

Preliminary Evaluation of the New York ISO Capacity Market

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Today's Topics

- Evaluation of Selected Features of Current New York ISO Capacity Market Design
- Impact of Differences in Capacity Market Design across New York, ISO New England, and PJM on Portability
- Evaluation of the Desirability of Implementing a Forward Capacity Market in New York



Overview

Evaluation of selected features of current New York ISO capacity market design

- Methodology for Anchoring Demand Curves
- Adjustment for Net Energy Revenues
- Demand Curve Slope
- Methodology for Creating New Zones



Assessment of Methodology used to Anchor Demand Curves

The methodology used to define the cost of new entry (CONE) for the purpose of anchoring the demand curve can at best provide a rough approximation of the capacity price at which new supply would be offered.

- The assumptions used to develop the capacity price, while plausible, are not based on actual market assessments.
- The generalized CONE calculation applies a simplified model that cannot reflect the heterogeneous nature of different capacity resources.
- The type of unit that would provide capacity at the lowest net cost is not a given, even in Zones J and K; but depends on expected gas prices and the shape of the energy market supply curve given the existing stock of generation.



Assessment of Methodology used to Anchor Demand Curves

- Most new units that have come on line since 2005 east of Central East have been combined cycles. This outcome in part reflected the level of gas prices at the time commitments were made to construct this generation, and the current low gas prices may shift construction back to gas turbines.
- The key consideration with respect to the value of CONE used to anchor the demand curve is to recognize that it may be either higher or lower than the actual cost of new capacity. Hence, the capacity market design should permit competition to drive capacity prices to the efficient level, even when estimated CONE is not accurate.



Assessment of Adjustment for Net Energy Revenues

Projecting expected future net revenues is difficult and all approaches have limitations. In calibrating any method against actual prices it is important to focus on comparing actual and projected prices during the hours in which actual or projected prices would produce net revenues for the hypothetical unit used to set CONE.

- Comparisons should not be based on the logarithm of actual and projected prices, this can mask large errors in the hours that matter for net energy revenues.
- While data for all hours can be used to estimate the model, assessment of whether the model provides a reasonable projection of prices for use in predicting net energy revenues needs to be based on how well the model predicts prices in the high priced hours.
- The specification used for the simulation or statistical analysis needs to be tested to make sure it will produce sensible results if historical values are replaced with projected future values. Projecting outcomes that are outside the range of the data used to estimate a statistical model or calibrate a simulation model, can result in predictions that are much less accurate than suggested by conventional goodness of fit measures.



Assessment of Adjustment for Net Energy Revenues

- It is difficult to assess the accuracy of the methodologies that have been used to project net energy revenues in recent years, because although the projected net revenues have tended to greatly exceed estimated current net revenues, part of this difference is a result of changes in power demand and capital costs following the financial crisis, and the tariff requirement that these revenues be calculated for the target level of capacity.



Assessment of Demand Curve Slope

The slope of the demand curve should reflect the reliability value of incremental generating capacity.

- Such an approach provides elasticity to the demand curve reflecting the value of capacity while avoiding large inefficiencies when the cost of new entry used to anchor the demand curve is over or understated.
- Based on an analysis we carried out jointly with the New York ISO, the current New York ISO demand curves are generally consistent with this criterion, particularly for capacity in excess of the target.
- The demand curves for Zone K and NYCA appear to be slightly steeper than warranted by the reliability value of incremental generating capacity in excess of the target, while the demand curve for Zone J appears to be slightly too flat.
- All three demand curves are too flat for shortfalls in capacity relative to the target.



Review of Methodology for Creating New Capacity Zones

The New York ISO's proposed process for defining new capacity zones will operate to support efficiency and reliability if the New York ISO is forward looking in defining zones that could bind, and letting the capacity market auctions determine whether the zonal constraints do bind.

- The introduction of a new zone or zones is needed from the standpoint of both economic efficiency and reliability;
- The introduction of a new zone is needed to support efficient entry and exit in western New York; to avoid exit of capacity in the lower Hudson Valley that reduces reliability in the short-run; and to reduce the potential for inefficient substitution of high cost Zone J capacity for lower cost Hudson Valley capacity through the operation of the local reliability requirement.



Evaluation of Difference in Capacity Market Design across New York, ISO New England, and PJM

The New York ISO's monthly current year capacity market auction design allows capacity suppliers to shift capacity between New York and PJM and between New York and ISO New England despite the differing capability year definitions.

- This portability would be more difficult to sustain if the New York ISO were to shift to a forward capacity procurement auction design, which might entail establishing an annual capacity obligation.

Evaluation of Difference in Capacity Market Design across New York, ISO New England, and PJM

While differences in capacity year definitions do not impede shifting capacity between New York and PJM or New England, or vice versa, the difference between the forward capacity procurement in PJM and New England and current year procurement in New York can delay adjustments to unexpected conditions.

- Capacity exports from New York in response to unexpectedly low prices in New York will be delayed by the forward procurement designs in PJM and New England.
- Capacity imports into New York or reductions in exports in response to higher than expected capacity prices in New York will also be delayed by the forward procurement designs in PJM and New England.

Evaluation of Difference in Capacity Market Design across New York, ISO New England, and PJM

The New York ISO currently models capacity imports from PJM, Ontario, HQ, and New England as deliverable into NYCA.

- There do not appear to be deliverability issues with capacity imports from Ontario, PJM, or Hydro-Quebec.
- Whether capacity imports from New England would be delivered to New York when there is transmission congestion into Connecticut is not evaluated by the New York ISO, but should not be an issue given the current surplus of capacity in Connecticut.

Conversely, capacity exports from western New York might not be deliverable to New England if a cross state transmission violation would be created in New York and New York is reserve short east of Central East but not in the west.

Capacity exports to PJM are modeled by PJM as delivered into the RTO region so would be deliverable.

Evaluation of Difference in Capacity Market Design across New York, ISO New England, and PJM

ISO New England rules for capacity imports that apparently require the capacity supplier to bid transactions into RTC so that they could flow if scheduled have the potential to cause New York ISO transmission customers to bear the cost of in effect carrying extra-spinning reserves for ISO New England.

- Current New York ISO policies regarding the de-rating of transactions that fail checkout appear adequate to address this potential problem.



Evaluation of a Forward Capacity Market

A forward capacity procurement process would:

- Provide greater visibility to the expected cost of keeping existing generation in a time frame in which replacement generation or transmission upgrades could more readily come on line.
- Tend to somewhat stabilize capacity prices, by reducing the impact of short-run demand shocks, thereby shifting risk from suppliers to power consumers and correspondingly somewhat reducing the equilibrium level of capacity prices.
- Have a potential for the planning process used to determine capacity targets under a forward procurement process to systematically increase the amount of capacity procured relative to current process. This outcome could perhaps be avoided through an appropriately structured planning process but is a risk.



Evaluation of a Forward Capacity Market

- Lead to a longer time period between the point in time at which the capacity price is fixed and remaining business costs are incurred, which would increase the regulatory risk associated with unfavorable changes in costs which might somewhat raise the equilibrium capacity price.
- Potentially require shifting to measuring capacity on an annual basis, reducing flexibility provided to demand response and other suppliers by the current capability period monthly design.



Evaluation of a Forward Capacity Market

A forward capacity procurement process would not:

- Reduce the uncertainty regarding the timing or implementation of federal regulations impacting staying in business costs;
- Change the current practice of contracting for generating capacity at most six months at a time in the current design;



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