NEPOOL Participants Committee

Future Pathways

Round 3: Standardized Fixed-price Forward Contract (SFPFC) and Summary Report

Preliminary Observations and Request for Input

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Agenda

1. Preliminary Observations on Standardized Fixed-price Forward Contract (SFPFC)
2. Outline of Summary Report
3. Next Steps
4. Questions, Comments, and Request for Input
5. Appendix: Background, Abbreviations & References

Inventory of Potential Pathways

1. Forward Clean Energy Market (FCEM)
2. Integrated Clean Capacity Market (ICCM)
3. Carbon Pricing (CP)
    1. With the RGGI framework (RGGI+)
    2. Carbon pricing external to ISO-NE
    3. Net Carbon Pricing (LMP-NC)
4. Energy Only Market (EOM)
5. Alternative Resource Adequacy Constructs (ARAC)
    1. Fixed Resource Requirement (FRR)
    2. FCM with Balancing Resources (FCM-BR)
    3. Voluntary-Residual Capacity Market
    4. Standardized Fixed-price Forward Contract (SFPFC)
    5. Regional Integrated Resource Planning (Regional-IRP)
    6. State Integrated Resource Planning (State-IRPs)
    7. Net FCM
    8. Capacity as a Commodity

For Quick Reference

Project Goal

Compares Pathways across two key questions:

- Whether and to what extent the Pathway supports the clean energy policies of States?
- Whether and to what extent the Pathway garners efficiency of regional markets?

Project Report: Draft targeted for mid Dec.; final in late Dec.

ISO Retained Functions and Caveats

For the Pathways and variations, it is presumed that ISO-NE would continue to conduct energy dispatch, unit commitment, maintenance scheduling, transmission planning, market monitoring and mitigation, and market administration and settlement

For the Pathways and Variations, markets are used to procure energy, capacity (except for EOM and some ARACs), ancillary services, although the type, structure and administration of these markets may vary across Pathways

Pathways are inextricably linked to regional and State specific policies

Standardized Fixed-price Forward Contract (SFPFC)

1. Recap (Wolak, Frank, Long-Term Resource Adequacy with Significant Intermittent Renewables, presentation, Nov. 5, 2020)
    1. Regulators mandate LSEs purchase and hold to delivery standardized forward contracts for energy for fractions of their annual energy demand at various horizons
    2. Standardized contracts are shaped by hourly demands
    3. Clearinghouse manages counterparty risk
    4. No installed capacity requirement
2. Preliminary observations
    1. SFPFC does not explicitly address the procurement of clean energy resources to achieve States' energy policy objectives
    2. For SFPFC to be considered a pathway, it needs to be augmented with how decarbonization occurs
    3. SFPFC may (or may not) be an improvement over the FCM

Outline of Final Summary Report

1. Reviews and discusses various pathways
2. The report summarizes pathways and leaves to the cited references to provide details and articulate the claimed advantages of pathways
3. Discusses high-level (preliminary, for discussion purposes only) findings (following slides)
4. Identifies gaps to be addressed
5. How do pathways address two questions:
    1. Whether and to what extent the Pathway supports the clean energy policies of States?
    2. Whether and to what extent the Pathway garners efficiency of regional markets?
6. More detailed findings from prior presentations are discussed

General, Overall Observation

The efforts underway to try to reconcile conflicting objectives of wholesale electricity markets and States' clean energy policies is clearly an ambitious and challenging undertaking. Any successful reconciliation is not likely to occur without some broad agreement reached among the New England States, NEPOOL stakeholders and ISO-NE, the ability of the ISO to implement a particular market mechanism, and/or some not yet specified means of procuring sufficient balancing resources.

High-Level Finding 1: Difficult to Reconcile Competing/Differing Objectives of the States and the Markets

It may not be possible to *fully* achieve each State's energy policy objectives through a regional market structure and at the same time *fully* garner the efficiency benefits of competitive regional markets that maximize social surplus. Thus, Pathways that pull or push more strongly in one direction than the other will produce a different set of tradeoffs.

High Level Finding 1: Difficult to Reconcile Competing/Differing Objectives (con't)

Preliminary Observed Challenges

1. Net Carbon Pricing

Net carbon pricing mitigates, but does not necessarily solve, the double payment issue by increasing the revenues clean energy resources earn in the energy markets but does not specifically help the States tailor the timing and type of clean energy resources to meet their individual policy objectives. Net carbon pricing does not alone address the balancing resource issue.

High Level Finding 1: Difficult to Reconcile Competing/Differing Objectives (con't)

Preliminary Observed Challenges

2. FCEM and ICCM

A major claimed advantage of the FCEM and ICCM frameworks is that they would procure the least cost set of clean energy resources, but they do so by having broad definitions of clean energy resources and setting the demand for these resources that compete among each other at the regional level. However, achieving sufficient uniformity in the definition of clean energy resources to maximize the regional efficiency benefits of these auction mechanisms will likely require the States (or at least a subset of the States) to relinquish some control over the outcomes.

For the region to make substantial progress on a Pathway like the FCEM or ICCM, the New England States will need to determine if they can obtain sufficient agreement regarding regional procurement of clean energy resources to meet their individual State objectives.

High Level Finding 2: More Precise Definition of Required Balancing Services is Needed

The required types, amounts and timing of balancing services needed to accommodate increasing levels of variable renewable energy resources has not been fully articulated/defined. Without knowing these requirements, analyzing whether in choosing any of the potential pathways, the markets will continue to be successful in providing the resources needed for reliability is challenge. The ISO-NE needs to specify the reliability criteria and metrics it plans to use to establish the balancing services needed to plan and operate the bulk power system reliability given increasing penetration of VRERs. Whether an FCM-like mechanism is the preferred alternative to procure the required balancing services is an open question given that such a mechanism is designed primarily to procure new resources to maintain resource adequacy as opposed to maintain existing resources to provide balancing resources.

- Note that NEPOOL is, in parallel, engaged in the "Future Grid Reliability Study" that is examining these issues and as part of that effort and the ISO is to identify any reliability or operational gaps associated with the expected transition of the fleet/very large increased penetration of variable resources on the system.

For discussion purposes only; preliminary and subject to change

High Level Finding 3: More Details Are Needed to Fully Assess the Tradeoffs

The proposed pathways need more development and specificity before a complete analysis of their implications and impacts can be conducted. The identified Pathways at this time are really collections of similar high-level proposals that vary, in some cases substantially, within each pathway. Furthermore, the outcomes of pathways depend on how they interact with energy dispatch and curtailment, unit commitment, ancillary service definition and opportunity costs, imports and exports of power, bids and offers incentives, transmission planning and cost allocation, deployment of smart grid technologies, dynamic retail pricing, market monitoring and mitigation, wholesale and retail credit policies, and regional and State energy policies. One major example of the need for more development of pathways is the intersection of the proposed pathways with transmission expansion and cost allocation policies. The region's push for extensive development of offshore wind is a prime example. Considering the intersection of pathways and transmission policy is critical in achieving the least cost deployment of generation and transmission resources.

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Possible Implications of Unspecified Deliverability of Clean Energy Resources

Several proposed pathways procure resources without specifying the delivery location

Without specifying delivery locations, transmission planning may become more difficult, and the combined cost of generation and transmission may be more expensive compared to integrating generation resource procurement and transmission planning

Next Steps

1. Opportunities for written feedback and comments to this presentation are available

2. All comments will be considered, although comments that improve and contribute to the analysis of tradeoffs of Pathways and Variations will be the more helpful than advocacy

   *Please provide any written feedback on this presentation or other Pathways to NEPOOL Counsel (slombardi@daypitney.com) by COB Thursday, December 10 or sooner; all comments will be posted on the NEPOOL website

3. Goal to issue final report by end of the year, which will be circulated as a draft for comment, targeted mid Dec.

QUESTIONS AND COMMENTS

Abbreviations

ACP: Alternative Compliance Payment

ARAC: Alterative Resource Adequacy Constructs

CCS: Carbon Capture and Sequestration

CEAC: Clean Energy Attribute Credit

CONE: Cost of New Entry

CP: Carbon Pricing

EOM: Energy Only Market

ERCOT: Electricity Reliability Council of Texas

FCEM: Forward Clean Energy Market

FCM: Forward Capacity Market

FRR: Fixed Resource Requirement

ICCM: Integrated Clean Capacity Market

IRP: Integrated Resource Planning

LOLP: Loss of Load Probability

LSE: Load Serving Entities

MOPR: Minimum Offer Pricing Rule

ORDC: Operating Reserve Demand Curve

PPA: Power Purchase Agreement

RDPA: Reliability Deployment Price Adder

REC: Renewable Energy Credit

RES: Renewable Energy Standard

RGGI: Regional Greenhouse Gas Initiative

RGGI+: RGGI Plus Additional Emission Reductions

RPS: Renewable Portfolio Standard

SCED: Security Constrained Economic Dispatch

SFPFC: Standardized Fixed-price Forward Contract

VOLL: Value of Lost Load

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