

Comments of NRG Energy, Inc. in Response to “NEPOOL’s Pathways to the Future Grid Process Project Report” by Frank Felder, January 6, 2021

NRG Energy, Inc. (“NRG”) appreciates the opportunity to submit these comments to the New England Power Pool (“NEPOOL”) to provide further detail and context regarding the Forward Clean Energy Market (“FCEM”) and Integrated Clean Capacity Market (“ICCM”) concepts reviewed in Dr. Felder’s Project Report. NRG also appreciates NEPOOL’s leadership in engaging Dr. Felder and convening these important sessions that surfaced a number of potential ‘pathways’ for the region to consider as we work together to secure a decarbonized electric system supported by competitive markets.

**I. Summary**

The NEPOOL Future Grid Pathways process has demonstrated that while there are a number of ways to organize the regional market structures for securing and operating a reliable and affordable supply of electricity, there are few options that meet the challenge of aligning those structures with the States’ interest in developing a low-carbon future and to use the cost-saving and risk-shifting capabilities of competitive markets to get there. The Forward Clean Energy Market and Integrated Clean Capacity Market<sup>1</sup> offer the most practical and comprehensive approach.

FCEM/ICCM is the ‘pathway’ most responsive to the needs of the region as articulated in Dr. Felder’s two criteria questions:

- i. Whether and to what extent the pathway solution supports or advances the clean energy policies of the States, and
- ii. Whether and to what extent the pathway solution garners efficiency of regional markets

FCEM/ICCM provides a platform for states to explicitly specify their clean energy objectives, including budgetary constraints in the form of maximum prices. The platform enables participation by all sellers of clean energy attributes, leading to maximum competition and efficiency in the achievement of the States’ objectives.

Just as it is for each of the pathway options that have been presented, additional definition is required for FCEM/ICCM. The need for more detail should not be a bar to moving forward with FCEM/ICCM. None of the pathways presented offers a fully implementable ‘off the shelf’ design. However, the FCEM/ICCM framework has many parallels to the existing ISO-NE capacity market that can be leveraged in creating the necessary implementation details.

Likewise, while FCEM/ICCM does not directly address the need for ‘balancing resources’ in a highly decarbonized grid, it is not unique among the pathway proposals in that regard. The NEPOOL Future Grid Reliability Study<sup>2</sup> is intended to identify and quantify the need for additional reliability

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<sup>1</sup> NRG considers the ICCM to be a ‘deluxe’ version of FCEM, and to contain all of the same functional features and capabilities of FCEM, with the added feature that the clean energy attributes would be procured jointly with capacity in a single integrated auction. This is described more fully in Section III below.

<sup>2</sup> <https://nepool.com/meetings/future-grid-reliability-study/>

products or characteristics, which are likely to be expressed either as additional ancillary services or as an additional type of capacity that has the necessary ‘balancing’ characteristics. In either case, adding those requirements to a market that includes an FCEM or ICCM platform should be straightforward and create no conflict or tension with the FCEM/ICCM aspects of the market.

## II. Establishing the Yardstick

Dr. Felder expands on his two foundational questions with four criteria by which he suggests potential solution pathways should be evaluated.

- i. Will it achieve States’ clean energy objectives? If the States can define these objectives in broad, technology-neutral terms, markets can be very effective. The more narrowly and specifically the States draw their clean energy objectives, the harder it will be to access the efficiency benefits of competitive markets.
- ii. Will it address the issue of ‘double payment for capacity?’ Will it ensure that the clean energy resources favored by the States will be allowed to fully participate and be fully valued in the ISO-NE markets?
- iii. Will it address the issue of ‘price suppression?’ Will it ensure that prices formed in the competitive markets are the result of resource costs and anticipated market revenues, unaffected by any payments or subsidies from other sources outside of the markets? Distortion of prices through the impact of such non-market revenues can have both short-term and long-term economic efficiency and reliability impacts.
- iv. Will it support sufficient balancing resources to maintain reliability in operations of the grid? Balancing resources will become increasingly important as the resource mix transitions toward more resources that are dependent on sun or wind, and that are not as controllable as traditional electric generation sources.

Dr. Felder’s first criterion, achieving the States’ clean energy objectives, is essentially the same as his first foundational question, and is an appropriate metric. If the pathway reforms do not bring the wholesale markets into alignment with the States’ clean energy objectives, the region will not have resolved the core source of current tensions. The second and third criteria, referred to as the ‘double payment’ and ‘price suppression’ issues, can both be considered subsets of the second foundational question of whether the pathway will garner the efficiency of a regional market. ‘Double payment’ and ‘price suppression’ are two sides of the same inefficiency coin – one results from excluding resources from the capacity market that are receiving out-of-market subsidies, and one results from those resources taking part in the market at prices reduced by those out-of-market subsidies. In order to address these complementary inefficiencies, the goal of the ‘pathways’ exercise should be to incorporate the States’ clean energy goals into the wholesale markets, eliminating the need for out-of-market subsidies and allowing the wholesale markets to be a self-contained economic system that will achieve the region’s long-standing objectives of reliability and economic efficiency, plus the new objective of decarbonization of the energy supply.

Dr. Felder's fourth criterion, regarding balancing resources, is a valid question as the region contemplates a highly decarbonized future grid. It should not, however, be construed as a basis for judging the pathway options. As Dr. Felder notes, none of the proffered pathways directly addresses balancing resources. The proximate issue that the pathway options are ostensibly responding to is the challenge of getting the non-emitting resources which are favored by States to be full participants in the wholesale markets. The need to explicitly value balancing resources is a derivative of the evolution toward decarbonization, and is, therefore, independent of the market framework chosen to foster that evolution. The region will necessarily have to address balancing resources, regardless of which pathway option is chosen.

### III. FCEM and ICCM

One of the primary pathway solution options described in the NEPOOL process and summarized by Dr. Felder is the Forward Clean Energy Market, and the closely related Integrated Clean Capacity Market.

As Dr. Felder summarizes,

Although there are many design components to the FCEM, the key elements are a downward sloping demand curve for clean energy resources, a forward auction, e.g., 3 years, with a possible multi-year commitment period for new resources (e.g., 3-7 years), an unbundled Clean Energy Attribute Credit (CEAC) that is tradeable via bilateral and spot markets, and associate[d] market administration policies regarding tracking, credit, and market power monitoring and mitigation policies.

The Integrated Clean Capacity Market (ICCM) integrates the FCEM and the FCM into one auction in which resources offer in to provide both clean energy and capacity. Resources that clear the joint procurement auction sell unbundled capacity and CEAC products. The motivation for the ICCM is to obtain the benefits of jointly optimizing the procurement of capacity and clean energy as opposed to running the FCEM and the FCM sequentially. (*citations omitted*)

Another important feature of FCEM and ICCM is the ability for each State to choose whether and to what extent it participates and a corollary ability for other entities, such as cities and towns or large users of electricity, to also participate by submitting their voluntary demand for clean energy attributes.

As originally conceived, the FCEM platform would entail an auction for clean energy attributes conducted shortly before the existing Forward Capacity Auction for the same future delivery year. Resources that secure a CEAC obligation through the FCEM auction could qualify for the capacity auction and would take account of their anticipated CEAC revenues in pricing their Forward Capacity Market ("FCM") offers. The interface and interaction between CEAC obligations and participation in FCM, including the schedule of FCEM and FCM, would require additional attention and coordination.

The ICCM, which incorporates all the same internal features of the FCEM, would integrate the FCEM into a single, co-optimized auction with the FCM. In doing so, ICCM would simplify the interface between the two products and markets. Rather than inserting a new and separate forward auction into the annual schedule, ICCM could use the same processes and timing through which the region procures capacity resources each year. The economic interface would likewise be simplified because all sell offers and pricing would occur in the context of a single auction for two products. Sellers able to offer both the clean energy attribute and the capacity product would offer a total revenue value that they would require from the market to provide the two products. The auction software would determine clearing prices for each product, and each resource capable of providing both products would either be selected to provide both products or would not be selected at all. A seller with a resource capable of providing only one of the products would also be eligible to participate and could take on an obligation for only clean energy attributes or capacity, as applicable, based on its offer price and the clearing price for the relevant product. Each selected resource would be entitled to receive market revenue at least equal to its total revenue requirement offer (subject, of course, to any adjustments for shortfalls in performance). As summarized recently by the staff of the New Jersey Board of Public Utilities:

Mechanically, the ICCM auction would produce two simultaneous “clearing prices,” one for Clean Energy Attribute Credits, or “CEACs” ... , and one for traditional capacity service ... . Clean energy resources compete to receive *both* capacity revenues and CEAC revenues. Conventional resources compete solely for capacity revenues. By co-optimizing the two products into a single auction, consumers would benefit from having identified the lowest cost, fully reliable system that meets the share of clean energy required by state policies.<sup>3</sup>

#### IV. Evaluation of FCEM/ICCM

##### State Clean Energy Objectives

By definition, the FCEM/ICCM is designed to procure all of the clean energy attribute needs bid into the market by the participating states through competitive annual markets. The very purpose of the FCEM/ICCM construct is to provide a vehicle by which States can specify their clean energy attribute objectives as well as their willingness to pay for those attributes through price-sensitive demand bids in the FCEM/ICCM auction. In addition, because the demand for the clean energy attributes is determined by the individual States, FCEM/ICCM provide a platform that does not require uniform goals or objectives among the States and can accommodate participation by one or several States without universal participation.<sup>4</sup> The

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<https://www.nj.gov/bpu/pdf/publicnotice/Public%20Notice%20for%20RA%20Work%20Session%20on%20Clean%20Energy%20Markets.pdf>

<sup>4</sup> Dr. Felder correctly observes that FCEM/ICCM require a common definition of ‘clean energy’ and the resources that qualify to provide it, and that a broad definition may play a critical role in FERC’s acceptance of FCEM/ICCM.

FCEM/ICCM is perfectly capable of functioning if, for example, one State is seeking to meet 100% of its load with clean energy attributes, another State has a goal of 50%, and yet another State has no quantifiable clean energy attribute goals. Each State will specify its own quantity and price requirements, and the costs of the clean energy attributes procured through the market will be allocated only to the participating States.

#### Market Efficiency (Double Capacity Payments and Price Suppression)

The ICCM would, by design, resolve the perceived double capacity payment issue by ensuring that resources selected as part of the least-cost solution for meeting the aggregated clean energy attribute requirements of the region would also be selected as part of the least-cost portfolio of resource adequacy resources, and vice-versa. The ICCM is structured to efficiently select the set of resources that provide the least-cost means of meeting both the resource adequacy and clean energy attribute demand quantities, and to do so in a way that would ensure that a resource capable of economically providing both products will do so. This ensures that every economic resource providing clean energy attributes is fully counted toward the region's resource adequacy requirements. Even if the two markets are not integrated into a single auction, the treatment of FCEM revenues as 'in market' for purposes of establishing FCM offer price floors under the Minimum Offer Price Rule ("MOPR") would go a long way toward enhancing the participation of clean energy resources in the capacity market. This approach minimizes the potential for resources selected in the FCEM for their clean energy attributes to be excluded from providing their resource adequacy value in the FCM.

On the other side of the inefficiency coin, the MOPR exists to deter the price suppression effect described by Dr. Felder, by recognizing only revenues derived through the ISO-NE markets in establishing offer price floors in the capacity market. One of the hallmark reforms involved in adopting FCEM/ICCM is to bring the attribute of non-emitting energy into the ISO-NE markets, making it a competitive market-based revenue stream, like energy or ancillary services. By virtue of making the clean energy attribute a market-based product, the primary source of State-backed 'out-of-market' revenues will be eliminated, effectively ending the potential for the price suppression described by Dr. Felder.

#### Balancing Resources

While the concept of balancing resources is not new, it has come to prominence as stakeholders contemplate an electric supply system that is dominated by resources that rely on the sun, the wind, or flowing water to produce energy, and therefore do not provide ISO-NE system operators with the same degree of control over when and at what levels resources produce energy compared to traditional resources. In that sense, the question of balancing resources is a corollary to the States' objectives for clean energy. As with those objectives,

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However, there is no requirement that all States participate in FCEM/ICCM, or that all participating States participate to the same degree.

the need for balancing resources has not previously been explicitly expressed in the capacity market. Instead, the ancillary service products of operating reserves and regulation have ensured that there are flexible and responsive resources ‘on standby’ to respond to system disturbances or loss of generation or transmission elements. The transition of the fleet to more intermittent resources makes it necessary to reconsider whether the current ancillary service products are sufficient in their definitions and in their quantity requirements, and whether the need for balancing resources should be an additional ancillary service product or an explicit part of an expanded definition of resource adequacy procured through FCM or ICCM.

In this respect, FCEM/ICCM is no different than any other proposed pathway approach. The primary forum for evaluating the markets’ need for additional reliability products and revenue streams is the NEPOOL Future Grid Reliability Study process. If that process determines that additional products or requirements should be reflected in the markets, those can be accommodated within an FCEM/ICCM framework.

#### **V. Other Questions about FCEM/ICCM**

Dr. Felder poses several additional questions, including whether it is possible to design and implement a feasible and practical joint auction for clean energy attributes and capacity, as contemplated by the ICCM. There is no conceptual challenge to this, based on the work and representations of the Brattle Group and the existence of mathematics that successfully co-optimize to meet multiple objectives (or constraints). Demonstration models have been built to illustrate the concept on a small scale. Resolving this question, at the necessary scale, is an important step, but not one that poses any obvious barriers that cannot be overcome.

Dr. Felder also notes that for FCEM/ICCM to be truly successful, the States (and stakeholders) will need to agree on a broad and uniform definition of the clean energy attribute. This requirement should be taken as a design specification that must be met as the region engages in discussions to further develop the FCEM/ICCM concept, and such a basic definition is consistent with the objectives, shared among the States and underlying their various policies, to achieve a decarbonized grid while maintaining the affordability of energy for their consumers. Again, there is no conceptual barrier to creating a broad-based technology-neutral non-emitting energy attribute. However, there is at least one important dimension in which there is no need for uniformity under an FCEM/ICCM. Whatever the product definition, each State is free to elect whether and to what extent it participates. Obviously, greater participation will achieve greater interest and liquidity from the supply side and lead to more competitive outcomes, but the FCEM/ICCM framework is explicitly designed to accommodate participation by only a subset of the States in a region.

#### **VI. Need for Further Definition**

As with all of the pathway options, Dr. Felder notes that the FCEM and ICCM need to be more fully fleshed out before the region can implement this path. However, it is noteworthy that the design

parameters of FCEM/ICCM have substantial definition through the work of the Brattle Group and others. It is also important to note that with any market design, it is unrealistic to expect any single party to have all of the details resolved to create an 'off the shelf' product. And all the more so in this case, given the need to balance and address the potentially conflicting needs of six States, hundreds of NEPOOL participants, and the ISO and FERC. Here we have the benefit of a comprehensive regional forum designed to deliberate and negotiate the framework to a fully implementable design. This is not a case of searching through hundreds of pre-made options to find the perfect one that fits; rather it is a project for stakeholders to roll up their sleeves to complete and customize the project to suit the region's needs.

As the report also observes, "... the Forward Clean Energy Market (FCEM) contains several major design variables that substantially change the characteristics and outcomes of specific FCEM alternatives as well as the associated trade-offs that would occur." The region should proceed with a comprehensive effort to choose those variables and create an internally consistent and implementable market design based on the FCEM/ICCM concepts. Such a design will provide the region with the best path forward to harmonize the States' clean energy objectives with sustainable competitive market pricing and investment frameworks.

## **VII. Conclusion**

NRG appreciates and applauds NEPOOL for diligently gathering a number of options for the region's stakeholders to consider as the pathway to a future decarbonized grid. After several months and a large number of presentations, NRG concludes that the FCEM/ICCM framework is ideally suited to reforming and leveraging the region's successful competitive wholesale markets to align with the States' decarbonization and clean energy goals. FCEM/ICCM provides a robust platform for the States to individually determine the extent of their clean energy goals and to express their participation in the market through price-sensitive bids. The platform offers a more attractive structure for clean energy developers than *ad hoc* State-mandated procurements and presents a financeable revenue stream that will support new investment in clean energy resources. Leveraging the region's competitive market structures through FCEM/ICCM will deliver the decarbonized future that the region demands at the lowest cost to consumers.

NRG looks forward to engaging with all of the region's policy makers and stakeholders to further refine the FCEM/ICCM concepts and to implementation of this framework that will set the New England region on an efficient and sustainable pathway to a clean future.