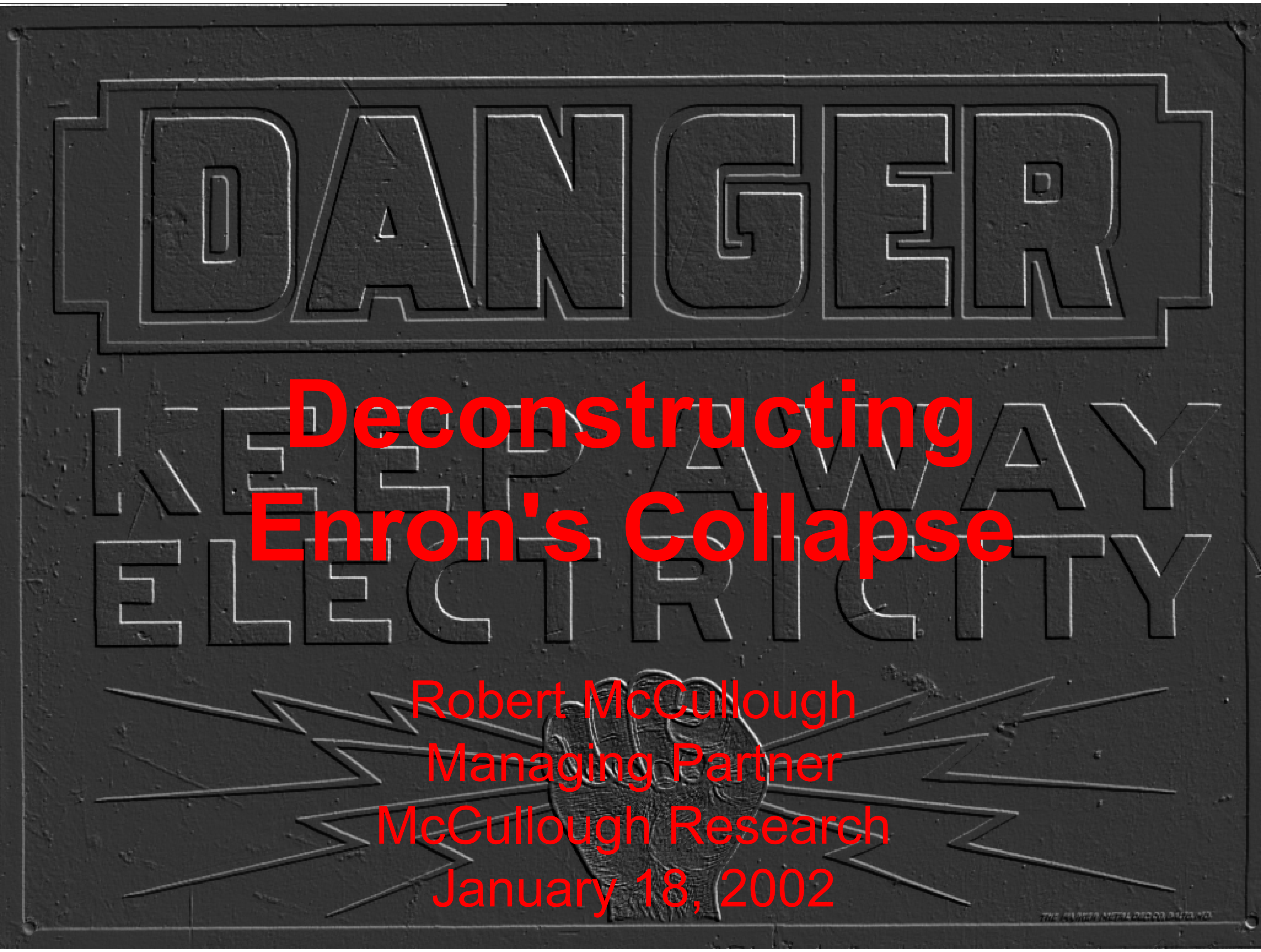

DANGER
KEEP AWAY
ELECTRICITY



Deconstructing Enron's Collapse

Robert McCullough
Managing Partner
McCullough Research

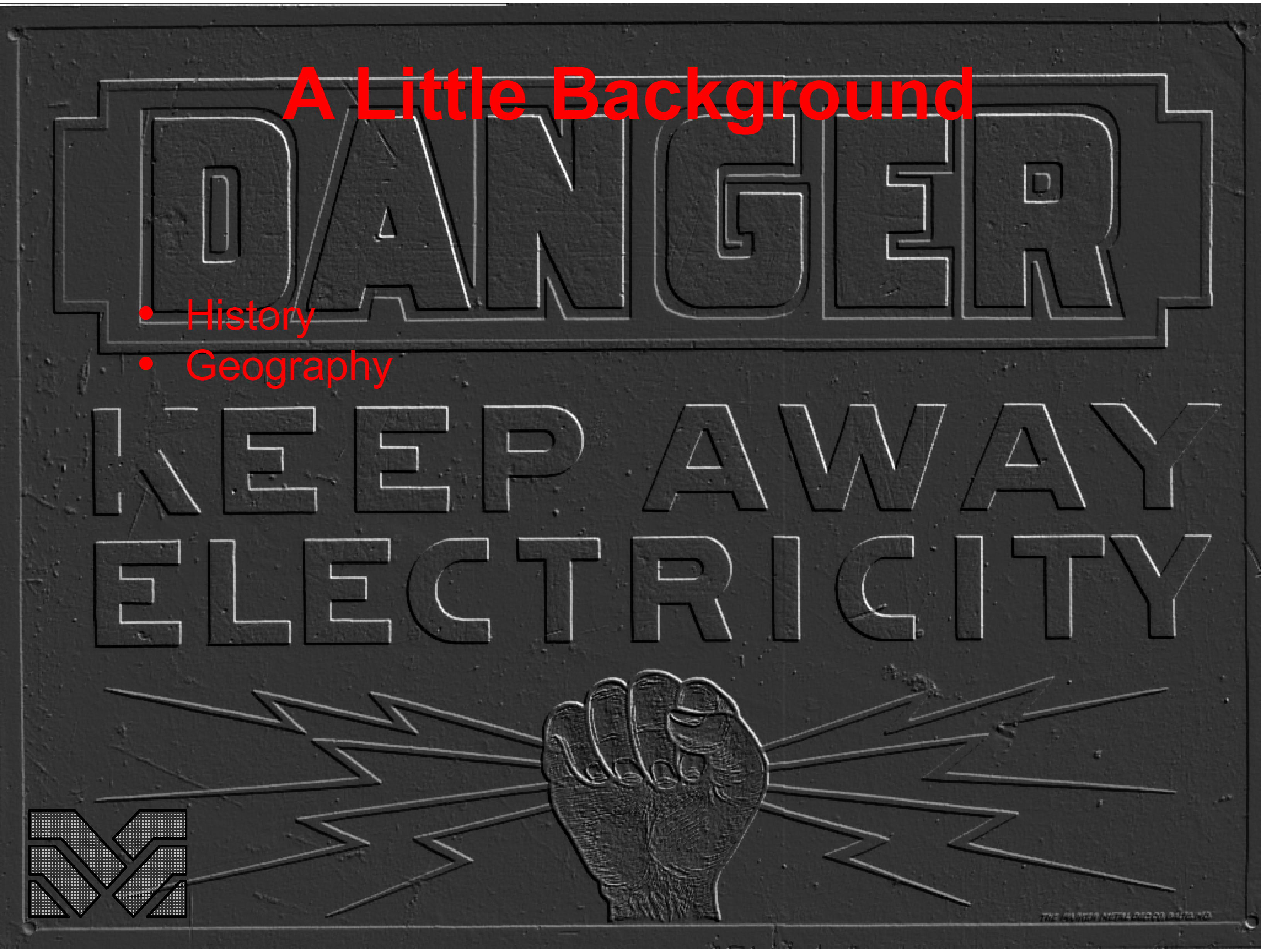
January 18, 2002

Deconstructing Enron's Collapse

- Historical Background
- Recent History
- Enron's Role
- The Collapse
- Hypotheses
  - Last of the Dot Com's
  - Ponzi Scheme
  - Barings Bank
- Current Events

A Little Background

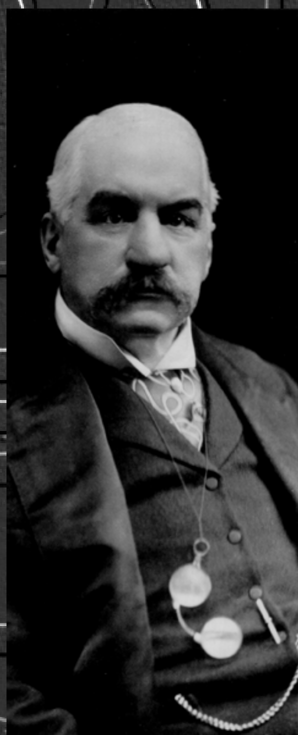
- History
- Geography



History

- 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

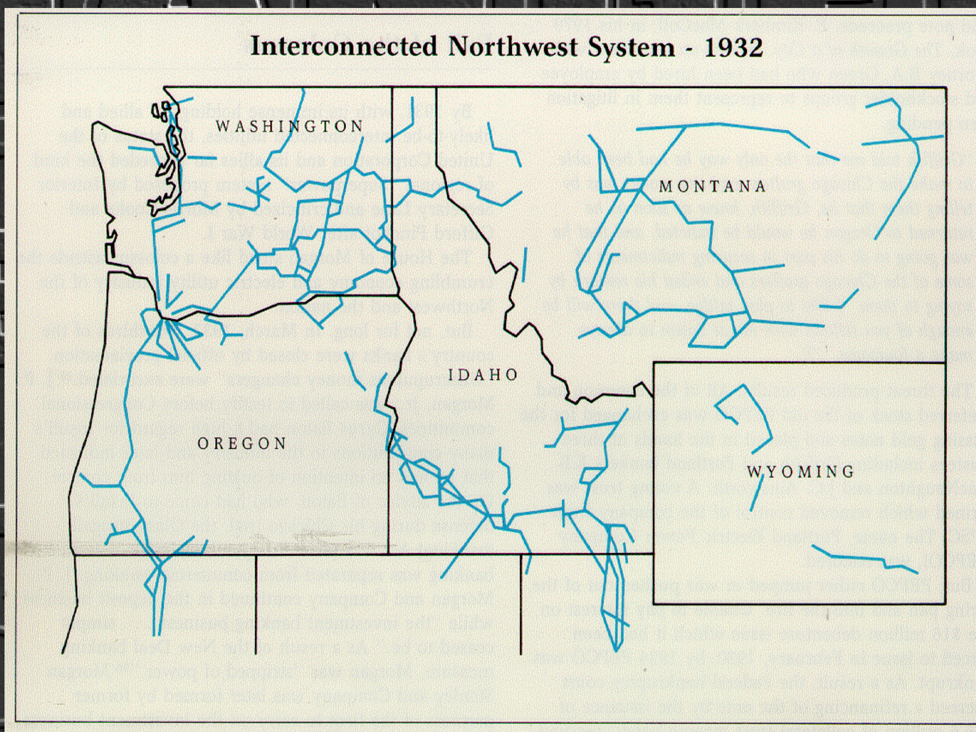
The Robber Barons



JP Morgan

Samuel Insull

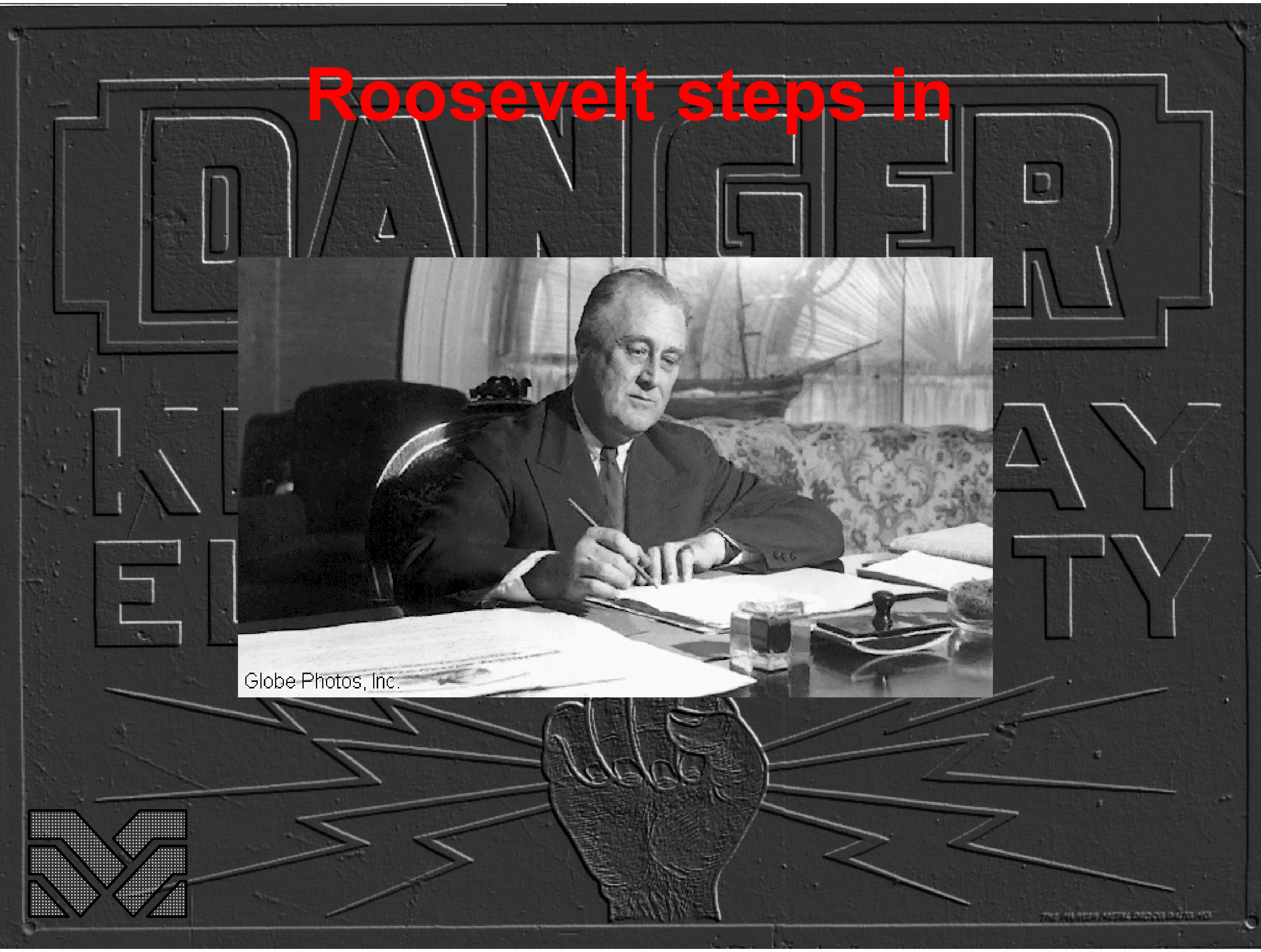
The Northwest Before Roosevelt



Interconnected Northwest System - 1932

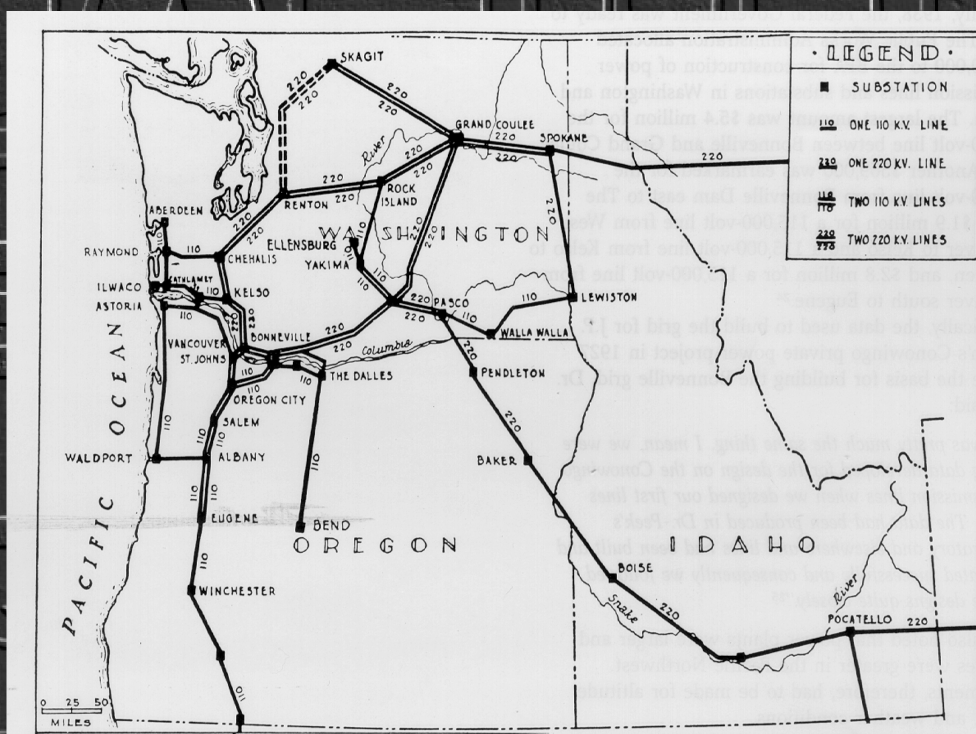
There were a few ups and downs

Roosevelt steps in



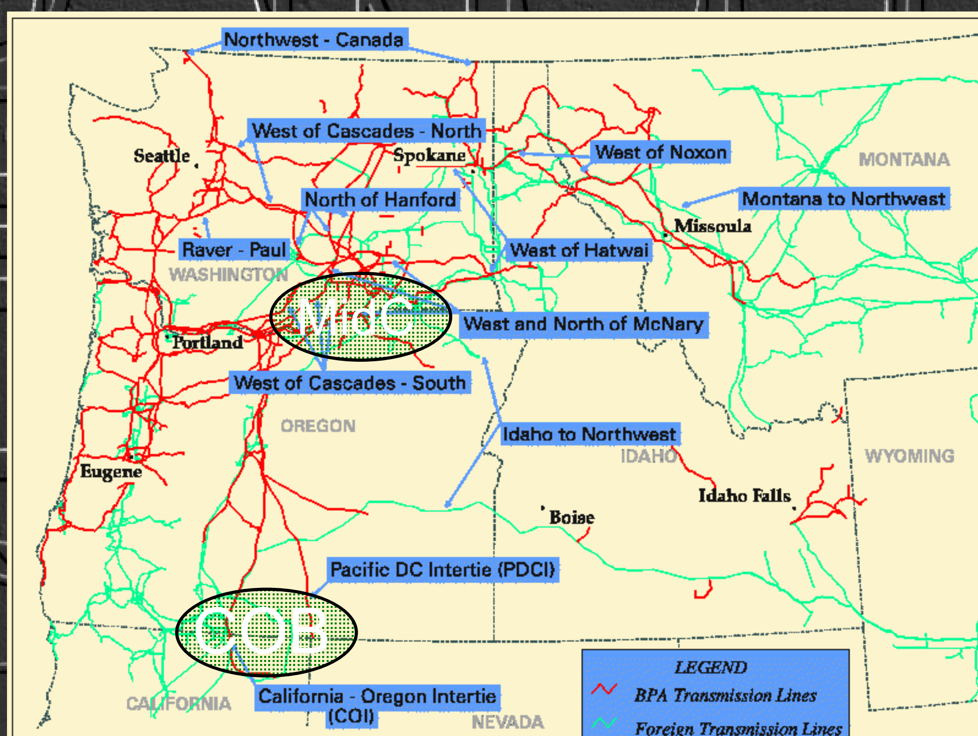
Globe Photos, Inc.

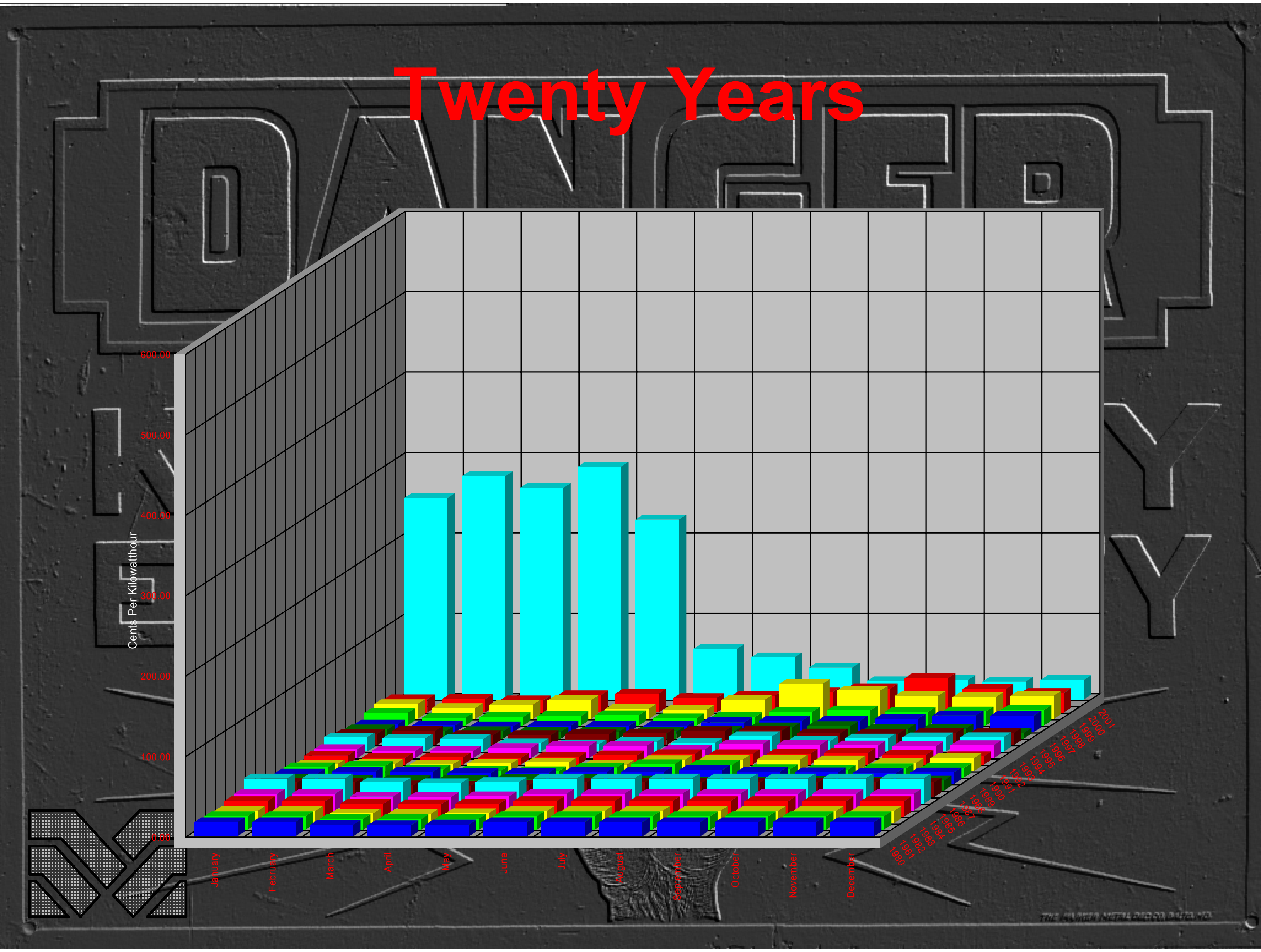
J.D. Ross Master Plan



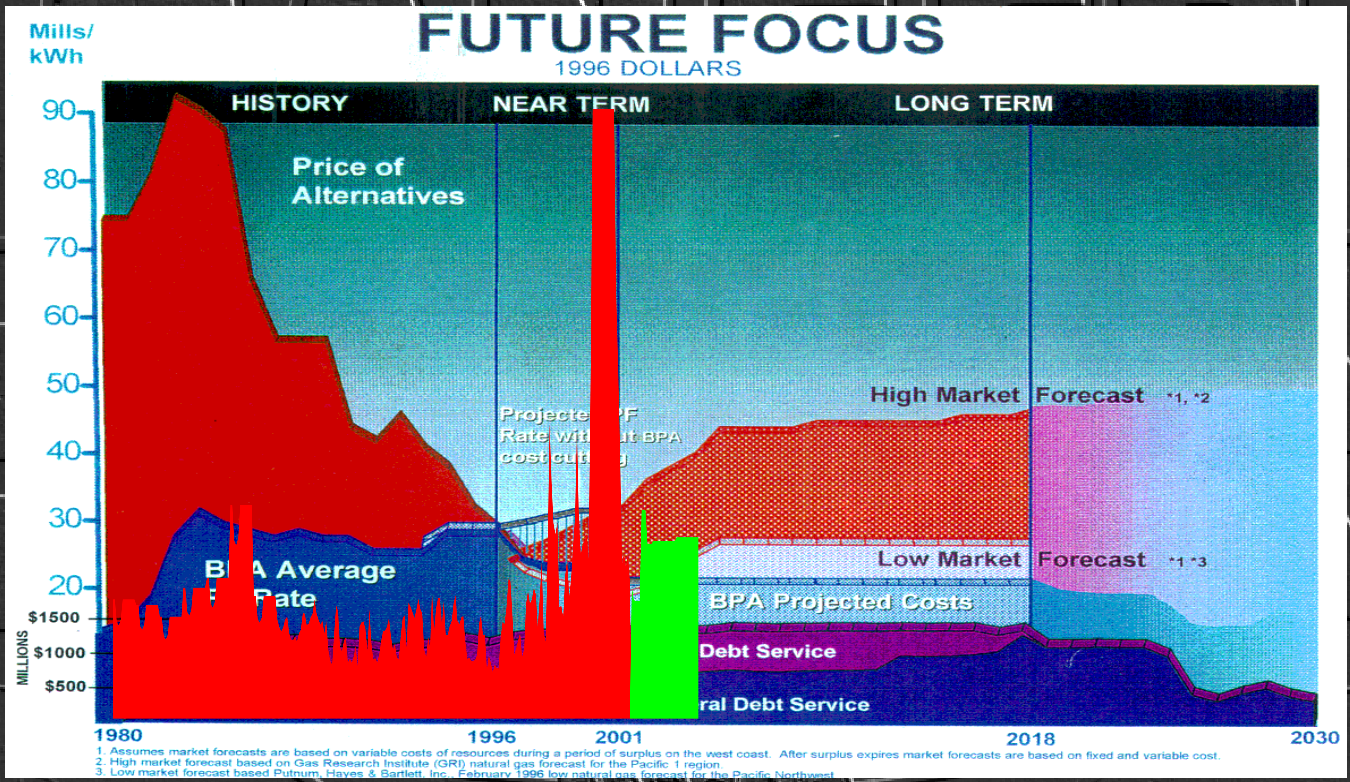
Basic Geography

Northwest Delivery Points




Twenty Years
Cents Per Kilowatthour
600.00
500.00
400.00
300.00
200.00
100.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December

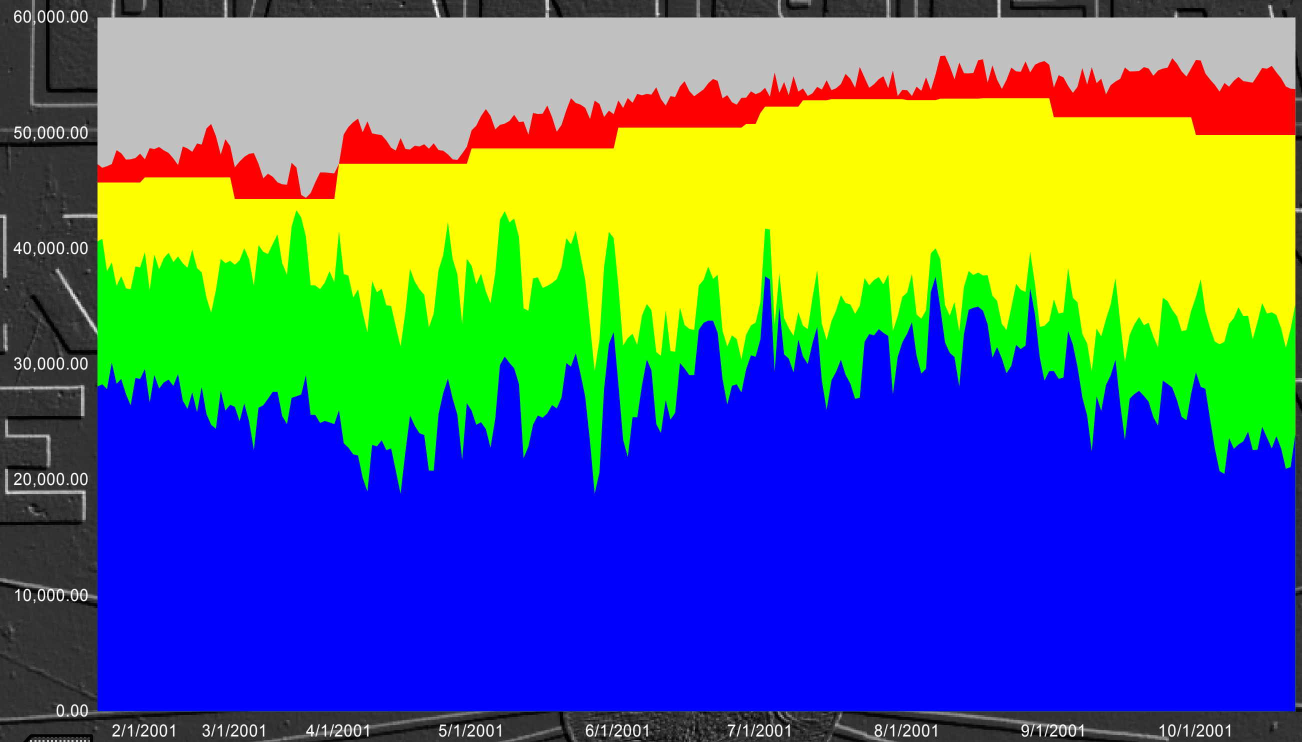
Past and Future Prices



Recent History

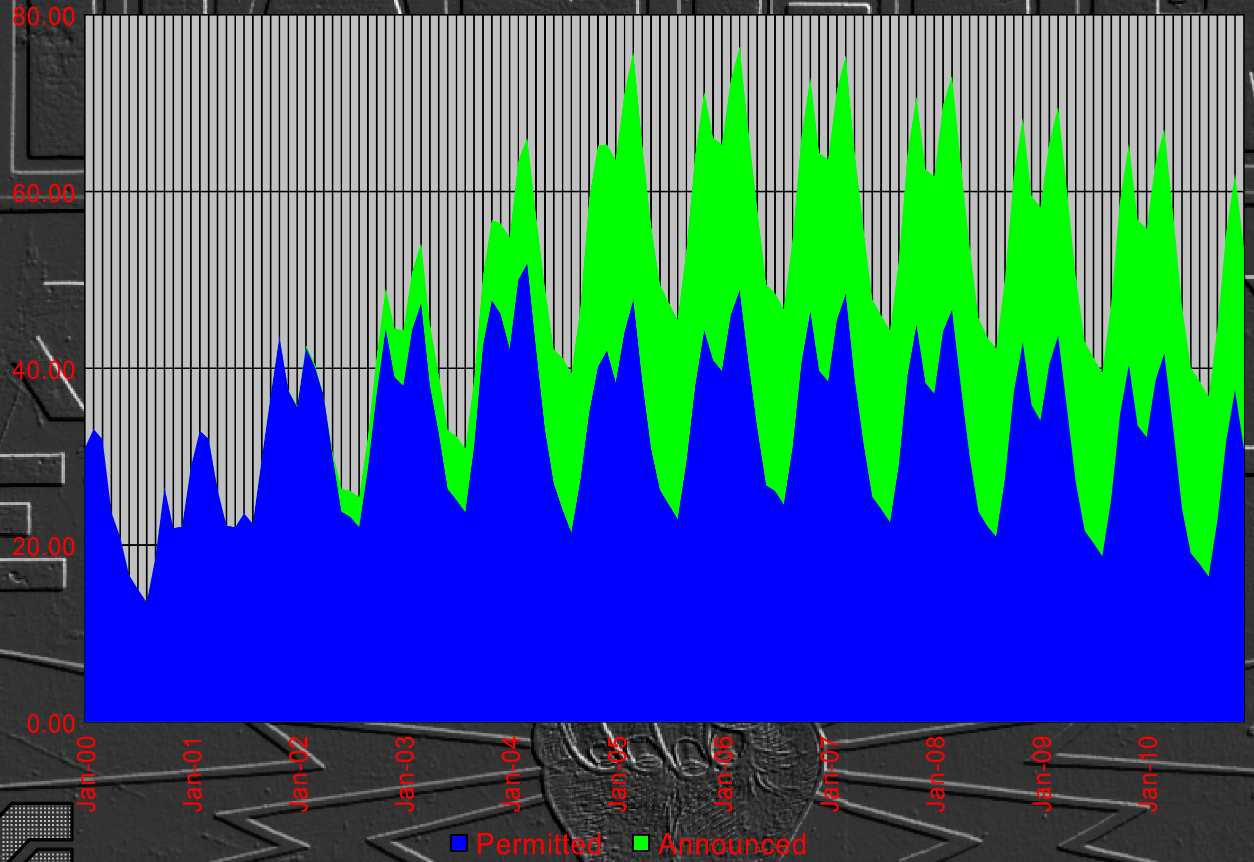
- BPA started the competitive wholesale power market twenty years ago (largely by mistake)
- FERC approved the market in 1988
- In 1992 Congress established similar rules for the industry as a whole
- Four years ago California replaced wholesale markets in most of the state with a complex administered market mechanism
- The experiment created a petrie dish for market manipulation
- The resulting problems bankrupted utilities and closed industry throughout the West Coast
- FERC finally imposed price ceilings in June

Actual ISO Operations

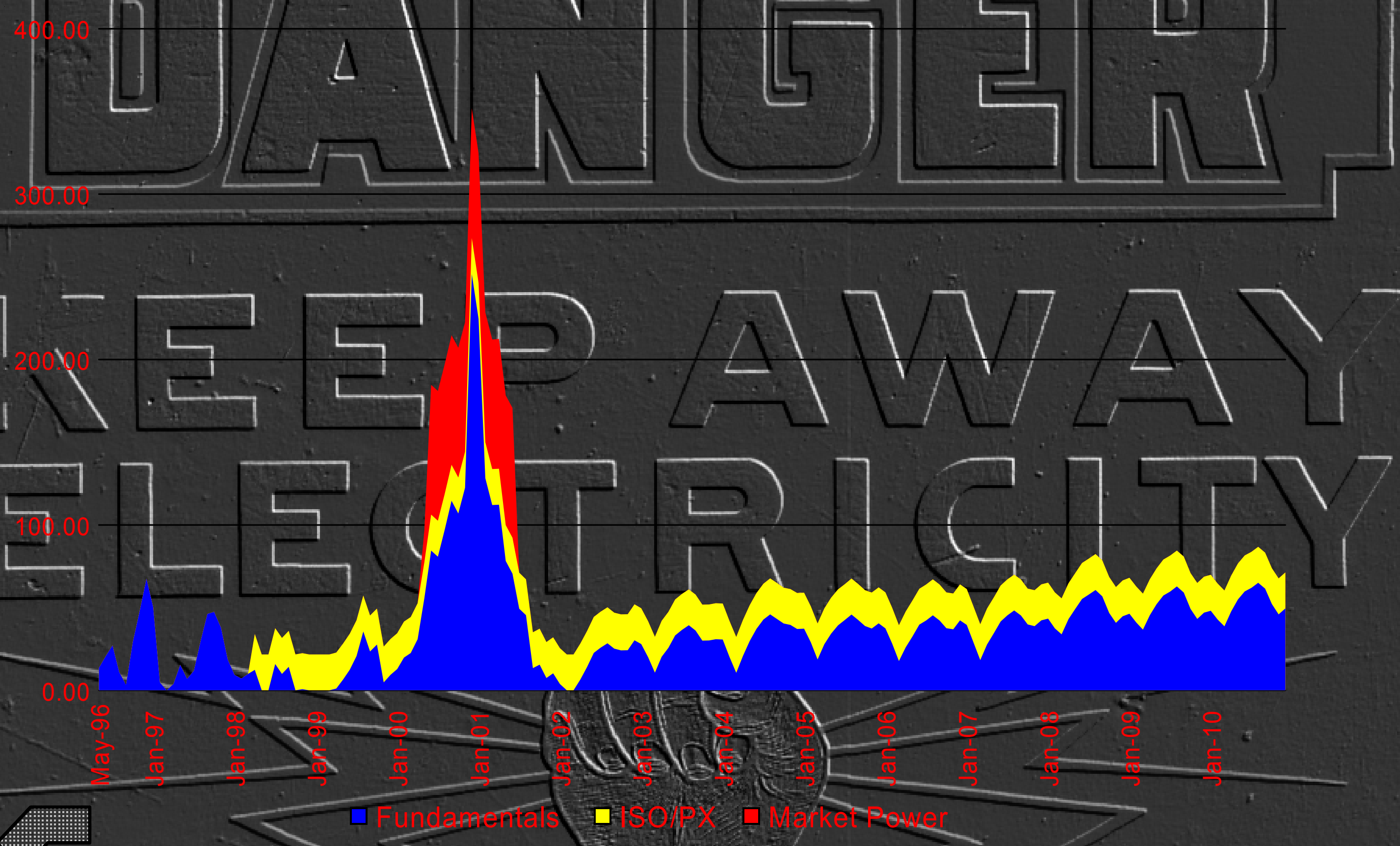


On-Peak Impacts
DANGER
KEEP AWAY
ELECTRICITY
400.00
300.00
200.00
100.00
0.00
May-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Fundamentals
ISO/PX
Market Power

WSCC Reserve Margins



On-Peak Impacts (realistic)



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.

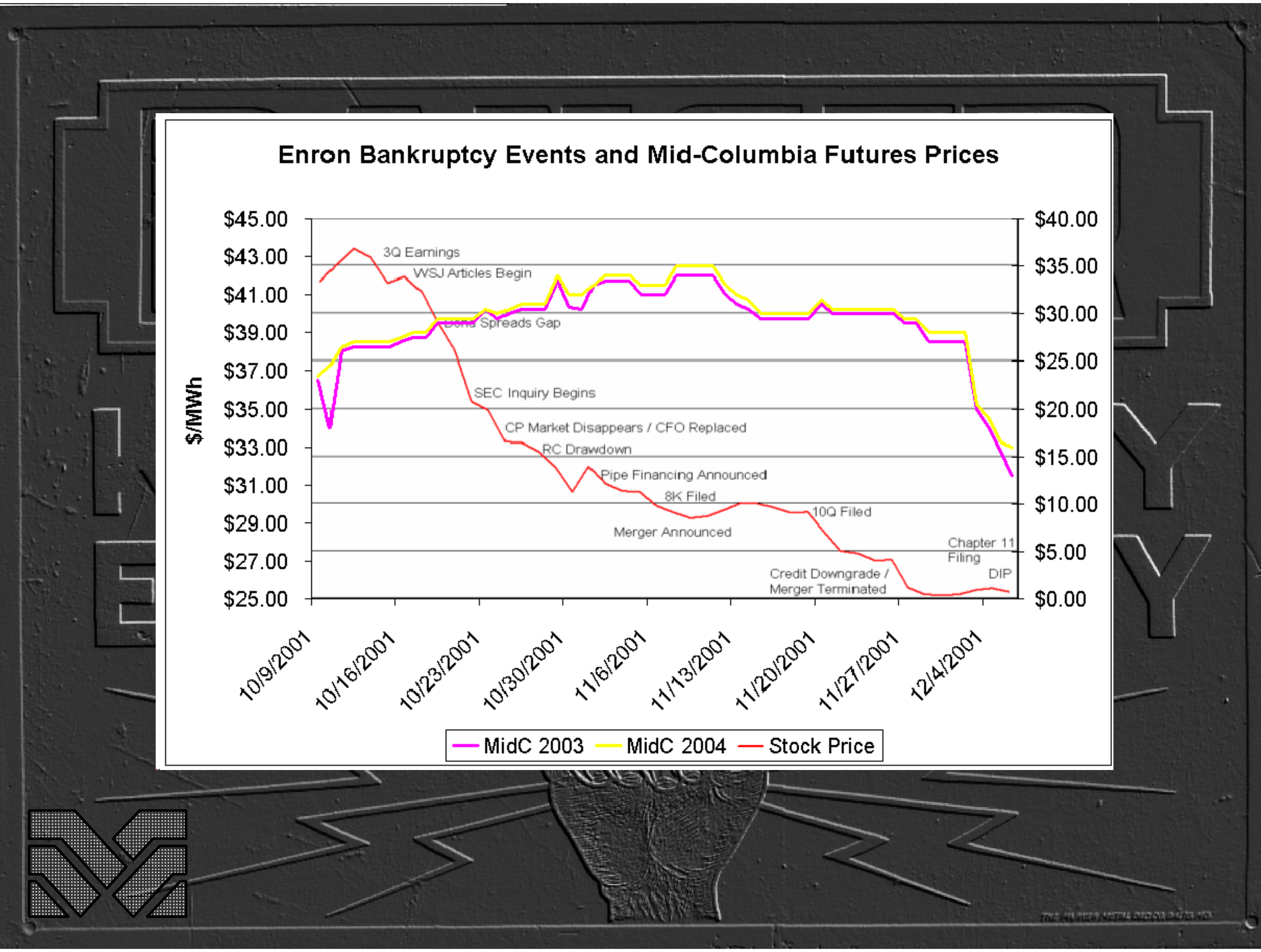
- Wholesale Services, Retail Services, and Broadband are very different than the pipeline and utility business. In recent years, these three entrepreneurial divisions reported quarter after quarter of enormous growth. As of the third quarter 2001, Wholesale Services' two divisions, Americas and Europe, provided 97% of total revenues.

Enron Was An Aggressive Political Player

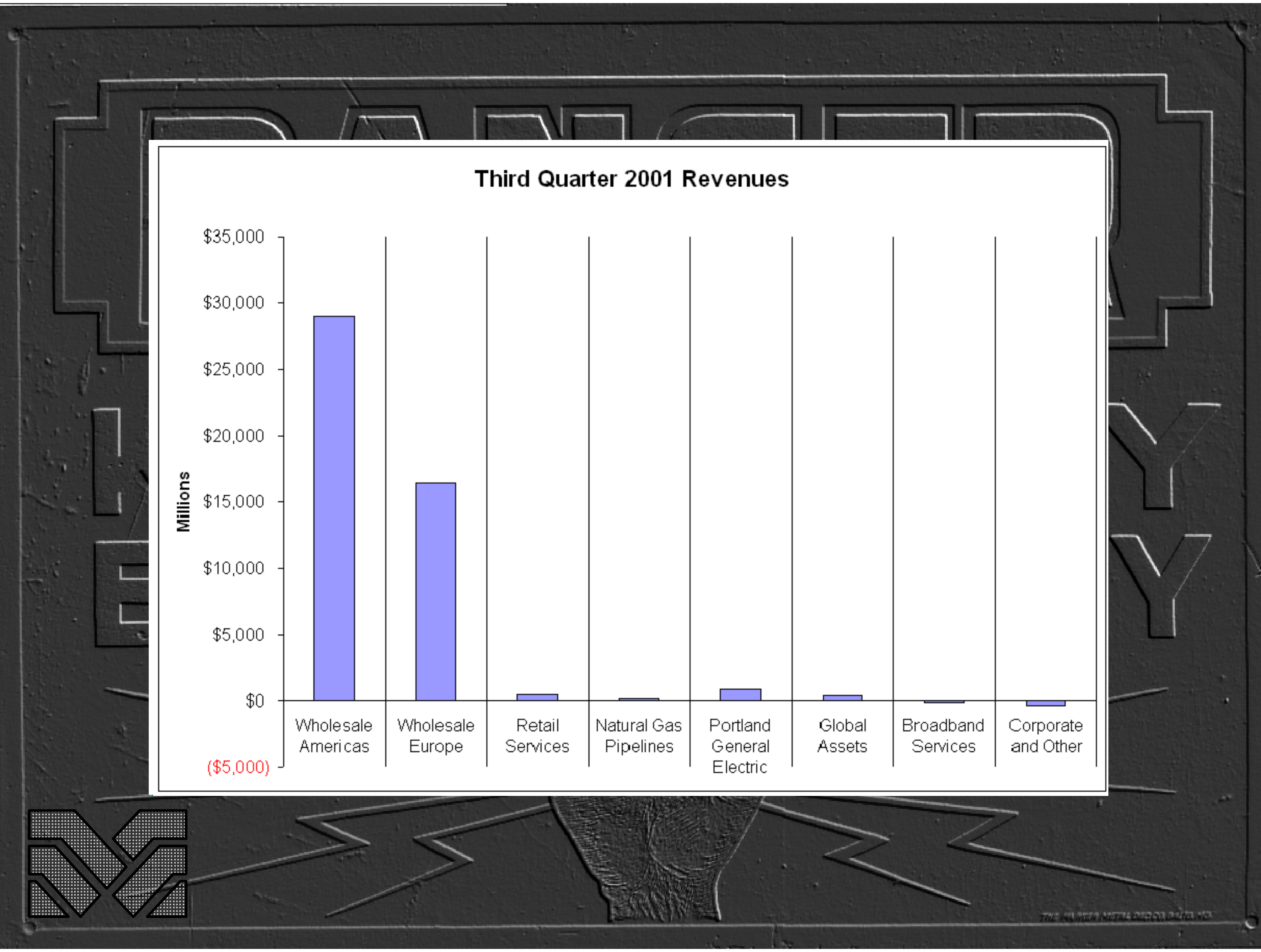
- Enron quickly dominated the deregulatory debate, even though they frequently had little knowledge of the underlying industry
- Enron was central to the California debacle -- participating (and often leading) the hearings
- Enron withdraw from California almost immediately after their scheme was launched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

The Collapse

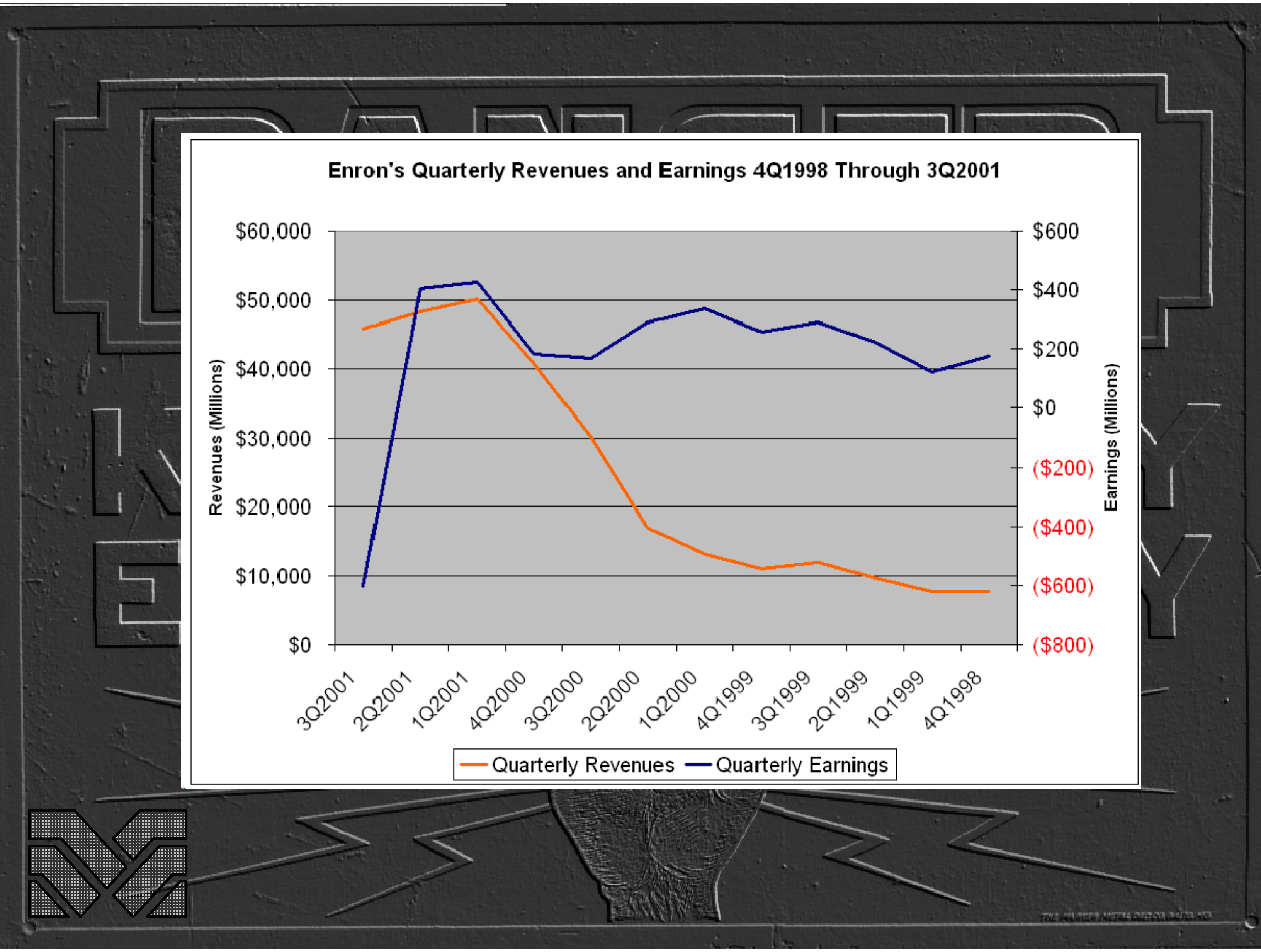
- October 16, 2001 Enron announced its third quarter results
- The overall results were positive -- revenue growth of 132%
- Enron reduced stockholder's equity by $1 billion reflecting the accounting treatment of several unique financing arrangements

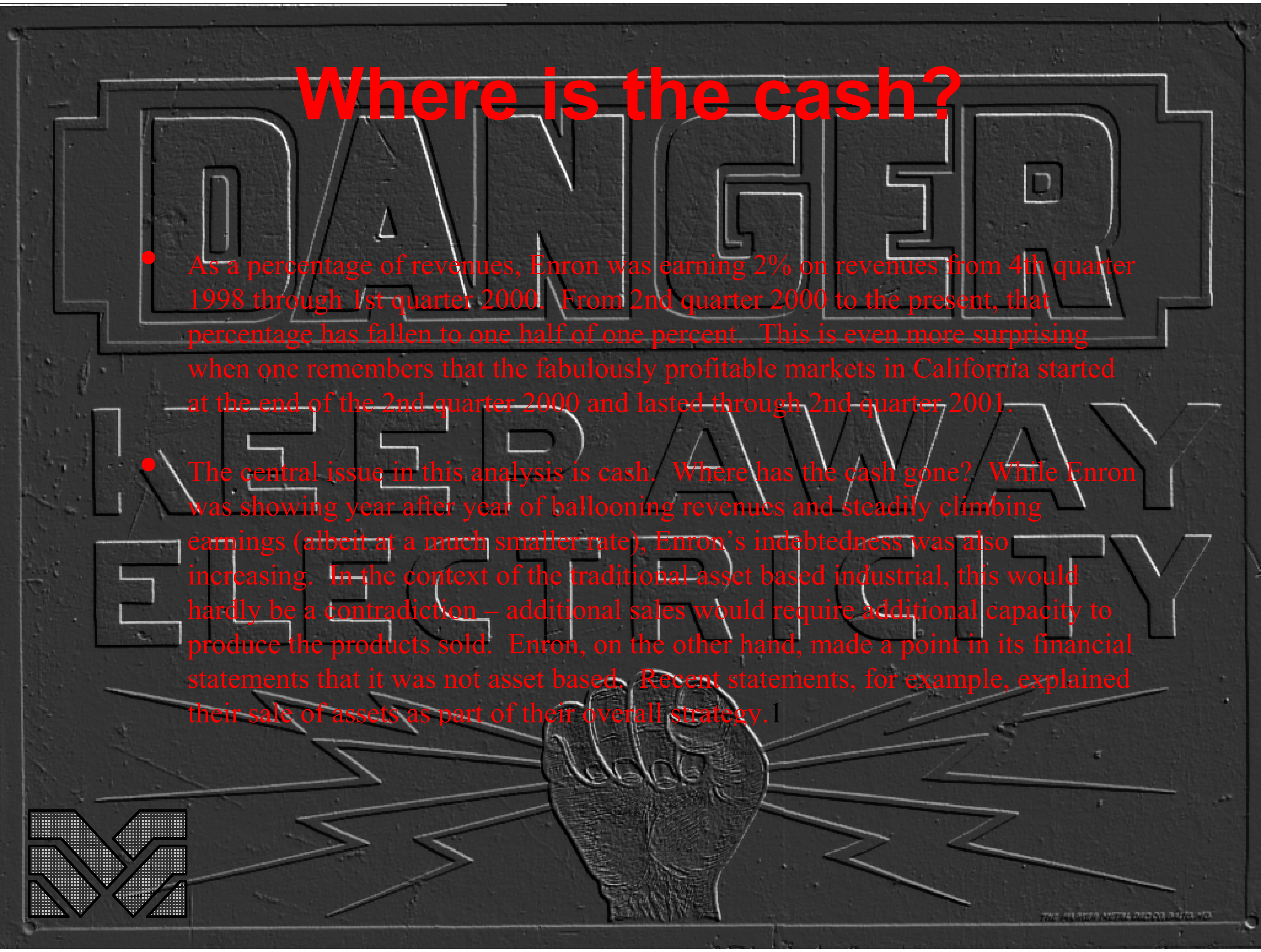


Enron Bankruptcy Events and Mid-Columbia Futures Prices
$/MWh
$45.00
$43.00
$41.00
$39.00
$37.00
$35.00
$33.00
$31.00
$29.00
$27.00
$25.00
$40.00
$35.00
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$0.00
3Q Earnings
WSJ Articles Begin
Bond Spreads Gap
SEC Inquiry Begins
CP Market Disappears / CFO Replaced
RC Drawdown
Pipe Financing Announced
8K Filed
Merger Announced
10Q Filed
Chapter 11 Filing
DIP
Credit Downgrade / Merger Terminated
10/9/2001
10/16/2001
10/23/2001
10/30/2001
11/6/2001
11/13/2001
11/20/2001
11/27/2001
12/4/2001
MidC 2003
MidC 2004
Stock Price



Third Quarter 2001 Revenues
Millions
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
($5,000)
Wholesale Americas
Wholesale Europe
Retail Services
Natural Gas Pipelines
Portland General Electric
Global Assets
Broadband Services
Corporate and Other

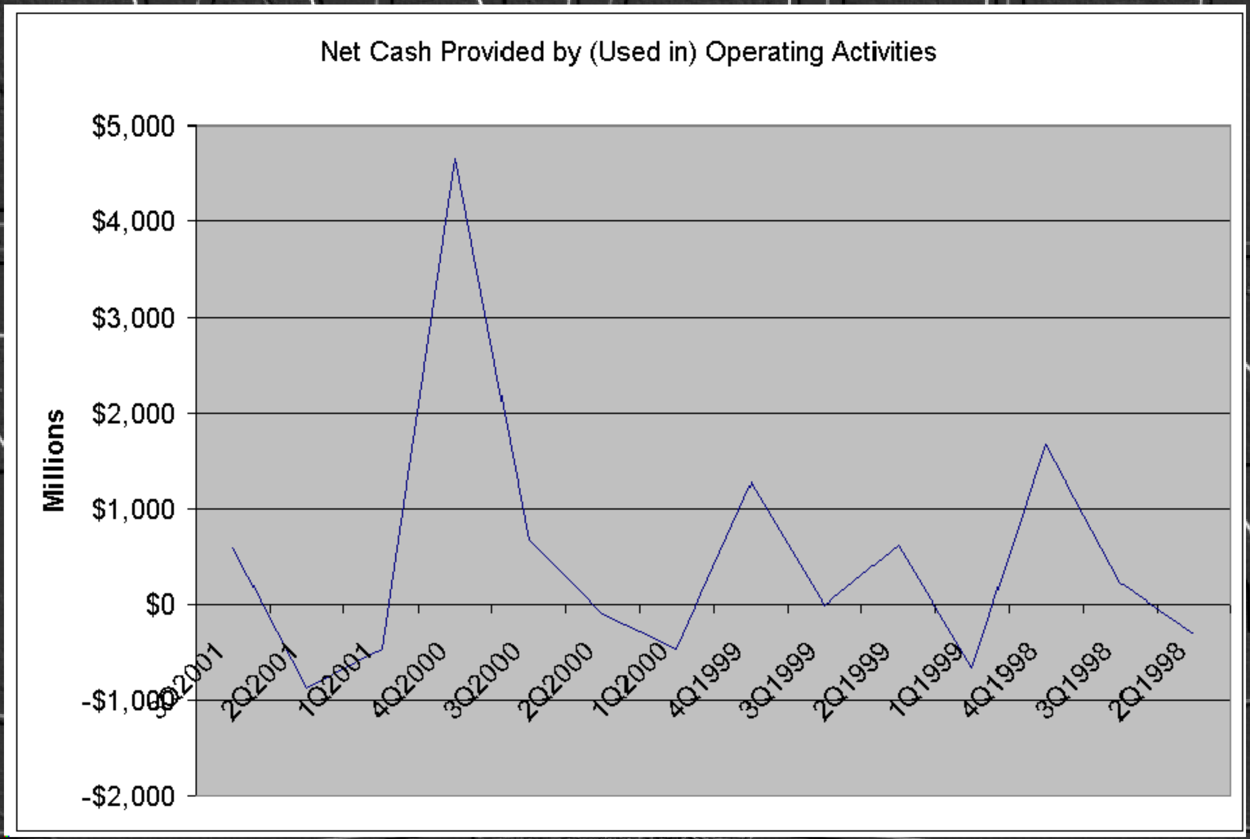

Enron's Quarterly Revenues and Earnings 4Q1998 Through 3Q2001
Revenues (Millions)
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
Earnings (Millions)
$600
$400
$200
$0
($200)
($400)
($600)
($800)
3Q2001
2Q2001
1Q2001
4Q2000
3Q2000
2Q2000
1Q2000
4Q1999
3Q1999
2Q1999
1Q1999
4Q1998
Quarterly Revenues
Quarterly 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.[1]



Net Cash Provided by (Used in) Operating Activities
Millions
$5,000
$4,000
$3,000
$2,000
$1,000
$0
-$1,000
-$2,000
3Q2001
2Q2001
1Q2001
4Q2000
3Q2000
2Q2000
1Q2000
4Q1999
3Q1999
2Q1999
1Q1999
4Q1998
3Q1998
2Q1998

Enron's Cash Use

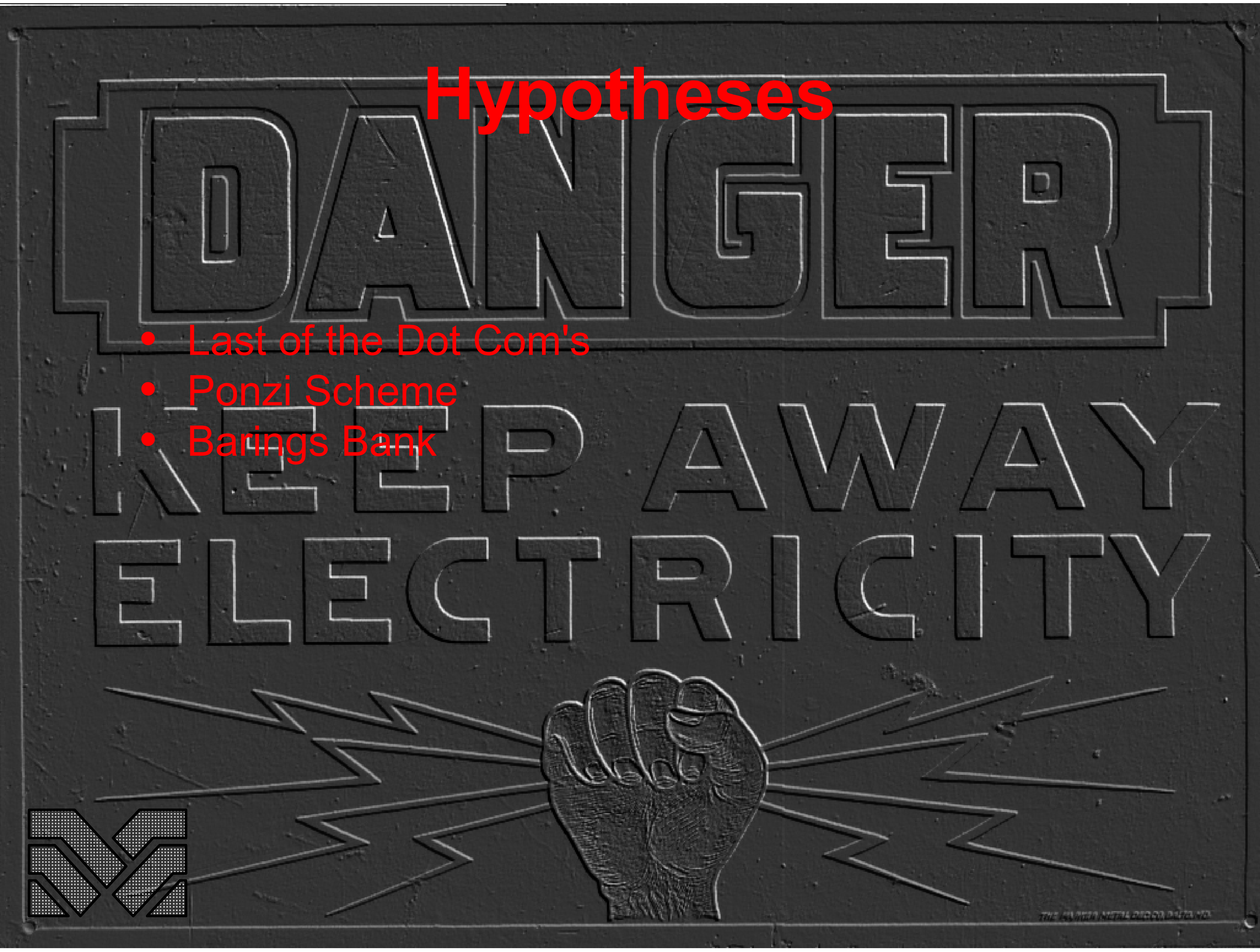
- December 3, 2001: $250 million in preliminary Debtor-In-Possession financing
- November 21, 2001: $450 million secured credit line from JP Morgan, $690 million payable, disclosed on Nov. 19, had been extended to mid-December
- November 9, 2001 $1,500 million equity infusion from Dynegy in exchange 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.

Hypotheses

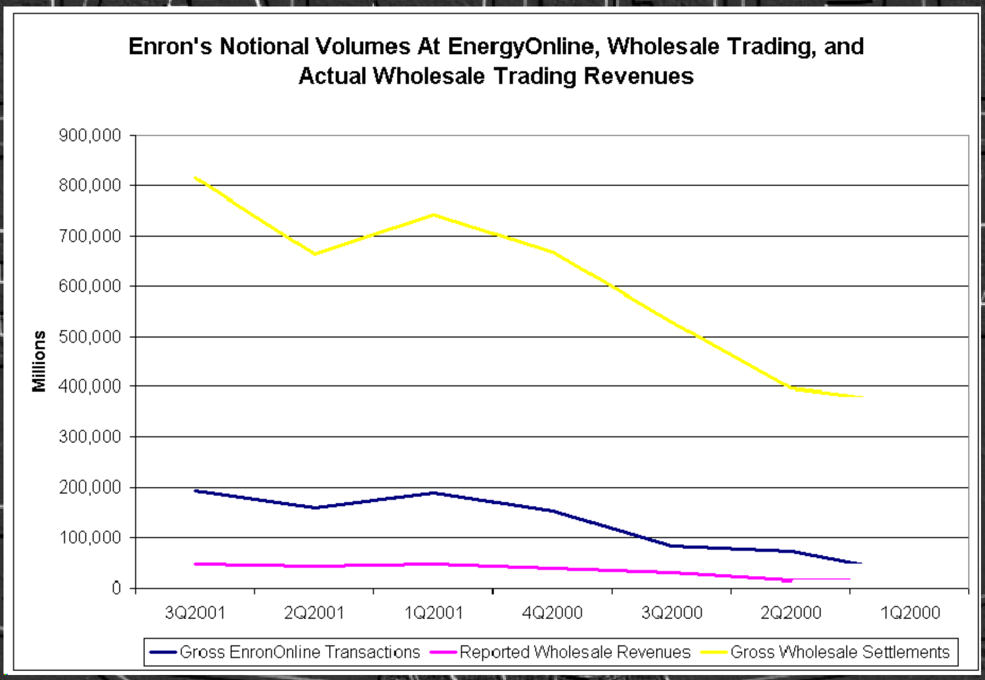
- Last of the Dot Com's
- Ponzi Scheme
- Barings Bank



Last of the Dot Com's

- In mid-1994 Mosaic Communications (later renamed Netscape) was formed to market a consumer browser for the world wide web. By 1995, Netscape had captured 80% of the browser market. Netscape's IPO set a market valuation for the company of $3 billion. By 1997, Netscape reached its apogee with a market capitalization of $16 billion. As Netscape's market share declined to 41%, AOL finally purchased the company for a mere $4.2 billion in 1998. As with many other dot coms, Netscape was able to report enormous market penetration without making a profit.
- Enron's online success made Netscape look tiny be comparison
- EnronOnline is 500 times the size of Anazon.com with a growth rate of 12% per month

EnronOnline

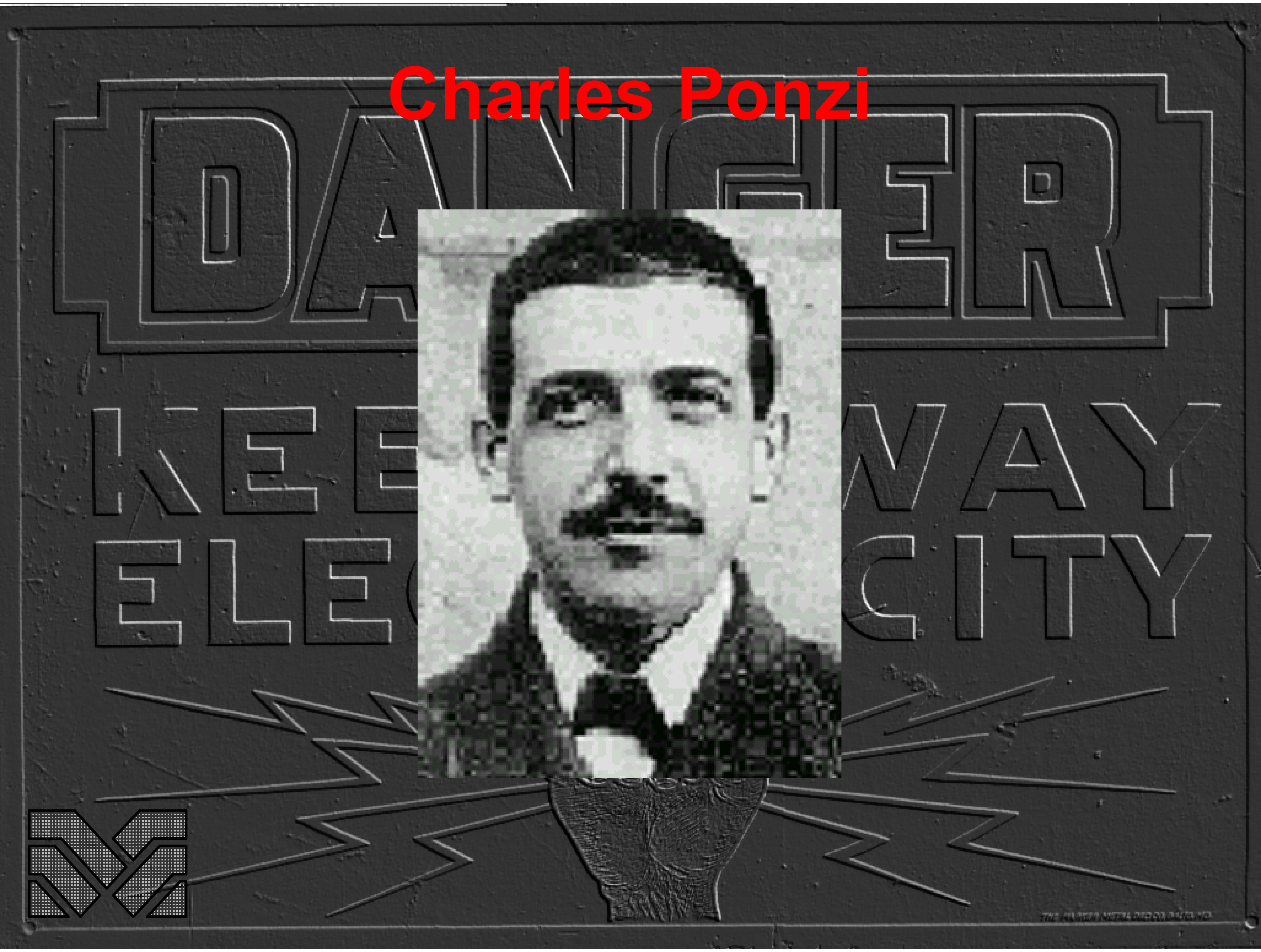


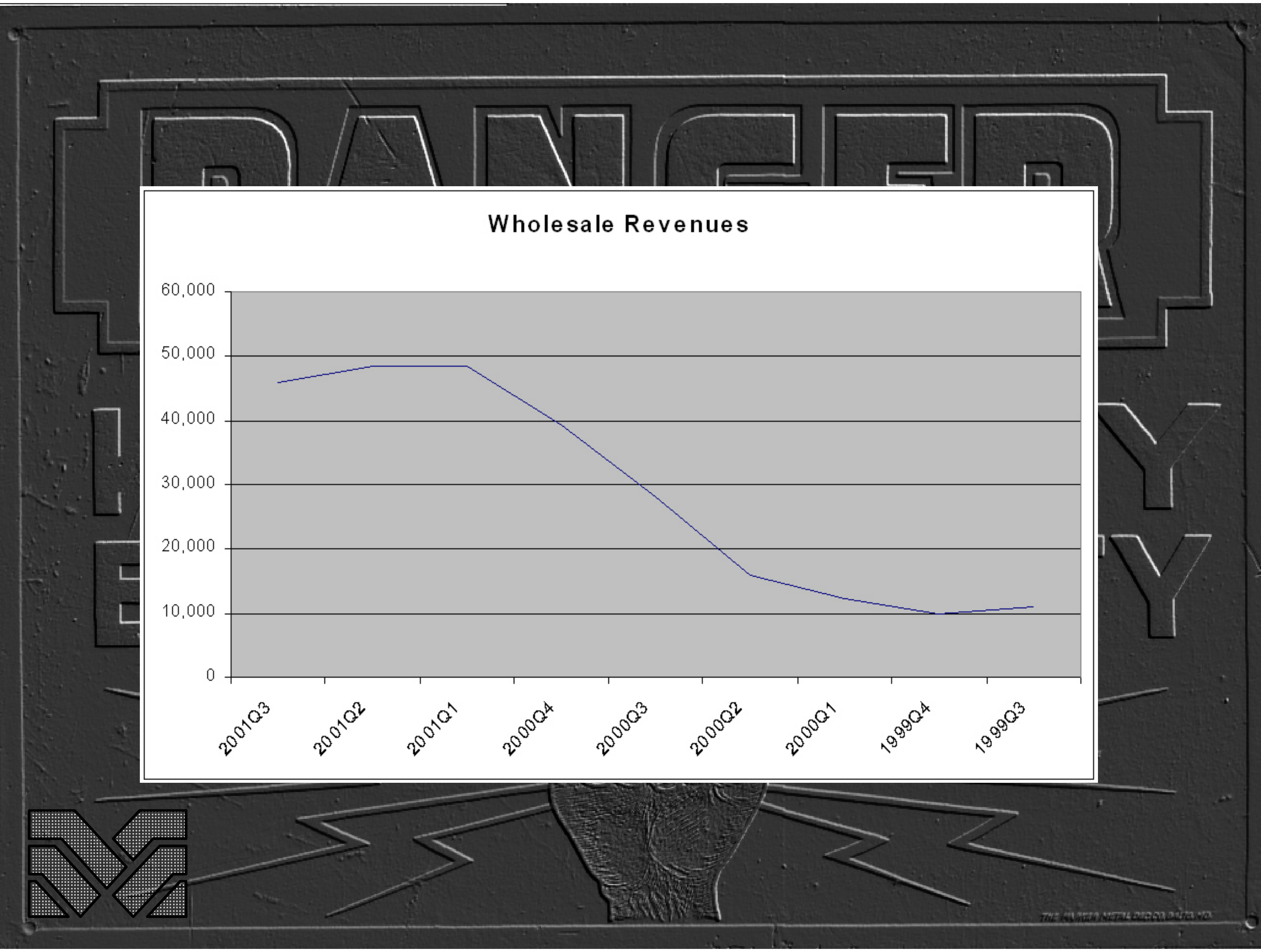
Ponzi Scheme

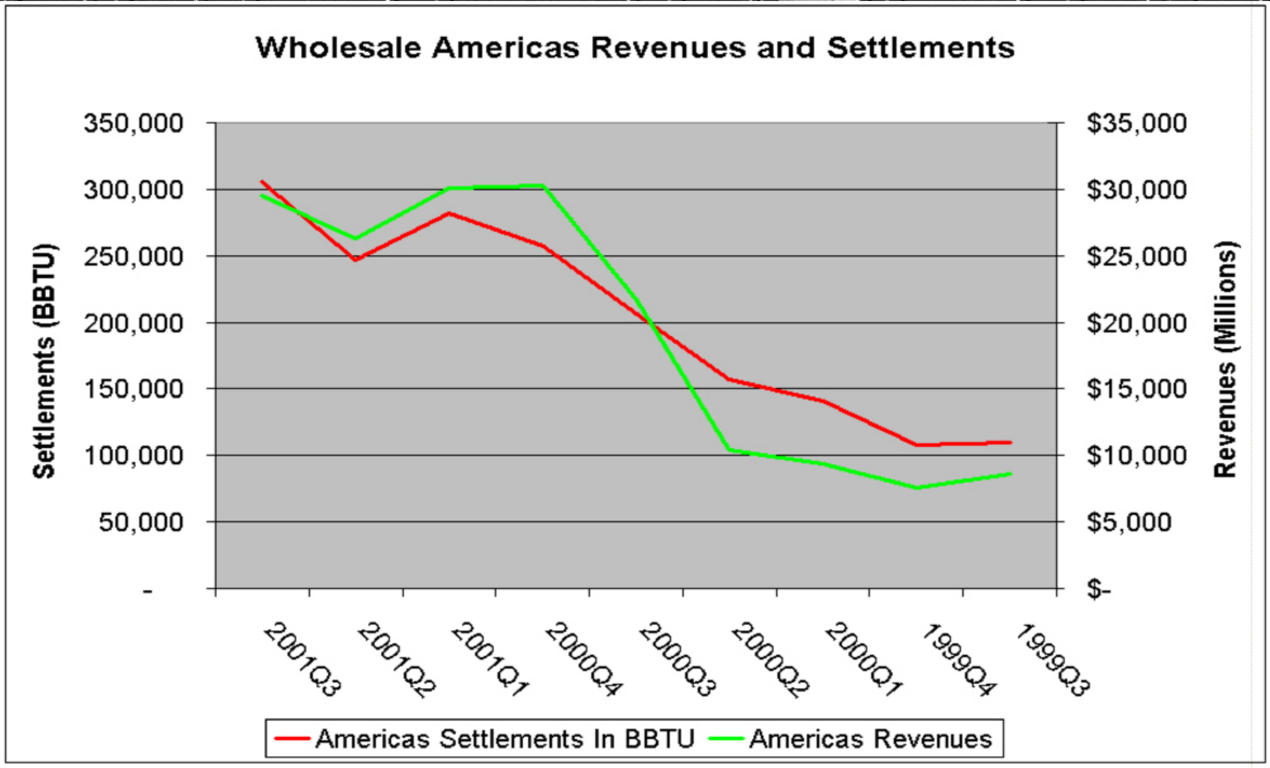
In 1919 an Italian immigrant named Charles Ponzi began the Securities Exchange Company. Like all good pyramid schemes, his company was based on the exploitation of a little understood mechanism – the International Postal Reply Coupon. The Postal Reply Coupon was an international stamp that could be exchanged for the local stamp in every participating country. Since exchange rates varied greatly after the First World War, an opportunity existed to arbitrage such coupons by buying them in countries with devalued currency and redeeming them in a country with a strong currency.

The Securities Exchange Company accepted $1,000 investments, purportedly invested the money in the arbitrage of Postal Reply Coupons, and returned a 50% profit within three months. In practice, early investors were simply paid from the investments of later victims. As long as the growth rate of the firm exceeded 512% per year, enough income existed to repay existing commitments. If the growth rate falls below that rate, not enough cash can be raised to repay the current investors and the scheme collapses. Charles Ponzi was able to sustain that rate of growth until a law suit filed by an early partner froze much of his assets and started a run on the company. Interestingly, Ponzi stayed to the bitter end – maintaining that his company had substantial assets and a real source of profits.

Charles Ponzi




Wholesale Revenues
60,000
50,000
40,000
30,000
20,000
10,000
0
2001Q3
2001Q2
2001Q1
2000Q4
2000Q3
2000Q2
2000Q1
1999Q4
1999Q3


Wholesale Americas Revenues and Settlements
Settlements (BBTU)
Revenues (Millions)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
2001Q3
2001Q2
2001Q1
2000Q4
2000Q3
2000Q2
2000Q1
1999Q4
1999Q3
Americas Settlements In BBTU
Americas Revenues

Prima Facie Case

- Enron had a superficially plausible business plan that quickly lost credibility on deeper review. When Bethany McLean of Fortune Magazine attempted to probe Enron's business plan this spring, Enron's CEO, Jeff Skilling, quickly became agitated and hung up on the reporter.[13]
- Enron has averaged a quarterly revenue growth of 39% per quarter over 2000. This growth rate compounds to 371% per annum. This rate of growth isn't impossible, but it is remarkable considering that Enron main products were neither new to the industry, nor terribly well implemented. Although any review of their business skills is necessarily anecdotal, doing business with Enron was often very difficult.
- Financial reporting was minimal and often contradictory. It isn't difficult to find obvious errors in their financial statements. For example, in their Third Quarter 2001 earnings announcement, Enron reported that their three month physical transactions were greater than their transactions for the nine month period.[14] Enron's discussion of risk was especially questionable. At the end of 2000, Enron's 10K reported that value at risk for the company averaged $50 million over the year.[15]
- Enron's central business – trading in the U.S. and Canada – stopped growing after the first quarter of 2001. This is the central indication that without the rapid rate of growth that Enron would not be able to continue – a critical feature of Ponzi schemes. Since the third quarter, Enron has desperately sought additional cash in huge amounts – another sign of a decaying pyramid scheme.

Possible Mechanics

1. Assume a transaction where five years of electricity was purchased at a fixed price for resale in future spot markets. Since a five year supply is more valuable than a spot supply, such a contract would lose cash in the first year. If the contract was valued with a future curve that forecasted the spot price of electricity approaching the fully allocated cost of a new power plant, the contract would be cash flow positive in later years.

2. Using Enron's mark to market approach, the present value of such a contract would be positive, even if it lost money in the first year.

3. Since there is no independent market in long term electric futures, the future curve used in the evaluation is based on bilateral trades between different parties in the market. While such future curves are easy to derive, the liquidity of the market after the current year is very thin.

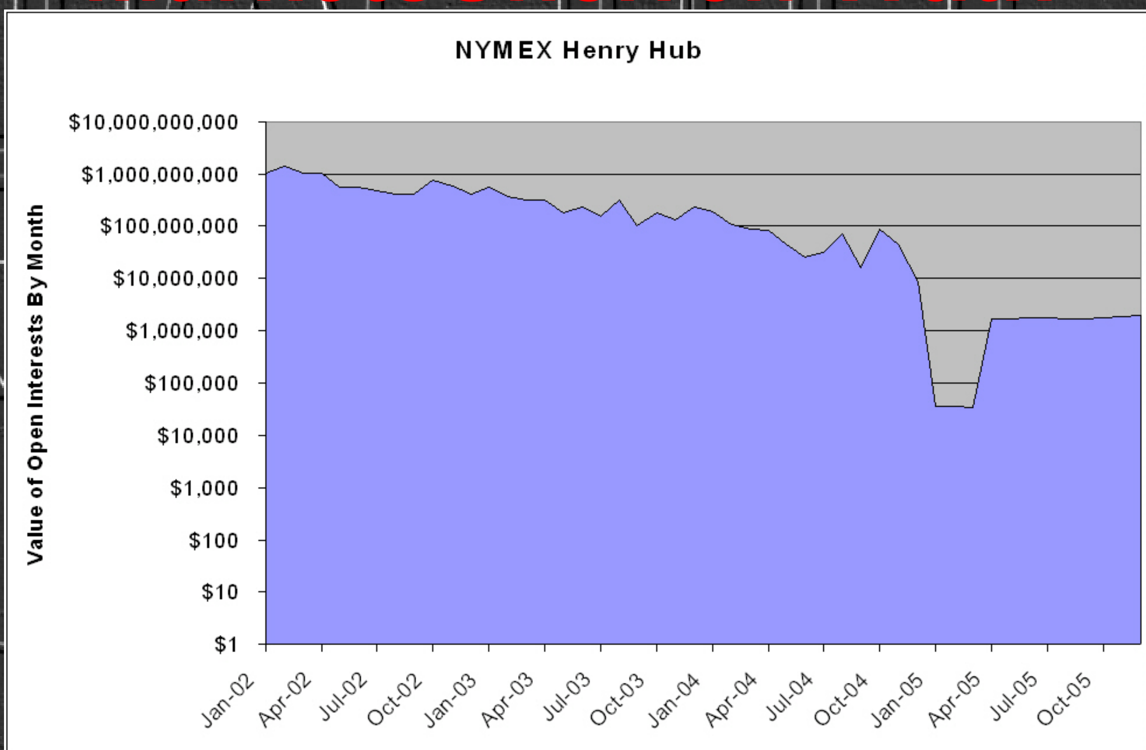
4. If, as has been the case in competitive power markets for the past twenty years, the price of power in the following year was less than the fully allocated cost of a new power plant, last year's contract would lead to a loss in the second year.

5. A second power contract, 50% larger than the first, would provide enough mark to market earnings in the second year to offset the realized loss on the contract from the first year. Cash flow would now be worse than in the first year – since a loss in the first year of the new contract would be increased by the unanticipated loss in the second year of the first contract.

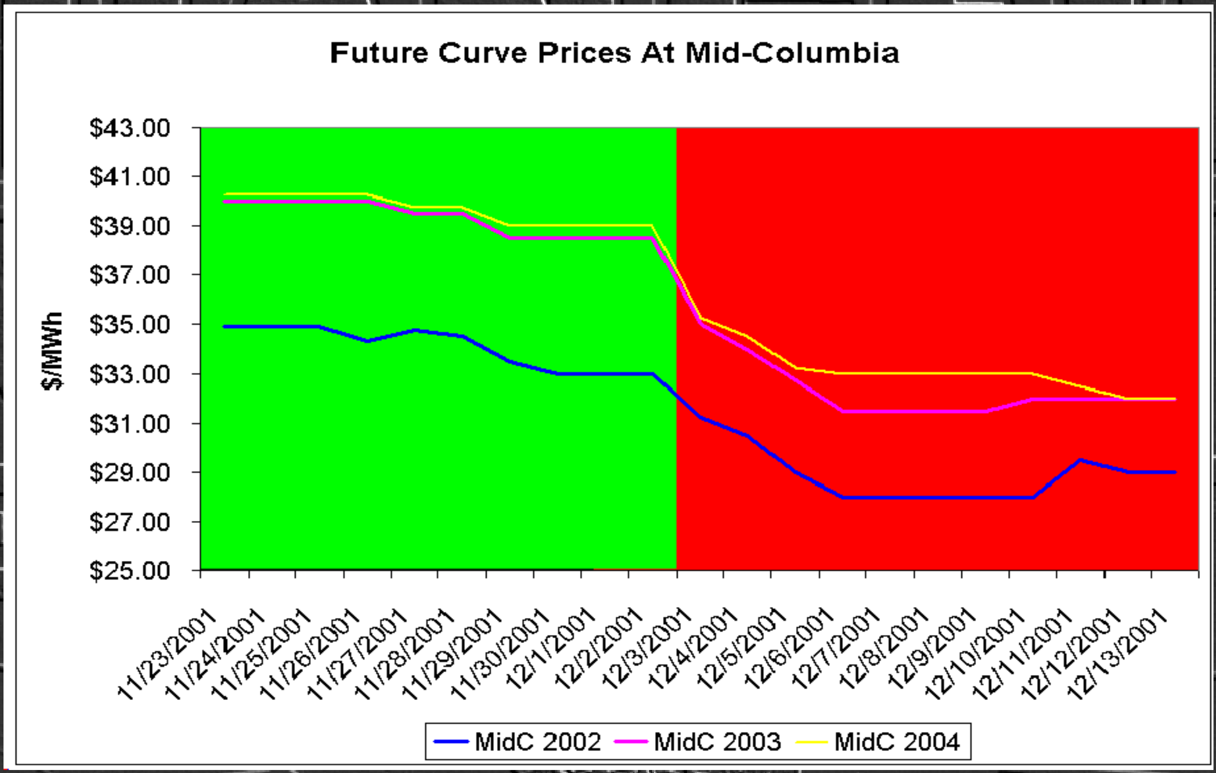
6. With sufficient growth in volume, earnings can be positive in each year, while cash flows continue to deteriorate.

7. Like any other pyramid scheme, such an approach will fail when sales growth cannot be sustained.

Liquidity of Futures MarketsSherren Watk



Possible Enron Impact?



Barings Bank

- In 1995, unauthorized trading by Nick Leeson, a trader at the venerable Barings Bank, bankrupted the entire enterprise. Mr. Leeson had run up outstanding futures obligations of $27 billion in Japanese equity and bond markets. Immediately before Barings bankruptcy, Barings was forced to transfer $835 million to meet margin obligations. Interestingly, Leeson's activities were viewed as profitable until the full impact of his trading activities became known.
- Enron's risk management picture was unnaturally good -- an average of $50 million at risk is inconsistent with EnronOnline's $100 to $200 billion dollars in trades per quarter
- This is one possible explanation for Enron's use of $5.75 billion since September

Enron's Risk Position

(In millions)	December 31, 2000	December 31, 1999	Year ended December 31, 2000 Average[a]	Year ended December 31, 2000 High Valuation[a]	Year ended December 31, 2000 Low Valuation[a]
Trading Market Risk:					
Commodity price[b]	$66	$21	$50	$81	$23
Interest rate	-	-	-	-	-
Foreign currency exchange rate	-	-	-	-	-
Equity[c]	59	26	45	59	36
Non-Trading Market Risk[d]:					
Commodity price	2	1	2	5	2
Interest rate	-	2	1	2	-
Foreign currency exchange rate	8	4	8	10	4
Equity	7	3	6	7	5

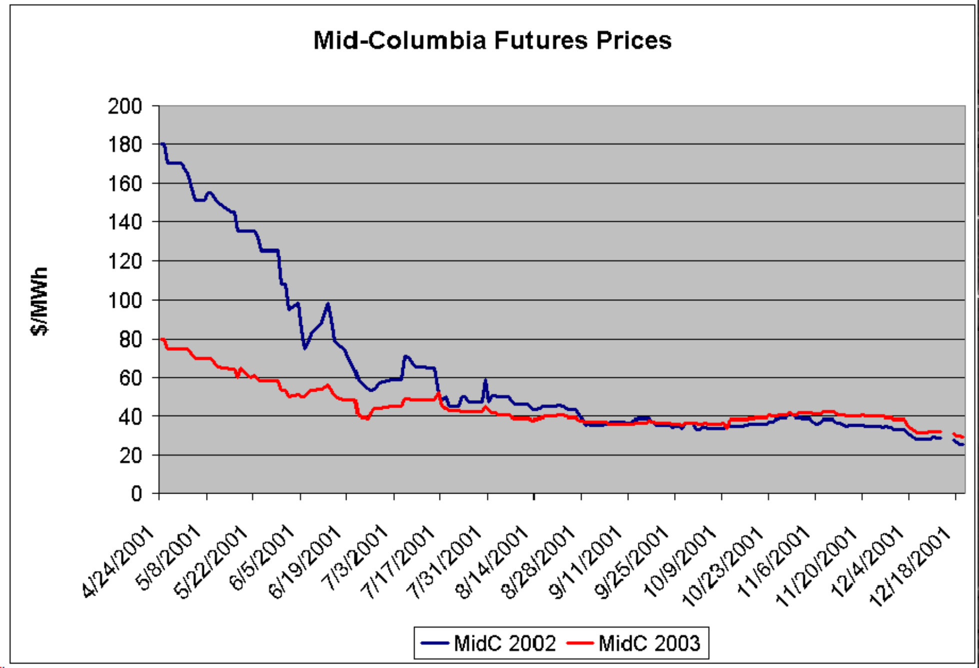
(a) *The average value presents a twelve month average of the month-end values. The high and low valuations for each market risk component represent the highest and lowest month-end value during 2000.*

(b) *In 2000, increased natural gas prices combined with increased price volatility in power and gas markets caused Enron's value at risk to increase significantly.*

(c) *Enron's equity trading market risk primarily relates to merchant investments (see Note 4 to the Consolidated Financial Statements). In 2000, the value at risk model utilized for equity trading market risk was refined to more closely correlate with the valuation methodologies used for merchant activities.*

(d) *Includes only the risk related to the financial instruments that serve as hedges and does not include the related underlying hedged item.*

Potential Losses



Could The Collapse Be Losses?

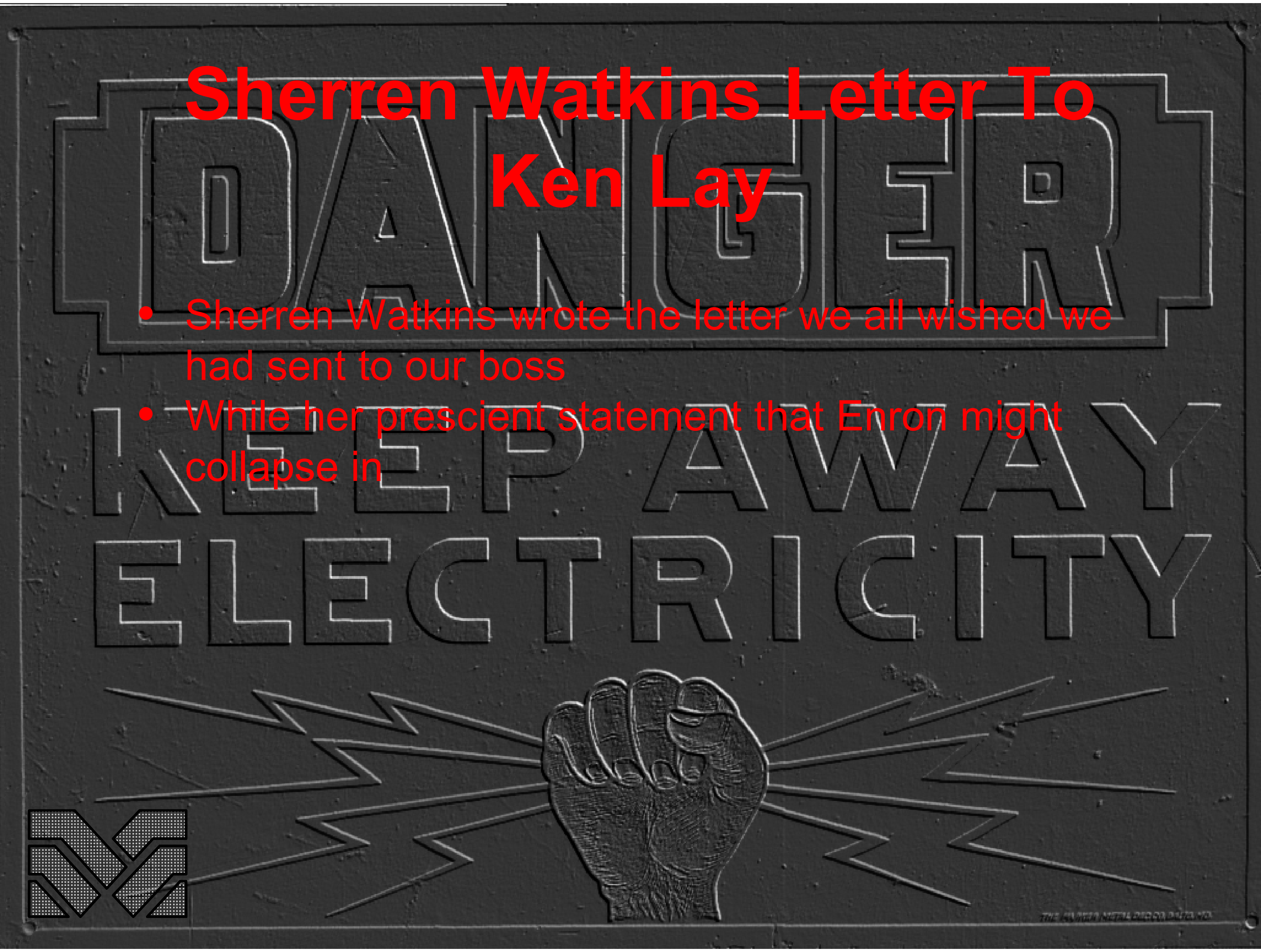
- This would be consistent with the need for cash
- Enron's creditors would probably not support payout of trading losses before debt holders

Current Events

- Sherren Watkins' August Letter To Ken Lay
- Fastow's Deposition

Sherren Watkins Letter To Ken Lay

- Sherren Watkins wrote the letter we all wished we had sent to our boss
- While her prescient statement that Enron might collapse in



Fastow Deposition

- This morning the New York Times published the text from a depositon of Fastow from the early 1990s
- Andrew Fastow described a complex transaction that apparently led to a mark to market gain on a long term open gas transaction
- Given the difference between gas price forecasts in the early 1990s and the realized gas prices through 2000, Enron realized a current loss in each of the following years

Conclusion

- The causes of Enron’s collapse will remain unknown until a detailed post mortem can be conducted. The sense from a detailed review of Enron’s financials is of a firm whose announced income seldom matched its cash flows. While Enron was able to maintain high rates of growth, it was able to disguise its chronic lack of cash through super recourse financings and the collection of deposits. Once Enron’s sales leveled off after 4th quarter 2000, maintaining the illusion of prosperity proved impossible.
- The suspicion the facts leaves is that strong revenue growth – even at the expense of declining margins – was used to create the illusion of manifest destiny. The use of mark to market accounting in an environment where the prices of future energy supplies is highly subjective is an incentive to abuse.