
Session 1:
**Why Monitor the Northwest's Wholesale
Electricity Markets?**

RTO West Market Monitoring Workshop
Portland, Oregon
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RTO West Market Monitoring Workshop

→ **Session 1: Market Monitoring: Why**

Session 2: Who Will Monitor; the RTO's Role

Session 3: Organization and Governance of Monitoring

Session 4: Monitoring Tasks and Process

Session 5: Authority to Address Problems

Session 6: Access to, Disclosure of Sensitive Information

Session 7: Market Power Issues

Scope and Focus of Session

- This session addresses the need for monitoring in any/all wholesale electricity markets (inclusive: energy, ancillary services, congestion management, imbalance, transmission rights, forward markets, etc.)

What are the potential problems that monitoring is intended to address, and how much of a concern is each for the Northwest region?

Competition in Wholesale Electricity Markets and RTO Formation: Objectives

- Competition where feasible leads to greater efficiency than regulation
- In other regions, competition has been shown to be feasible in electric generation and supply
- RTO formation organizes the monopoly transmission and reliability functions to support competition in generation
- Objectives: efficiency, lower cost, level playing field, minimal regulation, etc. while maintaining reliability

Why Competitive Electricity Markets Are Vulnerable to Problems

- Electricity can't be stored effectively; production must match demand instantaneously to maintain reliability, which is a highly valued, common good
 - Separating monopoly from competitive functions is complex and imperfect (ancillary services, transmission rights, etc.)
- Demand is inelastic (so prices can spike w/little response)
- Transmission constraints can lead to local market power
- Generation and transmission have high fixed costs and long lead times to build (so entry to mitigate competitive problems may be delayed, may require strong incentives)

Consequences of Unique Characteristics of Electricity and Electricity Markets

- Competitive electricity markets involve complex product definitions and property rights, rules, etc.; design weaknesses or simplifications lead to externalities, bad incentives, opportunities for gaming or market power
- Markets that are generally competitive may be vulnerable to market power under certain system conditions
 - Transmission constraints, major facility outages
 - Peak demand hours
- Demand responsiveness would discipline pricing at such times, however, there are institutional barriers to it

“What Can Go Wrong” Case Study: California Ancillary Services Markets (1998)

- **Problem:** Price spikes; ancillary services costs over 10% of energy costs (compared to historical costs under 5%)
- **Contributing factors:** large, inflexible ISO A/S demands; inflexible market procurement approaches; limits on participation of all potential suppliers; market distortions due to mix of cost- and market-based rates
- **Current status:** Problems largely addressed through numerous design changes; A/S costs declined by half in 1999.

(ER98-2843)

“What Can Go Wrong” Case Study: California “Reliability Must-Run” Contracts

- **Problem:** Contracts to mitigate the “local market power” of certain generators located in “load pockets” distorted markets, were very costly (total is almost \$.5 billion/year)
- **Contributing Factors:** Contract structures distorted incentives for market participation, other factors.
- **Current Status:** The contracts have been redesigned, but some market distortions, and the high costs of the contracts, remain; fundamental changes are under consideration as part of broader congestion reform efforts.

(ER98-495)

“What Can Go Wrong” Case Study: Calif. “Intra-zonal” Congestion Management

- **Problem:** Generators often have market power in providing relief for “intra-zonal” congestion (within a single pricing zone), resulting in high costs.
- **Contributing Factors:** Distortions due to zonal pricing, lack of adequate mitigation for such local market power.
- **Resolution:** CA-ISO wanted expanded authority to call such generators “out-of-market” and pay according to a formula; FERC rejected this, calling for fundamental reforms of congestion management. High costs -- and attempts to implement mitigation -- continue. (*ER00-555*)

“What Can Go Wrong” Case Study: PJM’s Minimum Run Time Bid Component

- **Problem:** PJM allows “minimum run times” in bids; when generators knew they would be called in at least one hour to meet peak loads the next day, they set minimum run times = 24 hours, and bid the price cap (\$1,000), for all hours. Result: payments of \$1,000 for 24 hours.
- **Contributing Factor:** Changes to min run time permitted.
- **Resolution:** PJM attempted to change its rules to eliminate this gaming opportunity, resulting in a complaint against it. FERC granted the complaint, finding that PJM must file a tariff revision to make the rules change. (*EL00-36*)

“What Can Go Wrong” Case Study: New England Generators’ Complaints

- **Problem:** Generators in the New England market have criticized ISO-NE for frequent price recalculations, alleged errors in dispatch and price determination, lack of transparency and accountability in ISO operations, with a negative impact on the market and its development. ISO-NE responds that there are inherent flaws in the market design that are being addressed.
- **Resolution:** Issues are being addressed in the context of the implementation of congestion reforms and a multi-settlement system (*EL00-62*)

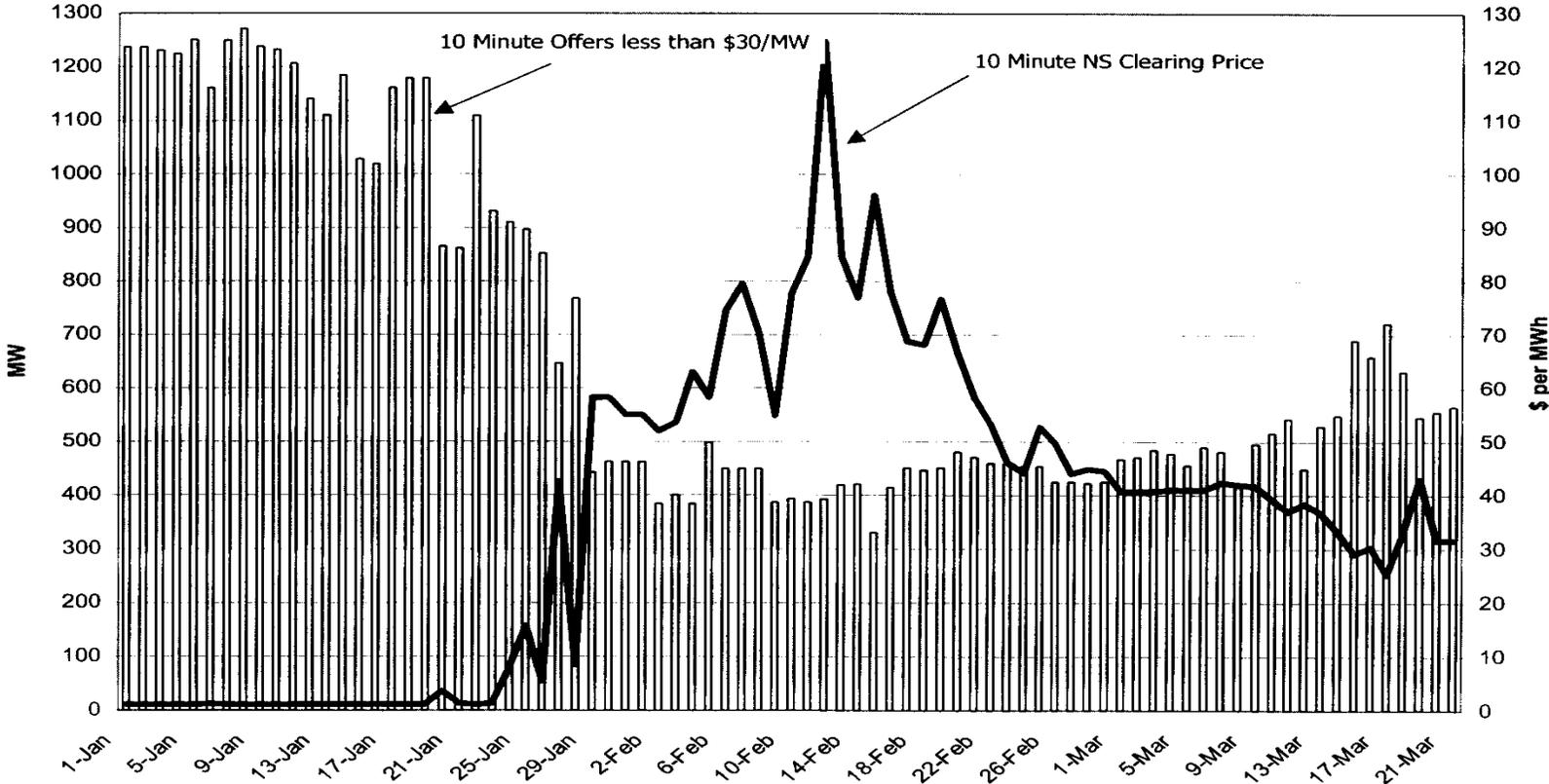
“What Can Go Wrong” Case Study: NYISO’s Non-Spinning Reserve Market

- **Problem:** The quantity bid of non-spinning reserves (NSR) declined and bid prices increased sharply after 1/29/00; NSR cost an average of \$65.57/MW in February, having never cleared above \$2.52/MW earlier.
- **Contributing Factors:** NYISO requirement to purchase NSR in congested zone; a large pumped storage facility was not able to provide NSR due to software limitations.
- **Resolution:** NYISO wanted temporary bid caps (granted) and retroactive relief (denied). FERC was highly critical of NYISO market design weaknesses. (*ER00-1969*)

NSR Offers Under \$30 (Bars) and Prices (Line)

Attachment A

10-Minute NSR Clearing Prices and Offers less than \$30 per MW:
Daily Averages for January 1 to March 21



“What Can Go Wrong” Case Studies: What to Take Away

- These markets are complex! Each region implements many unique features; each change can introduce new problems. The new ancillary services markets and congestion management markets have been especially problematic.
- Market restructuring provides market participants with more choices, and they will act according to the economic incentives they face under the market rules. When a market design is flawed, participants’ actions may appear contrary to the spirit, if not letter, of market rules and agreements, and market results may not accord with the goals of restructuring and introduction of competition.

“What Can Go Wrong” Case Studies: What to Take Away (cont’d)

- RTOs are likely to take the heat for problems that arise, whatever their causes (including, for instance, market design compromises to gain support of key stakeholders)

“What Can Go Wrong” Case Studies: The Bright Side

- Energy markets (*as opposed to A/S or congestion management markets*) have generally been highly competitive and problem free (*except during high demand hours, or when transmission constraints shrink the geographic scope of competition*)

“What Can Go Wrong” Case Studies: FERC Approach to Market Problems

- There may be little sympathy for temporary fixes if more fundamental reforms are considered necessary.
- There may be little sympathy for ISOs’ errors or the costs that result from them, despite the fact that these costs are ultimately borne by consumers, not the (non-profit) ISOs.
- There will be a very high hurdle for retroactive relief (other than recalculation of incorrectly determined prices, which amounts to a tariff violation).

The Role of the ISO Market Monitor When Things Go Wrong

- Identify that there is a problem; determine the causes.
- Propose solutions (may include temporary design fixes or mitigation; longer term rules changes or mitigation; some form of retroactive relief).
- Make the case for the existence of the problem and need for the solutions; respond to positions of other parties that may dispute the existence or cause of the problems, or preferred solutions.
- Participate in RTO implementation of solutions (under generic authority or as specifically approved by FERC).

Types of Problems That Can Afflict Competitive Wholesale Electricity Markets

- RTO Hardware/Software/Wetware Errors
 - Can result in incorrect awards or prices (tariff violations)
 - Can result in inability to operate markets as intended (market may have to be suspended; fallback approaches)
- Design Flaws or Design Weaknesses in RTO Markets
 - Can result in inefficient results, gaming, market power, or adverse reliability impacts. Examples:
 - Artificial limits on participation, or rules that impede arbitrage
 - Bidding and scheduling approaches that do not allow participants to achieve efficient resource utilization, leading them to increase their bid prices, withhold capacity, operate inflexibly, refuse to follow dispatch instructions, etc.

Gaming vs. Exercise of Market Power

- Gaming: Exploiting market design weaknesses
 - CA-ISO definition: Gaming is taking “unfair” or “undue” advantage of the rules and procedures to the detriment of efficiency and consumers’ interests
 - Gaming is behavior that would not have been permitted or possible under the rules, had the designers of the rules anticipated it and been able to design rules to preclude it
- Exercise of market power: Physical withholding, economic withholding (marking up bids), or uneconomic production (withholding from one market by placing output in another) to raise prices profitably (Session 7)

Market Design Weaknesses Create Opportunities for Gaming and Market Power

In these new and complex markets, market design shortcomings have always been contributing factors in market problems. Market design shortcomings that contribute to market power and gaming:

- Limits on participation of certain types of resources (imports, pumped storage, etc.)
- Institutional barriers to demand price-responsiveness
- Reliability rules that unnecessarily restrict markets
- Bidding flexibility or bid components that allow exploitation of market inflexibility

Is It A Market Design Flaw, Tariff Violation, or Market Power?

- *ISO-NE Operable Capability market*: Participants bid prices up very high during peak load hours. ISO-NE argued it was a design flaw.
- *PJM minimum run time*: Participants bid the price cap with 24-hour minimum run times on peak load days. PJM argued it was evasion of the FERC-approved price cap.
- *NYISO non-spinning reserve market*: Participant withheld capacity, claiming difficulties in getting acceptable schedules. NYISO software limitations excluded qualified capacity from the market. NYISO argued market power was exercised.

Problems Encountered In Ancillary Services Markets

- Regulation, reserves: Excessive ISO demands for these A/S; inflexible ISO procurement rules; various market design flaws; various restrictions on participation by all capable resources; increased bid prices or withholding in response to market design limitations; concentration of ownership.
- Voltage support, reactive power, control area services, etc. are generally not procured competitively.

Problems Encountered In Congestion Management Markets

- Distortions related to zonal pricing; artificial barriers to efficiency (market separations); concentration of ownership in load pockets; lack of local market power mitigation where needed

Other Potentially Problematic Areas

- Control area operations under an RTO (manipulation of reliability rules, etc.)
- Transmission operations under an RTO (manipulation of ATC or TLRs; strategic outage scheduling; etc.)
- Problems in markets operated by others (other products, or adjacent regions) that effect the RTO's service and markets
- Non-compliance with various tariff rules and requirements

Concerns About RTO Actions

- RTO stretching its authority to address errors and flaws; using such authority to correct market results it doesn't like
- RTO “risk-aversion” and “reliability bias”
 - Excessive A/S purchases
 - Conservative ATC calculations
 - etc.

Other Potentially Problematic Areas In the Northwest's Electricity Markets

- _____
- _____
- _____
- _____

Potential For Problems: Discussion of Relative Importance and Likelihood

Which Of These Problems Are Of Greatest Concern?

Why It Matters: On This Depends:

- Organization and governance of monitoring
- Types of authority monitor may need
- Level of resources devoted to monitoring