Achieving Competitive Energy Markets through Effective Structure, Rules and Regulatory Oversight

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Overview

- Fundamentals of a Competitive Energy Market
- Lessons Learned from the California Market
- Critical Issues Still Facing the California Market
- Recommendations for advancing competition

Fundamentals of a Competitive Electricity Market

I. Industry Structure
- Market concentration/Ease of entry
- Level of demand response
- Obligation to serve load/Adequate capacity
- Availability of hedging (Long term contracts vs spot market)
- Structure of retail rates

II. Market Rules
- Bilateral contract vs. power pool
- Daily hourly energy auction/pricing mechanism
- Congestion pricing
- Transmission rights

III. Regulatory Oversight
- Standard for just and reasonable rates
- Test for market-based rate authority
- Level of market monitoring

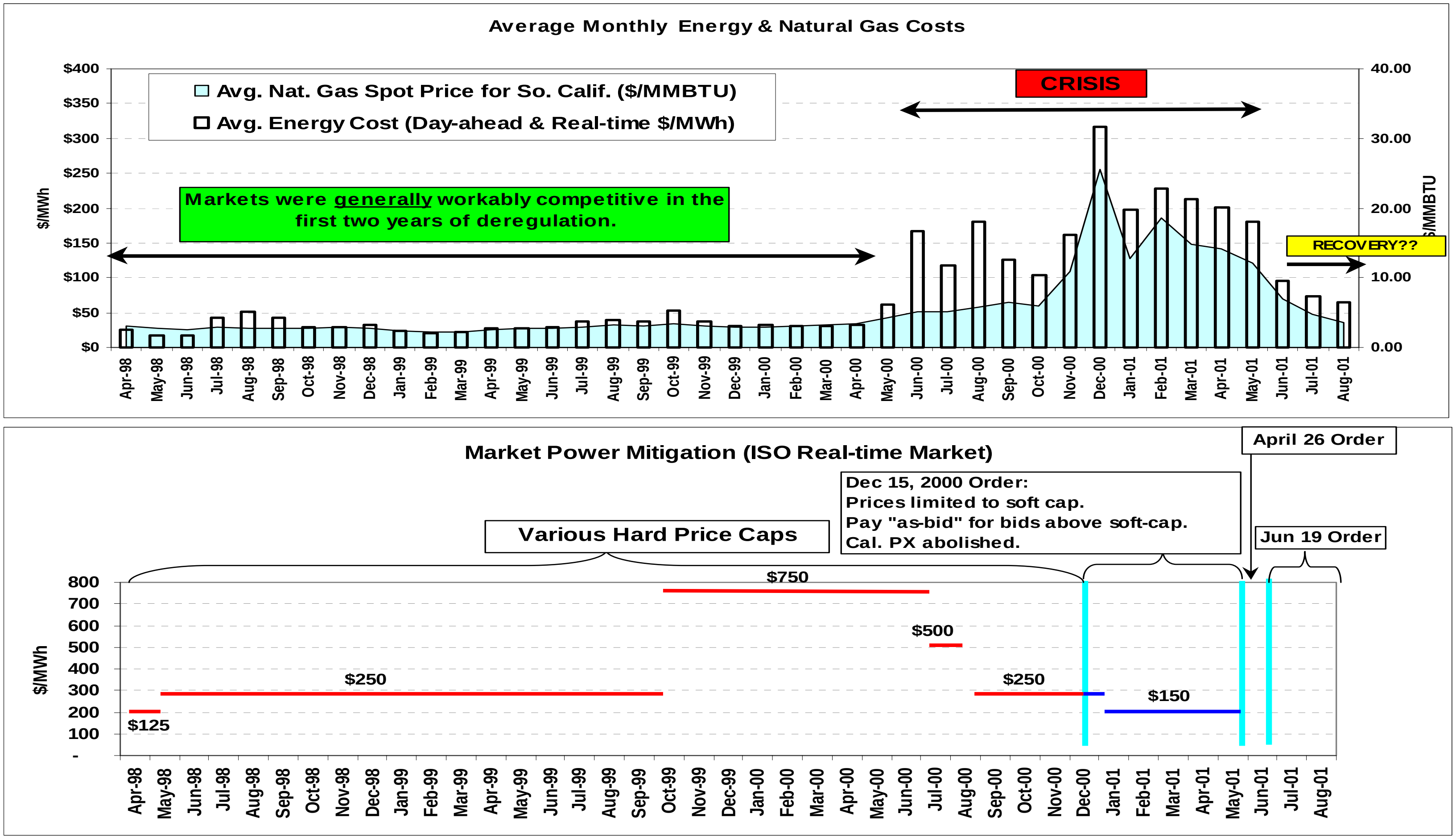
Why Do We Need Regulatory Oversight?

- Electricity markets are unique
  - No storage, and demand needs to be balanced instantaneously
  - Demand response is limited and slow to develop
  - Electricity has few substitutes in the short-run
  - Dramatic variation in demand and supply conditions by hour and day
  - Slow entry of new generation and transmission upgrades
  - Transmission constraints provide opportunity for market power
- Wholesale electric markets most prone to market power
  - Devastating impact on industry and consumers with large amounts of wealth changing hands in a few months that may wreck the local economy and bankrupt utilities

Regulatory Oversight in Electricity Market

- Antitrust
  - Regulate merger, collusion and price fixing and other antitrust violations
  - Unilateral exercise of market power does not violate antitrust laws
- Federal Power Act
  - Gives FERC the authority and responsibility to ensure just and reasonable rate
  - This is the basis for regulatory oversight that protect against horizontal market power
- FERC practice in enforcing FPA
  - Just and reasonable rate is not clearly stated and determined case by case
  - Market based rate standards are inadequate in managing market power
  - Investigation of complaints cumbersome and after the fact refunds are difficult
  - Monitoring and mitigating market power through market monitoring units in RTO/ISO markets is adequate

California Energy Market Performance in Perspective

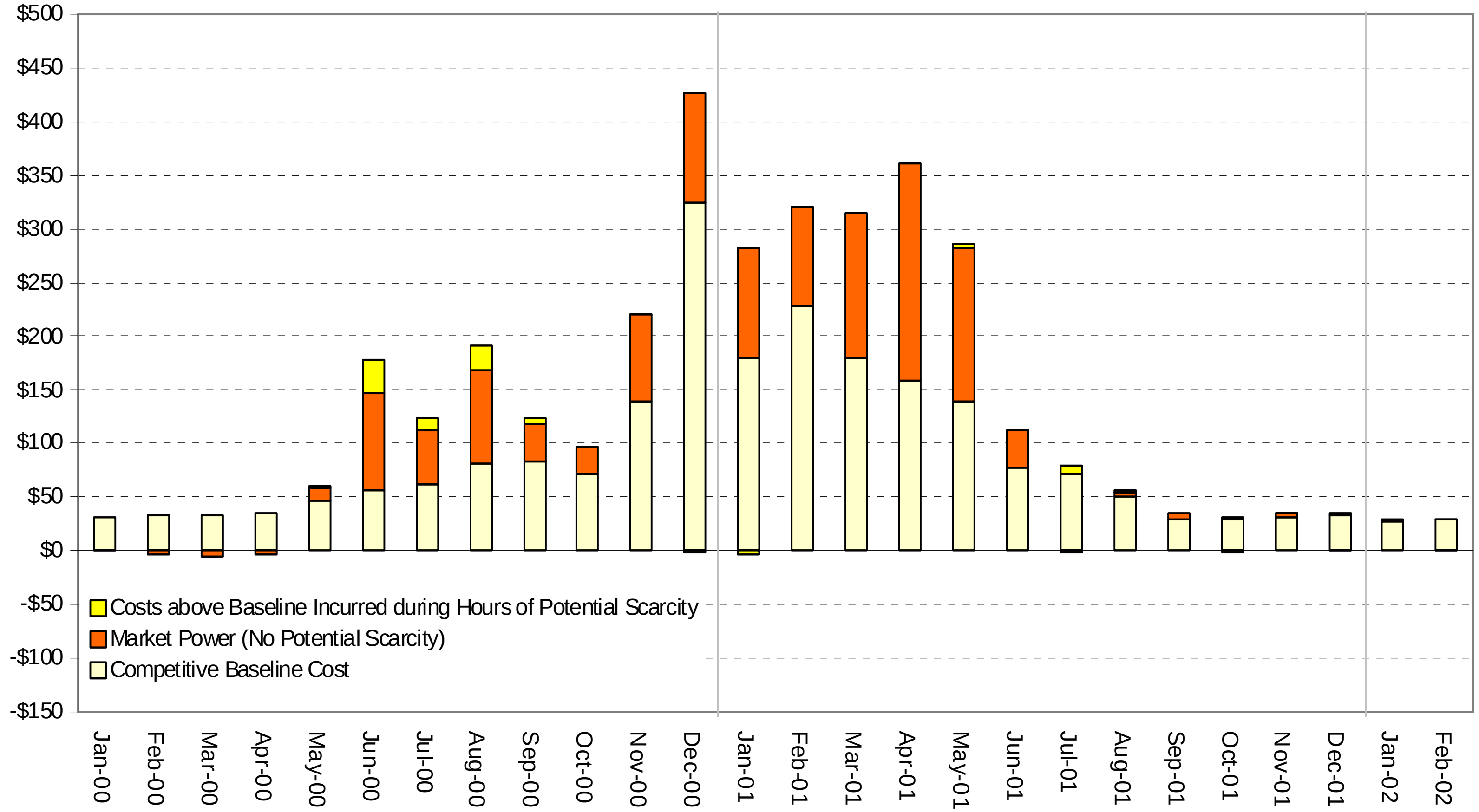


California ISO

California Independent
System Operator

Market Costs By Component: Input costs, Scarcity , and Market Power

(Day Ahead and Real-time Energy Transactions)

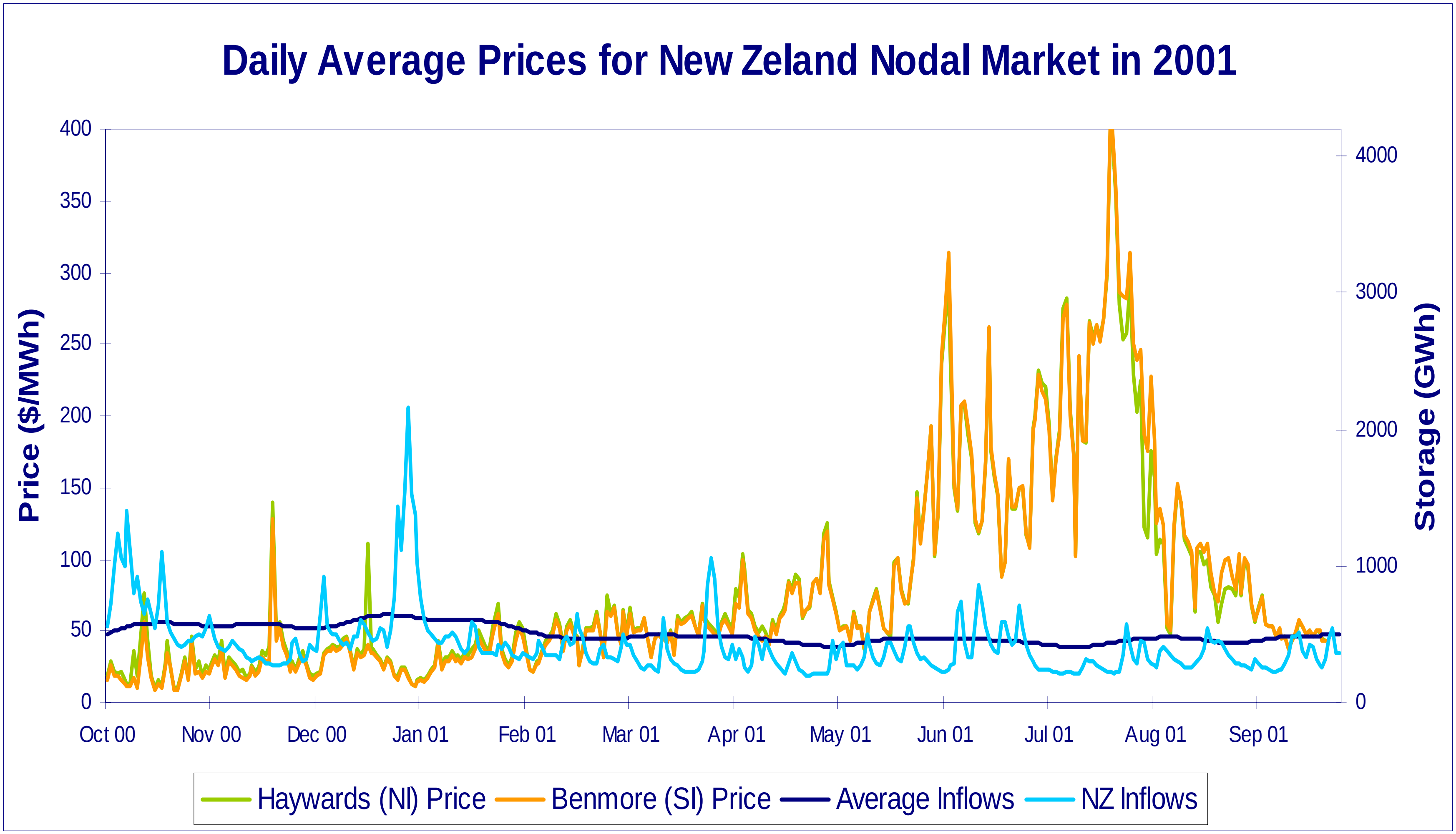


Lessons Learned from California Experience

- Inadequate energy infrastructure
  - Over-reliance on spot markets
  - Low hydro conditions caused tight supply conditions and many suppliers to be pivotal in setting prices
  - No long-term contracts with divesture
  - Retail rates frozen while wholesale costs without controls
  - No demand response program (common problem through out U.S.)
  - Transmission bottlenecks (Path 15)
- Flawed market rules
  - No tools to mitigate local market power (available in other ISO's)
  - Congestion management scheme
  - Hourly scheduling flexibility

Lessons Learned from California Experience

- Slow regulatory relief
  - Significant and sustained market power in tight supply conditions
  - Large suppliers used physical withholding and economic withholding
  - Market outcomes were not just and reasonable for over two years, with price-cost markup exceeding 100% in some months
  - FERC did not provide effective regulatory relief for 1 year (June of 2001)
  - By then $10 billion overcharges to consumers and $20 billion more extra costs locked into long term contracts


Daily Average Prices for New Zeland Nodal Market in 2001
Price ($/MWh)
Storage (GWh)
400
350
300
250
200
150
100
50
0
4000
3000
2000
1000
0
Oct 00
Nov 00
Dec 00
Jan 01
Feb 01
Mar 01
Apr 01
May 01
Jun 01
Jul 01
Aug 01
Sep 01
Haywards (NI) Price
Benmore (SI) Price
Average Inflows
NZ Inflows

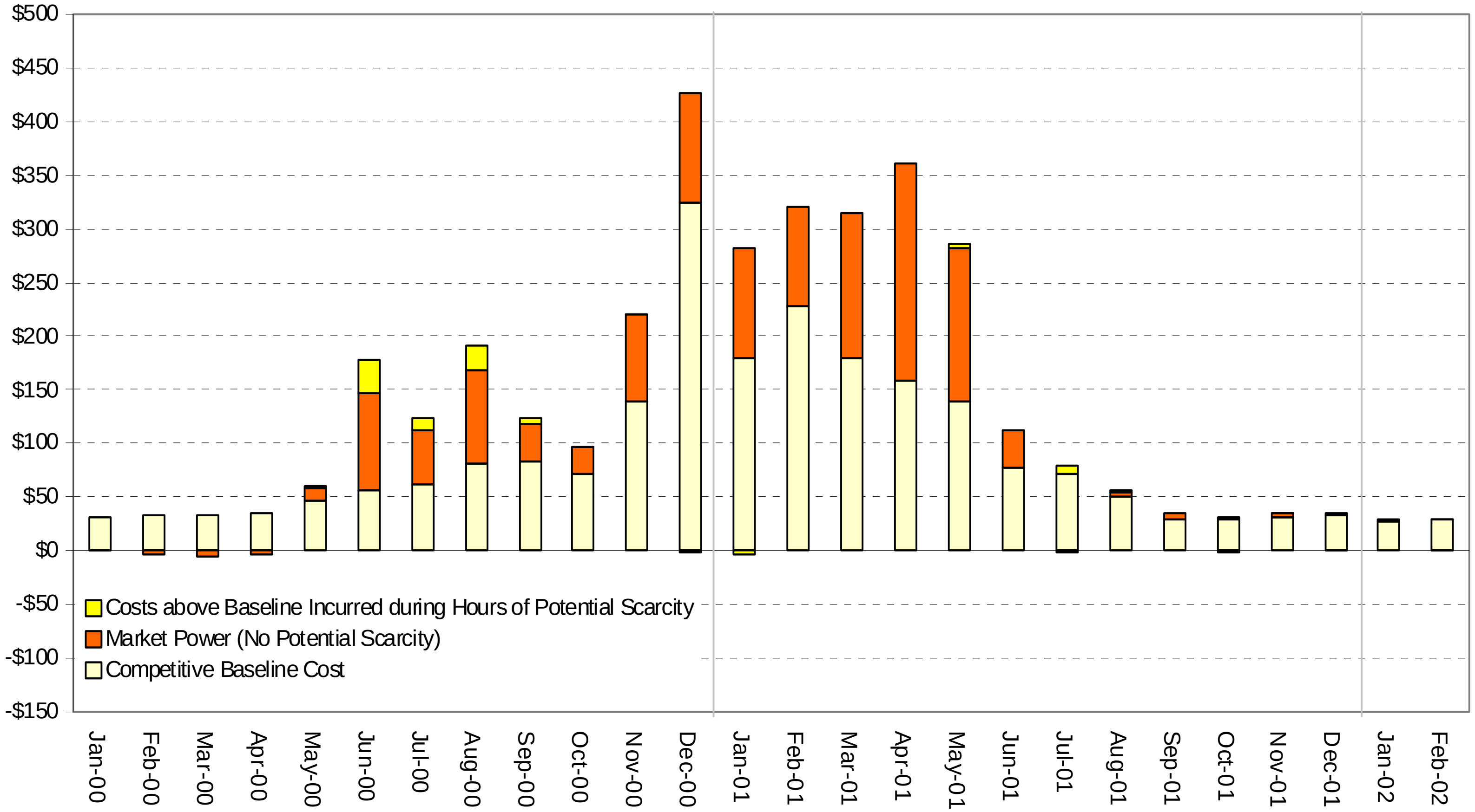
Corrective Actions Implemented

- Changes in Industry Structure
  - State entered into long term contracts, reducing reliance on spot market
  - Extraordinary conservation effort by consumers reduced load
  - New generation brought on-line
  - Drop in natural gas prices
- Market Rules
  - Eliminated double payment for replacement reserves
  - Underscheduling penalty on loads
- Increased Regulatory Oversight
  - FERC ordered mitigation in June, 2001: west-wide price cap and weak form of must offer requirements
  - Credit worthiness issues are being sorted out

Result: With these changes, market brought under control and blackouts avoided for Summer 2001

Impact of Corrective Actions:

Comparison of Average Energy Costs to Estimated Competitive Levels: Monthly Markup Decreases from over 100% in Spring 2001 to 6-8 % in late Summer 2001



Recommendations for Advancing Competition

- Fix Market Structure and Rules
  - Ensure adequate supply through available capacity requirement
  - Design new congestion management market using locational marginal prices
- Shortage may surface again with high economic growth, hot summer or dry hydro conditions
- Focus Regulatory Oversight To Provide A Safety Net
  - Market participants and state regulators have lost confidence in market (rippling effects through out the nation)
- Recommend Three Specific Actions:

  I. Establish Clear Standard for Just and Reasonable Rates

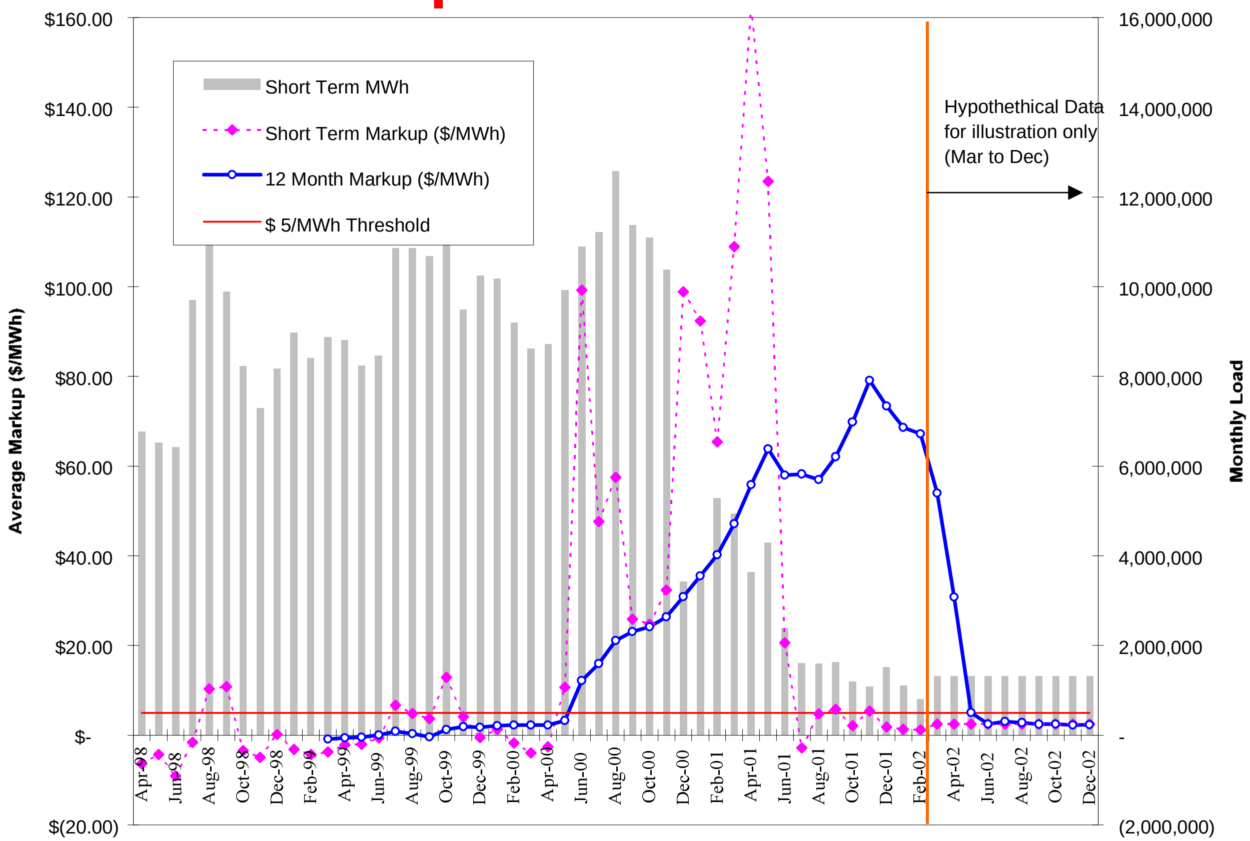
  II. Overhaul Criterion for Granting Market Based Rates

  III. Enhance Tools and Authority of Monitoring Units

I.Establish Clear Standard for Just and Reasonable Rates

- Practical benchmark and threshold: 12 month competitiveness index
- Measured on annual basis rather than hour to hour: hourly price fluctuation may be normal market response
- The threshold can be set at competitive market price plus $5/MWh for every hour in 12 month period
- Allows prospective mitigation

Set Explicit Standard for Just and Reasonable Rates -- California market performance under a 12 month Competitiveness Index



- Compare actual market cost with competitive market cost (price-cost mark-up)
- If the 12 month rolling price-cost markup is above $5/MWh threshold, rates are no longer just and reasonable and action is taken on a prospective basis

Benefits of a Clear Standard for Just and Reasonable Rates

- Prospective measure provides transparency, clarity and confidence to the market
  - Give consumers and state agencies confidence in the competitive energy market
  - Give suppliers guidelines of what is acceptable market outcome
  - Helps to build a self-regulating market place
- Provides a clear standard that governs FERC actions
  - Provides basis for market based rate standard and procedures
  - Provide basis for refund investigations and order

II. Overhaul Criterion for Granting Market-Based Rate Authority to Sellers

- Current standard of 20 percent market share gives no assurance of whether a seller can inflate the market price
- As low as 5 percent market share can create a problem when the demand is more than 95 percent of the total available capacity. In this case, a supplier with 5 percent of market share becomes pivotal.
- FERC initiated a rule making process to adopt new standard and procedures
  - Supply Margin Adequacy Screen
  - Conditional market-based rate authority subject to FERC review of market outcome

Overhaul the Criterion for Granting Market-Based Rate Authority to Sellers (2)

- **Alternative indicator is a simple index that CA ISO has developed called a Residual Supply Index (RSI). It can be calculated for any season, day or hour of the market.**
  - **RSI = (Available supply - Supply from the largest supplier)/Demand**
  - **RSI > 1.0 means no supplier is pivotal and above 1.2 for reasonable outcome**
- **Proposed rule: RSI Screen: RSI > 110% for 95% of the time**
- **Any market-based rate standard must be evaluated against the just and reasonable rate standard and modified if needed**
- **New market based rate standard should apply to RTO and ISO markets**

III. Enhance Tools and Authority Given to the Monitoring Units of the ISOs and RTOs

- California Market monitors diagnosed problems early, developed many indices of market performance. Had no authority to execute mitigation measures.
- RTO/ISO must have safe-guard built in the tariff and market rules, which set thresholds and allow for sanctions and penalties
- Monitoring unit should have open access to FERC monitoring staff and jointly discuss market monitoring and mitigation issues
- Monitoring unit, with the approval of RTO/ISO board, should have prespecified emergency mitigation measures that limit the market activity that seriously threaten reliability and competition

Summary

- Establishing a clear standard for just and reasonable rates is a critical component for competitive electricity markets
- Market design and market rules are necessary ingredients, but not sufficient to manage market power problems – New Zeland
- Focused regulatory oversight is the necessary safety net for the market place
- FERC must revise its market based rate standard
- Tools for Market Monitoring by FERC and RTO/ISO needs be enhanced