

# Real Time Scarcity Pricing

719 TF  
February 2-3, 2009

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# Scarcity Pricing

- **Scarcity related revenues can be collected in the energy market or in the capacity market or some combination**
- **Scarcity pricing is not required for revenue adequacy**
- **Scarcity pricing is relevant only for marginal signal to uncommitted resources**
- **Scarcity pricing requires a complete and transparent revenue offset mechanism with RPM to ensure no double collection of scarcity revenues**



# Issues to consider in any approach to PJM's scarcity mechanism

- **Energy market design must**
  - **Permit scarcity pricing when such pricing is consistent with market conditions**
  - **Use transparent triggers and prices for scarcity events**
  - **Prevent the exercise of market power**
  - **Provide strong incentives for competitive behavior and strong disincentives to exercise market power.**
  - **Where implemented in conjunction with capacity markets, must appropriately reflect scarcity rents in the energy market as an offset to capacity market offers**



# Issues to consider in any approach to PJM's scarcity mechanism

- **Administrative scarcity pricing is a key link between energy and capacity markets.**
  - **With a capacity market design that appropriately reflects scarcity rents in the energy market as an offset to capacity market offers, scarcity pricing can be a mechanism to appropriately increase reliance on the energy market as a source of revenues and incentives in a competitive market without reliance on the exercise of market power.**



# Issues with PJM's current scarcity mechanism

- **Reliance on the use of emergency administrative steps to indicate scarcity means that the system is in a condition of scarcity prior to it being declared under the current rules.**



# Issues with PJM's current scarcity mechanism

- **The current administrative scarcity pricing rules result in a non-locational signal within the scarcity pricing regions**
  - **Regional price set equal to the highest price unit running within the scarcity pricing region**
    - **Signal is inconsistent with economic dispatch and inconsistent with locational pricing**
    - **Scarcity price signal will not necessarily reflect the severity of the scarcity event**



# Proposed Scarcity Pricing Approach

- **The MMU recommends that the current scarcity rule, as provided in the PJM Tariff, be reviewed and enhanced to ensure competitive prices and more transparency of system shortages:**
  - **There should be several stages to the administrative definition of scarcity**
    - **Each stage should have an associated administrative price, rather than the single step now in the Tariff.**
  - **Pricing signals should be nodal**
    - **Should provide signals consistent with economic dispatch and locational pricing during the various scarcity stages**



# Proposed Scarcity Pricing Approach: Consistent with Dispatch

- **Scarcity signals could be implemented via reserve requirements modeled as constraints for scarcity regions in the context of the security constrained dispatch**
  - **Administrative scarcity penalty factors**
  - **The level of the penalty factor and the reserve target would be determined by the severity level of the scarcity event.**
  - **Would provide a means to signal scarcity that is consistent with economic dispatch, consistent with locational pricing and consistent with competitive market outcomes.**





# Proposed Scarcity Pricing Approach: Stages of Scarcity

- **Administrative scarcity pricing should include stages, based on system conditions, with progressive impacts on prices.**
  - **Use of emergency measures should cause an escalation of the scarcity condition and should be reflected in locational prices, as part of the system solution process**
  - **Each emergency measure taken in a given scarcity pricing region would:**
    - tighten the reserve requirement constraint for that region
    - increase the penalty factor associated with the reserve requirement constraint



# Proposed Scarcity Pricing Approach: Maintain Market Power Mitigation

- **Properly set, the penalty factors would increase prices on the system to provide a rational locational pricing signal properly reflecting the severity of the shortage in the scarcity pricing region.**
- **Should maintain offer capping rules during scarcity**
  - **Eliminates the “need” and incentive for participants to make non-competitive energy offers in anticipation of scarcity events.**
  - **Operationally cleaner solution**



# Proposed Scarcity Pricing Approach: Other Requirements

- **Any approach would require accurate operating reserve supply information on a five minute basis**
- **Would require regional, dynamically determined operating reserve requirements**

