**BEFORE THE**
**PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

| | |
|---|---|
| Order Instituting Rulemaking to Establish Policies and Cost Recovery Mechanisms for Generation Procurement and Renewable Resource Development | R.01-10-024 |

# OPENING COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION ON THE RESOURCE ADEQUACY WORKSHOPS

Anthony J. Ivancovich
Gene L. Waas
California Independent System Operator
151 Blue Ravine Road
Folsom, CA 95630
Telephone: 916-608-7135
Facsimile: 916-608-7296

Attorneys for the
**California Independent System Operator**

Dated: March 4, 2004

**BEFORE THE**
**PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

| | |
|---|---|
| Order Instituting Rulemaking to Establish Policies and Cost Recovery Mechanisms for Generation Procurement and Renewable Resource Development | R.01-10-024 |

# OPENING COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION ON THE RESOURCE ADEQUACY WORKSHOPS

## I. INTRODUCTION

In accordance with the Assigned Administrative Law Judge's (ALJ) Ruling On The Scope And Schedule Of Resource Adequacy Workshops ("Workshops Ruling"), the California Independent System Operator Corporation ("ISO") respectfully submits its Opening Comments[1] on the Resource Adequacy Workshops. The ISO appreciates the opportunity to submit comments on the issues being considered in the resource adequacy workshops and looks forward to discussing these issues and working closely with the parties to resolve such issues.

The CPUC's Interim Order in this proceeding began to establish the foundation of a viable and sustainable plan for ensuring long-term reliability in the State. In particular, the CPUC's decision reaffirmed a load-serving entity's ("LSE's") obligation to serve its load through the prudent forward-market procurement of the resources necessary to serve its load, plus a reasonable planning reserve margin. The ISO recommends that the CPUC

[1] Capitalized terms not otherwise defined herein shall have the meaning set forth in the Master Definitions Supplement, Appendix A to the ISO Tariff.

continue to build off of that foundation by quickly and formally establishing a process to resolve all outstanding issues. The end-point of that process should be an additional order(s) from the CPUC on each of the issues to be resolved in the workshop process. By letter dated February 25, 2004, President Peevey indicated to the ISO Governing Board his intent to issue a further order in this proceeding by summer 2004. The ISO urges the CPUC to hold to that commitment and to identify and establish a rational and thoughtful process that will enable such a ruling. The identification and establishment of such a process should be the focus of the upcoming workshop.

In the Workshops Ruling, the ALJ identified 11 issues to be addressed in the first workshop which will be held on March 16, 2004. The ALJ identified two additional issues to be addressed at the April 12-13 (and April 14, if necessary) workshop, plus any unresolved issues from the first workshop. The ISO is deeply concerned that that the workshop timeline is overly ambitious. There are 13 issues that need to be discussed and "resolved" via the workshop process. These are extremely important and complex (and often times technical) issues that cannot adequately be dealt with in the extremely short time frame set aside by the Workshops Ruling. The ISO has real concerns that, given the scope and importance of these issues, cannot be adequately and satisfactorily addressed in the time frame established by the Workshops Ruling. Stated differently, the Workshops Ruling attempts to resolve too many issues in too short a time frame. Given the importance of these issues, that is not a prudent approach. The proposed timeline offers little hope that the parties will be able to reach a consensus on the issues to be discussed or that the issues will be adequately vetted.

Each of the workshop issues individually could consume an entire day's discussion because they raise important policy issues, are very technical in nature, and are likely to be contentious. As opposed to descending into the workshops armed with the disparate views of each workshop participant and prepared to engage in a substantive debate on an issue-by-issue basis, the ISO recommends a more deliberative process. Specifically, the ISO recommends that the CPUC direct each interested party to indicate, in its reply comments, the order in which it would recommend that the CPUC resolve the issues at hand. Such a prioritization will enable the CPUC to establish a process that will ensure that the most pressing issues are resolved expeditiously.

The ISO recommends that the ALJ establish a workshop process that will allow the issues to be prioritized and fully vetted in a rational, sequential manner. Specifically, issues that require more immediate resolution (*i.e.*, issues that are critical to the resource adequacy program moving forward) should be addressed first in the workshop process, and less urgent issues should be addressed later in the process. The first issue that should be addressed is load-forecasting. Resolution of this issue is necessary in order to establish each LSE's baseline requirement or procurement target. The second issue that requires resolution is what resources "count", and how much, towards satisfying the baseline requirement or procurement target. Resolution of this issue will require that the CPUC establish "qualification" standards or criteria for each type of resource, *e.g.,* hydroelectric, thermal, renewable, and imports. The third priority issue is "deliverability". Absent a transparent and repeatable process for determining whether a given resource is actually deliverable to load on the system, the ISO would argue that a given resource's qualifying capacity may be illusory. Fourth, the ISO recommends that

the CPUC better define the nature of the obligation placed on LSEs. Specifically, the ISO recommends that the CPUC establish certain "availability" requirements, as further detailed below in the ISO's comments. The ISO believes that resolution of these first-priority issues will provide all parties – the CPUC, LSEs, the ISO, FERC, suppliers – the information necessary to make informed judgments regarding the future form and function of the California electricity market. The second-tier issues which can be addressed later in the workshop process include, *inter alia*, penalities, phase-in, reporting and compliance monitoring. A feasible and realistic, yet aggressive, schedule should be established that will allow all of these important issues to be adequately evaluated in a timely manner that allows the LSEs to (immediately begin) procure the resources needed to satisfy their procurement obligation.

Finally, with regard to process, the ISO recommends that the CPUC assign workshop participants certain tasks. As opposed to each party setting forth its own unique proposal, the ISO recommends that the CPUC establish a process wherein pre-selected participants develop and propose "strawman" proposals with regard to each issue. For example, with respect to load-forecasting, the ISO recommends that the California Energy Commission ("CEC") and the ISO be directed to develop a proposal for how to calculate and validate system peak load forecasts. Consistent with the January 22 Order, the LSEs could be directed to prepare summaries of their proposed methodological approach to developing coincident peak load forecasts for their respective systems. Similarly, with respect to deliverability, and as earlier proposed by President Peevey in his Proposed Alternate Decision, the ISO could develop a strawman deliverability test. With respect to the "counting" issue, another workshop participant

could be directed to review and work from the work previously prepared by the Resource Adequacy Working Group ("RAWG") that was established as part of the ISO's MD02 process. The assigned ALJ ruling on the scope and schedule of resource adequacy workshops recommends that the RAWG work be used as a starting point. The purpose of this exercise would be to focus the workshops on the strawman proposals presented by various parties and hopefully building from there. In the end, the CPUC would hopefully benefit from a focused discussion centered around specific proposals.

The ISO's positions on the issues to be addressed in the workshops are set forth below.

## II. A WELL-DESIGNED RESOURCE ADEQUACY REQUIREMENT SHOULD PROVIDE REPORTING FOR USE OF RESOURCES FOR USE BY THE ISO WHEN THEY ARE NEEDED TO BALANCE SUPPLY WITH LOAD

The Interim Order did not address the ISO's use of resources procured by the utilities when needed to balance supply with load. This is an important issue that needs to be addressed in any final order issued by the CPUC. In particular, the CPUC should order that the LSE's provide all remaining capacity that is otherwise not scheduled in the Day-Ahead or Real Time markets to the ISO such that the ISO can utilize the LSE contracted resources to balance Load and Resources in real time. This will ensure the seamless handoff to the ISO of resources procured in the forward market and subsequently scheduled in the ISO's markets[2].

This could be accomplished by having the CPUC require that contracts between utilities and suppliers include a provision for making capacity procured under the contract available to the ISO and subject to the applicable ISO Market rules. Pursuant to this

---

[2] The ISO agrees that in designing rules for such use by the ISO, utilities should be allowed to indicate restrictions on energy limited resource.

requirement, capacity that is not included in a forward schedule by the utility should be required to be available to the ISO for possible commitment by the ISO to serve anticipate real-time load. Likewise, such capacity should be available for dispatch by the ISO as part of the Residual Unit Commitment (RUC) procedure. RUC is a necessary tool in enabling the ISO to maintain system reliability.

Parties might argue that there is no need to grant the ISO the ability to use capacity procured by the utilities because the existing must-offer mechanism resolves the ISO's concerns. In that regard, the existing must-offer obligation ensures that existing supply can be called upon to meet load if it is available and necessary. However, there has been significant resistance to the must-offer obligation by suppliers, and the ISO is concerned that FERC may remove the requirement some time in the future. The CPUC should not depend on the "Must-Offer Obligation" in its current form remaining as a permanent feature of the California marketplace. Moreover, the CPUC should not establish rules for resource adequacy that are dependent on FERC's rules, the CPUC must establish its own rules that are self-sustainable and will promote resource adequacy in the State. The ISO also emphasizes that the "must-offer" obligation is not applicable to hydroelectric and certain other resources currently "participating" in the ISO's Markets. As the CPUC is aware, the availability of hydroelectric resources is critical to "keeping the lights on" in California and reliably operating the transmission grid

In addition, the "availability" provision is not merely a means to ensure that resources are available to the ISO to serve load when and if necessary, but it also serves as a means to ensure that resources are made available in a manner that accords with the ISO's scheduling and commitment requirements. It will be of little value to make

available to the ISO resources tare be unable to operate within the ISO's established rules. While this may be self-evident to some and presumably would come naturally to contracting parties, the ISO has often been required to deal with contracts that fail to conform to the ISO's established tariff rules (*e.g.*, contracts with different scheduling timelines) or that give rise to operation problems (e.g., block-loaded, or must-take contracts that give rise to over-generation situations). Such circumstances can easily be avoided if the CPUC were to direct the LSEs under it jurisdiction to explicitly conform to all ISO scheduling rules.

In conclusion, the ISO recommends that the CPUC develop a requirement in the final ruling that would require the LSE's to report contracted-for capacity available for use by the ISO such that the ISO can reliably operate the transmission grid and that the maximum amount of capacity is locked-up for a specified number of hours to serve California load. In addition, this would ensure the resources procured by the LSEs are utilized by the ISO for meeting operational requirements and the costs for such resources are not increased because the ISO commits resources that are not part of the LSEs resource portfolios.

## III. AN EFFECTIVE COMPLIANCE/ENFORCEMENT MECHANISM IS NECESSARY

Although the Interim Order requires a planning reserve margin of 15%-17% by 2008, the Interim Order is unclear as to when the annual obligation (*i.e.*, the requirement that utilities procure 90% of their capacity requirements for the summer months a year in advance) begins. The CPUC must provide clarity on this issue. The ISO believes the annual obligation should be effective sooner rather than later. Practically speaking, it

should be implemented effective May of 2005 for the operating year of 2006. By starting sooner, the CPUC can be assured that the utilities are making progress toward meeting their resource adequacy obligation, and the parties can begin the reporting process to work out the inevitable glitches.

For a resource adequacy framework to be meaningful, it is necessary that there be consequences for a failure to meet the resource adequacy obligations. Utilities (and other LSEs) that fail to procure sufficient capacity far enough ahead of real-time operation should be held accountable in a manner that will adequately deter recurrence of such performance. The ISO supports the adoption by the CPUC of explicit penalties/sanctions for utilities that fail to meet their resource adequacy obligations. Proper incentives are necessary to motivate compliance with the resource adequacy requirement. Absent an effective enforcement mechanism, there is little incentive for utilities to procure, prior to real time, sufficient resources to meet their load obligations. The ISO believes that utilities that fail to procure sufficient capacity should be subject to financial penalties and be designated for first curtailment in the event of a resource deficiency.

The ISO proposes that the CPUC recognize two time periods for which it will establish penalties for the inadequate procurement of capacity by the utilities. First, the Interim Order established an explicit annual obligation to procure 90% of the resource adequacy requirement, load plus planning reserves, for the summer months of May through September. Therefore, the CPUC should establish an ex-ante penalty for the entities that do not meet this obligation. This would require that there be an effective reporting requirement in place. Then, the CPUC and CAISO could review the utility and LSE plans to determine whether they satisfied their capacity obligation for each of the

summer months. For any entity that is found to be deficient, a severe financial penalty would apply. At the workshop, the parties can discuss the penalty that would apply. One possibility for consideration is a capacity deficiency charge based on the cost of a new peaker. This type of penalty has been employed by NEPOOL for many years.

Second, the Interim Order placed a "soft" cap on utility purchases in the spot market of 5%. Thus, the Interim Order essentially established an implicit requirement that utilities and LSEs "close the capacity gap" between the 90% annual obligation and 100% of real time needs. In the event a utility does not close this gap, the ISO may find itself scrambling in Real-Time to locate the necessary supplies to serve California load. In addition, a strong reliance on the spot market to "close this gap" may result in spot market price spikes that will ultimately be reflected in the cost of bilateral contracts for all Market Participants. At a minimum, excessive reliance on the spot market will subject the utilities (and hence consumers) to spot market volatility. Therefore, the CAISO recommends that the CPUC also establish an appropriate penalty for utilities that procure more than 5% of their supplies in the spot market. Such a penalty will discourage over reliance on spot market purchases.

Specifically, there could be a surcharge on real-time energy purchases, for entities that purchase more than 5% of their needs in the spot market. The ISO also believes that it is appropriate and necessary for LSEs to face the consequences of their failure to procure adequate resources in the forward market regardless of whether the ISO is in a staged emergency. The ISO is concerned that in the absence of such a penalty scheme, LSEs may be encouraged to take the risk that supplies will be readily available in the spot market and that the ISO will not enter a staged emergency and, as such, they will avoid

having to pay the real-time energy purchase surcharge. LSEs should be discouraged from playing this type of "Russian Roulette." Further, it essentially results in certain LSEs "leaning" on other LSEs without having to pay any cost for doing so and therefore an inappropriate form of cross-subsidization.

## IV. LOAD FORECASTING ISSUES

The Interim Order places the responsibility for load forecasting upon the utilities and LSEs because they have the load serving responsibility. The ISO urges the CPUC to clarify that the January 22 Order requires the utilities and LSEs to develop annual and monthly ISO coincident-peak based forecasts. The ISO supports use of a coincident-peak based methodology because such a methodology is consistent with the historical approach to integrated planning. In that regard, in the past, utilities planned their systems in a manner that would ensure that sufficient capacity was available to serve their peak loads. In addition, the utilities allocated the embedded costs of such planning and procurement activities (*e.g.*, the cost of new power plants) to their customers based on each customer's relative contribution to the utility's peak load. The ISO recommends that the CPUC adopt a similar approach with respect to LSE procurement obligations. Under this approach, each LSE would be required to procure capacity in an amount necessary to serve its coincident peak-demand on the system, plus a planning reserve margin (established by the CPUC at 15-17%). A coincident-peak based method will ensure that individual LSEs will not over-procure, based on their respective non-coincident peak load. This approach results in less reserves being procured, yet, attempts to ensure adequate resources are available to meet the coincident system peak of all

LSEs. Of course, this is predicated on the assumption that everyone is working together by pooling/sharing their respective resources to satisfy the system's peak load.

The Interim Order required that the utilities demonstrate, a year in advance, that they have procured 90% of their requirements for the five summer months, defined as May through September. However, the Interim Order is unclear whether the utilities must demonstrate that they have procured sufficient capacity for each hour of the five months, a certain number of hours to cover the highest peak for each of the five individual summer months, or a certain number of hours to cover the highest peak for that five-month period. The ISO notes, it may be prudent to require that a number of months have the same requirement such as, July thru September, because it is inherently difficult to determine in which month the annual peak will actually occur. Taking this principle to its complete conclusion, it might be reasonable to use the annual peak forecast for all of the summer months. However, there are costs associated with implementation. Therefore, the ISO recommends that the CPUC establish a separate requirement for each month's forecasted coincident system peak that covers a minimum quantity of hours based on all hours the peak could occur.[3] Significant diversity exists between the peaks during the months of May through September. The ISO also is concerned that a myopic focus on a single system peak during this period may result in under-procurement during the other months of this period. Stated differently, if LSEs are only required to demonstrate one year in advance that they have procured 90% of an anticipated July peak

---

[3] It is important to determine whether the resource adequacy requirement will be based on a monthly peak or a single peak. For example, looking ahead one year, the ISO and the CEC baseline peak forecasts (42,894 vs. 42,561) are very close: however on a monthly basis the differences between the two forecasts are significant.[3] It is imperative that load forecasting carefully consider the shoulder months of May, June, and September because these have the greatest statistical volatility. i.e. These are the critical periods in which actual loads can vary dramatically from long-term (year ahead) forecasts.

load, they may under-procure in the other months where they are not required to make a similar demonstration for each of those summer months.

Of course, application of a coincident peak based methodology requires the development of a system peak load forecast. While the Interim Order stated that the utilities should have the responsibility of estimating their own future needs (with an explanation of their forecast differs from the CEC's IEPR base case)the ISO believes that a coincidental peak forecast should be developed by the CEC, in conjunction with the ISO, to evaluate the combination of all LSE's load forecasts and provide a basis for estimating the remaining capacity available for the spot market. In addition, a control area-wide coincident forecast could provide the basis for incentives and/or penalties developed by the CPUC to discourage LSE's from manipulating their forecast of peak demand requirements in order to establish a smaller or larger resource requirement.[4] The ISO and the CEC are best positioned because LSEs peak demand can occur in different months or different days of the same month, and only these entities have historical data for the control area simultaneous peak demand which is comprised of all LSEs.

Finally, with respect to factoring in the impact of energy efficiency and demand-based programs, the ISO recommends that the impact of energy efficiency investments be

---

[4] The ISO recognizes that an unintended gaming opportunity may be created under circumstances where the same company who must forecast its load also has the obligation to purchase adequate supply to meet its forecasted load. The potentiality exists that such a regime might not produce the desired outcome of adequate resources being available to fully serve load. Alternatively, and as earlier proposed by the ISO, each utilities obligation could be determined by its historical contribution to the system peak. Under this approach a system peak load forecast would be developed but each LSEs obligation would be based on the contributions to the prior years peak load.

reflected in the peak-load forecasts for the system,[5] and demand-response programs be included as "resources" that count towards satisfying the established procurement targets. The CEC, working in conjunction with the LSEs, should assess and validate the likely impact of energy efficiency programs based on historical experience and empirical data.

## V. RESOURCES SHOULD BE COUNTED TO REFLECT THE ACTUAL AMOUNT OF CAPACITY THAT CAN REASONABLY BE EXPECTED TO BE AVAIALBLE IN PEAK HOURS

In order to achieve the primary objective of any resource adequacy requirement – that of being able to reliably serve load in real-time, resources must be procured in a manner that accurately reflects the resources capability to serve the peak load of the system. Thus, there is a need to assess the ability of each resource, or set of resources, to perform at peak load. Ideally, this is done by assessing each resource's historical performance at peak load or, for new generation, its total capability based on a technological assessment. That is because even with a given resource type category individual performance levels can vary. However, practically speaking, assessing and evaluating each resource individually is time consuming and may require that certain subjective judgments be made. Therefore, as is typically done in other parts of the country where there are operative and functioning resource adequacy programs, the ISO recommends that general standardized guidelines be established for each resource type. Standardized guidelines for resource counting are necessary to ensure consistency across the Control Area, ensure that adequate reserves are available in real time, and deter any

---

[5] This is appropriate because energy efficiency programs are intended to reduce the load obligation of the LSE. The ISO also notes that simply assuming that energy efficiency programs will lead to load reductions in direct proportion to the total amount of expenditures is not realistic nor warranted. The ISO recommends that energy efficiency programs be "counted" based on their historical effectiveness in actually reducing load and not be "counted" prospectively, based on the level of expenditures.

inappropriate manipulation of the results. Absent consistent, standardized guidelines, it will be difficult for the CPUC and the ISO to determine in a timely manner compliance with the resource adequacy requirements.

Resources should be counted to reflect the actual amount of capacity that can reasonably be expected to be available during peak hours. The ISO's initial thoughts on conventions for counting resources are set forth in the Opening Testimony of Mary Jo Thomas Exh. 3, Thomas Opening at 4-6. This testimony included recommendations for counting Utility Retained Thermal, Run of River Hydro, Pond Storage Hydro, Wind, and other intermittent resources. In addition, Attachment B of the Assigned ALJ Ruling on the Scope and Schedule of Resource Adequacy Workshops provides additional details on the ISO's recommendations for counting resources. The following are the ISO's recommendations regarding the counting of resources:

- Thermal capacity should be reported as the maximum net dependable capacity that can be delivered to the grid (less auxiliary station service, and load netted behind the meter) and then de-rated for reasonably expected outages that include scheduled outages, and environmental limitations.

- The capacity reported as contract capacity for thermal generation for which the utilities do not have knowledge of the traditional outage schedules, should be based on the historical metered contribution levels at the time that daily peak demands occurred. Solar generation should be treated in the same way. The maximum scheduled outage for the month should be used given that the peak demand could occur at any time during the month.

- Run-of-river hydro capacity should be based on the metered historical contribution levels at time of daily peak demands. Low hydro year conditions should be used for purposes of determining the adequacy of Long-Term Procurement Plans.

- Pond storage, and pumped storage hydro capacity should be based on the maximum level the generator is able to deliver to the grid based on the ability of the reservoir to release water during times of daily peak while applying limitations for known scheduled generation outages. Low hydro year

conditions should be used for purposes of determining the adequacy of the Long-Term Procurement Plans.

- Historical metered capacity levels contributed from pond storage, or pumped storage hydro generators during daily peak demands (plus undispatched Operating Reserve) should be used when the utilities do not have knowledge of the traditional outage rates or the level of capacity the generator is able to deliver to the grid based on reservoir levels.

- Wind capacity is an important resource to serve load in the California ISO Control Area. Wind generation, on occasion, provided over 1,300 MW of environmentally clean capacity. However, historical operating levels of wind generation during summer peak conditions are very low because the wind is generally stagnant on the hottest summer days. For this reason, capacity levels from wind generation should not be considered when assessing the adequacy of utility plans to meet Summer peak loads. The contribution of wind generation during winter peak days should be based on historical levels seen during daily peaks.

- New Generation can be classified as Large Merchant, Municipal, and Utility-owned Generation, Peaker Plants, Renewable Generation, Distributed Generation, and Self-Generation. These types of generation all have different risk factors that should be considered when including them in future procurement plans. Large generation typically takes three years to develop and transition to commercial status. Peaker Plants, Renewable Generation, Distributed Generation, and Self Generation can be developed in considerably less time. However, each of these types of generators have their own associated risks. Peaker Plants historically have been canceled as fast as they are planned. Distributed Generation is assumed to have the same issues as the Peaker Plants with the exception that less emphasis has to be placed on transmission capacity. Self Generation is dependent on the financial benefit to the end-use customer given current gas rates, environmental regulations and other permitting issues, the current financial status of the corporation, and other economic trends. These risks should be considered in the plans and furthermore, generation that relies on the Transmission System should be included in the ISO Transmission Expansion Plan in order to assess any potential transmission constraints that could be placed on the system as a result of the new generation.

Further, the ISO recommends that the Net Dependable Capacity be used for counting Utility Retained thermal generation resources. The Interim Order states that the consensus of the participants in the proceeding was that Net Dependable Capacity should be used; however, there was not a consensus on how Net Dependable Capacity is to be

defined. In the interest of clarifying the definition of Net Dependable Capacity for the workshop, the ISO would like to refer the working group to the ISO definition, which is largely based on NERC standards and recognized by the ISO resource data template. The ISO defines Net Dependable Capacity as:

> the power level that a generating unit can sustain, on average, measured at or compensated to the point of delivery to the electric grid by both telemetry and CA ISO revenue metering systems if there are no equipment operating on regulation restrictions. It is mathematically equal to gross dependable capacity minus any capacity utilized for the unit's auxiliary load, on-site load if applicable, and step-up transformer and project transmission losses. If the generating Unit provides Ancillary Services, the net dependable capacity must be tested and certified by the CA ISO.

## VI. A WELL-DESIGNED RESOURCE ADEQUACY REQUIREMENT MUST ADEQUATELY ADDRESS DELIVERABILITY ISSUES

Deliverability is an essential element of any resource adequacy requirement. Specifically, utilities must be able to show that the supplies they intend to procure to meet their load requirements can be delivered to load when needed. Otherwise, such resources are of little, if any, value for the purposes of resource adequacy. The CPUC should require the utilities to demonstrate the deliverability of the resources they procure in both their annual resource plans and their long-term resource plans. This is essential so that the utilities will be able to "count" their resources to determine whether they satisfy the planning reserve margin, and to ensure sufficient coordination between resource planning and transmission planning.

As part of developing its proposal to comply with FERC's Order No. 2003 regarding the Interconnection of new generating facilities, the ISO developed and proposed to FERC a "deliverability" test (but not requirement). The propose of this proposed deliverability test was to begin to assess the deliverability of new generation to

serve load on the ISO's system. Recent experience indicates that while California has added needed new generating capacity to the system over the past few years, not all of that capacity is deliverable to load on the system because of the presence of transmission constraints. Therefore, although not requiring that all new generation to be deliverable, the ISO proposed in its Order 2003 compliance filing to begin to assess deliverability so that the sponsors of new generation projects can accurately assess their ability to deliver the output of the new plants to load and thus congestion costs they may bear under the ISO's congestion management protocols.

The various aspects of the ISO's proposed deliverability test are discussed in greater detail below.

### A. Deliverability Of Generation To The Aggregate Of Load

The ISO recommends that a generating facility deliverability assessment be performed to determine the generating facility's ability to deliver its energy to all load on the ISO Controlled Grid under peak load conditions. Such a deliverability assessment will provide necessary information regarding the level of deliverability of such resources with an without Network Upgrades (i.e., major transmission facilities), and thus provide information regarding the required Network Upgrades to enable the generating facility to deliver its full output to load on the ISO Controlled Grid based on specified study assumptions. That is, a generating facility's interconnection should be studied with the ISO Controlled Grid at peak load and under a variety of severely stressed conditions to determine whether with the generating facility at full output the aggregate of generation

in the local area can be delivered to the aggregate of load on the ISO Controlled Grid, consistent with the ISO's reliability criteria and procedures. In addition, the ISO recommends that the deliverability of a new resource should be assessed on the same basis as all other existing resources interconnected to the ISO Controlled Grid.

Because a deliverability assessment will focus on the deliverability of generation capacity when the need for capacity is the greatest (*i.e.* peak load conditions), that will not ensure that a particular generation facility will experience economic congestion during other operating periods. Therefore, other information (*i.e.* congestion cost analysis for all hours of the year) would be required in addition to the deliverability assessment to evaluate the congestion cost risk of a take- or- pay energy purchase contract with a particular generation facility.

### B. Deliverability Of Imports

California is now, and will likely remain, dependent on imports to satisfy its energy and resource requirements. Therefore, it is likely that as part of fulfilling their obligation to procure sufficient resources (reserves) in the forward market to serve their respective loads, the IOUs will contract with out-of-state resources. This is appropriate and necessary. However, the ability to rely on imports to satisfy reserve requirements is entirely dependent on the deliverability of such out-of-state resources to and from the intertie points between the ISO's system and the neighboring systems. Therefore, when relying imports to serve load, and LSE should be required to ensure that they have 1) acquired the necessary *firm* transmission rights to deliver the resources output over the neighboring system's transmission system and to the tie point with California; and 2) assessed the deliverability of such resources from the tie point to load on the ISO's

system. The fact is, each LSE will have to utilize the same potentially constrained transmission paths to deliver their out-of-state resources.

Resources that need to be imported over the transmission grid could be needed simultaneously during a capacity deficiency. Because the utilities and LSEs will be procuring their resources independently, it is possible that all of them may rely on the same portion of the existing transmission system to meet their respective needs. While the existing system may be able to satisfy the procurement plans of any one LSE, it likely will not be able to transmit the sum of LSEs' needs. Therefore, the transmission system should be checked to make sure that it can accommodate the necessary simultaneous imports. The ISO proposes that each LSE, inconjunction with the ISO, be required to perform an integrated analysis on the annual procurement plans and the long-term procurement plans to ensure their identified resources are deliverable to load and that the necessary transmission capacity will exist on the system. Such, an analysis should be performed using similar techniques used for operational transfer capability ("OTC") studies but would look at specific resource import scenarios expected in the future. Adverse internal generation availability and loop flow scenarios should be developed to adequately evaluate the capabilities of the transmission system to deliver imports to aggregate load.

### C. Deliverability To Load Within Transmission Constrained Areas

Load within transmission-constrained areas is highly dependent on the availability of generation within the constrained area and the transfer capability of the transmission system. Because transmission capability is limited and may be unable to transmit a sufficient amount of resources located outside of the constrained area to load, the

reliability of service to this type of load is heavily dependent upon the availability of the local generation for meeting its resource adequacy needs. Local transmission constrained areas should have sufficient transmission so that an adequate amount of generation from resources located outside the local area can be delivered to serve the local load. The probability of load within the local area, exceeding the available capacity resources located in the local area and imported into the local area, should be equivalent to the probability of control area load exceeding the amount of capacity resources available to the overall control area. Therefore, the ISO recommends that as part of assessing the deliverability of an LSE's general portfolio of resources, that particular focus be placed on assessing the deliverability of the procured resources to serve load in such locally constrained load pockets.

## VII. PHASE-IN OF THE RESERVE MARGIN REQUIREMENTS

In its Interim Decision, the CPUC adopted a 15-17% planning reserve level, which is to be phased in by no later than January 1, 2008. An issue to be addressed in the workshop is how the reserve requirement should be phased in. Earlier in this proceeding, in the Joint Recommendation put forth by various parties including Turn, IOUs, CEC, ORA, they proposed a 15% planning reserve level, which would be phased in by increasing the planning reserves 2% per year beginning in 2005, and attaining the desired level of 15-17% planning reserves by 2008. The ISO supports such an approach. Therefore, while the ISO would prefer, and has previously recommended, an earlier implementation date for the full implementation of the resource adequacy requirement, the ISO supports a measured, linear phase-in to achieve the full planning reserve margain by or before 2008.

The issue of an appropriate phase-in of the planning reserve margin is inexorably linked with the issue of counting resources and evaluating the availability of spot market. Therefore, it is essential to first determine proper methodology for counting resources (including availability of spot energy), and then to total the available resources. Only after these steps are completed can one ascertain the level at which the IOUs are currently resourced and the "gap" that needs to be "closed" on a phased-in basis before January 2008. The objective of an effective resources adequacy program is to have adequate capacity available during real-time operations to meet all reasonably expected load conditions.

For example, the initial level of planning reserves in 2005 could be established at a level that would be as great as that required in 2004 (7% Operating Reserve), designed to meet the WECC Minimum Operating Reserve Criteria plus a reasonable adjustment for forced outages. An ISO initial review indicates that in 2003, the quantity of forced outages ranged from 3-12% during the summer months of May to September. Based solely on forces outages this would translate into a planning reserve margin of between 10% and 19%.[6] Therefore, the planning reserve margin may need to be set at a minimum level of 10% for the year of 2005 to account for the lowest quantity of forced outages and thus establish adequate resources are available for operation during the summer months. If this becomes the initial starting point, then there remains 5-7% to phase-in prior to January 2008. Thus, the ISO recommends an appropriate evaluation of LSE forced

---

[6] In Decision 03-12-062 (the IOU Short-term Plans) the Commission required the IOU's to meet the 7% Operating Reserve level required by the WECC in 2004. The difference between Operating Reserves Margin and Planning Reserve Margin as defined by the interim Order is the level of Reasonably Expected Resource Outages. [The Planning Reserve Margin is Dependable Capacity divided by the Peak Load. The Operating Reserve Margin is the Dependable Capacity less Reasonably Expected Resource Outages divided by the Peak Load.]

outage rates and the spot market be determined and linked to the initial level of planning reserves needed in 2005 and beyond.

## VII. AVAILABILITY OF SPOT ENERGY AND CAPACITY

The Interim Order sets a 5% target limitation on utilities' reliance on the spot market to meet their energy needs (*i.e.*, Day-Ahead, Hour-Ahead, and Real-Time Energy Markets). In effect, this is a "soft" limitation because utilities are allowed to purchase more than 5% of their energy requirements in the spot market if they are able to justify such reliance. The Interim Order is not clear on how such limitation will be applied. Is the limitation an annual limit? A daily limit? Or an hourly limit? If the limitation is an average annual limitation, then it would appear that in any given day or hour, the IOUs can purchase far more than 5%. This occurs if on an annual basis their purchases still average out to be no more than the 5% limitation. Therfore, the ISO asks the CPUC to provide additional clarification. Clearly, if the IOUs are permitted to purchase unlimited quantities from the spot market in any given hour, the objective of the Interim Order may be severly compromised and the ISO may have to structure the function and requirements of its own markets and operations accordingly. The CAISO appreciates the guidance provided in the Workshops Ruling which provides that "a better approach to ensuring reliable service is to require the utility's reliance on spot market purchases that are less than a month in advance to be based on reasonable estimates of the energy available in this market." However, no specific recommendations or parameters have been offered with respect to the determination of these reasonable estimates.

The ISO suggests that the estimate of Spot Energy and Capacity could be based on, the conservative criteria that is greater than the required base forecast of 1-in-20 such

as a 1-in-10 or a 1-in-20 Year Peak demand load forecast. The LSE procurement plans will show that the LSEs have lined up enough capacity to meet a 1-in2 Year Peak demand load forecast; however, they do not indicate where the necessary supply will come from to meet a situation where the loads are higher than forecasted. Such a basis for reasonable but conservative estimates would help to indicate whether it is likely that adequate spot energy will be available to serve load under high load conditions. Such an assessment should be part of the utility's reasonable estimation of spot energy and capacity in the West.

The ISO's Five Year Assessment (2004-2008), updated to reflect recent changes in new, retired, and mothballed generation, and the PUC approved Energy Conservation Programs shows that there currently are not enough resources to meet the required 15% reserve level, plus the recommended additional spot capacity to cover high load conditions. Without some combination of new generation/transmission capacity, and/or additional energy conservation, the spot market would be short for the next five years.

The ISO also offers a formulaic way to assess the available capacity that discourages the utilities to under or over forecast their load. The formula links the forecasted peak demand to the amount of capacity that may be available in the spot market. Thus, spot market capacity available to meet the remaining 5% reserves may be calculated based on the following assumptions:

- All Muni Load will be served
- All ESP Load will be served
- Total Available Capacity in the ISO Control Area will be counted using methodologies resulting from the workshops on counting resources.
- A forecast of net import levels will be based on historical levels available to meet peak demands adjusted to consider known variations due to major changes of resource availability that would increase or reduce historical

levels. (i.e. retirement of generation previously needed during peak hours, and/or new generation above the neighboring control areas load growth located in areas that have additional transfer capabilities.)

- Spot Market Capacity should be reserved to cover the difference between a 1-in-2 peak demand (average weather conditions) forecast and a 1-in-20 peak demand (high weather conditions) forecast.
- Muni and ESP Load = Total ISO Coincidental Peak Demand - ∑(IOU Forecasted Coincidental Peak Demand) - ∑(IOU net increases in energy conservation)
- Spot Market available to meet remaining 5% reserves= Total Available Capacity in the ISO Control Area + Net Import Levels – Muni and ESP Load – ∑(IOU Utility Retained Generation) - ∑(IOU Firm Contracted Capacity) - ∑(IOU additional capacity required to meet a 1-in-20 peak demand forecast)

## VIII. A MEANINGFUL MONTHLY REPORTING REQUIREMENT IS A NECESSRY ELEMENT OF AN EFFECTIVE RESOURCE ADEQUACY PROGRAM

The ISO is disappointed by at the short shrift given to Reporting Requirements issues in the Interim Order. Unless coordination and a hand-off to the ISO are explicitly addressed, the value of a CPUC resource adequacy requirement will not be fully realized, and the ISO will be forced to continue operating the system without the information it needs to support reliable system operations and to optimize Energy and Ancillary Services procurement. Perpetuating this situation benefits nobody. Therefore, the ISO believes that it is imperative that the workshops develop, and the CPUC approves a reporting requirement for the utilities to demonstrate that they have procured sufficient reserves to satisfy their resource adequacy obligation. In order to assure grid reliability and minimize costly and inefficient mechanisms to assure adequate capacity, it is reasonable that the CPUC and the ISO know what resources will be available and that the utilities have met their capacity requirements.

Specifically, the utilities should be required to provide to the CPUC and the ISO a monthly compliance report setting forth a calculation of their resource adequacy (based

on their monthly peak load, along with the applicable target reserve level), and the resources that the utilities have procured to meet their obligation. The ISO believes that the report should be provided to both the CPUC and to the ISO in order to monitor compliance. The monthly report will serve two purposes. First, it provides a mechanism for enforcing the resource adequacy obligation. In order to assure grid reliability and minimize costly and inefficient mechanisms to assure adequate capacity, it is reasonable that the CPUC and the ISO know what resources will be available and that the utilities have met their capacity requirements. In that response, the reports must provide a consistent quality, detail, and quantity of information for the CPUC and ISO to assess whether the utilities and LSEs have met their forward procurement obligations.[7] Second, the report provides specific important information to the ISO and provides a basis for the "hand-off" of resources to the ISO to balance load and resources in real-time.[8]

To help facilitate the workshop discussion, the ISO submits that there are five key principles that must be met in a resource adequacy reporting requirement:

1. A well-designed resource adequacy requirement should assure that the ISO has information ahead-of-time regarding the resources that have been procured by the utilities to meet their load.
2. A reporting requirement is essential at the time of obligation. Given the Interim Order, it should be provided at least one year prior to the summer months.

---

[7] The ISO supports steps that will make the reporting requirement less burdensome on the utilities, as well as the CPUC and the ISO. For example, the ISO fully supports integrating this proposed monthly report with other reports that are already prepared by the utilities to avoid a duplication of efforts.

[8] A well-designed resource adequacy requirement should assure that the ISO, as Control Area operator, has information ahead of time regarding the resources that have been procured and will be made available by the utilities to satisfy their loads. With this information, the ISO can more accurately determine whether it needs to take supplementary steps to assure that there are sufficient resources to meet loads in up-coming days. For example, the ISO would use this information to determine whether it needs to commit units through the existing must-offer obligation process or other available unit commitment processes (such as the proposed residual unit commitment process) If the must offer obligation is no longer in existence and insufficient resources bid into the Day-Ahead Market and are available in RUC, then the ISO can rely on the information provided by the utilities and take aggressive steps to procure additional power and encourage conservation by

3. A reporting requirement should have a standard format (template) for efficient communication and comparison.[9]
4. A reporting requirement should explicitly identify resources so the ISO can conduct an integrated system-wide deliverability assessment and share results with the CPUC and LSEs.
5. There are two time frames that require explicit reporting. The annual obligation for each of the next years summer months and the point in time prior the ISO Day-Ahead Market that provides an effective hand-off of resources for ISO use in real-time operations.

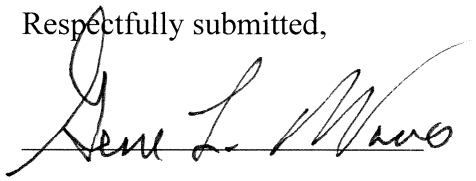
---

[9] The reporting process should provide for submission of the following information: (1) the forecasted peak demand and resources contracted for each month (May through September); (2) all ISO Control Area resources used to meet the peak demand should be identified (name of plant, location on the grid, total contracted capacity, duration of contract); (3) all Unit Contingent resources located outside of the ISO Control Area (name of plant, originating control area, point of entry on the grid, total contracted capacity, duration of contract); and (4) all Firm Imports (originating control area, point of entry on the grid, total contracted capacity, duration of contract.) (These are WECC requirements for each control area)

## IX. CONCLUSION

The ISO respectfully urges the CPUC to adopt the ISO's recommendations on the workshop issues. This will provide for an effective and efficient resource adequacy requirement in California, promote reliable operation of the transmission grid and promote the development of competitive electricity markets in the State.

Respectfully submitted,

By: 

Anthony J. Ivancovich
Gene L. Waas
Counsel for the California Independent
System Operator Corporation
151 Blue Ravine Road
Folsom, California 95630
Phone: (916) 608-7135
Fax: (916) 608-7296

Dated: March 4, 2004

PROOF OF SERVICE

I hereby certify that on March 4, 2004 I served, by electronic and U.S. mail, Opening Comments of The California Independent System Operator Corporation on the Resource Adequacy Workshops in Docket # R. 01-10-024.

DATED at Folsom, California on March 4, 2004.

Karen Voong
An Employee of the California
Independent System Operator

DANIEL V. GULINO
RIDGEWOOD POWER MANAGEMENT, LLC
947 LINWOOD AVENUE
RIDGEWOOD, NJ 07450

WILLIAM P. SHORT
RIDGEWOOD POWER MANAGMENT, LCC
947 LINWOOD AVENUE
RIDGEWOOD, NJ 07450

TYSON SLOCUM
RESEARCH DIRECTOR
CRITICAL MASS ENERGY/ENVIRONMENTAL PRG
215 PENNSYLVANIA AVE, SE
WASHINGTON, DC 20003

KEITH MCCREA
ATTORNEY AT LAW
SUTHERLAND, ASBILL & BRENNAN
1275 PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20004-2415

ROGER A. BERLINER
MANATT, PHELPS & PHILLIPS, LLP
1501 M STREET, NW, SUITE 700
WASHINGTON, DC 20005

MARTIN PROCTOR
CONSTELLATION POWER SOURCE
111 MARKET PLACE, SUITE 500
BALTIMORE, MD 21202

EDWARD SULLIVAN
SENIOR COUNSEL
PEABODY HOLDING COMPANY, INC.
701 MARKET STREET
ST. LOUIS, MO 63101-1826

LOUIS DENETSOSIE
ATTORNEY GENERAL
NAVAJO NATION DEPARTMENT OF JUSTICE
PO DRAWER 2010
WINDOW ROCK, AZ 86515

GILLIAN A. WRIGHT
SEMPRA ENERGY
555 W. FIFTH STREET, GT14D6
LOS ANGELES, CA 90013

LISA URICK
ATTORNEY AT LAW
SAN DIEGO GAS & ELECTRIC COMPANY
555 W. FIFTH STREET, SUITE 1400
LOS ANGELES, CA 90013-1011

CURTIS KEBLER
GOLDMAN, SACHS & CO.
2121 AVENUE OF THE STARS
LOS ANGELES, CA 90067

RICHARD A. SHORTZ, ESQUIRE
MORGAN, LEWIS & BOCKIUS LLP
300 SOUTH GRAND AVE., 22ND FLOOR
LOS ANGELES, CA 90071-3132

GREGORY KLATT, ATTORNEY AT LAW
LAW OFFICES OF DANIEL W. DOUGLASS
411 E. HUNTINGTON DRIVE, SUITE 107-356
ARCADIA, CA 91006

THOMAS D. O'CONNOR
ATTORNEY AT LAW
O'CONNOR CONSULTING SERVICES, INC
5427 FENWOOD AVENUE
WOODLAND HILLS, CA 91367

DANIEL W. DOUGLASS
ATTORNEY AT LAW
LAW OFFICES OF DANIEL W. DOUGLASS
6303 OWENSMOUTH AVE., TENTH FLOOR
WOODLAND HILLS, CA 91367-2262

BETH A. FOX
ATTORNEY AT LAW
SOUTHERN CALIFORNIA EDISON COMPANY
2244 WALNUT GROVE AVENUE, RM. 535
ROSEMEAD, CA 91770

JAMES WOODRUFF
ATTORNEY AT LAW
SOUTHERN CALIFORNIA EDISON COMPANY
2244 WALNUT GROVE AVENUE, SUITE 342
ROSEMEAD, CA 91770

RICHARD H. HERTZBERG
ENPEX CORPORATION
1329 STRATFORD COURT
DEL MAR, CA 92014

DAVID KATES
NEVADA HYDRO COMPANY
2416 CADES WAY
VISTA, CA 92081

JOHN PACHECO
CERS
CALIFORNIA DEPT OF WATER RESOURCES
3310 EL CAMINO AVENUE, ROOM 120
SACRAMENTO, CA 95821

JEFFREY M. PARROTT
ATTORNEY AT LAW
SAN DIEGO GAS & ELECTRIC COMPANY
101 ASH STREET, HQ 13
SAN DIEGO, CA 92101

JOHN W. LESLIE
ATTORNEY AT LAW
LUCE, FORWARD, HAMILTON & SCRIPPS, LLP
600 WEST BROADWAY, SUITE 2600
SAN DIEGO, CA 92101

KELLY M. MORTON
ATTORNEY AT LAW
SAN DIEGO GAS & ELECTRIC
101 W. ASH STREET, HQ13B
SAN DIEGO, CA 92101

FREDERICK M. ORTLIEB
CITY ATTORNEY
CITY OF SAN DIEGO
1200 THIRD AVENUE, 11TH FLOOR
SAN DIEGO, CA 92101-4100

MICHAEL C. TIERNEY
ATTORNEY AT LAW
PALOMAR ENERGY
101 ASH STREET
SAN DIEGO, CA 92109

BILL POWERS
WORKING GROUP
BORDER POWER PLANT
4452 PARK BLVD., SUITE 209
SAN DIEGO, CA 92116

MARK J. SKOWRONSKI
DUKE SOLAR
3501 JAMBOREE ROAD, SUITE 606
NEWPORT BEACH, CA 92660

KATE POOLE, ATTORNEY AT LAW
ADAMS BROADWELL JOSEPH & CARDOZO
651 GATEWAY BOULEVARD, SUITE 900
SOUTH SAN FRANCISCO, CA 94080

MARC D. JOSEPH, ATTORNEY AT LAW
ADAMS BROADWELL JOSEPH & CARDOZO
651 GATEWAY BOULEVARD, SUITE 900
SOUTH SAN FRANCISCO, CA 94080

MATTHEW FREEDMAN
ATTORNEY AT LAW
THE UTILITY REFORM NETWORK
711 VAN NESS AVENUE, SUITE 350
SAN FRANCISCO, CA 94102

MICHEL PETER FLORIO
SENIOR ATTORNEY
THE UTILITY REFORM NETWORK (TURN)
711 VAN NESS AVENUE, SUITE 350
SAN FRANCISCO, CA 94102

OSA ARMI
ATTORNEY AT LAW
SHUTE MIHALY & WEINBERGER LLP
396 HAYES STREET
SAN FRANCISCO, CA 94102

ROBERT FINKELSTEIN
ATTORNEY AT LAW
THE UTILITY REFORM NETWORK
711 VAN NESS AVENUE, SUITE 350
SAN FRANCISCO, CA 94102

NOEL OBIORA
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
LEGAL DIVISION ROOM 4107
SAN FRANCISCO, CA 94102-3214

THERESA MUELLER, ATTORNEY AT LAW
CITY AND COUNTY OF SAN FRANCISCO
1 DR. CARLTON B. GOODLETT PLACE
SAN FRANCISCO, CA 94102-4682

MARK SAVAGE, ATTORNEY AT LAW
CONSUMERS UNION OF U.S., INC.
1535 MISSION STREET
SAN FRANCISCO, CA 94103

JODY LONDON
GRUENEICH RESOURCE ADVOCATES
582 MARKET STREET, SUITE 1020
SAN FRANCISCO, CA 94104

KAREN TERRANOVA
ALCANTAR & KAHL, LLP
120 MONTGOMERY STREET, STE 2200
SAN FRANCISCO, CA 94104

EVELYN C. LEE
ATTORNEY AT LAW
PACIFIC GAS AND ELECTRIC COMPANY
77 BEALE STREET, MAILCODE 30B
SAN FRANCISCO, CA 94105

JEANNE MC KINNEY
ATTORNEY AT LAW
THELEN, REID & PRIEST
101 SECOND STREET, SUITE 1800
SAN FRANCISCO, CA 94105

MARY A. GANDESBERY
PACIFIC GAS & ELECTRIC COMPANY
77 BEALE STREET
B30A-2486
SAN FRANCISCO, CA 94105

PAUL C. LACOURCIERE, ATTORNEY AT LAW
THELEN REID & PRIEST LLP
101 SECOND STREET, SUITE 1800
SAN FRANCISCO, CA 94105

SHERYL CARTER
NATURAL RESOURCES DEFENSE COUNCIL
71 STEVENSON STREET, STE. 1825
SAN FRANCISCO, CA 94105

MARK R. HUFFMAN
ATTORNEY AT LAW
PACIFIC GAS AND ELECTRIC COMPANY
77 BEALE STREET
SAN FRANCISCO, CA 94106

BRIAN T. CRAGG
ATTORNEY AT LAW
GOODIN MACBRIDE SQUERI RITCHIE & DAY LLP
505 SANSOME STREET, SUITE 900
SAN FRANCISCO, CA 94111

DANIELLE MERIDA
BINGHAM MCCUTCHEN
3 EMBARCADERO, 18TH FLOOR
SAN FRANCISCO, CA 94111

ENOCH H. CHANG, ATTORNEY AT LAW
WHITE & CASE LLP
THREE EMBARCADERO CENTER, SUITE 2100
SAN FRANCISCO, CA 94111

JOE KARP, ATTORNEY AT LAW
WHITE & CASE, LLP
3 EMBARCADERO CENTER, SUITE 2210
SAN FRANCISCO, CA 94111

JOHN ROSENBAUM
WHITE & CASE LLP
THREE EMBARCADERO CENTER, SUITE 2200
SAN FRANCISCO, CA 94111

MARK FOGELMAN, ATTORNEY AT LAW
STEEFEL, LEVITT & WEISS, P.C.
ONE EMBARCADERO CENTER, 30TH FLOOR
SAN FRANCISCO, CA 94111

WILLIAM D. KISSINGER
BINGHAM MCCUTCHEN
THREE EMBARACADERO CENTER
SAN FRANCISCO, CA 94111

EDWARD W. O'NEILL
ATTORNEY AT LAW
DAVIS WRIGHT TREMAINE LLP
ONE EMBARCADERO CENTER, SUITE 600
SAN FRANCISCO, CA 94111-3834

LINDSEY HOW- DOWNING
ATTORNEY AT LAW
DAVIS WRIGHT TREMAINE, LLP
ONE EMBARCADERO, SUITE 600
SAN FRANCISCO, CA 94111-3834

STEVEN F. GREENWALD
ATTORNEY AT LAW
DAVIS WRIGHT TREMAINE LLP
ONE EMBARCADERO CENTER, SUITE 600
SAN FRANCISCO, CA 94111-3834

LISA A. COTTLE
ATTORNEY AT LAW
WHITE & CASE LLP
3 EMBARCADERO CENTER, SUITE 2210
SAN FRANCISCO, CA 94111-4050

DANIEL W. FESSLER
HOLLAND & KNIGHT LLP
50 CALIFORNIA STREET, SUITE 2800
SAN FRANCISCO, CA 94111-4726

JOHN WHITTING BOGY, ATTORNEY AT LAW
PACIFIC GAS AND ELECTRIC COMPANY
PO BOX 7442
SAN FRANCISCO, CA 94120

SARA STECK MYERS
ATTORNEY AT LAW
122 - 28TH AVENUE
SAN FRANCISCO, CA 94121

ANDREW J. SKAFF, ATTORNEY AT LAW
LAW OFFICE OF ANDREW J. SKAFF
220 THE KNOLL
ORINDA, CA 94563

JOSEPH M. PAUL
DYNEGY MARKETING & TRADE
5976 WEST LAS POSITAS BLVD.
PLEASANTON, CA 94588

WILLIAM H. BOOTH, ATTORNEY AT LAW
LAW OFFICE OF WILLIAM H. BOOTH
1500 NEWELL AVENUE, 5TH FLOOR
WALNUT CREEK, CA 94596

PETER W. HANSCHEN, ATTORNEY AT LAW
MORRISON & FOERSTER, LLP
101 YGNACIO VALLEY ROAD, SUITE 450
WALNUT CREEK, CA 94596-8130

SETH HILTON, ATTORNEY AT LAW
MORRISON & FOERSTER LLP
101 YGNACIO VALLEY ROAD, SUITE 450
WALNUT CREEK, CA 94596-8130

PAUL FENN
RATEPAYERS FOR AFFORDALE CLEAN ENERGY
4281 PIEDMONT AVE.
OAKLAND, CA 94611

REED V. SCHMIDT
BARTLE WELLS ASSOCIATES
1889 ALCATRAZ AVENUE
BERKELEY, CA 94703-2714

GREGORY MORRIS
GREEN POWER INSTITUTE
2039 SHATTUCK AVE., SUITE 402
BERKELEY, CA 94704

JULIA LEVIN
UNION OF CONCERNED SCIENTISTS
2397 SHATTUCK AVENUE, SUITE 203
BERKELEY, CA 94704

CHRIS KING
EXECUTIVE DIRECTOR
AMERICAN ENERGY INSTITUTE
842 OXFORD ST.
BERKELEY, CA 94707

NANCY RADER
EXECUTIVE DIRECTOR
CALIFORNIA WIND ENERGY ASSOCIATION
1198 KEITH AVENUE
BERKELEY, CA 94708

PATRICK G. MCGUIRE
CROSSBORDER ENERGY
2560 NINTH STREET, SUITE 316
BERKELEY, CA 94710

REBEKAH COLLINS
MARIN CLEAN ALTERNATIVE ENERGY NOW
PO BOX 605
FAIRFAX, CA 94930

MICHAEL GREEN
THE PACIFIC LUMBER COMPANY
PO BOX 37
SCOTIA, CA 95565

MICHAEL THEROUX
THEROUX ENVIRONMENTAL
PO BOX 7838
AUBURN, CA 95604

SCOTT BLAISING
ATTORNEY AT LAW
BRAUN & BLAISING, P.C.
8980 MOONEY ROAD
ELK GROVE, CA 95624

JEANNIE S. LEE
CERS
CALIFORNIA DEPARTMENT OF WATER RESOURCES
3310 EL CAMINO AVENUE, ROOM 120
SACRAMENTO, CA 95821

JAMES WEIL
AGLET CONSUMER ALLIANCE
PO BOX 1599
FORESTHILL, CA 95631

THOMAS TANTON
4390 INDIAN CREEK ROAD
LINCOLN, CA 95648

ANDREW B. BROWN
ELLISON, SCHNEIDER & HARRIS, LLP
2015 H STREET
SACRAMENTO, CA 95814

BILL DI CAPO
ATTORNEY AT LAW
CALIFORNIA POWER AUTHORITY
901 P STREET, SUITE 142A
SACRAMENTO, CA 95814

DOUGLAS K. KERNER
ATTORNEY AT LAW
ELLISON, SCHNEIDER & HARRIS LLP
2015 H STREET
SACRAMENTO, CA 95814

EMILIO E. VARANINI III
ATTORNEY AT LAW
CALIFORNIA POWER AUTHORITY
901 P STREET, SUITE 142A
SACRAMENTO, CA 95814

ROBERT P. HOFFMAN
PAUL HASTINGS JANOFSKY & WALKER LLP
1127 11TH STREET, SUITE 905
SACRAMENTO, CA 95814

STEVE PONDER
FPL ENERGY, INC., LLC
980 NINTH STREET, 16TH FLOOR
SACRAMENTO, CA 95814

LYNN M. HAUG
ATTORNEY AT LAW
ELLISON, SCHNEIDER & HARRIS, LLP
2015 H STREET
SACRAMENTO, CA 95814-3109

ANN L. TROWBRIDGE, ATTORNEY AT LAW
DOWNEY, BRAND, SEYMOUR & ROHWER
555 CAPITOL MALL, 10TH FLOOR
SACRAMENTO, CA 95814-4686

RONALD LIEBERT, ATTORNEY AT LAW
CALIFORNIA FARM BUREAU FEDERATION
2300 RIVER PLAZA DRIVE
SACRAMENTO, CA 95833

DONALD BROOKHYSER, ATTORNEY AT LAW
ALCANTAR & KAHL LLP
1300 S.W. 5TH AVENUE, SUITE 1750
PORTLAND, OR 97201

MICHAEL P. ALCANTAR, ATTORNEY AT LAW
ALCANTAR & KAHL, LLP
1300 SW FIFTH AVENUE, SUITE 1750
PORTLAND, OR 97201

JAMES PAINE, ATTORNEY AT LAW
STOEL RIVES, LLP
900 SW 5TH AVE STE. 2600
PORTLAND, OR 97204-1268

STEVE MUNSON
VULCAN POWER CO.
1183 NW WALL STREET, SUITE G
BEND, OR 97701

JAMES LOEWEN
CALIF PUBLIC UTILITIES COMMISSION
320 WEST 4TH STREET SUITE 500
NATURAL GAS, ENERGY EFFICIENCY AND RESOURCE ADVISORY
LOS ANGELES, CA 90013

AARON J JOHNSON
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
EXECUTIVE DIVISION ROOM 5205
SAN FRANCISCO, CA 94102-3214

BRADFORD WETSTONE
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRIC INDUSTRY & FINANCE AREA 4-A
SAN FRANCISCO, CA 94102-3214

CAROL A BROWN
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF ADMINISTRATIVE LAW JUDGES
ROOM 5103
SAN FRANCISCO, CA 94102-3214

CHRISTINE M. WALWYN
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF ADMINISTRATIVE LAW JUDGES
ROOM 5117
SAN FRANCISCO, CA 94102-3214

CLAYTON K. TANG
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRIC INDUSTRY & FINANCE AREA 4-A
SAN FRANCISCO, CA 94102-3214

DAN ADLER
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF STRATEGIC PLANNING
ROOM 5119
SAN FRANCISCO, CA 94102-3214

David M. Gamson
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
EXECUTIVE DIVISION ROOM 5214
SAN FRANCISCO, CA 94102-3214

Donna J Hines
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRICITY RESOURCES AND PRICING
BRANCH ROOM 4102
SAN FRANCISCO, CA 94102-3214

Eugene Cadenasso
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
NATURAL GAS, ENERGY EFFICIENCY AND RESOURCE ADVISORY AREA 4-A
SAN FRANCISCO, CA 94102-3214

Farzad Ghazzagh
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRICITY RESOURCES AND PRICING
BRANCH ROOM 4209
SAN FRANCISCO, CA 94102-3214

Jan Reid
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRICITY RESOURCES AND PRICING
BRANCH ROOM 4209
SAN FRANCISCO, CA 94102-3214

Jay Luboff
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
NATURAL GAS, ENERGY EFFICIENCY AND RESOURCE ADVISORY AREA 4-A
SAN FRANCISCO, CA 94102-3214

John Galloway
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
NATURAL GAS, ENERGY EFFICIENCY AND RESOURCE ADVISORY AREA 4-A
SAN FRANCISCO, CA 94102-3214

Julie A Fitch
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
EXECUTIVE DIVISION ROOM 5203
SAN FRANCISCO, CA 94102-3214

Julie Halligan
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF ADMINISTRATIVE LAW JUDGES
ROOM 5101
SAN FRANCISCO, CA 94102-3214

Karen M Shea
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRIC INDUSTRY & FINANCE AREA 4-A
SAN FRANCISCO, CA 94102-3214

Kayode Kajopaiye
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRIC INDUSTRY & FINANCE AREA 4-A
SAN FRANCISCO, CA 94102-3214

Lainie Motamedi
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF STRATEGIC PLANNING ROOM 5119
SAN FRANCISCO, CA 94102-3214

Laura L. Krannawitter
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRICITY RESOURCES AND PRICING
BRANCH ROOM 4101
SAN FRANCISCO, CA 94102-3214

Laurence Chaset
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
LEGAL DIVISION ROOM 5131
SAN FRANCISCO, CA 94102-3214

Lisa Paulo
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
TELECOMMUNICATIONS DIVISION AREA 3-E
SAN FRANCISCO, CA 94102-3214

Manuel Ramirez
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
EXECUTIVE DIVISION AREA 5-A
SAN FRANCISCO, CA 94102-3214

Maryam Ebke
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF STRATEGIC PLANNING ROOM 5119
SAN FRANCISCO, CA 94102-3214

Nilgun Atamturk
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
NATURAL GAS, ENERGY EFFICIENCY AND RESOURCE ADVISORY AREA 4-A
SAN FRANCISCO, CA 94102-3214

Paul Douglas
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRIC INDUSTRY & FINANCE AREA 4-A
SAN FRANCISCO, CA 94102-3214

Peter V. Allen
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
DIVISION OF ADMINISTRATIVE LAW JUDGES
ROOM 5022
SAN FRANCISCO, CA 94102-3214

Regina DeAngelis
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
LEGAL DIVISION ROOM 4107
SAN FRANCISCO, CA 94102-3214

Richard A. Myers
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
NATURAL GAS, ENERGY EFFICIENCY AND RESOURCE ADVISORY AREA 4-A
SAN FRANCISCO, CA 94102-3214

Robert Kinosian
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
EXECUTIVE DIVISION ROOM 4205
SAN FRANCISCO, CA 94102-3214

Scott Logan
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRICITY RESOURCES AND PRICING
BRANCH ROOM 4209
SAN FRANCISCO, CA 94102-3214

Stephen St. Marie
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRIC INDUSTRY & FINANCE AREA
SAN FRANCISCO, CA 94102-3214

Steven C Ross
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
ELECTRICITY RESOURCES AND PRICING
BRANCH ROOM 4209
SAN FRANCISCO, CA 94102-3214

Trina Horner
CALIF PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
EXECUTIVE DIVISION ROOM 5217
SAN FRANCISCO, CA 94102-3214

ANDREW ULMER
ATTORNEY AT LAW
SIMPSON PARTNERS LLP
900 FRONT STREET, SUITE 300
SAN FRANCISCO, CA 94111

ROSS MILLER
CALIFORNIA ENERGY COMMISSION
1516 9TH STREET
MS-20
SACRAMENTO, CA 95184

JAMES MCMAHON
SENIOR ENGAGEMENT MANAGER
NAVIGANT CONSULTING, INC.
3100 ZINFANDEL DRIVE, SUITE 600
RANCHO CORDOVA, CA 95670

CHIEF COUNSEL'S OFFICE
CALIFORNIA ENERGY COMMISSION
1516 9TH STREET, MS 14
SACRAMENTO, CA 95814

Alan Lofaso
CALIF PUBLIC UTILITIES COMMISSION
770 L STREET, SUITE 1050
EXECUTIVE DIVISION
SACRAMENTO, CA 95814

Carlos A Machado
CALIF PUBLIC UTILITIES COMMISSION
770 L STREET, SUITE 1050
EXECUTIVE DIVISION
SACRAMENTO, CA 95814

CONSTANCE LENI
CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
MS-20
SACRAMENTO, CA 95814

DAVID HUNGERFORD
CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET, MS-22
SACRAMENTO, CA 95814

Don Schultz
CALIF PUBLIC UTILITIES COMMISSION
770 L STREET, SUITE 1050
ELECTRICITY RESOURCES AND PRICING
BRANCH
SACRAMENTO, CA 95814

HEATHER RAITT
CALIFORNIA ENERGY COMMISSION
1516 9TH STREET, MS 45
SACRAMENTO, CA 95814

JENNIFER TACHERA
CALIFORNIA ENERGY COMMISSION
1516 - 9TH STREET
SACRAMENTO, CA 95814

KAREN GRIFFIN
EXECUTIVE OFFICE
CALIFORNIA ENERGY COMMISSION
1516 9TH STREET, MS 39
SACRAMENTO, CA 95814

KIP LIPPER
SENATOR BYRON SHER
STATE CAPITOL, ROOM 2082
SACRAMENTO, CA 95814

MIKE JASKE
CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET, MS-22
SACRAMENTO, CA 95814

RUBEN TAVARES
ELECTRICITY ANALYSIS OFFICE
CALIFORNIA ENERGY COMMISSION
1516 9TH STREET, MS 20
SACRAMENTO, CA 95814

TARA M. DUNN
901 P STREET, SUITE 142A
SACRAMENTO, CA 95814

WADE MCCARTNEY
REGULATORY ANALYST IV
PUBLIC UTILITIES COMMISSION
770 L STREET, SUITE 1050
ENERGY DIVISION
SACRAMENTO, CA 95814

FERNANDO DE LEON
ATTORNEY AT LAW
CALIFORNIA ENERGY COMMISSION
1516 9TH STREET, MS-14
SACRAMENTO, CA 95814-5512

GLORIA BELL
CALIFORNIA DEPARTMENT OF WATER
RESOURCES
3310 EL CAMINO AVENUE, SUITE 120
SACRAMENTO, CA 95821