Energy and Reserve Price Formation Goals

- Prices should reflect nodal competitive supply and demand conditions
- Prices should provide incentives consistent with economic fundamentals
- Price formation should be transparent
- Price formation should be as simple as possible
- Price formation should be feasible to implement
- Reserve prices should reflect actual demand for reserves, including demand defined by operator actions
Energy and Reserve Price Formation Goals

• Price formation should be designed to produce competitive results and explicitly address market power
• Prices should reflect short run marginal costs
• Prices should not reflect market power through inclusion of maintenance expenses and associated multipliers
• Prices should not reflect market power through inclusion of arbitrary adders to reserve offers
Comparison of Goals

IMM

• Reserve prices should reflect actual demand for reserves,

• including demand defined by operator actions

PJM

• Value reserves beyond MRR based on incremental contribution to near-term reliability

• Minimize out of market actions by operators where economically prudent
IMM ORDC Proposal

• Concept
  • Downward sloping ORDC extension beyond minimum requirement based on the expected cost of an operator commitment to maintain requirement in the future

• Time frame
  • Current market interval until the next peak period
  • ORDC penalty price and MRR plus regulation address the next ten minutes

• Determinants
  • Any operational or market event that affects reserves
  • Forecast errors, operator actions, and market behavior
IMM and PJM ORDC Comparison

**IMM**

- **Concept**
  
  Historic operator demand for excess reserves depends on daily load pattern

- **Time frame**
  
  Looking forward over period until next peak

- **Determinants**
  
  Uncertain events, participant behavior, and operator actions

**PJM**

- **Concept**
  
  Excess reserves have value based on forecast error and forced outage probability

- **Time frame**
  
  30 min. time frame to capture uncertainty for 10 min. reserves

- **Determinants**
  
  Forecast error and forced outages
Intertemporal ORDCs Winter 110+ GW Load

MW of Reserves Beyond the Minimum Reserve Requirement

ORDC Price ($ per MWh)
Intertemporal ORDCs Summer 120 GW Load

MW of Reserves Beyond the Minimum Reserve Requirement

ORDC Price ($ per MWh)

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Intertemporal ORDCs Fall 95 GW Load