



MARKET MONITORING ISSUES

Texas PUC
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Market Monitor



PJM's Operational Markets and Services

- Energy Markets
 - Day Ahead
 - Real Time
- Capacity Credits Markets
 - Daily
 - Long-Term
- Financial Transmission Rights Market
 - Auction Options
- Ancillary Services
 - Regulation Market
 - Spinning Reserve Market
 - Blackstart Service
 - Reactive Services

- Each market requires distinct monitoring
 - Indicators
 - Behaviors
 - Different metrics
 - Common metrics (e.g. market structure)
- Nodal energy markets
 - Increased complexity (nodal behavior)
 - Reduced complexity (no schedules; zonal issues)
 - Different potential market power mechanisms
- Day ahead markets
 - Pure financial transactions included
 - FTRs included
 - Interactions



Monitoring of PJM's Markets and Services

- Capacity markets
 - Different periods
 - Different market structure
 - Different rules
 - Different types of behavior
- Energy-only market
 - Different expected market behavior
 - Same metrics
- Regulation/spinning markets
 - Geographic submarkets
 - Different rules
 - Relationship to energy markets

- Monitor **compliance with rules**, standards, procedures and practices of PJM.
- Monitor **actual or potential design flaws** in rules, standards, procedures and practices of PJM.
- Monitor **structural problems** in the PJM market that may inhibit a robust and competitive market.
- Monitor the potential of Market Participants to **exercise undue market power**.

Develop/modify market rules to:

- **Facilitate competition**
- **Limit returns to market power**
- **Provide incentives to competitive behavior**
- **Make exercise of market power more difficult**

Stop exercises of market power before significant impact

- **Discussion of issues** with relevant Market Participants; informal resolution of issues.
- **Issue demand letters** requesting a change in behavior by relevant Market Participants.
 - Provide demand letters to relevant Authorized Government Agencies.
- **Recommend modifications to rules**, standards, procedures and practices of PJM.
 - **Make recommendations** to PJM Committees or to PJM Board.
 - **Make regulatory filings** to address market issues and seek remedial measures.
- **Evaluate additional enforcement mechanisms.**

- MMU has no authority to modify prices ex post
- MMU has no authority to make ad hoc adjustments in day-to-day market activities

FERC Policy Statement on Market Monitoring – May 27, 2005

- Modifies enforcement authority of MMUs
- MMUs enforce only clearly stated tariff rules
- All other market-power related issues are referred to FERC Enforcement Staff
 - FERC investigations are confidential
 - FERC investigations not shared with MMUs
- Will require modifications to Market Monitoring Plan
 - Disputes with members over behavior
 - Demand letter

- Relevant documents:
 - FERC’s Order Approving Market Monitoring Plan as Modified (March 10, 1999)
 - PJM Board of Managers Review of Market Monitoring Organization (November 13, 2003)
 - FERC’s Guidance Order on Expedited Tariff Revisions for Regional Transmission Organizations and Independent System Operators (April 7, 2005)
 - FERC’s Policy Statement on Market Monitoring Units (May 27, 2005)

- **Independent Internal Market Monitoring**
 - Independent System Operator
 - ISO/RTO has no financial stake in market outcomes
 - ISO/RTO has independent Board
 - ISO and MMU are independent from all market participants
 - Market Monitoring Plan is not subject to modification by PJM members.
 - Amendment to PJM's Open Access Transmission Tariff subject to FERC approval
 - MMU is independent from ISO

- **MMU Accountability**
 - To FERC (per FERC MMU Orders and MM Plan).
 - To PJM Board.

Clear definitions required in Market Monitoring Plans

- Clear definition of MMU reporting/accountability
 - Roles of FERC, the PJM Board and PJM management
- Clear definition of MMU budget approval process
 - Roles of FERC, the PJM Board and PJM management
- Clear definition of MMU responsibility to prepare reports
 - For FERC
 - For PJM Board
 - For PJM Members
 - For Authorized Government Agencies

- Independent Internal Market Monitoring
 - MMU also monitors PJM
 - Role of PJM in ensuring efficient market outcomes
 - Operating reserves issues
 - Operator decisions
 - Impact on prices
 - Actions when market is tight
 - DSM resources
 - Trigger for action

- Include diverse staff expertise
 - Economics/Engineering
 - Generation
 - Transmission
 - Power markets
 - Database/IT
- Build understanding of detailed market structure: macro/micro
- Build understanding of physical infrastructure
- Build understanding of operations
- Build in MMU data access/storage to RTO data designs
- Confidentiality protocols
- Complaint protocols

- Independent Internal Market Monitoring - Adequate resources are critical
 - Staff resources
 - IS resources
 - Hardware resources
 - Data resources (external/internal)
 - External resources

- Interaction with market participants is critical to understanding real markets
- Interaction with state Commissions is critical to understanding retail/wholesale interaction issues
- Interaction with RTO staff is critical to understanding real markets
- Coordination with FERC is essential to efficient monitoring and mitigation

- Market design
 - Market design critical for effective monitoring
 - Good market design does not obviate need for monitoring
- Market structure
 - Aggregate, supply-side market structure conditions not adequate to ensure competition
 - Transmission constraints limit competition in unpredictable ways
 - Full demand side participation a prerequisite - complex regulatory interactions to create required infrastructure
- Need to define market power as clearly as possible
 - Communicate definition to participants
 - Explain specific examples as they arise
- Need to define consequences of exercising market power
 - Explain specific examples as they arise

Subtle and complex ways to exercise market power

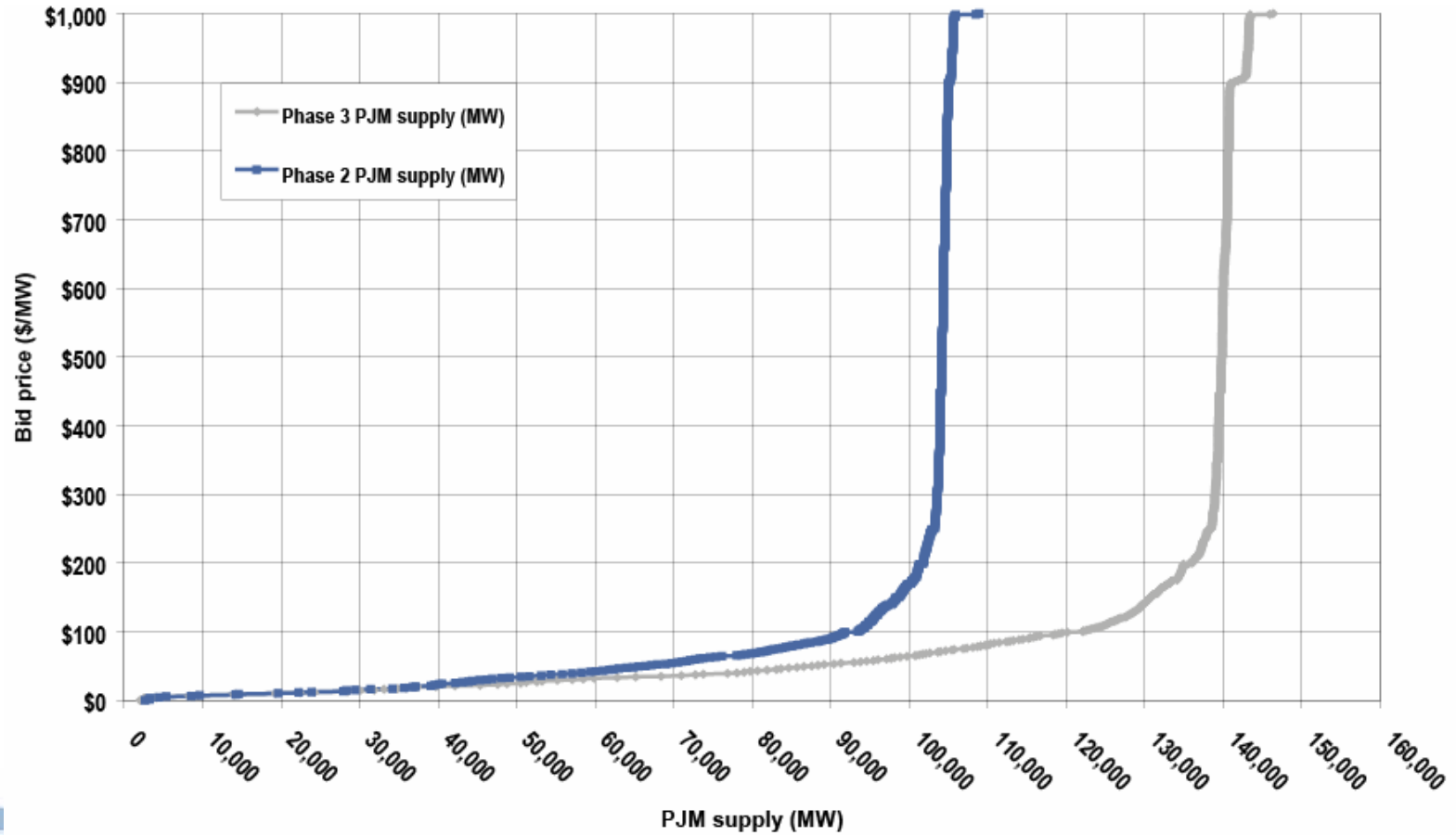
- Generally not aggregate market issue
- Local market power
- Operating reserves
- Bid parameters
- Retirements/mothballing
- Ramp violations
- Loop flows
- FTR/Inc/Dec
- Creation of congestion

Approach to scarcity

- Scarcity exists when demand is greater than or equal to supply
- In PJM – definition of demand includes the resources needed to reliably serve load
- Operating reserves are included in demand
- Scarcity exists when demand, including a defined level of operating reserves, is greater than or equal to supply
- Supply includes all available generation
- Competitive price under conditions of scarcity is any price less than the offer cap of \$1,000 per MWh

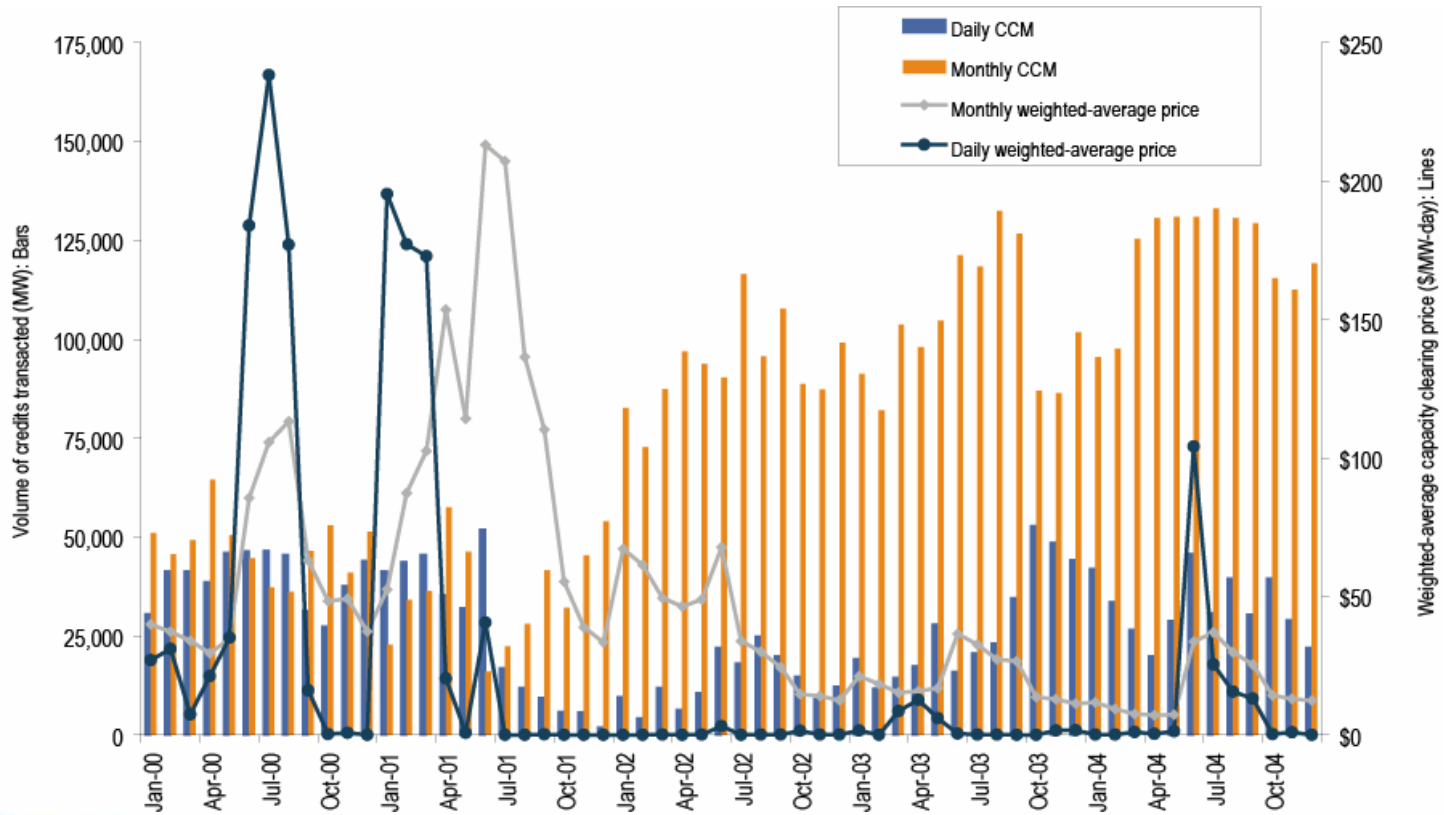


Average PJM aggregate supply curve comparison: Phases 2 and 3





PJM Daily and Monthly Capacity Credit Market (CCM) Performance: Calendar years 2000 to 2004





The PJM Capacity Market's net excess vs. capacity credit market-clearing prices: January 2000 to December 2004

