Energy and Reserve Pricing: Goals and Criteria

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- The current LMP pricing method has served the energy market successfully over the past twenty years covering important aspects of efficient pricing

- But there have always been circumstances where the prices could not reflect everything relevant to sending the right market signals

- PJM believes that it is prudent to take an essential first step to improve the foundation of energy pricing to ensure that the prices will more accurately reflect the incremental costs to serve load

- **Signaling**
  - Prices rise and fall to reflect scarcities and surpluses, costs and preferences, and other changes in market condition

- **Incentive**
  - An unobservable force that promotes efficient operations and investment decisions

- **Market equilibrium**
  - A mechanism that brings demand and supply voluntarily into balance

- **Efficient price signals**
  - Issue: LMP does not reflect all the offer costs and does not allow all resources to compete to set price
  - Issue: LMP may fall when demand increases, producing a pricing paradox that induces inefficient bidding behavior

- **Efficient incentives**
  - Issue: Prices aren't always sufficient to incent resources to follow dispatch
  - Issue: Resources have incentive to bid inflexibly

- **Under non-convex conditions, equilibrium prices may not exist**
  - Issue: Certain resources are paid not to serve load and other resources are not paid enough to serve load
  - Issue: Uplift payment can be reduced to improve transparency and efficiency

- **Efficient prices**
  - Prices support efficient commitment and dispatch solution
  - Prices reflect true cost of resources and scarcity value

- **Efficient incentives**
  - Resources want to follow dispatch instructions (compliance incentive)
  - Resources want to offer costs and parameters truthfully (self-motivated incentive compatibility rather than "command and control")

- **Transparency: Everyone knows what price everyone else receives**
  - Reduce reliance on uplift payment to the extent possible

- **Simplicity**
  - Fewest prices for each location/time (no nonlinear pricing)
  - Simple interpretation

- Market power mitigation
- Technical feasibility
- Implementation timing
- Implementation cost

Appendix

1) Efficiency – In the RT energy market
   a) Dispatch on offered prices will minimize actual production costs
   b) Resources want to produce to the cleared (dispatched) MW amount, not something else
   c) Prices are consistent with the underlying cost structure

2) Transparency – "much is known by many" about transactions prices (i.e. does everyone know the price(s) others receive?)

3) Simplicity
   a) As few prices as possible for each location/time
   b) Simple logic that buyers/sellers understand (ideally)

In general, no design will consistently meet all design principles