



Independent Market Monitoring of the Midwest ISO Electricity Markets

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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, FERC has relied on 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 – we generally receive data every 15 minutes from the RTOs.
 - ✓ Investigations of market operations or conduct identified through the daily screening or complaint processes.
 - ✓ Periodic analysis and reporting;



The Focus of Market Monitoring

- Consistent with the Commission's SMD requirements, the Market Monitor identifies:
 - ✓ Flaws in market rules that create inefficiencies or gaming opportunities;
 - ✓ Efficiency improvements;
 - ✓ Market power abuses;
- Market efficiency and market power generally receive equal monitoring attention – contrary to the assumption of most that market power is the primary focus.



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 behave 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 difficult to differentiate inefficient or strategic conduct from market power – however, this is critical since 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;
 - ✓ Market power is not always bad -- Market power provides incentives for firms to innovate and is the basis for the patent laws;
- In general, it is far more costly to eliminate all market power than to allow the some market power to exist.
 - ✓ For this reason, perfect competition is not the appropriate standard – economist 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.



Nature of Market Power in Electric Markets

- Market power in electric markets is generally caused by one of two factors:
 - ✓ Transmission constraints that create locational market power.
 - ✓ Peak demand conditions.
- Locational Market Power
 - ✓ Transmission constraints can create isolated geographic markets subject to substantial market power -- must-run units are an extreme example.
 - ✓ Such constraints may occur naturally or by manipulation of transmission facilities or generator dispatch patterns.
 - ✓ *Every operating ISO has some form of real-time mitigation to address this form of market power*



Nature of Market Power in Electric Markets

- Peak Demand
 - ✓ Market power can exist under peak demand conditions in a market area with many apparent competitors.
 - ✓ A large supplier can become a monopoly over a portion of the demand – when competitors resources are operating at full output with no ability to respond to withholding by the supplier.
 - ✓ Market power is enhanced by the fact that current electric markets lack meaningful demand participation.
- These two conditions are generally transitory -- thus, mitigation to limit abuses of market power during a small number of hours to allow unfettered market-based pricing in all other hours is appropriate.



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 bid so as not to run or raise the clearing price.
- Focusing on withholding from the spot market is the appropriate focus for monitoring since the spot market will discipline the forward markets.
- Other forms of strategic conduct include:
 - ✓ Creating congestion through a) outages of transmission; b) understating transmission ratings/capacity; or c) uneconomic dispatch of generation.
 - ✓ Conduct by utilities or transmission owners to depress prices (e.g., unjustified out-of-merit dispatch).



Independent Market Monitoring

- Market efficiency and market power generally receive equal monitoring attention – contrary to the assumption of most that market power is the primary focus.
- Independence of the Market Monitor from the RTO is important due in part to its role in monitoring the RTO's operations.
- The Midwest ISO maintains this independence by retaining an Independent Market Monitor (“IMM”) to perform the monitoring.
 - ✓ Potomac Economics serves as the Midwest ISO's IMM.
 - ✓ We report to FERC and the MISO Board of Directors.
- We have been monitoring the current markets in the Midwest while preparing to monitor and mitigate the Day 2 markets.



Market Monitoring Activities

- 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 screening and investigations rely primarily on data from the RTO.
- The market monitor also has the authority to obtain confidential data from participants.



Real-Time Market Monitoring

- Effective real-time market monitoring requires that data be received and analyzed continuously (we receive data every 15 minutes).
- This form of monitoring will be much more active under the centralized Day 2 markets – software is being developed now.
- 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 bid so as not to run or raise the clearing price.
- The real-time monitoring also seeks to identify market design flaws that can create inefficient or perverse incentives.



Analysis of Market Performance

- This periodic analysis would include an annual report filed with the FERC that would contain:
 - ✓ An assessment of the overall performance of the RTO markets;
 - ✓ Recommendations for changes in the market rules or other provisions to improve the efficiency of the market; and
 - ✓ An evaluation of the conduct of market participants and recommendations regarding modifications to the mitigation measures.
- The monitoring process would also include the receipt of complaints from market participants, government agencies, and the RTOs.



Mitigating Market Power

- Market power is the ability to profitably raise the price of a product;
- 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;
 - ✓ Remove barriers to investment in new generation;
 - ✓ Facilitating demand-side participation in the market; and
 - ✓ Divestiture – reducing concentration of supply ownership.
- Even with the structural mitigation, market power concerns may still justify “behavioral” mitigation.
- Behavior mitigation includes measures that restricts a supplier from exercising market power.



Summary of Current Monitoring Activities

- Monitoring current wholesale markets and transmission patterns:
 - ✓ Tracked trends in transmission reservation requests;
 - ✓ Evaluated TLR patterns in the MISO region;
 - ✓ Investigated transmission hoarding through abuses in the request and confirmation process; and
 - ✓ Evaluated events surrounding August blackout, including claims of manipulation.
- Produced the 2002 and 2003 State of the Market Reports.
- Developed a Midwest ISO generator database, mapping key fields from a) transmission planning and modeling systems; b) operations systems; c) customer registration system; and d) public data sources.



Summary of Day 2 Market Preparations

- Developed software for Day 2 monitoring and mitigation.
 - ✓ Mitigation software will run as part of the real-time Day 2 market software on MISO servers -- currently in testing.
 - ✓ Data interfaces and protocols were developed to automatically query the MISO systems and data to the IMM.
 - ✓ Monitoring software was developed to:
 - Continuously receive market and operations data,
 - Conduct screens and perform other analyses, and
 - Produce automated market monitoring reports.
- Reviewed and provided comments on the proposed markets rules.



Summary of Day 2 Market Preparations

- Continued working with participants, states and MISO to finalize the proposed mitigation measures.
 - ✓ Produced a market power analysis supporting the definition of certain mitigation parameters.
- Worked with MISO and PJM in developing provisions to address the configuration and seams issues raised in the 2002 Report.
- Hired on-site staff to augment IMM team, consisting professionals with expertise in economics, electrical engineering, math and statistics, and software development/programming.
 - ✓ Staffing levels are sufficient for Day 2 monitoring activities.



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David B. Patton is the President of Potomac Economics, which specializes in economic consulting to clients in the electricity and natural gas industries. Potomac Economics has been engaged by the Midwest ISO to be its Independent Market Monitor, responsible for identifying and remedy flaws in the market design or attempts to exercise market power. He also serves as a Market Advisor for the New York ISO, ISO New England, and ERCOT.

In addition to monitoring electricity markets, Dr. Patton provides strategic advice, analysis and expert testimony on deregulation, transmission pricing, asset valuation, market design, and competitive issues. He has provided expert testimony or analysis in a number of horizontal and vertical utility mergers, antitrust cases, wholesale market design matters, and rate proceedings before the FERC, state regulatory agencies, the Department of Justice, and the Federal Trade Commission.

Prior to consulting, Dr. Patton served in the Office of Economic Policy at the FERC where he advised the Commission on policy issues ranging from transmission pricing and open access to mergers and market power. He has published and spoken on a broad array of topics related to emerging competitive electric markets, including transmission congestion and pricing, risk management and market power.

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