



Myths Debunked: The Real Story of Wholesale Power Costs in California

Why Wholesale Power Costs Increased

Who Collected the Revenues

What was the Impact on Operating Margins of Suppliers

[This report is based in part upon an earlier report prepared by Reliant Energy entitled, *Analysis of Increased Power Costs*. Most significantly, this previous report has been updated and revised to include information regarding Reliant Energy's revenues, expenses and operating margins in California over the period April 7, 1998 to May 31, 2001.]

July 6, 2001

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I. INTRODUCTION

Disingenuous attempts have been made in recent months to paint the picture that independent generators have been the principal beneficiaries of the increase in wholesale power costs in California. Reliant Energy is now taking the step, unprecedented in this controversy, of publicly disclosing its California operating margins to help demonstrate the falsity of these claims. A review of Reliant's operating margins reveals no significant increase in operating margins over the period 1998 to 2001 on a dollar per megawatt-hour basis. While revenues have increased significantly over this period, what is ignored is that Reliant's sales quantities have increased *four fold* and Reliant's fuel costs have increased *seven fold* over this same period. In stark contrast, Reliant's operating margin has increased slightly more than *ten percent*. The evidence is compelling: operating costs and sales quantities are driving the revenues of gas-fired generators, not increases in operating margins.

While the prices paid to gas-fired independent generators dominated political and media reports, California's single market-clearing price system was quietly paying gas-based prices – thereby delivering immense windfalls – to generators who bought no gas at all. The real money stayed in California itself – with California's own three big utilities plus LADWP, who together collected

more than half of the \$27 billion power bill in 2000. Another twenty-two percent went to others who were buying little or no natural gas.

After the independent gas-fired generators paid their fuel bills, their net revenues totaled less than ten percent of the total market.

II. BACKGROUND

There has been a tremendous amount of attention focused on the increase in wholesale power costs in California from 1999 to 2000. This discussion has focused primarily on the magnitude of the increase in wholesale power costs without attempting to explain or otherwise put into context the reasons that wholesale power costs have increased. Similarly, there has been very little analysis done relative to where the increased revenues associated with the increases in wholesale power costs flowed. Publicly some officials have suggested that the primary beneficiaries of increased wholesale power costs have been power generators and marketers, many of whom are headquartered outside of California.¹ While most of the data necessary to do a thorough analysis of this issue is in the possession of the California Independent System Operator (“CAISO”) and individual market participants, we can say, based on publicly available information, that the assumption that the generators and marketers received the bulk of the revenues associated with increased power costs is clearly erroneous. We can also say, based on the financial results of Reliant’s California

¹ Texas-based generators are routinely cited by press and public officials as comprising the bulk of the alleged problem. In fact, the only available statistically-based study, published by the California Independent System Operator in March 2001 showed Texas-based generators and marketers receiving less than twenty percent of the alleged overcharges during the study period. *See* Appendix A.

operations, that the assumption that increases in operating margins are the major driving force behind wholesale power increases is similarly inaccurate.

Based on a review of publicly available data concerning the revenues of California's investor-owned utilities together with various statements made publicly by other market participants that shed light on their revenues and/or expenses, an analysis of the \$27 billion in wholesale power costs in 2000 shows that *more than half of the increase in wholesale power costs was paid to California's investor-owned utilities, San Diego Gas and Electric, Southern California Edison and Pacific Gas and Electric (the "IOUs"), and the publicly-owned Los Angeles Department Water and Power ("LADWP").*² This analysis also undercuts statements made to the effect that the increase in wholesale power costs has represented a tremendous transfer of wealth to entities outside of California.³ To the contrary, analysis of available data would suggest that the majority of the wholesale power costs in 2000 were paid to California-based entities. The implication that an alleged massive transfer of wealth moved to Texas-based entities, or to entities based in states outside the West seems also implausible, since the largest outside supplier to California was the Canadian supplier, British Columbia Hydro ("BC Hydro"), which together with numerous

² While the analysis set forth in this report is based in part on limited access to source information, the information with respect to the revenues and expenses of the IOUs is, as described below, based on analyses of filings made with the California Public Utilities Commission by the IOUs. The remainder of the analysis is based on other public statements made by market participants with regard to revenues and expenses, filings with the Energy Information Agency and extrapolations made based on those statements and filings. While access to all of the source data might result in some changes at the margin, the fundamental conclusions set forth in this analysis would not be affected by such changes.

³ It is also worth noting that to the extent suppliers are publicly traded companies, the ultimate beneficiaries of any earnings on power sales are the shareholders of such companies. Of course, these shareholders are dispersed across the United States, including, in many cases, California.

Western suppliers provided the majority of energy to California from outside the state, as documented by the CAISO's only report of alleged overcharges.⁴

The claim that high prices principally represent gas-fired, out-of-state generator profit also falls apart when analyzed in light of readily available public information. Natural gas costs have been and remain one of the primary driving factors in the increase in wholesale power cost in California. The generation retained by the California IOUs is primarily nuclear for Southern California Edison, or in the case of Pacific Gas and Electric, nuclear and hydro. Additionally, key suppliers outside of California such as BC Hydro and the Bonneville Power Administration operate hydroelectric generation facilities. Since power prices are typically set at the margin by less efficient gas-fired generation, as gas prices have increased, nuclear and hydroelectric generated energy has become materially more profitable. In contrast, while the revenues of the gas-fired suppliers have increased, those increases are more easily explained by the dramatic run up in natural gas prices.

Finally, when the operating margins of the independent generators are considered in light of the increases in natural gas costs – and, in the case of Reliant, a four-fold increase in sales volumes since 1998 – it is apparent that ***wholesale power costs are not being driven by increased operating margins.*** This analysis also illustrates the absurd nature of the claims in the range of \$9 billion in refunds, when, for example, Reliant's total operating margin (without allowing for any return on investment and without deducting fixed costs, interest

⁴ See Appendix A.

expense and taxes) for spot sales during the relevant refund period being considered by FERC was less than \$130 million.

III. ANALYSIS OF POWER SUPPLY COSTS

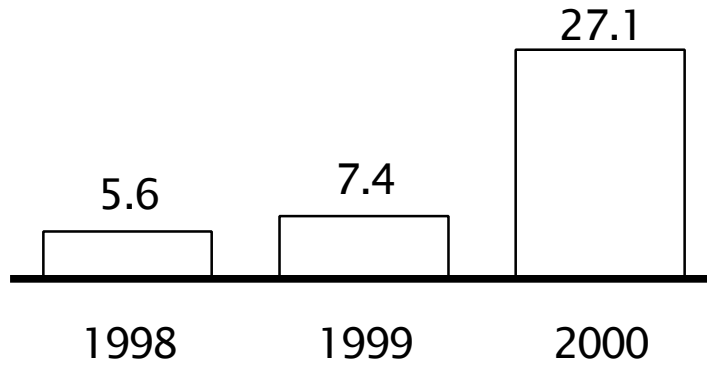
A. Why did prices increase?

Public officials have been quick to point out that wholesale power costs have increased substantially from 1999 to 2000. Indeed, wholesale power costs increased approximately five fold over this period as illustrated by Figure 3-1.

[Figure 3-1 presented on the following page.]

Wholesale Power Costs in CAL-ISO
\$/Billions

Figure 3-1



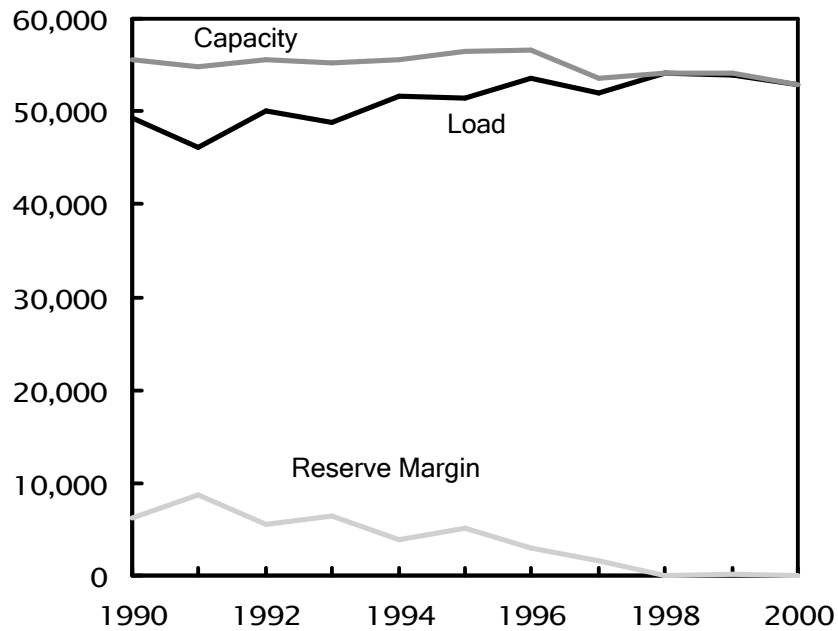
Source: CAL-ISO

Typically ignored, however, is any critical discussion of the factors that resulted in this increase in wholesale power costs. Without an understanding of some of the factors driving wholesale power costs up, an erroneous impression can be created that the increase in wholesale power costs is attributable solely to the actions of suppliers seeking to maximize revenues in a time of scarcity.

Two primary factors, more than all others, account for the bulk of the increase in wholesale power costs from 1999 to 2000. First, is the serious supply and demand imbalance that exists in California. Figure 3-2 shows the supply and demand balance in California.

California Supply Demand Balance
Megawatts at peak hour

Figure 3-2

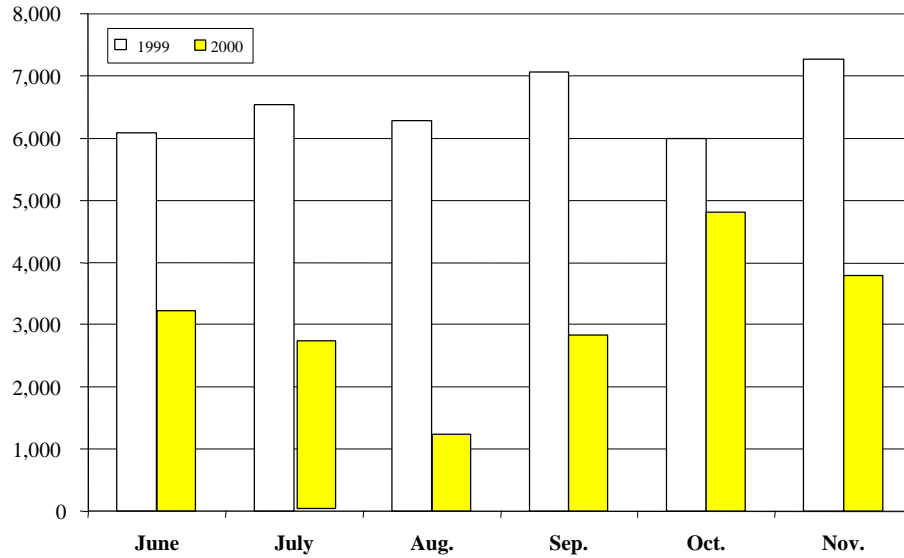


Source: NERC

As this chart illustrates, the increase in demand without a corresponding increase in supply forced reserve margins over this period to continue to tighten. The California supply and demand imbalance was aggravated by several other circumstances. Among those include a significant reduction in imports from 1999 to 2000 due to California's reliance on hydroelectric resources and drought conditions in the Northwest (California is dependent in a significant way on imports to meet its demand requirements). Figure 3-3 illustrates the dramatic reduction in imports experienced in 2000.

California Net Imports
Peak Hours (June - November)
Average MWh/Hour

Figure 3-3



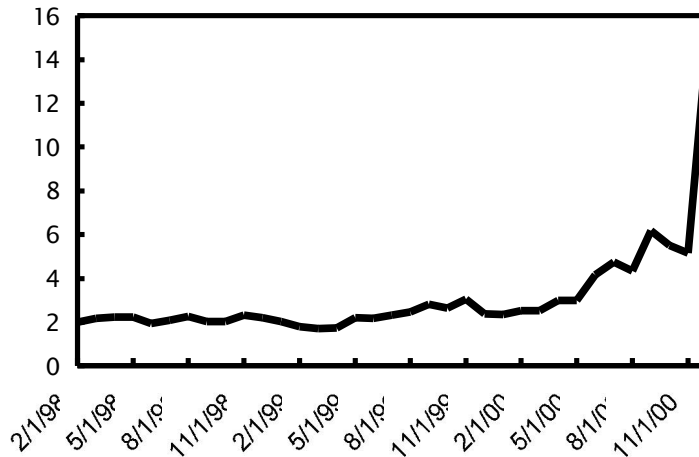
Source: CAISO

The other driving factor in the increase in wholesale power costs from 1999 to 2000 was the cost of natural gas. For a variety of reasons, including demand in other parts of the country, the lack of infrastructure upgrades in order to support the increase in gas demand and the increased demand for natural gas to fuel gas-fired electric generation facilities that were being run at significantly higher levels in 2000, gas prices increased dramatically from 1999 to 2000.

Figure 3-4 illustrates the significant increase experienced.

California Gas Price
\$/Mmbtu

Figure 3-4



Source: Western Natural Gas Market Review (Brent Freidman Associates)

Because natural gas-fired generation is the marginal source of generation in California the increase in natural gas costs contributed directly to the increase in overall wholesale power costs.

B. Where did the increased revenues go?

Contrary to widespread conjecture by politicians, the independent generators are not the primary beneficiaries of increased wholesale power costs. An analysis of publicly available data and public statements made by numerous parties would indicate that more than half of the power revenues in 2000 flowed to the IOUs and LADWP.⁵ Because the three IOUs in California retained

⁵ The data sources for the IOU information include the UDC Monthly Balancing Account Reports filed with the CPUC by both SCE and PG&E and the ATCP filings made with the CPUC by SDG&E. These filings indicate that SCE had generation revenues of \$6.06 billion, PG&E had generation revenues of \$5.6 billion and SDG&E had generation revenues of \$616 million. The information with regard to LADWP is based on public statements made by former LADWP General Manager David Freeman that LADWP's

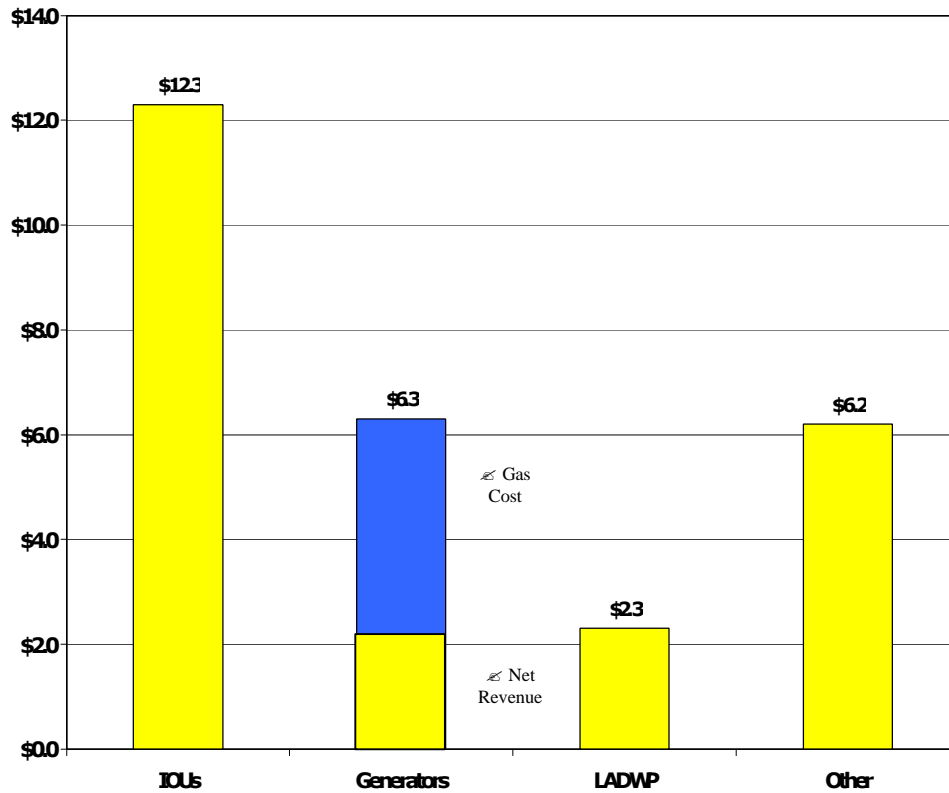
ownership of a significant portion of their regulated generation, coupled with the fact that this retained California utility generation is hydroelectric and nuclear, means that the IOUs have received not only a significant portion of the revenue associated with increased wholesale power costs, but enjoyed a disproportionately greater increase in profit margin, as their production costs are not linked to natural gas prices. Analysis would also indicate that LADWP has received a significant portion of the revenue associated with increases in wholesale power costs. Figure 3-5 illustrates Reliant's estimate of where the power revenues went based on available data.

[Figure 3-5 presented on the following page.]

profit in 2000 was approximately \$300 million and that LADWP charged a margin of fifteen percent over cost. The information with regard to the independent generators is based on (i) for Duke, public statements that their revenues were based on an average price of \$76/MWh times the megawatt-hours reported in filings made with the Energy Information Agency, and (ii) for all others, the average price per megawatt-hour of \$114/MWh cited in the CAISO study (Empirical Evidence of Strategic Bidding in California ISO Real-Time Market) times the number of megawatt-hours reported for each supplier in filings made with the Energy Information Agency. The "Other" category is simply the difference between the sum of the IOUs, the independent generators, LADWP and the \$27.1 billion wholesale power cost reported for 2000 by the CAISO.

Where the \$27.1 Billion Went in 2000
 (Revenues less gas costs for independent generators)
 \$/Billion

Figure 3-5



Source: See Footnote 5.

There are several points worth noting from this analysis:

- ↳ The IOUs and LADWP received more than 54% of the revenues associated with wholesale power costs in 2000.
- ↳ Other parties, including entities such as other municipally owned utilities, marketers, BC Hydro (according to the CAISO, the largest single revenue recipient) and the Bonneville Power Administration received approximately 22% of the revenue associated with wholesale power costs in 2000.

↴ Net of natural gas costs, approximately eight percent of the revenue associated with wholesale power costs was paid to the independent generators, or less than 24% of the revenue when natural gas costs are included. Additionally, as discussed below, revenue for the gas-fired generators was substantially offset by the increase in natural gas costs described previously.

IV. THE IMPACT OF INCREASED EXPENSES ON OPERATING MARGINS

Building on the foregoing discussion regarding who received the revenues associated with wholesale power cost increases in 2000, it is also critical to take into account offsetting expenses. For the owners of hydroelectric and nuclear facilities, the increase in revenues in 2000 was not offset by increasing fuel and emissions costs. Based on information prepared by Governor Davis' office in connection with the execution of the Memorandum of Understanding with SCE, SCE's generation costs were reported as \$42/MWh.⁶ This yields a revenue-to-expense ratio of approximately 2.7:1.

In contrast, the natural gas-fired generators, while experiencing an increase in revenues, also experienced a significant increase in operating costs in the form of natural gas costs and emissions costs.⁷ For example, in 2000 Reliant's gas cost alone represented approximately sixty-five percent of its revenues, up from approximately forty-five percent in 1998. Assuming Reliant's cost structure

⁶ Benefit-Cost Analysis of the Memorandum of Understanding ("MOU") with Southern California Edison ("SCE"), Prepared by The Blackstone Group L.P. and Saber Partners, LLC (April 30, 2001). For purposes of this analysis, the same generation cost of \$42/MWh was used for PG&E and SDG&E as being indicative of their generation costs. The SCE generation cost from the Benefit-Cost Analysis appears to be an all in cost figure inclusive of fuel, variable O&M, emissions and capital recovery.

⁷ Except as noted, the charts included in this report do not take into account increases in emissions costs, but such costs increased by over 1,000% in 2000 over 1999 levels.

is representative of the other independent generators,⁸ this yields a revenue-to-expense ratio of approximately 1.5:1.

Because the natural gas fired generators are paying the bulk of their revenues for fuel, their operating margins are reduced. So not only are the revenues for the IOUs significantly higher than the independent generators, their operating margins would be expected to be significantly higher since they experienced no material offsetting increase in operating expenses.

Figure 4-1 illustrates the disparity in operating margins. When the revenue figures for the IOUs are adjusted to remove QF and utility power purchases, the revenues for the IOUs are only approximately ten percent more than the revenues of the independent generators. However, the operating margin of the IOUs is almost two-and-half times that of the independent generators.⁹

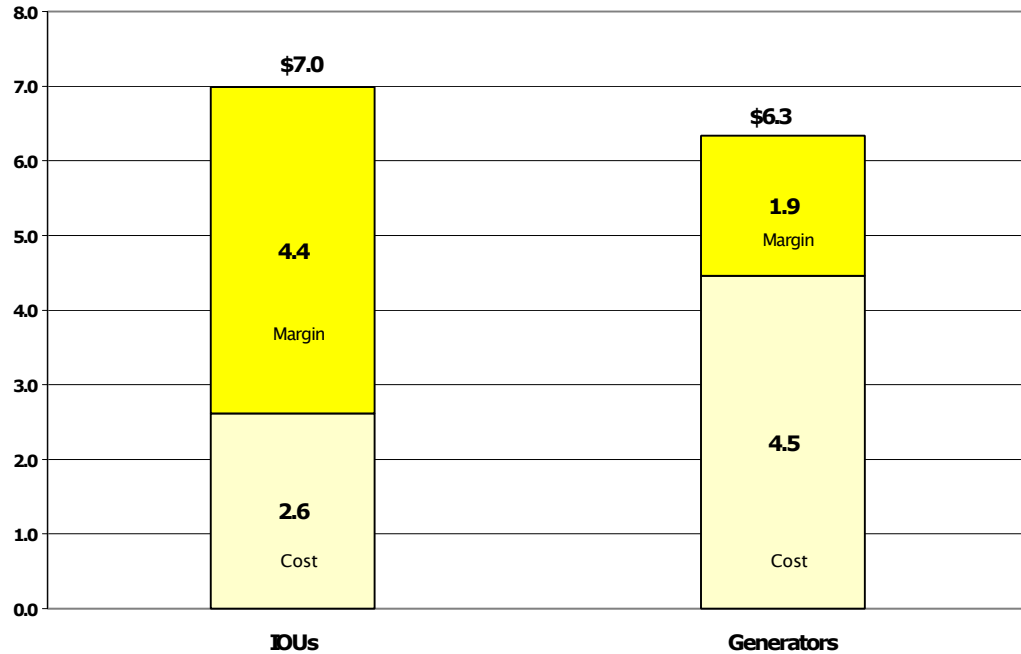
[Figure 4-1 presented on the following page.]

⁸ In 2000, Reliant's units were representative of the existing stock of gas-fired units in California.

⁹ For purposes of this analysis, costs for the independent generators only include fuel and variable O&M (\$6/MWh), not emissions, capital or other costs. In contrast, the cost figures for the IOUs appear to be all-in cost figures. Taking the additional costs of the independent generators into account would only magnify the disparity in operating margins.

Comparison of Revenues and Costs
 (Excluding QF and Other Utility Purchases)
 \$/Billion

Figure 4-1



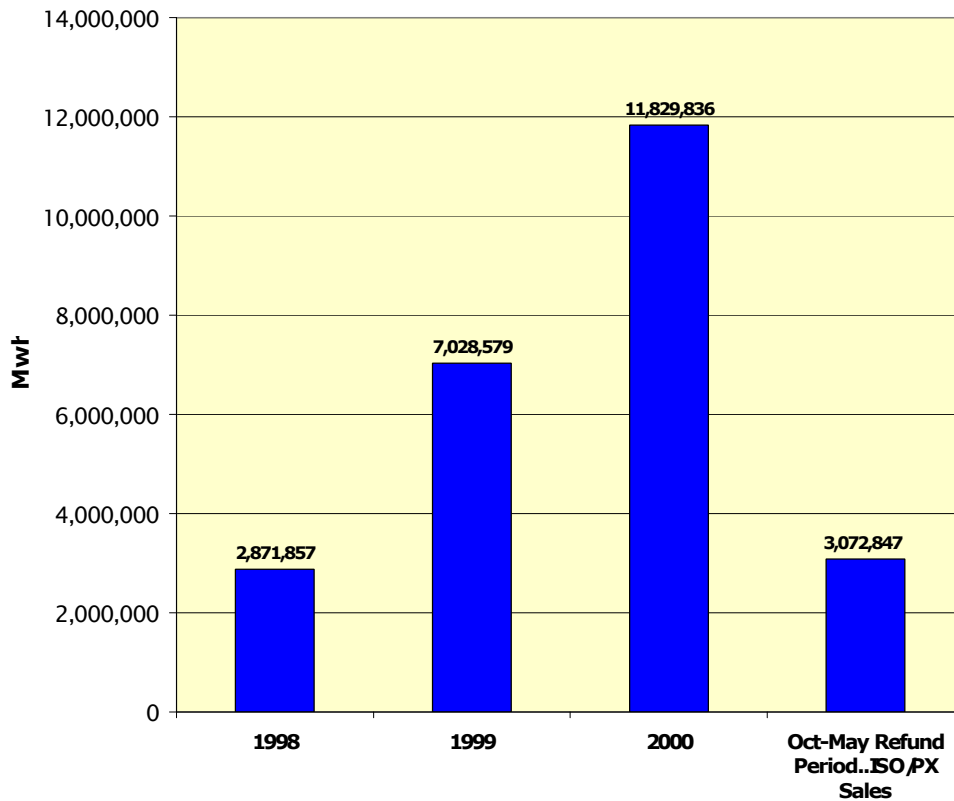
V. THE IMPACT OF INCREASES IN EXPENSES ON RELIANT’S OPERATING MARGINS

The common perception that revenue increases experienced by the independent generators over the last twelve months have been primarily attributable to increased operating margins is clearly wrong. As the foregoing discussion demonstrates, increased revenue to gas-fired generators has been substantially offset by the dramatic run up in natural gas costs. Additionally, in the case of many of the gas-fired generators, including Reliant, revenue has increased due to substantial increases in sales volumes. As shown in Figure 5-1, which shows the megawatt-hour sales quantities for Reliant over the period April

7, 1998, through May 31, 2001, Reliant's sales quantities in California in 2000 increased more than four times over that in 1998. As previously discussed, this was primarily a result of a reduction in imports due to drought conditions in the Northwest, as gas-fired energy replaced unavailable hydro power.

Sales Quantities
MWh

Figure 5-1

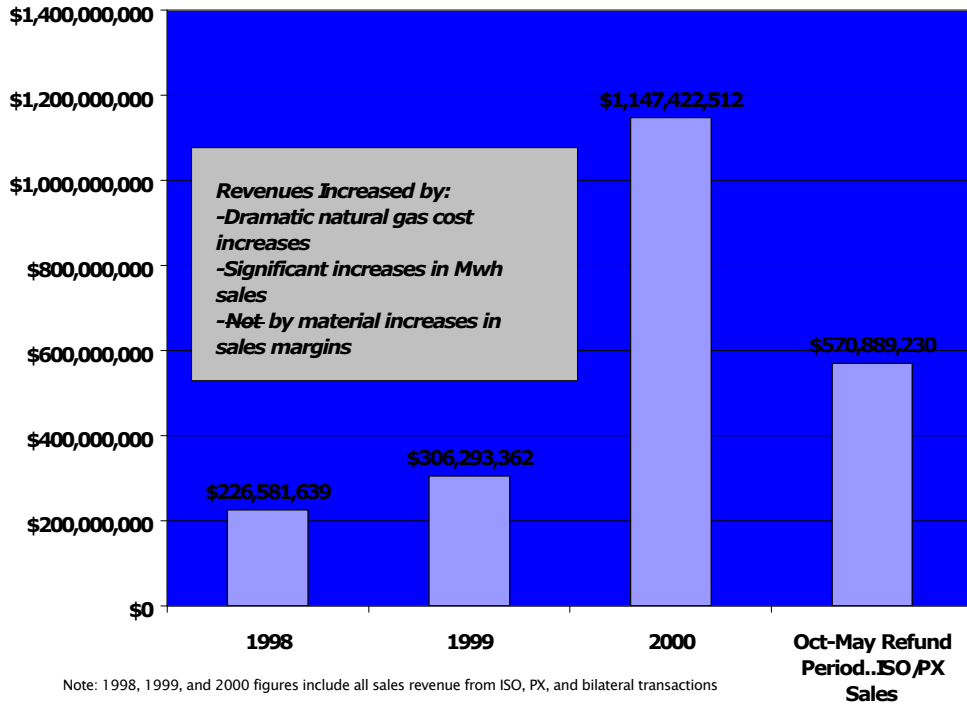


While Reliant's revenue rose substantially over this same period as a result of this substantial increase in sales volumes (See Figure 5-2), its expenses rose commensurately (See Figure 5-3). In particular, it is worth noting that in

contrast to the four-fold increase in sales volumes from 1998 to 2000, Reliant's gas costs increased more than seven fold.

Net Revenue
\$Million

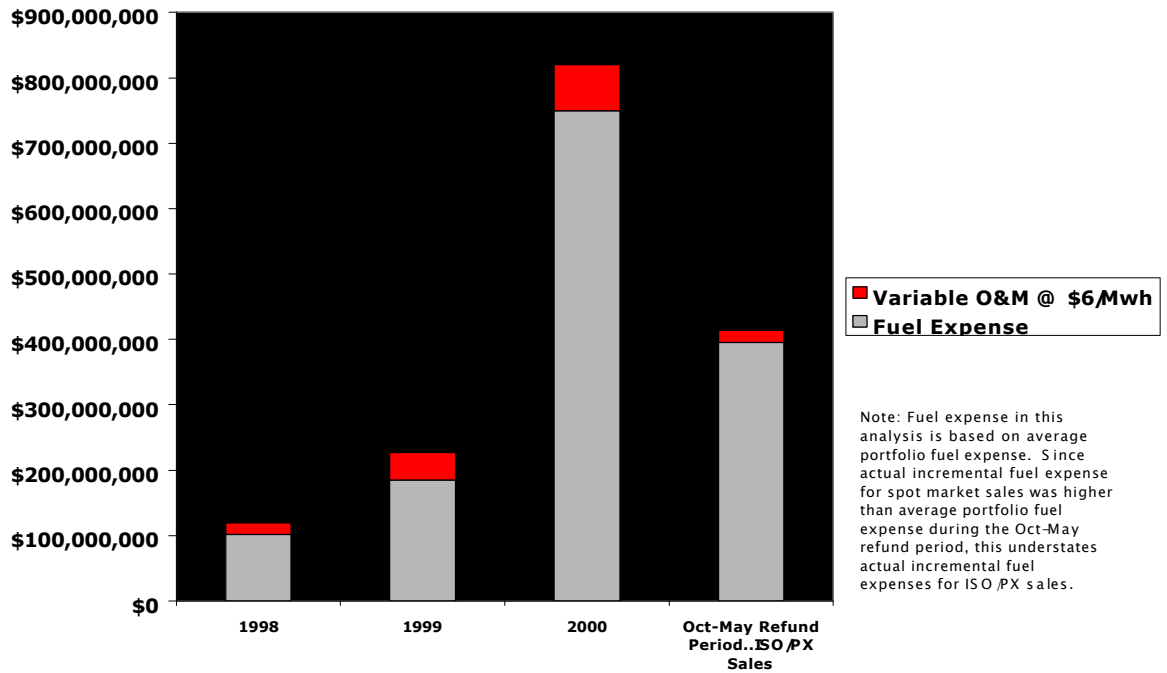
Figure 5-2



[Figure 5-3 presented on the following page.]

Fuel and Variable O&M Expense
\$Million

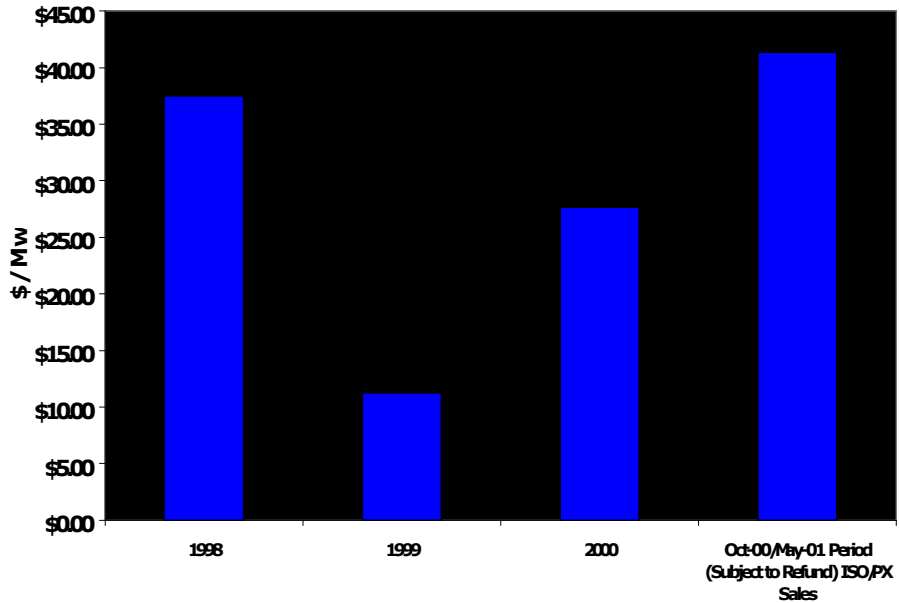
Figure 5-3



As a result, as shown in Figures 5-4 and 5-5, Reliant’s operating margins during 2000 account for only approximately 28% of Reliant’s total California revenue. Moreover, despite the suggestion by the State of California that generators such as Reliant owe billions of dollars in refunds, Reliant’s total operating margin (which only takes into account fuel expenses, emission costs and variable operations and maintenance costs, but *does not* provide for any return on and of capital, does not cover other fixed costs and does not reflect interest expenses or taxes) for spot market transactions during the relevant refund period is less than \$130 million. This information highlights the absurd nature of the refund claims that have been made to date.

Net Operating Margin¹⁰
\$/MWh

Figure 5-4



Summary Financials

Figure 5-5

	1998	1999	2000	Oct-May Refund Period ISO and PX Sales
Sales Quantities in Mwh	2,871,857	7,028,579	11,829,836	3,072,847
Net Revenue	\$226,581,639	\$306,293,362	\$1,147,422,512	\$570,889,230
Fuel and Variable O&M Expense	\$118,841,212	\$227,475,304	\$820,472,211	\$413,697,236
Net Operating Margin	\$107,740,427	\$78,818,058	\$326,950,301	\$127,041,394 ¹¹
Net Operating Margin in \$/Mwh	\$38	\$11	\$28	\$41

¹⁰ The Oct-00/May-01 Period includes \$30,150,600 in emissions costs. Emission costs are not included in the 1998, 1999 and 2000 figures.

¹¹ This figure includes \$30,150,600 in emission costs. Emission costs are not included in the calculation of net operating margin for 1998, 1999 and 2000.

Even a cursory review of the foregoing information highlights that *the substantial revenue increases that have been experienced over the last year in California are attributable to gas cost increases and increases in sales volumes.*

Ignoring this fact, some have suggested that the revenue increases have been driven by profiteering. However, an analysis of operating margins over the last three years – including two years in which no one contends that the market was dysfunctional – reveals the fallacy of this notion: while operating margins have increased from 1998 to the present, the increase in operating margins (from \$38/MWh in 1998 to \$41/MWh in the refund period) is a fraction of the increase in gas costs and sales volumes over this same period.

VI. CONCLUSION

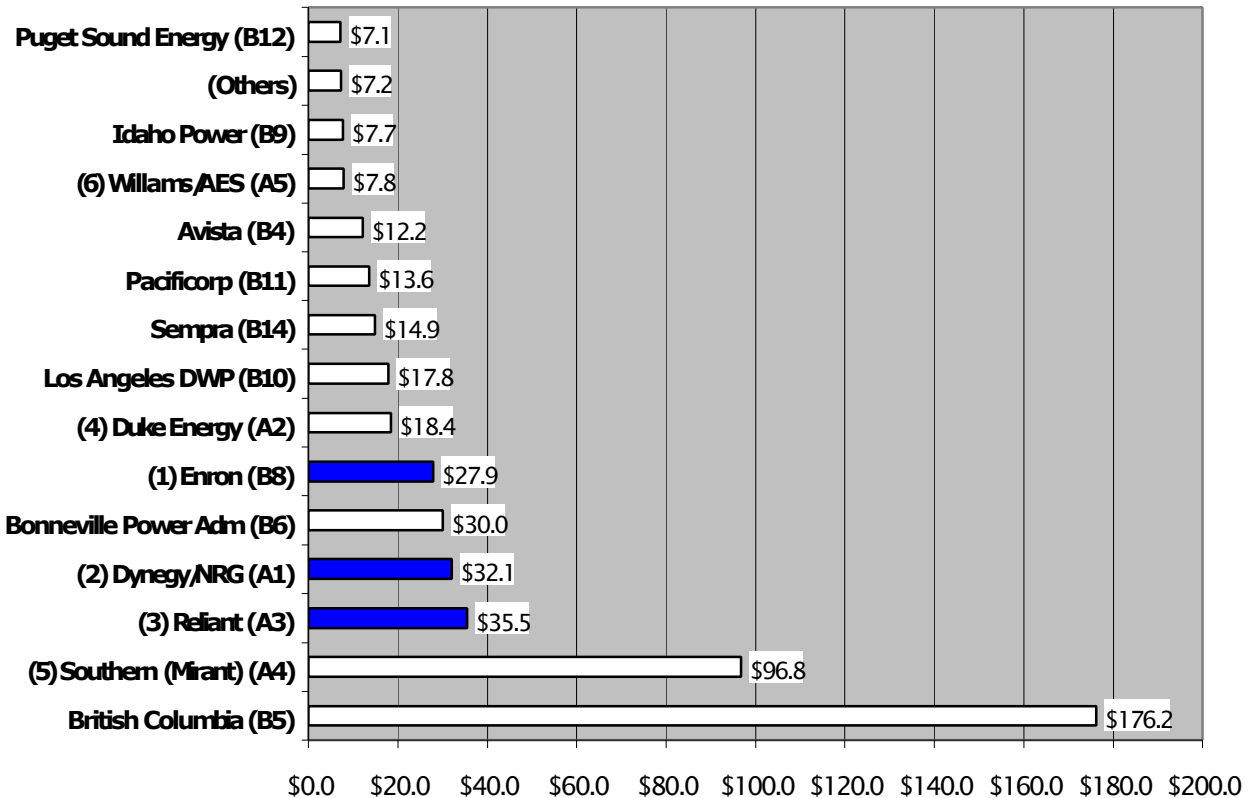
Conclusions that can be drawn from the foregoing analysis include:

- ↴ There are a number of explanations for the increase in wholesale power costs from 1999 to 2000, including a reduction in imports and dramatic increases in the cost of natural gas.
- ↴ There has not been a tremendous wealth transfer from California to other parts of the country. To the contrary, the majority of the wholesale power costs in 2000 were paid to California-based entities. Equally significant, the revenue received by these California-based entities led to a direct increase in profit margin, given the cost structure of the generation retained by the utilities. Low variable cost nuclear and hydro generation enjoyed a very large windfall as power prices rose due to gas-fired generation on the margin and increased gas costs.

- ↴ Independent generators, while experiencing an increase in revenue in 2000, incurred significantly higher fuel costs. The operating margins of the generators (gross revenues net of fuel costs) represent approximately eight percent of the total wholesale power costs in California in 2000. Even without taking into account increases in operating costs, the revenues received by the independent generators account for only approximately 24% of the total wholesale power costs in California in 2000.
- ↴ Additionally, many independent generators like Reliant have experienced substantial increases in sales volumes over the period 1998 to 2000 due to the lack of imports, particularly hydro generation. The combination of this increase in sales and dramatically higher natural gas costs has been largely responsible for the increase in Reliant's revenues. As a result, over this same period, Reliant's operating margins have not dramatically changed. In stark contrast to the widely-touted claims that billions of dollars are owed in refunds, Reliant's total operating margin (which does not include any return on investment, fixed costs, interest expenses or taxes) on spot sales over the period October 2000 through May 2001 is less than \$130 million.

APPENDIX A

Western Generators, Led by British Columbia, Bonneville and Los Angeles,
In the Aggregate Collected Most of the “Excessive” Profits in the Real Time
Power Market According to California ISO Study for Key 2000 Price Increase Period



The ISO study reported California and Western suppliers accounting for three times the alleged “excessive rents” or excess profits as Texas firms: 57% versus 19%, without counting profits of SDG&E, SCE and PG&E’s retained hydro and nuclear power plants

DARK Solid \approx Texas Companies. *LIGHT Stripe* \approx Non-Texas Companies. Amounts in millions. The parenthetical alphanumeric codes are the original code names used in the ISO report to mask the identities of the suppliers referred to in the report. The existence of the key to this code was first published by the L.A. Times on April 11, 2001.

Chart published in Sheffrin, *Empirical Evidence of Strategic Bidding in California ISO Real-time Market (Cal. ISO, March 21, 2001), page 19. Original caption: “Figure 8. Excessive Rents Earned in Real-time Market for the Top Ten Suppliers (Cumulative Rent for May to November 2000 – Top Rent Receivers (\$millions).”* The independent electric industry generally regards this report, which was prepared during the period after the governor’s replacement of the previous independent ISO Board with his own appointees, as both biased and conceptually unsound. However, only the ISO has access to the kind of data necessary to compile information of this kind.

Notes: 1. Enron is Texas based, but has no generation in California. 2. Dynegy is a Texas company but the venture in California is 50% owned by NRG, a Minnesota company. 3. Reliant is a Texas company. 4. Duke is a North Carolina company both as to headquarters and policy direction. Western trading operations are located in Salt Lake City, Utah, Eastern trading operations in Texas. 5. Mirant, until recently part of the Southern Company, is located for all purposes in Atlanta, Georgia. 6. Arlington, Va., based AES owns and operates the California joint venture plants and Williams of Oklahoma markets the electricity.