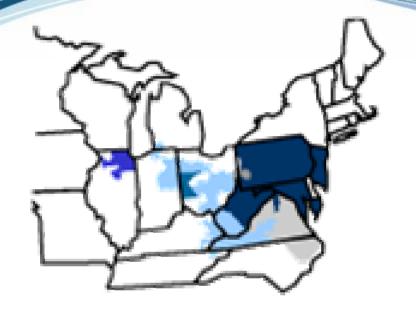


Monitoring of Competitive Electricity Markets

Southeast Europe
Electricity Market Monitoring Workshop
Athens, Greece
October 4, 2005

John Gdowik
PJM Interconnection





PJM - Full Service RTO

- Control Area Operator
- Transmission Provider
- Market Administrator
- Regional Transmission Planner
- NERC Reliability Coordinator

PJM RTO

Generating Units 1,082
Generation Capacity 163,806 MW
Peak Load 131,330 MW
Transmission Miles 56,070
Area (Square Miles) 164,260

Population Served 51 Million States (+ D.C.) 13 states + D.C.



Need for market monitoring

- Transition from regulated monopoly to self-regulating competition
- Multiple, complex markets
- Relationship between reliability and markets
- Wholesale/retail market interactions

Market design

- Market design critical for effective monitoring
- Good market design does not obviate need for monitoring
- Aggregate, supply-side market structure conditions not adequate to ensure competition
 - Transmission constraints limit competition in unpredictable ways
 - Full demand side participation a prerequisite
 - Market monitoring needed for foreseeable future



- Independent Internal Market Monitoring
 - PJM has no financial stake in market outcomes
 - PJM has independent Board
 - PJM and MMU are independent from all market participants
 - MMU is independent from PJM
- Market Monitoring Plan is <u>not</u> subject to modification by PJM members.
 - Modifications subject to FERC approval
 - Attachment M of Transmission Tariff
- MMU Accountability:
 - To FERC (per FERC MMU Order).
 - To PJM Board.
 - To PJM President.



- Monitor <u>compliance</u> with rules, standards, procedures and practices of PJM.
- Monitor actual or potential <u>design flaws</u> in rules, standards, procedures and practices of PJM.
- Monitor <u>structural</u> problems in the PJM market that may inhibit a robust and competitive market.
- Monitor the potential of Market Participants to exercise undue <u>market power</u>.
- Access to all data collected by PJM.
- Requests for additional data.



- Definition: Raise market price above competitive level
 - Physical withholding
 - Economic withholding
 - Offer price > Marginal Cost and no output when Price > Marginal Cost
 - Export when export price < internal price
 - Transmission related
 - Create congestion





- Competition is benchmark
 - Price > Marginal Cost is the basic test for market power
- Market price may exceed marginal cost due to scarcity or market power
- MMU goals:
 - Develop/modify market rules to facilitate competition
 - Limit returns to market power
 - Provide incentives to competitive behavior
 - Make exercise of market power more difficult



- Conditions for the exercise of market power in the energy markets:
 - High probability of running all units
 - Inelastic demand
 - Discontinuity in supply curve: Base load; mid-merit and peakers
 - Transmission constraints create small local market
- Conditions NOT required for the exercise of market power:
 - Collusion is not necessary
 - High levels of overall concentration are not necessary



- 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.





- Energy market offer cap = \$1,000/MWh
 - Energy market offer cap includes operating reserve payments
- Start up and no load costs can be modified only biannually
- Regulation market offer cap = \$100 plus opportunity cost
- Only one market-based offer curve per day
 - Hourly price offer changes not permitted
- Local market power mitigation (units built < July 9, 1996)
 - Must run units are cost capped for determining LMP
 - Receive greater of cost plus 10% or LMP
 - Alternative methods to determine payment cap



- Required submission of cost data by unit
- If maximum economic output specified in day ahead offer is less than in real time, forced outage ticket
- If unit classified as Max Emergency in day ahead and not in real time, forced outage ticket
- Generator interconnection process (RTEP)
- Capacity market effective offer cap = capacity deficiency rate
 - \$177.30/MW-day
- Allocation of capacity deficiency payments
- Interval market



- Transmission outage notification requirements and FTR auction
- Required approval of transmission line rating and voltage limit changes
- Required coordination of transmission outages
- Required coordination of generator outages
- Increment offers/decrement bids cannot create day ahead congestion > real time congestion
- Demand elasticity initiatives
 - Demand Side Response Working Group



Potential rules violation

- Complaint to MMU
- Timing of transmission outage notification and FTR auction
- MMU analysis found no evidence of rules violation
- Highlighted potential issue
- Solution: rule change to remove incentive
 - FTR auction typically in first two weeks of month preceding effective month
 - Transmission outage notification must be provided by first day of month preceding month of outage
 - If notification not adequate, PJM can require rescheduling of outage to minimize congestion costs
- FERC investigation and order to show cause
- FERC approved PJM modifications to transmission oversight



Thank You