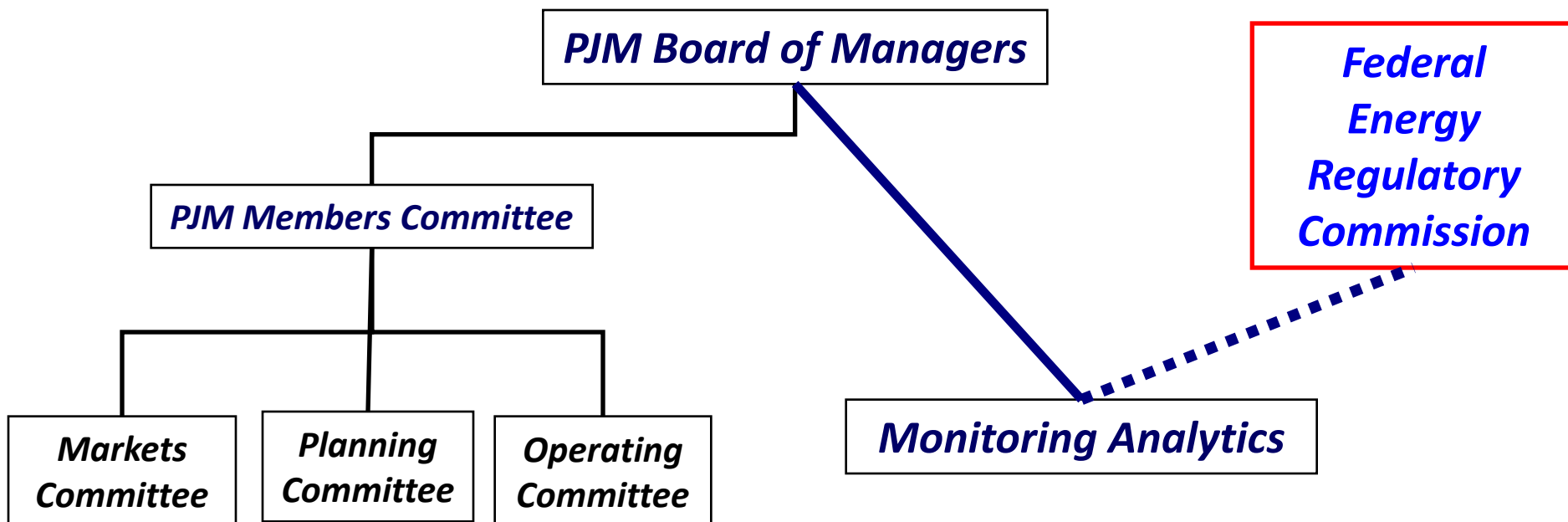


PJM Market Power Mitigation and Supervision

Presentation to the Kosovo Delegation

October 31, 2011

Independent Market Monitor



- The IMM reports directly to the PJM Board and to FERC
- Market Monitoring Plan is not subject to modification by PJM members
- Market Monitoring Plan: Attachment M of the PJM Tariff

Market Monitoring Objectives

Core Functions:

Monitoring, Reporting and Market Design

Monitoring

- Monitor **compliance** with rules, standards, procedures and practices of PJM and FERC Market Rules
- Monitor **actual or potential design flaws**
- Monitor **structural problems** that may inhibit a robust competitive market
- Monitor the potential or actual **exercise of market power** by participants

Reporting

- Annual and quarterly State of Market Report and issue reports
- Reporting: Reports probable violations to FERC for prosecution

Market Design

- Makes **market design** recommendations to the PJM Board, during the stakeholder process and regulatory proceedings, and in the State of the Market Report

What does the IMM look at?

- Market Structure
 - Market Share
 - Affiliate Relationships/ Contractual Relationships
- Market Behavior - Participant Conduct
 - Bidding Behavior
- Market Performance
 - State of the Market Report – Metrics
- Market Design
 - State of the Market Report – Effective or flawed
 - Recommendations for improvement

What does the IMM look at? Example

PJM Market Monitor Report, 2nd Quarter, 2011

	<u>Energy</u>	<u>Capacity</u>	<u>Reg.</u>	<u>Sync. Res.</u>	<u>DASR</u>	<u>FTR Auction</u>
Market Structure – Aggregate	Comp.	No	No	No	Comp	Comp
Market Structure – Local	No	No	No	No	Comp	Comp
Market Behavior	Comp	Comp	Comp	Comp	Mixed	Comp
Market Performance	Comp	Comp	No	Comp	Comp	Comp
Market Design	Eff.	Mixed	Flawed	Eff.	Mixed	Eff.

Notes

- ❑ Capacity: MMU has concerns regarding market design features associated with treatment of demand resources.
- ❑ Regulation: MMU believes that market design is flawed due to calculations of lost opportunity costs that results in prices above competitive market outcomes.
- ❑ Synchronized Reserve: Competitive outcomes result from market price mitigation – cost based offers required.
- ❑ Day Ahead Scheduling Reserve: Only about 5% of price offers appear to be above cost. These offers did not clear the market. MMU recommends amending market design to impose mitigation where the TPS test is failed.
- ❑ FTR Auction: Voluntary market – no evidence of any competitive behavior; market participants have a wide choice of hedging alternatives.

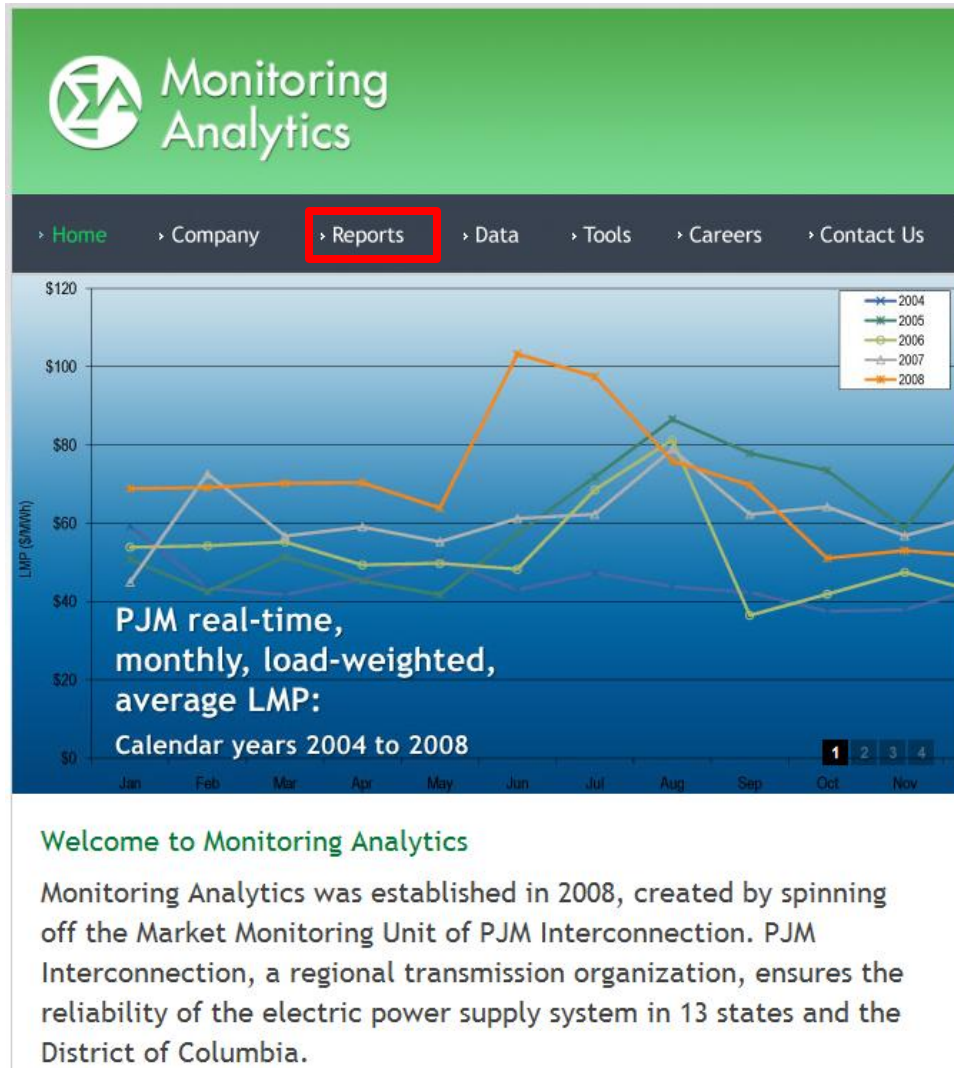
Market Monitor Market Power Metrics

- New entrant net generation net revenues per installed megawatt year
- Market Structure – competitive or non-competitive
 - Herfindahl-Hirschman Index (HHI)
 - Three Pivotal Supplier Test (TPS)
 - PJM applies the TPS to mitigate local energy market power, capacity market power at the aggregate level, the regulation market, and the synchronized reserve market.
- Energy market price cost markup

Corrective Actions of IMM

- **Discussion of issues** with relevant Market Participants; informal resolution.
- **Issue referral to FERC**
 - FERC Office of Enforcement will evaluate and decide on corrective actions.
- **Recommend modifications to rules, standards, procedures and practices of PJM.**
 - **Make recommendations** to PJM Committees or to PJM Board.
 - **Make regulatory filings**
- **Additional enforcement mechanisms**

State of the Market Report

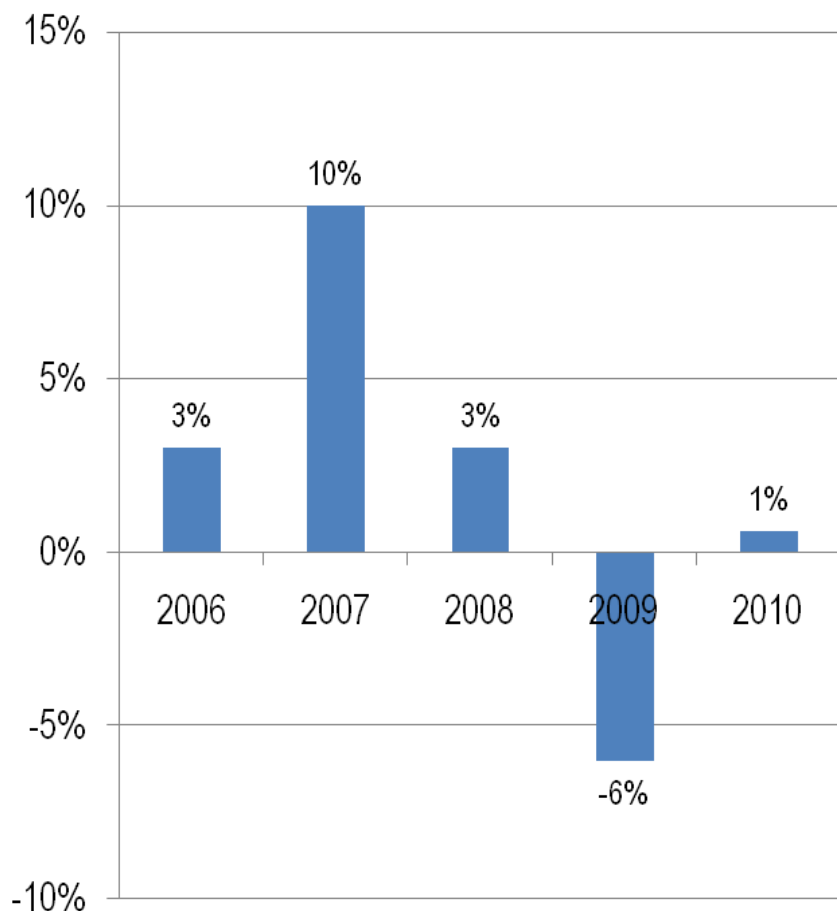


- *IMM's annual assessment of the competitiveness of the PJM markets*
- *Analyzes market structure, participant behavior, market performance*
- *Provides details, charts, and graphs of various market activities and prices*

<http://www.monitoringanalytics.com/home/index.shtml>

Markets – Market Competitiveness

PJM Energy Market Price Cost Markup



- Recent Trend
 - Prices in PJM are set, on average, by marginal units operating at or close to their marginal costs

Note: *The data on Market Competitiveness was obtained from the State of the Market Reports issued by PJM's independent market monitor.*

Appendix A: Market Power Screens

- Herfindahl-Hirschman Index (HHI). The HHI is a widely accepted measure of market concentration, calculated by squaring the market share of each firm competing in the market and summing the results. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases. Markets in which the HHI is less than 1,000 points are considered to be unconcentrated; markets in which the HHI is greater than or equal to 1,000 but less than 1,800 points are considered to be moderately concentrated; and markets in which the HHI is greater than or equal to 1,800 points are considered to be highly concentrated.
- The Three Pivotal Supplier [TPS] test measures the degree to which the supply from three generation suppliers is required in order to meet the demand to relieve a constraint. A generation owner is pivotal when output of its units are required to meet demand: $RSI = (\text{Total supply} - \text{supply}_{1,2,3}) / (\text{Total demand})$. If $RSI < 1.0$, owners are jointly pivotal. Demand consists of the incremental, effective MW required to relieve the constraint. Total supply consists of all effective MW of supply incrementally available to relieve the constraint at a distribution factor (DFAX) greater than or equal to the DFAX used by PJM in operations. Incremental, effective MW of supply that are available at a price less than, or equal to, 1.5 times the clearing price (P_c) that would result from the intersection of demand (constraint relief required) and the incremental supply available to resolve the constraint.