



To: NEPOOL Participants Committee
From: NESCOE
Date: August 19, 2016
Subject: IMAPP: Initial Solution Proposals Follow-up Questions

NESCOE appreciates NEPOOL commencing dialogue about a potential range of wholesale, market-based solutions that could enable the integration of markets and public policies (IMAPP). Pursuant to NEPOOL's request at the close of business at the first IMAPP meeting on August 11, 2016, please find below NESCOE's questions related to the market-based solutions presented. The questions are set forth by subject matter, rather than by solution proponent.

Many of the presenters stated that their proposals would require additional discussion to inform the development of further details. We appreciate the need for that, and understand it will take some time. We provide here the full set of questions we have at this time to get answers set out and to inform near-term discussion. We anticipate that solution proponents will be able to answer some questions by the August 30, 2016 meeting, and may need further discussion to answer other questions. We leave it to the solution proponents to sort through which questions are relevant to their presentations and which may require more time.

Please do not interpret the nature or number of questions as indicative of an evolving NESCOE position or focus with respect to any of the proposals.

Finally, at the end of the document is a chart listing the preliminary "goal posts" states issued in June 2016. We request that solution proponents indicate whether their proposal satisfies each "goal post" and briefly explain how.

Variants of a Forward Clean Energy Market (FCEM):

FCEM Product Definition

1. The value of energy varies by season, time of day, and location. Based on technology, location, and other factors, different clean resources produce relatively more energy during certain seasons, times of day and locations. Does your proposal ensure that the most valuable clean energy resources are more likely to clear in the forward clean energy auction (e.g. a resource that runs on most summer days vs one that runs mostly at night)? If so, please explain how?

2. Would each clean energy resource in the FCEM be required to submit a single offer price that is fixed annually for all MWh offered for the forward year or would each resource be required to submit multiple fixed offer prices that vary by season and time-of-day with each price associated with a specific number of MWh to be delivered?
 - a. If based on a time-of-day or season how would the clearing price be determined?
 - b. What standard would be used to base the resources offer price (e.g. cost of production, revenue requirement, etc.)?
3. What exactly is purchased from the winners in the forward clean energy auction (*i.e.*, what is the product)?
 - a. Is the payment per MW per year, or per MWh with a fixed annual MWh quantity, or something else?
 - b. What does the winning resource have to do to get the payment (or under what circumstances will its payment be reduced)?
 - c. Is it a two-part payment mechanism, such as fixed payment or floor?
4. Are *existing* clean energy resources permitted to participate in the auctions or do you consider the FCEM construct to be available only for new resources that begin operation as of a certain date (*e.g.*, resources with a commercial operation date of January 2020)? Please explain the reasoning behind the answer.
5. Do you consider demand response a clean energy resource eligible to participate in the proposed mechanism?
6. In connection with how far in advance forward procurement auctions would occur, please provide your view of the pros and cons of alternative timeframes?

FCEM Procurement Amounts

7. Please explain how the quantity of the forward clean energy procurement is determined.
 - a. Is this based on needs reflecting state requirements and how are the requirements determined by state (e.g. RPS only or other)?
 - b. Will the states, or some subset of states with similar policy objectives, have input to the procurement quantities and willingness to pay (maximum prices), for each auction? (Consider, for example, that current Renewable Portfolio Standard requirements have an alternative payment structure to ensure that clean energy is not purchased at any price, and state-approved PPAs must typically pass some form of a cost-effectiveness test.)
 - c. To what extent does the location of the resource impact the clearing price? What happens under your proposal if transmission constraints cause some zones to have relatively high prices? Or what if few resources are offered in some

locations at some times? Will there be a mechanism to reduce or defer purchases if prices rise (such as a sloped demand curve)?

- d. Would the selected resources be required to deliver into the state(s) with the resource requirement needs (in other words, do transmission constraints matter)? Could resources located in one area offer into another area, if possession of firm transmission rights could be demonstrated?
8. Some clean energy resources are intermittent, increasing the need for flexible resources available when they are generating; other clean resources have that impact to a lesser extent, so, other things equal, they impose less cost on the system. Some clean energy resources will require significant new transmission infrastructure that may be included in regional transmission rates. Will the forward clean energy procurement recognize these differential impacts in any way, and if so how?
 9. The value of different clean energy resources will depend upon the extent to which the grid has sufficient flexible and fast-ramp capacity to manage the intermittent nature of many clean energy resources. Further, whether there is ample energy storage, fast-ramp capacity, etc., will influence the relative value of different clean energy resources at different times and locations on the grid. How would the introduction of storage, fast-ramp capacity, etc. be determined? Would it be market-driven, or based on ISO planning (like transmission)? How will this be coordinated with forward clean energy procurement, if at all?
 10. Explain whether and how the availability of storage at substations would affect the value of clean energy resources depending upon their location & technology?
 - a. How would storage levels, locations and time frames be determined?
 - b. Would storage resource deployment be coordinated with forward contracting of clean energy resources, if at all?
 - c. Would clean energy resource developers have any way to influence the storage placement decisions (for instance, by accepting some cost allocation)?

FCEM: Relationship to Other Markets and Policies Solutions

11. Do the selected resources in the FCEM participate as they normally would in energy and ancillary services markets and earn market prices, or do they earn a “greater of” pricing, or something else? To the extent that “greater of” pricing is proposed, how does this impact price certainty which can be a benefit of PPAs.
12. If “greater of” pricing is proposed, would this not distort the results toward resources with low-value production? If not, please explain. Also, how will the actual delivery of MWhrs that are purchased in the FCEM be matched to the real time production (*e.g.*, if 100MWhrs are purchased in the FCEM, is it the first 100MWhrs produced from that resource or some other allocation)?

13. Please provide examples of how the selected clean energy resources participate in FCM and explain how the risk to consumers of purchasing excess capacity is reduced under the proposals. In providing the examples please show resources that have state-approved Power Purchase Agreements (PPAs) and that 1) clear and 2) do not clear in the FCEM.
14. Please explain how the forward clean energy auction is similar to and different from a carbon pricing mechanism with respect to factors identified in the Goal Post document, including but not limited to potential cost to consumers?
15. Please explain how the forward clean energy market would interact with RGGI?
16. Please consider and explain what approaches could be used to mitigate any unwanted inter-state implications (e.g., high demand for clean energy resources in one state runs up the price paid in another state with more modest demands.).
17. What are the advantages and disadvantages of an ISO New England-administered mechanism, as compared to individual states doing a similar procurement according to the state's needs and parameters?

Generation PPAs:

18. Please explain how the Clean Energy PPA mechanism would work. Specifically:
 - a. Would there be a FERC-approved process that, when followed, resulted in PPAs not subject to the MOPR?
 - b. Would the mechanism have annual limits (such as the current 200 MW/year exemption level) or any other features designed to minimize potential market impacts?
 - c. Would the mechanism require that the PPAs be far enough forward in time to allow the market to anticipate and absorb the capacity?
 - d. What entity would be the counterparty to the PPA? Would a legally enforceable tariff-based revenue stream of a long-term duration suffice, instead of a PPA?
 - e. To the extent that the Clean Energy PPA mechanism is designed to cover minimum annual revenue requirements, would this revenue requirement be determined on an individual or generic unit basis? To the extent that the revenue requirement is determined on a generic basis, what would be the process for choosing the proxy unit?
19. Would you expect the term of the PPA's to be tiered (terms of 5/10/15/20 years) to allow for turnover and new technologies to displace older ones?

Voluntary-Residual Market Structure:

20. Please describe the changes to FCM that would be required to transform it into a residual mechanism?
21. Please identify the changes needed to enable consumers, states, and public power entities to procure and pay for resources that meet their objectives?
22. What are the advantages of a Coordinated Plan with respect to clean energy targets, compared to each state having its own plan (perhaps coordinated with other states, but on a voluntary basis)?
23. Under these proposals is the expectation that request for proposals (RFP's) are the preferred method for solicitation or other methods? Also, would a tier approach be preferred?

Carbon Adder Proposals:

24. Please discuss whether consumers would be "at risk of material energy market cost increases that do not lead to new clean carbon resources being built?"
25. Would a carbon adder provide an incentive to *existing* resources to lower their current carbon footprint?
 - a. Please provide examples of how existing resources could lower their current carbon footprint along with an approximation of the adder cost needed to achieve such reductions.
26. Exelon - Please provide detail on how you arrived at the avoided cost calculations on slide 7 of your presentation. Please provide specific information about the potential energy and capacity market mitigation calculations.

Two-tier Pricing Proposals:

27. Please explain the benefits to consumers of a two-tier pricing model compared to the "status quo" where states simply meet their statutory requirements using PPAs and meet reliability needs through the FCM? All things equal, are the cost and total capacity procurement roughly the same under the two procurement models?
28. Would the implementation of a two-tier pricing model create distorted bidder incentives? If so, please explain and suggest possible mitigation techniques that could be implemented.

Goal Post Comparison

http://www.nepool.com/uploads/IMAP_20160621_Goal_Posts_States.pdf

“Goal Post” Item	Does Proposal Satisfy (Y/N)	Explain
<i>A Solution Should:</i>		
1. Enable reaction to different market conditions and changing public policy priorities over time (i.e., not assume that the requirements of state laws are static over time).		
2. Focus on achieving longer-term goals (10-30 years) cost-effectively, with the ability to incorporate needed shorter-term mechanisms to achieve near-term policy requirements.		
3. At a minimum, enable the achievement of the current RPS requirements of each state.		
4. In the near-term, consider the need to accomplish current policy objectives under discussion including, for example, up to 2,400 MWs of hydropower and 1,200 MWs of on- or off-shore wind. These numbers are illustrative and could vary according to the outcome of current matters, including but not limited to the three-state Clean Energy RFP.		
5. Consider mechanisms to ensure consumers in any one state do not fund the public policy requirements mandated by another state’s laws.		
6. Attempt to minimize short-term financial effects to current existing resources.		

<i>A Solution Should Not:</i>		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.		
2. Over the long-term, include out-of-market mechanisms unless those ultimately are determined to be required in order to meet the objective and limit overall costs of the design (i.e., markets are not an objective themselves; they are a means to place risk with shareholders and to serve consumers at the lowest cost).		
3. Produce undue windfall profits for existing non-carbon or carbon emitting resources (i.e., existing resources and particularly existing carbon-emitting resources should not profit from state requirements to increase the amount of non-carbon emitting resources in the region's portfolio).		
4. Compel or assume state legislative action or action from jurisdictions outside New England (e.g. RGGI). Any state may, of course, wish to pursue state legislative action related to this matter, but any potential regional wholesale market adjustment should not presuppose state legislative action(s).		