



Capacity Market Alternative

CCPPSTF July 17 2017

Capacity Market Reform

- LS Power supports competitive markets
  - Accommodating subsidized resources will negatively impact competitive resources and forward investment signals
- LS Power understands the desire to accommodate state action in the market
- Alternatives suggested to date introduce bidding behavior concerns that may suppress pricing
  - PJM approach may result in price offers below competitive pricing
  - NRG approach may result in quantity offers above available MW
- Alternatives suggested to date do not allow resources to clear the market based on price signals
  - PJM approach does not allow “in between” resources to receive a capacity obligation
  - NRG approach reduces bid quantities that would otherwise clear the market

LS Power Capacity Market Alternative

- Competitive price offers determine the total system clearing cost to be paid by load
- Allow subsidized resources to obtain a capacity commitment
  - Hold the total system clearing cost for load steady (i.e. load does not pay more for the subsidized resources)
  - Generators receive a reduced price based on a weighted average of the subsidized entry (e.g. a 1,000 MW subsidized resource in 100,000 MW market would reduce clearing prices by 1%)
- Generators make an election prior to the auction on whether or not they are willing to accept a reduced clearing price resulting from the entry of subsidized resources
- Goals in the alternative approach
  - Limit price suppression
  - Avoid load from “paying twice” for capacity
  - Provide resources flexibility in bidding to avoid bidding behavior changes/impacts
  - Avoid interaction of subsidized resources relative to the VRR curve, which is highly sensitive to small changes

Resource Offer Election

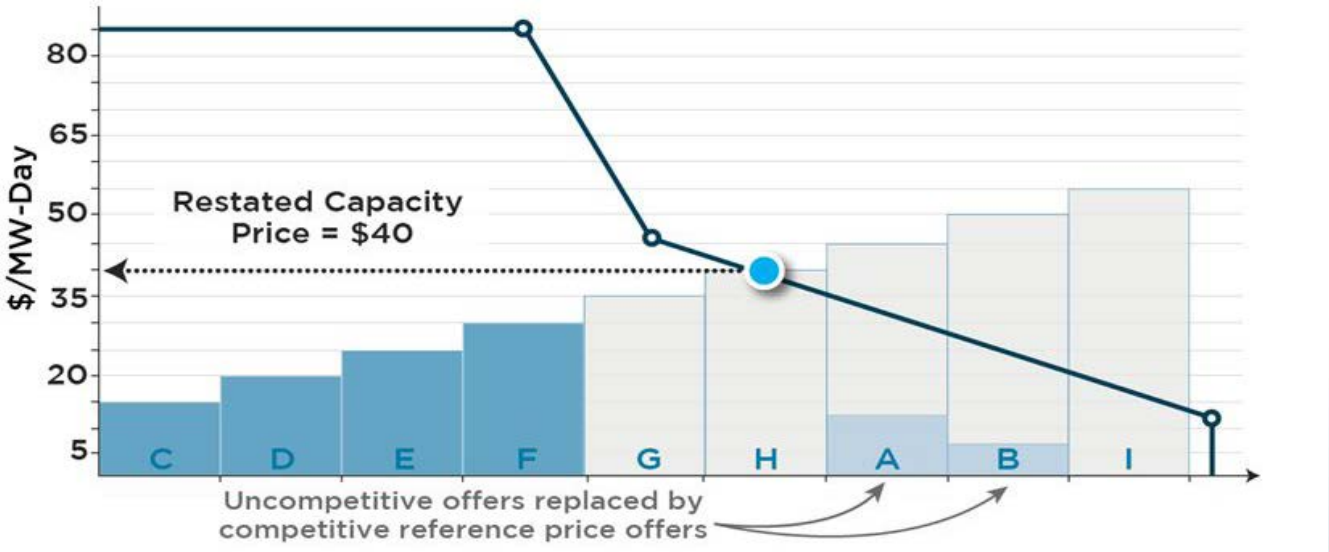
- Competitive Offer Price
  - Offer price a resource is willing to accept a capacity obligation for (similar to how a resource would offer today)
  - Resources receiving out-of-market revenues (e.g. uncompetitive offers) replaced by competitive reference price offers (similar to PJM's proposal)
- Clearing Price Impact Election
  - Resources have the ability to make an election prior to the auction to continue to clear if the clearing price is impacted by a subsidized resource
  - PJM identifies potential clearing price impact prior to the auction
    - PJM determines quantity of resources receiving out-of-market revenues (i.e. subsidized resources)
    - PJM calculates maximum clearing price impact (percentage basis) that could occur through introduction of subsidized resources in each LDA
  - Resources make the election at the same time as the competitive offer price is submitted

First Step – Competitive Auction

- First step in auction is the same approach as PJM's second step
  - Uncompetitive offers replaced by competitive reference price offers
  - Determines "competitive clearing price" and pool of competitive resources that are eligible to receive a capacity obligation
- PJM example (below)
  - Competitive clearing price would be $40/MW-Day and resources C through H would be eligible to receive a capacity obligation

Second Step – Part 1 (Total Cost)

- New step in auction would introduce subsidized resources while maintaining the total system competitive clearing cost for load
- PJM determines total "competitive" system clearing cost from the first step of the auction
  - Assume price takers of 150,000 MW plus resources C through H are each 1,000 MW
  - Competitive system clearing cost = (150,000 MW + 6,000 MW) x $40/MW-Day x 365 days = $2,277.6 million



Second Step – Part 2 (Subsidized Entry)

- PJM re-introduces subsidized resources A & B to determine a "subsidized clearing price"
  - Subsidized resources re-inserted to the extent their unmitigated offer price is below the competitive clearing price
  - Assume resources A & B are each 1,000 MW with an unmitigated offer price below $40/MW-Day
  - Subsidized Clearing Price = $2,277.6 million / (156,000 MW + 2,000 MW) / 365 days = $39.49/MW-Day

Second Step – Part 3 (Competitive Iteration)

- PJM evaluates resources with offers between the subsidized clearing price (e.g. $39.49/MW-Day) and the competitive clearing price (e.g. $40/MW-Day) to determine the final clearing results and final clearing price
  - Resources that elected the "Clearing Price Impact" would continue to clear
  - Resources that did not elect the "Clearing Price Impact" would not clear and the clearing price would be adjusted upward to account for removing the resource from the supply stack
- Example
  - Resource H would be evaluated as it is the price setting resource at $40/MW-Day
  - If resource H had not elected the Clearing Price Impact, it would not clear and the final clearing price would be adjusted to $39.75/MW-Day
    - $2,277.6 million / (156,000 MW + 2,000 MW **– 1,000 MW**) / 365 days
  - If resource H elected the Clearing Price Impact, it would clear and the final clearing price would be $39.49/MW-Day

Advantages

- Allowing resources to make an election to continue to clear in spite of a subsidized resource impact protects the market against bidding behavior that would result in price suppression
  - Eliminates resources from bidding down a price in an attempt to avoid being the price setting resource, but not clear
- Limits price suppression from subsidized resources through the use of a weighted average clearing price as opposed to the VRR curve, which is nearly vertical
  - 1,000 MW movement on the VRR curve in RTO represents a $25+/MW-Day impact in pricing
  - Using a weighted average approach results in a 1,000 MW resource having a less than 1% impact on the pricing in RTO
- Results in a competitive market clearing price for load