California's 2000-2001 Electricity Crisis: Causes and Lessons

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Simplified Causes & Dynamics of the Crisis

**Retail Market**

- Mandatory Generation Divestiture
- Mandatory Buy-Sell Rule in PX/ISO Spot Markets
- Utilities became Net Buyers but without the ability to do much hedging
- Retail Rate Freeze

**Wholesale Market**

- Demand growth but failure of California’s market structure to support much new generation
- Suppliers Gained Market Power
- Unreasonably High Wholesale Prices

**Political Dithering & Utility Insolvency**
The Basic Causes of California’s Electricity Crisis

- Short-Sighted Restructuring Rules
- Adverse Market Fundamentals
- Complex Market Rules, Market Power, & Market Manipulation
- Regulatory and Political Dithering & Inaction
California’s Short-Sighted Restructuring Rules

Utilities were forced to become net buyers and become over-exposed to spot-market prices.

• Aggressive generation divestiture without transitional buy-back contract hedges

• Mandatory buy-sell rule required utilities to sell all their generated power at spot prices and purchase all retail requirements at spot prices
  • Regulators repeatedly rejected utilities’ attempts to hedge their power purchases through longer-term contracts

CPUC precluded utilities from collecting the high wholesale power costs from retail customers.

• Transitional retail price freeze
What Caused the High Spot Prices?

Adverse Market Fundamentals

• A decade of **demand growth far outpaced new generation construction** throughout the West.

• **Low hydroelectric year** in the Pacific Northwest
  • Did not directly cause the crisis, but created conditions that were exploited by tacit collusion and market manipulation.

• **Skyrocketing gas prices**
  • Pipeline capacity shortage to California and gas market manipulation in southern California.

• **Air emissions limitations and high-priced emission credits**
Why the High Wholesale Prices?
Market Structure, Rules, and Conduct

• Resource inadequacy: Lack of responsibility for adequate installed capacity

• Mandatory buy-sell rule: Large amount of unhedged power purchases

• Complex market structure: Sequentially, rather than simultaneously, optimized energy and ancillary service markets was inefficient and facilitated market manipulation (a market structure first encouraged and then exploited by Enron).

• Price-Inelastic Demand: Uncoupled retail-wholesale markets; Underdeveloped demand-side responsiveness

• All of these factors facilitated the exercise of supply-side market power
More Causes and Contributors to the Crisis: Regulatory and Political Inaction, Dithering & Stalemate

• **CPUC’s refusal to approve** sufficient utility use of longer-term forward hedging contracts.

• CPUC’s presumably **complacent attitude** about the devasting real effects of utility **insolvency/bankruptcy**.
  
  • **Despite very clear warnings from the financial rating agencies** as early as September 2000 that PG&E and SCE were headed toward insolvency in early 2001 unless something was done the CPUC persistently refused to end the retail rate freeze.

• **FERC’s unreadiness** to expeditiously identify the exercise of market power and enforce “just and reasonable” wholesale prices.
Lessons Learned
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Market Structure

• **Attempting to jump the wholesale and retail chasms in a single bound** was probably a mistake. (Steve Herod had been absolutely right about this.) We should have gotten the competitive wholesale structure in place first before introducing retail competition.

• Trying to introduce robust retail competition while **retaining utilities as regulated “default providers” is a doomed half-way house** that will likely never work very well.

• **Resource adequacy** was, and perhaps still is, one of the most troublesome design challenges in electricity markets. Somehow, LSEs must be made responsible for supporting their fair share of generation capacity.

• **Wholesale and retail markets must be better linked** through real-time pricing and demand-response mechanisms. Encourage retail participation in wholesale markets through real-time pricing and voluntary load reduction programs.
Lessons Learned

Control of Market Power

• **Electricity markets are very vulnerable to the exercise of market power.** When supply-demand balances tighten, the conditions for “tacit collusion” to exercise market power can be encountered surprisingly quickly.

  • This susceptibility of electricity markets to market power is **exacerbated by the price-inelasticity of short-run demand.** Getting more demand-response into the wholesale markets will help but likely not eliminate the vulnerability altogether.

• Failure to get the **resource adequacy framework** correct will result in very difficult to manage market power problems.

• **Market power is best controlled “structurally” and “before-the-fact”** by encouraging forward contracting by load-serving entities and enforcing maximum supplier market share rules.
Lessons Learned

Regulatory/political responsiveness--California

• **Unchartered waters are likely to contain hidden reefs and shoals.**
  Regulators and politicians must be ready to expeditiously respond to unforeseen structural problems and unintended consequences.
  
  • In governing, there is a time for dithering and temporizing—and a time for bold action. The trick is to recognize the type of situation you are in. In this case, the impending disaster of utility insolvency was *perfectly clear* for months and California government did essentially nothing.

• **Utility bankruptcy/insolvency** involves much more than simply changing the names on the stock certificates. It has very real and painful consequences for everyone. It doesn’t provide a solution—it provides an additional problem to manage.
Lessons Learned

Regulatory/political responsiveness--FERC

- Although FERC had been pursuing market-based price regulation since Martha Hesse’s efforts in the 1980s, **FERC was not prepared to apply anything more than “the pornography standard”** to detect “unjust and unreasonable” prices when they finally showed up at FERC’s doorstep.
  - In FERC’s defense, **perhaps regulation inherently involves “learning by doing”** and, therefore, regulation necessarily involves a certain amount of “unpreparedness” until a specific situation comes down the pike. (The Supreme Court doesn’t hear hypothetical cases; it only struggles to rule on actual ones.)

- **An ounce of prevention is worth a pound of painful cure.** FERC should concentrate on fostering wholesale electricity markets that structurally support and encourage **resource adequacy**, sufficient **forward contracting by LSEs** (even though they have little or no direct authority over LSEs), and **diverse market shares**.
Lessons Learned

Advice to Load-Serving Entities

• As the referee says at the beginning of every boxing match, “Protect yourself at all times.” Don’t expect that regulators can protect you. Regulators are constrained by their statutory authorizations and they operate in “regulatory time”—which is exceeded only by geologic time.

• Statutory constraints within the structure of the FPA may make it impossible to fully compensate victims for market power abuses (e.g., the rules governing “subject to refund” dates).

• Load-serving entities must protect themselves from the vagaries of spot markets through significant forward contracting or vertical integration into supply.
That's all Folks!