

**Comments of NJCF on the Integrated Clean Capacity Market (ICCM) draft framework.
Investigation of Resource Adequacy Alternatives**

Docket No. EO2003003

1. Background. On January 21, 2021, the New Jersey Board of Public Utilities (Board or BPU) issued its Notice of Work Session to be held on February 19, 2021, to explore the draft framework presented by BPU's consultant, The Brattle Group. This framework, called the Integrated Clean Capacity Market (ICCM) would integrate the forward clean electricity market (FCEM) concept earlier developed by Brattle, with the PJM reliability pricing model (RPM) capacity market, or with one or several variants of the RPM that could be adopted by one or more states under PJM's Fixed Resource Requirement (FRR) alternative to the RPM. The ICCM framework was described by Brattle in a white paper attached to the BPU's January 21 Notice, and further explained and clarified by Brattle's Dr. Kathleen Spees at the February 19th work session. The BPU's Notice invited comments on the ICCM framework proposal to be submitted by March 5th. New Jersey Conservation Foundation's consultant has reviewed the proposal, participated in the work session, and respectfully submits these comments.

2. Comments and Recommendations. NJCF appreciates the BPU and its staff's initiative in developing a thoughtful proposal with the assistance of one of the country's leading group of experts on existing electricity market design and operation. For the reasons detailed below, however, NJCF recommends that the BPU not pursue further develop or implementation of the ICCM through an FRR-based approach. Implementation of the ICCM as a voluntary component of PJM's RPM market level could, in our view, be further explored, because it would avoid some of the problems associated with an FRR-based implementation.

However, even such an RPM-based implementation is unlikely to achieve materially greater environmental benefits or lower costs than a stand-alone, collaborative multi-state clean electricity credit procurement mechanism such as the FCEM, operating in parallel to but independent of PJM's RPM market. An efficient regional procurement mechanism for clean electricity credits would be simpler and quicker to implement, and may well be essential for New Jersey's ability to actually achieve the state and regional greenhouse gas (GHG) emission reductions required by the Global Warming Response Act.

Further, such an efficient regional clean electricity credit mechanism could supercharge the implementation and evolution of the state's Energy Master Plan, and support an affordable mix of in-state and regional clean electricity resources that will maximize net benefits to the state's electricity customers and broader economy. Accordingly, NJCF supports further and active development by the BPU and stakeholders of such an efficient, regional clean electricity credit market, potentially along the lines of the Brattle FCEM proposal.

3. Considerations underlying our recommendation. Our conclusions that the ICCM as proposed is unlikely to produce significantly more benefits than a stand-alone FCEM or similar clean electricity credit procurement mechanism, and that implementation through one or several FRRs is likely to fail even more significantly, are based on the following observations and reasoning.

a. The primary rationale for a new resource adequacy regime is likely to disappear with the MOPR.

First, and most basic, is the fact that the new FERC is highly likely to eliminate or modify the current requirement that PJM use its Minimum Offer Price Rule as a barrier to entry into the RPM for certain state-supported clean electricity projects. Similarly, PJM has indicated, in the ongoing stakeholder process focused on the evolution of their capacity market, that PJM's own priority for RPM reform is the elimination of the MOPR as a tool for limiting the participation of state-sponsored resources in the RPM. With both PJM and, reportedly, the new FERC in agreement that this abuse of the MOPR needs to end, the primary rationale for this entire docket is on the brink of resolution. As such, the only other reason to pursue an FRR alternative is if it could reduce the cost, and increase the net benefits, to New Jersey of achieving the decarbonization required by the state's Global Warming Response Act and Clean Energy Act, and of achieving the Administration's additional clean energy goals.

The primary way in which the ICCM could achieve these results, according to the Brattle paper and presentation at the working session, is through the additional benefits that the ICCM's co-optimization of both RPM and ICCM bids and the lower clearing prices that Brattle posits would result in both markets. The likelihood of any additional co-optimization benefits, beyond those available with a stand-alone FCEM operating independently from a MOPR-free RPM, however, appears to be very small.

b. Actual benefits of co-optimizing environmental attributes and resource adequacy may be fewer than anticipated. The purported co-optimization benefits may be unrealistic for two basic reasons. First, actual implementation of the ICCM, especially in the context of one or more FRRs, appears highly likely to create significant problems of thin, highly segmented markets with inadequate competition. These problems, by Brattle's own recommendations, could require many state-sponsored resources to be excluded from the ICCM.¹ If they are not excluded, inadequate competition will increase ICCM costs, despite any co-optimization of bids across the two markets integrated by the ICCM (i.e., one for environmental attributes and one for resource adequacy). Similarly, excluding the problematic resources from the ICCM due to excessive segmentation and costs and inadequate competition, will necessarily mean the resources cannot be co-optimized across both markets. Either way, the purported co-optimization benefits will not be realized.

The other main reason the purported co-optimization benefits are unlikely to be realized through the ICCM is that most, if not all, of these same benefits would be realized by implementing an efficient, stand-alone clean electricity credit procurement mechanism. Clean electricity resources that sell credits into such a market should face strong competitive pressure in the RPM market to bid their going-forward costs, net of expected revenues for energy, ancillary services, and clean electricity credit revenues. This is primarily due to the nature of competition, rather than any of PJM's various rules. Quite simply, the profit-maximizing bid for a competitive resource in the RPM market is its going forward costs net of other expected revenues.² Any additional benefits the ICCM's centralized co-optimization of bids across the RPM and FCEM are likely to be small, and over time potentially non-

¹ See fn. 11 in Brattle's ICCM white paper, which offers more information on the carve-out idea by referencing Appendix H3 in the FCEM Brattle prepared for NRG Energy in September, 2019. Available at https://brattlefiles.blob.core.windows.net/files/17063_how_states_cities_and_customers_can_harness_competitive_markets_to_meet_ambitious_carbon_goals_-_through_a_forward_market_for_clean_energy_attributes.pdf

² PJM's various rules can help ensure such bidding behavior from resources that have market power, which is an important reason to favor a MOPR-free RPM over an FRR alternative, including an FRR-based ICCM.

existent, compared to the benefits of this spontaneous, competitive co-optimization that would take place with a stand-alone FCEM-type mechanism. Each of these two key reasons why the ICCM may produce few or no incremental co-optimization benefits is explored in more detail below.

i. The ICCM is unlikely to support all the carve-outs needed to accommodate even New Jersey's current panoply of clean electricity programs, types and incentives.

The first problem would be created by the need to set up an ICCM to co-optimize the diverse resource adequacy requirements and clean electricity goals of multiple states or sub-state LDAs. As Brattle recognizes, the more complicated and numerous the various clean electricity resources that are procured separately through carve-outs, in either a stand-alone FCEM or as part of the ICCM, the more problems there will be with insufficient competition, segmented markets, and higher costs. To avoid these problems, Brattle experts recommend that the total of all carve-outs amount to no more than 5% of the total clean electricity demand, and that the carve-outs be of limited duration, and only for technologies that are on a clear path to being fully competitive, with clear ex-ante phase-outs or sunset dates when the resources must compete fully in the clean electricity attribute market.

These requirements for effective competition in the FCEM side of an ICCM could be hard for New Jersey to meet in a single-state implementation of either the ICCM or a stand-alone FCEM. The reason is that New Jersey has multiple mandates, procurement and crediting programs for different types of clean electricity resources, each with its own unique cost structure and distinct existing revenue opportunities. As a result, either an FCEM or an ICCM for New Jersey would potentially need to set up separate carve-outs for ZECs, ORECs, TRECs, successor solar plan incentives, and only procure Class I RECs as unrestricted or "Base Resources". But this many smaller carve-outs in the FCEM would create the risk of highly segmented, thin markets with inadequate competitive pressure to result in competitive results, and instead would be prone to strategic bidding and market power within each carve out, with the result of excessively high, non-competitive FCEM prices. The only efficient alternative, in the ICCM context, would be to exclude highly segmented and high-cost resources from the FCEM and thus from the ICCM, as Brattle recommends. Of course, the ICCM could not co-optimize bids from resources that are excluded from participating in it, and that can instead only submit stand-alone bids into the RPM market.

ii. The problem is likely to be worse with more eastern PJM states with aggressive but segmented clean electricity goals joining the ICCM. If multiple PJM states with aggressive clean electricity goals, most of which could be met by the lowest cost regional resources, formed an ICCM or an FCEM, the segmentation problem would be reduced or eliminated, and clean electricity credit market should be expected to work efficiently to identify the least cost resources available across the regional footprint. A few carve-outs, limited in size and duration, for the most promising resource types that are urgently needed for effective decarbonization, could easily be accommodated in a larger, multi-state FCEM and a related ICCM.

By contrast, a multi-state FCEM, where each state has its own highly segmented clean electricity programs and goals, could require even more carve-outs for all these distinct products, programs and incentives, and would need to exclude even more resources to prevent non-competitive results in the FCEM and any related ICCM. Such multi-state problems could be further compounded on the resource adequacy side of an ICCM that must map out the various carved-out capacity resources according to the capacity and locational resource adequacy requirements of disparate LDAs and sub-LDAs. For example,

multiple different nested LDA deliverability restrictions and local siting requirements could create further segmentation among buyers of co-optimized capacity, in addition to creating significantly more market power in highly concentrated local clean electricity suppliers. Such complexities could make it even harder for the ICCM to work efficiently, raising potentially even more serious market power concerns than those that have been well-aired before the BPU in this same docket in the context of the FRR concept. The potential amplification of market power in an FRR-based ICCM that would span several states but be outside of PJM's overarching capacity market construct is a risk that would need to be fully evaluated before moving forward with an FRR-based ICCM proposal.

iii. The most likely participants in the ICCM include a large number of resources which, after the MOPR is returned to its proper use of limiting buyer-side market power, could be expected to bid as price takers in the RPM anyway. Outside of the few, relatively small carve-outs the FCEM (and hence any ICCM) is designed to process efficiently, many of the resources that could be expected to bid in a regional FCEM or ICCM are those that currently produce Class I RECs throughout PJM. There are reasons to think that, in the absence of a MOPR or other artificial price floor in the RPM auction, many of these resources may bid as pure price-takers in the RPM auctions.³

As such, there would be little or no downward adjustment of the RPM supply curve due to co-optimizing their bids across the FCEM and RPM auctions, since they would be bidding at zero either way. In such circumstances, co-optimization would be likely to reduce the RPM clearing price only when clean electricity credit sales result in the marginal portion of the RPM supply curve downward and to the right. Such shifts would not come from resources that would bid as price takers with or without the ICCM. Instead, they would come primarily from clean electricity credit sellers whose going forward costs, net of their FCEM and other revenues, are high enough to support non-zero inframarginal bids in the capacity market. Whether there are enough such resources to expect co-optimization to result in lower prices is an empirical question that does not appear to have been addressed by Brattle's analysis.

iv. Competitive bids in a MOPR-free RPM will automatically co-optimize by deducting expected clean electricity attribute revenues, along with expected energy and ancillary service revenues. Even if there were a substantial number of clean electricity resources that would place non-zero RPM bids in the absence of the ICCM, the ICCM's co-optimization should not be expected to consistently produce significantly lower prices than would result from a stand-alone FCEM, operating alongside a MOPR-free RPM. As Brattle's Dr. Spees clarified at the February 19th working session, the only difference in bids into the RPM between (i) a scenario with both a stand-alone FCEM and a stand-alone RPM and (ii) a scenario with the two markets integrated and co-optimizing, is that in the stand-alone scenario, the bids into the RPM would be based on bidders going-forward cost, net of their *expectations* of FCEM and other revenues, while in the integrated scenario, PJM would subtract the *actual* revenues each resource receives from the FCEM from that resource's bid into the RPM. The bids would, presumably, still be based on each resource's going-forward costs, less the bidder's expectation of energy and ancillary service revenues.⁴ In other words, the ICCM's co-optimization benefits (to consumers) would only be

³ E.g., see *CONE and ACR Values – Preliminary*, January 28, 2000, Monitoring Analytics. Available at: https://www.monitoringanalytics.com/reports/Presentations/2020/IMM_MIC_Special_Special_Session_CONE_and_ACR_Values_20200128.pdf

⁴ The Brattle ICCM paper does not explain the bid co-optimization arithmetic in any detail, or explore the bidding incentives that would be created by the co-optimization process. The Brattle presentation simply stated that

greater than under the stand-alone scenario only if marginal bidders in the stand-alone scenario consistently expect erroneously *low* clean electricity attribute prices in the FCEM.⁵ However, if the expectations of FCEM prices held by marginal RPM bidders have a random or symmetric distribution around the real FCEM prices, the co-benefits of the stand-alone optimization would be roughly equivalent to that of the co-optimized process. Thus, the vast majority, if not all, the purported benefits of the ICCM's complex co-optimization process are likely to be realized with the much simpler and easier to develop FCEM-like mechanism.

Conclusion and recommendations. The devil is very much in the detail in any new market design, and the above details and potential problems illustrate, at the very least, the need for considerably more analysis, testing and evaluation of the ICCM concept, in the context of real market data and market simulation, before it should be considered for possible implementation.

Since many of the problems outlined above relate to just a few critical factors, NJCF respectfully makes the following additional recommendations regarding how to manage those factors, should the BPU decide to move forward with further development of, or endorsement of, the ICCM.

1. A key driver of the problems identified above is the growth of clean electricity programs that are tailored to specific resource types and locations and that cost appreciably more than clean electricity resources available relatively nearby in our region, which are readily accessible. Expensive, restricted, local resource mandates would be particularly challenging for the ICCM concept, in light of Brattle's recommendation to limit the total carve-outs for such resources in the ICCM or FCEM to 5% of total clean electricity demand, and to limit the number and term of such carve-outs. As Brattle points out, following these recommendations will be critical for ensuring competitive and affordable clean electricity outcomes. Accordingly, if the BPU chooses to move forward with the ICCM approach, it should do so in the context of directing its ongoing and evolving EMP and the programs developed to support it in the direction of technology-neutral, competitive procurement, predominantly from resources located throughout the PJM region, and with sparing use of mandated, in-state and above market cost clean electricity resources.

This strategy would not only remove significant impediments to the ICCM's potential success, but it would also dramatically reduce costs to New Jersey homes and businesses, spur much more rapid electrification, due to the built-in financial incentives for electrification created by low cost clean electricity, and dramatically improve the pace and extent of decarbonization throughout the PJM region and in the state of New Jersey, which are both critically needed to avert the impending and

bidders would submit the total *revenue requirements* (sic) to PJM, and PJM would optimally allocate them between the FCEM and the RPM sides of the ICCM. "Revenue requirement" is a term of art in utility regulation meaning "full cost of service." It is highly questionable whether such full-cost bids would produce efficient behavior or results in a non-discriminatory (single price) auction for a homogenous product. Indeed, it is well-established that profit maximizing competitive bids in such an auction for capacity are a resource's going forward costs, net of expected other revenues. If the BPU decides to explore the ICCM further, it should specifically seek to explore and ensure the efficiency and incentives of the bidding rules needed for the co-optimization process.

⁵ If stand-alone marginal bidders expect lower FCEM revenues, they would deduct fewer expected revenues from their bids in the RPM, resulting in higher RPM bids and higher prices in the RPM. Consumers would also ultimately pay for the higher than expected (by sellers) clean electricity attribute prices, which would flow from LSEs who buy the clean electricity attributes through to energy consumers. There is no indication in the Brattle analysis for why such systemic bias in bidder expectations of the FCEM prices would be likely.

otherwise unavoidable climate crisis that threatens our economy, our families, and our natural heritage.

2. Another key driver of the potential problems above is the challenge of implementing the ICCM through an FRR or a patchwork of FRRs. To avoid this, NJCF recommends the BPU only explore the ICCM in the context of PJM-based implementation, where all states would continue to participate in an RPM that is unencumbered by the MOPR, or any other bid floor or quantity limit that excludes state-sponsored or supported clean electricity resources, and those states and private buyers that want to participate in an FCEM-like clean electricity construct can do so in a way that efficiently, and competitively, co-optimizes their resource mix.
3. An even simpler approach, which NJCF strongly recommends, is to proceed with developing a regional, fully technology-neutral, clean electricity attribute procurement mechanism to augment the current RPS and, within the next five years, to fully replace it and other resource-specific mandates and programs for all incremental clean electricity procurement needed to meet the GWRA and state clean electricity goals. Such a program could be developed on the basis of the FCEM construct, but need not be limited to it. The goal should be a system that efficiently prices clean electricity attributes at the marginal cost needed to bring the most cost-effective and competitive new clean electricity resources on line and allow them to procure innovative, low-cost financing in the scale needed to decarbonize the entire PJM region's electric supply, including New Jersey, by 2035. Carve-outs for limited, early incubation of critically needed technologies (electricity to fuels, zero-carbon gas, clean firm resources) should be allowed in line with the Brattle guidelines; in-state resource should be encouraged as part of the overall mix but, given the high cost of real-estate and soft costs in this the most densely populated state in the union, and the critical importance of low cost clean electricity to successful deep decarbonization, in-state resources should only be a moderate portion of the total regional clean electricity portfolio developed by this procurement mechanism.
4. To the extent the BPU wants to co-optimize its resource adequacy resources along with its clean electricity supply resources, NJCF suggests the consideration of a simpler approach that should be easier to implement quickly and successfully than the ICCM. As part of the regional FCEM or related clean electricity credit mechanism recommended above, the BPU could simply require LSEs to procure a significant portion, but not all, (e.g., 50%) of the clean electricity credits needed to meet their clean electricity obligation from clean electricity resources that also bid into the RPM and are located in the LDAs that can provide capacity resources to New Jersey LDAs. Each LSE would be required to acquire these locational electricity credits from the various LDAs in proportion to the amounts of capacity from those LDAs that can be used to meet PJM's resource adequacy requirements in each New Jersey LDA. The roughly 50% limit on such a requirement would serve to help keep clean electricity prices low for consumers and to spur rapid electrification, as well as to ensure adequate competition in the overall FCEM. It would also recognize the fact that clean electricity resources, including non-capacity resources, located in all parts of PJM can contribute equally to decarbonizing the region, and because they can all also deliver electricity to New Jersey – the LDA restrictions reflect capacity deliverability constraints, not energy deliverability constraints –

they all need to be included in a competitive procurement approach, in order to meet the GWRA regional reduction GHG reduction requirements.

The added revenue clean electricity resources will earn in this market through sales to New Jersey LSEs will result in them bidding at lower levels into the MOPR-free RPM market, resulting in lower capacity costs, and a growing supply of clean electricity capacity capable of serving not only New Jersey, but the region.⁶

Respectfully submitted,

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⁶ Note this feature would not impose a “deliverability” requirement on the clean electricity resource, even though it would impose a locational requirement. NJCF recommends the BPU to avoid establishing or invoking any such “deliverability” requirement that is different from, and could conflict with, the well-established energy deliverability requirements in PJM’s tariffs, which are based on sound electrical engineering, system characteristics, and various important PJM operating and interconnection requirements. The locational bidding requirement we suggest would not masquerade as some additional “deliverability” requirement, but would be represented accurately and justifiably as needed to further both New Jersey’s goal of regional decarbonization, as required by the GWRA, and the even more fundamental goal of making clean electricity affordable.