

FCEM in New England Feedback on ISO-NE Questions

ON BEHALF OF NRG ENERGY AND OTHER STAKEHOLDERS

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Today's Topics

- Feedback on Questions posed by ISO-NE at 'Pathways' meeting on February 18
- Today's presentation is being offered by consultants to NRG Energy, based on consultations with and input from a group of stakeholders representing diverse interests

Initial Observations

- We welcome insights from ISO and Analysis Group as well as other stakeholders
- Draw a clear distinction between assumptions and design specifications needed for the Pathways modeling effort, as opposed to the specifications needed for ultimate implementation of FCEM/ICCM
 - Pathways modeling needs to capture the essence of FCEM/ICCM and how it differs from contract-based procurements and net carbon pricing. Actual implementation will require additional detail and mechanisms to address real-world dynamics
- Wherever we refer to “clean energy” below it should be understood to refer to the clean attribute, not the energy itself

ISO-NE Questions (1)

- What resources can sell “clean energy?”
 - *For modeling, limit to wind, solar, hydro and nuclear as the major carbon-free resource types.*
- Does it include imports?
 - *Yes, as long as energy originates at a specific resource that is eligible under the same criteria as resources internal to New England.
Probably should be included in modeling.*

ISO-NE Questions (2)

- Apply to energy storage (eg, pumped hydro, batteries)?
 - *Yes, subject to demonstration (physical or contractual) that storage is charged with energy meeting the criteria above.*
- Would credits be “dynamic?” If yes, how would this work?
 - *Dynamic credits, or some form of time-varying value, should be explored for implementation to capture the value of controlling the timing of energy production/injection. Pathways modeling should proceed initially on the basis of a non-dynamic credit (though perhaps with accommodations in the model for later inclusion).*

ISO-NE Questions (3)

- Is there a cap on the quantity of “clean energy” a resource can sell forward?
 - *For modeling, assume eligible clean/renewable resources offer their P50 (median) output.*
- If yes, how would this cap be determined?
 - *For implementation, upper limit on sell offer would be based on weather data and technical capabilities. Resources could offer less based on risk tolerances.*

ISO-NE Questions (4)

- Is there a qualification process?
 - *For implementation we anticipate a process very similar to FCM and a similar 'physical' paradigm for attributes under FCEM/ICCM.*
- Is there a single “clean energy” product, or are there potentially multiple products (and if so, what are they)?
 - *The market will be most efficient with a single product. For modeling, see 'ISO-NE Questions (1).'* For implementation States will need to ensure their demand participation in FCEM/ICCM does not interfere with statutory and other requirements for clean/renewable energy.

ISO-NE Questions (5)

- What are the settlement implications of producing more or less “clean energy” during the commitment period than was sold forward?
 - *The forward sale should encompass an obligation to deliver the specified quantity of attributes or secure replacement credits through bilateral or auction-based transactions. A ‘balancing’ auction might be used to create a valid price to settle shortfalls. Absent a robust means to create a market-based ‘real time’ price for credits there should be an administrative penalty for under-delivering and failing to secure replacement credits. It is not clear whether or to what extent this needs to be specified for modeling purposes.*

ISO-NE Questions (6)

- Is there a “penalty” for the non-delivery of “clean energy?” If so, how is it determined?
 - *There should definitely be a performance incentive as part of a FCEM/ICCM obligation. If a ‘balancing’ auction isn’t effective to create a valid price to settle shortfalls, there should be an administrative penalty for under-delivering and failing to secure replacement credits. Perhaps set at some multiplier of the clean energy credit clearing price, and/or a minimum level set administratively, similar to Alternative Compliance Payments (ACP) under RPS programs. It is not clear whether or to what extent this needs to be specified for modeling purposes.*

ISO-NE Questions (7)

- Are there opportunities to buy/sell credits during the commitment period so that a resource can align its forward and spot positions?
 - *Definitely. In addition to bilateral trading, there should be at least one balancing auction after the close of the commitment period. Other auction-based opportunities within the commitment period could be considered. It is not clear whether or to what extent this needs to be specified for modeling purposes.*
- Can a resource without an FCEM obligation buy/sell credits?
 - *Yes, a resource can sell credits subject to meeting eligibility criteria. Similarly, a resource with an FCEM obligation that 'over-produces' can sell bilaterally or through a balancing auction.*

ISO-NE Questions (8)

- Are there any exemptions that would allow resources to avoid covering their forward position during the commitment period?
 - *Generally no, but who should bear the risk of a region-wide shortfall in clean energy, e.g., in the event weather is such that regional production of clean energy credits is less than the amount of FCEM/ICCM obligations?*
- Can credits be banked across commitment periods?
 - *Not clear whether or to what extent necessary for modeling. For implementation, will depend on a number of other parameters, such as product definition, balancing opportunities, and demand levels relative to supply.*

ISO-NE Questions (9)

- Can a resource provide “clean energy” under the FCCEM and also qualify for credits/certificates under current state programs?
 - *Yes. We assume the ultimate FCCEM/ICCEM design must be able to co-exist with State RPS and similar programs. For modeling, suggest several scenarios/sensitivities:*
 - *Assume no RPS value outside of FCCEM/ICCEM*
 - *Assume Class I REC value of \$[TBD] as an offset to resource costs offered in FCCEM/ICCEM*
- If yes, does it receive credits for both programs?
 - *We have offered two potential models in our December whitepaper.*

ISO-NE Questions (10)

- If not, does the resource choose which credit is awarded, or does one program supersede the other?
 - *We assume the two are not mutually exclusive, consistent with the two suggested modeling scenarios.*
- The answer to the above may have implications, such as if/how suppliers price “clean energy” offers.
 - *For modeling, see suggestion on ‘ISO-NE Questions (9)’*
- Whether the FCEM replaces (or reduces) certain state policy requirements.
 - *Over time, we expect requirements will trend toward the single attribute of ‘no carbon emissions.’*

ISO-NE Questions (11)

- The design appears to allocate “clean energy” costs to RTLO in the states that buy this product.
 - *Assume that FCEM/ICCM costs are allocated to end-use consumers in participating states using the RTLO metric and the ‘supply’ portion of retail bills.*
- If it allows non-rationable “clean energy” MWh offers/bids there may not be a single price that is acceptable to all buyers and sellers.
 - *As with FCM, some amount of ‘non-rationability’ is likely unavoidable. Optimize for social surplus in the same manner as FCM.*

ISO-NE Questions (12)

- In such cases, the design would require side payments. This is how minimum offers in the energy market can create uplift.
- In such cases, how would the “clean energy” price be determined? How would the costs associated with any side payments be allocated?
 - *Side payments would be added to the costs allocated to end-use consumer RTLO. The clearing price would be determined based on the social surplus optimization. The payment rate for buyers might differ from the clearing price.*

ISO-NE Questions (13)

- Stakeholders have discussed an approach that would jointly optimize forward capacity and “clean energy” positions. [*aka, ICCM*]
- Would resources offer capacity and “clean energy” jointly?
 - *As envisioned, ICCM would entail joint offers comprising both the resource adequacy/capacity capabilities of the resource as well as its clean energy attribute capabilities, in a single non-rationable offer. For modeling this is likely sufficient. For implementation it may be valuable for resources to be able to submit rationable offers.*

ISO-NE Questions (14)

- How would such offers be formulated? Do participants submit separate offers for each product, or a joint offer for both?
 - *A resource's offer would be based on its total cost/revenue requirements for the applicable year less anticipated energy/ancillary service revenues. It would be presented in terms of \$/year for the resource as a whole. For implementation there would likely be refinements to account for performance risk associated with each product.*
- If separate offers, could an offer clear for one product but not the other, or would the products be bundled?
 - *This is the reason for bundled and non-rationable offers.*

ISO-NE Questions (15)

- Are offers non-rationable? If yes, how would prices be determined? Are side payments required?
 - *As noted above, this may be an unavoidable consequence of this design. The significance of this issue will depend on the magnitude of the bid-in demand relative to the level of supply and the size of individual projects, among other things.*
- Is such a joint optimization feasible?
 - *Brattle has demonstrated the mathematics at a small scale and there is no obvious reason it cannot be scaled. This is one of the key questions to resolve in modeling.*

ISO-NE Questions (16)

- What study year (or years) should be evaluated? What are the regional and state carbon emissions targets for the study year(s)?
What are the assumed load levels and shapes?
 - *Suggest adopting appropriate scenario assumptions from the Future Grid Reliability Study*
 - *While a time-series 'capacity expansion' approach might be ideal, it appears far too complex to effectively formulate and solve.*
- What are the assumptions regarding MOPR?
 - *Assume all clean energy suppliers act in a rational economic manner based on costs without external subsidies and with no market power.*

Some Unasked Questions (1)

- How should State demand for “clean energy” be formulated for modeling purposes?
 - *Suggest translating state targets, eg, “80% reduction in carbon emissions by 2050” into MWh terms at the appropriate point along the trajectory.*
 - *Also consider RPS requirements and ensure FCEM demand is equal or greater*
 - *Also consider participation of existing contracts and if participating ensure FCEM demand is sufficiently large to clear on competitive offers*
- How should the ‘business as usual’ case be constructed?

Some Unasked Questions (2)

- How should resources with state-backed long-term contracts participate in FCEM/ICCM?
 - *Consider modeling several scenarios:*
 - *Assume contracted resources are outside of FCEM/ICCM and all contract-based revenues are subject to MOPR*
 - *Assume contracted resources participate as price-takers in FCEM/ICCM (with appropriate levels of demand to ensure price is set by non-contracted resources); FCEM revenues treated as 'in-market' for MOPR and other contract-based revenues subject to MOPR*
 - *Assume contracted resources participate as price-takers in FCEM/ICCM (with appropriate levels of demand to ensure price is set by non-contracted resources); no application of MOPR to contract revenues*
 - *Others?*

Closing Observations

- The suggestions offered today represent starting points for discussion and refinement
- As the Pathways process evolves, maintain clarity on the assumptions needed to complete the modeling task
- Implementation of FCEM/ICCM will require yet more detailed and extensive discussion and engagement from all stakeholders in the region

Questions and Feedback



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