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For a thriving New England

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August 26, 2016

By Electronic Mail (*heatherhunt@nescoe.com*)

Ms. Heather Hunt, Executive Director
NESCOE
4 Bellows Road
Westborough, MA 01581
E: heatherhunt@nescoe.com

Re: IMAPP: Initial Solution Proposals Follow-up Questions

Dear Heather,

NEPOOL Member Conservation Law Foundation ("CLF") writes to respond to NESCOE's August 19, 2016 request[1] for additional information regarding CLF's August 11 IMAPP proposal and presentation.

CLF's responses to NESCOE Questions 24 and 25 are provided below for CLF's Proposal that (among other market modifications required to enable the ISO-NE bulk electricity market to achieve state GHG emissions laws and policies) an ISO-NE administered carbon price be added to the day-ahead and real-time energy markets. CLF's responses to NESCOE's "Goal Post Comparison" are enclosed.

NESCOE Question 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?"*

CLF Response: There is no inherent "risk of material energy market cost increases that do not lead to new clean carbon resources being built" in the concept of an ISO-NE administered carbon price in the day-ahead and real-time energy markets. Internalizing a cost of carbon proportional to a generator or supplier's ability to

[1] *See* NESCOE letter to NEPOOL Participants Committee, dated Aug. 19, 2016.

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meet existing state greenhouse gas emissions goals and requirements by means of a mechanism acceptable to the NEPOOL participants, ISO-NE, and the state alike will create a new revenue stream for, and thus, if the carbon price is set at a sufficiently high level, will help provide an incentive for construction and interconnection of, low-carbon resources.

The risk of retail cost impacts can be mitigated by several means. Most directly, the Proposal would return excess energy market revenues related to the imposition of a carbon price to customers either as part of ISO-NE wholesale accounting or as part of load-serving entity retail accounting. Second, capacity market prices should decline as new, marginal resources forecast higher energy margins. Third, as evidence of the effectiveness of the Proposal builds, it has the potential to, over time, reduce or eliminate the cost of existing programs that provide financial incentives to, e.g., renewable generation.

NESCOE Question 25 *Would a carbon adder provide an incentive to existing resources to lower their current carbon footprint?*

CLF Response: Yes – an ISO-NE administered carbon price in the day-ahead and real-time energy markets would provide a financial incentive to existing fossil-fueled generators to increase their plant efficiency, to the extent technically possible, so as to minimize their per MWh CO2 emissions rate. To the extent such efficiency increases are, or become, technically infeasible or unavailable, an ISO-NE administered carbon price in the day-ahead and real-time energy markets would nevertheless help to drive continued reductions in system emissions by creating a new revenue stream, and thus an incentive, for the construction and interconnection of low-carbon resources which, once interconnected, can be

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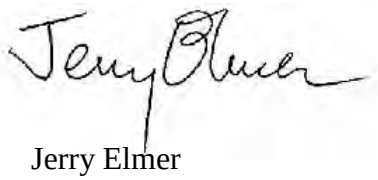
expected to displace existing fossil-fueled generators and suppliers from energy market dispatch.

Sincerely,



Jerry Elmer

David Ismay

Senior Attorneys
Conservation Law Foundation

Encl.

cc: Joel Gordon, NEPOOL Participants Committee Chair
David Doot, NEPOOL Participants Committee Secretary
Donald Sipe, NEPOOL Participants Committee, Vice Chair (End User)
Bill Fowler, NEPOOL Markets Committee, Vice Chair (Generation/Supplier/AR)

Enclosure to CLF Response to
NESCOE re: IMAPP Follow-Up Questions

Goal Post Comparison

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

This Goal Post Comparison is provided for CLF's Proposal to (among other market modifications required to enable the ISO-NE bulk electricity market to achieve state GHG emissions laws and policies):

> ***Add an ISO-NE administered carbon price to the day-ahead and real-time energy markets.***

"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should:		
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).	**Y**	The Proposal will enable ISO-NE and its market participants to react to different market conditions and changing public policy priorities regarding carbon emissions over time. To the extent aggregate member state emissions requirements increase or decrease in the future, an ISO-NE administered carbon price to the day-ahead and real-time energy markets could be administratively updated by ISO-NE in a manner parallel to how it annually sets reliability related targets (e.g., ICR) and prices (e.g., CONE) in a manner consistent with all of its efforts to meet those aggregate emissions limits.
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.	**Y**	The Proposal will help to fundamentally re-align the market to account for, and optimize the reduction of, carbon emissions from ISO-NE generators and suppliers, and will do so immediately and at all times. It thus works to achieve state emissions requirements in the short, mid-, and long-term and to do so cost-effectively via the market itself. It does not preclude, should not negatively affect, and

		may facilitate any "shorter-term mechanisms to achieve near-term policy requirements," for example, sustaining otherwise un-economic low and zero-carbon generation facilities in the near term.
3. At a minimum, enable the achievement of the current RPS requirements of each state.	**Y**	The Proposal will provide an immediate and consistent market incentive – increased energy market revenues for non-emitting supply resources – that will help achieve current state RPS requirements.
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.	**Y**	The Proposal would create a new, market-based revenue stream that could be incorporated into the bid price of suppliers responding to state clean energy procurements. If the Proposal were implemented in time, it could be expected to reduce the long-term contract bid price offered by clean energy and off-shore wind suppliers in response to the procurements required by MA.4568. It is unclear to what extent the Proposal (or any other IMAPP proposal) could now affect bids already-submitted in response 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.	**Y**	Given the regionally shared public policy to substantially reduce greenhouse gas emissions by 2050, the Proposal would not require consumers in any one state to fund the public policy requirements mandated by another state's laws. Moreover, the Proposal, together with other modifications to the ISO-NE markets, would create incentives for the addition of non-emitting resources to the regional grid which may lower system-wide costs (*see* 2016 NEPOOL Economic Scenario Analysis, Draft Results for Scenario 3).
6. Attempt to minimize short-term financial effects to current existing resources.	**Y**	By internalizing the cost of carbon emissions within the market structure, the Proposal can be expected to help optimize – that is,

		minimize – the cost to existing ISO-NE generators and suppliers of reducing their carbon emissions.
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	**Y**	The Proposal would not "[i]mprudently increase costs to consumers" but instead, would use the market to help achieve existing state law and public policy affecting carbon emissions at least cost. The Proposal creates a wholesale market settlement surplus that is rebated to load-serving entities for distribution thereafter as the states may variously direct.
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).	**Y**	The Proposal is a market-based solution.
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).	**Y**	The Proposal would not produce any windfall profits, instead directly compensating existing generators and suppliers in proportion to their ability to help achieve existing state law and public policy affecting carbon emissions.
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).	**Y**	The Proposal would not compel or require any state legislative action. It can be implemented administratively by ISO-NE with FERC approval as a measure required by ISO-NE's existing mandate to ensure system reliability and ensure the bulk electricity market remains competitive and free of undue discrimination.

Goal Post Comparison

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

"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should:		
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).	Yes	The level at which carbon is reflected into the energy market may be adjusted annually to accommodate changes in state laws and/or market conditions.
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.	Yes	Continued presence of carbon costs into energy dispatch provides a long-term signal for investment needed to meet long-term goals and may be increased/decreased as necessary based on state requirements and technology advancements.
3. At a minimum, enable the achievement of the current RPS requirements of each state.	Yes	Reflecting the cost of carbon into energy dispatch is compatible with existing state RPS policies and will reduce the cost of RPS compliance. If is set at a sufficient level to drive new renewable entry absent additional state support, it will drive compliance with many state RPS policies without need for additional payments. Even if not set at this level, it will reduce the state support payments (such as RECs) needed to achieve RPS compliance.
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.		The reflection of carbon costs into energy dispatch is compatible with policy-driven state procurements for specific resources. It will reduce the above-market procurement cost for these resources to the extent that they have a zero/low carbon emission profile.

5. Consider mechanisms to ensure consumers in any one state do not fund the public policy requirements mandated by another state's laws.	Yes	Dollars collected from emitting resources through incorporating carbon costs in energy dispatch could be used to offset the costs to the states which do not have a public policy mandate to reduce carbon emissions.
6. Attempt to minimize short-term financial effects to current existing resources.	Yes	Reflecting carbon costs into energy dispatch supports the availability and the dispatch of both new and existing resources, favoring those resources that meet goals at least cost.
"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	Yes	Reflecting the cost of carbon into energy dispatch is the most efficient and overall least-cost means of reducing carbon because it provides incentives for all potential sources of carbon free emissions (such as new renewables, redispatch, retention of nuclear plants, and demand-side reductions) via a single price signal and thus will produce the highest amount of emissions reductions at least cost compared to piecemeal approaches such as bilateral contracting for new build resources.
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).	Yes	Under an approach that incorporates the cost of carbon into energy dispatch, generation developers bear the market risk associated with new builds and reduces or eliminates the need/costs for state bilateral contracts.
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).	Yes	Incorporating carbon costs into energy dispatch will drive increased energy prices but in the case of carbon-emitting resources this will be offset by increased costs from carbon payments resulting in zero or at most modest incremental profits for emitting resources. Existing zero and low emissions resources will receive incremental compensation via increased energy prices that will ensure these resources do not retire (for resources such as nuclear) and

		dispatch appropriately (for low-emission resources such as natural gas combined cycles). Existing RPS-qualified resources will receive additional energy compensation but this will likely be offset by reductions in Renewable Energy Credit prices. Competition between all resources will drive toward a least cost solution in all hours that minimizes the potential for "windfall" or "undue" profits while realizing state carbon policy objectives.
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).	Yes	Incorporating carbon costs into energy dispatch will require a change to the ISO tariff and FERC approval but no state legislative action will be required. No action from jurisdictions outside New England is necessary to enact a carbon adder.

FIRSTLIGHT POWER RESOURCES RESPONSES TO NESCOE QUESTIONS DATED AUGUST 19th

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?

Yes. Indeed that is the focus of FirstLight's proposed Forward Clean Energy Market (FCEM) design – to deliver the most carbon reduction value for each clean energy dollar spent. Under the proposed design, the procurement would target clean energy deliveries timed to achieve the highest carbon reductions. The New England states would specify the desired carbon reduction and ISO-NE would translate that into a set of off-peak, midday peak and late-day peak FCEM requirements to achieve that carbon reduction target. The FCEM auction would clear the most valuable clean energy. The market design is technology and vintage neutral. Clean energy resources with technologies generating their energy in periods of less FCEM demand can sell in periods of higher FCEM demand by contracting for storage and later release of their clean energy.

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?

The proposed FCEM would consist of three clean energy products: off-peak, midday peak and late-day peak clean energy delivery. A bidder in the forward clean energy auction would bid a fixed price (which could be either in $/MWh or $/kw-month) for delivery of a specified quantity of clean energy in the off-peak, midday peak or late-day peak hours, respectively. Similar to the existing Forward Reserve Market, this would be a portfolio bid where the seller could designate output from one or more resources to meet its obligations.

   a. If based on a time-of-day or season how would the clearing price be determined?

The clearing price for each of the off-peak, midday peak and late-day peak clean energy products would be set by the marginal clean energy bid for that product.

   b. What standard would be used to base the resources offer price (e.g. cost of production, revenue requirement, etc.)?

The offer price would depend on the seller's estimated cost to meet the clean energy delivery obligation. Costs may differ by bidder location and technology, including whether or not storage services would be required for any specific resources to compete against other clean energy resources for a given clean energy product. It would also depend on factors of the design for which FirstLight remains flexible (e.g., lead time, obligation duration, etc.). The bid itself would be a portfolio bid that permits the seller to combine various resources to meet the clean energy delivery obligation.

3. What exactly is purchased from the winners in the forward clean energy auction (*i.e.,* what is the product)?

   The seller(s) would be obligated to deliver X megawatt-hours/hour of clean energy in the respective time of day (off-peak, midday peak, or late-day peak).

   a. Is the payment per MW per year, or per MWh with a fixed annual MWh quantity, or something else?

   Payment is currently contemplated as a price per megawatt-hour delivered against contracted obligations with a non-performance charge where obligations are not satisfied.

   b. What does the winning resource have to do to get the payment (or under what circumstances will its payment be reduced)?

   Full payment requires full delivery consistent with the clean energy delivery obligation it took on through the auction. If full delivery is not achieved, there would be a non-performance charge (in addition to no payment for the megawatt-hours not delivered).

   c. Is it a two-part payment mechanism, such as fixed payment or floor?

   Compensation is contemplated as a fixed payment per megawatt-hour delivered. This payment is specific to the FCEM and separate from either ISO New England energy market or capacity market payments.

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.

All clean energy resources, existing and new, would be permitted to participate. This would be necessary for the FCEM revenues to be considered "in-market" as support for Forward Capacity Market new capacity offers. Further, absent the ability of existing clean energy resources to participate, the region would miss the opportunity for immediate carbon reduction benefits possible from existing resources through improved use of existing

storage. New England is fortunate to have significant electric storage capability in its three existing pumped storage facilities in Massachusetts and Connecticut which can help optimize the delivery of clean energy to reduce carbon emissions. However, neither the existing ISO New England market design nor the proposed carbon shadow pricing mechanism will achieve the necessary coordination between clean energy generation and energy storage.

5. Do you consider demand response a clean energy resource eligible to participate in the proposed mechanism?

Pumped storage hydro resources are essentially demand response devices themselves. They shift load in higher demand periods to periods of lower demand by storing energy for release in higher demand periods. In that sense, pumped storage resources share a lot in common with behind-the-meter demand response resources. However, measurement and tracking can get a bit more complicated with behind-the-meter demand response resources. For example, for a persistent load shifting of X megawatt-hours/hour of load in late day peak hours and increased load in off-peak hours every day, it would seem difficult to determine an appropriate baseline against which to measure the load reduction performance of the behind-the-meter demand response resource. Further discussion by ISO New England and other demand response experts would be needed to understand how such performance could be verified and what would be required to facilitate behind-the-meter demand response participation.

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?

For existing clean energy resources, shorter lead times mean less risk that circumstances may change between the auction and the delivery period. However, clean energy developers may require a longer lead time to complete construction of their clean energy resources in advance of the delivery period.

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)?

Yes. States determine the desired carbon reduction target. ISO translates that target into a specific volume (megawatt-hours) and distribution (off-peak, midday peak and late day peak) of clean energy deliveries.

    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.)

Yes. The quantity of clean energy purchased is driven by state carbon reduction targets. The pace of those targets might be based on relative price levels or on a price cap. There are various ways to address these concerns and they can be factored into further detail of the FCEM.

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)?

The FirstLight FCEM does not currently seek separate locational clearing prices and is instead contemplated to have a single system-wide clearing price for each of the off-peak, midday peak and late-day peak products. While there are physical limits on the maximum clean energy that can be simultaneously generated in certain sub-areas of the system, the existence of non-performance charges itself sends a locational signal. A sloped demand curve or other form of mechanism could be considered as part of the FCEM design.

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?

The FirstLight FCEM proposal contemplates only requiring clean energy delivery to the system since the aggregate of system supply is used to meet the aggregate of New England demand. Since all resources are scheduled and dispatched to meet all demand on the system, clean energy generation in state A could be meeting demand in state A and other states. If ISO analysis of clean energy requirements needed to achieve state carbon reduction goals identified greater (or lesser) carbon reduction benefits due to location, then a locational aspect could be considered at that time. Any factors impeding a clean energy resource's ability to deliver clean energy onto the grid (e.g., constrained off due to congestion) would likely be reflected in the offer price of its clean energy into the FCEM.

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?

Yes. The FirstLight proposed FCEM design would define the clean energy delivery with specified timing requirements that most efficiently meet the desired carbon reduction targets. Clean resources, individually, or paired with storage (including existing pumped storage hydro), would compete for each of these forward energy delivery commitments (off-peak, midday peak and late-day peak). All costs borne by the clean energy developer would presumably need to be recovered through the combination of market revenues, including revenues from the FCEM.

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?

From a pure ISO-NE system reliability perspective, as the penetration of variable output resources increases, there will likely need to be improved market incentives to offer fast start and fast ramping capability to maintain system reliability and protect against contingencies. We understand ISO-NE is contemplating further market design elements to address these needs. From a carbon reduction efficiency standpoint, the amount of clean energy, and, equally important, the timing of its delivery, mean incentives are needed for storage (including existing pumped storage hydro) in order to optimally pair storage and clean generation to avoid the most carbon intense generation decisions (i.e., at the unit commitment stage). The FirstLight FCEM proposal provides such incentives.

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)?

    Whether, where and to what extent storage at substations might be an efficient complement to carbon reduction efforts could be determined through the FirstLight FCEM proposal.

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.

Firstlight has proposed that FCEM compensation (and non-performance charges) occur independent of the compensation under any of the existing ISO markets for capacity, energy or ancillary services. There would be no specific obligations on resources used to meet an FCEM obligation to participate in the Forward Capacity Market or ancillary services markets. Other than satisfying the FCEM delivery obligation through clean energy delivery in the requisite period, there are no other specific FCEM requirements affecting any clean energy resources participation in the energy market.

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)?

The "greater of"pricing is not a feature of the FirstLight FCEM proposal. Under the FirstLight proposal, there is no need to distinguish among megawatt-hours in the day-ahead or real-time energy market. Those energy market settlements will occur the same as they do today.

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.

Other than creating a new competitive wholesale market FCEM revenue which could be included as "in-market" revenues in the clean energy resource developer's support of its new capacity offer price in the Forward Capacity Market, there would not be any other direct impacts of implementing FCEM on the Forward Capacity Market.

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?

Both the forward clean energy action and carbon shadow price mechanism incentivize carbon reduction, but they each do it differently. A forward clean energy auction directly reduces carbon emissions by procuring emission-free generation and the FirstLight FCEM directs delivery of that emission-free generation in the hours where it can deliver the most carbon reduction benefit. A carbon shadow price mechanism seeks to reduce carbon emissions by providing more energy revenue to generation that is less carbon intense than

the generation setting the marginal energy price. The carbon shadow price mechanism would not achieve the coordination between clean energy generation and storage necessary to deliver the higher carbon reduction efficiency possible under FirstLight's FCEM proposal.

15. Please explain how the forward clean energy market would interact with RGGI?

There is no direct interaction between RGGI and FCEM; however, successful reductions in carbon emissions through FCEM would reduce demand for carbon allowances.

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.).

The cost of FCEM purchases under the FirstLight design would be allocated to LSEs in the states directing the proportionate share of the FCEM purchases. If one state had no carbon reduction requirement at all, it is contemplated that such state's LSEs would not receive FCEM charges. The example interstate implication identified in the question will exist whether the two example states conducted competing RFPs or whether the aggregate need is procured under an FCEM. However, by incentivizing efficient pairing of clean energy and storage (including existing storage), the FirstLight FCEM would moderate the quantity of clean energy resources needed to meet carbon reduction objectives of both example states.

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?

An advantage of an ISO-NE administered FCEM (as proposed by FirstLight) is that the aggregated procurements can be coordinated and targeted at off-peak, midday and late-day peak clean energy commitments to achieve the most carbon reduction for the quantity of clean energy procured.

Generation PPAs: (Questions 18 - 28 are not applicable to FirstLight FCEM proposal)

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?

NESCOE

Goal Post Comparison for the
FirstLight Forward Clean Energy Market Proposal

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

"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should:		
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).	Y	Since state carbon reduction targets are the basis for off-peak, midday peak and late-day peak product requirements under FirstLight's FCEM proposal, the design permits changes in the pace of states' carbon reduction efforts in reaction to changes in market conditions or public policy 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.	Y	FirstLight's FCEM proposal provides the ability to cost-effectively meet carbon reduction goals through competitive market signals in the short-term (e.g., leading to better use of existing clean generation) and longer-term (e.g., addition of clean energy resources).
3. At a minimum, enable the achievement of the current RPS requirements of each state.	Y	FirstLight's FCEM proposal does not alter the existing REC market used to support achievement of current or any future state RPS requirements.
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.	Y	Any clean energy resources, new or existing, including the resources contemplated in the identified targets could participate in the proposed FCEM.
5. Consider mechanisms to ensure	Y	FirstLight's FCEM proposal would allocate the

consumers in any one state do not fund the public policy requirements mandated by another state's laws.		costs of FCEM purchases to consumers (through wholesale market LSEs) in states with carbon reduction mandates relative to the portion of FCEM demand driven by that state's mandate. LSEs in a state with no carbon reduction mandate and no contribution toward FCEM requirements would not receive FCEM charges.
6. Attempt to minimize short-term financial effects to current existing resources.	Y	The FirstLight FCEM proposal does not alter any of the existing ISO New England markets and any clean energy resources, new or existing, can participate in FCEM.
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	Y	While FCEM would represent an additional category of costs to consumers in states with carbon reduction mandates, the FirstLight FCEM proposal would efficiently provide clean energy through a competitive forward clean energy market to prudently accomplish those mandates.
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).	Y	FirstLight's FCEM proposal provides a competitive (in-market) market opportunity to meet carbon reduction objectives.
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).		FirstLight's FCEM proposal provides compensation to the resources supplying clean energy which most efficiently achieve the carbon reduction goals. Carbon-emitting resources would not participate in the FCEM. *(Note – FirstLight does not address the question of whether biomass or municipal solid waste generators are considered non-carbon emitting based on their lifecycle impacts. That question is more appropriately answered by the states.)*
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	Y	The FirstLight FCEM proposal does not presuppose any future legislation and does allow for future changes in the pace of carbon reduction at the states' election.

potential regional wholesale market adjustment should not presuppose state legislative action(s).		

Goal Post Comparison

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

"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should:		
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).	Yes	The two-tier pricing mechanism will accommodate any state-backed resource receiving out-of-market revenues and seeking to participate in the capacity market.
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.	Yes	The two-tier pricing mechanism is primarily focused on near-term market stability as states pursue policies through out-of-market actions, and will adapt to future contracting or, preferably, future market-based entry of renewables and other resources that better advance state policy goals.
3. At a minimum, enable the achievement of the current RPS requirements of each state.	Yes	While the two-tier pricing mechanism by itself will not 'achieve' RPS goals, it will accommodate state actions to do so.
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.	Yes	The two-tier pricing mechanism is explicitly intended to accommodate state contracts such as referenced here to the extent the resources seek to participate in the FCM.
5. Consider mechanisms to ensure consumers in any one state do not fund the public policy requirements mandated by another state's laws.	Yes	By pro-rating the auction outcomes (as discussed in NRG's 8/30 presentation), the cost of the capacity market can be managed to, for example, not exceed the cost of the market with no out-of-market resources. In other words, the cost for all states and consumers can be managed to, for example, be the same as if no

		state took any policy action that led to out-of-market resources seeking to participate in FCM.
6. Attempt to minimize short-term financial effects to current existing resources.	Yes	The two-tier pricing mechanism is expressly designed to maintain pricing for current existing resources as if there were no out-of-market resources participating in the auction.
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	Yes	With pro-rating to manage cost and/or quantity as part of the two-tier pricing mechanism in the FCM, there is no need for any increased cost to consumers, other than the explicit out-of-market costs of states' preferred resources.
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).	Yes	The two-tier pricing mechanism would only be needed to the extent states continue to pursue out-of-market actions to meet policy objectives. If those policy objectives can be incorporated into competitive market mechanisms, the two-tier pricing mechanism would have no further effect.
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).	Yes	The intent of the two-tier pricing mechanism is to maintain capacity revenues for existing resources at or near what they would be in the absence of state policy actions, not to increase those revenues.
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).	Yes	The two-tier pricing mechanism will accommodate whatever state policy actions are taken and does not require legislative changes, or action by states outside of New England.

Energy Market Advisors LLC

To: NEPOOL Stakeholders

From: Brian Forshaw on Behalf of Public Power Systems

Date: August 26, 2016

Subject: Responses to NESCOE Questions and Goalpost Comparison

We appreciate the opportunity to continue the dialogue on options and opportunities to allow the region to achieve its public policy objectives in conjunction with the current centralized wholesale market structure. Since the last IMAPP meeting, we have focused on better defining the Voluntary-Residual approach first presented at the August 11 meeting. This memorandum addresses the questions related to this proposal that have been raised by NESCOE and also provides a comparison about how this proposal addresses the NESCOE Goalpost concerns.

In addition, as the various proposals get refined and developed further, we believe that following threshold questions should also be considered for each specific proposal.

- How does the proposal impact reliability and risk exposure?
- How does this approach impact consumer costs?
- What implications does the Supreme Court's Hughes decision have for this alternative?
- How well does this approach address individual State policy objectives, including reducing emissions?

NESCOE Questions on Voluntary-Residual Market Structure:

20. **Please describe the changes to FCM that would be required to transform it into a residual mechanism?**

    - The biggest change in the FCM structure would be to the schedule and timeline for conducting the residual FCM auction.
        - The schedule would need to allow sufficient time between specification of the regional resource adequacy requirement and the auction date to allow LSE interests (including the states) to enter into voluntary bilateral contract and other arrangements for resources to meet the state objectives.
        - The FCM Qualification process can take place in parallel with this voluntary resource procurement period.
    - Changes will be needed to the FCM mitigation rules to permit resources certified during the voluntary procurement process to be excluded from or to clear in the mandatory, centralized FCM residual auction. This may take the form of an exemption to the Minimum Offer Price Rule provisions.

  - Note that under this construct, resources certified during the voluntary procurement period would not receive compensation from the centralized, mandatory residual auction.
  - Further consideration would be needed on how to treat a resources that exceed an LSEs share of the regional resource adequacy obligations to recognize the lumpiness of procurement as well as potential market price suppression concerns in the residual market.
- At a high level, the current FCM settlement provisions for treatment of existing resources that elect a "self-supply" option could be used for the FCM market settlement.
  - Further consideration would be needed to evaluate the implications extending this treatment on a more widespread basis.

21. **Please identify the changes needed to enable consumers, states, and public power entities to procure and pay for resources that meet their objectives?**

- In addition to direct contracting or development by consumers, consumer groups and public power utilities, conceptually the mechanisms currently authorized to support resources that meet State policy objectives (including PPAs and RFPs supported by Electric Distribution Companies) could also be used to procure and pay for such resources.
  - Because these bilaterally contracted resources would not receive direct compensation from the centralized wholesale capacity market, these arrangements should not be adversely impacted by the Hughes decision, notwithstanding any payments directed by state entities.
- We are not aware of all the legislative and statutory provisions associated with procurement of resources to meet public policy objectives in all of the states or among multiple states acting as a group, so a more careful analysis would be required before specific contracts are entered into. Procurement results could be more efficient to the extent the states agree on a Coordinated Plan to achieve common regional policy goals.
  - States may also want to consider a mechanism such as the Alternate Compliance Payment used in the various RPS programs to provide an incentive for LSEs to procure sufficient low/no carbon resources and other resources to meet policy objectives during the voluntary resource procurement period.

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)?**

- Each state would be free to develop a specific plan and/or mix of resources to be procured to meet its policy objectives as well as its LSEs' share of the regional resource adequacy requirements, either individually or in concert with other states.

- Procurement results could be more efficient to the extent the states agree on a Coordinated Plan to achieve at least some common regional policy goals. Doing so could facilitate multiple LSEs in different states building or procuring resources bilaterally at a scale that is more economically efficient.
- On a short-term basis, the ISO will continue operating the bulk power system on a coordinated, single-system basis consistent with the current energy and reserve market rules.
- Additional consideration would be needed to evaluate whether and/or how the "capacity performance" provisions would need to be changed to accommodate this structure. Initially, it appears that these provisions should be applied to all resources counting toward the region's resource adequacy requirements.
- The Coordinated Plan starts with the aggregate quantity of resources needed to meet the region's resource adequacy requirements.
  - The Coordinated Plan should also factor in the impact of non-market distributed resources and energy efficiency measures by specifying minimum data collection, monitoring, and reporting requirements in order to be factored into the Coordinated Plan.
  - Note that as non-market resources, decisions over procurement and operation of such distributed resources would remain with the customer and/or LSE.

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?**

- The specific form of contract would be up to the contracting parties. As applicable, state regulators or other regulating body for each LSE would determine the procurement mechanics. For new resources with long lead times and uncertain permitting and interconnection timing informal negotiations may be preferable to requiring RFP's. The only basic requirement would be that any resources certified as counting towards the regional resource adequacy requirements would have to be committed to ISO metering, reporting, and dispatch requirements.
- As a result of this structure, resources procured during the voluntary procurement period may be compensated differently than resources procured during the mandatory centralized procurement period.
- The expectation is that such resources would receive compensation through the energy and reserve markets (where applicable) like any other resource, but would not receive compensation through the residual capacity market.

Energy Market Advisors LLC

Goal Post Comparison

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

"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should:		
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).	Yes	In general, we view commitments made during the voluntary procurement period as the primary vehicle for responding to changes in policy objectives and/or market conditions over time. The centralized, residual market operated by ISO-NE would continue to be structured to assure that, as a region, New England meets the minimum resource adequacy standards for the region. The centrally dispatched energy and reserve markets would continue to be focused on near-term operational reliability and near-term economic efficiency.
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.	Yes	We believe that one of the most cost-effective ways to procure resources is through bilateral contracts supported by load serving entities. By maintaining an annual voluntary procurement period on an ongoing basis, LSEs and entities representing load interests (including the states) can enter into arrangements with projects with the confidence that such resources will be counted towards meeting resource adequacy requirements and avoid the possibility of "double payments". As policy objectives change over time, maintaining this annual voluntary procurement period can also allow resource commitments to change over time (subject to the provisions of any agreements between the parties.)

3. At a minimum, enable the achievement of the current RPS requirements of each state.	Yes	We believe that sufficient resources to meet the current state RPS requirements can be procured during the voluntary procurement period.
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.	Yes	The voluntary procurement period will permit resources procured as a result of the Clean Energy RFP and other processes put in place by the states to be incorporated into the region's resource mix.
5. Consider mechanisms to ensure consumers in any one state do not fund the public policy requirements mandated by another state's laws.	Yes	Each state would be free pursue its policy requirements during the voluntary procurement period and any resources procured would reduce the resource adequacy requirement allocated to LSEs within that state through the centralized mandatory residual auction. This would be similar to how existing resources that have been designated as self-supply resources are currently treated in the FCM settlement. States, not the LSEs, drive whether multiple states can agree on a set of policy objectives and allocation of responsibilities among them and their LSEs for meeting such objectives.
6. Attempt to minimize short-term financial effects to current existing resources.	Yes	Existing resources that a state deems to need support could be compensated and maintained during the voluntary procurement period.
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	Yes	The current market design is effectively maintained during the mandatory, centralized residual procurement. States and LSEs have the option to secure commitments during the voluntary procurement period to meet various policy and cost-effectiveness objectives. We expect such decisions will explicitly factor in prudence and cost effectiveness considerations.
2. Over the long-term, include out-of-market mechanisms unless those ultimately are determined to be required in order to meet the	Yes	We would expect states and LSEs to procure resources during the voluntary procurement period in the most cost effective manner possible. This

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).		may include RFPs, PPAs and other competitive processes. These arrangements will allow specification and balancing of costs and risks between consumers and project developers.
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).	Yes	LSEs and states will have the ability to negotiate compensation for specific resources during the voluntary procurement period. All resources procured during the mandatory centralized procurement period will be compensated based on the existing FCM settlement provisions.
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).		The mechanisms and processes currently in place (including RFPs and PPAs supported by EDCs) should be available to procure resources during the voluntary procurement period without additional legislative or statutory authorizations.

Goal Post Comparison

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

"Goal Post" Item	Does Proposal Satisfy (Y/N)	Explain
A Solution Should:		
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).	Y	States would set purchasing requirements (quantity, technology, location, vintage, etc.) based on their evolving public policy priorities.
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.	Y	Long-term (10+ years), obtaining sufficient revenue for low/no carbon resources does not rely on fossil-fuel fired generators setting marginal energy market price. Near-term, achieves policy requirements by procuring resources to meet the criteria as determined by states.
3. At a minimum, enable the achievement of the current RPS requirements of each state.	Y	Supplements existing RPS in each state (possibly reducing RPS costs), does not replace it.
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.	Y	State requirements for low/no carbon energy and/or renewables would determine the resource procurement.
5. Consider mechanisms to ensure consumers in any one state do not fund the public policy requirements mandated by another state's laws.	TBD	No specific cost allocation provisions were proposed, but can be developed to achieve this goal post.

6. Attempt to minimize short-term financial effects to current existing resources.	Y	Adequate revenue required for legacy and off-contract clean energy generation from centralized procurement, though possibly at a different price and term than the long-term commitments to new resources that are meant to make capital costs financeable. Adequate revenue for other existing resources required to maintain system reliability and operability would most likely come from the capacity market in the short term as energy market revenues are reduced. A mechanism to ensure appropriate capacity prices for these resources would fit together with the long-term commitment mechanism.
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	Y	This kind of market mechanism would supplement, and reduce cost of, RPS compliance and PPAs
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).	Y	No requirement for OOM mechanism specified.
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).	Y	State-determined requirements determine the constraints on the centralized procurement. For every constraint in such a market, there may be price differentiation. If vintage were a constraint, that would allow different pricing for new resources (which need to finance capital investments) and existing resources (which need to cover operating expenses).
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).	Y	No requirement for state action outside of New England.

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?

Synapse Energy Economics response: The deployment of storage at substations would be evaluated as a reliability asset that ISO-NE would control to better manage the resources on the system and provide more efficient use of all resources. This would not assume nor exclude additional storage resources that could be market-based. The questions below are good ones that we do not have answers for at this time.

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
A Solution Should:		
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).	Y	Storage at substations would be implemented gradually and scaled up over time to accommodate any changing public policy priorities and the resources that are developed pursuant to those policies.
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.	Y	Same explanation as above.
3. At a minimum, enable the achievement of the current RPS requirements of each state.	Y	Uncertain as to what that would mean in terms of the quantity of storage needed, but certainly possible to implement that quantity once it is determined
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	Y	Storage at substations can be scaled up to meet any specific needs.

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.	Y	The deployment of storage at substations would be based on reliability and improved efficiency of all system resources.
6. Attempt to minimize short-term financial effects to current existing resources.	Uncertain	Using system resources more efficiently with storage at substations will have impacts on all resources and could cause financial harm to some existing resources
A Solution Should Not:		
1. Imprudently increase costs to consumers over the costs that they would incur under the status quo/current market design.	N	Siting storage at substations should not lead to imprudent costs.
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).	N	Storage at substations that is dispatched based on ISO-NE operational needs could be based on a new Operating Procedure that would not interfere with market systems.
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).	N	Unlikely that storage at substations that improves the reliability and efficiency of system operations will create windfall profits for any resources.
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).	N	ISO-NE has a tariff that allows for the reliable and efficient operation of the New England system.