“Let There be Light”

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How We Got Here...

• Despite the rhetoric, there are three foundational elements that led to the crisis:
  – Supply and Demand Problem
  – Flawed Market Design
  – Political and Regulatory meltdown
How We Got Here

Supply and Demand

• Supply and Demand Problem
  • Prior to the crisis, no significant new supply had been added in California within the last 10 years.
  • Average age of power plants at the time was over 37 years old- increased operation also drove up the cost of emission credit
  • From 1990-1999 while demand grew by 11% in California the generation capability decreased by 2%.
  • The entire WSCC demand also increased in 2000 at an unprecedented rate- 4.2% over 1999 and 7% over 1997

• Drought (limited imports)
  • Normally California relies upon 15-20% of its demand to be met through imports from the Pacific Northwest only half of this import energy was available in 2000.

• Natural Gas Cost Increase throughout the U.S.
  • Additional constraints on CA Gas due to El Paso pipeline explosion
The Perfect Storm: The convergence of adverse supply & demand conditions

- California has historically relied upon its neighbors for power.
- During the Summer of 2000 California was only able to import half of what it did (from the entire WSCC) during 1999.
- Reserve margins are heavily influenced by hydro conditions in conjunction with transmission transfer capability into California.
- Increased electric consumption throughout the WSCC has eaten into the historic “surplus”.

Low Hydro Impact on Natural Gas

The Collapse

• The aging fossil fleet ran at historically high levels throughout 2000.
  “These facilities ran at unheard-of levels to service California and the Grid during the crisis. From what we could see they were running almost into the ground”. –Deputy Executive Officer, Carol Coy, SCAQMD referencing 1/1/00-6/30/00

• The Fleet averaged 60% more production in 2000 over 1999 and the oldest units, over 45 years old, averaged a 108% increase

• Plants operate at high heat rates on a strict air-quality regimen

• This resulted in an increased number of outages in the Winter of 2000.
  (coupled with SCR installation requirements and delays)
How We Got Here

Flawed Market Design

- Utilities limited on forward procurement
  - The Investor Owned Utilities (IOU’s) were regulatory restricted from entering into any short or long-term hedging contracts. (no prudency guidelines for procurement)
  - Generating units were sold without any “buyback” provisions
  - Reliability Must Run (RMR) contracts were actively cancelled

- Utilities were required to buy/sell energy through the Power Exchange only
  - Purchases made through the PX were per se reasonable
How We Got Here

Flawed Market Design

- ISO Real Time markets had a Price Cap
  - Designed for 3-5% of the load only
  - Utilities often under-scheduled up to 30% (12,000-15,000 MW per hour) in the real-time markets

- Resulting in an over-reliance on short-term markets

- No Retail Competition
  - Wholesale rates were market-based while the CPUC kept a ‘rate-freeze’ in effect.
How We Got Here
Political and Regulatory Instabilities

• Market expectations hardwired into AB1890
• Rates determined by Legislative action, CPUC inaction
• California seeks to protect its structure while blaming FERC for its shortcomings
• State/Federal jurisdiction fight = lots of heat but no light
• Politics and physics don’t mix. California market structure has regional implications
Déjà vu all over again...

• The Recession is over.  
  – California economy is recovering at an expedited pace resulting in increased demand

• El Ninô is coming- NW Drought repeat

• Infrastructure investment stalled: political and regulatory uncertainties, Enron fallout

• Lack of real Market Reform in California
CA Energy Commission Forecast

Supply/Demand Projection 2002-2004

2004- No Guarantees

This “New Generation” is in jeopardy

No guarantee That DSM will continue

Imports into Cal. will fall if a drought in the PNW is repeated

Natural Gas Rig Count

U.S. Average Natural Gas Rig Count

source: EIA

* Through 1st quarter
Crisis May Repeat - Natural Gas

• Natural Gas Demand is increasing in California and throughout the WSCC
• There is a direct relationship between the decrease in hydro production and the increase in demand for Natural Gas
Projected Natural Gas Demand in California

Concerns 2003-2005

• Demand will continue to grow. Voluntary reduction will diminish
• Lower Northwest snow pact due to El Ninõ
• Power-plant construction on hold
• Up to 2000 MW of instate generation at risk for air quality issues
Concerns 2003-2005

• Market redesign is lagging
• Transmission upgrades at Path 15 (CPUC opposes this) and other infrastructure investments on hold
• Political and Regulatory rhetoric
• Repeat of 2000-2001?
Out of Chaos Comes Opportunities

- California is the world's 5th largest economy and will continue to grow
- WSCC is a growing robust market
- California ISO Market Reform 2002 is trending toward the proven eastern models.