



## RTO Electricity Markets and Resource Adequacy Conference

### RPM and Market Power Mitigation in PJM

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Joseph Bowring  
Market Monitor

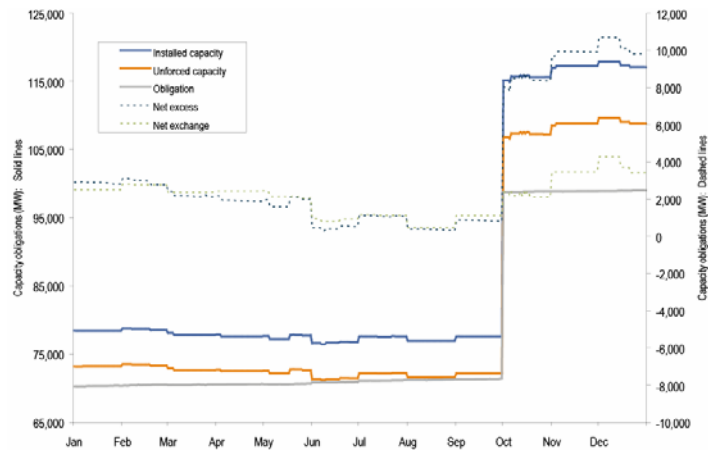


#### Reliability Pricing Model Fundamental Components

- Locational Constraints
- Four Year Forward Pricing
- Variable Resource Requirement (Demand Curve)

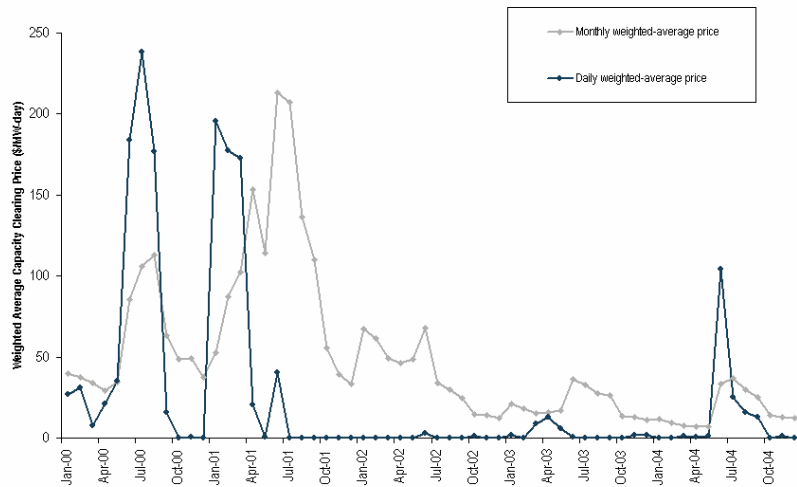
- Disconnect Between Market Signals and Reliability
  - Load Growth
  - Generation Retirement
  - Lack of New Capacity
  - Locational Variation
  - Net Revenue

Capacity obligations to the PJM Capacity Market:  
Calendar year 2004





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



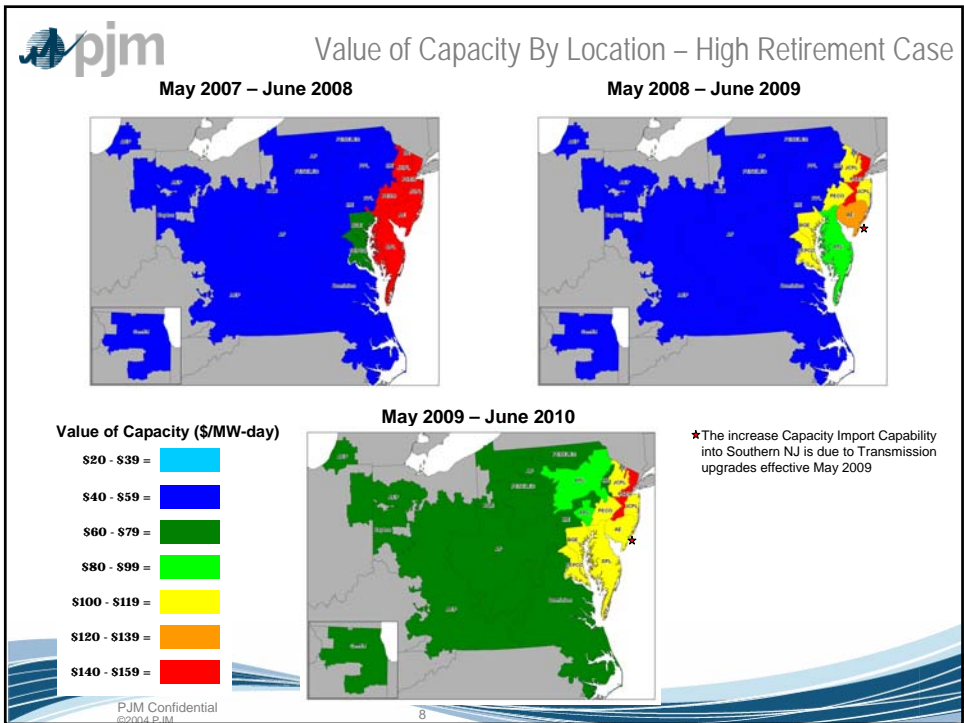
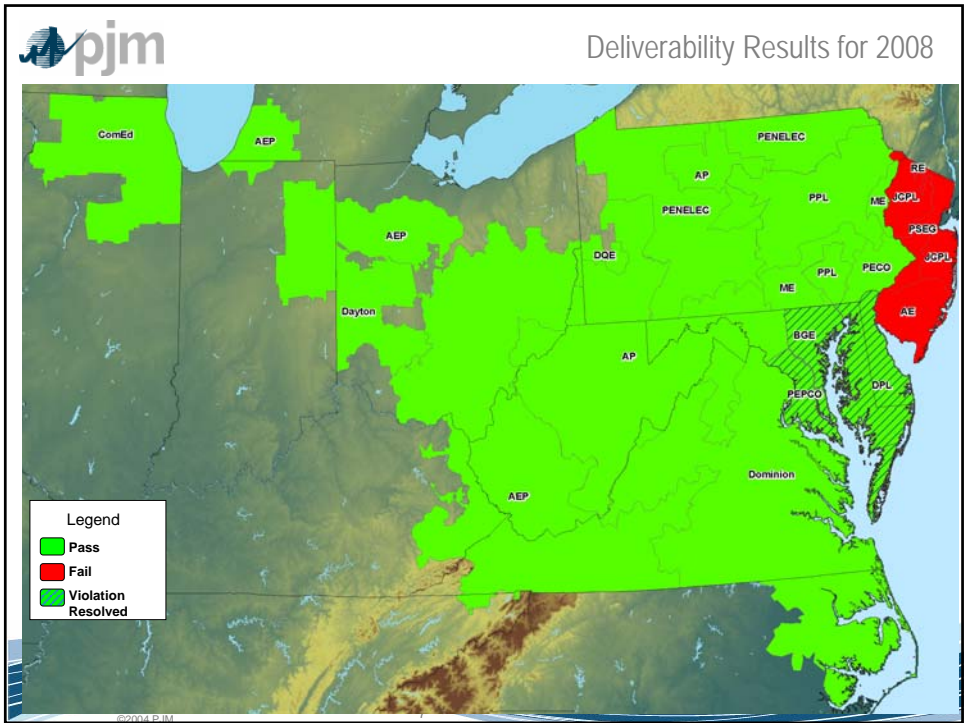
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### PJM Net Revenue

Unit Type	20 Year Levelized Fixed Cost	Realistic Dispatch Average Net Revenue 1999 to 2004
Combustion Turbine (CT)	\$72,207	\$36,195
Combined Cycle (CC)	\$93,549	\$52,243
Pulverized Coal (CP)	\$208,247	\$137,015



- Forward looking
  - Competition from new entry
  - Investment incentives
- Locational capacity prices
  - Locational price signals
  - Investment incentives
  - Retirement incentives

- Performance incentives
  - RPM: EFORd based
  - Alternative: Actual performance on high load days
- Net revenue offset
  - RPM: Historical data
  - Alternative: Actual net revenues
  - Incentive effects
  - Energy market power effects



- Reliability issues
- Inadequate investment signals
- Retirement issues
  - Non-market bilateral contracts
- Risks to overall market design



- Capacity markets susceptible to market power
- Locational capacity markets more susceptible to market power
  - Prices above competitive level
  - Wealth transfer
- Market power mitigation plan required to address these risks



- To prevent exercise of market power by existing resources
- Not applied to new resources
- Limited to relatively small local capacity markets



- No physical withholding
- No economic withholding
  - Structure
  - Behavior
  - Performance

- All existing generation resources must offer capacity in auctions except
  - Units reasonably expected to be physically unable to deliver
  - Units that have a physically firm commitment to an external sale of its capacity
  - Units constructed as energy only resources
- If failure to offer
  - Unit cannot be used to satisfy any capacity obligation for that delivery year.

- Price impact
  - If withholding results in an increase in market prices by more than 5 percent
  - MMU may postpone clearing auction
  - MMU would request review by FERC





- Identification of locational deliverability areas (LDAs) by PJM
- Preliminary Market Structure Screen
- Market Structure Screen applied in auction clearing process



- Preliminary Screen failed if:
  - HHI exceeds 1800
  - Any Capacity Market Seller has market share greater than 20 percent
  - There are three or fewer jointly pivotal suppliers
- Failure of the Preliminary Screen results in the provision of additional data
- If Preliminary Screen passed – no additional data required

- Market Structure Screen failed if, for constrained area (LDA)
  - HHI exceeds 2500
  - Any Capacity Market Seller has market share > 20%
  - There are three or fewer pivotal suppliers

- Mitigation may be applied if screen failed
  - Only in specific constrained area (LDA)
  - If a unit attempts to exercise market power
  - If that attempt would increase market price
  - Mitigation means unit offer limited to avoidable cost plus 10 percent (incremental cost of capacity)

- Mitigation does not limit scarcity prices
  - New entry offers not mitigated
    - All resources receive new entry price when new entry required
  - If total capacity offered is less than required, price set by demand curve
- Mitigated units receive higher of
  - LDA market clearing price
  - Overall market clearing price

QUESTIONS?