

Market Monitoring in ERCOT



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TPPA 2007 Annual Meeting
San Antonio, Texas

July 24, 2007

Presentation Outline

- Objectives and Focus of Market Monitoring
- Definition of Market Power
- Resource Adequacy in an Energy-Only Market

Objectives and Focus of Market Monitoring



Objectives of Market Monitoring

- The objective of an electricity market is to produce efficient and competitive market outcomes (pricing and dispatch) while meeting reliability objectives
- In evaluating outcomes, there are three primary market monitoring questions:
 - Is the market providing efficient incentives to the suppliers and the loads?
 - Is the operation of the market, including the actions taken by the system operator, undermining efficiency of the market results?
 - Are participants able to abuse market power?

The Role of Market Monitoring

- Deregulation is premised on the benefits of replacing regulation with competition to guide generation and transmission usage and investment
- In deregulating the wholesale markets, regulatory authorities rely upon market monitoring and mitigation to address potential market power concerns
- The monitoring function includes:
 - Real-time screening and analysis to identify circumstances that require further investigation
 - Investigations of market operations or conduct identified through the daily screening or complaint processes
 - Periodic analysis and reporting

The Focus of Market Monitoring

- The Market Monitor is tasked with identifying:
 - Flaws in market rules that create inefficiencies or gaming opportunities
 - Efficiency improvements
 - Market power abuses
- Contrary to the typical assumption, market efficiency and market power generally receive equal monitoring attention

Delegation of Authority

- The Market Monitor's primary delegated authority is investigative, including:
 - The authority to access and analyze confidential market data
 - The authority to obtain data and information from market participants
- Enforcement authority is generally retained by the regulatory authority
- Market Monitors should not have the authority to revise market prices retroactively
 - Revising prices retroactively would undermine the credibility of the market
 - Ideally, market power mitigation should occur prospectively so that the market outcomes remain competitive
 - Prices should only be revised when data or software errors affected the prices
- Market monitors should not have the authority to make *ad hoc* changes to the market rules, procedures, or market outcomes

Market Monitoring and Market Design

- The style and scope of the market monitoring does not change substantially with a change in the market design
- However, the market design affects the difficulty of the market monitoring:
 - Nodal markets tend to be more transparent and, therefore, easier to monitor
 - Market design flaws can make distinguishing between withholding and the inefficiency attributable to the market design more difficult.
 - In a nodal market with unit-specific offers and a coordinated day ahead market, detecting economic or physical withholding is relatively straightforward

The Role of Market Monitoring in Improving Market Performance

- The market flaws and efficiency improvements to be identified include:
 - **Distorted Market Outcomes:** Modeling procedures, system operations, and pricing rules can lead to inefficient prices and outcomes, even when participants are behaving competitively
 - **Inefficient Conduct:** The market rules may impose unintended costs/risks on participants that cause their conduct to depart from competitive expectations
 - **Strategic Conduct:** Flaws in the market rules can create opportunities for participants to profit by departing from competitive conduct
- It is sometimes challenging to differentiate inefficient or strategic conduct from market power – however, this is critical because the preferred response is to remedy the market flaw and restore efficient incentives

What is Market Power?



What is Market Power and When is it a Problem?

- Market power is the ability of a firm to profitably raise the price of a product
- Market power exists in nearly every product market, the most of which are not regulated – only perfectly competitive markets exhibit no market power
- In general, it is far more costly to eliminate all market power than to allow some market power to exist
 - For this reason, perfect competition is not the appropriate standard – economists generally refer to “workable competition” as a competitive standard with an acceptable level of market power
 - References to market power by economists and policymakers generally pertain to unacceptable levels of market power

What Conduct May Indicate an Attempt to Exercise Market Power?

- Price fluctuations are not the primary indicator
- When a price spike is due to scarcity, generating resources should be fully utilized (providing either reserves or energy)
- When a price spike results from market power, the resources will not be fully utilized. The key to differentiating between market power and scarcity is to determine whether resources are being withheld from the market:
 - Physical withholding – Resources that would be economic and capable to operate that are unavailable
 - Economic withholding – Resources not producing fully because they submitted an offer substantially above competitive levels
- Focusing on withholding from the spot market is the appropriate focus for monitoring because the spot market will discipline the forward markets

Mitigating Market Power

- The first and best form of mitigation is to address the structural characteristics of the market:
 - Promoting transmission investments to reduce congestion and associated locational market power
 - Removing barriers to investment in new generation
 - Facilitating demand-side participation in the market; and
 - Divestiture – reducing concentration of supply ownership
- Even with structural mitigation, market power concerns may still justify “behavioral” mitigation
- Behavior mitigation includes measures that restrict a supplier from exercising market power
- In developing behavioral mitigation measures, policymakers should adhere to the following principles:
 - The measures should not affect participants bidding competitively – including causing suppliers to bid or generate below their marginal costs
 - Mitigation should not artificially limit price movements – particularly during times of shortage
 - If possible, mitigation should be applied prospectively

Resource Adequacy in an Energy-Only Market



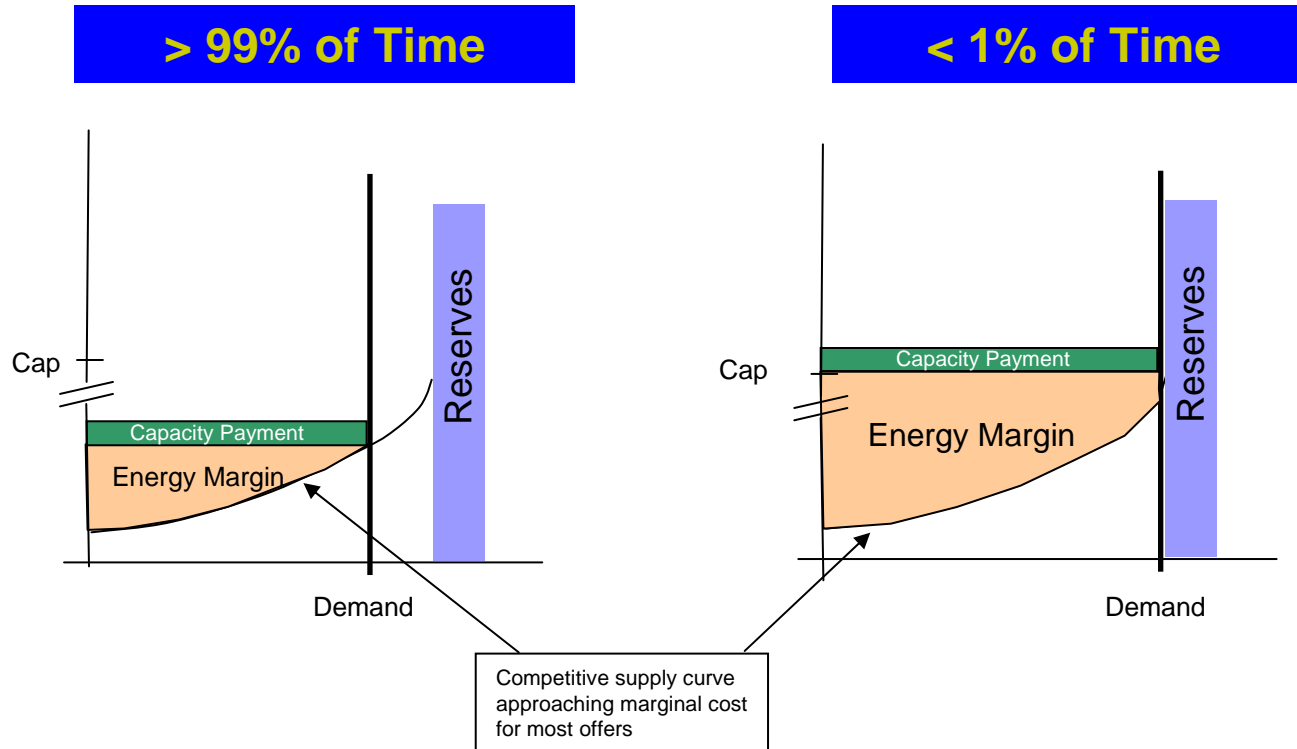
Scarcity Pricing and Efficiency

- Most domestic electricity markets – if not all – have not been designed to reliably reveal the true value of energy during supply shortages
- Scarcity pricing is important because it plays a critical role in:
 - Providing the opportunity for existing high-cost units to recover their cost of remaining on the system
 - Providing the economic signal necessary to motivate demand response
 - Establishing efficient incentives for new investment

Scarcity Pricing and Efficiency

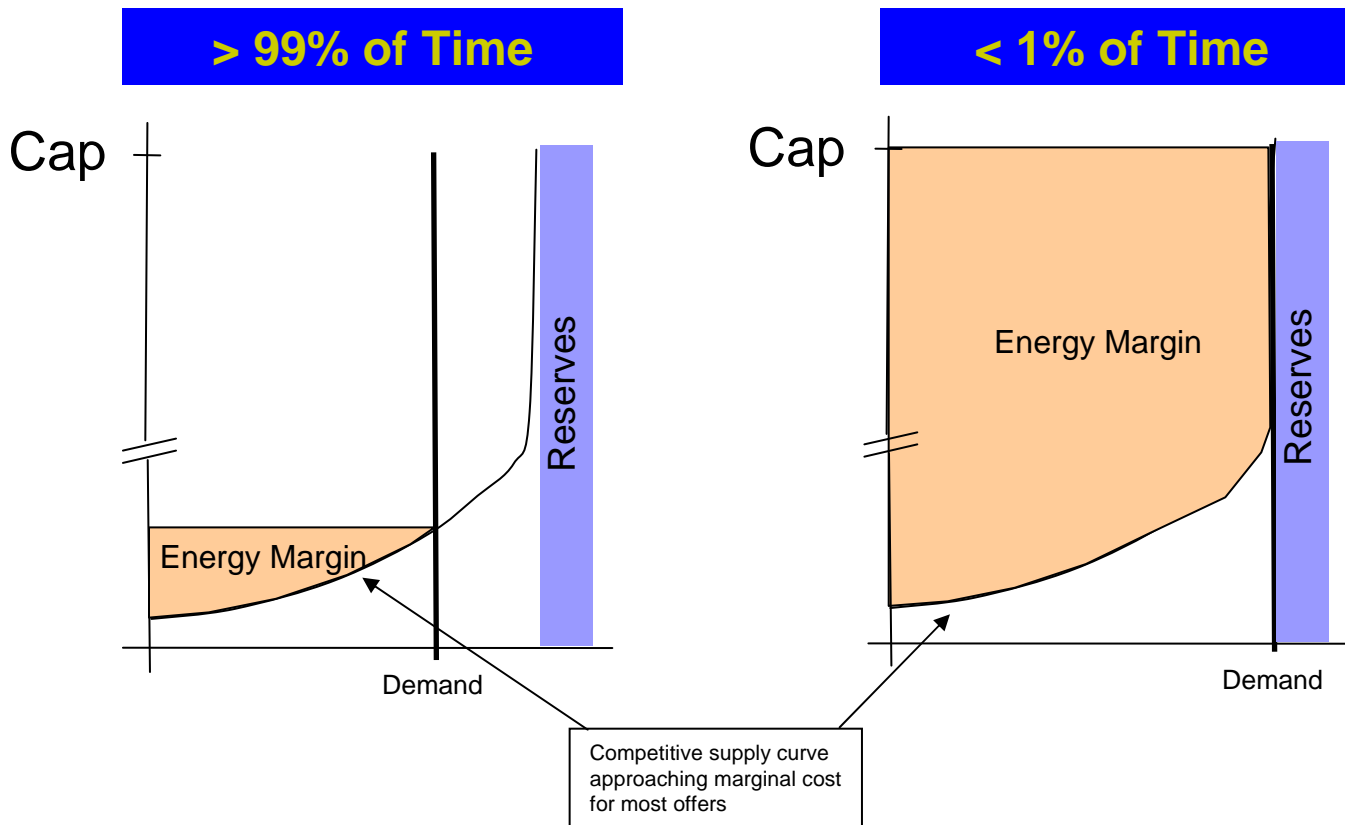
- Shortage conditions exist when the supply of resources is insufficient to simultaneously meet both energy and operating reserve requirements
- Markets should be designed such that prices rise sharply during legitimate shortage periods, so that prices are high during authentic shortages
- Relying upon participants to artificially raise prices by withholding in order to generate efficient long-term economic signals is inferior to relying on explicit shortage pricing provisions
 - Most seem to agree that prices should rise sharply during legitimate shortage conditions, but the current approach relies exclusively upon the submission of uneconomic offers by “small” market participants to achieve this objective
 - This may be an unreliable means to achieve the intended results during shortage conditions and will contribute to inefficient market outcomes during times of relative surplus (*i.e.*, most of the time)
- The long-term solution is to utilize a reserve demand curve that explicitly recognizes the trade-off between reserves and energy – this is particularly critical in energy-only markets such as ERCOT

Capacity and Energy Market



Note: For illustrative purposes only. Reserves are shown to indicate a quantity only beyond the available energy.

Energy-Only Market



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Energy-Only vs. Capacity/Energy Markets

- In both types of markets, market outcomes are driven by competitive forces that induce marginal cost-based bidding when energy is not scarce in the market.
- The Northeast markets have had to rely upon capacity markets to supplement their energy markets because they do not allow energy prices to rise to sufficiently high levels during energy scarcity. The success of these capacity markets in producing the desired objectives remains questionable.
- The PUCT has specifically designed the ERCOT energy-only market with price cap levels that, during scarcity conditions, are allowed to reach the levels deemed to be required to provide for new entry into the market when required.
- The fact that ERCOT is an energy-only market does not alter the expectation that competitive and efficient outcomes should occur during the majority of the periods when energy is not scarce, just as is the expectation in capacity and energy markets.
- The only difference is that during periods of short-supply, the prices in the energy-only market are allowed (and expected) to rise much higher than is allowed in capacity in energy markets to provide the potential for returns that are necessary to attract the amount of investment required to meet reliability objectives.