Pay As Bid vs. Uniform Price Auctions(ENCORE) and Performance Incentives Compatibility

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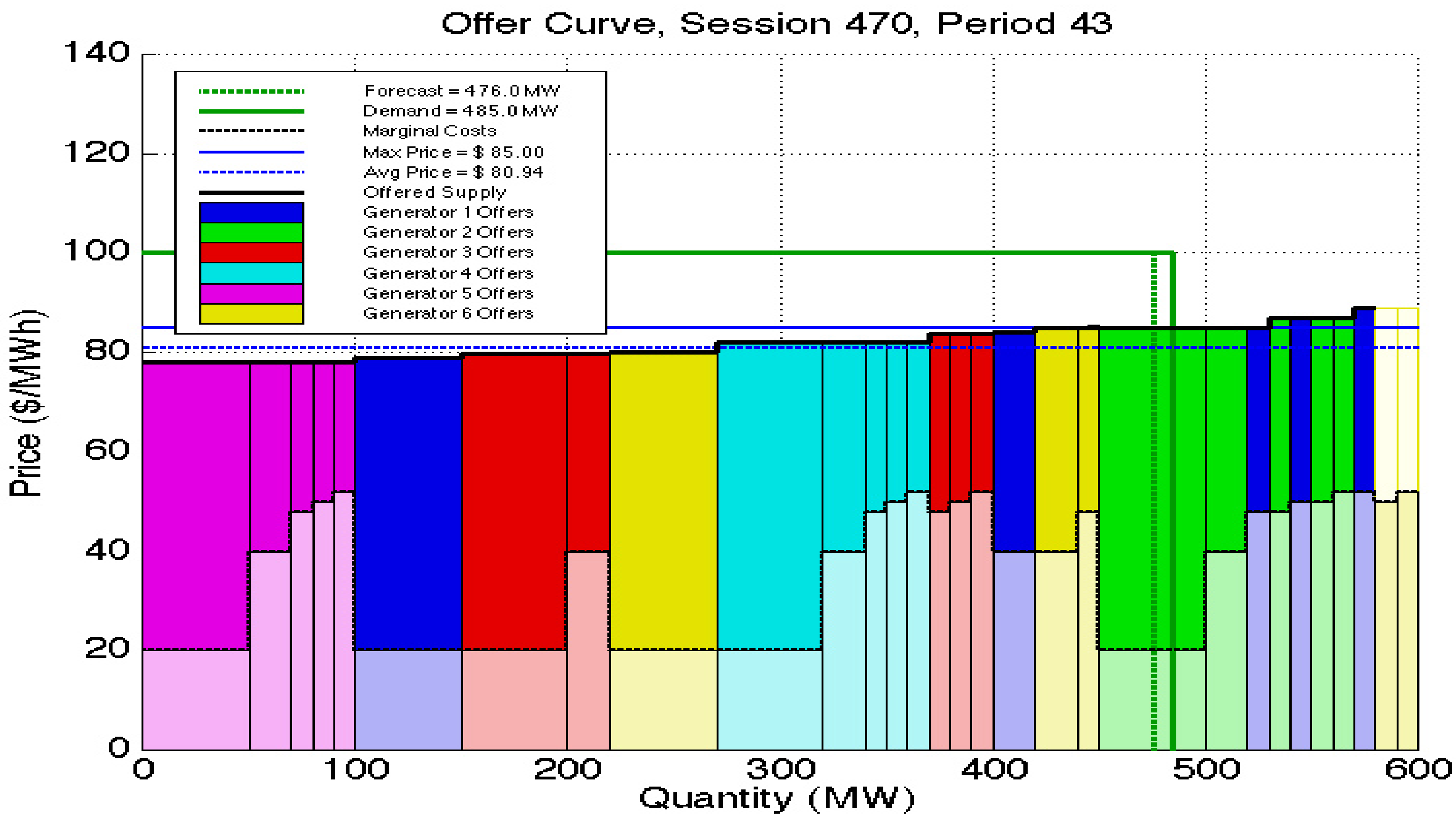
Revenue Equivalence

- In equilibrium, the expected cost to the buyer is the same whether the auction settlement is “pay as bid” or “uniform market clearing price”
- In a PAB auction rational bidders will anticipate the market clearing price and adjust their offer price accordingly
- Bidders prediction errors may result in merit order distortion and inefficient dispatch under PAB

Experimental verification

Eventually, bidders learn to forecast the clearing price and raise their offers to that level. The resulting offer curve is flat and conveys no merit order information so offers are selected out of merit order resulting in efficiency loss with no price savings to consumers



PAB Pros and Cons

- In equilibrium, PAB auctions result in flat offer curves and loss of merit order information (due to bidders forecast error) that could cause inefficient dispatch
- Argument valid if commodity is homogeneous and bidding is repeated often enough to achieve equilibrium
- PAB auctions do not provide transparent market clearing price signal
- PAB makes “hockey stick” bidding les profitable” (This does not mean that PAB less vulnerable to market power in general).
- Limited theoretical results under restrictive assumption show that in a supply function equilibrium setting average procurement cost under PAB is no higher than under MCP

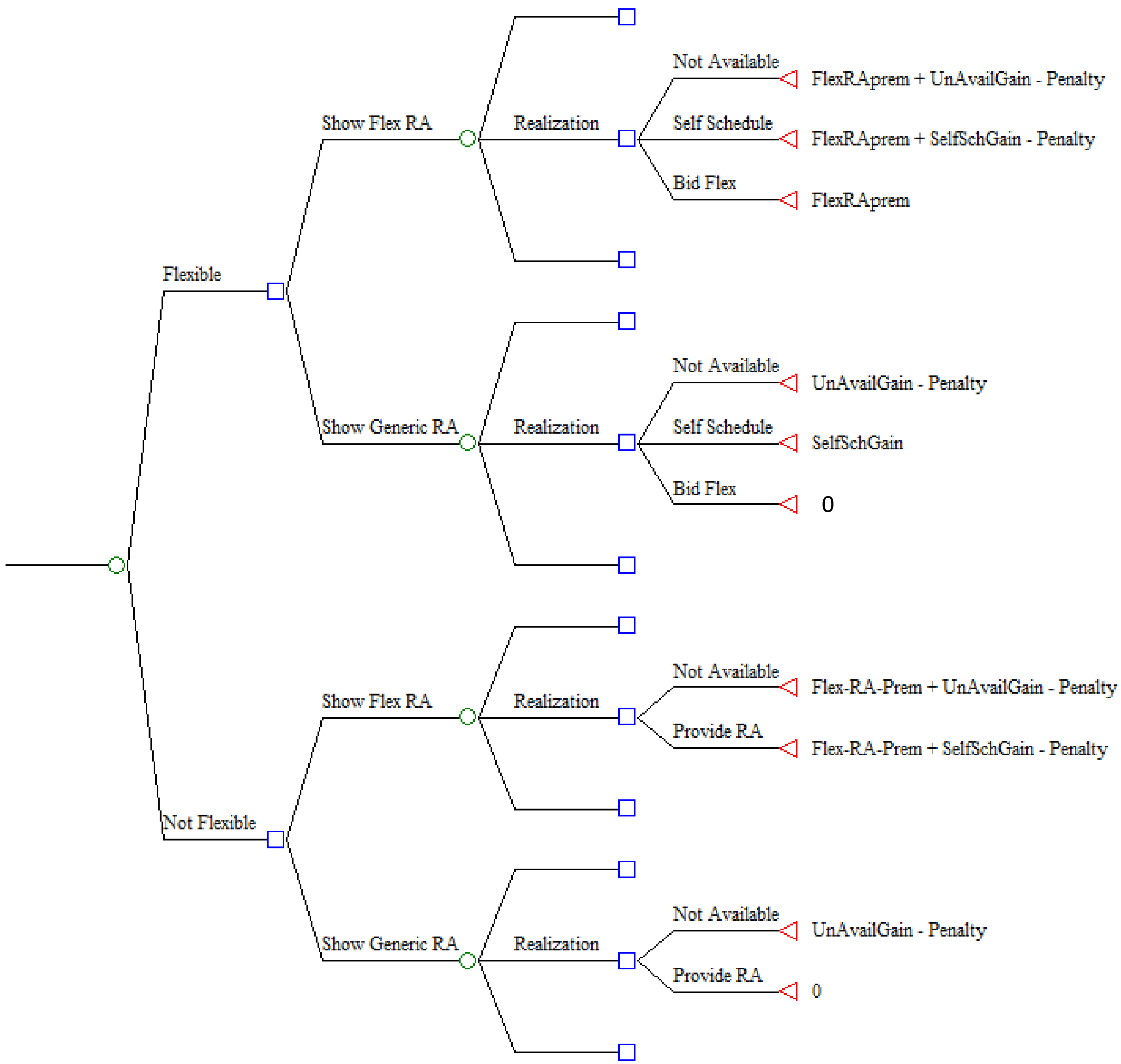
Implications for CPMR

- Using long term (monthly) standing offers minimize the impact of bidders adjusting their offers in anticipation of highest clearing offer (support for PAB)
- Backup capacity offers are heterogeneous (limited interchangeability) since they are selected based on specific characteristics such as location and resource capability => Market for each resource category is too thin to provide a reliable competitive clearing price in a uniform clearing price auction (support for PAB)
- **PAB auction is appropriate but for CPMR but it will not provide a price signal that can guide FRACMOO noncompliance penalties**

Availability Incentives and Performance Penalties

- Availability incentives are needed if energy market remuneration is insufficient to induce economic bidding and showing of true capability by resources
- This can happen when a resource can gain or avoid losses by not being on (e.g. ULRs) or by self-dispatch instead of submitting economic bids.
- The objective of penalties is to induce resources to show their true capability (show Flexible RA if Flexible and Generic RA if not) and then being available to deliver what was shown.

Performance Incentives Compatibility: Resource decision tree



Performance Incentives Compatibility: One price penalty is sufficient