

**Staff Testimony on  
Electricity Restructuring Market Power Concerns**

Prepared for the August 14, 1996 *ER 96* Committee Hearing

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## *Table of Contents*

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	<i>Page</i>
INTRODUCTION .....	1
MARKET POWER CONCERNS .....	2
GAMING THE POWER EXCHANGE: AN EXAMPLE OF MARKET POWER ABUSE .....	3
RECOMMENDED MARKET POWER ANALYSIS .....	5
Traditional Horizontal Market Power Analysis .....	5
Second Step Market Power Analysis: .....	9
MITIGATION PROPOSALS .....	12
RECOMMENDATIONS .....	13

## INTRODUCTION

The *ER 96* Committee's February 15, 1996 Issues Order introduced a number of questions regarding the implications of electricity industry restructuring. Although the Energy Commission supports the vision of a restructured electricity industry using market-based prices for generation, there are many important implementation details of the CPUC Decision and related proposals that need to be resolved. Furthermore, the outcome and effectiveness of the proposed market structure remains uncertain. One of the areas of concern to ratepayers and potential competitors is the possibility for market power abuses by large utilities.

The purpose of the Staff testimony is to respond to the following question on market power, found on page 4 of the February 15, 1996 *ER 96* Committee Issues Order:

**IA.5. What steps need to be taken by the CPUC and FERC, in considering the investor-owned utilities' ISO and Power Exchange applications, to provide adequate protection against the potential exercise of undue market power?**

Staff's extensive work on market power issues associated with restructuring the California electric industry has resulted in two market power reports that provide a discussion of the same issues related to the above Committee question. Both Staff reports were filed at the CPUC on May 1, 1996 as attachments to the Energy Commission comments regarding the utility divestiture proposals and are incorporated herein by reference.<sup>1</sup> The first report provides a broad overview of the market power concerns and an analysis of the market structure. The second report provide the Staff recommendations concerning the market power showing that utilities should submit to FERC in support of their application to sell generation through the Power Exchange at market-based rates. The recommendations are consistent with the analysis FERC required of applicants requesting to sell energy, and other FERC jurisdictional products and services, at market-based rates.

The first task needed to respond to the Committee question is an evaluation of the extent to which market power is actually a concern under restructuring. It is important to recognize that the results of any study to identify the potential for market power will depend on the methodology and assumptions considered. This is demonstrated by the type of analysis that

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<sup>1</sup> **Attachment #1: Staff Report on Generation Market Power in Electricity Restructuring and Attachment #2: Staff Proposal on the Utility Market Power Showing, May 1, 1996.**

both Edison and SDG&E used for the May 29, 1996 Supplemental Market Power filing to FERC.<sup>2</sup> The utilities contend that they do not have the ability to engage in horizontal market power activities for profit. However, the Staff analysis demonstrates that the proposed market structure may grant the investor-owned utilities an opportunity to manipulate prices or deter entry of new competitors.<sup>3</sup>

Although there are methodological limitations to the Staff analysis (explained in the report), Staff believes it provides sufficient doubt to suggest a need for a more detailed review of the planned market structure and an energy modeling study of the generation and transmission system. Staff have the use of available system simulation models that could facilitate the necessary type of analysis and are also investigating other methods for evaluating market power concerns. The inherent complexity of the restructuring proposal and degree of unresolved issues is reason enough not to take market power concerns for granted.

Once an analysis of the market structure is completed, CPUC and FERC would then gain a better understanding of the need and effectiveness of any proposed mitigation measures. Furthermore, a properly designed monitoring program should provide the necessary information to analyze market activities and ensure that such abuses do not occur.

The following is a summary of the Staff market power concerns and recommendation on what type of market power showing that the CPUC and FERC should require from the WEPEX Applicants on the proposed Independent System Operator and Power Exchange. These issues are already discussed in the referenced Staff reports and Commission comments to the CPUC.

## **MARKET POWER CONCERNS**

As the California utility industry and its regulators entertain proposals to move toward open competition for generation-related services and open, non-discriminatory access to transmission services, one of the main concerns is market power. Economists define market power as the ability of one firm, or a set of firms, to profit from a unilateral price increase. Staff recognizes that the mere possession of market power is not a violation of the anti-trust laws. Rather, the anti-trust laws serve to deter and punish such abuses of market power and/or anti-competitive efforts to acquire or retain market power.

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<sup>2</sup> Supplement Filed at the Federal Energy Regulatory Commission by Southern California Edison Company (U 338-E) and San Diego Gas and Electric Company (U 902-E) to the Application for Authority to Sell Electric Energy at Market-Based Rates Using a Power Exchange, May 30, 1996, **Report on Horizontal Market Power Issues, Workpapers Filed at the Federal Energy Regulatory Commission**, May 30, 1996, and **Supplemental Workpapers in Support of Report on Horizontal Market Power Issues Filed and the Federal Energy Regulatory Commission by Southern California Edison Company**, June 6, 1996, FERC Docket No. ER 96-1663-000 and CPUC Docket R. 94-040-31 and I. 94-04-032.

<sup>3</sup> Staff agree with the market power concerns provided in the **Comments of the California Energy Commission on Southern California Edison and San Diego Gas and Electric's May 29, 1996 Supplemental Market Power Filing**, June 25, 1996.

However, the goal of the electric industry restructuring proposal is to transition from the regulated utility monopoly structure we have today, to a workable competitive market place. Certainly, restructuring would not be in the public interest if it were to allow the companies that grew large under the regulator's oversight to exploit this market dominance free of countervailing market forces. Thus, market power and its mitigation become central issues in utility restructuring. There are three fundamental questions that should be considered and resolved.

- Will the proposed market structure create a workable competitive environment to discipline potential market power abuse?
- If there is still a doubt, what would be the effectiveness of proposed market power mitigation strategies for establishing a more competitive market during and after the transition period?
- What type of information should be made available in a monitoring program that may be used to identify any questionable market behavior or performance by individual firms?

FERC requires detailed market power analysis in other markets, such as natural gas, when there are requests for market-based rates or mergers. The record of these proceedings demonstrate that a market power analysis is a difficult and controversial task with a range of opinions. Staff believes that understanding the elements to restructure a regional electricity market is much more complicated than the level of analysis that has occurred when establishing market-based rates for a natural gas pipeline. The number and degree of unresolved issues associated with the restructuring proposal accentuates the need for a rigorous market power analysis.

## **GAMING THE POWER EXCHANGE: AN EXAMPLE OF MARKET POWER ABUSE**

The restructured electricity market in California can serve the public with efficiency, perhaps even with elegance, if it is truly competitive. However, if the market is dominated by a few large generating companies, the system can be distorted to serve the particular interests of these companies rather than the broader interests of consumers and electricity providers.

Setting up a power pool along the lines of the proposed Power Exchange may create opportunities for gamesmanship, especially for players who have many biddable resources and generation capacity. Such behavior may be characterized as an exercise of market power. Gaming in a power pool is a serious but complicated issue that should be examined. The topic is complicated due to transmission considerations and the proposal to include multi-attribute bidding protocols in the Power Exchange. The simulations of the UK system,

conducted by Richard Green and David Newbery,<sup>4</sup> may serve as a springboard for analyzing the issue.

Ideally, the restructured market would be built around an active and highly competitive Power Exchange (PX). Generators would bid in energy at what it costs them to produce it — not because they wish to make restructuring a success, but because bidding higher would reduce the number of hours during which they might be dispatched. When supply exceeds demand, generators would earn their money based on the difference between their own operating costs and the higher operating costs of other generators. When demand exceeds supply, they would earn based on the difference between their own operating costs and the prices consumers are willing to pay.

The ideal market would include transactions outside the PX, such as direct bilateral contracts between generators and consumers, but all such transactions would be influenced by the PX's efficient pricing. Consumers would not pay more than their risk-adjusted perceptions of future PX prices, and generators would not accept less than their risk-adjusted perceptions of future PX prices. Perhaps markets are never truly ideal, but at least the most obvious and harmful imperfections, real and potential, should be dealt with before placing the public's reliance on a purportedly competitive, open market electricity system in California.

A company that wishes to game the PX has three options: bid high, bid low, or withhold generation. Bidding low is effective only if the objective is to deny revenue to other generators, drive them out of the market, and secure a more dominant position. Bidding high can be effective when the company controls enough of the market to have a reasonable expectation of setting the market clearing price (MCP) with one of the units under its control. It can then bid its best units low, to make sure they get dispatched, and bid several of its less efficient units high, with the intent that one of these will turn out to be on the margin and thus set MCP. All generators, including competitors, will then get the benefit of the high price. Withholding generation, by not bidding some units or portions thereof, can be effective in forcing higher-priced generation to the margin or in creating an artificial shortage of electricity. In the latter case, prices may be set by demand bids that greatly exceed any generator's marginal cost. The result can be greatly increased revenues for all generators.

All gaming schemes are facilitated when a single company controls multiple generators, the more the better. A company having only one unit cannot afford to bid it high, because it might lose its place in the dispatch order. Anyway, with only a small amount of capacity, it would rarely have a reasonable expectation of setting MCP. It might as well bid its costs and try to get dispatched. Likewise, the small company could not afford to hold back generation. Any resulting price increase would only accrue to other generators.

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<sup>4</sup> Richard J. Green and David M. Newbery, "Competition in the British Electricity Spot Market." *Journal of Political Economy*, 1992, vol.100, No.5.

## RECOMMENDED MARKET POWER ANALYSIS

Staff assumes that FERC will require the utility applicants to complete at least the same level of market power analysis as required in other applications for market-based rates or mergers. There are several issues that should be addressed in a market power analysis:

1. **vertical market power**, resulting from the ownership or control by a single firm of all aspects of electricity production, transmission, network coordination, distribution, and retailing; vertical integration may allow control of one aspect (i.e., transmission, distribution and metering) to subsidize or force higher prices for another aspect (generation), and thus grant firms an unfair competitive advantage in a power pool or in bilateral contract markets;
2. **horizontal market power**, resulting from a concentration of ownership or control of any single aspect, such as generation; horizontal market power may allow a generator to influence market clearing prices; and
3. **locational market power**, where a specific generation facility may provide unique services needed for a particular geographic area and command a premium market price.

The market power analysis would entail traditional industrial organizational tests as well as a more specific evaluation of individual generators and their role in an assumed competitive market. Furthermore, both short-term transitional concerns and long-term market structures should be considered.

Given the special dispensation of a large percentage of California's generation supply (nuclear, hydro, QFs, contracts, and PBR on must-run units for reliability) and minimum load constraints, the transitional market place will be fundamentally different from the workable competitive market place that is the goal of restructuring. Because of the must-take status of so many generation sources, there will be relatively little load served through the Power Exchange to be met through competitive bidding during the transition. In addition, there is also some question as to whether there will be sufficient incentives for new entrants during the transition. The market power analysis, therefore, should not be limited to the transition period in order to ensure a successful bridge to the workable competitive future.

### Traditional Horizontal Market Power Analysis

The initial phase for a traditional market power analysis entails the task of defining the geographic scope and products in the restructured market. Defining the geographic scope for the proposed California market means taking into consideration the potential for transmission constraints that could restrict the ability of competing generators to serve loads in transmission-constrained areas. Such analysis could be performed using actual market conditions, but only once the market began operations. This implies that prior to the start of the new

market, a rigorous analysis of expected transmission constraints under conditions simulating actual market conditions is probably required.

Defining the geographic scope also entails consideration of the proposed transmission pricing and congestion management protocols and how they affect possible entry of new competitors into, or demand elasticity within, constrained areas. For example, the analysis must consider whether protocols that require averaging of locationally-different prices for loads may lessen the incentive for locating new generators in constrained areas or lessen the incentive of price-sensitive loads to curtail consumption during periods when local market power is being exercised by generators.

Defining the relevant products involves understanding the types of electricity-related services and commodities that might be traded in the new market. We can expect, for example, hourly trading of electricity (e.g. kWhs) through the proposed PX, as well as a market for various types of ancillary services, such a spinning and non-spinning reserve, back-up reserves, AGC, voltage support, and black-start capability. In addition, each of these ancillary services will have a geographic or locational aspect which may limit the ability of competing providers to effectively mitigate market power in particular locations. For some products, such as voltage support, the locational aspect may severely limit the size of the geographic market.

Once the product and geographic markets are defined, the most widely used indicator to infer the potential for market power is to identify market shares and concentrations. Market shares help to establish whether the market has a single dominant firm, a small set of firms who can collude, or a set of potential rivals with incentives to compete. A significant concentration of sellers of a relevant product within a given geographic region may provide the necessary conditions for the exercise of market power. The Herfindahl-Hirschman Index (HHI) and the Four-Firm Ratio are two well used measures of market concentration to infer the potential for market power. This type of analysis would serve only an initial screening attempt to identify the potential magnitude of a market power problem.

Staff applied the market share and concentration (HHI) tests to California's 1994 energy sales data and to simulations of all the energy that was available for purchase by California utilities during 1994.<sup>5</sup> **Table 1** and **Table 2** provide a summary of the market shares and HHI results. The tables provide the results using different geographic scopes, historical capacity and energy, the limited set of "competitive resources,"<sup>6</sup> divestiture proposals, and assumptions regarding municipal utility participation in the Power Exchange.

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<sup>5</sup> A more detailed description of the study and assumptions are found in Section VII of the Staff report on **Generation Market Power in Electricity Restructuring**, Attachment #1 to the Commission Comments to the CPUC on Voluntary Divestiture, May 1, 1996.

<sup>6</sup> Competitive electricity supplies represents 1994 energy by generation sources assumed to compete in a wholesale power pool during the transition period. Staff assumed that energy from hydro, nuclear and non-utility generators will not compete in the planned wholesale power pool during this period.

**TABLE 1**  
**MARKET POWER CALCULATIONS**  
**Based on 1994 Total Generation (1)**

	Actual Generation		Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Energy	Dependable Capacity	Oil/Gas Divestiture (2)	Divestiture w/Coal (3)	Actual w/o Muni (4)	Divestiture w/o Muni (5)
HHI Calculations						
California	1,395	1,763	1,042	936	2,184	1,419
NCal	3,424	4,658	2,546	2,546	5,462	3,972
SCal	2,348	2,909	1,817	1,620	3,633	2,434
Largest Firm Share						
California	26%	29%	21%	19%	33%	24%
NCal	52%	66%	42%	42%	68%	54%
SCal	42%	47%	35%	30%	54%	39%

1. Total Resources are the electric resources that will offer bids to a proposed power pool. Mission Energy generation is allocated to SCE market shares.
2. Scenario 1 includes the utility 50% divestiture proposal, suggesting the sale of oil and gas generation units. SCE did not include any of the coal units in the divestiture proposal. Market share calculations assume that divested divestiture proposal. Market share calculations assume that divested facilities will contribute to half of the 1994 generation.
3. Scenario 2 includes the 50% divestiture of the IOU fossil fuel generation units, including SCE's coal facilities.
4. Scenario 3 includes competitive electricity from only the IOU's and from imports, assuming that municipal utilities will not participate in pool bidding.
5. Scenario 4 includes 50% divestiture of all fossil fuel generation units, assuming that municipal utilities do not bid in the pool.

**TABLE 2**  
**Market Power Calculations**  
**Based on 1994 Competitive Generation (1)**

	Actual 1994 Generation		ELFIN Results	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Energy	Dependable Capacity	Energy (2)	Oil/Gas Divestiture (3)	Divestiture w/Coal (4)	Actual w/o Muni (5)	Divestiture w/o Muni (6)
HHI Calculations							
California	1,503	2,118	1685	891	727	2,948	1,165
NCal	4,160	5,857	4131	2,452	2,452	8,406	4,472
SCal	2,343	3,297	2571	1,577	1,461	4,535	2,510
Largest Firm Share							
California	28%	34%	24%	19%	14%	42%	21%
NCal	60%	75%	56%	37%	37%	91%	56%
SCal	42%	51%	38%	29%	21%	64%	32%

1. Competitive Resources are those electric resources assumed to compete in a proposed power pool. Represents all resources other than nuclear, hydroelectric and NUG energy and capacity.
2. ELFIN derived 1994 energy represents the dispatch modeling results using the ER 94 data set.
3. Scenario 1 includes the utility 50% divestiture proposal, suggesting the sale of oil and gas generation units. SCE did not include any of the coal units in the divestiture proposal. Market share calculations assume that divested facilities will contribute to half of the 1994 generation.
4. Scenario 2 includes the 50% divestiture of the IOU fossil fuel generation units, including SCE's coal facilities.
5. Scenario 3 includes competitive electricity from only the IOU's and from imports, assuming that municipal utilities will not participate in pool bidding.
6. Scenario 4 includes 50% divestiture of all fossil fuel generation units, assuming that municipal utilities do not bid in the pool.

The results show that the HHI would be below an assumed 1,800 initial screening threshold, if California as a whole is considered to be the appropriate geographic scope (meaning that transmission congestion is not an issue within the state). However, the market share of the largest firm is above the 20 percent criteria suggested by Paul Joskow.<sup>7</sup> Both the HHI and market shares increase significantly if all California municipal utilities do not participate in the Power Exchange or if transmission constraints imply a smaller geographic market. If we take an optimistic assumption that utilities divest part of their fossil fuel generation capacity and a new firm will supply 50 percent of the energy that PG&E and Edison would supply from these generation facilities, the HHI will decline. However, the results under divestiture also vary depending on the geographic scope and number of market participants. Considering that the results are driven by the assumptions, Staff suggest that a conservative screening criteria be used for evaluating whether further analysis is needed.

Based on the analysis, Staff cannot conclude that there is no potential for horizontal market power on part of utilities in California. The analysis suggests that there may be a tight oligopoly type of market structure during the transition period of restructuring. The results of the Staff analysis simply suggest that further work is needed to adequately measure the potential for horizontal market power in a restructured market.

The traditional methods of analysis may serve to identify the resulting market structure and determine if a firm has the potential to engage in market power activities. The analysis would also serve to determine whether there will be a workable competitive market to discipline the potential for any abuses of market power. However, defining the market structure alone is not sufficient to identify the potential for market power. Further characterization of the market dynamics (e.g., pool bidding protocols and number of participants) and an analysis of gaming theory would provide a better understanding of how market power abuses may occur. Other critical elements that should discipline a market are the ease of entry for other competitive firms and whether there is an adequate number substitutable goods and services.

## **Second Step Market Power Analysis:**

The second step for determining whether one or a small collection of dominant firms are likely to exercise horizontal (generation) market power should consider other structural and behavioral characteristics relevant to the market structure in question. Each of these elements should be defined before any party can adequately understand the operation of the proposed market structure and determine the potential for market power abuses.

These characteristics include: (1) Ease of output expansion by the competitive fringe thereby impacting the demand elasticities faced by the dominant firms; (2) Entry conditions for new participants and existing participants wishing to expand existing capacity; (3) The extent of

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<sup>7</sup> Paul Joskow, "Horizontal Market Power in Wholesale Power Markets," Comments in FERC Docket No. RM95-9-000, 1995, Page 37.

market concentration on the demand side of the wholesale and retail markets; (4) The nature of the regulatory structure placed on the relevant market segments; (5) The extent of vertical integration between the generating companies and distribution and transmission companies; (6) The nature and extent of the competitive transition arrangements; and (7) the nature of the likely competitive strategies pursued by the players. Likely strategies include cooperative behavior and unilateral restrictions of output. Price/marginal cost ratios that may prevail under a competitive market structure would capture a significant portion of these market and institutional characteristics.

A necessary condition for the exercise of market power by a firm is the ease with which it can vary prices without effecting any changes in its customers' market behavior. In fact, the market power of a seller is inversely related to the demand elasticity he faces. If there is an elastic supply of good substitutes for his product, the demand a firm faces will be fairly elastic and that firm will lose much business by raising its price. Price elasticity of demand is time dependent. The longer time elapses, the more flexibility and choices consumers have to adjust to a price change. Therefore, a firm may have market power in the short-run, but not likely in the long-run if there is the potential for entry of new competitors in the market.

A dominant California firm would be reluctant to raise its prices if it faced a competitive fringe of in-state entities and out-of-state utilities able and willing to enter the market. In this case, the dominant firm would be facing a short-run elastic demand for its output. The freedom of a dominant firm to manipulate prices would also be constrained by a credible threat of entry. The ease of generation entry would not only be determined by the available technologies, but also by the nature of the competitive transition arrangements and the availability and competitive health of risk mitigation financial instruments, such as contract for differences, transmission congestion contracts, futures and options contracts. An analysis of the likely sustainable pool prices is important to determine the potential ease of entry by new participants. Although there has been many general assertions that the market will provide the necessary incentives for the entry of new generation or DSM services, this type of analysis has not been presented.

Ease of entry is one of several competitive factors that may suggest that an applicant lacks market power. In a FERC decision approving market-based rates for Koch Gateway (Koch Gateway, 66 FERC at 62,299), the Commission defined good alternatives as "an alternative that is available soon enough, has a price that is low enough, and has a quality high enough to permit customers to substitute the alternative for Koch Gateway's service." However, it is possible that applicants will have the ability to identify the extent of available market alternatives and potential for entry of new generation competitors. If a dominant firm has a cost advantage (such as the CTC) over potential entrants, it may be optimal for that firm to set prices just below the level where entry would occur.

FERC has required that applicants demonstrate that the price of alternatives and new entry is low enough to effectively restrain the applicant from increasing prices. In prior cases, the Commission has established a threshold price level for new entrants at or below the applicants

approved maximum cost-based rate plus 15 percent.<sup>8</sup> A new entrant that could provide a competitive service within this price range would demonstrate a relative ease of entry to the market. "However, for some alternatives the cost of construction and the time needed for environmental analysis and certification would suggest that the entry may not be easy."<sup>9</sup>

The ownership structure of the transmission sector will impact the likelihood that generation market power may be exercised. Currently, there is discussion on the incentive properties of transmission congestion contracts, primarily designed as locational price hedging instruments. How these financial instruments, which confer transmission property rights to the holder, are initially allocated and eventually traded will have a significant impact on existing participants and potential new entrants. A market power showing should consider the possibility that the proposed market structure may not contain sufficient incentives for all parties to participate in the Power Exchange.

The interplay between the wholesale and retail markets will be significant in determining the extent of generator market power. For example, competitive generating companies, initially, will sell a large share of their output to a few large distribution companies (discos) in the wholesale market. Therefore, the regulatory structure governing the distribution companies in the newly formed markets will have a significant impact on the incentive of the generator to exercise market power. If a distribution company is able to pass through the cost of spot market purchases from the wholesale market to its retail customers, then it will have little incentive to put downward pressure on wholesale prices. On the other hand, if the distribution company faced a cost-incentive based regulatory structure, the firm would then have a strong incentive to counter inflated wholesale pool prices.

The extent of vertical integration adds another level of complexity in assessing the likelihood of the exercise of horizontal market power. For example, if a distribution company retains ownership in some of the generating facilities and is allowed to pass through changes in wholesale prices, then its generating arm may have the incentive to restrict output in the wholesale market to increase prices, since it would lose very little in the retail market.

An affiliated distribution company may also have an incentive to harm competitors in the generation market. For example, in an electricity industry organized around a pool-based spot market, the distribution companies may, at first, be the major source of contract for differences (CFDs) and other financial hedging instruments. As such, they would have an incentive to withhold the supply of these temporal risk mitigation instruments from the market. New generation entrants would thereby find it more difficult to obtain project financing. Eventually, as the market matures, marketers and retail consumers will compete with the discos in

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<sup>8</sup> FERC Staff Paper, Market-Based Rates for Natural Gas Companies, February 1995, page 30.

<sup>9</sup> FERC Statement of Policy and Request for Comments on Alternatives to Traditional Cost-of-Service Ratemaking for Natural Gas Pipelines (Docket No. RM95-6-000) and Regulation of Negotiated Transportation Services of Natural Gas Pipelines (Docket No. RM96-7-000), Issued January 31, 1996, page 4.

signing CFDs with existing and new generation companies. Parties should demonstrate that functional separation of the generation, distribution and transmission segments of the industry, as outlined in the CPUC Order, will indeed be complete. This showing will be particularly significant for the transition period.

In addition, there remains unresolved issues regarding the efficiency of the spot price formation process (i.e., the bidding process and computer simulations to generate locational spot prices, or a multilateral trading process up to an hour before dispatch). The extent to which the generating companies game bids remains a topic for further research. One would think that the elasticity of demand facing a particular firm would be adequate to assess the likelihood of gaming. However, bid gaming is an issue with respect to the exchange. Therefore, further information is required on the extent to which the exchange can respond to variations in a generator's supply bid.

## **MITIGATION PROPOSALS**

The CPUC has proposed several mitigation measures to address different types of market power. The structure of the Power Exchange and Independent System Operator is assumed to take care of any transmission and vertical market power concerns. The CPUC goes one step further by requesting that the jurisdictional utilities investigate corporate restructuring options to reflect some form of functional separation. Recognizing that locational market power problems may develop, the CPUC also proposes some form of Performance-Based Rate mechanism for any generation units that are needed for transmission system stability and have the potential for commanding premium prices. Horizontal market power concerns are addressed by recommending a 50 percent divestiture of the fossil fuel generation facilities that jurisdictional utilities own.

The CPUC provided a list of other market power mitigation measures in a response to questions by State Senate Energy, Utilities and Communications Committee.<sup>10</sup> These CPUC mitigation measures include:

- Establishment of complaint procedures and monitoring programs both at the CPUC and at the FERC.
- Customer-specific information necessary for the distribution (accounting and billing) functions of the utility which will be made available on terms that are fair to all competitors in the generation sector.

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<sup>10</sup> **Electric Restructuring Issues: California State Senate Energy, Utilities and Communication Committee 1995-96 Legislative Session**, Response by the California Public Utilities Commission, July 2, 1996, Page 11.

- Distribution utilities affiliated with generation companies will be prohibited from entering into contracts with an affiliated generator until the market structure is fully implemented, all CTC has been collected, and all customers are eligible for direct access service.
- Limits on a utility's ability to obtain operating costs through the transition cost balancing account for its non-nuclear, non-hydroelectric units.

Conceptually, each of the above mentioned mitigation proposals may adequately address specific market power concerns. However, there has not yet been any evaluation as to the effectiveness of these proposals. Staff recommends that FERC analyze the effectiveness of the market power proposals after the CPUC approves the details of PBR and the assessment and collection of the CTC. In addition, a better understanding of the relationship between the energy and ancillary services market is also needed.

The applicant utilities should explain and demonstrate that these or any other mitigation proposal will guarantee that market power concerns will diminish. The review of market power issues and effectiveness of mitigation proposals should include an energy modeling analysis of the generation and transmission system under varying load and resource availability conditions. Computer simulations provide a means of gaining some insights into how the market will develop, what types of market power issues could emerge and what are the most effective methods for mitigation.

## **RECOMMENDATIONS**

Staff recommends that further analysis, as suggested above, should be completed to evaluate the seriousness of any market power concern. A market power evaluation should consider energy as the relevant product. The analysis should also consider potential uncertainties, such as the doubtful participation of public-owned utilities. The evaluation should go beyond structural indicators of market power and address the types of behavior that are ultimately the concern of regulators and the consumer. Only then can the CPUC or FERC determine the need or effectiveness of market power mitigation strategies.

Staff believes that there are a number of important issues that need to be resolved before any definitive market power findings can be made. For example, Edison has expressed its commitment to divest 50 percent of oil and gas generation facilities. This assumption is incorporated in Edison's horizontal market power analysis. However, locational market power concerns may restrict the sale of a significant portion of Edison's generation facilities. Furthermore, a large portion of the existing generation units operate at very low capacity factors, due to age and high heat rates compared to newer, more efficient units. Even if Edison divests a portion of the existing generation capacity, the resulting competitive position will depend on which units are actually sold. The final outcome of the Competition Transition Charge and Performance Based Rate proposals will also affect the competitive standing of existing utilities over other potential market participants. It is also important to

understand the relationship between energy and ancillary services in the proposed market. Market power findings and an evaluation of mitigation proposals should be postponed until these issues are resolved.

Staff believes that there are vertical market power concerns that merit further investigation before restructuring occurs. Although the PX/ISO structure will likely address transmission access concerns, the interplay between wholesale and retail markets may present opportunities for vertical market power abuses. Vertical market power issues involve an evaluation of the corporate restructuring proposals, cross-subsidization opportunities and the rate structure proposals that will be imposed on the utility distribution companies. Vertical market power and the proposed utility corporate structure may present barriers to effective retail competition and opportunities for distributed generation or Demand Side Management services. A robust retail market is an important deterrent for wholesale electricity market power abuses.

Staff recommends that the CPUC and FERC market power findings should pertain to only the five-year transition period. The transitional market will likely be fundamentally different from the workable competitive market place that is the goal of restructuring. Although many are optimistic about the restructuring vision, the outcome and effectiveness of the proposed market structure remains uncertain. Staff thereby recommends that the CPUC and FERC revisit the market power evaluation after the transition period and determine whether a competitive market is in place for the long term.

Other important market power concerns include: 1) Will resulting prices to consumers be too high over the transition period? 2) Will the Investor Owned Utilities (IOUs) be in a position to squeeze marginal Qualifying Facility (QF) competitors after the transition period? 3) Do proposed solutions to market power concerns adequately solve the problem in the long term?

Staff also recommends that some form of regulatory oversight is needed to evaluate the performance of all firms that compete in the proposed power pool. Information should be made available to the jurisdictional body to facilitate the necessary analysis to evaluate whether the proposed pool is in fact competitive. In past cases, FERC established some reporting requirements for companies authorized to charge market-based rates.

**Witness Qualifications  
for  
AL ALVARADO**

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Mr. Alvarado is employed at the California Energy Commission as an Electric Generation System Specialist in the Electricity Resource Assessments Office. Mr. Alvarado currently has oversight responsibility for regional markets assessments, utility financial issues and electricity restructuring market power concerns.

Mr. Alvarado has been a member of the Energy Commission staff since 1981 serving in various capacities, including Special Advisor to Commissioner Robert Mussetter and an analyst in the Engineering Office and Fuels Resource Assessments Office. Mr. Alvarado received a Bachelors of Science in Environmental Policy Analysis and Planning from the University of California, Davis.

**Witness Qualifications  
for  
ROBERT D. GROW**

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Robert D. Grow has been employed as an Electric Generation System Program Specialist I in the Electricity Resource Assessment Office of the California Energy Commission since March 1995. Previously he was an Energy Resources Specialist with the Department of Water Resources for ten years. He holds a Bachelor of Science in Business Administration from U.C. Berkeley, an MBA from California State University, Sacramento, and a Juris Doctor degree from Northwestern California University School of Law.

**Witness Qualifications  
for  
PHILIPPE AUCLAIR**

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Philippe Auclair is employed by the California Energy Commission as an Electric Generation System Specialist in the Electricity Resource Assessment Office withing the Energy Forecasting and Resource Assessments Division. Mr. Auclair is currently working on electricity restructuring issues. He holds a Bachelors of Science from the State University of New York at Albany, and a Masters of Art in Economics from the University of California, Davis.