

NERA

Economic Consulting

NERA Review of RAM Model - Report on Conclusions on Remaining Issues

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Draft - Preliminary



How Markets Work



Agenda

- Summary of Issues Reviewed Previously
- Deficiency Charges
- Reconfiguration Auctions/Filling Gaps/Spot Markets
- VRR Update and Clarification
- Retail Access/Bilaterals
- Demand Resource Update
- Coordination of Auction Among ISOs
- Impact on Energy and AS Markets



Summary of Issues Reviewed Previously

- 3 Year Planning Horizon is required
- 3 Year Commitment Period is preferred
- Descending clock auction format
- Evaluate competition at qualification stage, consider specific monitoring and mitigation measures, do not mitigate prices resulting from competition among new resources.
- Holding Auction before commitment to construction required to assure adequacy, discipline price and provide meaningful price signal.
- Longer CP will lower price and increase interest in entry. Mix of CPs including one and two year CPs also consistent with RAM objectives.
- Best format given common value uncertainty with respect to non-RAM revenue expectations. Well suited for limiting coordination opportunities and facilitating simultaneous ISO auctions
- All aspects of NERA's recommendation are designed to ensure a competitive process. It is necessary to permit market to reveal price for adequacy without mitigation if competitive forces are at work



Deficiency Charges - Factors Underlying NERA's Recommendation

- Two general approaches were examined
 - ▣ MTM approach associated with traded products.
 - ▣ Liquidated damage approach associated with IPP contracts.
- Deficiency Charges are part of a system for ensuring and providing incentives for performance that include:
 - ▣ Strict qualification criteria
 - ▣ Deficiency charges
 - ▣ Loss of contract payments
 - ▣ Contractual provisions that make economic breach impossible
 - ▣ Short sales are not permitted
- Deficiency charges are not the sole guarantor of performance.
- It would be prohibitively expensive to use deficiency charges to cover potential damages.



NERA Recommendation

- Use liquidated damage approach.
- Determine daily deficiency charge as an LD charge based on a percentage of the auction clearing price.
- Limit total LDs to a percentage of total construction cost of new unit as a per kW basis.
- Implement strict qualification measures and contractual protection against economic breach (e.g. a unit that does not perform cannot schedule generation into other markets).
- Rely on deficiency payment as incentive to performance in addition to loss of contract payments.



Deficiency Charge Liability Would be Assessed Upon Failure to Perform

- Deficiency charges would become due upon contract termination which would occur prior to the supply period:
 - ▣ Failure to meet development milestone;
 - ▣ Abandonment of plan
 - ▣ Destruction of plant

These would be come due in a lump sum at limit on LD



Deficiency Charge Could Become Due Upon Change in Ratings

- Before supply period if annual UCAP rating frozen
- At intervals if UCAP change during the year
- As a result of DNMC tests
- These would be based on expected days at lower rating level
- Limit on deficiency charges over commitment period based on capacity of each facility and percent of new construction cost applied on a per kW basis



Implications of Deficiency Charge Recommendation

- Risk to sellers is manageable and prices will not be inflated by high deficiency payment risks.
- Profit incentives for performance are sufficiently strong that higher deficiency payments would not be expected to significantly improve performance.




Reconfiguration Auctions

■ Initial RAM Concept

- ▣ Reconfiguration auctions reduce risk by enabling suppliers to cover deficiencies and avoid deficiency charges.

■ Reconfiguration Auctions Can Also Serve Other Purposes

- ▣ Provide an opportunity for short lead time supply or demand response resources.
- ▣ Provide an opportunity for resources with increased capacity ratings.
- ▣ Provide for economic substitution of resources.



Reconfiguration Auctions Require an Exception to RAM Principle

- Basic Principle
 - ▣ To be eligible to provide capacity the resource must be bid in to and win at the central capacity auction.
- Reconfiguration Auctions Would Have No Eligible Capacity
- Reconfiguration Auctions Require Qualification and an Exception to the Basic Principle.

NERA Recommends that the ISOs Implement Procedures for Qualifying “Substitute Capacity”

- Potential Qualification principles
 - ▣ Most strict approach -- To qualify as substitute capacity, the resource must have been unable to qualify in the original auction. This excludes existing capacity and capacity under development that could have qualified in the original auction.
 - ▣ Eligible capacity would be limited to resources such as:
 - ▣ Short lead time generation and demand response
 - ▣ Increases in UCAP from better forced outage experience
 - ▣ Increases in UCAP from DMNC tests
- There are potential benefits to allowing capacity that could have won but did not; however, this may imply additional guidelines to eliminate gaming opportunities
- Periodic Qualification
 - ▣ Must meet all original qualification requirements.

Qualified Substitute Capacity Would be Permitted to Replace Supply Cleared Through the Auction

- Bilateral transactions permitted at any time.
- Two sided reconfiguration auction held several months before supply period - after changes in UCAP ratings. Perhaps also during the year if ratings change
- Possibility of periodic reconfiguration auctions between original auction and start of supply period.
- Would allow for economic substitution.
- Would limit exposure to deficiency charge.



The ISOs May Have Shortages or Gaps Between Capacity Needed and Capacity Procured

- Increased load forecast can cause gaps.
- Default of auction winner and termination of contract can cause gaps.
- Gaps could be filled through a supplemental ISO procurement.
- Supplemental ISO procurements to fill gaps are different from reconfiguration auctions.



NERA Recommends that Gaps be Filled Only From Qualified Substitute Capacity and Demand Resources

- Capacity and Demand Resources would need to demonstrate that they could not have qualified in the original auction.
- Supplemental procurement could be held, if needed, on a periodic basis between the original auction and the supply period.
- Contracts would need to contain milestones and termination provision to allow for the ISOs to terminate and hold gap procurement.
- There may be some competition between the ISOs and winning suppliers to buy substitute capacity.
- Supplemental procurement could be limited to increases in load and milestone defaults and would not affect clearing price of the original auction.
- Supplemental procurements may be non competitive and the ISOs would need the discretion to reject offers and not fill gaps.

NERA Was Asked to Examine the RAM Model, to Make Specific Recommendations on the RAM Model -- Not to Compare the RAM Model to Different Models

- NERA's Conclusion Is that the RAM Model as Recommended Will Meet the Objectives Set Forth by the RAM Group
 - ▣ Transition may be difficult as credibility of market is established.
 - ▣ Degree to which suppliers are able to exercise some pricing power during surplus conditions will affect prices when entry is required.
 - ▣ There may be difficulties in smaller markets with low incremental annual capacity needs.
- NERA Did Not Do a Comparative Model Analysis With Other Constructs.



VRR Update and Clarification

- NERA examined the VRR as an addition to the RAM market and assuming the three year planning horizon and recommended auction format.
- In the context of the above, NERA concluded that the VRR would work with the recommendations, but that it was not necessary, as the CRAM, as recommended by NERA, meets many of the VRR objectives.
- We were not asked to examine if the VRR was needed in a capacity spot market, but have looked at this issue and believe that a capacity spot market would require the VRR to produce reasonable results.
- Were we reviewing a market design that was centered around a spot market and sought to establish a spot market to encourage forward contracts, we would most likely incorporate a VRR mechanism



Retail Access/Bilaterals

- RAM is consistent with retail access as it assures adequacy without requiring LSEs to make forward capacity commitments -- wholesale capacity prices will be known before retail prices, offers or bids to supply POLR load are set.
- As envisioned, LSEs could self supply or rely on bilaterals to meet capacity obligation, and would accomplish this by bidding such resources in the auction.
- The three year planning horizon, three year commitment period and percent procured recommendation, create risk to a hedge created by bidding.



Proposed Ideas to Facilitate Use of Bilaterals/Self Supply by LSEs

- All self supply (including bilaterals) would need to be qualified simultaneous with the Auction Process and meet all financial and qualification requirements.
- Capacity could be notified as reserved for self-supply.
- Self supply capacity would be bid in the auction with an opportunity for an automatic bid of entire qualified capacity until auction close
- Pending feasibility of settlements and protection against gaming, develop procedures to allow for a hedge that minimizes the weighting difference between capacity sold in various terms and capacity bought



Demand Resource Update

- Three year planning horizon and commitment period will discourage a significant quantity of demand resources from participation.
- As an interim measure the ISOs could reserve a block of capacity for demand resources that are unable to participate in the auction, provided that the ISOs believe they can reliably estimate the quantity of DR that will be available.
- Procurement could come through a DR only auction or continuation of programs.
- DR Resources may also qualify as substitute capacity to fill gaps or participate in Reconfiguration Auctions.
- Qualification criteria will need to be carefully developed for DR



Coordination Among ISOs

■ Issues:

▣ What level of coordination is necessary to ensure that the price is a meaningful signal and to meet other objectives of the CRAM?

▣ What are the benefits/cost to more/less coordination?

■ We aim to look forward at the long term possibility that all ISOs would coordinate. We assess the benefits of doing so - and therefore the cost of less coordination in the short or medium term

The ISOs Could Choose a Coordinated Approach for Each Key Element of the CRAM

- ISOs could make different choices or could coordinate on:
 - ▣ Qualification requirements
 - ▣ Financial guarantees required for indicative offers
 - ▣ Product definition, including commitment period and planning horizon
 - ▣ Auction format and rules
 - ▣ Use of the variable resource requirement
 - ▣ Mitigation measures and monitoring

The ISOs have many options regarding the level of coordination for the auction itself

- A single auction for all the ISOs
- Coordinated auctions (switching is possible)
- Concurrent auctions (switching is not possible)
- Separate auctions (happen at different times and switching is not possible)



A Single Auction

Round 1

EDC	Charge (\$/kW-year)	Bid ('000 MW)	needed ('000 MW)	Excess supply	Ratio
NE	\$180.00	120	30	90	0.900
NYC	\$220.00	10	10	0	0.000
PJM	\$184.00	75	75	0	0.000
NY-ROS	\$195.00	35	25	10	0.100

Round 2

EDC	Charge (\$/MW-day)	Bid ('000 MW)	Needed ('000 MW)	Excess supply	Ratio
NE	\$171.00	80	30	50	0.500
NYC	\$220.00	40	10	30	0.300
PJM	\$184.00	80	75	5	0.050
NY-ROX	\$192.50	40	25	15	0.150

There are key advantages to more coordination for the auction itself

1. A single event means that all ISOs benefit from the competition of all resource providers
2. Price signals reflect the bidders' perception of the differences in economic opportunity among ISOs
3. Bidders can switch among products for which they qualify and offer capacity where it is most economically rational for them
4. The best match of resource provider to product can occur
5. The auction provides bidders with information regarding the signal for adequacy for a variety of products and market contexts
6. Competing new resources can settle where most needed

A single auction has all these key advantages but requires coordination on other aspects of the CRAM

A single auction would require common decisions on various aspects of the auction:

- Restrictions on bids are used for certain bidders, common product definition, single round timing
- Coordination on setting starting prices, price decrements and information provided to bidders

And common decision on other elements of the CRAM

- Common qualification procedure, monitoring, and assessment of whether mitigation measures are needed

A coordinated auction with switching is the next best alternative

- Auctions occur concurrently and bidders are allowed to switch among products offered by the various ISOs
- Requires coordinated round timing, decrement rules and information provided to bidders
- However, each ISO could lead its own qualification procedure, have different credit requirements, and have/not a variable resource requirement

If switching is not possible, the reliability of the price signals suffer, even if auctions are concurrent

- Whenever auctions are held in parallel and can end at different times, there becomes a point where bidding stops in one of the auctions
- At that point, another auction can continue for a long time
- The prices can be widely disparate and will not reflect reliably the differences in economic opportunities across the ISOs

If switching is not possible, few of the advantages of coordinating the auction will materialize

5. The auction provides bidders with information regarding the signal for adequacy for a variety of products and market contexts
6. Competing new resources can settle where most needed
 - The Texas PUC, in its capacity auction, initially mandated such an approach
 - The price disparities across similar products were important and led the PUCT to revise the approach to allow switching

NERA recommends that coordination be sufficient to allow switching across ISOs



Impact on Energy and AS Markets

- For a given level of capacity, NERA could not identify any expected impact of the CRAM upon bidding in energy and AS markets - the capacity market is a distinct market.
- The primary impact on these markets would be to moderate price extremes by maintaining capacity margins within a tighter band around the target for unforced capacity.
- We have quantified the relationship between capacity and energy price and will include these analyses in the Final Report.