

Integrated Electrics

Two Steps Forward...One Step Back



*The Institute for Regulatory Policy Studies'
Energy Markets at the Crossroads*

December 12, 2002

Scott Pearl
Integrated Utility Analyst

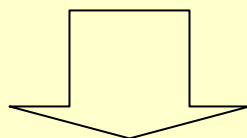
CREDIT | **FIRST**
SUISSE | **BOSTON**

The Old Model Served Customers Well Since the Great Depression

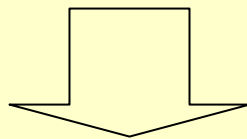
Industry Structure

- Vertically integrated
- Monopoly supplier
- State regulation
- Obligation to serve / regulatory compact

Raw Materials
(Coal, Oil, Gas, Uranium, Water)



BTU

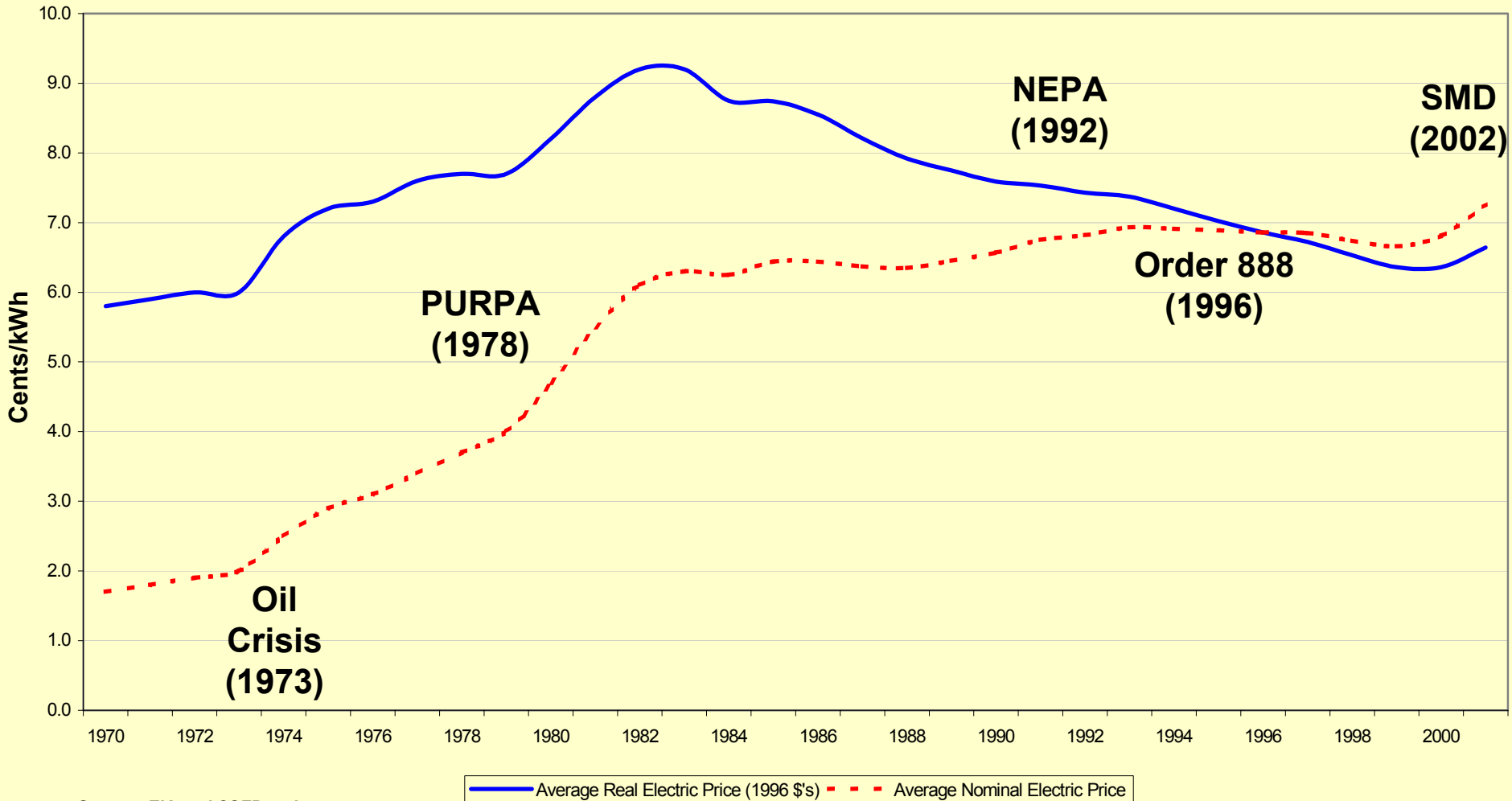


MWH

Franchise Customers

But Rising Prices Inspired Federal Regulators to Act

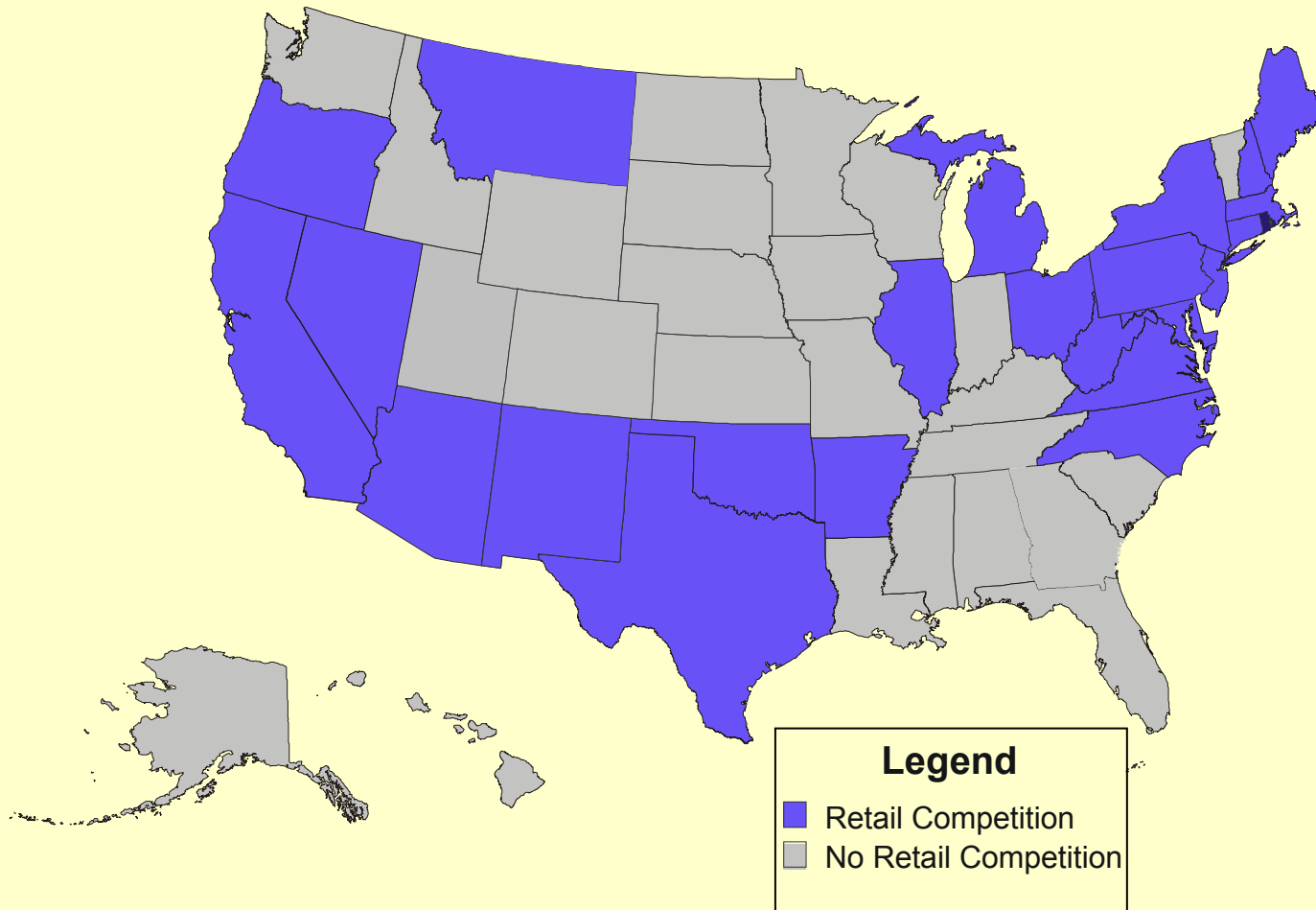
Average U.S. Retail Electric Rates



Source: EIA and CSFB estimates

And It All Seemed To Be Progressing Smoothly

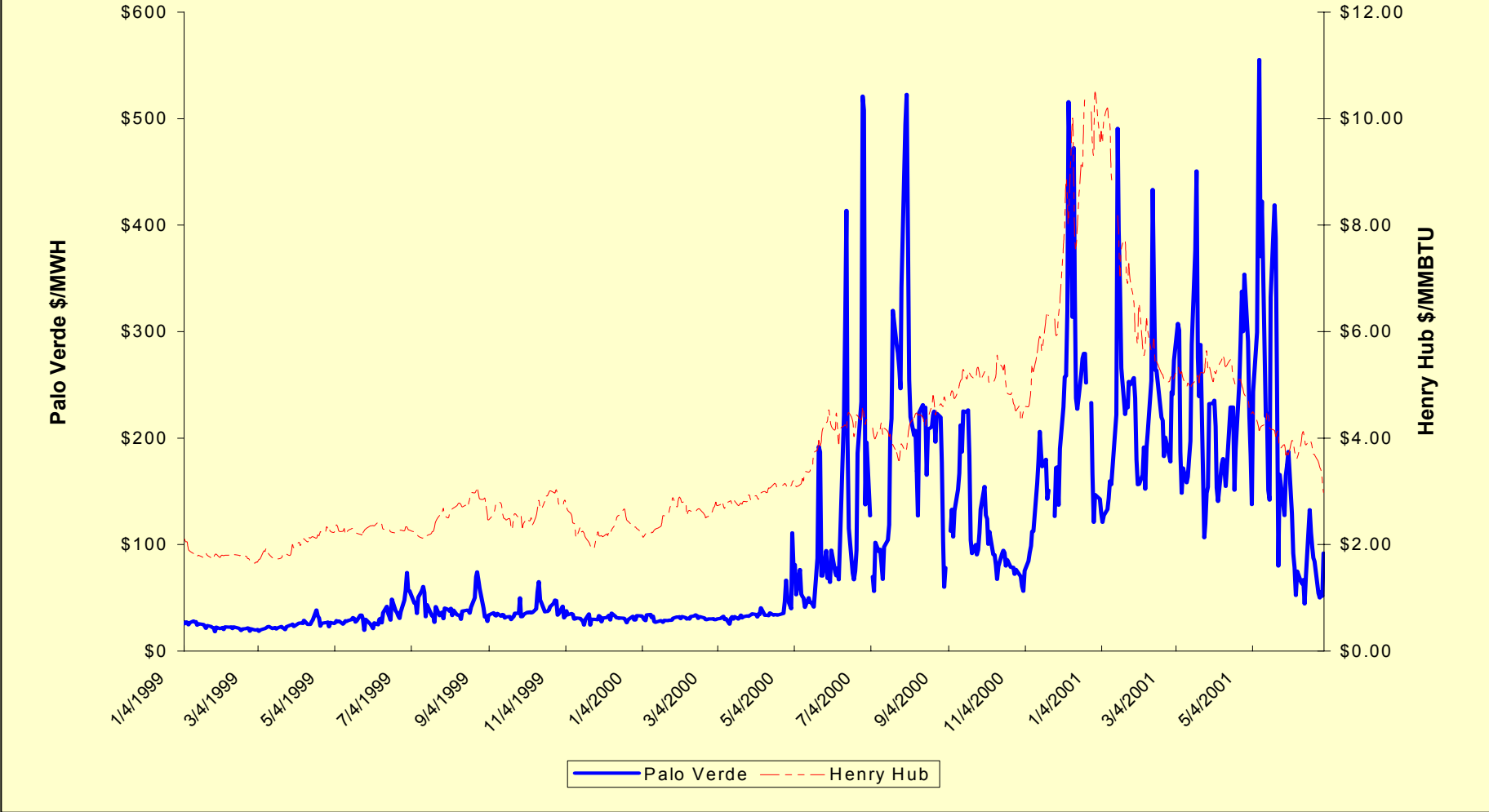
- 23 states enacted electric restructuring legislation between 1996 and 2000
- California developed the first U.S. wholesale power exchange in 1998



Source: EIA and CSFB estimates

Until the California Crisis Exposed...

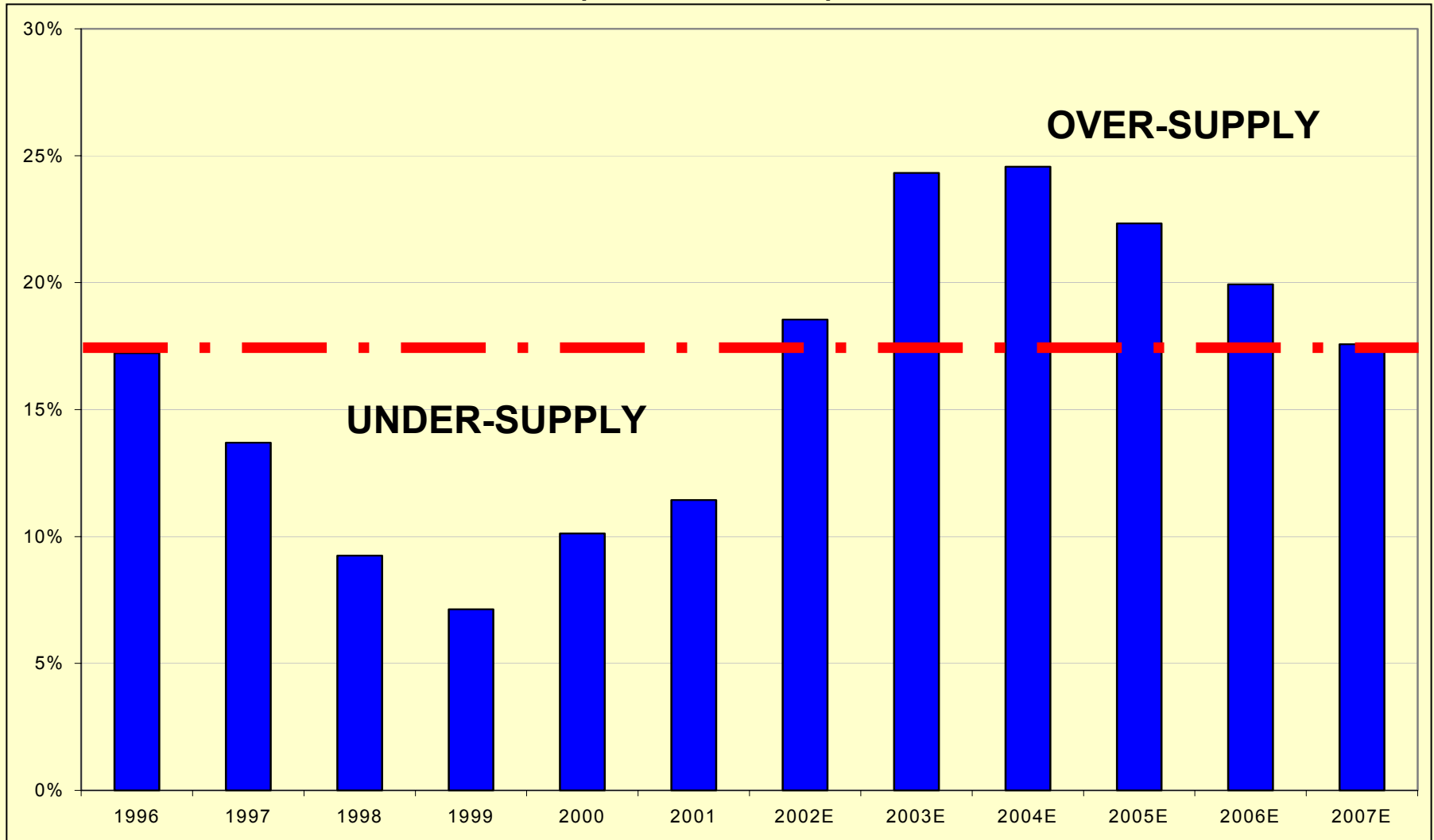
Prices for Electricity and Natural Gas
(1/1/99 – 06/30/01)



Source: Bloomberg and CSFB estimates.

The Magnitude of Boom and Bust

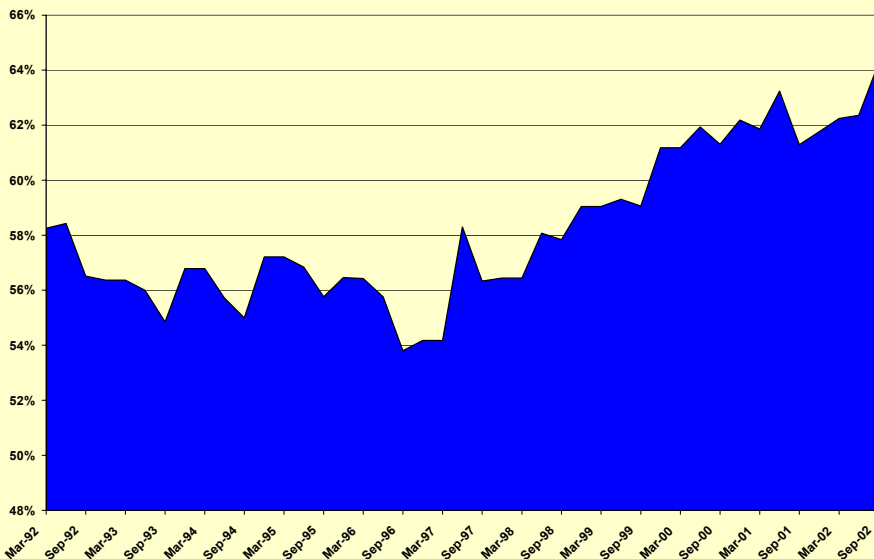
US Reserve Margin (1996 – 2007E)



The Dangers of Too Much Leverage

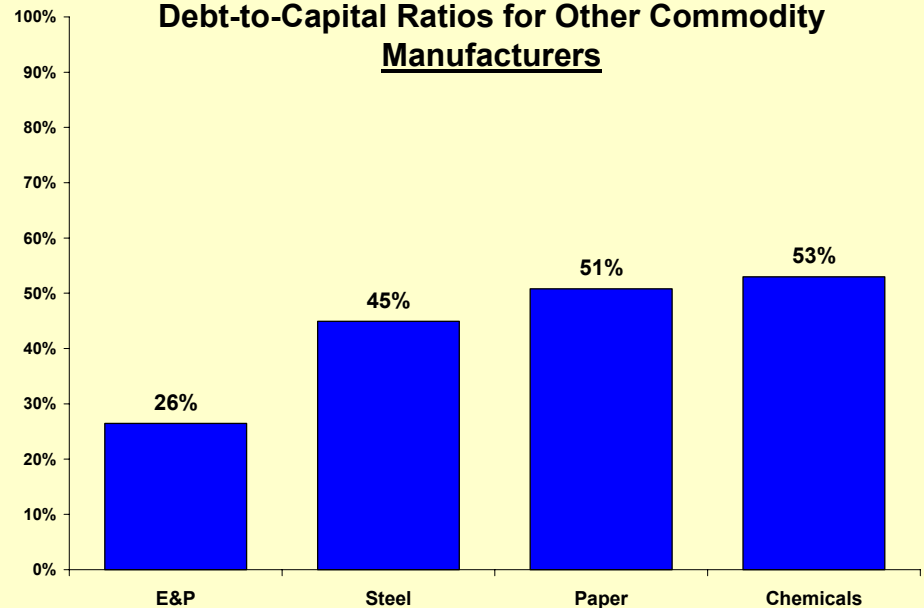
- Business and financial risks must be properly aligned
 - < 50% debt for manufacturing, lower for risk management
- Lack of tenor matching exposed liquidity concerns
- Financial engineering can be life threatening – ratings triggers

Debt / Capitalization Ratio – Integrated Electrics
(1992-2001)



Source: Factset, CSFB estimates.

Debt-to-Capital Ratios for Other Commodity Manufacturers

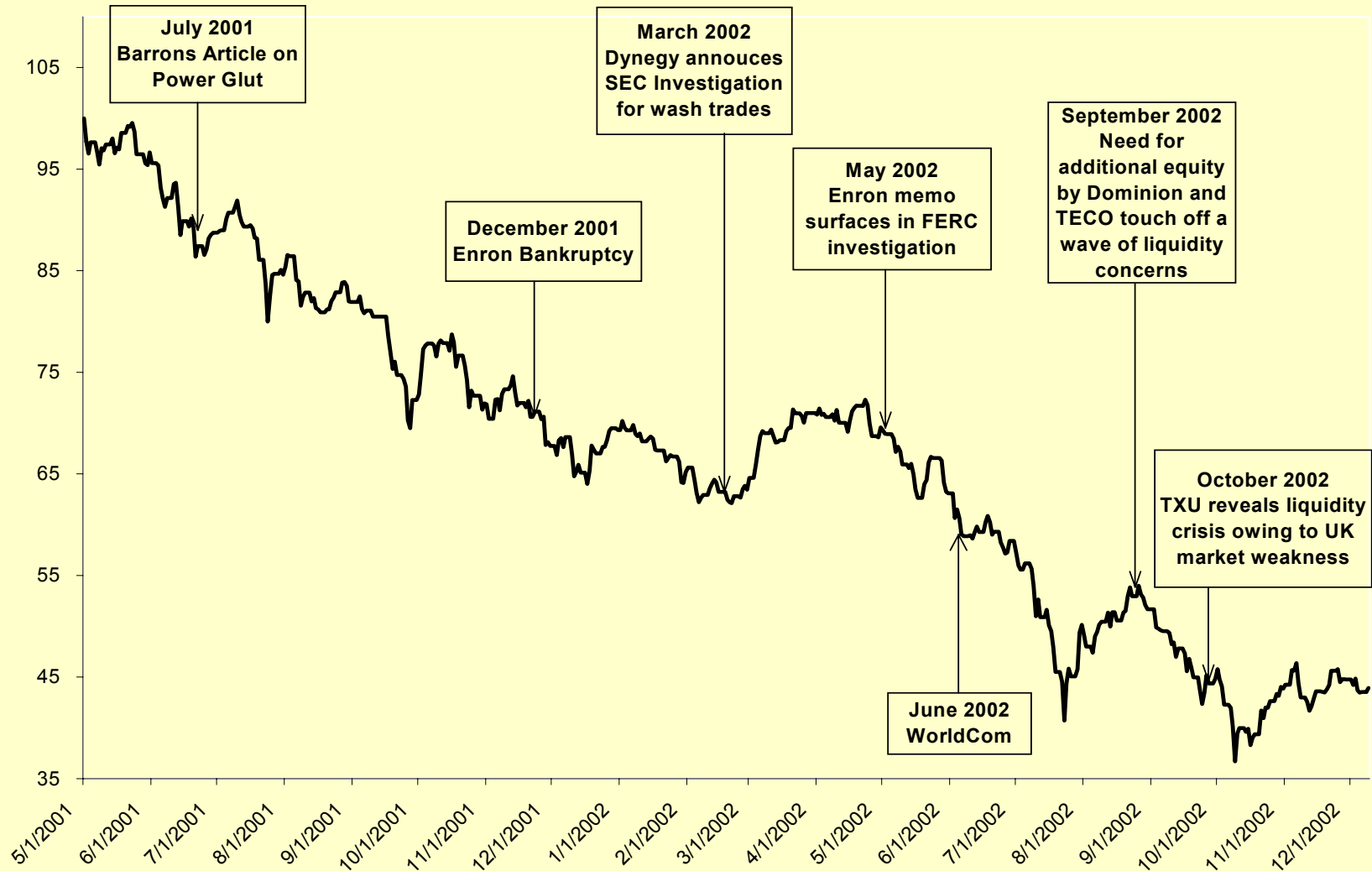


Source: Factset, CSFB estimates.

And The Fragility of Investor Confidence

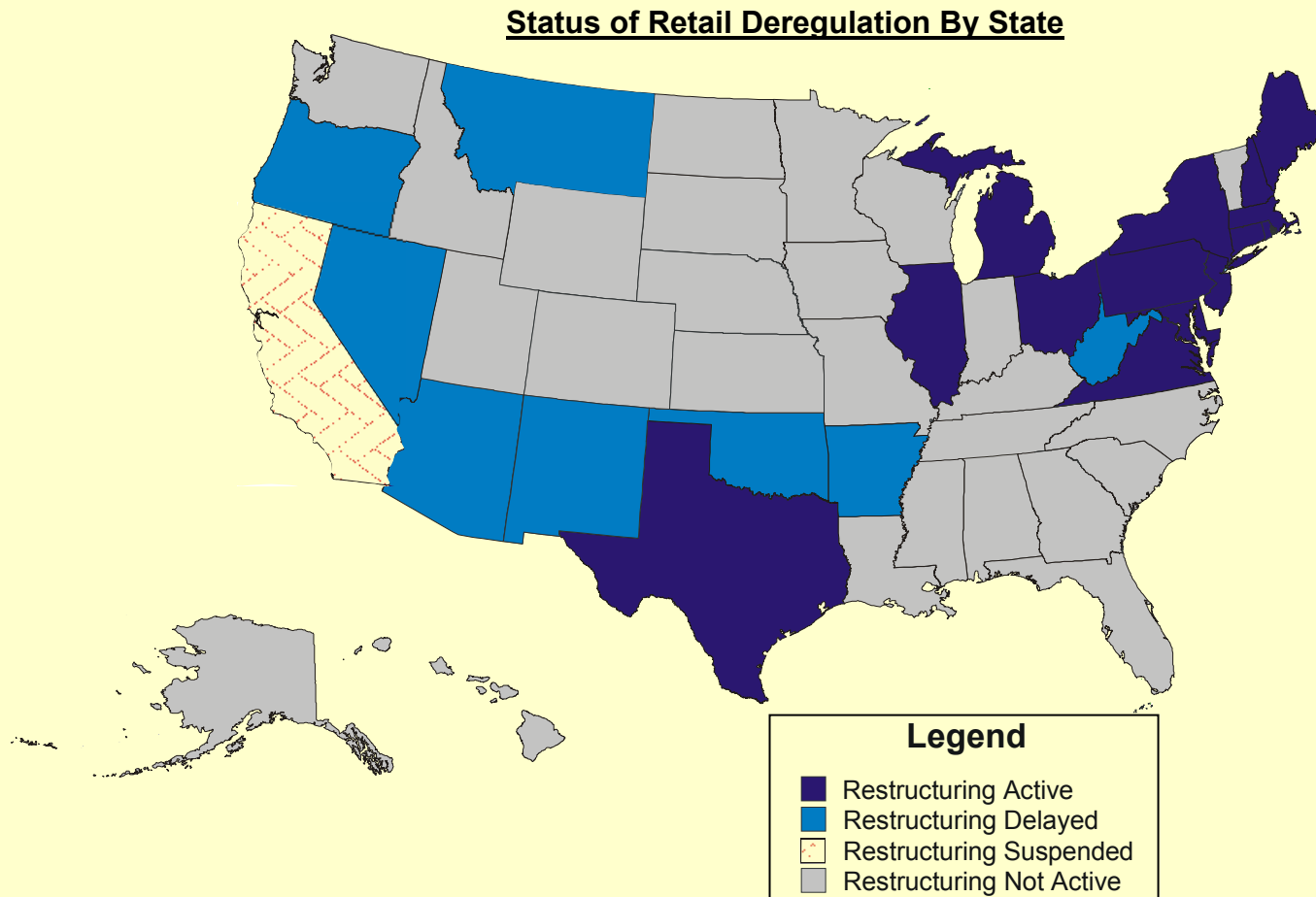
S&P Utility Index

5/1/2001 to Present



Causing a Re-Examination of The Entire Approach

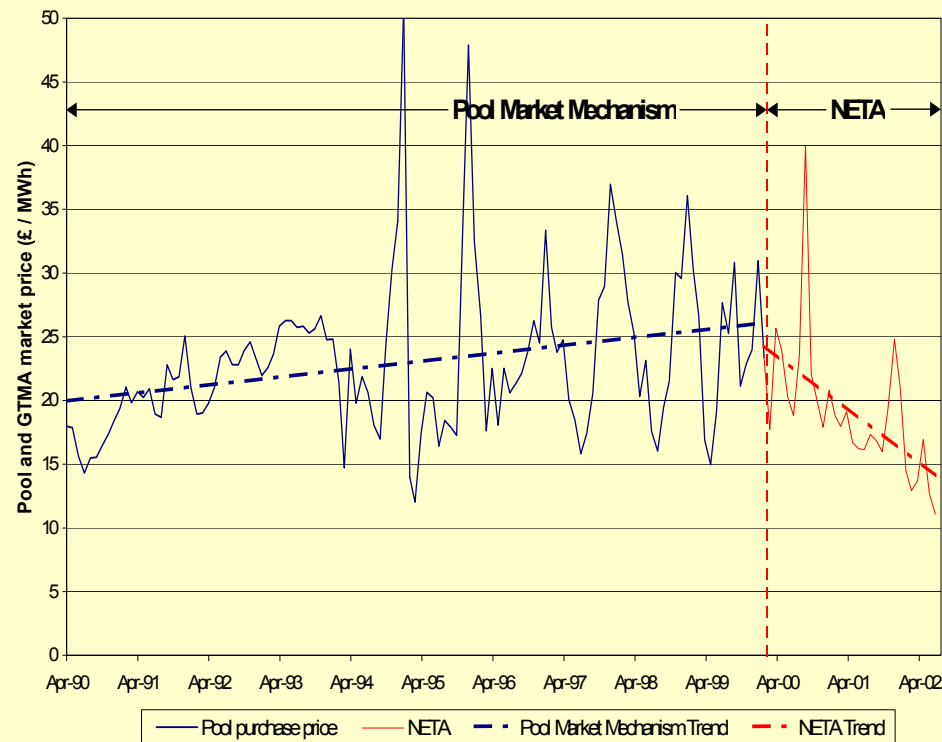
- Two steps forward, one step back
- 9 of 23 states are re-evaluating retail deregulation (California suspended)
- All eyes on Texas deregulation experiment



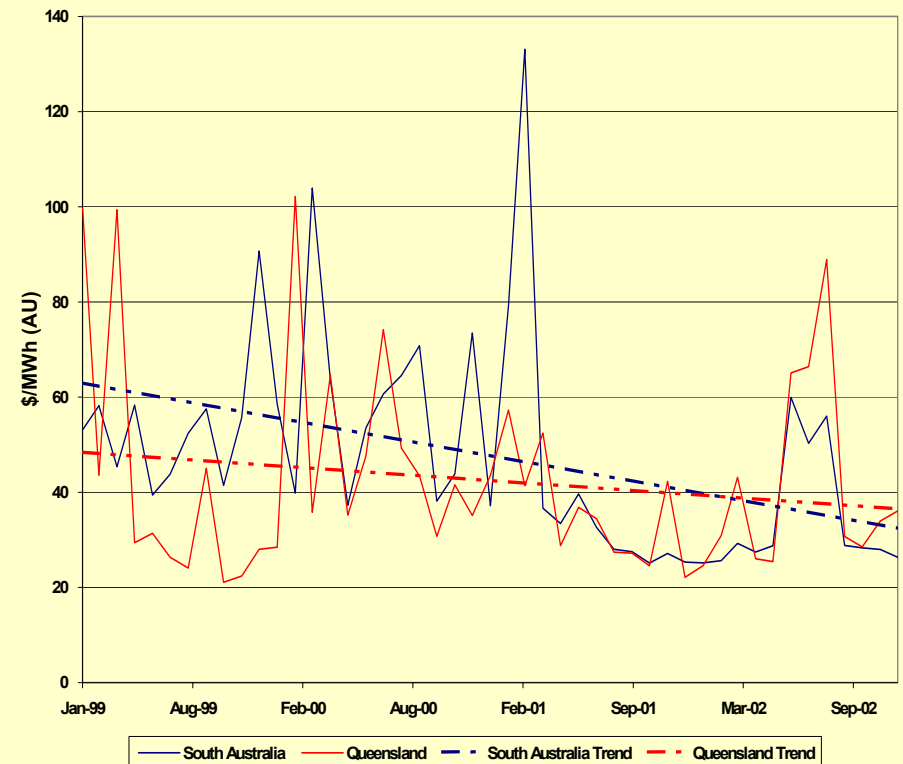
...But If Structured Properly, Deregulation Can Benefit Ratepayers

- UK prices have declined substantially in response to improved market design

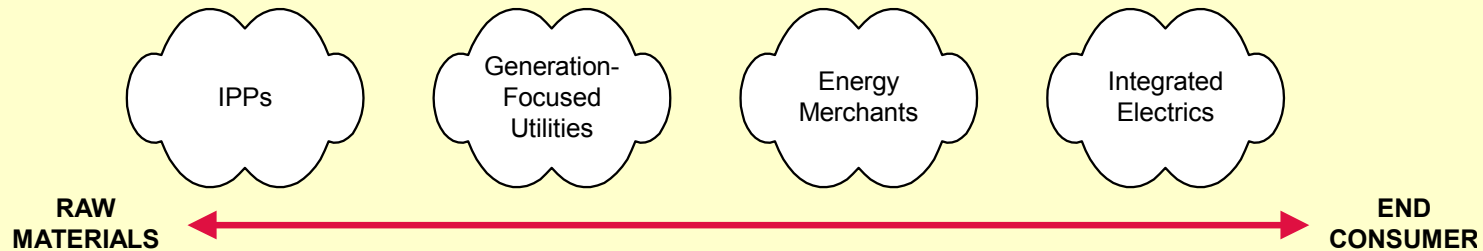
UK Power Pool Prices 12/1988 to 12/2002



Australian Power Prices 1/1999 to 12/2002



We Envision A Disaggregated World



Manufacturing

- Commodity conversion
- Location, location, location
- New technology, improved operating efficiency
- Lessons from: E&P, steel, refiners, paper, chemicals

Risk Management

- Energy intermediaries (retail and wholesale)
- Intellectual capital / information nexis
- Strong balance sheet
- Lessons from financial services/brokerages

Delivery

- Regulated infrastructure
- Regulators drive returns on capital
- Incentive regulation can encourage efficiency
- Lessons from UK regional electrics/transmission companies

With Differentiated Opportunities to Create Value

- Substantial value to be captured through evolution to competitive market
 - Improve resource allocation decisions and operating efficiency
 - Average US Electric Rate ~ \$72 / MWh
 - ~ 70% Generation ~ \$50 / MWh
 - Cost of New CCGT ~ \$45 / MWh
- } \$5 / MWh * 3.9 BN MWh/Yr = \$20 BN / YR

Manufacturing

- Improved utilization

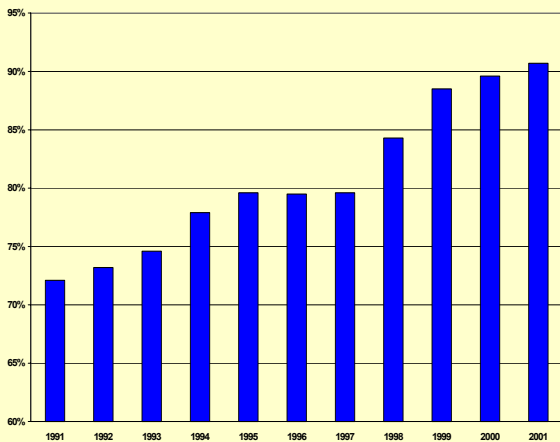
Risk Management

- Smooth volatility

Delivery

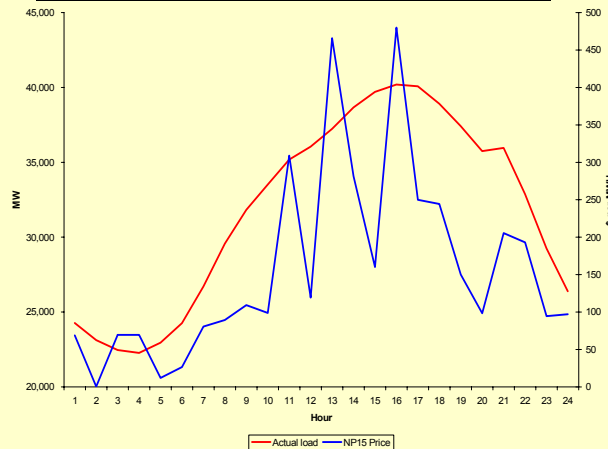
- Infrastructure Investment

Nuclear Capacity Factor (1991 –2001)



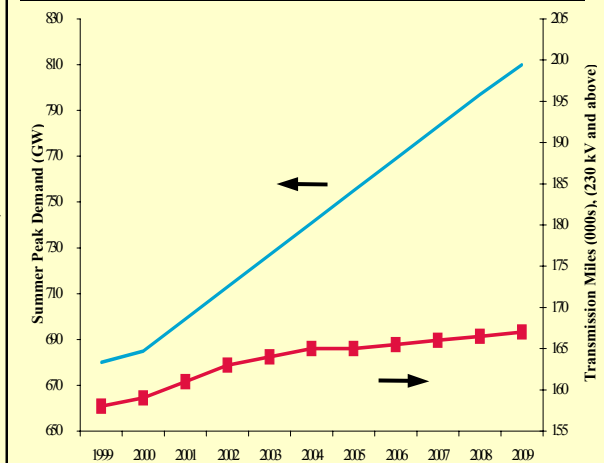
Source: SNL Securities Database and CSFB estimates.

24 Load & Price – CAISO (7/27/00)



Source: California ISO and CSFB estimates.

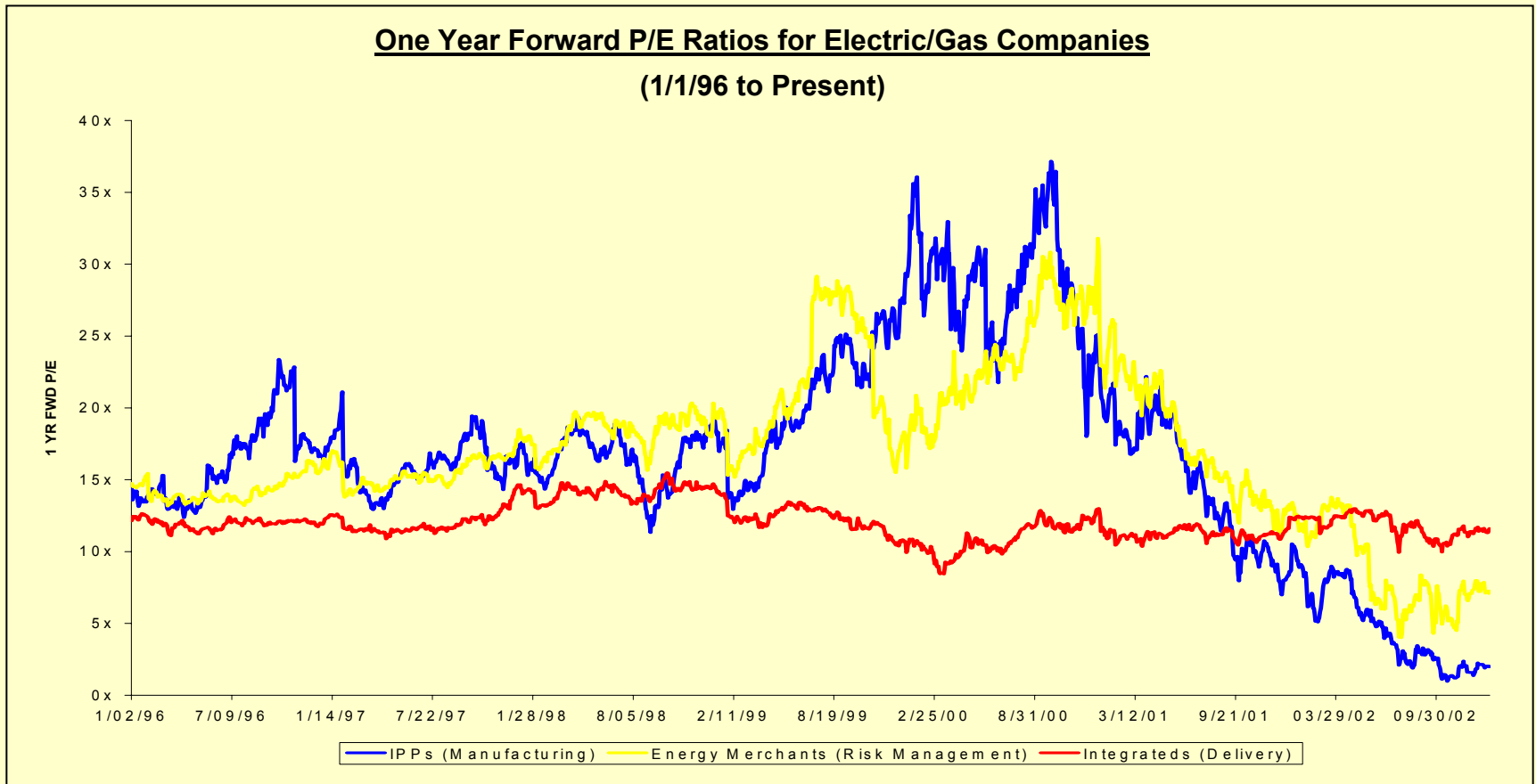
Transmission Investment vs Demand



Source: Beacon Energy and CSFB estimates.

And The Markets Are Reaching a Similar Conclusion

- P/E ratios diverged as competitors pursued strategies focused on different aspects of the energy value chain
- Commodity cycle conditions have increased P/E volatility for unregulated players



Source: Factset and CSFB estimates.

As Always, the Devil Will Be in The Details

- Near term (managed monopolies)
 - ✓ Generation price caps
 - ✓ Limit market concentration
 - ✓ Mandated reserve margins
 - ✓ Standardized market design

- Long term (free market for generation)
 - ✓ Sufficient investment in transmission grid
 - ✓ Floating retail generation rates / end of stranded cost recoveries
 - ✓ Incentive rate structures for delivery
 - ✓ Emergence of new technology

