



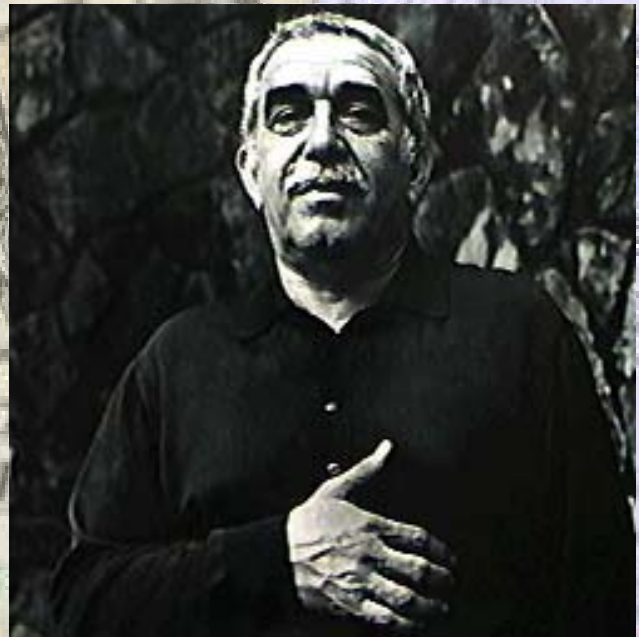
A stack of US dollar bills, including a \$100 bill and a \$50 bill, with a dark red pen resting on top. A semi-transparent text box is overlaid on the center of the image.

One Hundred Years of Solitude

Robert McCullough
Managing Partner
McCullough Research
May 2, 2002

Gabriel Garcia Marquez

It seems clear to me that, in any conventional sense of the literary term, we are dealing here with an epic work: a long narrative fiction with a huge scope which holds up for our inspection a particular cultural moment in the history of a people. The novel is the history of the founding, development, and death of a human settlement, Macondo, and of the most important family in that town, the Buendias.



One Hundred Years of Solitude

- History's Lesson
- A Little Background
- Hydro-thermal Program
- Regional Power Act
- Competition
- AB-1890
- Collusion?
- The Future
- Policy Implications



Woody Guthrie

Woody Guthrie was hired as an "Information Specialist" for one month in 1941 and paid \$266.66. He has set the direction of policy for seventy years.



History's Lesson

- History's lesson has been that cooperation is superior to competition
- In a sense, the Pacific Northwest is the last vestige of the new deal
- We are waiting for the greatest of all depressions
- Some lessons are wrong so long that they became accepted truth

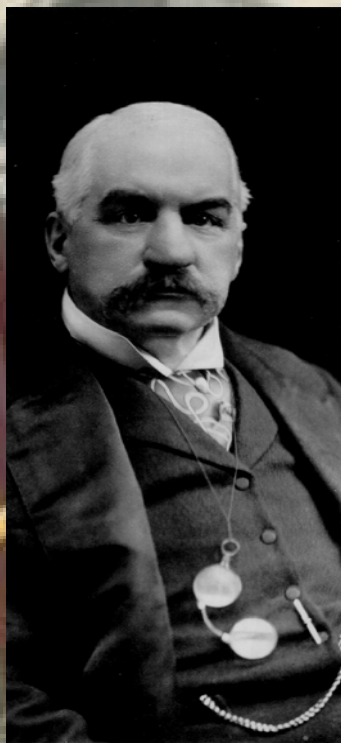


A Little Background

- History
- Geography



The Robber Barrons



JP Morgan



Samuel Insull



There were a few ups and downs



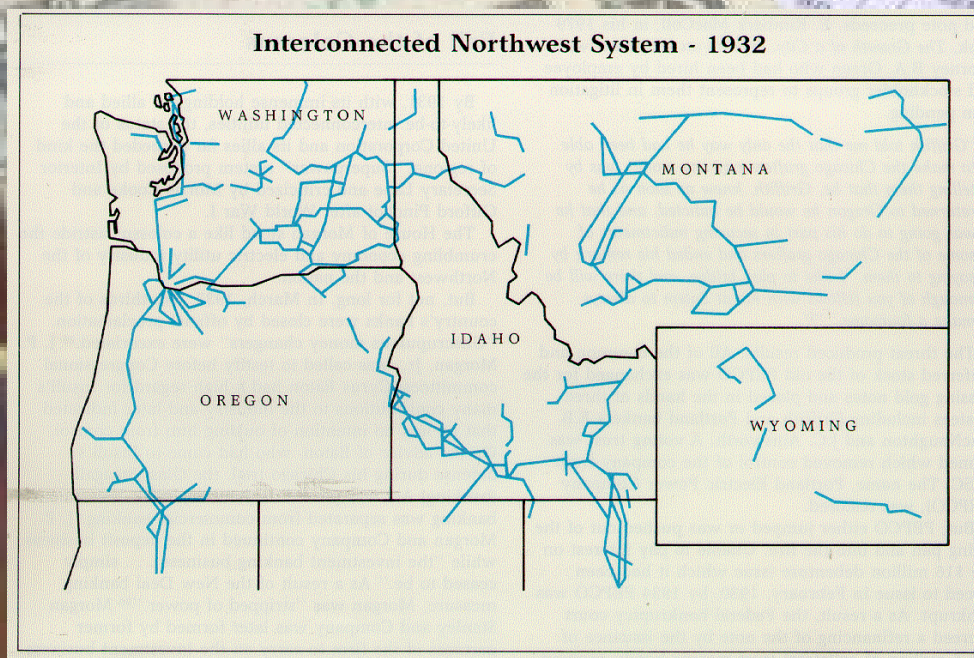
Roosevelt steps in



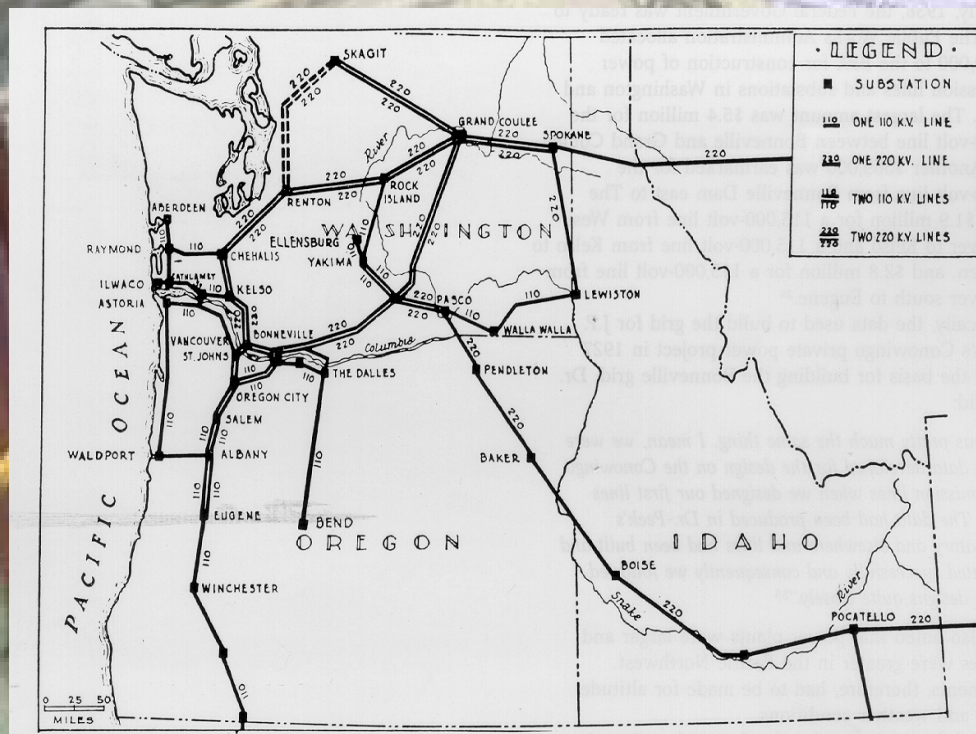
Globe Photos, Inc.



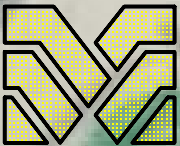
The Northwest Before Roosevelt



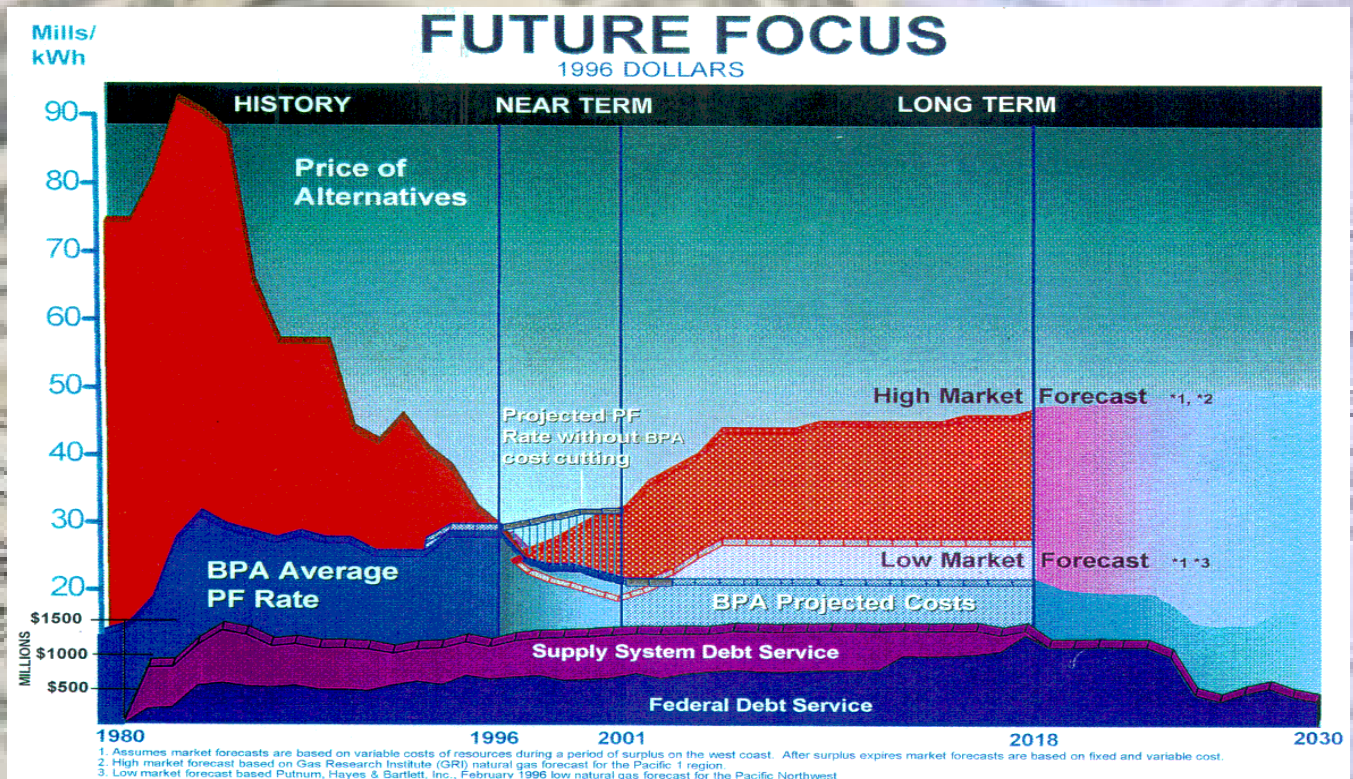
J.D. Ross Master Plan



Captain Bonneville



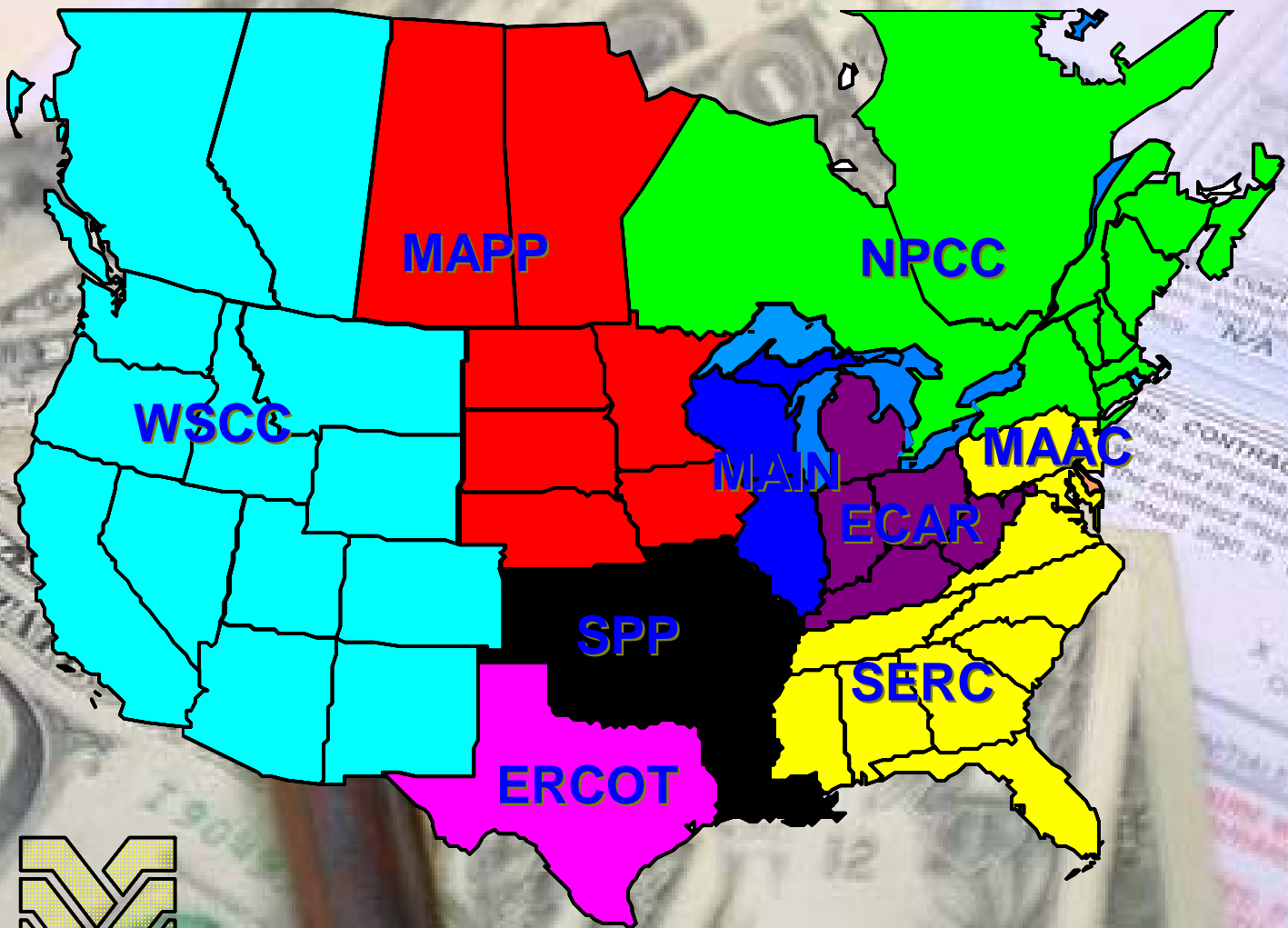
BPA's Past and Future



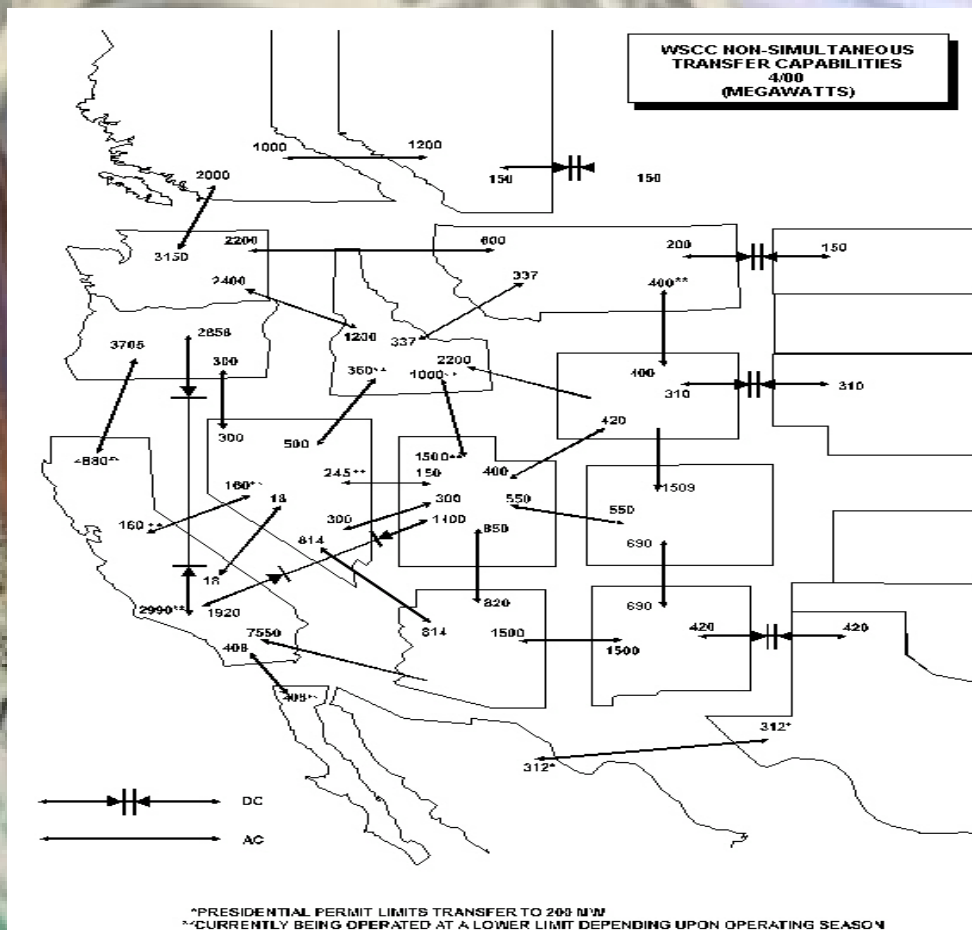
Where are we?

- The west coast of the U.S. and Canada is a single integrated electric market
- Prices in California this summer have driven prices from Edmonton to Tijuana
- California driven price increases have made transmission costs insignificant by comparison



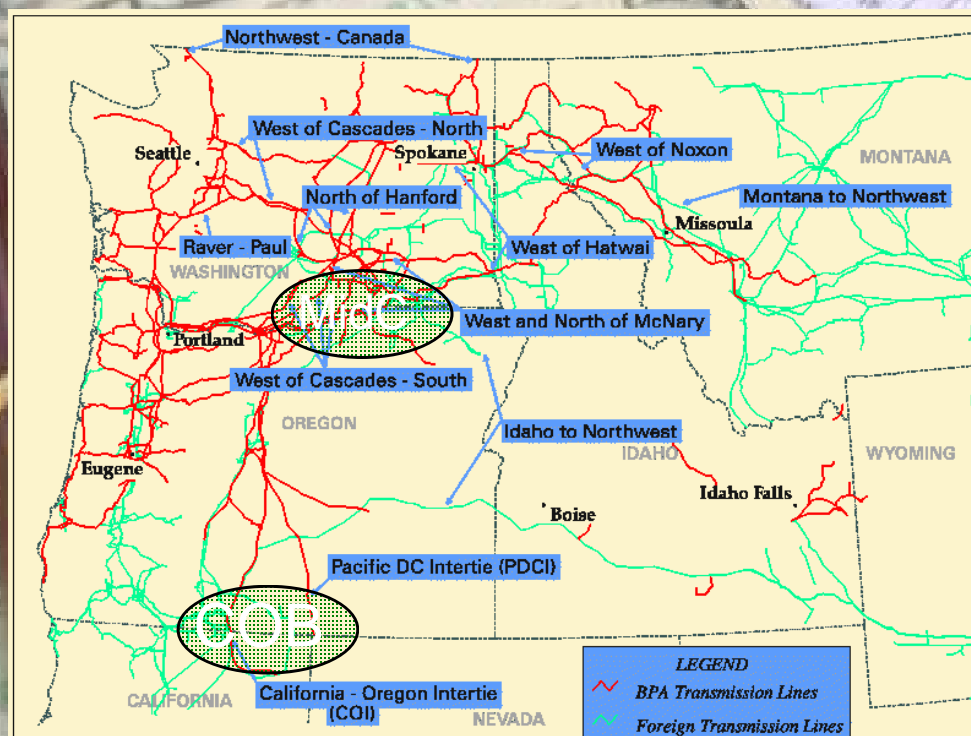


West Coast



Basic Geography

Northwest Delivery Points



How does all this fit together?

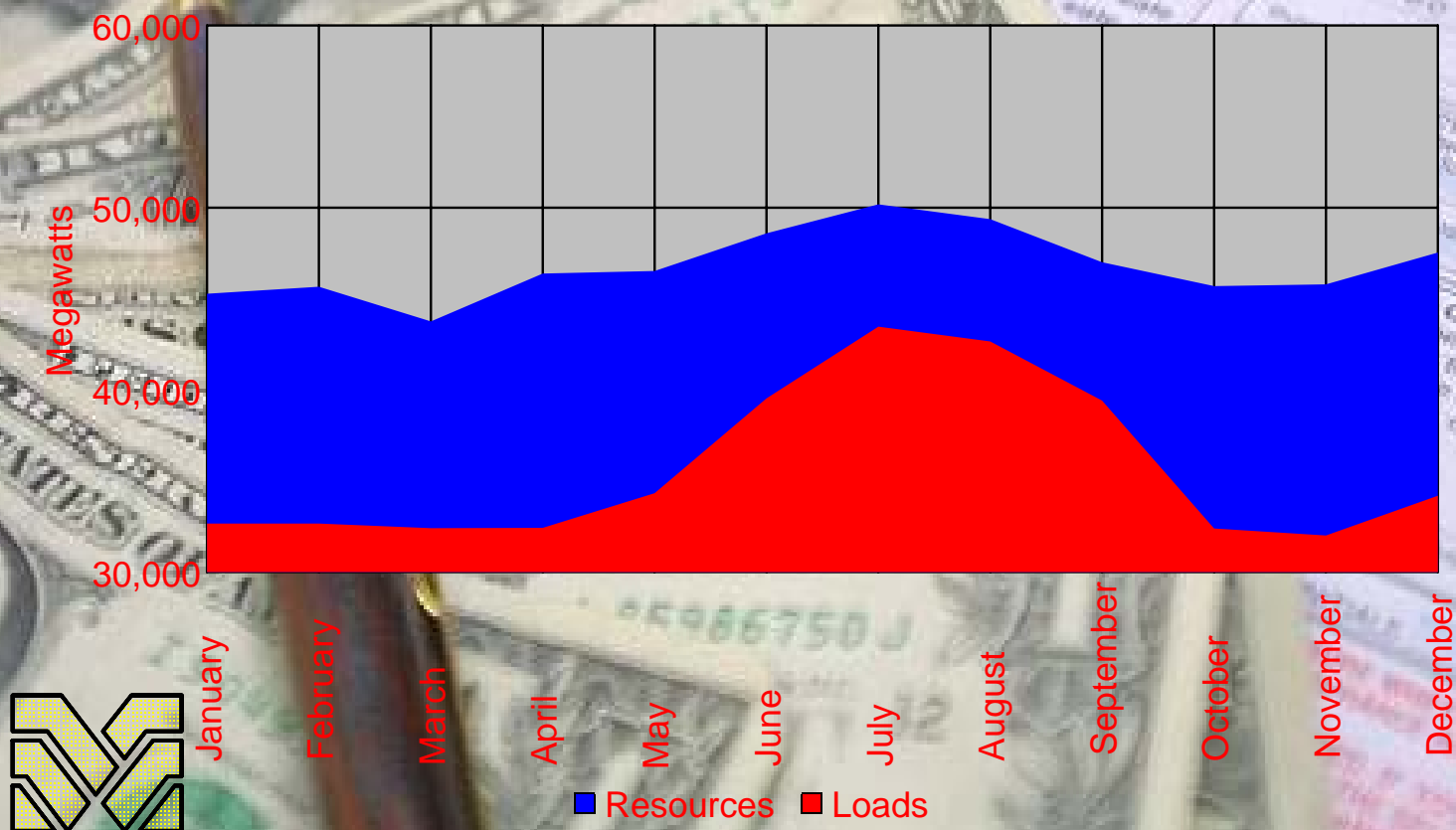
- California imports power in the summer
- The Pacific Northwest imports power in the summer
- Overall, the capacity surplus is large
- Energy surplus floats with regional hydro



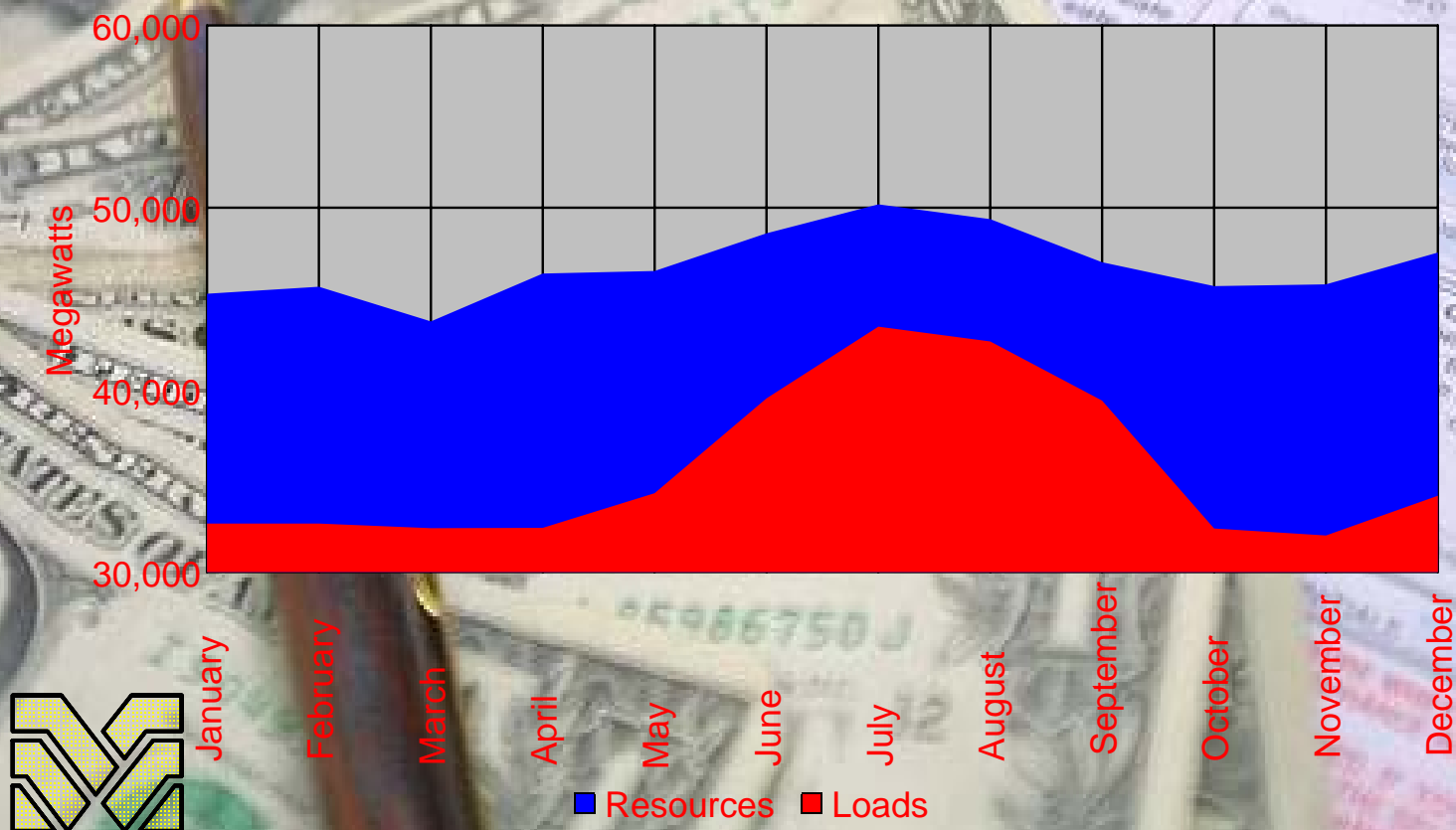
WSCC Capacity Balance



California Capacity Balance



ISO Capacity Balance



Hydro-Thermal Program

- The first of the "melding" fiascos
- Massive proposed construction leavened off of the Columbia dmas
- This quickly collapsed ounder its own weight



Net-Billing

- The next melding scheme contemplated trading billings between BPA and the utilities
- This scheme is in operation today



Northwest Regional Power Act

- Everyone got what they wanted
- Few understood the implications
- Absent minded, the most important implication was the sale of the non-firm hydro

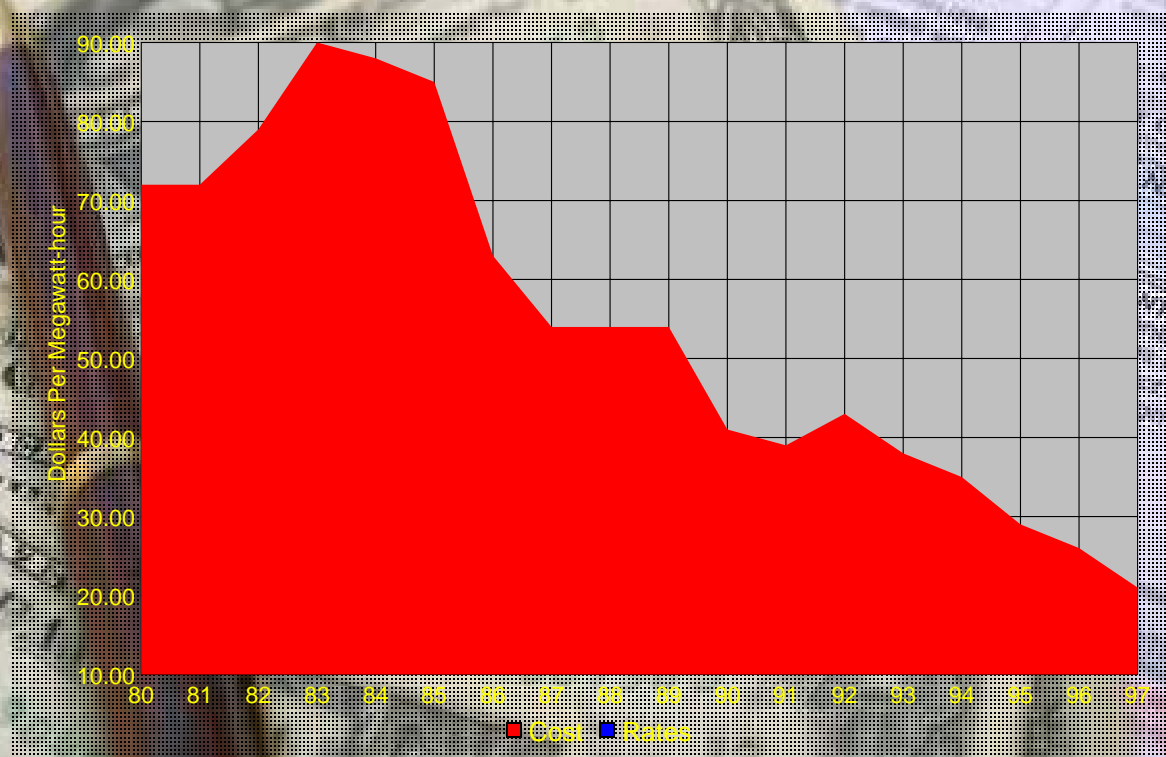


Stealthy Competition

- The Pacific Northwest slipped into competition
- Industrial rates became tied to markets in the 1980s
- General spot markets developed by 1987 and were ratified by 1992



Changing Prices and Costs at BPA



Twenty One Year's Prices At MidC



AB-1890 Market Design

Making a
small, bad
idea bigger.

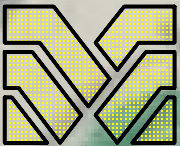


Twenty One Year's Prices At MidC



AB 1890

- Senator Peace's brilliant compromise
- May a hundred provisions bloom, may a hundred agencies contend
- Purportedly the creation of competition, the law brought into place one of the most comprehensive interventions of government into business in U.S. history



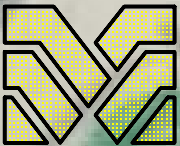
California's System



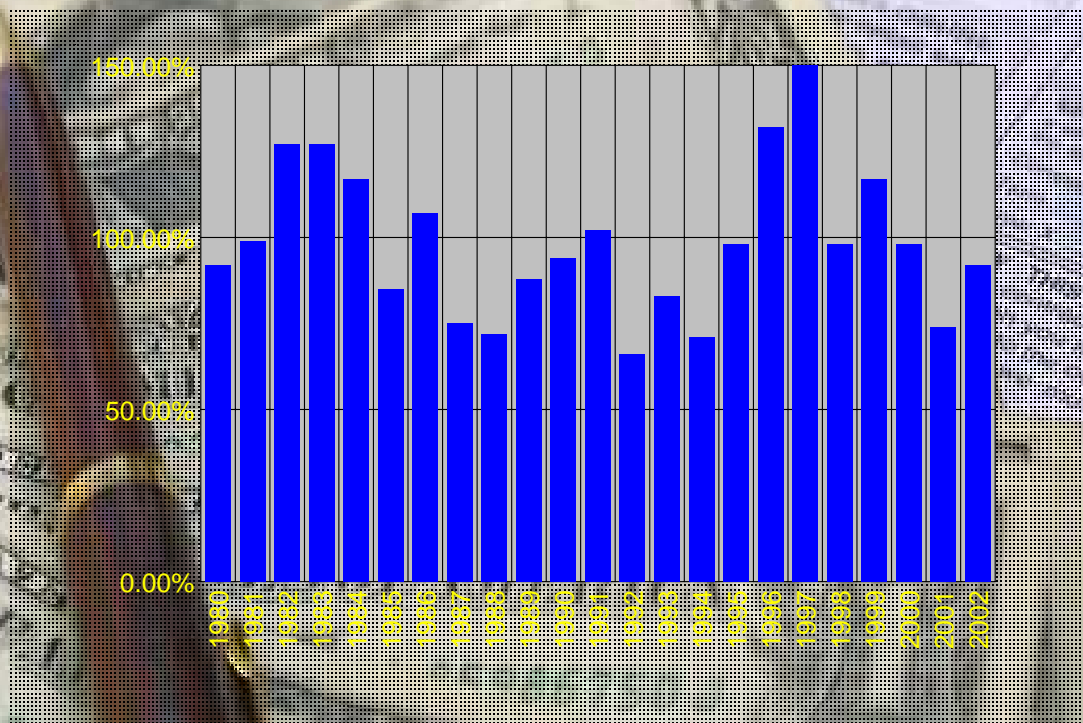
Prices

Recent History

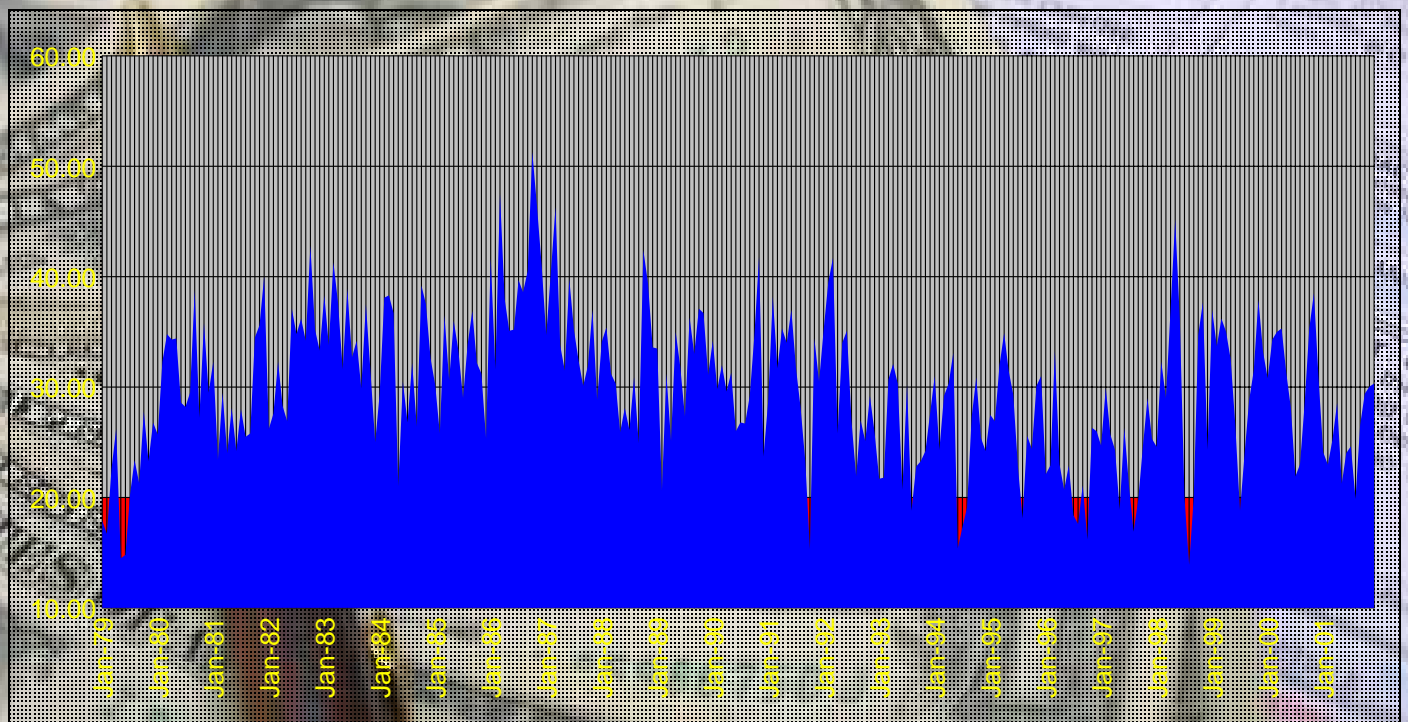
- The fourteen month California market failure had many appalling aspects
- Some of the worst occurred during the "super-crisis" in December, January, and February
- California ISO operations become inexplicable by traditional utility dispatch standards
- Critical ISO issues have never been understood and may simply have been wrong



January to July Flows



Reserve Margin



Plant Operations

	Northern California	Southern California (Outside of SCAQMD)	SCAQMD	Total	Southern California
Forecasted					
Jan-97 to Mar-98	125.63	467.31	486.69	1,079.63	954.00
Apr-98 to Apr-00	2,097.07	2,145.22	2152.96	6,395.24	4298.17
May-00 to Jul-01	4,055.36	4,623.28	4812.76	13,491.40	9436.04
Aug-01 to Dec-01	2,504.16	2,524.25	1202.37	6,230.78	3726.62
Actual					
Jan-97 to Mar-98	973.99	1,157.25	1060.72	3,191.96	2217.97
Apr-98 to Apr-00	1,250.30	1,349.55	952.43	3,552.28	2301.98
May-00 to Jul-01	2,603.83	2,665.89	2408.84	7,678.57	5074.74
Aug-01 to Dec-01	2,351.52	2,031.62	2163.14	6,546.27	4194.76
Difference					
Jan-97 to Mar-98	848.37	689.93	574.03	2,112.33	1,263.97
Apr-98 to Apr-00	(846.77)	(795.67)	(1,200.52)	(2,842.97)	(1,996.20)
May-00 to Jul-01	(1,451.53)	(1,957.38)	(2,403.92)	(5,812.83)	(4,361.30)
Aug-01 to Dec-01	(152.64)	(492.63)	960.77	315.50	468.14



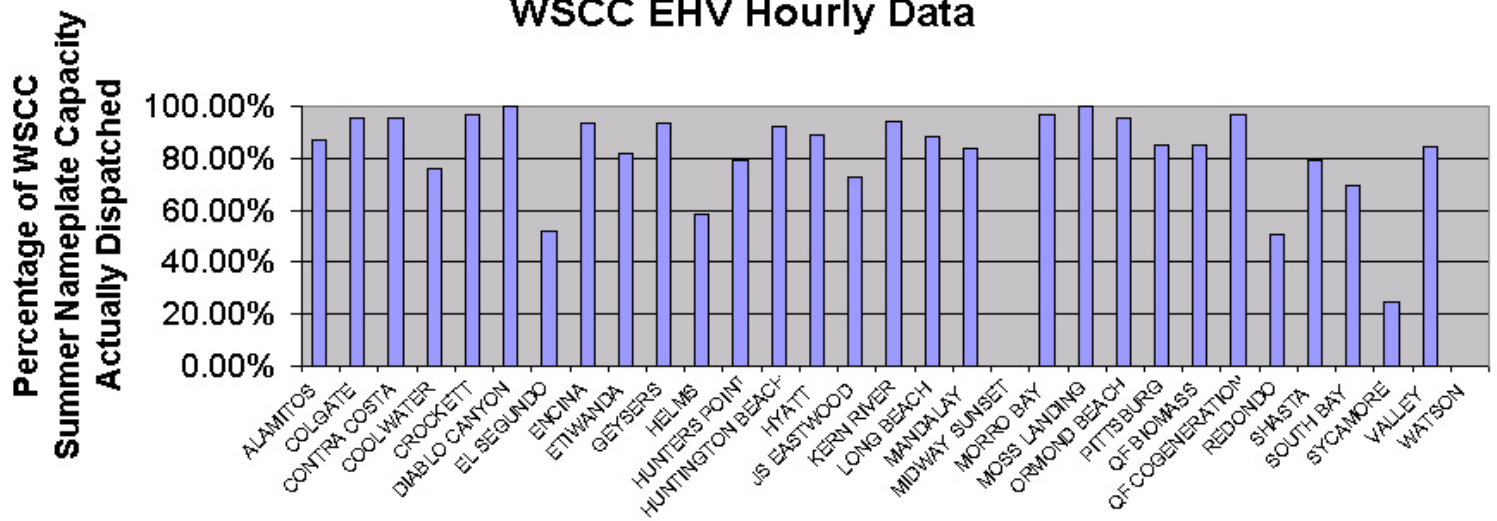
Collusion?

- Collusion remains unproved, but the investigations are ongoing
- Substantial evidence exists of market sharing agreements



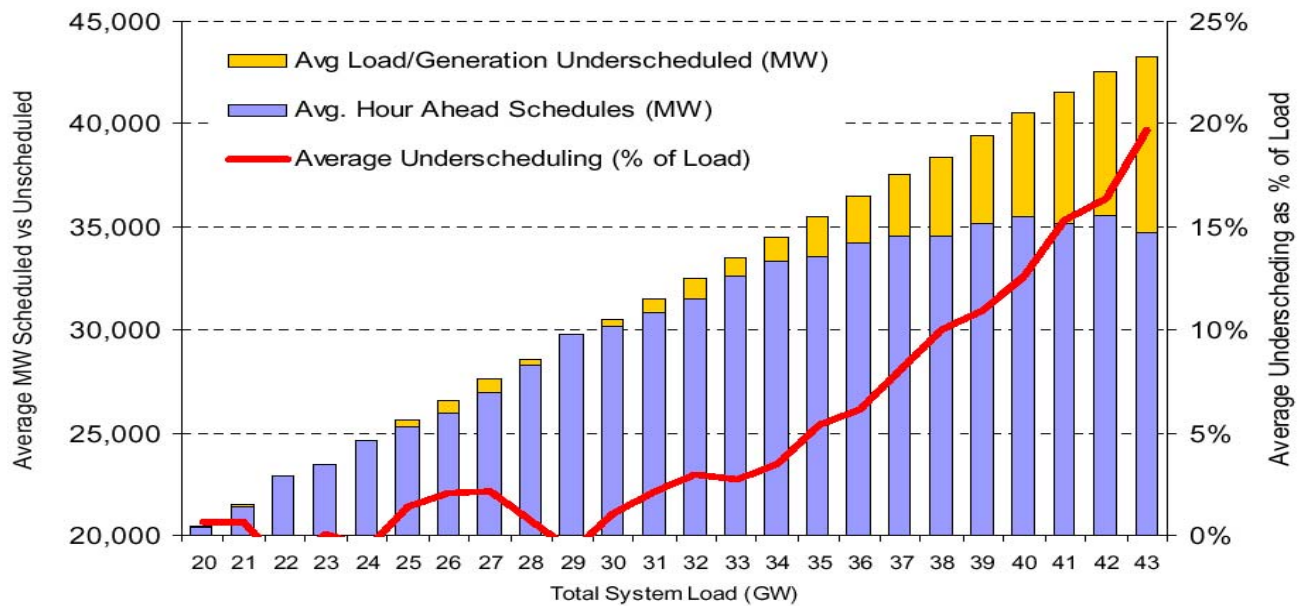
An ISO Emergency

July 24, 2000 ISO Emergency
WSCC EHV Hourly Data



Undergeneration

Figure 13. Average Underscheduling of Loads and Generation by System Load Level (June, 2000)



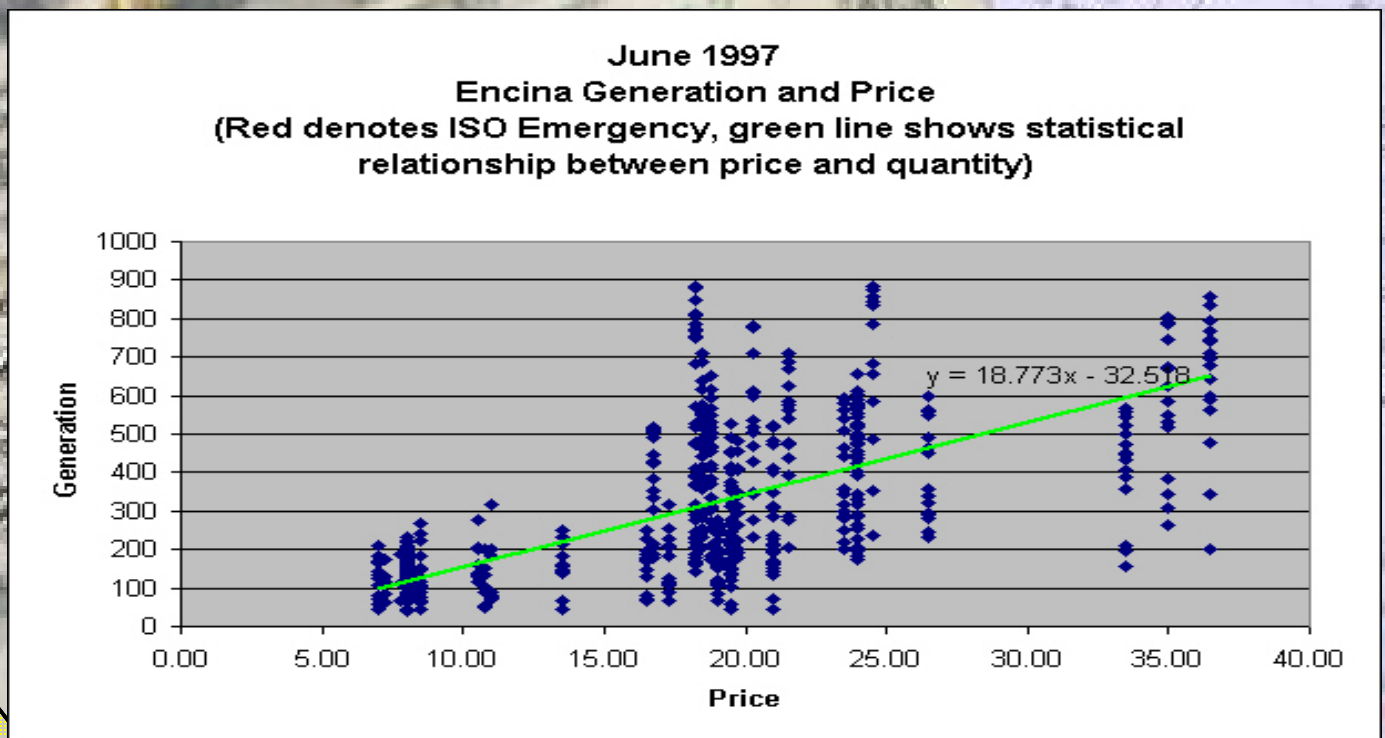
Report on California Energy Market Issues and Performance: May-June, 2000

Inefficient Peak Dispatch

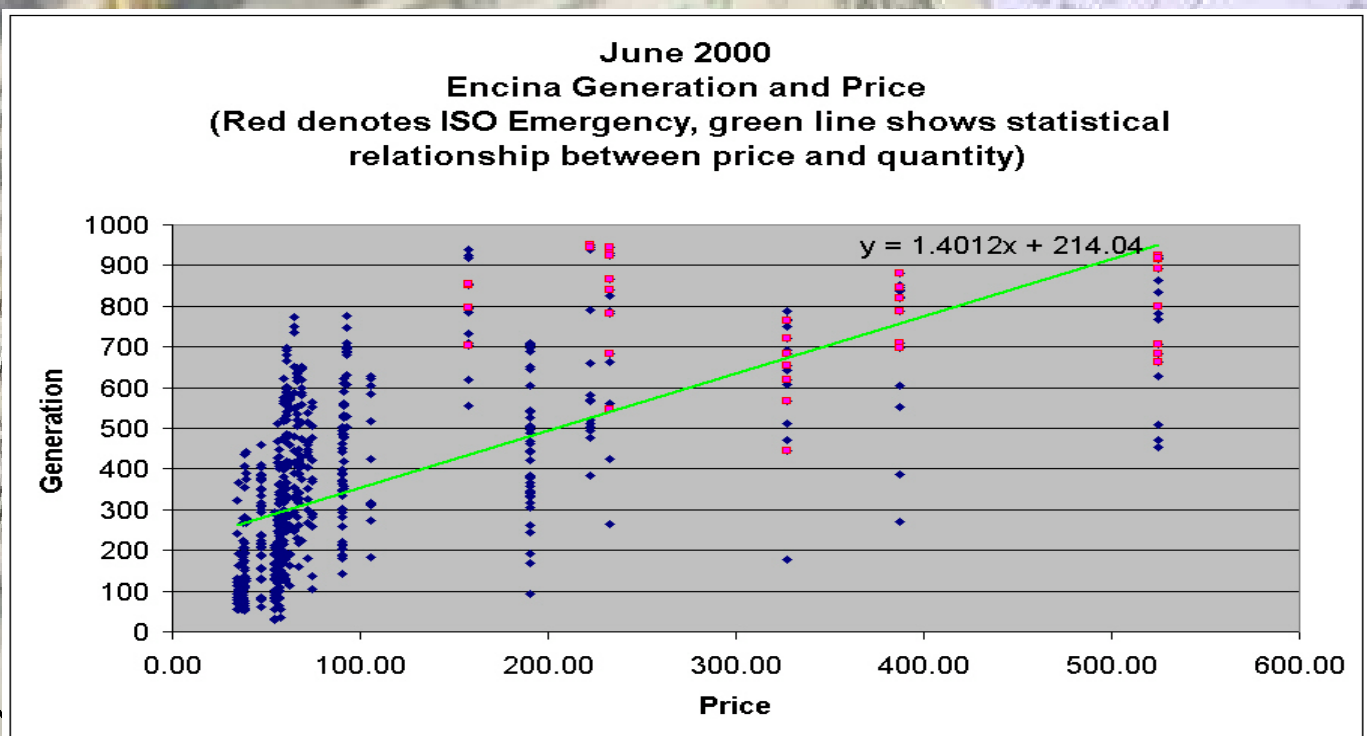
- ISO plants dispatch erratically
- Although total capacity equals nameplate, actual dispatch averages only 50% of nameplate
- ISO dispatch doesn't even approach nameplate during system peaks



June 1999: Encina Generation and Price



June 2000: Encina Generation and Price



Colusion? Very Possibly.

- It now costs the market 13 times as much to raise generation levels as it did in 1997
- Substantial evidence exists for signaling -- change production levels to check the responses of other generators
- Replacing the Internet with major generating units as "tom-toms"



Optimal Dispatch: June 2000

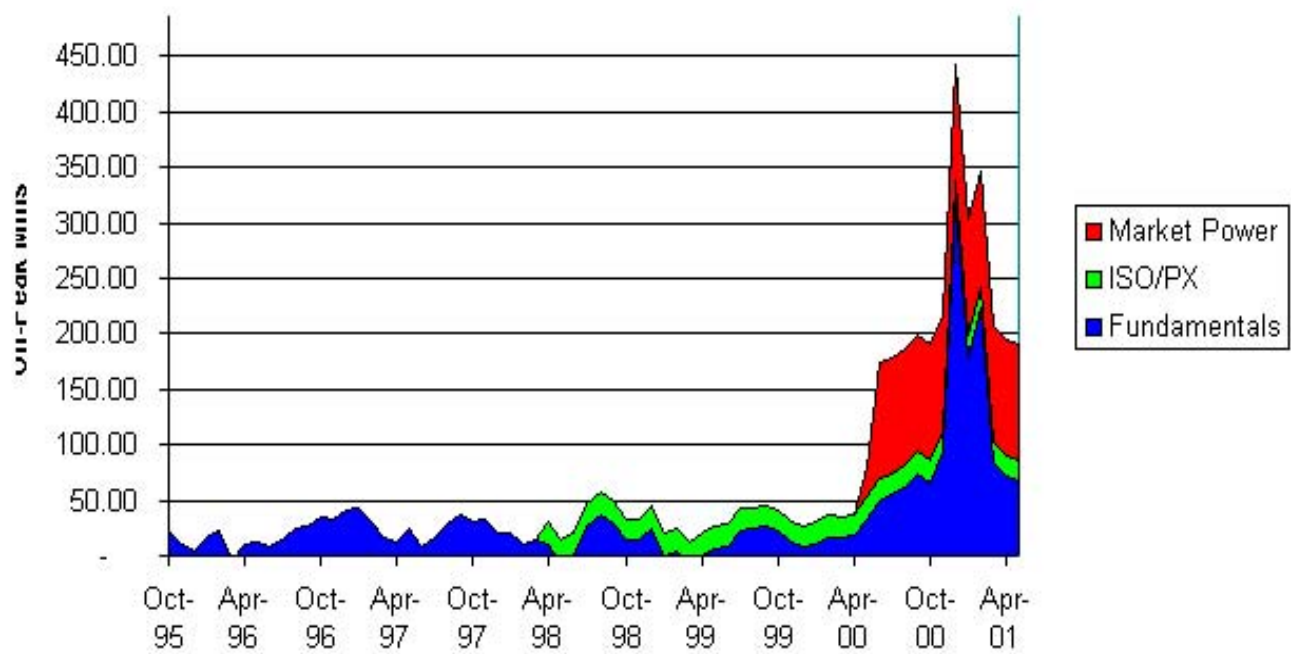


A background image featuring several US dollar bills, including a \$100 bill and a \$1 bill, with a dark red pen resting on them. The bills are slightly out of focus, and the pen is in the foreground.

• Encina	180%
• South Bay	164%
• Hermiston	100%
• Gadsby	120%
• Naughton	101%



On-Peak Impacts



Calculated Refunds

- On-Peak: 99.4 mills +/- 13.4 Mills
- Off-Peak: 32.6 mills +/- 8.4 Mills
- Refunds appropriate from May 22nd through July 31st
- Additional data will continue to refine estimates on a month by month basis

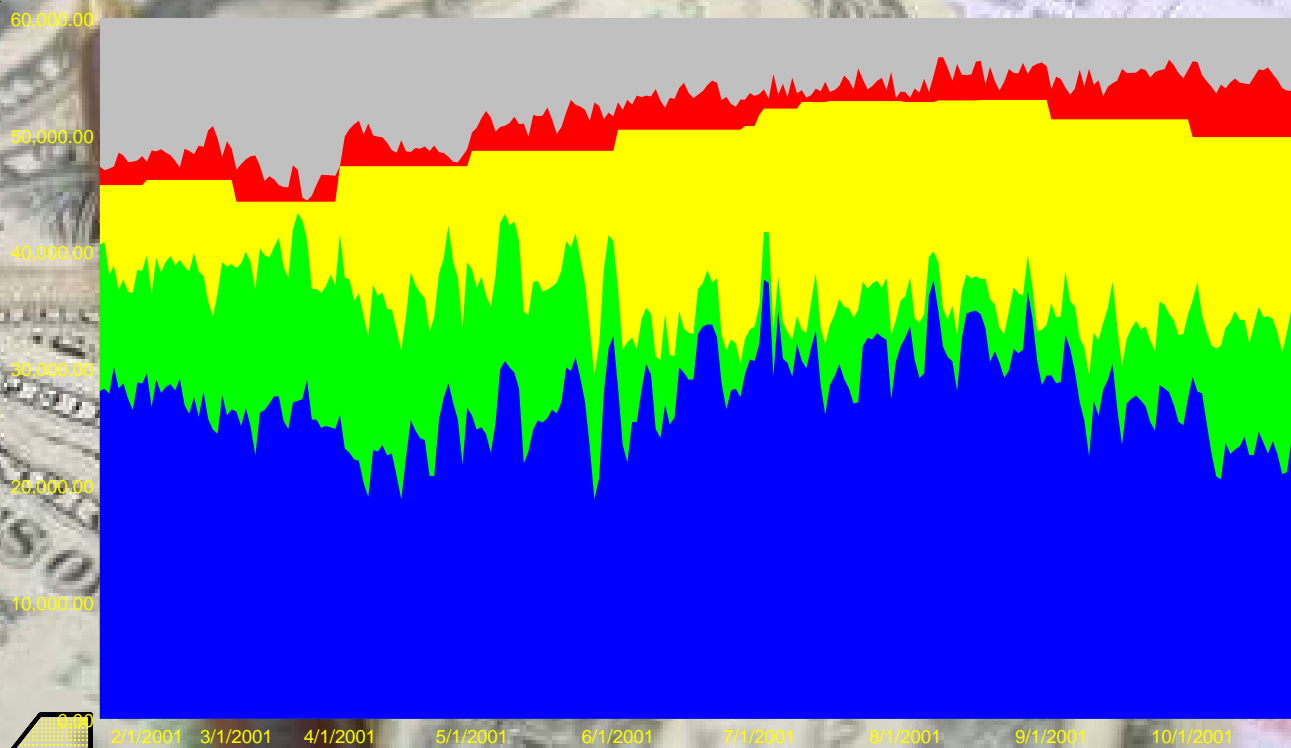


Market and Regulatory Response

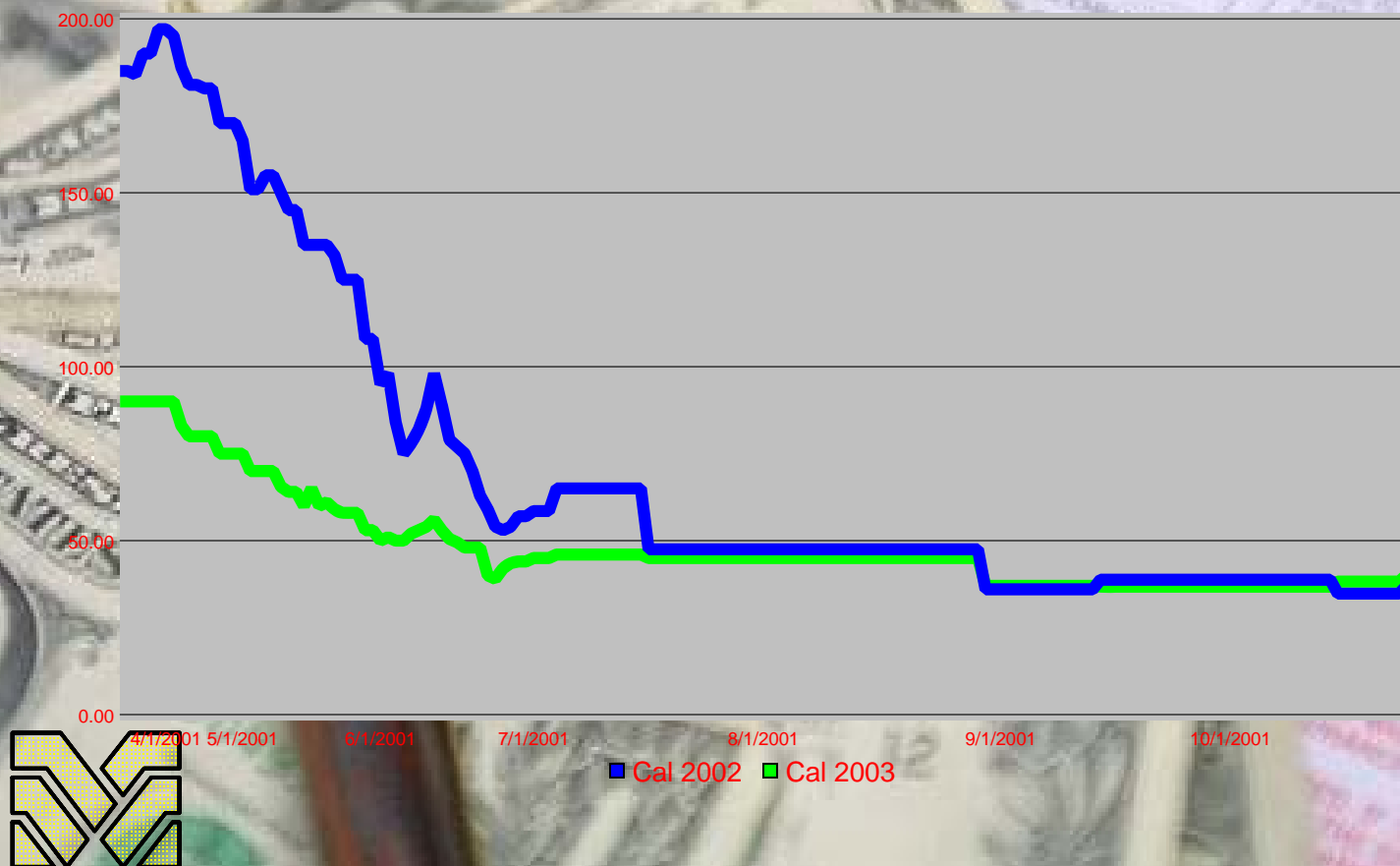
- FERC imposed working price controls on April 16th
- Outages promptly fell to historical levels
- Futures prices went back to historical levels -- even for periods beyond the price controls



Actual ISO Operations

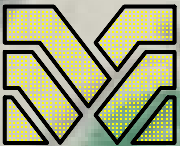


Futures Markets



Repeating 1932

- Enron has closely duplicated Insull's Trust
- Enron owned PGE



Nov. 14, 2001 Conference Call

- In hindsight, we made some very bad investments in non-core businesses. Our investments in various international assets such as Azurix, India and Brazil to name a few, have performed far worse than we could ever have imagined when we made these investments;
- Because of these investments and other matters, Enron became over-levered. While the poor performance of our investments was bad enough, the negative impact of these investments on the Company have been exacerbated through the extensive use of debt capital both on and off the balance sheet;
- We entered into related party transactions that produced various conflicts of interest both real and perceived. Although we put in place significant safeguards to protect Enron and its stakeholders, investors still perceived conflicts and the loss of investor confidence from these transactions has been very damaging;
- We have been criticized regarding the breakdown of the results of our various business activities as being opaque and difficult to understand; and
- On top of it all, we discovered and disclosed errors in our financial statements which will require a restatement of our previously reported financial statements.



Historical Context

- Portland General Electric has figured significantly in two of the largest bankruptcies in U.S. history
 - In 1932 PGE initiated the collapse of the Insull empire
 - In 2001 PGE was one of the major assets of Enron
- The electric and gas industries were largely founded by Sam Insull and J.P. Morgan
- Both companies used Arthur Anderson



Arthur Anderson

"The thoroughly trained accountant must have a sound understanding of the principles of economics, of finance and of organization. It has been the view of accountants up to this time that their responsibility begins and ends with the certification of the balance sheet and statement of earnings. I maintain that the responsibility of the public accountant begins, rather than ends, at this point."



Enron's Role

- Formed from the merger of two pipeline companies in 1985, Enron breaks logically into two parts – the relatively stodgy pipeline and utility business encompassing Portland General Electric, and the speculative Wholesale and Retail Services divisions including the Broadband trading operation. Other than a ready source of cash for the perennial cash starved speculative enterprises, PGE and the pipelines appear to have participated little in Enron's meteoric rise and fall.
- Wholesale Services, Retail Services, and Broadband are very different than the pipeline and utility business. In recent years, these three entrepreneurial divisions reported quarter after quarter of enormous growth. As of the third quarter 2001, Wholesale Services' two divisions, Americas and Europe, provided 87% of total revenues. Pipelines and PGE provided nearly all of Enron's cash.



Enron The Political Player

- Enron quickly dominated the deregulatory debate, even though they frequently had little knowledge of the underlying industry
- Enron was central to the California debacle -- participating (and often leading) the hearings
- Enron withdraw from California almost immediately after their scheme was launched on April 1st, 1998

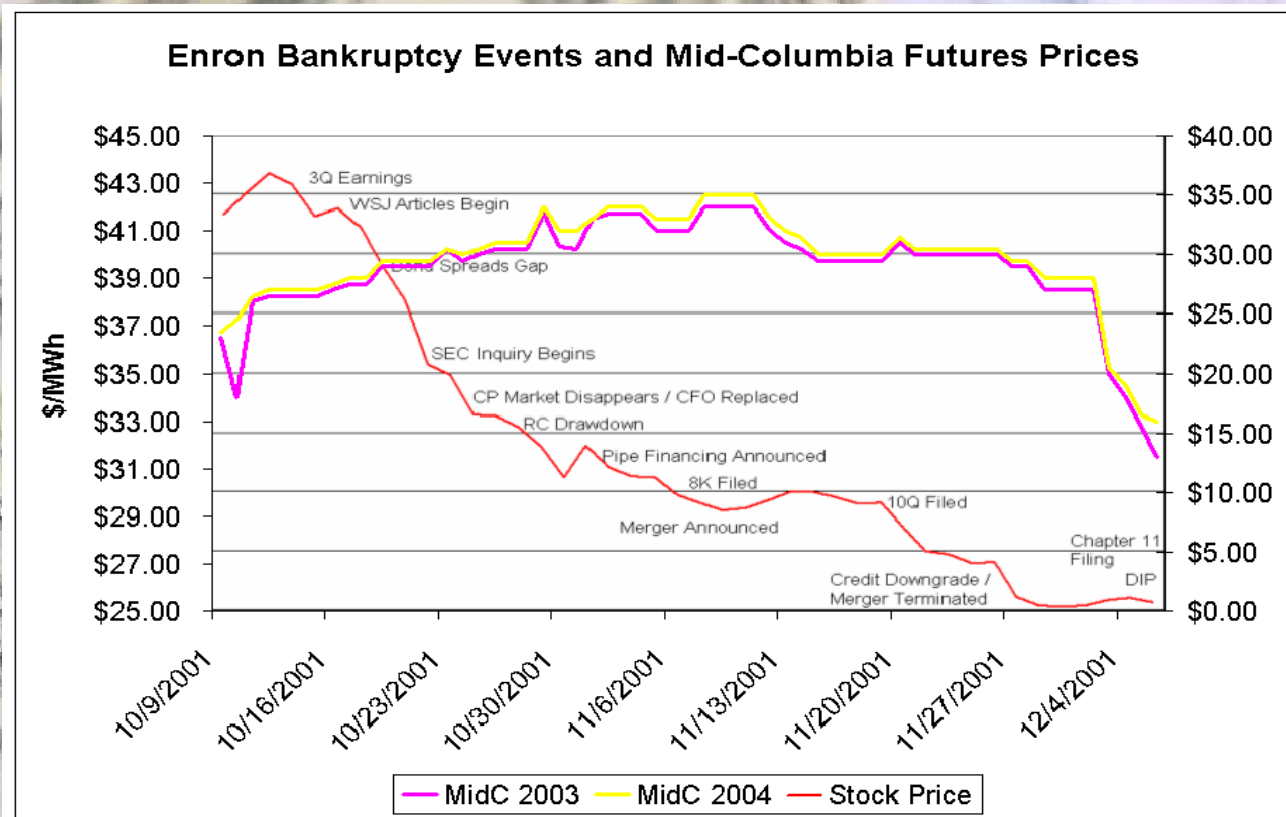


The Collapse

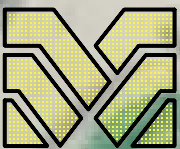
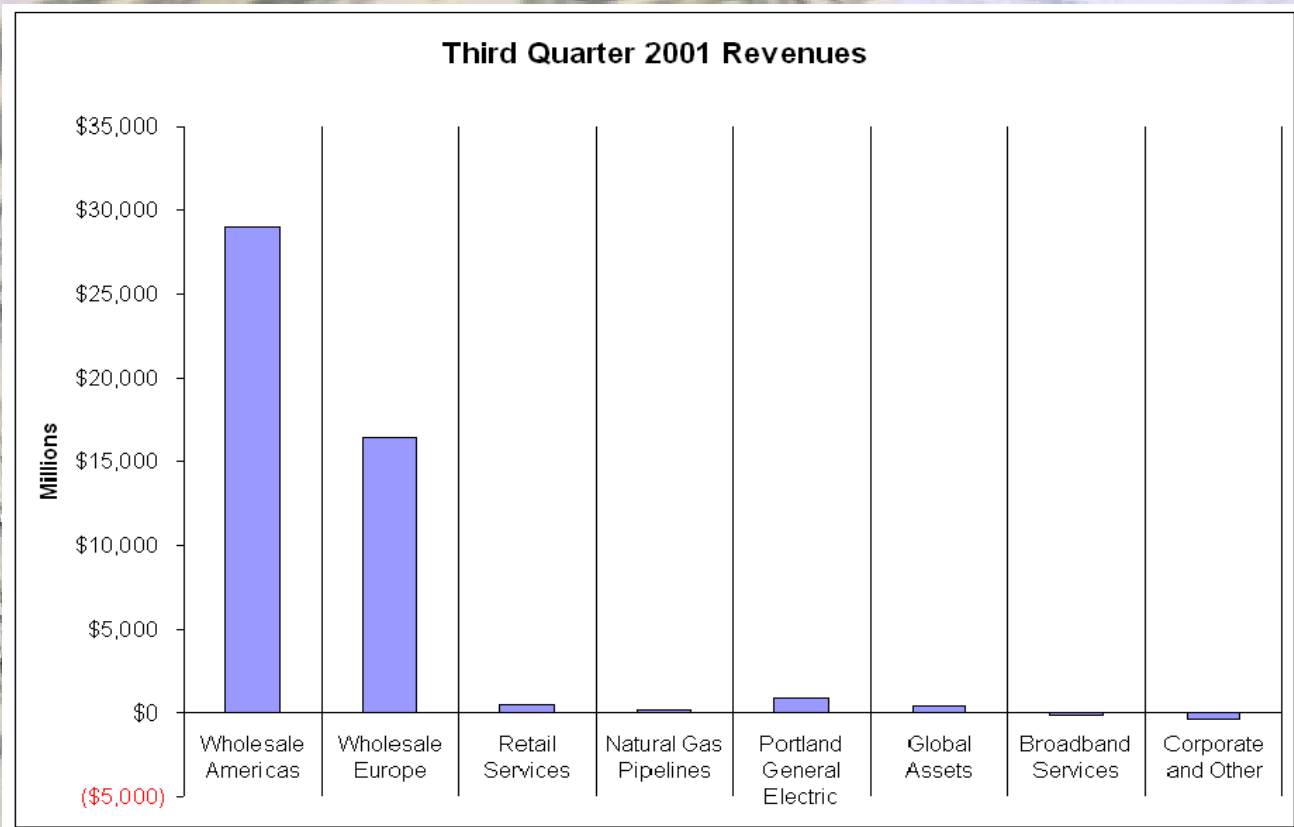
- October 16, 2001 Enron announced its third quarter results
- The overall results were positive – revenue growth of 132%
- Enron reduced stockholder's equity by \$1 billion reflecting the accounting treatment of several unique financing arrangements



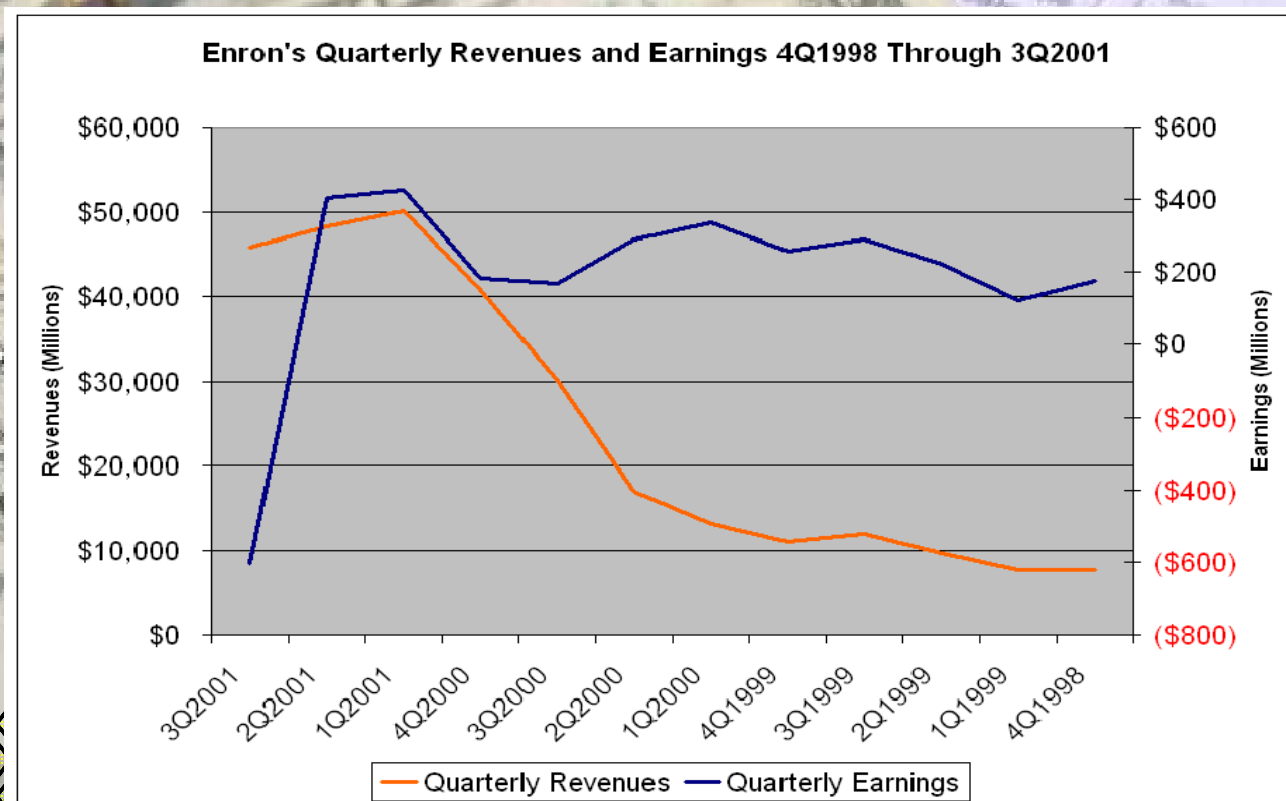
Enron's Collapse



Enron Structure



Revenue and Earnings

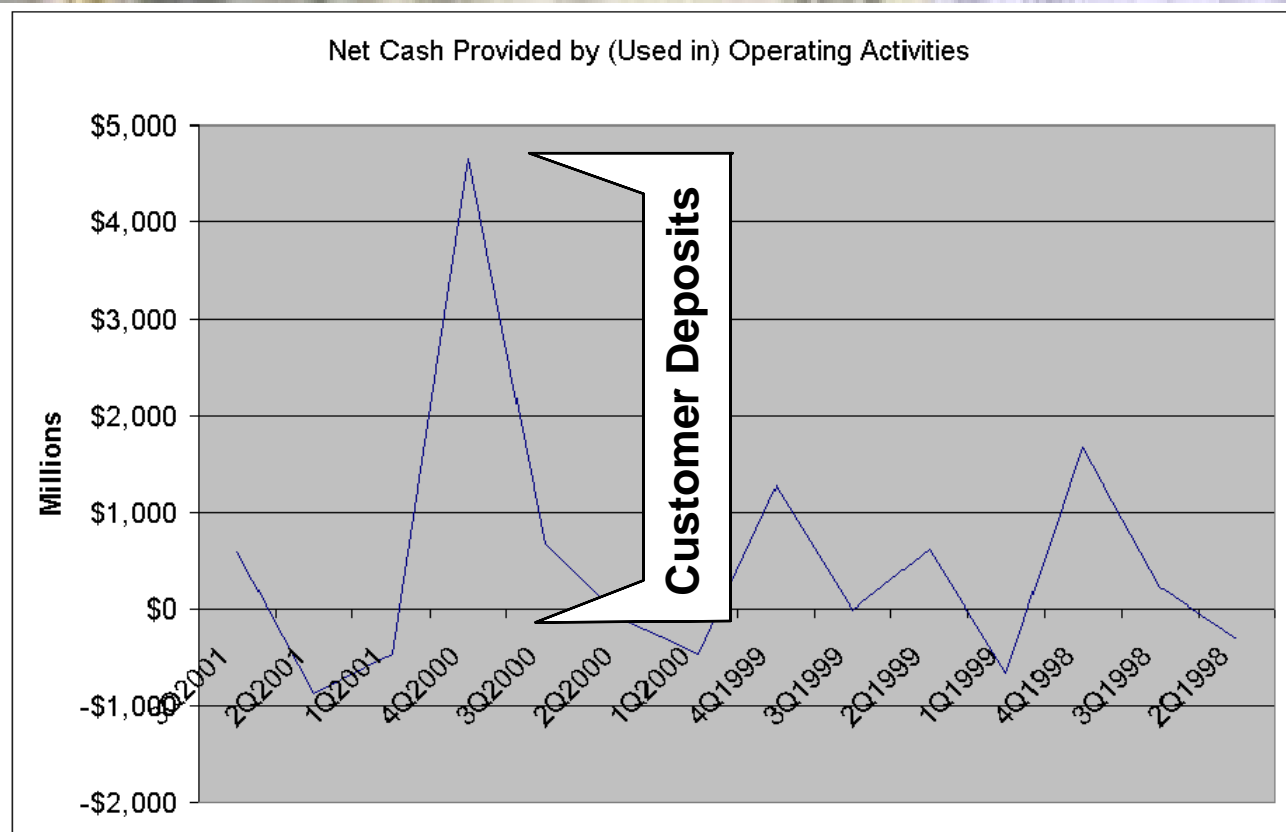


Where is the cash?

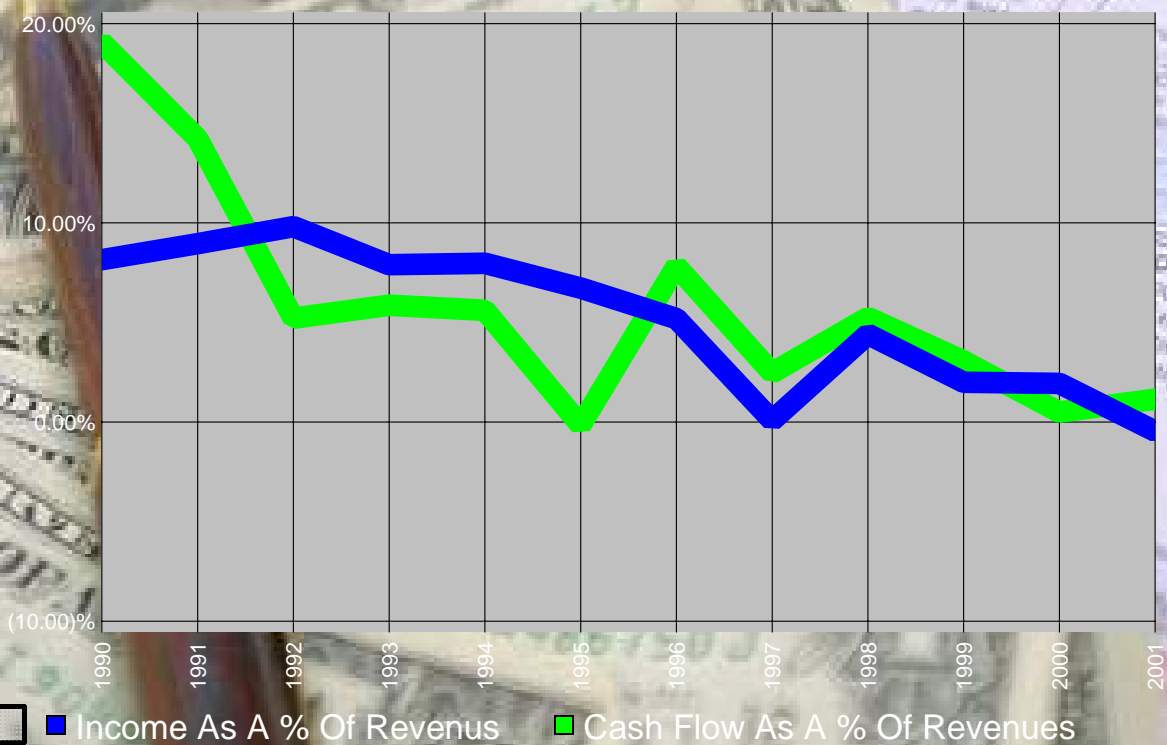
- As a percentage of revenues, Enron was earning 2% on revenues from 4th quarter 1998 through 1st quarter 2000. From 2nd quarter 2000 to the present, that percentage has fallen to one half of one percent. This is even more surprising when one remembers that the fabulously profitable markets in California started at the end of the 2nd quarter 2000 and lasted through 2nd quarter 2001.
- The central issue in this analysis is cash. Where has the cash gone? While Enron was showing year after year of ballooning revenues and steadily climbing earnings (albeit at a much smaller rate), Enron's indebtedness was also increasing. In the context of the traditional asset based industrial, this would hardly be a contradiction – additional sales would require additional capacity to produce the products sold. Enron, on the other hand, made a point in its financial statements that it was not asset based. Recent statements, for example, explained their sale of assets as part of their overall strategy.



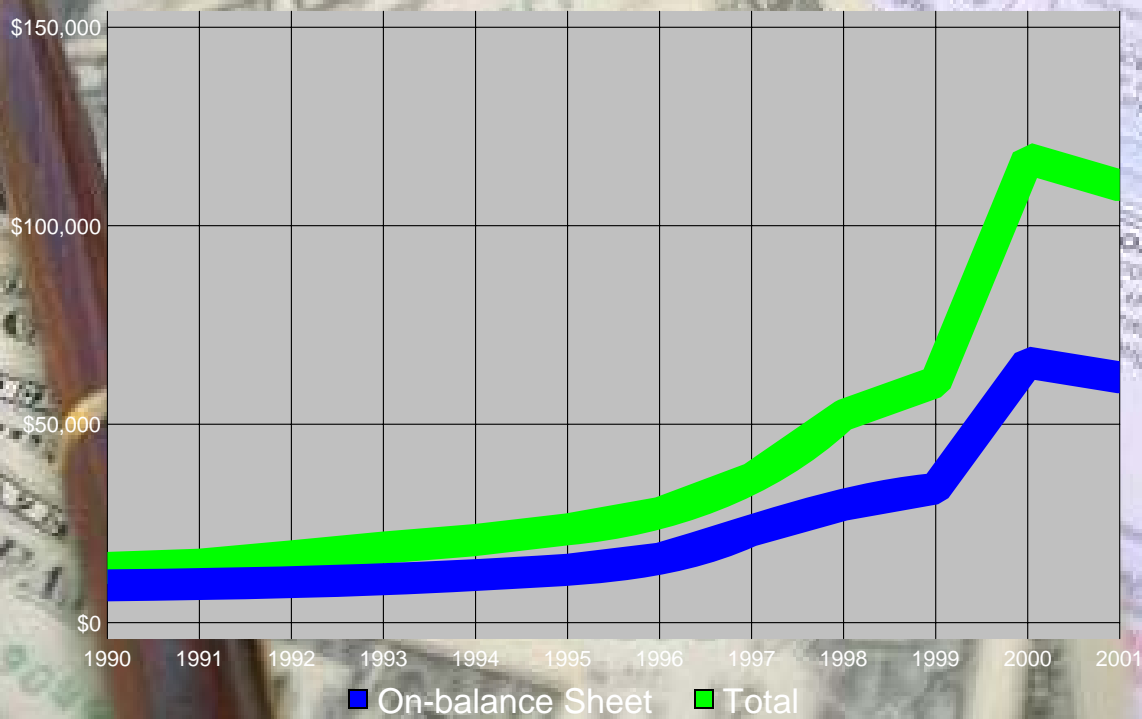
Cash?



Income and Cash Flow



On And Off-Balance Sheet



Enron's Cash Use

- December 3, 2001: \$250 million in preliminary Debt-In-Possession financing
- November 21, 2001: \$450 million secured credit line from JP Morgan, \$600 million payable, disclosed on Nov. 19, had been extended to mid-December
- November 9, 2001: \$1,500 million equity infusion from Dynegy in exchange for Northern Pipeline preferred equity
- November 1, 2001: \$550 million secured credit line from JP Morgan
- October 16, 2001: \$3,000 million borrowed on existing lines of credit, repayment of \$1,900 million in commercial paper obligations

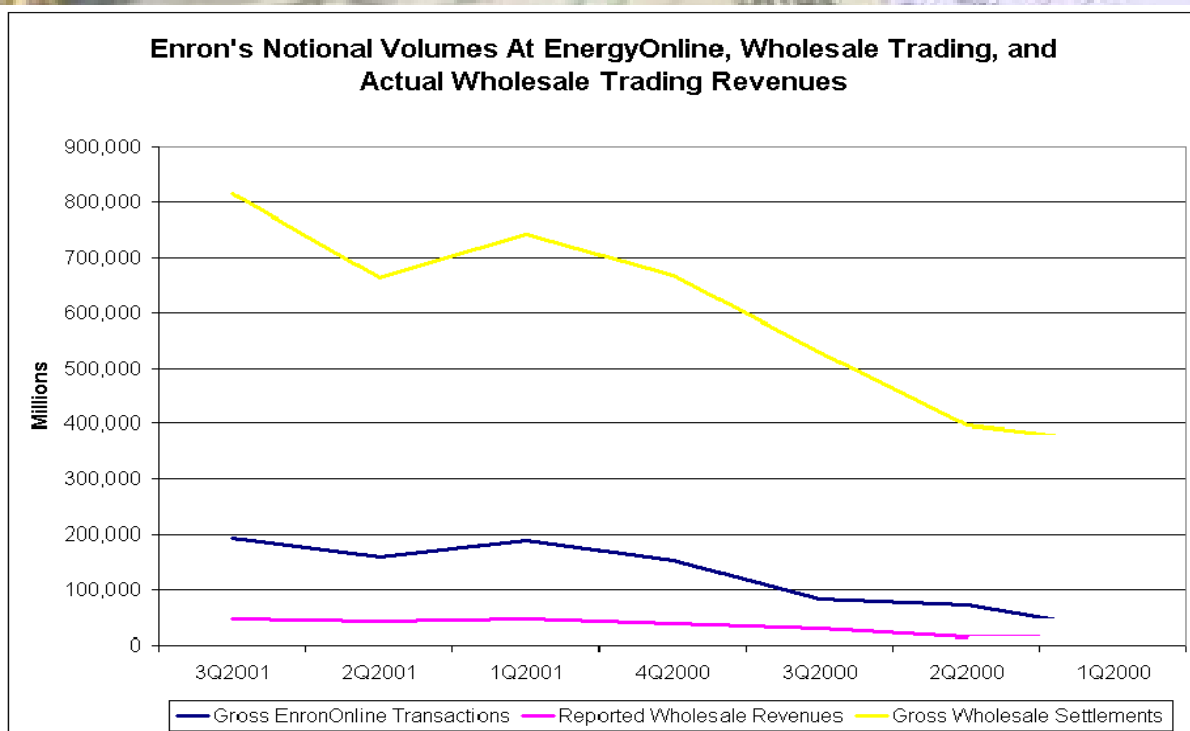


Super Recourse Financing

- Most eastern cities have a financial mechanism that allows small firms to borrow significant amounts off the balance sheet. The local shylock will agree to not inform other lenders of his prior lien on the firm's assets – even if they have already been promised to the bank. Instead, the lender practices a form of super-recourse lending – leg breaking – to assure that these debts are always paid first.
- We now know that Enron had a number of similar financial arrangements. These super-recourse loans were more orderly – no gross physical trauma was necessary – but they were still very unusual. The Osprey Trust, for example, had recall procedures tied to stock price and bond ratings.⁷ This also applied to the similar “Marlin” investment. In effect, this means that any threat to Enron's assets would trigger a payout to the Osprey and Marlin investors long before payouts to traditional bond holders would even be considered.
- On November 19, Enron detailed a series of revelations concerning “triggers” that had led to an early repayment of a \$690 million dollar note owed by Enron. This trigger event was caused by the bond downrating – another example of super-recourse financing.



EnronOnline



Unfortunate Last Words

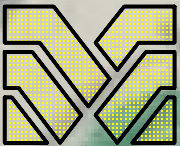
I have heard one manager level employee from the principle investments group say "I know it would be devastating to all of us, but I wish we would get caught. We're such a crooked company." The principle investments group hedged a large number of their investments with Raptor. These people know and see a lot. Many similar comments are made when you ask about these deals. Employees quote our CFO as saying that he has a handshake deal with Skilling that LJM will never lose money.



The background of the slide features a close-up, slightly blurred image of several US dollar bills. A dark-colored pen with gold-colored accents is positioned diagonally across the lower-left portion of the frame. The bills are mostly one-dollar bills, with some two-dollar bills visible. The text "UNITED STATES OF AMERICA" and "ONE DOLLAR" are partially legible on the bills. The overall tone is professional and financial.

April 22, 2004 8K

- Write offs of hard assets are forecasted at \$14 billion
- Write offs of 'risk management assets' – accumulated mark-to-market earnings from past years are \$8 to \$10 billion
- Enron had no net earnings since 1990

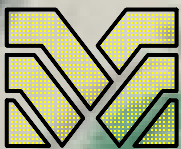


Charles Ponzi

Charles Ponzi's career started as a cook, a facilitator of illegal immigrants, a speculator in stamps, and finally, a cook



"THE GREAT PONZI"



Replaying Past Mistakes

- Entering the future of RTO West
- Once more a collective solution is proposed

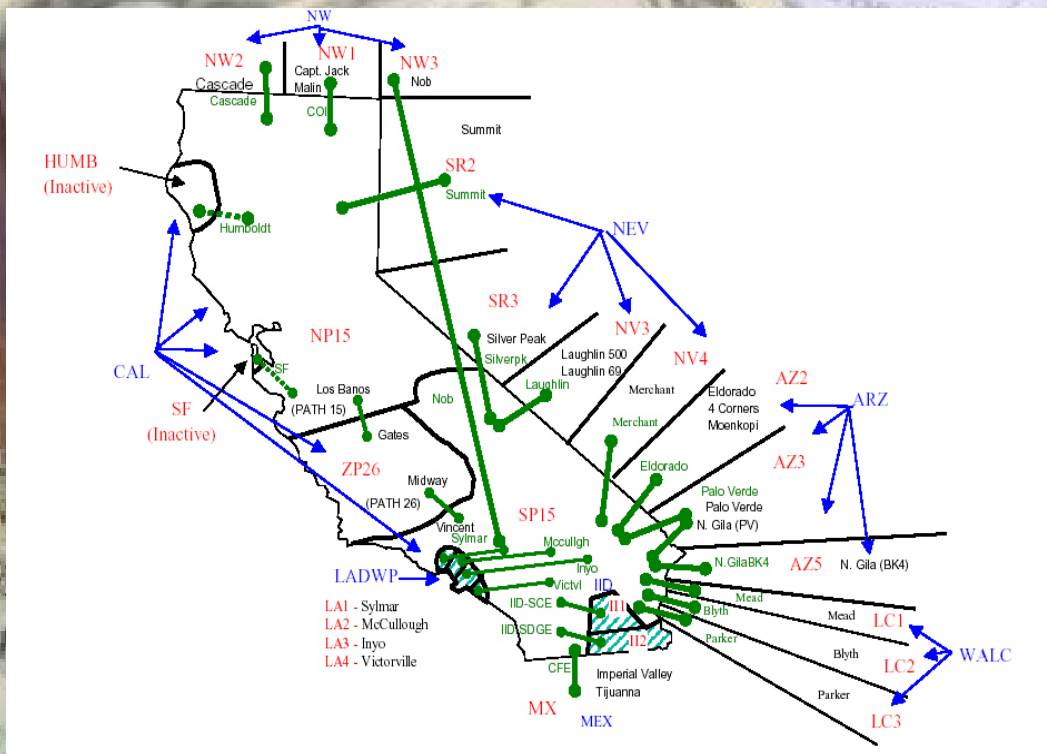


Terminology

- Regulation: A system where state boards review rates and review the prudence of investments
- Competition: Markets characterized by bilateral transactions, many sellers, and easy entry
- Market design: A system where markets are determined and enforced on the participants
- Administered markets: A market where bidding is allowed, but all transactions are designed and implemented by a governing body



California



California Transmission

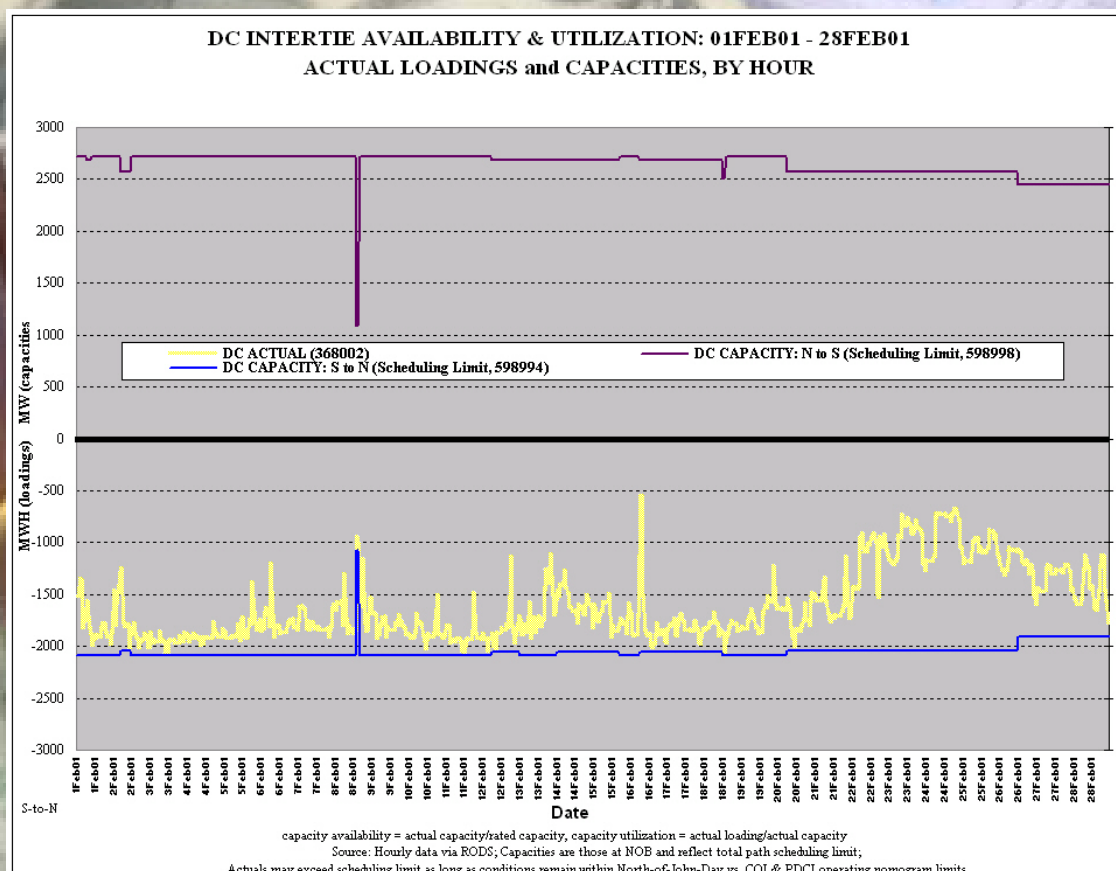


Path 15

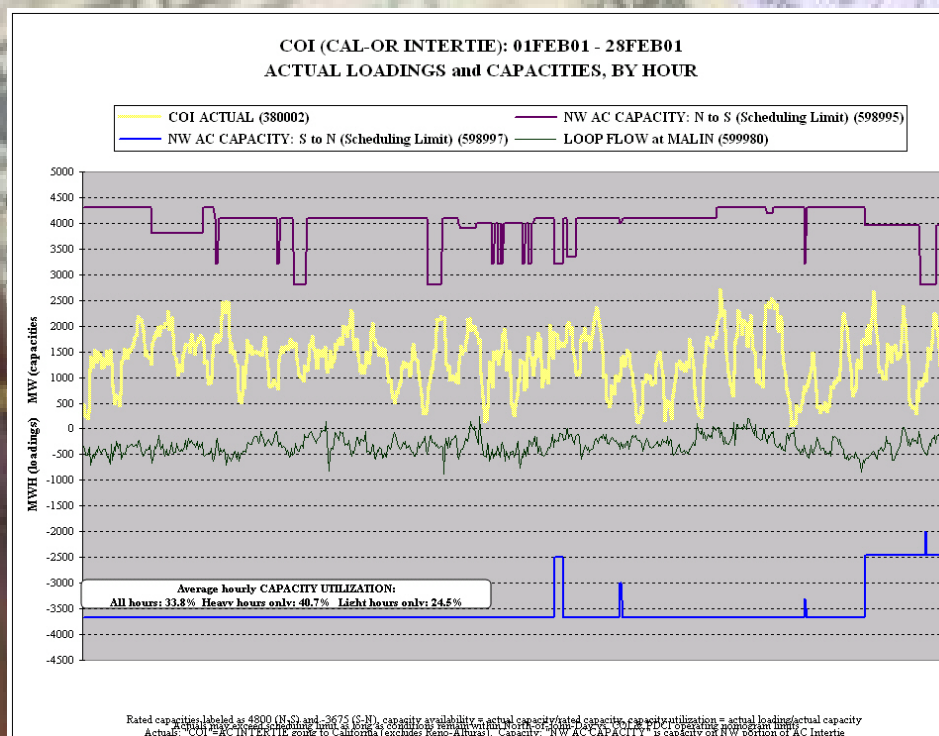
- The ISO justified interruptions to "NP-15" -- Northern California -- because it was unable to move power north
- The parallel path to Northern California was not congested over this period
- The ISO has never been able to explain how this occurred



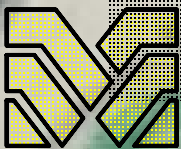
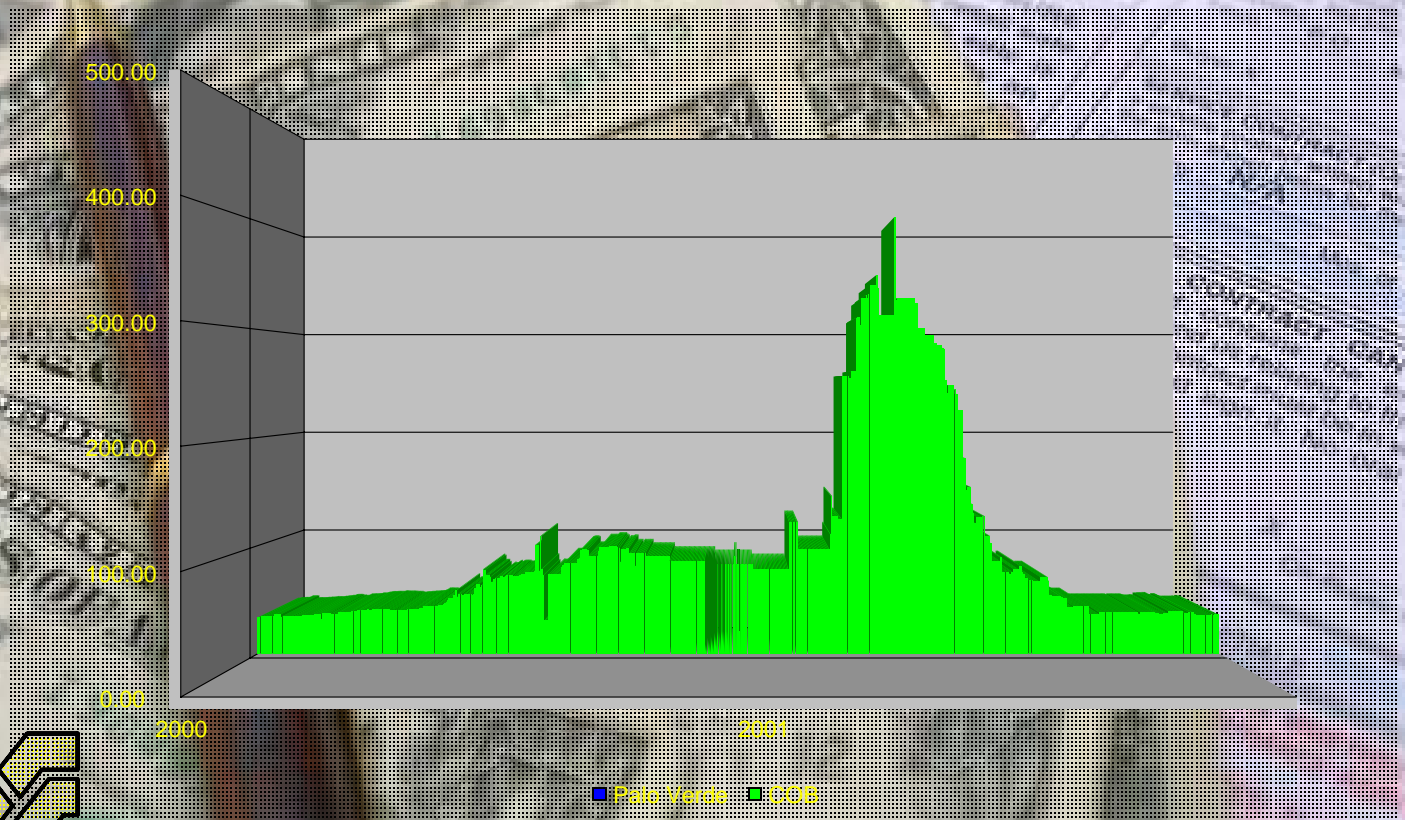
DC Loadings - 80%



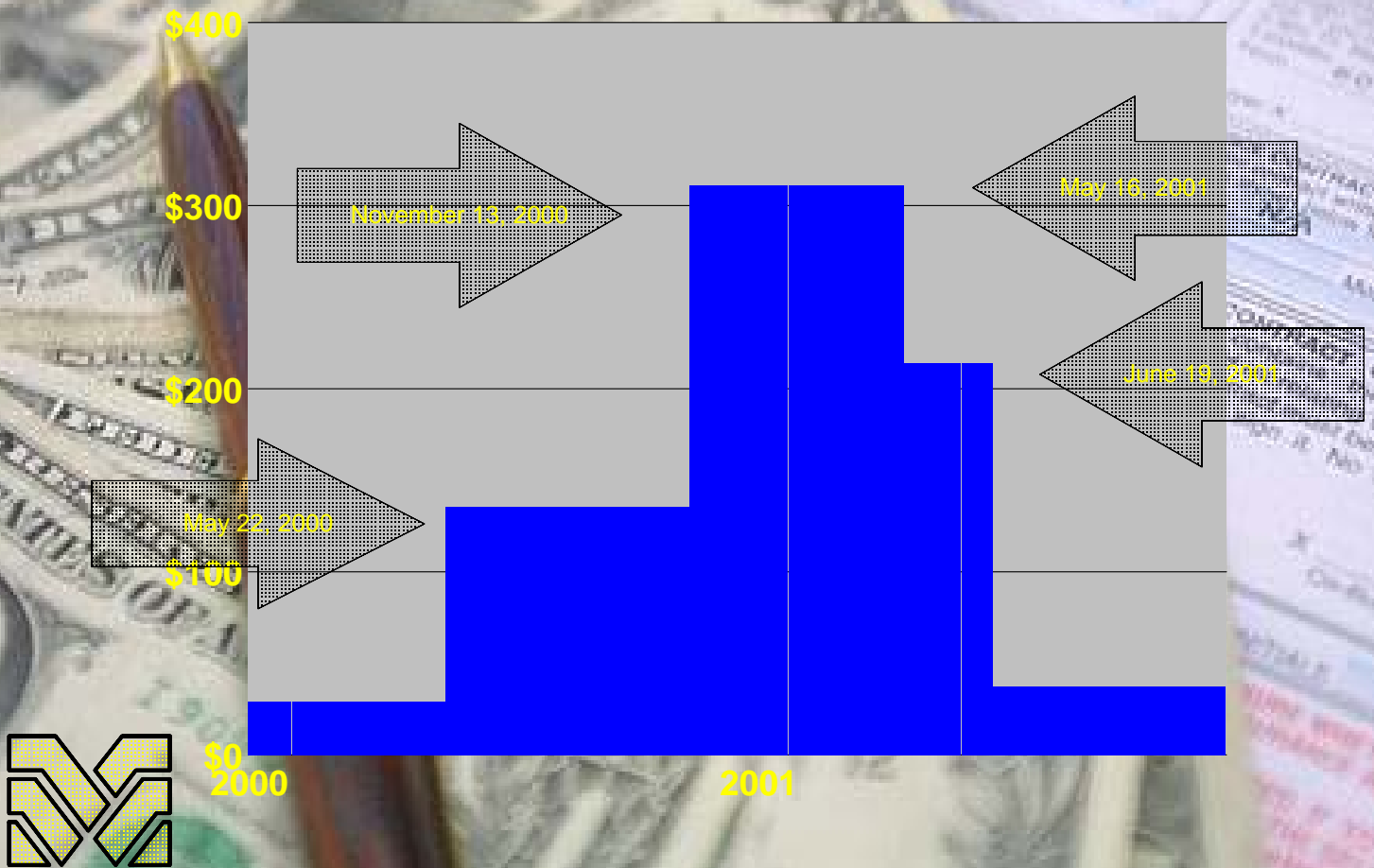
AC Loadings -- 40.7%



Can Water Run Uphill?



Ignoring Fundamentals



Friedrich Nietzsche

He who fights with a monster
might take care lest he thusly
become a monster. And if you
gaze long into an abyss, the
abyss gazes back at you.



Speeders and Slackers

Congestion schemes often provide an incentive to congest narrow pathways



Administered Markets in Texas, PJM, Alberta, New England, and California

- Although almost all electric transactions are daily, weekly, monthly, or yearly, theorists are fascinated by hourly transactions
- In the real world, hourly transactions only reflect adjustments for weather and plant outages
- Administered markets define the mainstream transactions as derivatives
- In addition, the administered markets focus on transmission congestion – usually solved by very complex adjustment bidding schemes

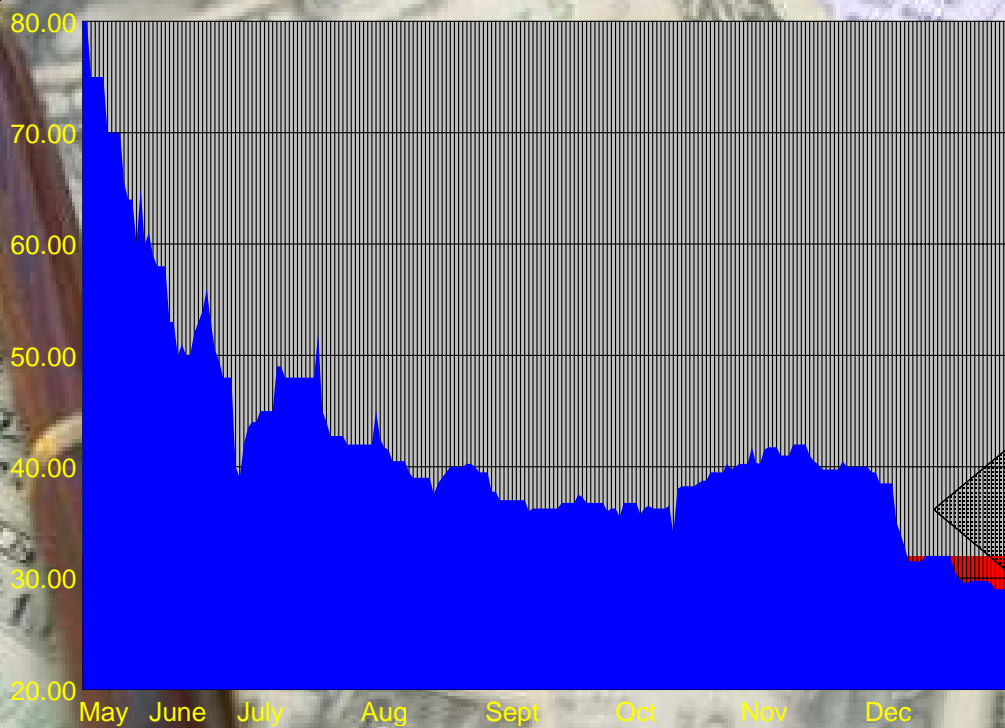


FERC's Shrinking Mission

- FERC has frequently stated that protection of the consumer is no longer a serious part of their mission
- FERC's primary mission is to "promote" competition by establishing administered markets
- By definition, administered markets cannot fail since they have been designed by theorists
- California, Alberta, Texas, and PJM are temporary aberrations



Long Term Prices



Ch. 11



Inefficiency

- Not one of the administered markets are approximating economic prices
- California's prices varied from three to five times long term cost to below long term cost
- Other markets have been less volatile, but no less inefficient



Thorstein Veblen

Theories are constraining on
the underlying facts.



Indego

- Indego occupied much of our lives until -- after an enormous study -- we found that smudging costs around did not make them go away
- The phrase "dull and pointless" was coined to describe Indego meetings
- Never have so many, done so much, to achieve so little



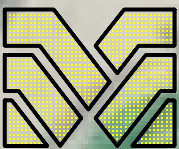
RTO West

- Cost benefit study proves that twenty years of successful markets could not have existed without bureaucratic intervention
- Why break what's not broken?



Cost Benefit Study

- Generally, the domination of the northwest system by hydroelectric power provides a relatively efficient bulk power system to begin with;
- Pancaking therefore has a greater impact on the congestion prices across constraints than it does on overall production cost efficiency;
- The ability to further substitute hydro resources for thermal resources, through further regionalization, offers significant benefits.



Derating The System

3.3.10 Generation from Hydro Units

The hourly generation schedule of hydro units in the northwest and British Columbia was provided by RTO West based on average hydro conditions and was used in the GE MAPS in both With RTO and Without RTO cases. The Benefit Cost Work Group decided on this approach to ensure that the model captured all environmental, operational, and other constraints that determine generation from hydro units. The work group fixed the hydro schedule because the “hydro operations in the Pacific Northwest are driven largely by non-power constraints associated with fish and wildlife mitigation, flood control, irrigation, navigation, etc.”²⁷



Montana Transmission

Annual Average Energy Price (Real 2000\$/MWh)				
Area	Region	Without RTO	With RTO	% Change
BC Hydro + W Kootenay	RTO-West	35.80	34.41	(3.89)
Avista Corp	RTO-West	35.50	29.70	(16.34)
Bonneville Power Admin	RTO-West	34.82	29.75	(14.57)
Chelan Douglas Grant PUD	RTO-West	34.18	29.73	(13.01)
Idaho Power Company	RTO-West	30.30	28.93	(4.53)
Montana Power Company	RTO-West	25.24	26.82	6.27
Nevada Power Company	RTO-West	33.75	30.38	(9.99)
Pacificorp East	RTO-West	30.16	27.46	(8.94)
Pacificorp West	RTO-West	32.73	29.68	(9.33)
Portland General Electric	RTO-West	33.42	29.73	(11.05)
Puget Sound Energy	RTO-West	35.60	29.77	(16.39)
Seattle City Light	RTO-West	34.82	29.75	(14.56)
Sierra Pacific Power	RTO-West	40.99	33.21	(18.97)
Tacoma Public Utilities	RTO-West	34.42	29.75	(13.56)
Alberta Power	ALBERTA	23.98	23.81	(0.69)
LA Dept of Water & Power	CA ISO	34.39	30.99	(9.87)
Pacific Gas & Electric	CA ISO	32.88	31.32	(4.76)
San Diego Gas & Electric	CA ISO	32.20	30.97	(3.83)
Southern California Edison	CA ISO	32.93	31.41	(4.61)
Public Service of Colora	Rocky Mtn	32.66	25.72	(21.23)
WAPA Colorado-Missouri	Rocky Mtn	26.75	25.76	(3.73)
WAPA Upper Missouri	Rocky Mtn	27.59	24.56	(10.99)
Arizona Public Service	WConnect	31.17	27.77	(10.93)
El Paso Electric	WConnect	36.17	30.63	(15.32)
Imperial Irrigation Dist	WConnect	30.69	28.71	(6.44)
Public Service New Mexico	WConnect	33.16	27.80	(16.14)
Salt River Project	WConnect	31.12	27.68	(11.06)
Tucson Electric Power	WConnect	31.14	27.41	(11.96)
WAPA Lower Colorado	WConnect	31.11	27.42	(11.85)



Status Quo

Costs

- Low plant availability rates
- Some transmission pancaking

Benefits

- Easy entry and exit
- Transparent pricing
- Efficient monthly and yearly prices



Administered Markets

Costs

- High administration costs
- Difficult entry and exit
- Exceedingly complex pricing
- Enforcement problems
- Resource 'slacking'

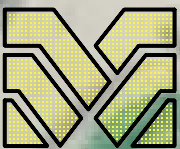
Benefits

- Efficient hourly prices (in theory)
- Job creation



Counting The Costs

- We aren't sure how high the costs of implementing centralized administered markets will be
- We have recently experienced cost increases in the \$20 per megawatt-hour range from the implementation of the California experiment
- During the California crisis, we faced incremental costs in the one hundred dollar range



The background of the entire image is a close-up photograph of several US dollar bills, including one-dollar and five-dollar bills, fanned out. A dark red pen with gold-colored accents lies diagonally across the bills. In the upper right corner, a portion of a contract document is visible, featuring sections for 'SERVICE CONTRACT', 'NOW THIS CONTRACT CAN BE', and 'HOW THIS CONTRACT CAN BE'.

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