From: Tim Belden/HOU/ECT
Sent: Thursday, October 05, 2000 5:57 PM
To: Debra Davidson/PDX/ECT
Subject: FERC Presentation on California/West Wholesale Market

---------- Forwarded by Tim Belden/HOU/ECT on 10/05/2000 03:00 PM

From: Steven J Kean@ENRON on 10/02/2000 04:59 PM CDT
Sent by: Steven J Kean@ENRON
To: Tim Belden/HOU/ECT@ECT
cc:
Subject: FERC Presentation on California/West Wholesale Market

Per our discussion
------ Forwarded by Steven J Kean/NA/Enron on 10/02/2000 04:58 PM ------

Mary Hain@ECT
08/29/2000 08:17 PM

To: Steven J Kean/NA/Enron@Enron
cc:
Subject: FERC Presentation on California/West Wholesale Market

---------- Forwarded by Mary Hain/HOU/ECT on 08/29/2000 06:23 PM

Mary Hain
08/29/2000 06:11 PM
To: James D Steffes/HOU/EES@EES, David W Delainey/HOU/ECT@ECT, John J Lavorato/Corp/Enron@Enron, Christopher F Calger/PDX/ECT@ECT, Tim Belden/HOU/ECT@ECT, Joe Hartsoe@Enron, Paul Kaufman/PDX/ECT@ECT, Sarah Novosel/Corp/Enron@ENRON, David Parquet/SF/ECT@ECT, jdasovic@ees.enron.com, Mona Petrochko, Kevin M Presto/HOU/ECT@ECT, Richard Shapiro, Steve Kean, Chris H Foster/HOU/ECT@ECT, Robert Badeer/HOU/ECT@ECT, Jeff Richter/HOU/ECT@ECT, Susan J Mara/SFO/EES@EES
cc: Christi Nicolay
Subject: FERC Presentation on California/West Wholesale Market

Last Thursday, I made the first attached presentation to the FERC Staff at the power marketer's meeting on the FERC's investigation of the wholesale market in the West (and in particular California). Ellen Wolf (of Tabors Caramanis) and I created this presentation building on previous presentations by Tim Belden and Dave Parquet. In the presentation and the meeting we made the following points:
There isn't much FERC can do because the cause of the price spikes is not in the wholesale market. We discouraged FERC from taking any action that would hurt the vibrant wholesale market in the California and the rest of the West as well.
High prices logically resulted from scarcity and if the Commission does anything it should (1) investigate whether market power was being exercised by any party and, (2) if necessary to protect the market (while still incenting needed generation) establish a price cap at a scarcity rent level equal to the price at which loads were willing to interrupt.
The IOUs have not properly prepared for the risk of high prices caused by scarcity. They have failed to hedge and have underscheduled their load, therefore having to fill a large percentage of their load at ISO real time prices. My analogy was that this was like day trading your retirement fund as an asset allocation scheme.

The market would function better if more information was provided to the market. The Commission should do whatever it can to incent participation by load. To see the presentation, detach, save, and view in Powerpoint. When you do, you will find there are many "hidden" slides that were not part of the oral presentation but were provided to Staff in hard copy for additional information.

According to the head of the investigation (Scott Miller), the staff got alot more out of this meeting than Staff's previous meetings with the IOUs and the generators. Based on the numerous phone calls I've been getting, the Staff is looking into the data we provided.

I have also attached a revised version of the presentation that Tim sent to Scott Miller on Friday. Tim's version conveys the same message but takes a different approach to conveying the message. On Friday, Tim talked to Scott and answered some additional questions. Tim said that Enron is in favor of eliminating the mandatory PX buying requirement and would like the IOUs to be able to buy from Enron Online. He also explained more fully the existence of scarcity .

What To Do About Western Wholesale Markets?

August 25, 2000

Tim Belden
Enron North America
West Power

Summary

- High prices in peak periods are the result of scarcity and are necessary to incent needed generation investment
- California Retail/Wholesale Market Interaction
  - Retail customers are benefiting from the low prices during shoulder months caused by wholesale competition
  - The major problem is in the retail market where high peak period wholesale prices have not been mitigated by forward purchases
  - Underscheduling in forward market causes high demand and reliability problems during real time

Summary (Continued)

- Some wholesale market remedies are necessary now
  - The FERC should analyze whether there are Market Power Concerns Associated with Times of Scarcity and then determine appropriate level of Price Caps
  - Publicize Market Information
  - Encourage structure/ technological innovation to enhance demand side participation

Agenda

- Market Fundamentals Indicate Scarcity Exists
- Supply Side and Demand Side Economics
- Retail Design Issues
- Wholesale Market Remedies

Western Supply and Demand Fundamentals

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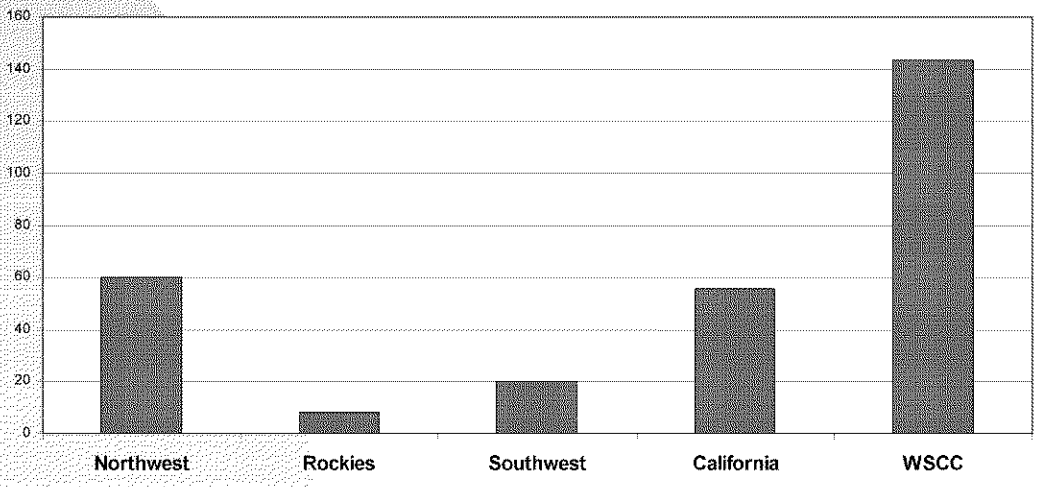
WSCC Loads (GW)

California is not an island and cannot develop a self-contained solution.



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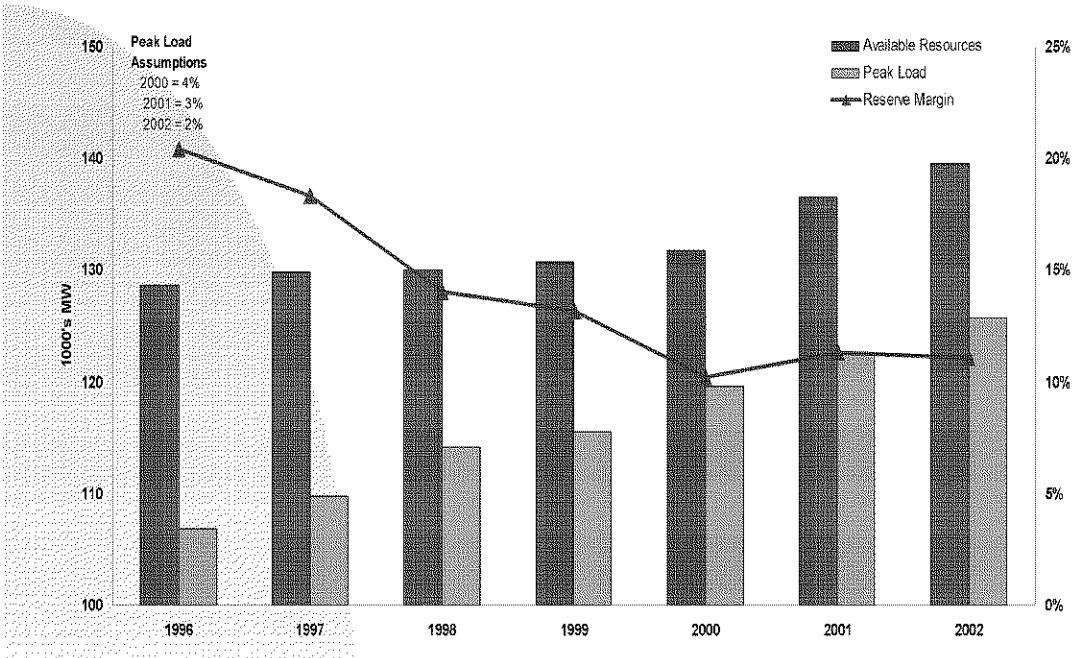
WSCC Resources and Loads



Base data from WSCC. Adjustments made by Enron based on verifiable data inaccuracies.

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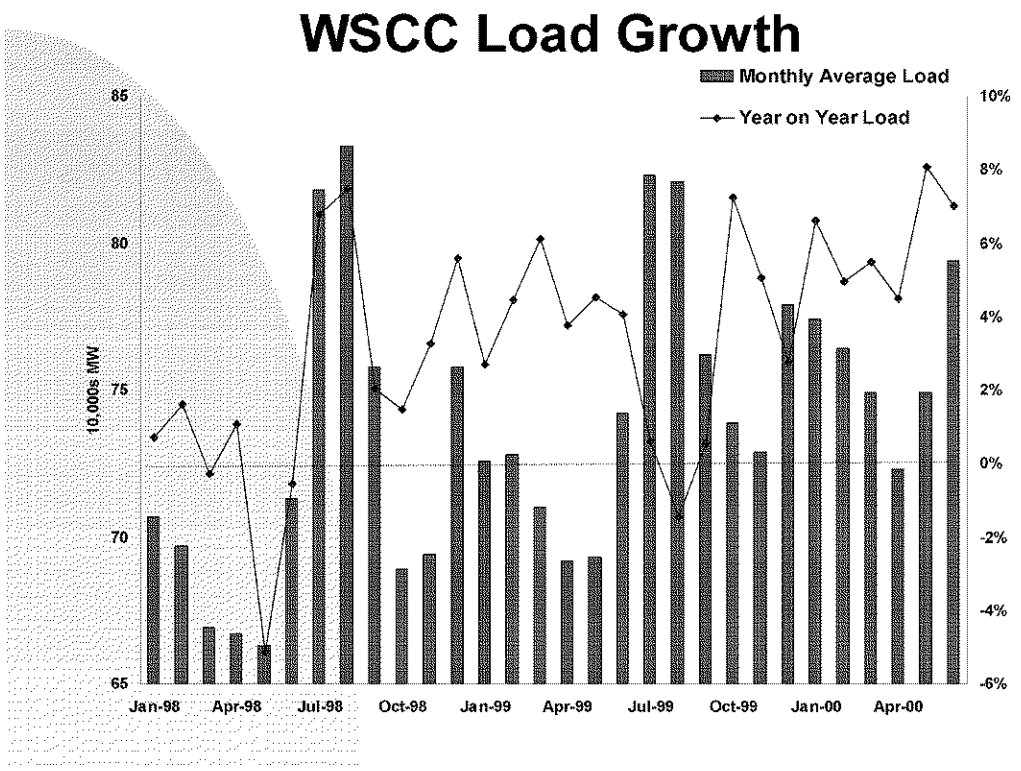

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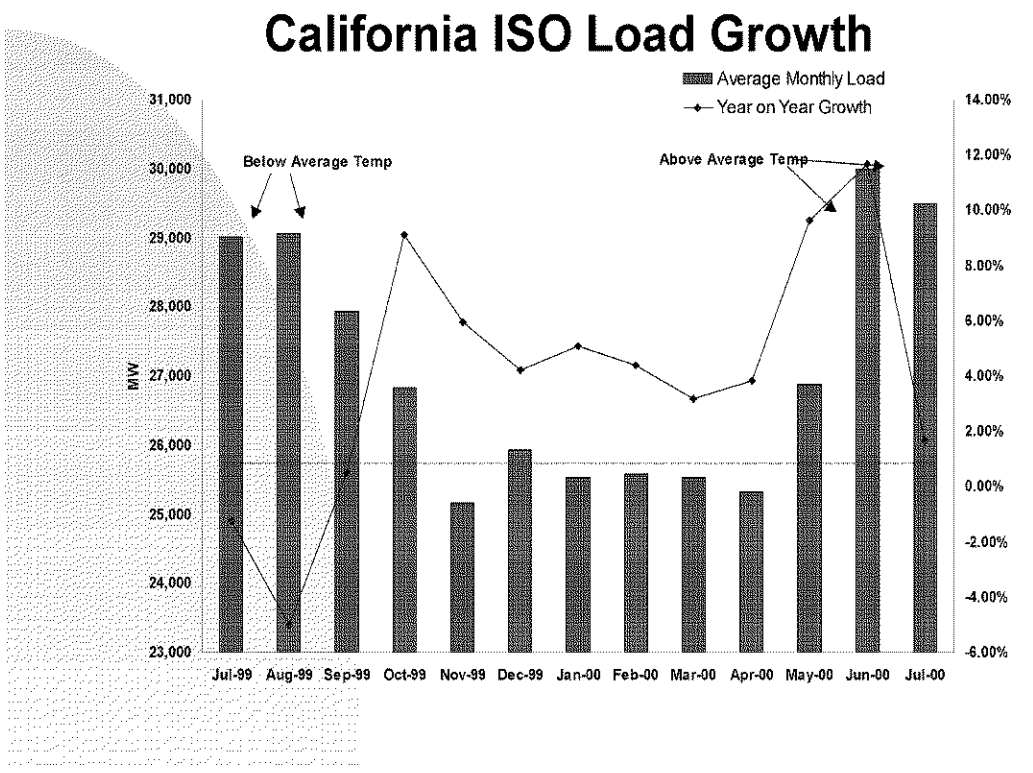

Has Recent Unusually Strong Hydro Fooled Us?

Volume Runoff Percent of Normal

	Columbia River	California
2000	93%	94%
1999	116%	108%
1998	98%	153%
1997	152%	84%
1996	138%	129%

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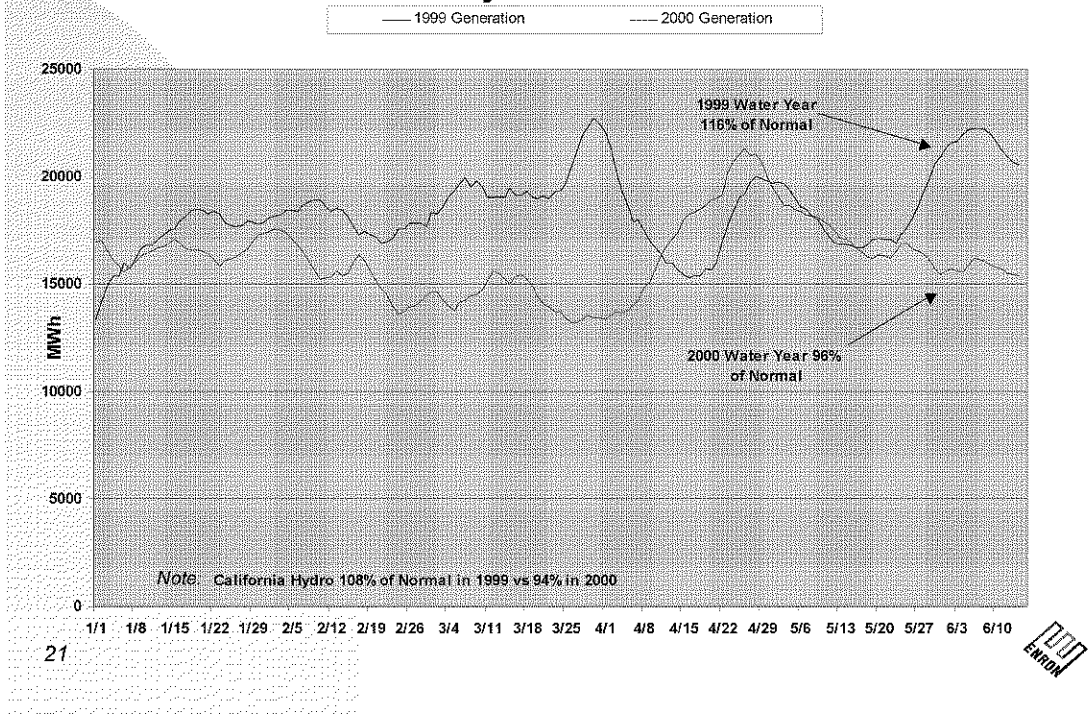
PNW Hydro Generation



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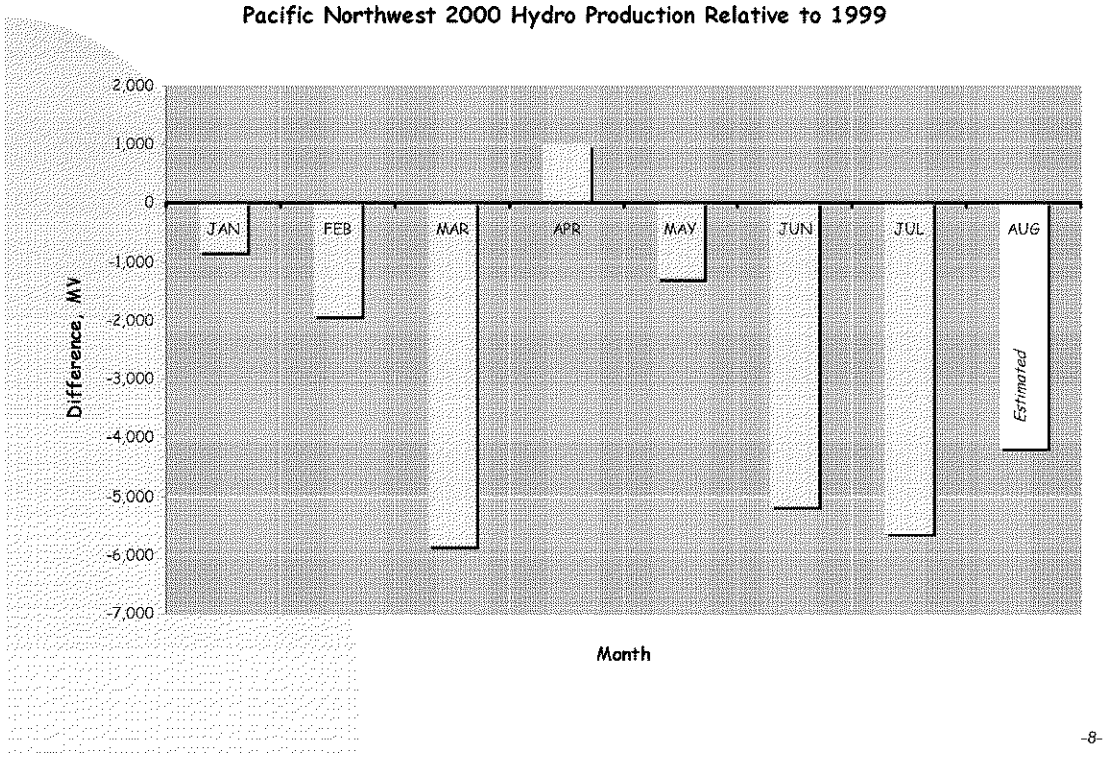
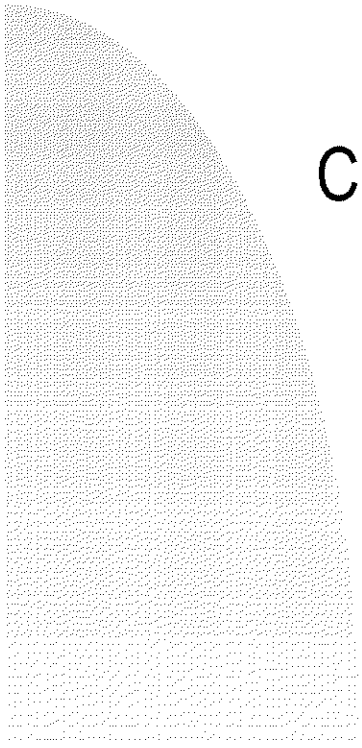


WSCC Capacity Additions

	Summer 2000	Summer 2001	Summer 2002
Northwest	7	760	851
California	-0-	1000	2648
Southwest / Rockies	908	2390	692
Total	915	4150	4191
Estimated Load Growth (Assumes 3% Escalation)	(3600)	(3708)	(3819)

In Sum, Scarcity is Real - Generation is Needed

- Scarcity is real
- Energy prices driven by scarcity
- New generation or demand-side resources are required



Current Supply/Demand Economics

Power Economics

- Power is a Bust and Boom Commodity -- Merchant Generators Lose Money in Some Years and Make it Up During Times of Scarcity
- California Demand Side Resources are Far More Expensive than Supply Side Resources
- Demand Side and Supply Side Resources Should Receive Symmetrical Treatment with Respect to Price Signals

Peaker Plant Economics

Technology:	GE LM 6000
Fuel:	Natural Gas
Heat Rate:	10,000 Btu/Kwh
Capacity:	48 MW
Capital Structure:	
◆ 60% Debt @ 9%	
◆ 40% Equity @ 18%	
◆ 15 Year Amortization	
Total Cost to Build:	$27 million
Annual Capital Recovery:	$3.7 million
Annual Fixed O&M:	$1.5 million
Annual Total:	$5.2 million

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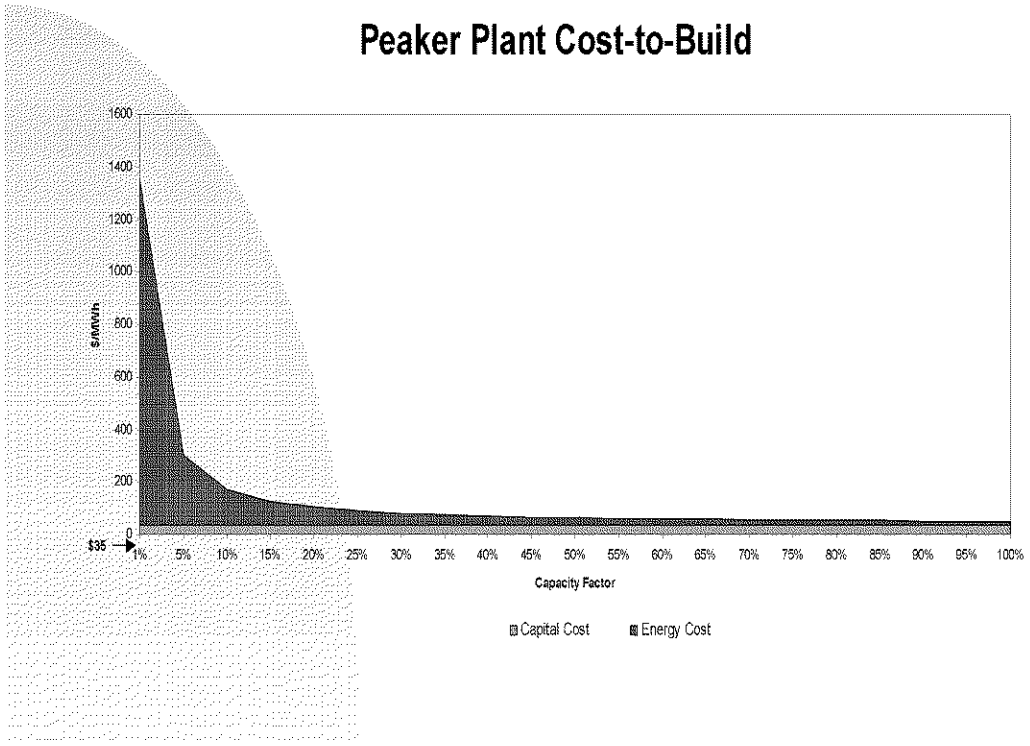

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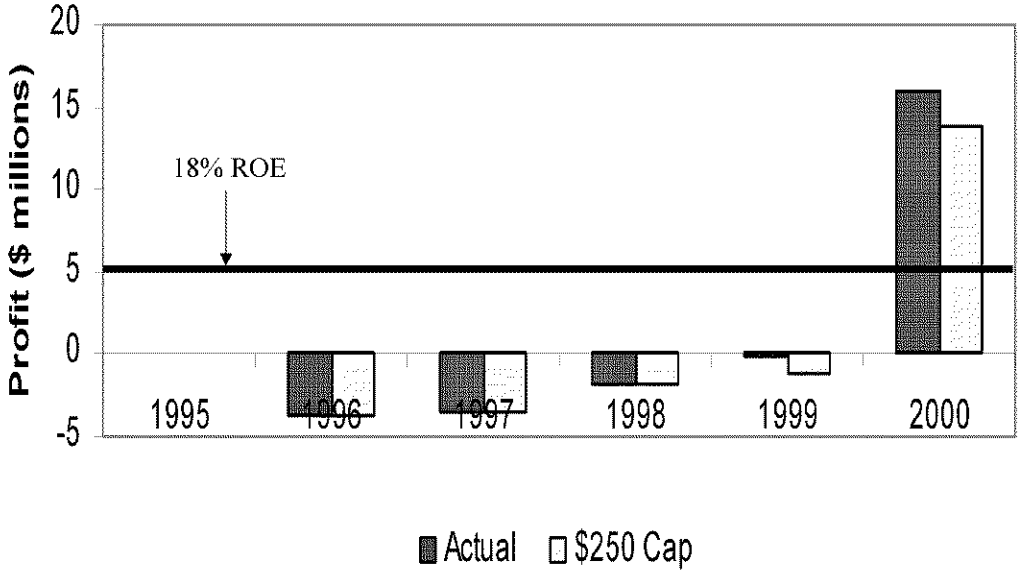
LM6000 Annual Profit



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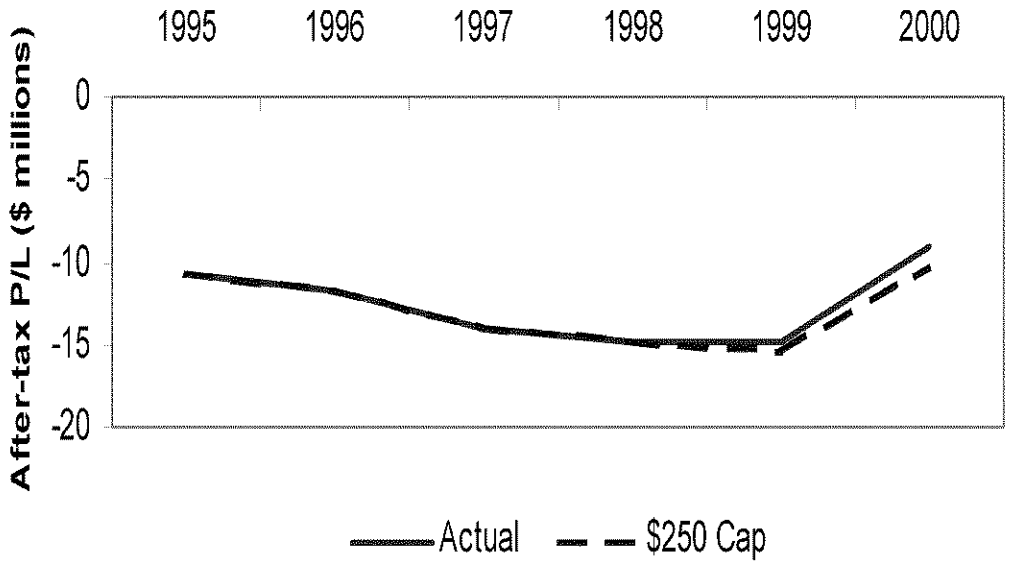
LM6000: Cumulative After-tax Profit/Loss



Baseload Plant Economics

▪ Technology: Combined Cycle	GE Frame 7FA
▪ Fuel:	Natural Gas
▪ Heat Rate:	7,100 Btu/Kwh
▪ Capacity:	280 MW
▪ Capital Structure:	
◆ 50% Debt @ 9%	
◆ 50% Equity @ 15%	
◆ 15 Year Amortization	
▪ Total Cost to Build:	$180 million
▪ Annual Capital Recovery:	24 million
▪ Annual Fixed O&M:	3 million
▪ Annual Total:	$27 million

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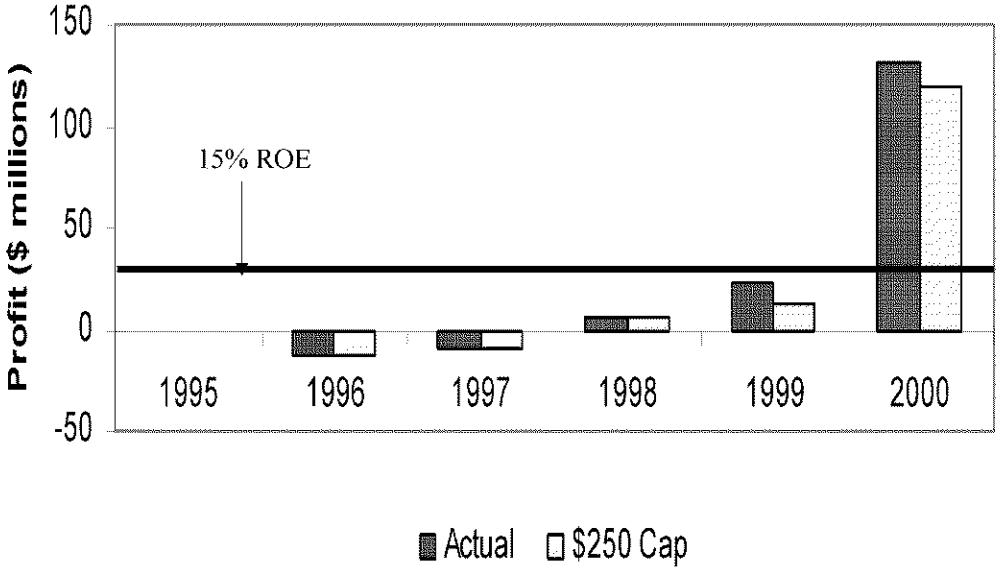
Combined Cycle Annual Profit



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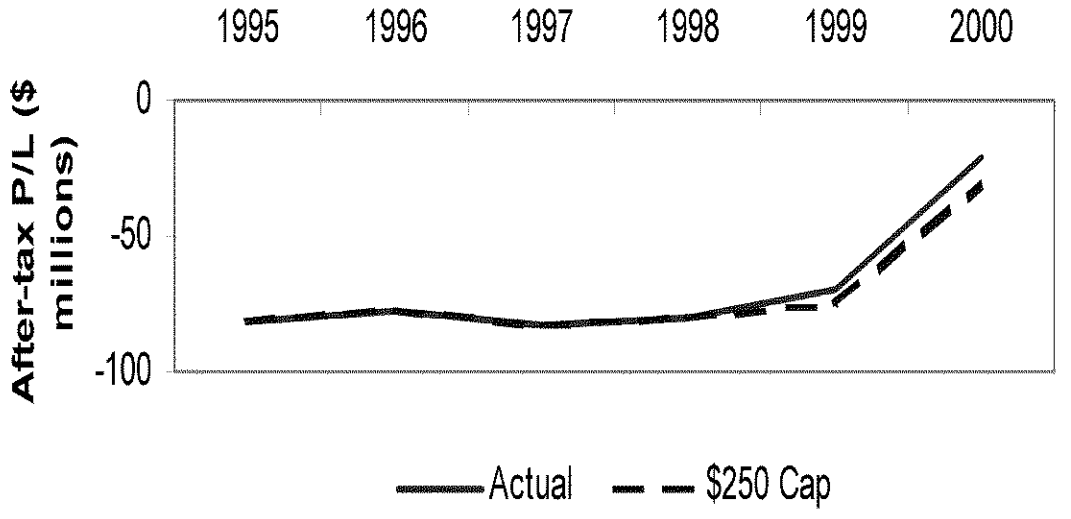
Combined Cycle: Cumulative After-tax Profit/Loss



Load Responsiveness

- 2700 MW of Load theoretically available under the Interruptible Tariffs
- New Load Management Programs Have Been Expensive and Small
  - 100 MW to 300 MW of Shared Savings with IOU's When Prices Exceed $250/MWh
  - 230 MW in CAISO Participating Load Agreement with Capacity Costs of $750/MWh and Energy Costs Up to $750/MWh
  - Seldom Used - Most Participants Already Under Interruptible Tariff

Source: ISO DMA August 10 Report

The ISO's Demand Side Program Has Not Been Very Effective

- The proponents of price caps claim that as soon as the demand side is "workably competitive" then there is no need for price caps
- But if ISO sets the caps too low it will not get demand response
- The utilities have up to 2700 MW of available interruptible load, yet only a small fraction responds when called (600 MW)
- Uncut loads willingly lose value of up to $1,500 per MWh
- Thus, during times of scarcity, the value of energy is at least $1,500 per MWh

Price Controls Will Perpetuate Scarcity

- Power plants are needed; Demand is still not very price responsive
- Operating costs of plants are increasing
  - Gas prices high
  - Gas generally is on the Margin in WSCC (I.e., Gas-fired generation sets the electricity generating market price)
- Power plant economics will keep generators from investing in generation if they anticipate price cap
- In state and out of state generation will be incented to sell out of state

Price Controls are Detrimental to Investment and Other Markets

- Merchant generation subject to volatile commodity prices -- caps will inhibit investment
- Creates asymmetry between load response and generation
- Suppliers will sell outside California where markets are more predictable and prices are higher.
- Because of the interdependent linkages in California's electric market, cannot change one aspect of structure without impacting all others
- Uncertainty in the marketplace will dry up the growing forward markets

Retail Market Design Issues

Retail Issues

- SCE and PG&E Customers Receive No Price Signals Due to CTC Balancing Accounts.
- SDG&E Customers Entered Volatile Short Term Commodity Markets Without Knowing About Risk and Without SDG&E Hedging For Them.
- Limits on IOU Forward Hedging Forces Large Volumes Into Day Ahead and Real Time Markets Which Contributes to Volatility.
- CTC Recovery Mechanism Incents IOU's to Take Large Volumes to Real Time Market.

Lack of IOU Hedging Has Distorted Price Impacts

- The IOUs had a choice of buying their power in the PX Block Forward, PX Day Ahead, PX Day Of, and CAISO Ex Post
- Hedging limits prevented some purchases of forward energy
- IOU claims notwithstanding, there *have* been significant opportunities to hedge forward prices
  - ~ 1800 MW in entire PX block forward for SP15 in June, 2000
  - Only ~800 MW for SCE out of 2,200 MW authorized
  - Clear market signals to hedge
- Fear of prudence review kept IOUs from hedging the risk of day ahead and real time prices

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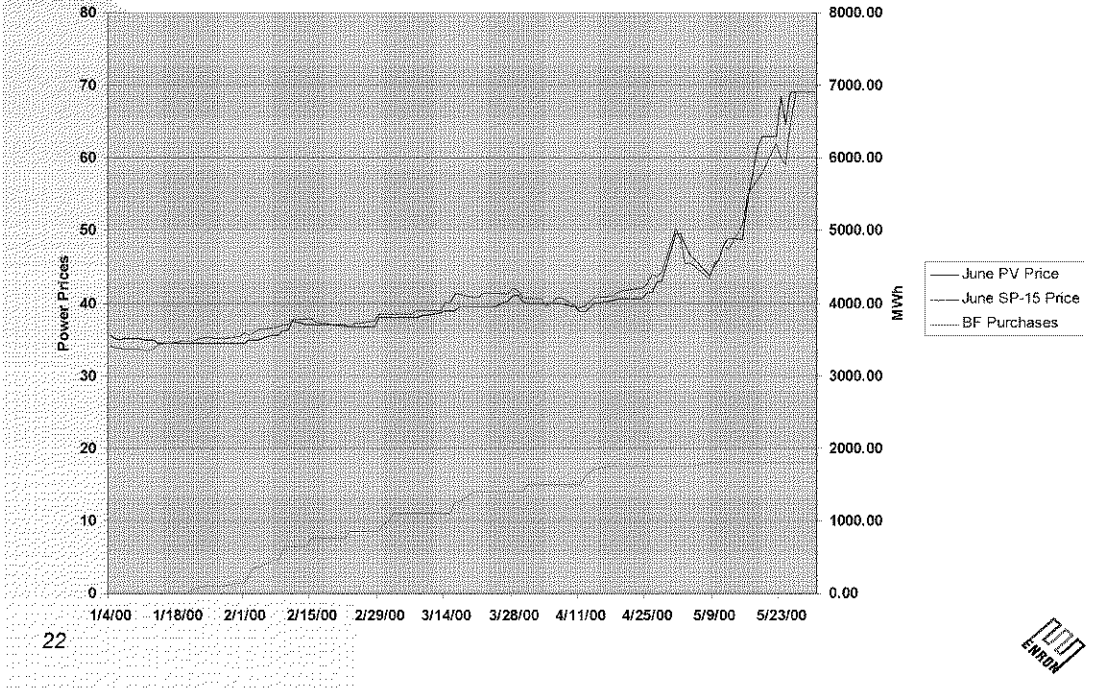
June SP15 Block Forward Purchases vs. Power Prices



Stranded Cost Recovery Incents IOUs to Underschedule in the Forward Market and Buy in the Spot Market

- CTC payments can theoretically be increased by underscheduling demand in the PX Day ahead markets
- But, underscheduling demand increases ISO prices and reduces reliability
  - ~ 30% of ISO load in real time market on 06/14/00
  - Only 100 MW of blackouts--a remarkable achievement

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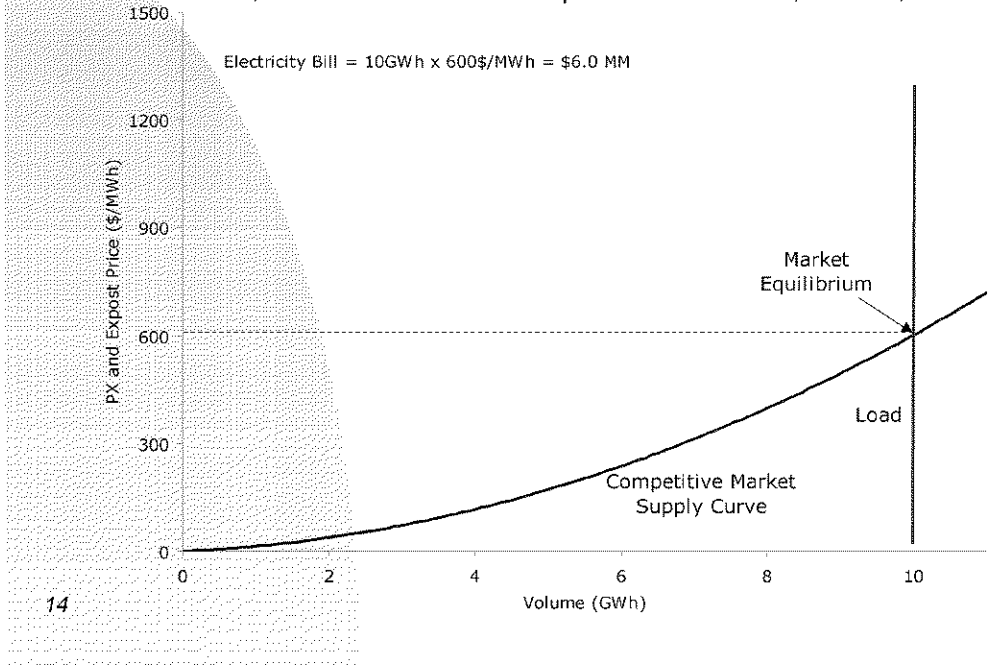
Gross Underscheduling of Load Is a Real Problem

If all power scheduled in PX Day Ahead market, except for small imbalances, market should be in equilibrium: PX DA, PX HA, ISO Ex Post



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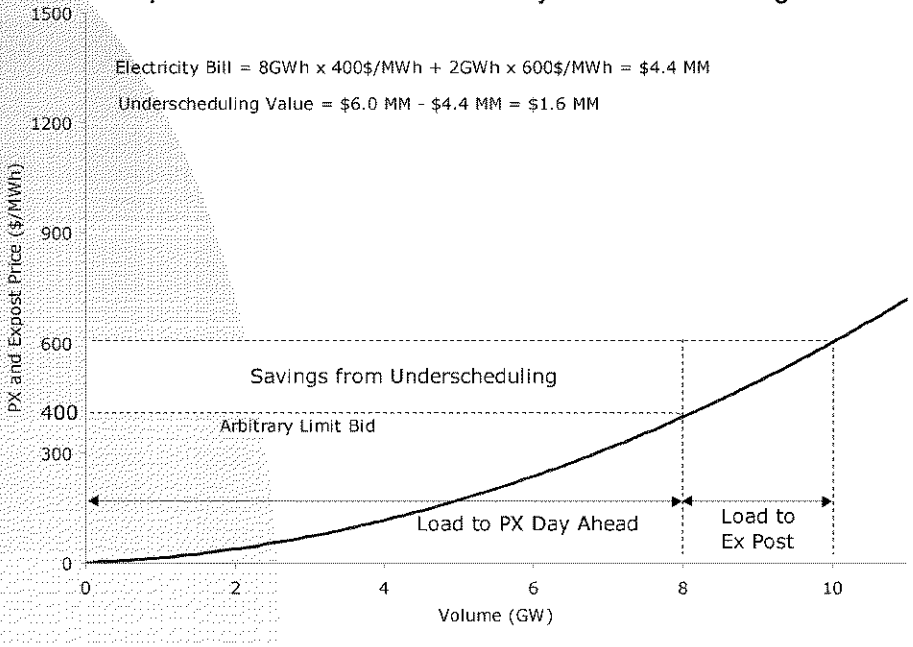
Gross Underscheduling of Load Is a Real Problem

In actual fact, there is an incentive to underschedule, but consequence is pressure on real time reliability as Ex Post load grows.



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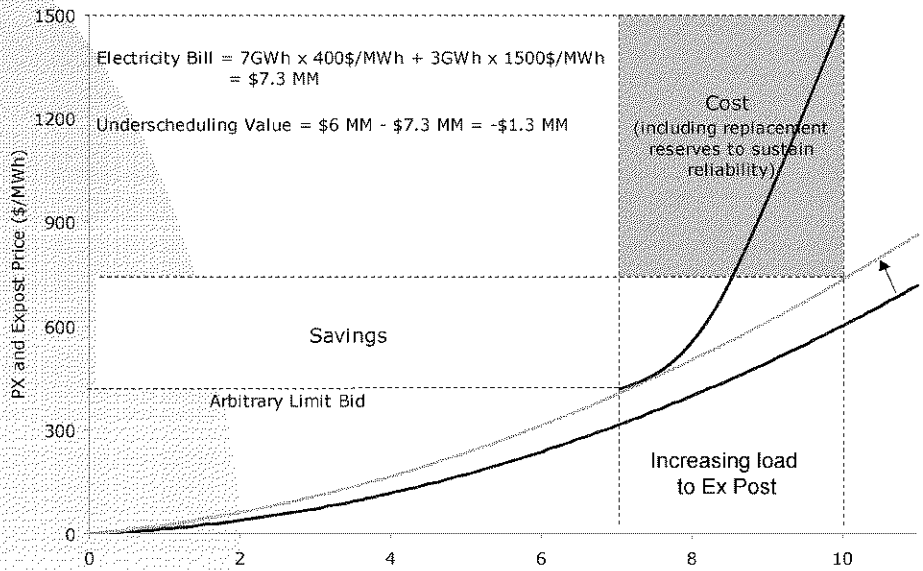
Gross Underscheduling of Load Is a Real Problem

But when there is massive underscheduling in a tight supply market, the ISO may have to take drastic action.



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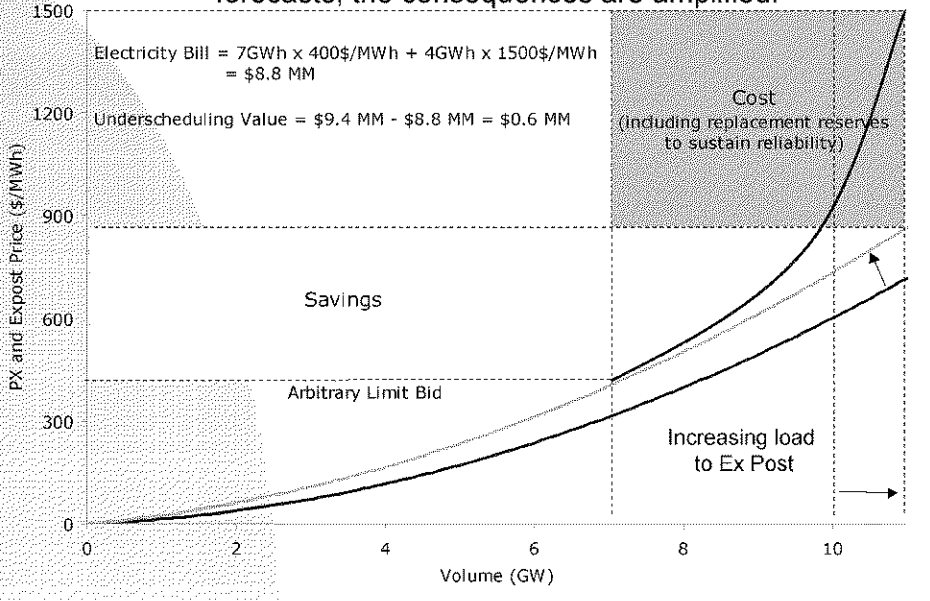
Gross Underscheduling of Load Is a Real Problem

And, when load is growing faster than forecasts, the consequences are amplified.



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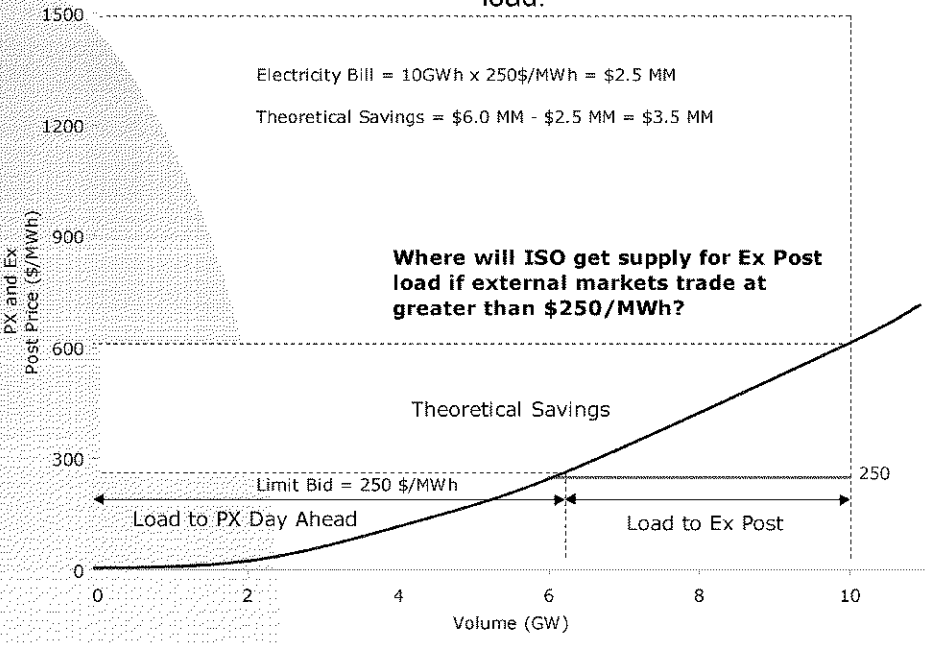
Gross Underscheduling of Load Is a Real Problem

When price caps are reduced to $250/MWh in a scarce supply market, ISO may not be able to maintain reliability due to magnitude of Ex Post load.



Underscheduling's Effects on Reliability Are Observable

- Stage 1 Emergency
  - In Anticipation of Low Reserves
  - Users Asked to Voluntarily Reduce Consumption
  - 15 Times From May 22 to August 5
- Stage 2 Emergency
  - Reserves Fall Below 5%
  - 2700 MW of Interruptible Load Curtailed
  - 9 Times From May 22 to August 5
- Stage 3 Emergency
  - Reserves Fall Below 1.5%
  - Firm Load Cut - Rolling Blackouts
  - 0 Times From May 22 to August 5

Retail Design Flaws Are Largest Contributor to Problem

- **California should fix its retail problems first.**
- **Should remove barriers to hedging.**
- **Should systematically examine relationship between retail and wholesale market design.**
- **Knee-jerk reactions in wholesale markets will not solve the problem.**

Wholesale Market Issues

- Analyze whether there are market power concerns associated with times of scarcity and then determine appropriate level of price caps
- Publicize market information
- Encourage structure/ technological innovation to enhance demand side participation
- Don't mistake San Diego's failure to hedge as failures in the wholesale market
- Decide whether FERC has a role in the underscheduling issue: Are the California utilities exercising monopsony power by underscheduling load into the PX day ahead market?

ISO Should Do More Rigorous Market Power Analysis

- The Market Analysis Unit report and the UC Energy Institute Report wrongly uses pricing above short term marginal cost to conclude that there is market power
- Some market power analysis failed to take into consideration changes in supply and demand like the decrease in hydro generation
- To distinguish market power from scarcity, FERC should instruct the ISO to use rigorous analytical measures to determine market power
- Under such measures Enron does not have market power

Market Power or Scarcity Rents?

- At points of scarcity (e.g., at Stage 2 when you're getting low on reserves and you're cutting load) marginal cost is no longer a reasonable price.
- Rather when you reach scarcity you should price scarcity rents at the value of energy (e.g., $1,500 as illustrated in the interruptible market)

To Investigate the Source of High Prices FERC Should Review:

- High gas prices
- Below normal Hydro
- Lack of NOx credits
- Planned Outages and Forced Outages in June
- High demand
- Real Capacity Margins in Western Markets
- Relationship between Wholesale Market Design and Retail Market Design
- Relationship between California Market and Other Western Markets

To Investigate the Source of High Prices FERC Should Review (Continued)

- Were any generation plants off-line due to unplanned maintenance during Summer 2000?
- Were other Western power markets prices higher (year-on-year)?
- What options did SDG&E have to "hedge" its retail rates?
- What were prices in the CAL PX block forward market on Jan 15, 2000 and May 15, 2000?
- FERC and the ISO should consider the regional impacts of any price caps implemented in California, such as prices not corresponding to flows

We Do Not Have All the Answers. Why?

- ISO and PX have a monopoly on data.
- ISO and PX have monopoly on analysis of market power.
- Transparent markets are preferable to opaque markets. Transparency requires data release.
- Open up the books for all to see.

Status of Data Release

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ISO GENERATION

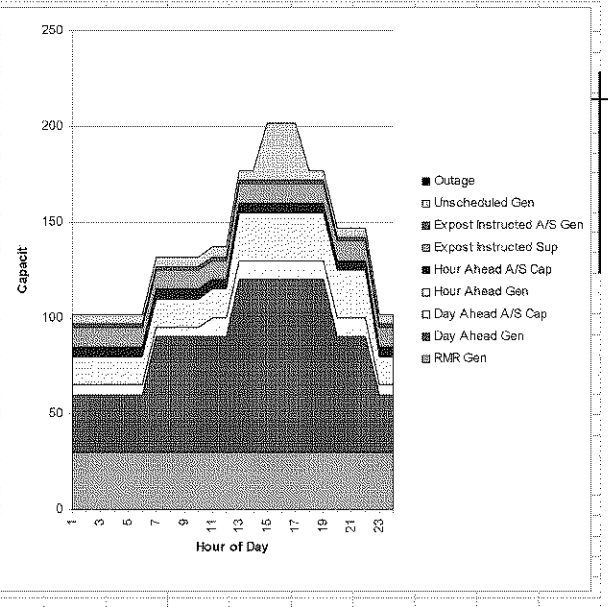
	Allocation*
A	RMR Generation
B	Day Ahead Generation
C	Day Ahead Ancillary Service Capacity
D	Hour Ahead Generation
E	Ancillary Service Hour Ahead Capacity
F	Expost Instructed Supplemental Generation
G	Unscheduled Generation
H	Expost Instructed Ancillary Service Generation
I	Outage/Deration
J	Idle

*Actual Gen = A+B+D+F+G+H

Physical Dimensions
Unit
Plant
Load Zone
Congestion Zone*
System

* Supply and Demand for Capacity, Generation, and Transmission are related at the Congestion Zone Level

Data
Awarded Price-Quantity
Price Quantity Offer Curve



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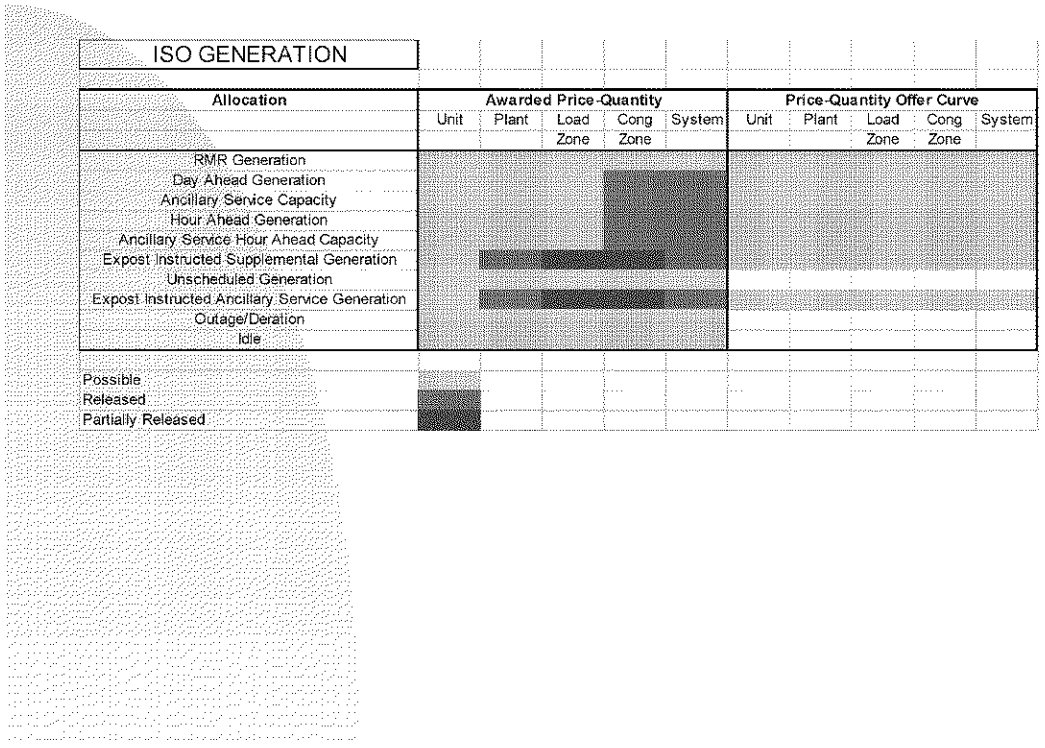

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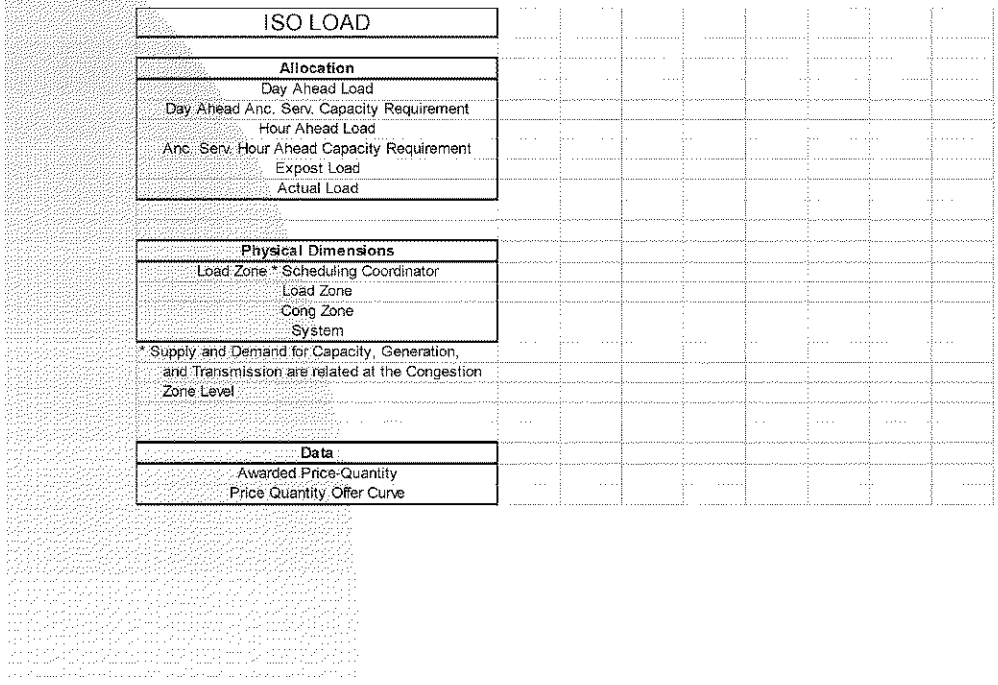

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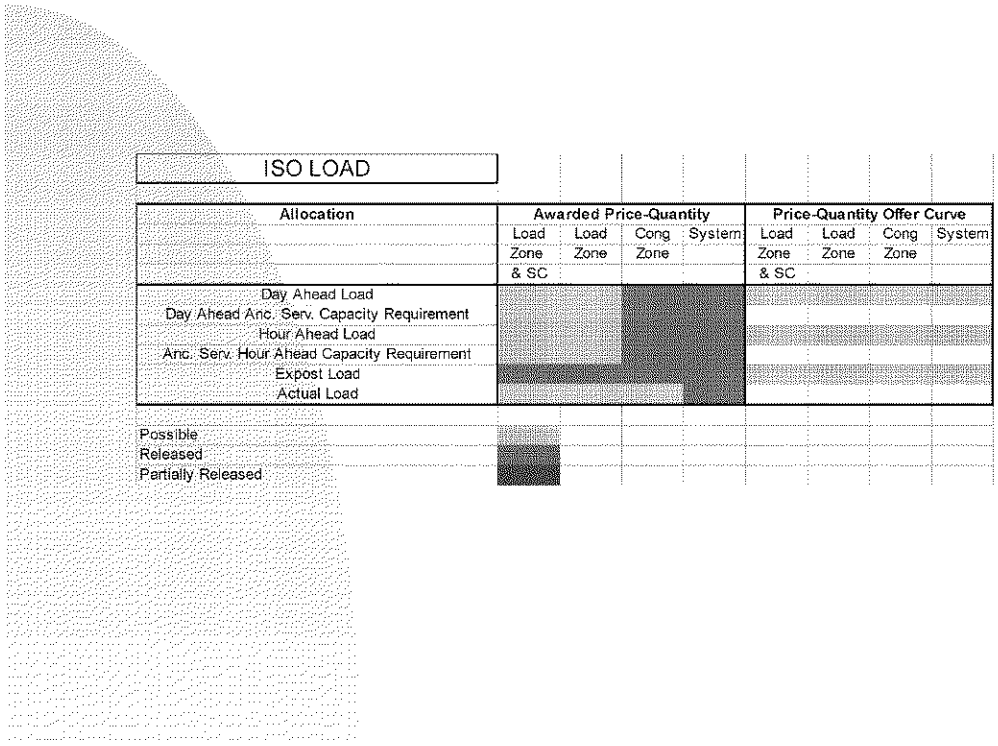

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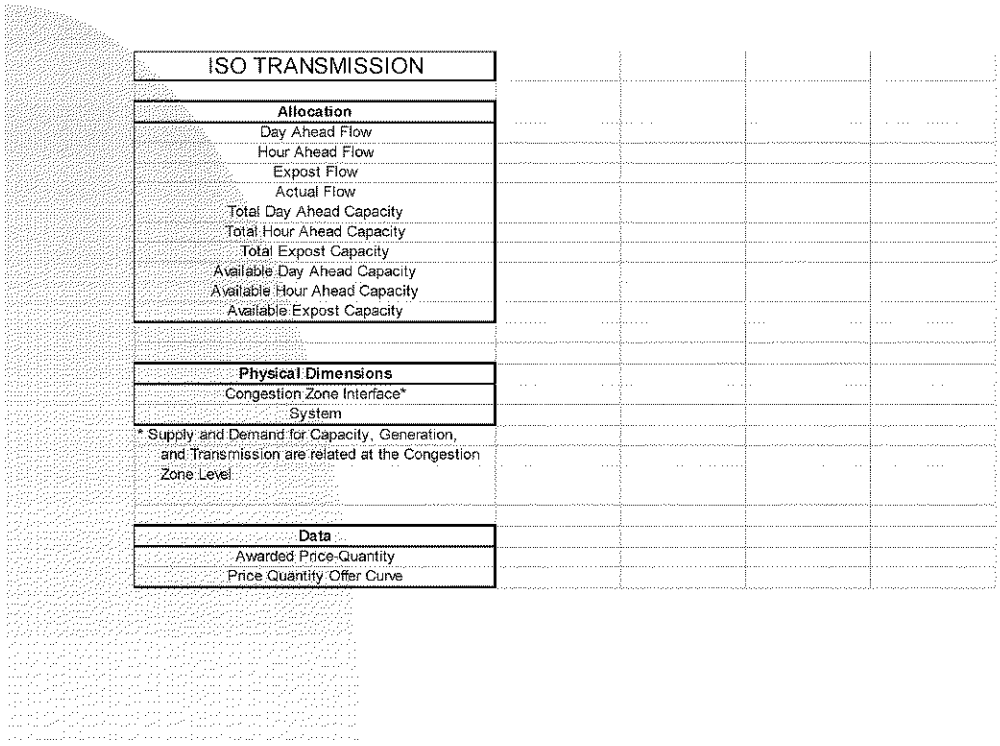

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