



Market Monitoring and Market Design

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Introduction

- Competitive markets are valuable because they are effective means to:
 - Allocate resources to the highest value uses
 - Provide visible signals regarding the value of the products
 - Organize complex processes
- Markets for electricity in particular have been implemented to:
 - Improve the utilization of transmission capability by dispatching generation (and load) economically over a broad market area; and
 - Send accurate economic signals to govern investment in supply, demand and transmission.
- This presentation will discuss the role of market monitoring in competitive wholesale power markets and the principal roles of the RTO in coordinating and facilitating those markets

Primary Objectives of Market Monitoring

- The objective of an electricity market is to produce efficient and competitive market outcomes (pricing and dispatch)
- 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 market 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 to Market Monitors

- 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 should 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 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
- The key to differentiating between market power and scarcity is to determine whether resources are being withheld from the market
 - Physical withholding – withdrawing or derating an economic unit
 - Economic withholding – raising a generator offer so as not to run or raise the clearing price
- 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
- The RTO should play a leading role in the first three

Mitigating Market Power

- 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

Scarcity Pricing and Efficiency

- Most 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:
 - Allowing 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

- 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 shortage pricing provisions
- 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

Demand Response and the RTO

- Demand response can play an important role in these markets to:
 - Set efficient market prices under peak conditions
 - Improve economic efficiency by making better consumption decisions
 - Increase reliability by rationing scarce supply
 - Mitigate market power by limiting price increases
- RTOs should understand their role is to ensure that market rules facilitate participation by the demand side in their:
 - Energy markets
 - Ancillary service markets; and
 - Capacity or resource adequacy markets
- The true value of the demand resources should be reflected in the pricing in each of these markets