Toward better, more efficient capacity market design

Richard P O’Neill
Chief Economic Advisor
FERC

Harvard Electricity Policy Group
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Views expressed are not necessarily those of the Commission
Today's Capacity Markets

- Forward reserves markets are needed primarily because there is not enough price-responsive demand in the energy markets.
- Energy market prices are suppressed creating the Shanker missing money problem.
- Capacity markets create a weak call option in the energy markets.
- They require more administrative intervention than other markets.
- They are highly contentious because there is too much money at stake.
Administrative Intervention in Capacity Markets

- Designed for summer peak
- Needed non-summer peaks and valleys
- What is the marginal unit?
- Cost of new entry (CONE)?
- What does 1 in 10 mean?
- What is a forced outage?
- Forecast of demand
- Market power mitigation rules
- Choice of zones
- RMR status
- Going forward costs
- What is comparability?
Capacity markets require longer-term forecasts

- Future demand
- Retirements
- Future transmission
- Profits in the energy markets

Forecasts are inherently wrong
- Puts most of the risk of being wrong on load
- Creates principal-agent problem
CONE debate

becomes a massive generic cost-of-service debate on

- ROE
- Depreciation
- Debt-equity ratio
- Capital costs
- Revenues for energy markets
- principles are comprised
- Jobs program for cost-of-service consultants
Current Demand Response Programs

- Current DR programs are a weak substitute for ‘iron in the ground’ or price-responsive demand bids
- get too much or too little
- too late
- in the wrong place.
- At the wrong time
- For example, a resource with a two hour call, lack of locational specificity and limited availability.
- Measurement problems
- DR programs need to evolve comparably
The capacity market could become a Rube Goldberg ATM for subsidizing technologies not a capacity market what's in a name?
ISO Market Design Principles

- Maximize benefits to society (market surplus)
  - Suppliers bid marginal costs
  - Demand bids marginal value
- Settlements are
  - non-confiscatory and
  - incent efficient behavior
- Equity focused on need
- Parsimony: as simple as possible but not simpler
- Bilateral markets are used to equilibrate risk
The major problem with ISO markets is the lack of price-responsive demand

- Price-responsive demand is demand that bids into the energy (real-time and day-ahead) markets
- Develop better energy market bidding program for demand
  - Marginal value
  - Fixed cost of the call
  - Lead time to call and minimum duration time
  - Ramp rates (up and down) and max and min consumption
- Bid into the energy, up and down regulation, and spinning reserves markets
Energy Market Enhancements

- Price-responsive demand participates in energy and AS markets (frequency and voltage regulation).
  - some demand has a very high value
- Energy markets have more efficient pricing
  - no arbitrary caps on bids or clearing
  - energy prices could occasionally reach high prices
- stronger mitigation
- good shortage pricing to incent participation
Energy Market Results

- New energy markets would cover considerably more of the missing money and ideally eliminate the problem.
- Put the money where performance can be better measured.
- Load factors would improve because price-responsive demand would reduce consumption on peak, so average costs - and the bill for the average customer - could decline.
Monitoring Mitigation and Manipulation becomes more important

- Get rid of market share, pivotal supplier, conduct and impact tests they take up optimization time and are second best

- Bid mitigation should be the focus
  marginal opportunity cost and marginal opportunity value.

- Done properly marginal cost mitigation fails safe

- Needs discussion
**Capacity Market Redesign**

- Price-responsive demand is exempt from the capacity market
  - PRD does not need a forward reserve commitment.
  - The energy market makes the system reliable.
- The capacity could require firm fuel and transport capacity to back up the generation capacity, for example, pipeline capacity, oil storage and coal pile.
- Give the ISO some assurance into the future on premature retirements and new construction when needed.
Transition

- Will take 5 to 10 years
- Develop a better bidding program for demand in the energy markets for better comparability.
- Shortage pricing should be increased to a level so that it is seldom used.
- The ISO would use price-responsive demand, storage and generation to make the energy markets reliable.
- Possible auction to pay a fraction of demand, eg, 20%, to bid into the energy market.
Capacity Market Change

- Capacity market prices would decrease because they are derivative of the energy market revenues.
- With less money at stake, there is less contentious debate.
Most of a generator’s ISO revenues would be obtained from producing energy and providing ancillary services in the energy markets.

During periods of high energy and reserve prices, generators will have a stronger incentive to be available.

Generators that are not available during these periods of high prices will lose out on the opportunity for profit.

There will be little need to debate whether the generator deserves to be penalized for not showing up.
End Results for Demand

- Price-responsive demand does not pay for capacity
- ISO revenues would be obtained by providing ancillary services in the energy markets.
- During periods of high energy and reserve prices demand will have a strong incentive to conserve.
- Measurement problems go away
Hedging for generators and load

- Bilateral contracts and state procurement hedge the prices for customers.
- More important since LMPs can be high
- Contracts should have good price-responsive incentives
Equity, Conservation and Environment

- Maximizing benefits to society allows for the greatest distribution of benefits
- Do not subsidize those who don't need it
  Elderly. Gates and Buffet do not need subsidies
  Don't subsidize heating swimming pools
- Poor focus the subsidies in the least distorting way, for example, negative income tax
- Price the externalities
- Incentives to conserve.