. Finally, section 8.2.4 of the CAISO's tariff defines the Operating and Capital Reserves Cost as "the budgeted annual cost of pay-as-you-go capital expenditures and reasonable coverage of debt service obligations. Such reserves shall be utilized to minimize the impact of any variance between forecast and actual costs throughout the year."

The costs recovered through the grid management charge are to be allocated to the three service charges that comprise the Grid Management Charge by summing the Operating

Costs, Financing Costs, and Operating and Capital Reserves Costs associated with each of the three CAISO services to obtain a total Revenue Requirement.

We reviewed the CAISO's most recent GMC Filing and monthly financial reports. We noted no discrepancies between tariff requirements and the CAISO's financial statements and records. The CAISO accounts for operating costs through the assignment of cost centers. During the budgeting process, each CAISO cost center develops its proposed budget. Allocation factors are then determined. For some departments the allocation factors are determined based on the results of other departments. As operating costs are incurred, they are assigned directly to individual cost centers. Capital costs consist primarily of computer software costs since most of the CAISO's computer hardware is leased and is recorded as an operating expense. The initial infrastructure costs of developing the CAISO received similar treatment. Such costs consisted of computer hardware and software, facilities, and start up costs. Such costs are recovered through the GMC in the form of the debt service payments of principal and interest to the CAISO creditors.

IV-F13 In its 2002 GMC filing, the CAISO is altering two of the three service categories.

In its 2001 rates, the CAISO allocated its Grid Management Charges to three service categories: (1) Control Area Services Charge, (2) Inter-Zonal Scheduling Charge, and (3) Market Operations Charge. For its 2002 rates, the CAISO is proposing two alterations to the service categories. First, the Inter-Zonal Scheduling Charge is being renamed the "Congestion Management Charge." Second, the Market Operations Charge is being renamed the "Ancillary Services and Real-Time Energy Operations Charge." In 2001, the Market Operations Charge was assessed based on purchases and sales of Ancillary Services, Supplemental Energy, and Imbalance Energy (both instructed and uninstructed). For 2002, the Charge will be assessed based on the same purchases and sales plus 50 percent of effective self-provision of Ancillary Services (A/S). Since the CAISO performs services on behalf of those that self-provide A/S as well as those that procure A/S through the CAISO markets, the CAISO determined that it was appropriate to allocate some portion of its costs to market participants that self-provide their A/S requirements.

IV-F14 Rates for two of the GMC service categories are increasing substantially for 2002.

For the CAISO as a whole, the revenue requirement increased from \$225 million to \$244.5 million. The following exhibit summarizes the proposed revenue requirement.

Operational Audit of California ISO
Exhibit IV- 2
Proposed Revenue Requirement

Revenue Requirement (\$ in 000)						
Operating & Maintenance Budget						
	Salaries and Benefits					78814
	Bldg, Lease & Facility Costs					14444
	Insurance					1024
	Third Party Vendor Contracts					45767
	Professional & Consulting Services					12063
	Audit, Legal & Regulatory					12496
	Training and Travel					6330
	Miscellaneous					5543
	Other					984
	Total O&M Budget					177465
Financing Budget						
	Principal-Existing Debt					33800
	Interest-Existing Debt					10711
	Operating Reserve funding -current debt					11128
	Total debt service-new debt					3513
	Operating Reserve funding -new debt					878
	Cash funded capital expenditures					8301
	Total Financing Budget					68331
	Less: Expense recovery budget					-2610
	Subtotal, revenue requirement before revenue credit					243186
	Deficiency from operating reserve					1608
	Total Revenue Requirement					244794

The O&M budget increased from \$171.8 million to \$177.5 million, an increase of approximately 3%. The increase was generally caused by an increase in responsibilities undertaken by the CAISO since the 2001 budget was prepared. Additional responsibilities resulted from the entrance of the California Department of Water Resources as purchaser of the net short position, the bankruptcy of PG&E, continued modifications to CAISO market

rules, refund litigation, continued settlement statement re-runs, and investigations from numerous regulatory and governmental authorities.

Rates charged for the individual services provided increased for 2002. Not only did costs to be recovered increase, but the volumes over which they are to be spread are forecast to decline from 8% to 23%, depending on the budget category, further amplifying the per unit rate.

The rate for the Control Area Services category increased by approximately 42%, from \$0.406 to \$0.575 per MWh, while the revenue requirement for this category increased by approximately \$33 million, or 31% from the net revenue requirement of \$108 million in 2001. The rate for the Congestion Management category increased by approximately 65%, from \$0.223 to \$0.368 per MWh. This is due in part to a change in the revenue requirement for this category of approximately \$8 million, or 42% from the net revenue requirement of \$20 million in 2001. Finally, the rate for the third GMC category, the Ancillary Services and Real-Time Energy Operations, remained generally flat from 2001 to 2002. The net revenue requirement for this category decreases by approximately \$2 million, or 23% from the net revenue requirement of \$97 million in 2001. Approximately 45% of the decrease is due to funds available in the CAISO's operating reserve related to this category from 2001. The remaining decrease is due to changes in cost allocation between the service categories and less spending in this area.

IV-F15 The CAISO's reserve requirement is set at the level specified in the CAISO tariff.

Appendix F, Schedule 1, Part C of the CAISO's tariff specifies a debt coverage requirement of 25% of the senior lien debt service (all debt service that has a first lien on CAISO net operating revenues) and a reserve requirement of 15% of annual operating expenses. In its development of annual budgets and revenue requirements, the CAISO adheres to these levels of coverage. The operating reserve is funded annually with a collection of 25% of budgeted debt service, and the operating reserve is targeted to build to a level equal to 15% of overall budgeted operating expenses by CAISO service category. The operating reserve includes the effects of variances from one year to the next, and it is possible that some excess collections from one year or some deficiencies from one year will be incorporated into the subsequent year's rates. At December 2000, the operating reserve was fully funded. In 2001, however, the CAISO is projecting that the operating reserve will be below the 15% level for two of the three GMC service categories and above for the third. The net shortfall among the three service categories in 2001 is projected to be \$1.6 million and has been incorporated into the 2002 revenue requirement calculations.

IV-F16 In contrast to many peer ISO's, the CAISO financed all of its transition costs; thus, financing costs are higher for the CAISO than other ISO's.

Most peer ISO's made the transition to ISO status from existing power pools utilizing varying amounts of the existing infrastructure of the affiliated transmission owners in the pool. CASIO was developed as a stand alone entity with all significant development costs recorded on its books and included in its financing costs. These transition costs included the full cost of the staff hired and other operating costs including facilities. CASIO's complex computer systems were designed on an accelerated basis under intense time pressure. This

time pressure led to costs higher than peer costs for infrastructure, software development, and services such as telecommunications and information support. Finally, the establishment of a backup facility with fully functional duplicate computer systems exceeds the backup systems in place at other ISO's. The additional costs are reflected in the initial infrastructure costs.

The CAISO commenced operations in March 1998. In 1998, the CAISO issued bonds in the amount of \$301,400,000 in order to fund initial costs of the CAISO. The funds raised by this bond issuance were budgeted as follows:

Operational Audit of California ISO
**Exhibit IV- 3
Costs Funded by Initial Bond Issuance**

CAISO			
Total amount Financed (Amounts in)'000's			
Infrastructure budget:			
	Energy management system		\$ 13,566
	Systems (SI/SA/BBS)		63,766
	Communication		33,954
	Meter & Data Acquisition		5,945
	Computing Management		7,962
	Primary & Backup Centers		13,896
	User Groups		1,259
	Project Management		20,240
	ACC Upgrades		1,941
	Contingency		3,000
	Trust Administration & Regulatory Expenses		5,927
	Start up Costs through 12/31/97		25,945
	Staging Plan/Phase II		18,000
	Interest & Fees through 3/31/98		6,135
	Total Infrastructure		\$ 221,536
	Delayed Start		20,817
	1998 Capital Expenditure Budget		15,322
	1999 Capital Expenditure Budget		9,150
	First Quarter Working Capital		31,829
	Total Financing Budget		\$ 298,654
	Capitalized Interest Requirement		\$ 2,713
	Total Issuance		\$ 301,367
	Rounded to:		\$ 301,400

Sources

IV-F17 The CAISO's loss of a creditworthy bond rating prevented it from issuing bonds in 2001 and constrained its capital spending.

In April 2000, the CAISO issued \$293,000,000 of variable rate demand revenue bonds. The proceeds of the bonds were used to retire \$256,900,000 of previously issued bonds with the

remainder available to finance the CAISO's capital expenditures for 2000 and 2001. The remaining balance of bond proceeds available for capital projects was fully utilized by October 2001. Operating reserve funds in the amount of \$4.6 million were utilized for capital projects costs through November 2001. A new bond issuance was planned for 2001 but was never completed due to the CAISO's inability to secure credit. The CAISO intends to issue \$20 million in bonds to fund a portion of the 2002 capital budget. It is expected that the bonds would have a higher interest rate than current debt due to the CAISO's impaired credit rating. The reasons for the impaired credit rating are discussed later in this chapter. The CAISO assumes the bond issuance will be possible in the second or third quarter of 2002. The bond issuance is not currently feasible given the CAISO's impaired bond rating of D. CAISO intends to limit its capital expenditures in a manner that will assure that expenditures do not exceed the ISO's actual financial capacity.

Due in part to the CAISO's reduced ability to obtain additional financing, certain large projects have been deferred, including the Congestion Management Reform/Comprehensive Market Reform project. In addition, the building of a new facility has been indefinitely postponed. The CAISO currently leases all facilities and calculates that savings could be realized on a net present value basis by constructing its own facility. The CAISO purchased land for the planned facility in 2000.

An additional complication arising from the loss of a creditworthy bond rating is the CAISO's inability to secure a letter of credit on reasonable terms to secure all remaining lease payments on the CAISO's Alhambra facility. The lease on the Alhambra facility was negotiated by the CAISO Restructuring Trust in 1997. It specifies that a letter of credit is to be posted in March 2001 for \$3 million to secure all remaining lease payments until 2007. To date, the CAISO has been unable to secure such a letter of credit on reasonable terms, and the matter is still under negotiation with the landlord.

IV-F18 Requirements for creditworthiness are clearly detailed in existing tariffs and subsequent amendments.

Section 2.2.3.2 of the CAISO's tariff sets forth the requirement for each scheduling coordinator to maintain an Approved Credit Rating. The Approved Credit Rating is defined in Appendix A of the CAISO's tariff. Various acceptable credit ratings are defined, among them a rating of A1 from Standard & Poor's Corporation or P1 by Moody's Investors Service for short term commercial paper debt and a rating of A- by Standard and Poor's Corporation or A3 by Moody's Investors Service for long term debt. The Approved Credit Rating is further defined as a "California state agency ... if its financial obligations under the ISO Tariff are backed by the full faith and credit of the State of California." In the absence of required credit ratings, scheduling coordinators are required to post one of the following forms of security:

- (a) an irrevocable and unconditional letter of credit confirmed by a bank or financial institution reasonably acceptable to the CAISO
- (b) an irrevocable and unconditional surety bond posted by an insurance company reasonably acceptable to the CAISO

- (c) an unconditional and irrevocable guarantee by a company which has and maintains an Approved Credit Rating
- (d) a cash deposit standing to the credit of an interest bearing escrow account maintained at a bank or financial institution designated by the CAISO
- (e) a certificate of deposit in the name of the CAISO from a financial institution designated by the CAISO
- (f) a payment bond certificate in the name of the CAISO from a financial institution designated by the CAISO.

Amendment 36 of the CAISO's tariff modified the requirements for creditworthiness such that a SC for an Original Participating Transmission Owner shall not be precluded from scheduling transactions that serve a Utility Distribution Company's (UDC's) load from

- (1) a resource that the UDC owns
- (2) a resource that the UDC has under contract to serve its load
- (3) a resource from which another entity has purchased energy or with regard to which another entity has provided assurance of payment for energy on behalf of the UDC, if that entity has an approved Credit Rating or has posted security pursuant to Section 2.2.7.3.

Following various proposed revisions to these tariff provisions, the FERC issued a series of orders. These Tariff modification were necessary because the two largest investor-owned utilities were unable to meet the credit requirements in the CAISO's original Tariff.

The CAISO monitors the security posted by SC's on a weekly basis. It should be noted that the amount of security required to be posted is based on a formula that uses metered data for actual transactions. The metered data are not available until some 45 to 51 days after the actual transaction. In the recent case of Enron's bankruptcy, the CAISO had to develop a formula for Enron's required security deposit based on historical and recent transaction trends to assure that at no time were CAISO market participants at any risk of losing money because Enron could not pay later during the settlement process. The CAISO has indicated it will review the security posting requirements in the Tariff, in light of the Enron and Pacific Gas and Electric Company bankruptcies, to identify improved security calculation methods.

D. FINANCIAL SYSTEMS

IV-F19 The complexity of the CAISO's operations results in a highly detailed, complex settlements process.

The CAISO's tariff and accompanying Settlement and Billing Protocol require the CAISO to calculate, account for, and settle transactions carried out by Scheduling Coordinators and

other market participants on the CAISO controlled grid. The CAISO is required to settle charge types including grid management charges, grid operations charges, ancillary services charges, imbalance energy charges, and wheeling access charges, among others.

During 2001, the CAISO settled an average of 41 million MWh per month from a range of 3 to 4 million monthly market schedules. The volume of market schedules is attributable to the operation of day-ahead, hour-ahead, and real-time energy markets. The ten minute settlement process has added to the complexity of settlement operations. The settlements system generated a range of line items from a high of 1.6 million line items in January 2001 to a low of 614,000 line items in October 2001. The number of additional manual line items ranged from 6.8 million in December 2000 to 635,000 in October 2001. Total gross settlement amounts ranged from \$4.8 billion in December 2000 to \$109 million in October 2001. Although the settlements process is complex, the CAISO's "Balance of Business Systems" has never crashed.

The settlements process is so complex that it can be difficult to reconcile settlement statements from one month to the next. Statements from one period may include data from a previous statement period if a disputed item was corrected. The correcting items cannot always be shown in the same level of detail as current statement items, making reconciliation difficult. This complexity has led to extreme frustration on the part of Scheduling Coordinators. Scheduling Coordinators have expressed concerns regarding the level of resources they must devote to monitor settlements statements and dispute charges as necessary. In addition, we note that settlements statements are issued for transactions which are approximately 60 days old. This length of time is the result of the CAISO's having to wait for receipt of metered data to develop settlement statements and to provide for such data. Financial settlement for transactions occurs on average 75 days after the transaction date.

A number of participants in CAISO's market have indicated a lack of confidence with the settlement process. Parties have stated that the CAISO refuses to share metrics and is continuously changing rules. The feeling is that there is no way to verify anything on a settlement statement. In addition, some parties have the view that changes are implemented too fast (implemented at 5:00 p.m. on Friday effective on Saturday) and often retroactively without publication. As examples, the ten minute settlement process is felt to be incomprehensibly complex, and the neutrality adjustment is used to allocate unacceptably high costs so they cannot be easily challenged.

IV-F20 The volume of transactions has resulted in a higher level of staffing for client services, including the settlement function, than at other ISO's.

The volume and complexity of transactions has resulted in a higher level of staffing for market services, including the settlement function, than at other ISO's. Market services functions include: billing & settlements, contract management, market operations, client relations, metering, and market quality. The settlements department has dedicated a staff of 34 analysts to the settlements function. In addition, the settlements department is assisted by 8 dedicated information technology staff members. The 1998 study, Cost Performance Benchmarking Study of Independent System Operators, noted that CAISO's client services staff of 68, compared to an average of 36 staff for peer ISO's. The study also noted that

client services costs per MWh were higher for CAISO than peers, but that client services costs per energy schedule were actually less than peer costs of the Pennsylvania-New Jersey-Maryland Interconnection (“PJM”) and the New York ISO. The lower costs per energy schedule are a reflection of the high volume of schedules.

IV-F21 Manual settlement transactions add a level of vulnerability to the settlement process.

One measure of the complexity of the settlements process is the level of manual (or off-line) calculations that must be done. Extractions are made from the data base to Excel or Access spreadsheets, calculations are performed, and then the results are reloaded into the data base. For example, in December 2000, 6.8 million manual line items were processed. The settlements department is in the process of enhancing control over the off-line calculations so that version control is maintained in accordance with the findings of the most recent SAS 70 audit.

IV-F22 A review of the most recent annual statements indicates concerns regarding the CAISO’s ability to continue as a going concern.

The financial statements of the CAISO are audited by independent accountants each year. The 2000 audit report contains a report of independent accountants, PwC, which notes substantial doubts about the CAISO’s ability to continue as a going concern. These concerns are based on the CAISO’s dependency upon its market participants including California’s two largest investor owned utilities which are experiencing severe financial difficulties. PwC report states, in part, the following:

“As discussed in Note 3 to the financial statements, the Company is economically dependent upon its market participants, all of which are actively involved in California’s electric utility industry which is experiencing significant structural and financial problems which are adversely affecting many of these market participants. These impacts have been particularly severe on the state’s two largest investor owned utilities, leading to their defaults on various obligations including some of their charges billed by the Company on behalf of the Company’s markets. One of these investor owned utilities filed for bankruptcy protection in April 2001. These uncertainties raise substantial doubt about the Company’s ability to continue as a going concern. The priority position of the Company’s revenues (grid management charges) in the market and other factors relating to management’s expectations of full collection of such revenues are also described in Note 3.”

The notes to the financial statements mention that the CAISO’s tariff and its most recent GMC filing provide for adjustment to the GMC in the event that current GMC revenues are projected to fall short of the budgeted revenue requirement. CAISO management believes that sufficient revenues will be collected to fund the CAISO’s operations during the normal course of operations. GMC revenues have a first priority on any cash cleared through the Company’s markets each month. The CAISO maintains operating reserves which equate to approximately two months of GMC.

In 2000 and 2001, the CAISO collected all billed GMC. In 2000, the CAISO realized \$5,013,000 in income from operations and an overall decrease in net assets \$1,646,000 after interest income, interest expense, and the effect of gain realized from the refunding of bonds.

The CAISO's rates are set using a different method of accounting than generally accepted accounting principles which are the basis of presentation for the audited financial statements. The rates are set to cover CAISO costs plus provide for an operating reserve.

IV-F23 The most recent year-to-date financial statements portray a stronger financial position than the 2000 annual financial statements.

For the period January through November 2001, the CAISO realized total revenues of \$207,911,000. Operating expenses totaled \$143,075,000 for the period yielding net operating income of \$64,836,000. Net income after interest, depreciation, and amortization was \$9,852,000. Operating revenues and O&M costs are both under budget for the year-to-date period. The decrease in GMC revenues was a result of lower real-time market activity, and the lower O&M costs are attributable to reduced payments for third party vendor contracts and leases, lower travel/training costs, and lower salaries and benefits. The operating reserve increased by \$20.4 million year-to-date, \$27.8 million higher than budgeted, primarily due to higher collections to date of GMC revenues and lower O&M and debt expenses. The CAISO's revenue requirement year-to-date is \$223.1 million, which is \$9.4 million lower than budget. This is primarily a result of lower expenses, including lower out of pocket expenditures. Also, the CAISO received revenue for this period from interest earned.

Notwithstanding the improved financial position of the CAISO, management believes that in order to receive an unqualified opinion from its independent auditors, financial stability of the CAISO market, including that of the investor owned utilities, is essential. Management believes that next year's audit opinion will be dependent on CERS' continued funding of the investor owned utilities' purchases. The following three exhibits contain the most recent (draft) year-to-date financial statements.

Operational Audit of California ISO
Exhibit IV- 4
November 2001 Balance Sheet (DRAFT)

For the month ending November 30, 2001
(dollars in thousands)

	<u>Current Month</u>	<u>Prior Month</u>	<u>Variance</u>
ASSETS			
NET ELECTRIC UTILITY PLANT	\$ 97,450	\$ 99,070	\$ (1,620)
RESTRICTED BOND FUNDS	2,453	4,800	(2,347)
CURRENT ASSETS			
Cash and Investments			
Unrestricted	87,242	78,794	8,448
Restricted for Payment of Debt Service	(2,696)	12	(2,708)
Total Cash and Investments	84,546	78,806	5,740
Accounts Receivable, net	42,706	47,522	(4,816)
Prepayments	1,607	1,749	(142)
Total Current Assets	128,859	128,077	782
NONCURRENT ASSET AND DEFERRED CHARGES			
Unamortized debt exp.	696	712	(16)
Other	(2,131)	(1,786)	(345)
Total Noncurrent Asset & Deferred Charges	(1,435)	(1,074)	(361)
TOTAL ASSETS	<u>\$227,327</u>	<u>\$230,873</u>	<u>\$ (3,546)</u>
CAPITALIZATION AND LIABILITIES			
CAPITALIZATION			
Stakeholders' Surplus	\$ (58,495)	\$ (54,063)	\$ (4,432)
Long-term Debt	228,800	228,800	-
TOTAL CAPITALIZATION	<u>170,305</u>	<u>174,737</u>	<u>(4,432)</u>
CURRENT LIABILITIES			
Long-term debt due within one year	32,500	32,500	-
Accounts Payable	24,523	23,636	887
Total Current Liabilities	57,023	56,136	887
TOTAL LIABILITIES	<u>57,023</u>	<u>56,136</u>	<u>887</u>
TOTAL CAPITALIZATION AND LIABILITIES	<u>\$227,328</u>	<u>\$230,873</u>	<u>\$ (3,545)</u>

Operational Audit of California ISO
Exhibit IV- 5
November 2001 Statement of Operations (DRAFT)

For the eleven months ending 11/30/01 (dollars in thousands)	Month				Year to Date				Annual
	Actual	Budget	Variance	Var (%)	Actual	Budget	Variance	Var (%)	Budget
Revenues:									
Grid Management Charge	\$ 12,964	\$ 18,407	\$ (5,443)	-30%	\$ 199,933	\$206,155	\$ (6,222)	-3%	\$ 225,307
Fines, WSCC Fees & Other	(25)	-	(25)	0%	4,388	789	3,599	456%	1,052
Interest Income	185	113	72	64%	3,590	1,238	2,352	190%	1,350
Total revenues	13,124	18,520	(5,396)	-29%	207,911	208,182	(271)	0%	227,709
Operating Expenses:									
Salaries and Benefits	5,145	5,625	(480)	-9%	57,354	64,684	(7,330)	-11%	73,121
Building, Leases and Facility	1,240	1,297	(57)	-4%	14,639	14,475	164	1%	15,451
Insurance	-	13	(13)	-	947	959	(12)	-	971
Third Party Vendor Contracts	4,313	4,152	161	4%	43,651	45,674	(2,023)	-4%	49,171
Professional and Consulting Services	738	797	(59)	-7%	9,434	8,379	1,055	13%	8,792
Legal and Audit	1,005	861	144	17%	10,256	9,587	669	7%	10,385
Training, Travel and Professional Dues	235	647	(412)	-64%	3,296	7,126	(3,830)	-54%	7,774
Other	213	1,000	(787)	-79%	3,498	4,468	(970)	-22%	6,133
Total operating expenses	12,889	14,392	(1,503)	-10%	143,075	155,352	(12,277)	-8%	171,798
Net operating income (loss)	235	4,128	(3,893)	-94%	64,836	52,830	12,006	23%	55,911
Interest and Other Expenses									
Interest expense	941	1,097	(156)	-14%	13,998	11,428	2,570	22%	11,785
Depreciation and amortization	3,726	3,726	-	0%	40,986	40,986	-	0%	44,712
Total interest and other expenses	4,667	4,823	(156)	-3%	54,984	52,414	2,570	5%	56,497
Excess (Deficiency) of Rev. Over Exp.	\$ (4,432)	\$ (695)	\$ (3,737)	538%	\$ 9,852	\$ 416	\$ 9,436	2268%	\$ (586)
Operating Expenses By Dept.									
CEO and Strategic Planning /Comm.	\$ 467	\$ 838	\$ (371)	-44%	\$ 6,818	\$ 9,431	\$ (2,613)	-28%	\$ 18,113
Operations	2,291	2,776	(485)	-17%	28,392	31,323	(2,931)	-9%	43,378
Client Services	1,234	1,449	(215)	-15%	14,179	16,548	(2,369)	-14%	6,600
Information Services	6,522	6,264	258	4%	67,493	69,815	(2,322)	-3%	76,871
Legal	1,552	1,497	55	4%	15,722	16,731	(1,009)	-6%	16,569
Finance	823	1,568	(745)	-48%	10,471	11,504	(1,033)	-9%	10,267
Total operating expenses	\$ 12,889	\$ 14,392	\$ (1,503)	-10%	\$ 143,075	\$155,352	\$ (12,277)	-8%	\$ 171,798
Number of FTE	511	544	(33)	-6%					544
FTE plus commitments made	520								

Operational Audit of California ISO

Exhibit IV- 6 November 2001 Operating Reserve & Revenue Requirement (DRAFT)

For the month ending November 30, 2001

	Month				Year to Date				Annual Budget
	Actual	Budget	Variance	Var.(%)	Actual	Budget	Variance	Var.(%)	
Revenues									
GMC rev. collected (75 day lag from month sched.)	\$ 17,803	\$21,048	\$ (3,245)	-	\$ 203,055	\$ 192,302	\$ 10,753	5%	\$ 231,658
Other revenue	261	113	148	57%	6,813	2,027	4,786	70%	2,402
Total Revenues	18,064	21,161	(3,097)	-	209,868	194,329	15,539	7%	234,060
Operating Expenses									
	12,889	14,392	(1,503)	-12%	143,075	155,353	(12,278)	-9%	171,798
Net Before Debt Service	5,175	6,769	(1,594)	-31%	66,793	38,976	27,817	42%	62,262
Debt Service									
Bond principal payments	2,519	3,074	(555)	-	27,714	33,815	(6,101)	-	36,889
Bond interest payments	941	1,097	(156)	-17%	14,047	12,525	1,522	11%	13,624
Total Debt Service	3,460	4,171	(711)	-21%	41,761	46,340	(4,579)	-11%	50,513
Capital Projects	3,000	-	3,000	-	4,600	-	4,600	-	-
Increase (Decrease)	(1,285)	2,598	(3,883)	302%	20,432	(7,364)	27,796	136%	11,749
Operating Reserve Fund									
Beginning Balance	42,146	10,467	31,679	75%	20,429	20,429	-	0%	20,429
Ending Balance	\$ 40,861	\$ 13,065	\$ 27,796	68%	\$ 40,861	\$ 13,065	\$ 27,796	68%	\$ 32,178
Revenue Requirement									
Net Operating Costs									
Operating Expenses	\$ 12,889	\$ 14,392	\$ (1,503)	-12%	\$ 143,075	\$ 155,353	\$ (12,278)	-9%	\$ 171,798
Less Interest & Other Revenue	(261)	(113)	(148)	57%	(6,813)	(2,027)	(4,786)	70%	(2,402)
Net Operating Costs	12,628	14,279	(1,651)	-13%	136,262	153,326	(17,064)	-13%	169,396
Debt Service									
Principle and interest payments	3,460	4,171	(711)	-21%	41,761	46,340	(4,579)	-11%	50,513
25% Debt Service Reserve	876	1,053	(177)	-20%	9,629	11,576	(1,947)	-20%	12,628
Total Debt Service	4,336	5,224	(888)	-20%	51,390	57,916	(6,526)	-13%	63,141
Capital Projects	3,000	-	3,000	-	4,600	-	4,600	-	-
Revenue Requirement	\$ 19,964	\$ 19,503	\$ 461	2%	\$ 192,252	\$ 211,242	\$ (18,990)	-10%	\$ 232,537

IV-F24 The lack of creditworthiness on the part of the key parties inhibits long-term solutions to the California energy crisis.

This is a broad statement, yet one that is backed by hard facts as well as opinions and views of almost all of the major stakeholders. Some of the key considerations supporting this include:

- Under current legislation, the role of the CDWR ends in about one year. The two year program initiated in January 2001 was intended to be an interim measure while the IOU's returned to creditworthiness. The recent audit by the California State Auditor of the CDWR, as required by AB1x, provided extensive discussion of the current status of the contracts and the difficulty that will be encountered in transferring them to the IOU's at some point.^{vi}
- Without an increase in overall creditworthiness by all parties, the CAISO will not have its bond rating improved, allowing it to return to the markets for needed capital
- Virtually every generator and/or scheduling coordinator interviewed for this audit indicated that the return to creditworthiness would be a major step in correcting the market's problems.

IV-R4 Implement efforts to return the CAISO to a creditworthy level. (Refer to Finding IV-F24.)

The issue of creditworthiness for the CAISO is largely perception on the part of the credit rating agencies. The CAISO has a clear claim to money from all transactions to cover both operating and capital requirements. Much of the problem stems from arguments and claims that the CAISO budget is too high and out of line with other ISO's.

While it is true that the operating costs of the CAISO are higher than other ISO's, this is largely due to the fundamental structure of the CAISO and the method and assumptions used in its initial design and implementation. One example is discussed in the section on IT - the original communications network is greatly oversized for the existing environment.

IV-R5 Support financial and creditworthiness restructuring activities vis-à-vis SCE. (Refer to Finding IV-F24.)

Once SCE returns to full creditworthiness, it will be able to resume its role as a SC and work directly with the CAISO in procuring power. Its relationship with CDWR and CERS will need to be modified as well.

^{vi}/ California State Auditor report "California Energy Markets: Pressures Have Eased but Cost Risks Remain" Issued December 2001 available at <http://www.bsa.ca.gov/bsa/>

IV-R6 Implement a short term means for PG&E to return to creditworthiness. (Refer to Finding IV-F24.)

Obviously, the long-term solution for PG&E is to resolve its bankruptcy issues. In the interim, other solutions should be considered. The CAISO tariff has well defined provisions for meeting creditworthiness.

At the time of PG&E's filing for bankruptcy, a number of alternatives were considered to address creditworthiness. Perhaps other solutions exist for addressing PG&E now that it is under control of a bankruptcy judge and its financial structure is better understood.

IV-F25 Since the appointment of the current Board of Governors, the CAISO has not had a CAISO Audit Committee in place, and there is currently no direct reporting mechanism between the Controller's office and the Board.

Section 12.2 of the CAISO's tariff states that the CAISO Audit Committee shall have overall audit responsibility for the CAISO. The Committee is to make recommendations to the CAISO Governing board in relation to the approval, initiation, and scheduling of certified financial audits, operations audits, code of conduct audits, and interim audits that may be undertaken for specific issues and concerns of market Participants that the CAISO Audit Committee believes, at its sole discretion, to be of significant and critical magnitude to the CAISO. Prior to the appointment of the present Board of Governors, the Board had in place an audit committee. The current Board does not have a specific audit committee in place but rather functions as a committee of the whole. All of the required audits have taken place during the most recent year. No interim audits have been requested by the Board.

IV-F26 The CAISO has estimated and is collecting funds for the FERC annual charges.

In October 2000, the FERC issued a Final Rule in Docket No. RM00-7-000, entitled "Revision of Annual Charges Assessed to Public Utilities." This rule indicates that the fees to fund FERC's electric regulatory costs will now be levied on the ultimate providers of electric transmission service, including ISO's. The fees will be based on energy transmitted, are to be levied on 2001 transmission, and will be payable in 2002.

Because the actual rate for the FERC fee will not be set until early 2002, it was necessary for the CAISO to estimate a rate. The rate was estimated as follows:

Calculation of Estimated FERC Fees for 2001

FERC's total annual budget for electricity regulation for 2000 **\$55,000,000**

Divided by:

1998 IOU Energy Sales to ultimate Customers (Edison Electric Institute) 2,653,164 GWh

Equals: **\$0.021/MWh**

Based on the calculation above, the CAISO expects to pay approximately \$5.5 million in FERC fees based on 260,000,000 MWh. Through November 2001, the CAISO has collected \$1,5721,329 in FERC fees and escrowed these funds in a separate trust account. In addition, \$1,524,000 in fees has been assessed market participants and is to be paid when the fees are due to FERC in 2002. The collections through November account for settlements through August 2001. If fees assessed by FERC exceed or fall short of funds collected by the CAISO for the FERC charge by a range of 10% or less, an adjustment to the FERC Annual Charge Recovery Rate shall be made. If the CAISO's collection of funds for the FERC charge results in an under or over recovery of greater than 10%, the CAISO will either assess a surcharge against or issue a credit to all active scheduling coordinators.

IV-F27 The CAISO has recently begun collecting payments owed by CERS and has escrowed approximately \$31 million (at the time of the report), pending resolution of a payment issue by the FERC.

As a result of an order issued by the FERC on November 7, 2001, CERS has begun making payments to the CAISO for its outstanding amounts. Collections through January 2, 2002 were \$648 million, and payments through the planned payment date of January 10, 2002 will be \$610 million. The CAISO expects to collect additional payments totaling \$453 million through February 7, 2002.

The \$610 million in payments includes payments to the CAISO of \$15 million in GMC charges and \$40 million in AWS fine revenue. In addition, the CAISO has escrowed approximately \$31 million in funds paid by CERS. The funds have been escrowed pending a decision by the FERC as to the treatment of proceeds due transmission owners. CERS maintains that the proceeds due the transmission owners should be netted against the IOU's obligations. The CAISO did not believe that it had the authority to revise the CERS obligation under the November 7 FERC order. In order to best protect the financial position of all parties, the relevant amounts have been placed in escrow pending a decision by FERC.

IV-R7 Simplify the settlements process as part of an overall market redesign. (See Findings IV-F19, IV-F20 and IV-F21).

As we noted in our discussion of the settlements process, it is extremely complex and requires a large investment of resources on the part of the CAISO to administer, as well as on the part of scheduling coordinators to monitor. Our understanding of the CAISO's market design is that it was developed to provide market incentives for efficient power

purchasing rather than as a “command and control” system. As a result, it has become more and more complex and requires a significant amount of off-line calculations in order to develop settlement statements. We recommend that, as part of the market design process, the CAISO simplify the settlements process. Any redesign of the settlement process must be done in conjunction with market redesign, and the overriding effort should be toward simplifying the process.

IV-R8 Establish a direct reporting relationship between the Controller’s office and the Board of Governors. (Refer to Finding IV-F25.)

The Controller of the CAISO reports to the Chief Financial Officer. At present, there is no direct reporting relationship between the Controller’s office and the BOG. The Controller states that if evidence of financial impropriety or lack of internal controls came to his attention, he would consult with the CAISO’s general counsel. To date, no such evidence has come to his attention. Although we found no evidence of financial impropriety, we note that this lack of an audit committee and lack of a direct reporting relationship to the BOG leaves the CAISO vulnerable to financial improprieties. We recommend that a formal reporting relationship be developed between the controller and the BOG, perhaps a quarterly status report. This will serve to strengthen the Board’s fiduciary role.

IV-R9 Enhance control over off-line calculations in the settlements process. (Refer to Finding IV-F21.)

The CAISO is in the process of developing enhancements to maintain version control over manual (or off-line) calculations in the settlements area. Off-line calculations comprise a significant portion of the settlements calculation line items. We recommend that the CAISO make a priority of this endeavor in order to strengthen the control over these calculations. We would anticipate that if the settlements process is simplified as a part of an overall market redesign effort, the need for extensive manual workarounds in the settlements area would diminish.

DISPUTES

IV-F28 The dispute resolution process seems to be functioning but is seriously burdened by the volume of disputes and the complexity of the bidding and settlement processes.

Disputes are handled by the CAISO in three steps: administratively, good faith negotiations and arbitration. We were advised by the CAISO that the resolution process is working well as evidenced by

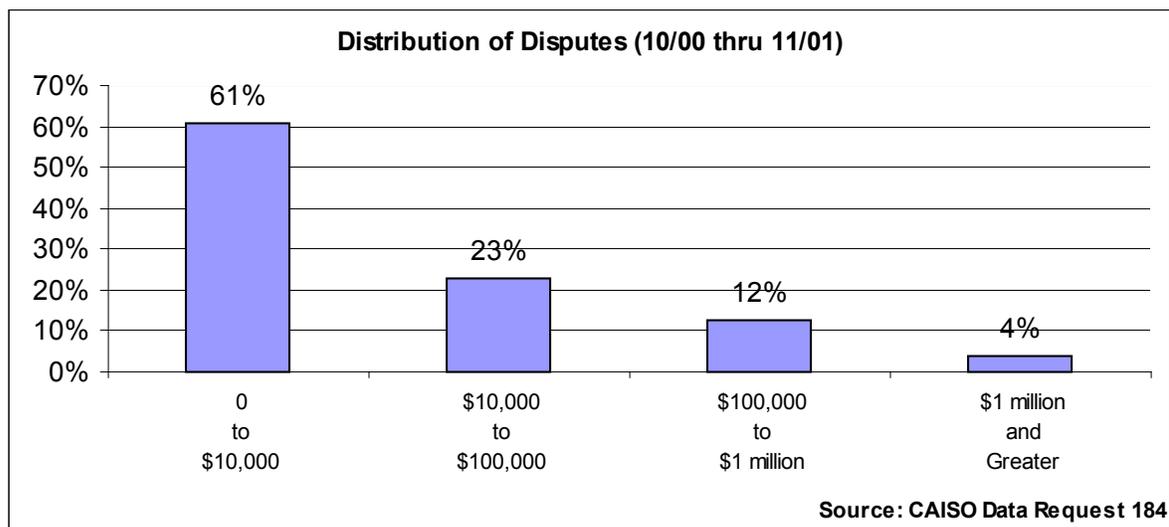
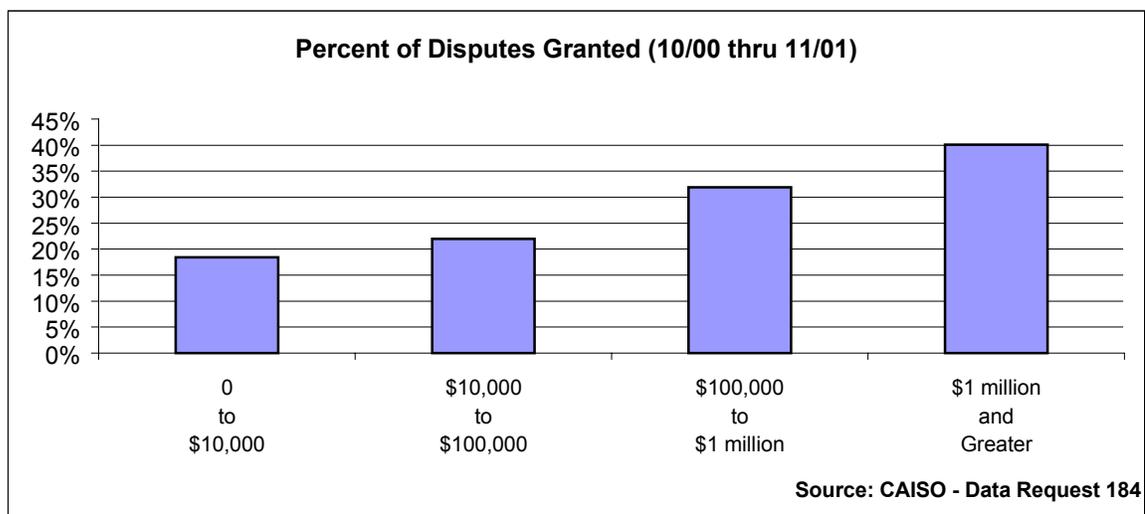
- The number of disputes is coming down
- The “nickel-dime” disputes are disappearing (except for primarily one party)
- The number of disputes progressing to good faith negotiations is extremely small, and the number progressing to arbitration is miniscule.

Needless to say, the stakeholders, although not especially critical of the resolution process itself, are highly dissatisfied with the underlying causes of disputes, the complexity of the

system that gives rise to disputes, the difficulty in validating charges, the time required to reconcile disputes, and the moving target that results from subsequent bill adjustments.

The magnitude of the challenge is illustrated by the volume of disputes. Data provided by the CAISO indicates nearly 10,000 disputes in a recent 13 month period, with a monthly average of about 725. Considering that each dispute requires approximately 4 person-hours to resolve, the high cost of the current system and the massive effort required to address disagreements are clear.

Fortunately, the majority of disputes are relatively small, but the number of large disputes is nonetheless significant. *Exhibit IV-7* shows that less than half of the disputes exceed \$10,000. It is also interesting to note that the number of disputes eventually proving valid (in the judgment of the CAISO) is relatively small. This is illustrated in *Exhibit IV-8*.

Operational Audit of California ISO**Exhibit IV- 7****Operational Audit of California ISO****Exhibit IV- 8**

Our overall conclusions regarding the dispute process is that the root cause of any problems lies in the complexities of market design and the underlying CAISO – stakeholder interactions and not the dispute resolution process itself. Recommendations for those root cause issues are addressed elsewhere in this report.

E. OPERATIONS AND MARKETS

OVERVIEW

The CAISO operates a real-time imbalance energy market that matches resources and loads. This imbalance reflects deviations from forward market schedules. The objective of this market is to manage small deviations from schedules due to various factors including load forecast errors, unforeseen generation changes, generation outages, and transmission outages. The original design of the real-time market assumed that the trading volume in this market would be small compared to that of the forward markets.

The majority of the energy transactions for the bulk of the load, generation, and imports/exports are scheduled by scheduling coordinators (SC's) in the forward markets (Day-Ahead (DA) and Hour-Ahead (HA)). The CAISO tariffs require that the schedules for each SC be balanced. SC's are permitted to adjust their DA final schedules for Energy and/or Ancillary Services in the HA market. Many times these schedule adjustments are necessary to accommodate changes in various conditions including load forecast, unit availability, or transmission outages. Therefore, the HA market provides the SCs a final opportunity to hedge their forward positions without being exposed to the volatility of the real-time imbalance energy market.

To facilitate the forward scheduling process, while the CAISO does not represent load, or electricity power consumers, the CAISO provides hourly load forecasts to all SC's. The CAISO produces a 48-hour forecast and also a DA forecast. SC's compare the CAISO forecasts to their individual load forecasts or an individual load forecast they have received from the load they manage. Thus, SC's can use both their own forecasts as well as the CAISO's forecasts to make their DA scheduling process as accurate as possible.

The CAISO 48-hour forecast is provided at 1800 hours two days prior to the trade day and the DA forecasts is provided at 0600 hours on the day prior to the trade day. In addition, the CAISO provides an updated hourly forecast before and during the trading day. The CAISO HA forecast is provided three hours prior to the operating hour for the market participants to use for HA schedules. The forecast is performed for the service areas of PG&E, SCE and SDG&E. These forecasts are summed to produce the CAISO control area load forecast. The CAISO is responsible for producing the control area load forecast. The CAISO does not forecast the retail load of the three utilities or any other SC's.

The load forecast is a very important piece of operational data for both the CAISO and the market participants, and it is also the most variable factor in the scheduling process. The uncertainty of the load provides a challenge for ensuring compliance at all times with the reliability standards of both NERC (North American Electric Reliability Council) and WSCC (Western Systems Coordinating Council).

By comparing the SC's final HA schedules for generation, imports, and exports with the CAISO's HA load forecast, the CAISO can determine how much over or under supply will occur in real-time. The imbalance between the total supply resources scheduled and the CAISO forecasted load is met in the real-time market. When an under-scheduling of the load (same as under-scheduling of supply resources) occurs, there is a need for incremental energy. Conversely, if there is an over-scheduling of the load (same as an over-scheduling of supply resources), then decremental energy is needed in real-time.

When the CAISO grid operators are faced with an imbalance requirement, they must dispatch real-time energy to balance the transmission grid and match generation (or supply) with load (or demand). This energy imbalance may be due to the initial imbalance between the SC's HA load schedules and the CAISO forecast, plus any additional imbalance due to the over- or under-performance of the SC's HA generation schedules. This imbalance energy may be met using incremental or decremental energy. In general, this balancing energy will be taken from the BEEP (Balancing Energy and Ex-post Pricing) stack in merit order of bid price. The CAISO may, if required for local reliability or other specific operational requirements, dispatch bids out of sequence (OOS) from the BEEP stack. The BEEP prices are based on bids submitted by the SC's or proxy bids inserted into the BEEP stack by the CAISO in response to FERC orders regarding the Must-Offer Obligation. The CAISO may still require additional energy to maintain reliability of the transmission grid after using all of the BEEP stack bids. In these circumstances the CAISO may call for bids that are out of market (OOM) (i.e., not in the BEEP stack). However, some energy may need to be called out-of-sequence (OOS) or out-of-market (OOM).

In concert with the CAISO's real time balancing energy market operation, it is also responsible for ensuring that there are sufficient Ancillary Services (A/S) to maintain the reliability of the grid controlled by the CAISO consistent with WSCC and NERC criteria. The CAISO's A/S requirements may be self provided by SC's. Those A/S which the CAISO requires to be available, but which are not being self provided, will be competitively procured by the CAISO from SC's in the DA and HA markets or in real-time.

OPERATIONAL ISSUES

The CAISO has identified several operational issues that it currently confronts. The first potential operational problem identified by the CAISO is load over-scheduling and under-scheduling. Generally, load is over-scheduled for most hours. Under-scheduling occurs on average in hours ending 14 to 17 and 23. The scheduling problem is worse in the PG&E service area, although it is also a concern in the SCE service area. The imbalance between the total supply resource and the forecasted load is met in the real-time market. When these imbalance amounts are large, the resulting impact on the real-time market can be significant.

A second problem is basically the other side of the first problem, that is the performance of the SC's HA scheduled generation. As it is commonly known, generation is locally controllable and can easily deviate from SC's HA schedules if it wishes to do so. In total, the generation may be under- or over-delivering, which, depending on the initial imbalance energy, may adversely impact the amount of the imbalance energy going into the real-time market. Of course, it is also possible that the under- or over-delivering of energy may

improve the imbalance energy conditions going into the real-time market. However, regardless of whether the imbalance energy condition is improved or made worse, the CAISO is faced with additional uncertainty about the amount of real-time energy that must be procured and dispatched. This under- or over-delivering of generation energy leads to uninstructed deviations from the SC's HA schedules.

The uncertainty on both the demand and supply sides create a challenge for balancing the system's energy needs in real-time. When the deviations are large, the challenge becomes ever greater. In addition, the CAISO grid operators' problems can become even more challenging as the following operating problems exacerbate the problems.

On numerous instances, generators have failed to comply with dispatch instructions, largely in response to dispatch instructions issued under the Must-Offer Obligation. The principal reason for the problems with generator compliance with the Must-Offer Obligation rests with recovery of minimum operating costs incurred during compliance with the Must-Offer Obligation. As previously noted, the CAISO filed its implementation plan with the FERC on July 10, 2001, but the FERC did not accept in part and rejected in part the CAISO's plan until December 19, 2001. Thus, the CAISO and generators were forced to operate without common understanding or agreement for six months, and this led to the majority of the problems with failure to follow dispatch instructions.

The real-time market has recently been constrained by the lack of import energy and import bids. There was a sharp decline in the volume of incremental imbalance energy market bids for the June through September period for the year 2001 as compared to 2000. This lack of imbalance energy import bids did not allow the CAISO dispatcher to meet its area resource requirements and may cause out-of-market activities. The CAISO has identified three potential contributing factors to the lack of bids. They are the decrease and the effect of the price caps in 2001 as compared to 2000; less water in the northwest that limited the amount of hydro generated energy; and the increased credit and payment risk for the suppliers associated with the 10-minute imbalance energy settlement market that was initiated September 2000.

The ability of the CAISO to balance energy markets has also been constrained by the reduced availability of decremental bids, that is, bids to buy power for purposes such as to reduce generator output. During the off-peak hours of 10 PM to 6 AM of June through September 2000, the CAISO received an average of 9,184 MW of decremental bids, of which 5,432 MW were positively priced. During the same hours and months of 2001, the CAISO received an average of only 2,424 MW of decremental bids, of which 1,548 MW was positively priced. A positively priced decremental bid represents an offer by generators to pay into the CAISO's markets for power reductions by the generator voluntarily reducing its generator output. A negatively priced decremental bid represents an offer by a generator to reduce generation if the generator is paid by the CAISO market to do so.

Due to the over-scheduling of generation, CAISO dispatchers are not able to balance the market with actual generation (HA schedules plus uninstructed deviations plus dispatch instructions), HA net import schedules, and imbalance energy dispatched via BEEP. To balance the load in these instances, they must rely on their only remaining option which is

out-of-market dispatches. During June through September of 2001 this gap to be balanced amounted to approximately 1,000 MW of excess power that had to be sold or exchanged. This problem is further complicated by the fact that it cannot be adequately or accurately anticipated in advance of the operating hour.

MARKET ISSUES

The CAISO has identified several market issues that need to be considered in any initiative to reform markets. These issues relate to ancillary services (A/S), target price methodology, lack of adjustment bids, potential gaming of DA and real-time markets, phantom DA load schedules, and more formal incorporation and coordination of CERS into the markets.

With regard to A/S, the CAISO procures ancillary services via auctions in the forward markets to maintain the reliability of the system. These auctions result in different ancillary services prices in the day-ahead and hour-ahead markets. The CAISO Tariff allows eligible resources to participate in both day-ahead and hour-ahead ancillary services auctions. If a resource is unable to deliver the capacity it sold in the day-ahead market, it is allowed to reduce its financial exposure for non-delivery by selling back to the CAISO, without CAISO direct approval, either in part or the entire capacity in the hour-ahead market. In this case of “buy-back operation,” the resource will compensate the CAISO for replacing the previously purchased capacity at the hour-ahead market-clearing price. It has been observed during recent months that at certain hours the day-ahead prices for ancillary services have been higher than the hour-ahead prices. This price pattern has been exacerbated by the fact that Scheduling Coordinators have routinely waited until the hour-ahead market to schedule self-provided ancillary services, which has reduced the amount of capacity that the CAISO needs to purchase in the hour-ahead market. The reduced demand for ancillary services in the hour-ahead market has thus driven down the hour-ahead prices for ancillary service capacity. Some SC’s have taken unilateral advantage of this predictable price pattern and have been routinely selling ancillary services to the CAISO during the day-ahead market, and then buying back the committed capacity in the hour-ahead market.

With regard to the target price methodology, due to the lumpiness and overlap of incremental and decremental bids, a target price methodology was developed. However, the original methodology created the potential for gaming. Recognizing this shortcoming, the target price methodology was modified in April 2000. Although the revised target price methodology reduced the gaming opportunities and created an incentive for generators to stay more closely to their schedules, it has also created some gaming opportunities during over-generation conditions. The revised methodology has increased the volatility of real time imbalance energy prices as zero prices can occur shortly before or after times of high prices.

The lack of adjustment bids has limited the ability of the CAISO to adequately respond to congestion concerns. SC’s are allowed to submit adjustment bids that state their willingness to adjust their “preferred” schedules to resolve congestion. These adjustment bids are bids where market participants indicate whether they want to increase (“inc”) or decrease (“dec”) their forward schedules to solve transmission congestion. The CAISO uses these adjustment bids to ration transmission capacity if congestion occurs. Adjustment bids are extremely important to the CAISO since they are the only mechanism the CAISO uses to

resolve congestion while maintaining feasible day-ahead schedules. If sufficient adjustment bids are not available to eliminate congestion via market mechanisms, any remaining transmission congestion is resolved by incrementing generation on a pro-rata basis on one side of the constraint and decrementing generation on a pro-rata basis on the other side of the constraint. Frequent use of pro-rata based congestion elimination indicates a serious problem in the markets. Since the demise of the Power Exchange and the lack of an alternative organized, broad-based forward energy market, the adjustment bid market at the CAISO is virtually non-existent.

Concerning the potential for gaming DA scheduling and real-time dispatch, instances have been observed in which a SC will schedule a bilateral contract in the day-ahead market, and then submit a negative decremental bid in the real-time market. This can create arbitrage opportunities for the SC by allowing it to decrement its generation while profiting from the combined transactions.

With regard to phantom load in DA scheduling, instances have been observed in which a SC schedules an import to serve load that will not actually be present in real time, on a path that will be congested with exports during the day-ahead market. By scheduling this counter-flow on the congested path, the SC receives the same congestion revenue that it would receive if it held a Firm Transmission Right contract for the path without the expense of acquiring the FTR. This practice creates an operational problem for the CAISO because if the exports occur as scheduled but the phantom import does not, the path will be overloaded. In addition, the CAISO believes there are many instances where SC's schedule incorrect load in strategic locations to mute congestion and therefore shift cost to the real-time market where cost is spread across all SC's.

One of the more significant market issues that needs to be addressed is the recognition and inclusion of CERS into the CAISO tariff and operating procedures. Since January 2001, CERS has been purchasing and scheduling energy on behalf of market participants that are not creditworthy to purchase energy themselves. In addition, CERS has been purchasing energy in real-time on behalf of the CAISO to meet imbalance energy requirements. While CERS has successfully purchased energy since January and the CAISO and CERS have overcome many operational hurdles in implementing the bifurcated approach to energy procurement, the operational requirements for CERS to purchase energy has resulted in several conflicts with CAISO tariff requirements and operating procedures. Current CAISO procedures require SC's to bid any unused resources that are available to deliver energy into the CAISO's real-time market approximately 2 hours before the actual operating hour. Based on schedules and any congestion management that is required, the CAISO develops an optimized stack of real-time energy bids for each hour. This occurs at 20 minutes prior to the operating hour. However, due to concerns regarding the creditworthiness of parties purchasing energy through the CAISO's real time market, CERS has been purchasing a portion of the projected energy requirements of the CAISO's real-time market on the CAISO's behalf through bilateral transactions. However, CERS required approximately 2 hours to purchase energy for an operational hour. To accommodate this, the CAISO provided CERS preliminary information in advance of when it knew its real-time needs and prices. Thus, when CERS procured real-time energy, sometimes it was at prices in excess of the price available in the

real time market and sometimes it was less. This mis-coordination has led to some inefficiencies in the market.

Further, there is the potential for CERS' energy suppliers to arbitrage between CERS contracts and the CAISO real-time market. In addition to distorting the market, the arbitraging creates operational concerns for the CAISO in maintaining grid reliability.

Finally, CERS has engaged in numerous must-take, on-peak block forward contracts where a fixed quantity of energy is delivered over several hours. However, the CERS contracts likely do not conform to the CAISO's load curve. As a result, there will be instances in which the CERS purchases deliver considerably more energy than is required, and this energy must be sold. This forces the CAISO to call on dispatchable generation to reduce or increase output to accommodate the CERS purchases. This has substantially increased work for the CAISO systems dispatch and raised some reliability concerns. Also, the need to re-dispatch other generation has contributed to the price volatility in the real-time market.

IV-F29 The operational and market issues identified above should be given careful consideration in efforts to re-design markets.

CONGESTION MANAGEMENT REFORM

In March 2000, the CAISO and various stakeholders initiated a comprehensive review and redesign of the CAISO's congestion management processes and protocols. This effort became known as the Congestion Management Reform (CMR) at the outset, although later it was similarly referred to as the Comprehensive Market Reform. The effort was initiated in response to the FERC's order in January 2000 to reform the CAISO's congestion management. In December 2000, the FERC directed the CAISO to file a proposed congestion reform plan by January 31, 2001. However, the circumstances already present in the winter of 2000 and continuing into January 2001, including the seating of the Governor's appointed Board for the CAISO, overshadowed the reform effort and so the CAISO has not filed its proposed Congestion Management strategy.

The CMR presents the CAISO's "proposed approach to the reform of congestion management as developed within a process that was never intended to address all the current problems in California's electricity market." The CMR was not revised to reflect the events of the past year. However, it does provide a useful frame of reference before embarking on another market reform effort.

The CMR identifies the CAISO's core functions as follows:

- To provide open, non-discriminatory access to transmission service
- To efficiently allocate use of the grid among potential users when transmission capacity is scarce
- To procure ancillary and local reliability services through competitive mechanisms (e.g. auctions) to the extent possible, as a means to operate the transmission grid reliably

- To operate a real-time Imbalance Energy market to balance generation and load while reliably operating the transmission grid.

Two key principles guided the CMR efforts. Those principles are

- 1) Reliable operation of the grid in real-time is absolutely crucial to the CAISO's mission of providing transmission infrastructure to support a competitive electricity market.
- 2) Forward congestion management (CM) – and more generally, the commercial framework underlying the CAISO market design – must be consistent with and must support real-time operating needs.

The second principle is referred to as the consistency principle. Principle 1 does not offer sufficient guidance on how to design forward congestion management. However, when the consistency principle is added, the design implications emerge. The CAISO's congestion management procedures should manage and price all scarce transmission resources in a consistent manner across all markets, from forward scheduling of energy flows on the grid and procurement of reliability services, up to and including real-time operation. These guiding principles led the CMR to propose Local Reliability Areas of the CAISO grid to represent the appropriate level of locational pricing refinement to ensure consistency between forward management of congestion and reliable real-time operation. In addition to the locational pricing refinement, the CMR proposes that the CAISO use a real time dispatch optimization program to simultaneously procure imbalance energy and manage congestion. The real-time pricing in the CMR proposal is to use locational price area based pricing for uninstructed deviations and locational pricing for instructed deviations to be consistent with the ten-minute market design.

In general, the CMR attempts to resolve the congestion management concerns with a locational based pricing approach and then integrate this pricing approach into the current markets and operations of the CAISO.

The CAISO is currently in the process of beginning a new market re-design initiative. It is called Market Design 2002. This effort is discussed in the context of the global recommendations in Chapter V of this report.

IV-F30 Comprehensive market reform is necessary to restore viable, transparent electricity markets in California.

The events of the summer of 2000, the collapse of the California PX, the credit problems of several entities, among other things, leave no question that changes are needed. There has been a reluctance to revisit the fundamental basis of the markets in California. There is almost a blind adherence to the principle that competitive markets are the correct way to arrive at the efficient allocation of scarce generating and transmission resources and that this will lead to reasonable prices for consumers. Based on this belief, the approach has been to solve a problem and impose that solution on top of the existing structure. In many interviews there was reference to tweaking the current system. However, it is clear now that the problems are more fundamental and that any efforts at market reform will need to be broad and visionary. Continued tweaking will not be adequate.

IV-F31 To develop a viable comprehensive market reform, it will be necessary to first revitalize an effective stakeholder process.

The CAISO cannot proceed with market reform with the stakeholders feeling like they have not been provided an opportunity to give meaningful input to the process. To do otherwise will only perpetuate the contentious, litigious environment that has surrounded the CAISO during the past year and a half. Many stakeholders have expressed to us during our audit that the stakeholder process had deteriorated to the point where it was merely an exercise in futility. They indicated that regardless of their comments the CAISO proceeded with tariff and procedure changes that accomplished the CAISO's purposes and were often not in the mutual interest of the stakeholders. In another section of this report, we offer some suggestions for re-vitalizing the stakeholder process in California.

IV-F32 There is broad agreement that CAISO would be better served if all LSE's were required to procure adequate capacity reserves.

During our interview process, we received numerous comments that the LSE's needed to have a capacity obligation that represented the load they were responsible for meeting. We are encouraged to see that the CAISO's latest reform effort called Market Design 2002 appears to include this feature for change in the market.

IV-F33 The structure of the current market design is overly complex and leads to many operational, communications, and cost issues.

The current system is far too complex – whatever new design is put in place needs to seek simplicity to the extent practical. Complexity results in real costs (for example, the elaborate billing, settlement, and related dispute processes) and an inability to develop mutual understandings and balanced solutions.

IV-R10 Develop an approach to accomplish a comprehensive market reform that includes effective input from stakeholders. (Refer to Findings IV-F29, IV-F33, IV-F31, IV-F32 and IV-F33.)

We are concerned that the current Market Design 2002 initiative may be putting the cart in front of the horse (See *Chapter V*). Before an effective market reform initiative can be implemented, it will be necessary to develop a means to include the stakeholder input in a meaningful fashion. Because of concerns for the independence of the CAISO (discussed in another section of this report), the lack of a vital stakeholder process, and the on-going litigation and complaint proceedings, the CAISO at this time lacks the credibility to lead and accomplish the changes that are necessary to restore effective, transparent markets. In our view, the best way to proceed is to first resolve the Board independence issue as suggested elsewhere in this report. Then, an effective stakeholder input process needs to be developed through which market reforms can, preferably, be developed on a bottom-up basis rather than through edits coming from top-down which are subject only to perfunctory, after-the-fact comment by stakeholders. Again, we have offered suggestions elsewhere in the report on how to accomplish this. Finally, the effort to reform the markets should be initiated. Depending on the level of animosity among the parties, consideration should be given to using a professional facilitator to move the market reform initiative effort along.

F. GENERATOR CONDUCT

IV-F34 Public perceptions have damaged the image of the generators and, therefore, the public's confidence in the market as a whole.

We noted earlier that many of the causes and outcomes of the 2000 market collapse may be debatable, but the consumer was the clear economic loser. We might also add that the generators were the clear public image losers. Whether such criticisms are valid or not, there is no denying that the generators have been assigned the “bad guy” role, and nothing has changed to improve their image in the last year. The recent suspicion that some may play a fast, loose and dangerous game with accounting rules, initiated by the Enron debacle, has further tarnished their image. It may not be fair, but everyone tends to be painted with the same brush.

And certainly the CAISO has played a role in fostering this image. The CAISO's rhetoric, addressed at the generators' “continuing campaign to maximize their profits at the expense of California ratepayers” and their “enormous windfall profits resulting from the exercise of market power,” are not meant to enhance the image of these stakeholders or the public's confidence in the California market.

We will not judge the generators other than to note that the actions of the parties demonstrate the symptoms of an immature market. There seems to be a general agreement, among generators and non-generators alike, that it is fully appropriate and indeed it would be expected for the players to maximize profits, provided that it is within the confines of the rules. But this is not always an attribute of a mature industry, where management is also extremely concerned with the long-term viability of the industry it serves, the public image of its company, and the long-term prospects for its role in the marketplace. To jeopardize the very business we depend on for the benefit of this quarter's bonus is surely not a trait of responsible management. And concern for the long-term health of the business should be especially important to those who have invested large sums (i.e., the generators).

In a mature industry, firms can make a great deal of money in times of scarcity or stress; indeed, scarcity pricing, driven by a shortage of supply and/or excess of demand, can provide the economic signal for new investment which can alleviate supply shortages over the long haul. Yet, in a mature industry, firms are also prudent enough to apply a degree of self-discipline. This line of thinking is prevalent on several levels. First, and most simply, it makes little sense to “kill the goose that lays the golden eggs” (and many would argue that is precisely what has happened in California). Second, the players, both consumers and otherwise, have a long memory. When offending firms need help in the future, they would like to get a sympathetic ear.^{vii} And finally, all firms want a positive image with the public, recognizing that long-term success and a negative public image simply do not go together.

^{vii} On this score, it was fascinating to see the complete lack of sympathy for Enron as they collapsed. It appeared that industry players, and many outside the industry, enjoyed the process, at least until the human toll on Enron's employees and shareholders became apparent.

IV-R11 Pursue additional steps at FERC to prohibit generating companies from engaging in any anticompetitive behavior. (Refer to Finding IV-F34.)

One of the major recommendations in this report seek to find ways to bring the industry back together again, since that is the only way a viable market can be reestablished. The relationships between the CAISO and the generators are one of the more important elements of this formula. With this specific recommendation, we suggest that FERC should use all its powers to prohibit generating companies from engaging in any anticompetitive behavior.

G. PUBLIC POWER ISSUES

IV-F35 The public power sector, which represents a substantial amount of California supply, load, and transmission, should be an integral part of any industry design that purports to optimize California's resources.

As in most regions of the U.S., public power plays a major role in California. Public power utilities and agencies represent a large amount of electric resources in California and are important elements in the system.

In accordance with options given in AB 1890, most of the California public power entities declined to turn over control of their transmission assets to the CAISO. Accordingly, the CAISO grid encompasses only about 70% of California's transmission resources. In past years, extensive discussions have taken place to accommodate public power as a part of the CAISO grid, but all have failed. Varying reasons for this failure have been offered, including private use restrictions, local control issues, turf and philosophical issues, load curtailment policies, and compensation for transmission. On balance, however, it appears that the economic incentive for broad municipal participation in the CAISO has simply not been there.

It will be noted that other jurisdictions included within the western markets enjoy strong public power participation in their regional activities. This, combined with positive feedback from public power people, lends encouragement that a California solution can be found that will adequately compensate the municipals, protect their customers, and improve the overall effectiveness of California's electric system.

In the meantime, the gulf between the CAISO and the municipals should be considered a serious flaw in the California system, leading to inefficiencies that are manifest in the following ways:

- The CAISO grid is fragmented. With only 70% of the state's transmission resources, the CAISO will obviously be less efficient and effective.

- The municipal's existing transmission contracts (ETC's) have proven to be a real problem for the CAISO in that these contracts include scheduling flexibilities that are inconsistent with the CAISO's operating practices (causing so-called "phantom congestion").
- The CAISO's ability to plan and manage future transmission expansion is seriously debilitated. California's most important expansion project, the Path 15 upgrade, is being implemented outside the scope of the CAISO.
- At least one major municipal (SMUD) is threatening to become its own control area, further fragmenting the overall system.

We have, therefore, concluded that the inability of the CAISO and public power to come together represents a problem that needs to be addressed.

IV-R12 Re-initiate efforts in future market design to bring public power into the fold of an integrated California solution. (Refer to Finding IV-F35.)

We listed above numerous problems caused by a fragmented grid in California. We also noted that public power, provided its customers were protected and it did not suffer operating or economic penalties, would probably be agreeable to participation. As improvements are sought to today's structure, it, therefore, makes sense to solve the public power issue as well.

V. RESOLUTION PROCESS

A. STATUS OF THE INDUSTRY

It is no secret that the functioning of the electric industry in California is seriously flawed. In the absence of extensive repair, including reestablishment of the participants' confidence in the market, continuing negative consequences are likely. In this context, we examine the industry broadly and extend this conclusion to all of the key elements of the business, including factors such as:

- The rules governing the business.
- The quality of the players in terms of financial strength, credibility, and public trust.
- The processes for interaction among the participants.
- The processes for regulatory oversight and, where appropriate, direction.
- The financial viability of the overall system; i.e., can it continue to function in good times and bad?
- The cohesiveness of the industry; i.e., is there sufficient leadership and/or cooperation to permit a coordinated solution to problems?
- The long-term viability of the electric system; i.e., whether the mechanisms now in place assure reliable operations and sufficient future investment in plant, particularly generating and transmission facilities.

The current industry in California seems to fall short in most, and perhaps all, of the above categories. Although some industry participants and observers might contest this conclusion in one or two categories, our discussions with an extensive cross section of industry, government, and regulatory parties suggest that the conclusion of a broken system is indeed widely held. Most feel that the degree of damage is sufficiently severe that only a massive overhaul will be appropriate.^{viii}

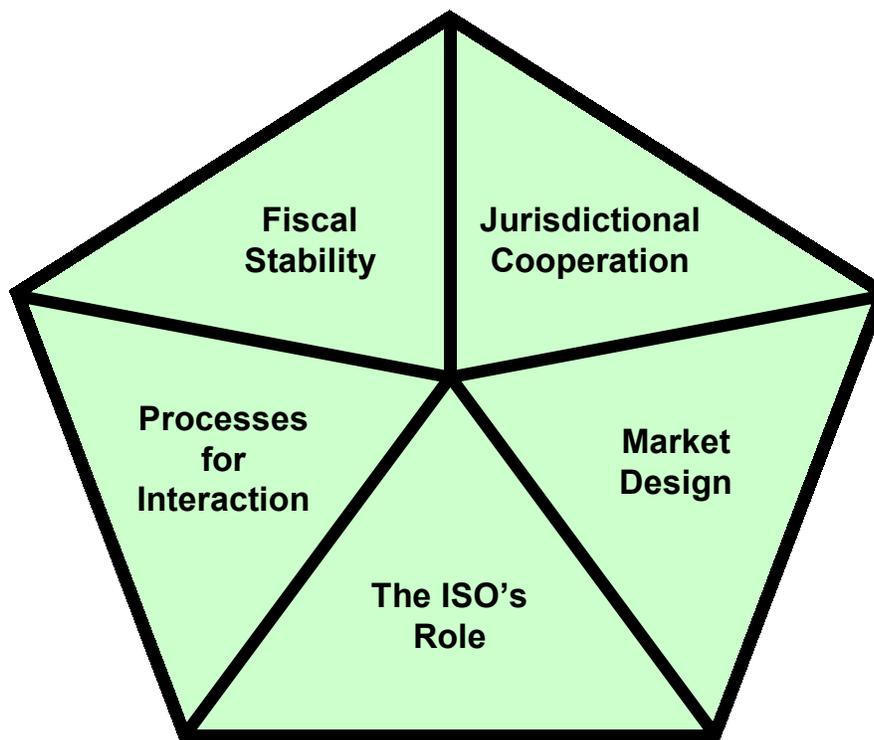
There is a strong basis for the consensus that today's system is broken and that the repair challenge is immense. We have categorized the reasons in five broad areas, as illustrated in *Exhibit V-1* and discussed below. These elements may also provide a roadmap towards a solution

- Fiscal stability
- Jurisdictional cooperation
- Processes for interaction
- Market design
- The CAISO's Role

^{viii} In numerous interviews, we asked if the problems were severe enough to "start over." The overwhelming consensus is that sweeping change was essential.

Operational Audit of California ISO

Exhibit V-1 Elements of the Solution

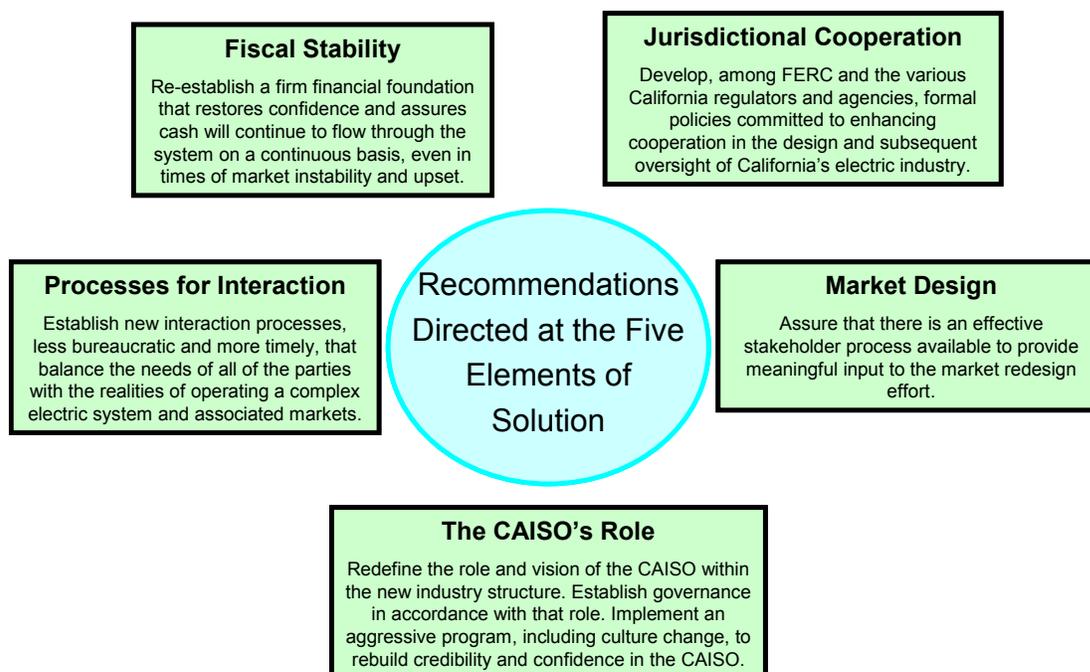


We will examine each of these five elements in Sections B through F. The recommendations discussed in these sections are summarized in *Exhibit V-2*.

We will then offer a potential process for resolution in Section G and conclude with a review of potential future threats in Section H.

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Exhibit V- 2 Global Recommendations



B. FISCAL STABILITY

In the present industry design and all future scenarios, the financial health of the participants, and especially the distribution companies, is paramount to the stability and success of the industry. It will not be possible to build a viable industry structure until the financial foundation is rebuilt and confidence in the system restored. First and foremost, the current financial status of the California industry precludes an effective market. This can be seen on many fronts. The bankrupt or weakened IOU's rob the overall system of a strong financial foundation. We have seen the consequences when the IOU's cannot recover their costs from the end user. Also, when healthy, the utilities are able to provide a cushion for market perturbations, but today's weakened balance sheets call that ability into question for the future. It is difficult to build and maintain a robust market when the most important link in the chain is fractured.

Similarly, the large payments which the State of California has been compelled to make have weakened its financial capabilities. Although measures are in place to recover these costs from consumers, the memory of what can happen in a chaotic market, and how fast the money can disappear, is sure to influence any future decisions to prop up the market. Moreover, notwithstanding the willingness of the State to intervene in future crises, its

financial abilities to engage in such an intervention have surely been compromised by the debt burdens resulting from the last crisis.

As a result of the FERC's November 7, 2001 order, the State of California through the Department of Water Resources has begun to make regular payments to ISO market participants. The State is making regular payments for the past due amounts for the months of February through August, 2001, and is making current payments for the months of September, 2001 forward. Nonetheless, some market participants continue to wonder when and if they will be paid the large sums still outstanding for the months preceding the assumption by the State of energy purchases on behalf of Pacific Gas and Electric Company and Southern California Edison Company. Additionally, the recent bankruptcy of Enron, and the resulting financial pressures on both the credit ratings and balance sheets of some of the ISO's biggest market participants, has forced even the most optimistic observer to question the fiscal quality of the electricity business.^{ix}

The crisis of confidence caused by these financial factors will not easily disappear. The remedies that are already underway^x may lead to a functioning market, but the memory of what can happen in a serious market perturbation will not be lost by the prudent business person. This concern is likely to materialize in less investment, diminished participation in the market, higher risk premiums in all transactions, lower overall efficiency of the market, and higher costs to consumers. It should, therefore, be obvious that getting the players back on a sound footing is not enough – the confidence that the system will continue to function must also be reestablished.

V-R1 Re-establish a firm fiscal financial foundation that restores confidence and assures cash will continue to flow through the system on a continuous basis even in times of market instability and upset.

This task is likely to be the most challenging within the framework of solution that we propose. It will entail, at least, effective rate treatment for the IOU's, clarification and solidification of the CDWR role, and reform of the CAISO's processes to assure creditworthy players.

C. JURISDICTIONAL COOPERATION

There are many federal and state organizations that have an important and legitimate role in defining the future of the California and western energy markets. In the wake of AB 1890, and subsequently the catastrophe of 2000, the number of participating regulatory

^{ix} The severe drop in the stock prices of firms such as Calpine, Mirant and Dynegy, and recent announcements by these and other generators that they will be substantially scaling back investment in new power plant projects are ample testimony to the degree of collateral damage.

^x Adequate rate protection for the IOU's, resolution of the PG&E bankruptcy, CERS payments that restarted in December, a stronger focus on creditworthiness by all players, etc.

and/or governmental organizations has increased. Today, important players with a potential hand in solutions include:

- FERC
- The Governor of California
- California PUC
- California Energy Commission
- California Electricity Oversight Board (EOB)
- California Power Authority
- California Department of Water Resources (and CERS)
- CAISO
- The California Legislature (both Houses)

Realistically, none of these entities has the jurisdiction, resources, and influence to provide meaningful solutions on their own. Only an integrated approach can provide the broad solutions required. Such an approach is now lacking but is urgently needed.

Although many government and/or regulatory leaders are expending effort to correct the California industry's problems, there is no coordinated effort – and only a broad-based integrated response can succeed. The present day responses to the industry's problems are fragmented. The responding organizations, with their limited jurisdictions, simply cannot apply the holistic approach that is necessary to address the systemic issues in a coordinated, integrated fashion. As a result, for example, the CAISO is forced into a mode of piecemeal solutions that are generally seen as ineffective “band-aids” by the industry.^{xi}

Although each of the various regulators and government entities can agree on the overall objectives, their interpretations of what is best for California and its consumers can vary greatly. Also, no organization is in an optimal position to unify all the parties and lead an integrated approach. It is these jurisdictional concerns, compounded by difficult political issues, that lead many observers to believe that a broad-based integrated response as suggested in this report is simply not possible in the current environment.

We believe a more optimistic outlook is appropriate. Supporting a positive resolution is our sense that many parties, including some of the most outspoken and influential, are getting tired. Even the most aggressive players seem to believe that the pendulum has swung too far and that the public good is not being served. Perhaps the time is right for compromise, and bringing the parties together now might produce a solution that would not have been deemed possible just a few months ago.

The search for a process in which the various authorities and industry participants can come together is complicated. Although FERC may not be positioned perfectly (nor do they face an easy task), there is general agreement that FERC is the logical choice for this role. Consistent with the CAISO's loss of credibility as an independent organization, there was

^{xi} Actually, the constant stream of such “solutions” is often viewed as counter-productive in that it further complicates the processes and invariably leads to further confusion and conflict.

consistent feedback (from outside the CAISO) that the CAISO cannot take a leadership position in fixing the system.

In suggesting a leadership role for FERC in bringing the parties together, we stress that this process is not likely to succeed through fiat. FERC can and must provide firm direction in its field of legal jurisdiction, as must the other regulatory bodies; but the challenge of bringing the parties together, and facilitating the jurisdictional cooperation we envision, is more a management challenge - rather than purely a legal nor regulatory challenge.

We note that FERC has recently adopted a more flexible approach in their policy decisions, particularly those relating to RTO's. The staff's recent initiative to improve communications among California players received high marks from most participants. Also, FERC seems increasingly sensitive to the legitimate concerns held by the State of California. These ingredients can help set the stage for a more meaningful role for FERC in bringing the parties together.

In our view, the CPUC must also play a meaningful role in establishing jurisdictional cooperation. In our interviews with CPUC personnel, a broad range of inputs were provided by the staff. These include: market re-design, outage monitoring, creditworthiness issues, and other relevant topics. The CPUC will certainly play a crucial role in re-establishing the financial stability of the IOU's. In addition, the CPUC will have continued jurisdiction over transmission siting and demand response mechanisms.

V-R2 Develop, among FERC and the various California regulators and agencies, formal policies committed to enhancing cooperation in the design and subsequent oversight of California's electric industry.

This recommendation seeks to establish a long-term policy for and commitment to cooperation. We note, for example, that both FERC and the CPUC have important long-term roles to play. Similarly, other agencies of the California government, including the legislature, will have a legitimate and significant impact on the industry. There is no choice for these groups but to work together, and not just to define a new structure - they also must establish a viable long-term working relationship.

In this regard, a first priority needs to be a mutual understanding and respect for the roles of the parties. Although various groups may disagree, we suggest that these roles are far from clear to the industry's participants, especially the roles of the various state agencies. As a first step, perhaps the state will wish to reexamine these organizations and clarify their intended long-term roles.

D. PROCESSES FOR INTERACTION

We have discussed the difficult nature of interactions among the industry participants in numerous places in this report. In the context of this particular "root cause," an element of solution, we will examine the issue as it relates to interactions among the CAISO, FERC, and stakeholders. In general, these relationships often seem more conducive to the industry of the 60's and 70's than to today's "deregulated" environment.

The necessity to maintain reliable electric system operation is a responsibility that everyone in the business takes very seriously. Although the players have changed over the years, and merchant functions have grown in importance, the culture of public service vis-à-vis “keeping the lights on” has remained strong. As a result, communications and relationships among operating people are generally good, but the processes for, and effectiveness of, interactions deteriorate sharply as we move away from the front lines.

Our observations suggest that the *business* of generating electricity, operating a reliable electric system, and maintaining a market for the purchase and sale of power seems to have been transformed into an elaborate *legal* process in California, adding considerable inefficiencies and threatening operating reliability. We observed this first-hand as virtually no activities of substance seem to occur without the watchful eyes of attorneys, including what once were rather simple day-to-day operating decisions. Although some conflict will exist in any system, an “all conflict, all the time” environment serves no one.

The relationships between the CAISO and its stakeholders represent a serious impediment to solving the industry’s problems. There is a great deal of concern on the part of stakeholders that the CAISO does not properly solicit and consider their input – “they seem incapable of listening.” On the other hand, the CAISO believes they try to accommodate stakeholder input but invariably face litigation anyhow despite their best efforts, implying that their efforts are often frustrating and a waste of time. Perhaps both points have some validity, but one thing is certain: the process of interaction among the players is contentious, weak, and ineffective.

The standard administrative processes at FERC have been criticized as formal, bureaucratic, and legalistic with simple questions or clarifications taking months and thousands of pages of filings to resolve.^{xii} Although FERC’s processes are designed to ensure due process, some have questioned the appropriateness of many of the rules in today’s fast-paced markets.

Generally, regulators have struggled to redefine their role in the more competitive markets. Recently, FERC has made a careful assessment of its responsibilities in this more competitive environment and has made some organizational changes and resource commitments to recognize its changing role.

But constraints persist. Ex-parte concerns take precedence over many of the communications with the entities that deal with FERC. Because ISO’s and RTO’s are regulated entities, they are subject to the same rules as all other jurisdictional entities. Yet, the ISO’s and RTO’s are really unique in the role they play in the evolving energy markets. In fact, FERC has acknowledged their significant role in promoting competitive, efficient,

^{xii} The recent controversies relating to the “must offer” issue is one example. FERC’s order of June 19, 2001, was interpreted in a specific manner by the ISO and detailed in the ISO’s compliance filing on July 10, 2001. Following conflict and controversy and a burdensome legal process, FERC clarified its intentions regarding the Must-Offer Obligation six months later. But in another case, FERC attempted to streamline these processes by issuing an order on December 8, 2000 in less than 24 hours to keep the lights on. However, FERC’s expedited handling of that case also received criticism on the grounds that the process had been denied.

transparent electricity markets and has even worked hard to encourage the development of RTO's. Perhaps the desired end result could be more easily and effectively accomplished if ISO's and RTO's were subject to a different form of regulation that functioned more as a partnership to achieve mutual goals. We realize this could not be accomplished without a significant resource commitment by FERC, but it may be the most efficient means to accomplish FERC's objectives regarding the CAISO and more generally RTO's.

V-R3 Establish new interaction processes, less bureaucratic and more timely, that balance the needs of all of the parties with the realities of operating a complex electric system and associated markets.

E. CAISO ROLE

In order for the CAISO to regain its role, a number of steps must be taken. *Chapter III* of the report deals with many of these issues, including:

- Credibility – The CAISO must make significant strides to regain its credibility with its stakeholders. This means addressing issues such as independence and communications.
- Vision – It must establish a clear vision for the future; one that addresses the appropriate role for an ISO.
- Stakeholder process – Along with an independent Board of Governors, the views of stakeholders must be included in all dialogue.
- Transparency – The CAISO must communicate in a manner that makes its decisions and positions transparent to all stakeholders.

V-R4 Redefine the role and vision of the CAISO within the new industry structure. Establish governance in accordance with that role. Implement an aggressive program, including culture change, to rebuild credibility and confidence in the CAISO.

This global recommendation incorporates many findings and recommendations from *Chapter III*.

F. MARKET DESIGN

At the time of the writing of this report, the CAISO has initiated another market reform effort referred to as Market Design 2002. The mission of this project “is to develop, obtain Board approval for, and file at FERC a program of CAISO market design changes needed to ensure the CAISO's effective and sustainable performance of its core functions, position the CAISO to better serve the needs of all its customers, and support efficient performance of the electricity markets for the benefit of all California consumers.”

Market Design 2002 will address the deficiencies that led to the 2000-2001 electricity crisis. The schedule for Market Design 2002 is ambitious. It calls for a final comprehensive design

document by January 28 and the submittal of a Phase 1 filing to FERC by March 2002 and a Phase 2 filing by May 2002.

There is broad support for the notion that market redesign is a high priority problem in California and is deserving of immediate attention. The efforts of the CAISO are, therefore, to be applauded, yet the success of the effort faces significant challenges. Consider the dysfunctional processes now in place for stakeholder input; the lack of trust and credibility in the CAISO by its stakeholders; continued disagreement on the fundamental principles of market design; the overwhelming complexity of the current design and the perception that any changes are merely band-aids that increase complexity even more; and legitimate questions on the roles of various players. These challenges to the successful implementation of a new market design should not be underestimated

It is for this reason that we suggest that the market redesign, although of high priority, may nonetheless be somewhat premature. A stronger foundation needs to be in place before the sweeping changes needed in the design of the market can be effectively developed and implemented. This foundation must include the restoration of the CAISO's credibility, a renewed stakeholder process and agreement on fundamental design principles. To proceed with the proposed aggressive schedule without the proper foundation has a strong potential for stakeholders to feel as if the process has been forced on them. Their likely recourse will be a legal reaction, further delay, and another setback to re-establishing an effective stakeholder process and CAISO credibility. To the extent the aggressive schedule is driven by regulatory deadlines, reasonable extensions should be pursued which permit a reasonable stakeholder process.

V-R5 Assure that there is an effective stakeholder process available to provide meaningful input to the market re-design effort.

G. A POTENTIAL PROCESS FOR RESOLUTION

We have discussed the five elements of the solution in Sections B through F, which can also be characterized as root causes. Each of the five represents a serious deficiency, any one of which can cause the overall system to fail. In fact, each played a significant role in the 2000 collapse of the system.

It is interesting to note that the elements interact, and this forms the basis for our conclusion that only an integrated approach and a coordinated solution can succeed. Can fiscal stability be returned to the market without jurisdictional cooperation? Can an effective market design be derived in the absence of effective interactions and jurisdictional cooperation? Can any design work without an "independent" system operator? Can the interaction processes be repaired without a clearly defined and accepted role for the CAISO? These questions represent but a few of the permutations, but they illustrate the importance of seeking an integrated solution.

This interdependence issue is perhaps challenged by the conventional wisdom that "market design" is the problem and an effective redesign is the first and foremost priority. Although we received this message from many players whose judgment commands respect, we

nonetheless must disagree. This narrow view avoids dealing with the other interrelated aspects of the problem, most of which flow from human and institutional interactions. Only an holistic approach that effectively deals with all of these compelling issues will lead to the necessary solutions.

A SUGGESTED PROCESS

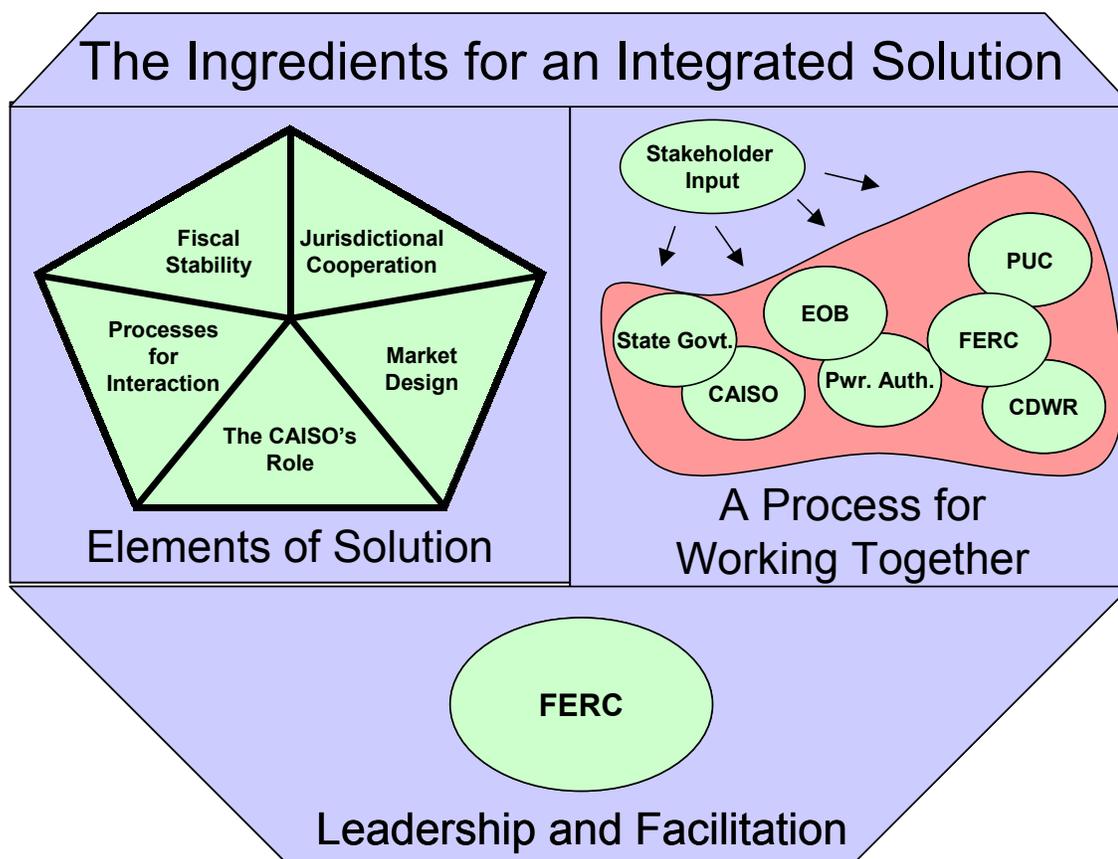
In seeking a pathway to solution, we envision three key ingredients

- a. a focus on the five elements of solution (as discussed above), which center around the root causes of the key problems
- b. a process for working together
- c. leadership, perhaps more correctly characterized as facilitation, to make it all happen.

This approach is illustrated in *Exhibit V-3*.

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Exhibit V- 3 Integrated Solution



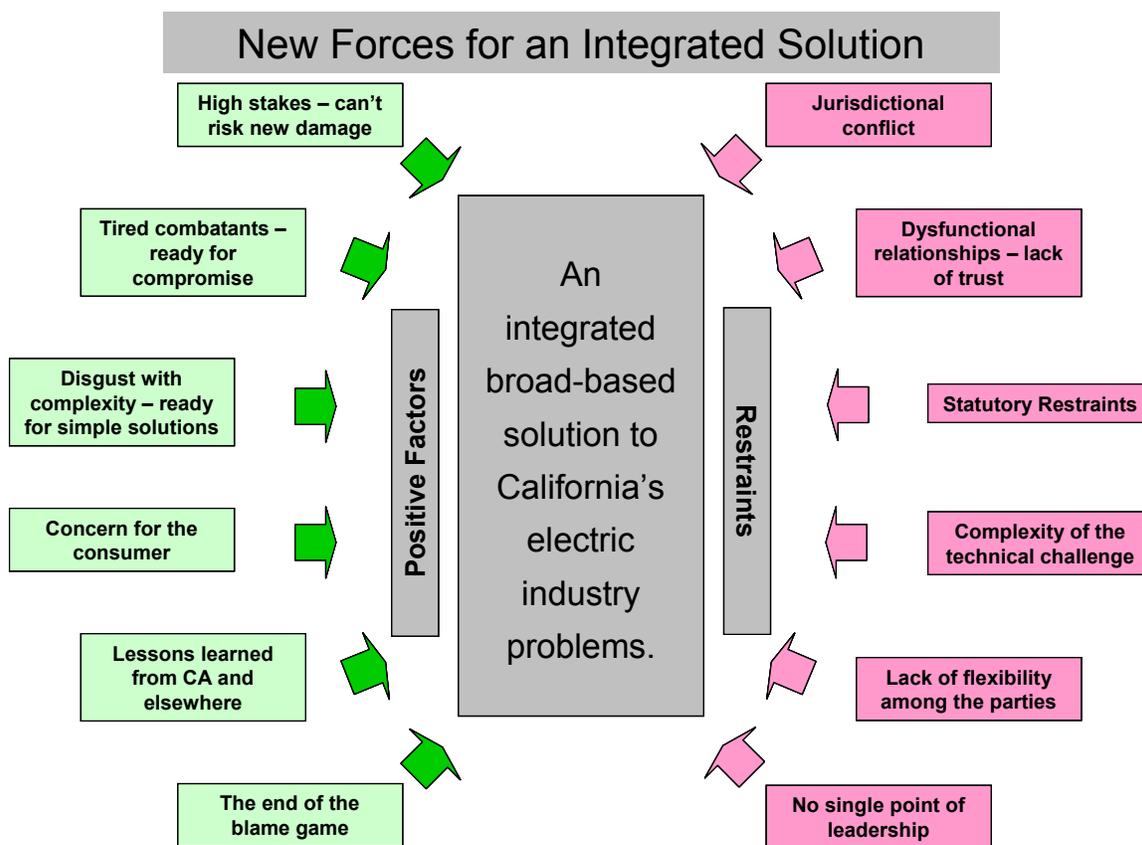
Realistically, we understand that some stakeholders may read no further, attributing these conclusions to naiveté and a lack of understanding of the current relationships. They may argue that the relationships and conflicting objectives among government, regulatory and industry players are such that any integrated approach is doomed from the start. We counter that there is indeed a basis for industry cooperation, and that the parties increasingly have common interests. We suggest that the process of facilitation begin with those common objectives and understandings. For example, the following may be considered as motivation and encouragement for working together:

- The stakes are too high to allow partisanship and turf battles to rule, and the parties increasingly accept and respect that point of view. The irreparable damage already done to California's economy cannot be allowed to happen again. We believe that the leadership of the various groups are ready to cooperate.
- As discussed earlier, we sense that many of the combatants are tiring – the time for compromise may be at hand.
- The complexity of the current structure defies all but the most astute observers. There is general agreement that any changes that simplify matters can receive broad support.
- There is mutual understanding that the consumer has been the big loser and that any future fixes must do a far better job of protecting the consumer's interests. All parties seem to understand this basic tenet, thereby mitigating (although not eliminating) some of the conflicting objectives.
- The "state of the art" has grown in past years, providing an improved basis for decision-making. Although perfect solutions have not been defined, there is a much greater body of knowledge on what works and what doesn't. This will contribute to a narrowing of differences among the parties.
- Most parties seem to accept their roles, at least privately, in the debacle of 2000. They recognize that, with the benefit of hindsight, they might have done some things differently. There is an increasing awareness that there is plenty of blame to go around, and there is little more to gain from the blame game.

We believe that these realities all represent some degree of common ground and, therefore, could be a foundation for progress. They represent a set of forcing factors that tend to counteract the existing constraints to an integrated approach. In *Exhibit V-4* we seek to illustrate that there are indeed forces at work that offer hope for what many believe has been a hopeless situation. We see reason for optimism and now look to the three ingredients (the five elements, the process for working together, and leadership/facilitation by FERC) to make it happen.

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Exhibit V- 4 Integrated Solution



Leadership and Facilitation

FERC should establish the management commitment, supporting policies, and internal skills to assume the challenging role of facilitator within the context of this plan for an integrated solution to the California challenges.

We concluded that FERC is best positioned to facilitate an industry-wide cooperative approach to restructuring, and noted that there is broad support among the industry for this conclusion. This is a new and tricky role for FERC and one which requires a serious commitment, respect for California's internal needs, a spirit of compromise, and skilled management of the ensuing relationships.

We stress again that the leadership role here is more appropriately characterized as facilitation. A cooperative process is needed, and it is our belief that command and control will not work. The level of skill required by FERC at all levels to manage this role will be substantial, with success by no means assured.

Process for Working Together

In order to establish a process for working together, a number of steps might be followed. We suggest that a process be established, facilitated by FERC, that provides for a coordinated approach to industry restructuring and a continuing oversight and regulation via the meaningful participation and cooperation of all other relevant government and regulatory organizations.

The process we envision involves all key government and regulatory agencies, supported by industry advisors, working to develop solutions to California's electric structure challenges. It will be important for the process to allow input from the industry players. Needless to say, a process involving government and regulators, without significant and meaningful industry input, will likely be ineffective and will surely lack industry support. The efforts to collaborate among jurisdictional interests will need to be open to, and responsive to, the opinions of stakeholders.

Finally, the critical assignment for this newly cooperative group will be the five elements of solution.

Timing and Sequencing

Although we have stressed the need to manage the five elements on an integrated basis, this does not imply that they can be solved simultaneously. A simultaneous approach is impractical on two counts: first, certain of the elements will require a considerable amount of time, measured in years; second, some elements will take on a higher priority, being essential to establishing some level of stability while the longer-term solutions are pursued.

We offer here our thoughts on timing and sequencing, but stress that such planning should be a first order of business under the process described above.

In our view, the first priority should be to re-establish the independence and credibility of the CAISO. This can be accomplished by creating a Stakeholder Advisory Committee and establishing an election process for a new Board selected from a group of independent candidates. Our suggested approach is laid out in more detail in *Chapter III*.

At the same time that the Board changes are being implemented, the Jurisdictional Cooperation issues, which are an equally important priority for resolution, could proceed. Without agreement on these issues, all subsequent discussions will be constrained.

Processes for Interaction and the CAISO's Role might also proceed in parallel as the next priority. Both of these will also benefit from the early results from other tasks. We do not suggest a substantial lag - these activities should also begin as soon as possible.

Market Design and Fiscal Stability might then proceed in parallel as urgent initial priorities - the former because of its complexity and its overriding importance in the eyes of the

industry, and the latter because of its critical importance and likely long timeframe for solution.^{xiii}

H. FUTURE THREATS

Although the public perception is that the industry has returned to normalcy, we still see potential threats in the future unless major industry structure issues are resolved. The industry, the State, and the consumer, financially challenged by the problems of the past, will not have the same ability to withstand any future market breakdown. False complacency must not be permitted.

Can a repeat of the past market collapse occur? Our many discussions with industry participants are somewhat optimistic in this regard. Although there is some degree of skepticism, the probability that adequate retail rates will be in place, the large amount of pending new capacity, the substantial decline in prices, and the general lessons learned from the 2000 meltdown seem to have convinced many observers that there is reason for optimism. That optimism may be misplaced, however, based on the following concerns:

- The crisis of confidence is sure to reduce the amount of originally intended investment in new generation.
- The fallout from the Enron bankruptcy, in which some of the major players now seem committed to a much more conservative investment policy, may also slow new construction.
- The economic slump that has seriously retarded electric demand is (hopefully) likely to give way to new economic growth, and a rise in demand, soon.
- Oil and gas prices, depressed by the weak economy and the recent inability of the cartel to limit supply, are likely to increase in the next few years. To the extent that unrest in the Mid-East continues or escalates, the potential increases may be substantial.
- The financial health of many of the players, including the IOU's, the State, and some of the large generators is much weaker today than before the last market excursion. Although a new market upset may be less severe, the industry's ability to accommodate it may be far worse.

This potential for future instability also relates to how much additional burden the electric consumers, large and small, will (can) accept. Although AB 1890 produced some immediate near-term benefits, it also involved a "mortgage payment" for the alleviation of the IOUs' stranded costs. Also, the costs associated with the high wholesale electricity prices in 2000, many of which are still unpaid to the generators, will represent another substantial "mortgage payment" for the consumer. And finally, the costs associated with the long-term contracts entered into by CDWR, which may have been competitively priced at the time but are now well above market, are yet another long-term burden on the California consumer.

^{xiii} It will be recalled that the challenge here is to rebuild the financial foundation and restore confidence in the system, tasks that will surely take a great deal of time.

This all adds to a situation in which similar future problems must be avoided at all costs, raising the stakes and highlighting the urgency for immediate repair of the industry's structure.

VI. GLOSSARY

Glossary Term	Glossary Definition
Ancillary Services (A/S)	The services other than scheduled energy which are required to maintain system reliability and meet WSCC/NERC operating criteria. Such services include: Spinning, Non-Spinning, Replacement reserves, Regulation (AGC), voltage control, and Black Start capability.
Audit Committee	A Committee of the ISO Governing Board appointed pursuant to Article IV, Section 5 of the ISO bylaws to (1) review the ISO's annual independent audit, (2) report to the ISO Governing Board on such audit, and (3) to monitor compliance with the ISO Codes of Conduct.
Available Transfer Capacity (ATC)	For a given transmission path, the capacity rating in MW of the path established consistent with ISO and WSCC transmission capacity rating guidelines, less any reserved uses applicable to the path.
Capacity	The installed capability of a Generating Unit.
Congestion	A condition that occurs when there is insufficient Available Transfer Capacity to implement all Preferred Schedules simultaneously or, in Real Time, to serve all Generation and Demand. "Congested" shall be construed accordingly.
Congestion Management	The alleviation of Congestion in accordance with applicable ISO Protocols and Good Utility Practice.
Control Area	An electrical region that regulates its generation in order to balance load and maintain planned interchange schedules with other control areas and assists in controlling the frequency of the interconnected system in accordance with WSCC and NERC criteria.
Day-Ahead Market	The forward market for the supply of electrical power at least 24 hours before delivery to buyers and End-Use Customers.
Day-Ahead Schedule	A schedule prepared by an SC or the ISO before the beginning of a Trading Day indicating the levels of Generation and Demand scheduled for each Settlement Period of that Trading Day.
Demand	The rate expressed in kilowatts at which electric energy is delivered to or by a system or part of a bid of a system at a given instant or averaged over a designated interval of time.
Demand Forecast	An estimate of Demand over a designated period of time.

End-User or End-Use Customer	A purchaser of electric power who purchases such power to satisfy a Load directly connected to the ISO controlled Grid or to a Distribution System and who does not resell the power.
Existing Transmission Contracts (ETC)	The contracts which grant transmission service rights in existence on the ISO Operations Date (including any contracts entered into pursuant to such contracts) as may be amended in accordance with their terms or by agreement between the parties thereto from time to time. Owners of such contracts either are exempt or receive reductions from various settlement charges.
Final Settlements Statement	The restatement or recalculation of the Preliminary Settlements Statement by the ISO or the PX, as the case may be, following the issue of that Preliminary Settlements Statement.
Good Utility Practice	Any of the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period or any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision is made, could have been expected to accomplish the desired results at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region.
Governing Board	The Board of Governors established to govern the affairs of the ISO.
Grid Management Charge (GMC)	An approved FERC tariff which recovers the ISO's on-going operating and management costs.
Hour-Ahead Market	The electric power futures market that is established 1-hour before delivery to End-Use Customers.
Hourly Ex Post Price	The price charged or paid to SC's responsible for Participating Generators and Participating Buyers for imbalance energy in each Zone. The price will vary between Zones if Congestion is present. The Hourly Ex Post Price is the Energy weighted average of the 6 ten-minute Ex Post Prices in each Zone during each Settlement Period.
Import Deviation	The difference between the scheduled quantities submitted by an SC and the actual meter quantity delivered during Real-Time operations.
Interchange Inadvertent Energy	The difference between the scheduled quantities submitted by an SC and the actual meter quantity delivered during Real-Time at an Intertie point.
ISO Control Area	The electrical region that regulates its generation in order to balance load and maintain planned interchange schedules with

	other control areas and assists in controlling the frequency of the interconnected system in accordance with WSCC and NERC criteria.
ISO Tariff	A document filed with the appropriate regulatory authority specifying lawful rates, charges, rules, and conditions under which the ISO provides services to parties. A tariff typically includes rates schedules, list of contracts, rules, and sample forms.
Load	An end-use device or an End-Use Customer that receives power from the electric system. Load should not be confused with Demand, which is the measure of power that a Load receives or requires.
Market Clearing Price (MCP)	The price at a location at which supply equals demand – all demand at or above this price has been satisfied, and all supply at or below this price has been purchased.
Market Participant	An entity, including an SC, who participates in the Energy marketplace through the buying, selling, transmission, or distribution of Energy or A/S into, out of, or through the ISO-controlled Grid. Also includes SC's, TO's, and RMR unit Owners.
Operating Reserve	The combination of Spinning and Non-Spinning reserve required to meet SWCC and NERC requirements for reliable operation of the Grid.
Out-of-Market (OOM) Purchase	Procuring resources for which there is no market bid.
Out-of-Sequence (OOS) Purchase	Procuring resources not in economic order as reflected in the Market Commodities Sheet or BEEP stack.
Preliminary Settlements Statement	The initial statement issued by the ISO or the PX, as the case may be, of the calculation of the Settlements and allocation of the charges with respect to all Settlement Periods covered by the period to which it relates.
Protocols	The rules, protocols, procedures, and standards attached to the ISO Tariff as Appendix L, promulgated by the ISO (as amended from time to time) to be complied with by the ISO SC's, Participating TO's and all other market participants in relation to the operation of the ISO-controlled Grid and the participation in the markets for Energy and A/S in accordance with the ISO Tariff.
Real Time Market	The competitive generation market-controlled and coordinated by the ISO for arranging Real Time Imbalance Energy.
Reliability Criteria	Principals used to design, plan, operate, and assess the actual or projected reliability of an electric system.
Reliability Must-Run Unit	A Generating Unit which is the subject of the contract between the Generator and the ISO under which, in return for certain payments,

	Generator and the ISO under which, in return for certain payments, the ISO is entitled to call upon the owner to run the unit when required by the ISO for the purposes of the reliable operation of the ISO-controlled Grid.
Replacement Reserve	Generating capacity that is dedicated to the ISO, capable of starting up if not already operating, being synchronized to the ISO-controlled Grid, and ramping to a specified Load point within a sixty (60) minute period, the output of which can be continuously maintained for a two hour period. Also, Curtailable Demand that is capable of being curtailed within sixty minutes and that can remain curtailed for two hours.
Revised Schedule	A schedule submitted by a SC to the ISO following receipt of the ISO's Suggested Adjusted Schedule.
Scheduling Coordinator (SC)	An entity authorized to submit to the ISO a balanced Generation or Demand schedule on behalf of one or more Generators, and one or more End-User Customers.
Settlement	A financial settlement process (billing and payment) for products and services purchased and sold; each settlement will involve a price and a quantity.
Settlement Period	For all ISO and PX transactions the period beginning at the start of the hour and ending at the end of the hour. There are twenty-four settlement periods in each Trading Day, with the exception of a Trading Day in which there is a change to or from Daylight Savings Time.
Settlement Processes	Activities and business processes encompassing the accounting, billing, and settlement for energy, capacity, transmission, and ancillary service transactions entered into by market participants.
Settlements Statement	Either or both of a Preliminary Settlements Statement or Final Settlements Statement.
Spinning Reserve	The portion of unloaded synchronized generating capacity, controlled by the ISO, which is capable of being loaded in 10 minutes, and which is capable of running for at least two hours.
Transmission Control Agreement (TCA)	The agreement between the ISO and Participating TO's establishing the terms and conditions under which TO's will become participating TO's and how the ISO and each Participating TO will discharge their respective duties and responsibilities as may be modified from time to time.
Transmission Owner (TO)	An entity owning transmission facilities or having firm contractual rights to use transmission facilities.
Utility Distribution Company	A distribution wires business and a regulated retailer who serves

(UDC)	End-Use Customers.
Unaccounted for Energy (UFE)	The difference in Energy; for each UDC Service Area and Settlement Period between the net Energy delivered into the UDC Service Area, adjusted for UDC Service Area Transmission Losses (calculated in accordance with Section 7.4.3), and the total metered Demand within the UDC Service Area adjusted for distribution losses using Distribution System loss factors approved by the Local Regulatory Authority. This difference is attributable to meter measurement errors, power flow modeling errors, energy theft, statistical Load profile errors, and distribution loss deviations.

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