

2022 PROGRESS REPORT ON NEW JERSEY'S RESOURCE ADEQUACY ALTERNATIVES

Update Regarding Staff's Investigation of Resource
Adequacy Alternatives, Docket #EO20030203

New Jersey Board of Public Utilities

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Executive Summary

In March, 2020, the New Jersey Board of Public Utilities (“Board”) directed Board Staff (“Staff”) to evaluate “whether New Jersey can achieve its long-term clean energy and environmental objectives” while continuing to participate in the regional electricity markets administered by PJM Interconnection, LLC (“PJM”). Further, the Board directed that Staff “recommend how best to meet New Jersey’s resource adequacy needs in a manner consistent with the State’s clean energy and environmental objectives, while considering costs to utility customers.”¹

As part of its investigation, Staff worked with The Brattle Group (“Brattle”) to conduct a detailed analysis of resource adequacy alternatives (“2021 Resource Adequacy Report” or “2021 Report”). In July 2021, the Board accepted the 2021 Report, including its findings that incorporating New Jersey’s clean energy goals in the regional market is the most efficient way to provide customers with reliable, affordable, and carbon-free electricity. Additionally, the 2021 Report found that a newly developed Integrated Clean Capacity Market (“ICCM”) design would be a highly effective way of accelerating the grid transition envisioned in New Jersey’s 2019 Energy Master Plan (“2019 EMP”). The Board further instructed Staff to engage in efforts to develop regional market reforms, including the ICCM or other alternatives, and to assess whether PJM and stakeholder processes have demonstrated sufficient progress toward viable regional market reforms. If not, the Board directed Staff to consider whether New Jersey should independently pursue its preferred clean resource procurement platform. Staff was directed to report on its efforts and make any further recommendations within one year.

¹ In re BPU Investigation of Resource Adequacy Alternatives, BPU Docket No. EO20030203, Order dated March 27, 2020.

In response to the Board's directive to provide a progress report and make additional recommendations, Staff has prepared this 2022 Progress Report on New Jersey's Resource Adequacy Alternatives ("Progress Report" or "2022 Report"). After two years of intensive investigation and consultation with our fellow PJM states, market design experts, and stakeholders, this Progress Report largely echoes the conclusions of the initial Resource Adequacy Report, including that:

1. The Board can meet the State's clean energy targets at substantially lower costs by participating in a regional clean energy "buying pool," such as an ICCM, to purchase clean energy attributes on behalf of New Jersey consumers and other interested state, corporate, and municipal buyers; and
2. The Board should adopt a formal policy preference for relying on clean electricity technologies instead of fossil fuel generators to meet its reliability needs, which means purchasing sufficient capacity from non-carbon emitting resources to meet New Jersey's resource adequacy needs.

Taken in conjunction, these policies would substantially reduce carbon emissions and provide significant public health benefits by limiting the consumption of fossil fuels, as well as reaching our clean energy goals at the lowest possible costs.

In reaching these recommendations, Staff has participated in numerous discussions with interested stakeholders, including two region-wide efforts aimed at establishing a regional clean electricity marketplace. The first is an effort chartered by the Organization of PJM States, Inc. ("OPSI") to consider how best to incorporate state policy goals into regional markets, known as the Competitive Policy Achievement Working Group ("CPAWG"). The second is PJM's Clean Attribute Procurement Senior Task Force ("CAPSTF"), which has a specific issue charge to examine how PJM can best facilitate achievement of state policies,.

While both forums are promising avenues for meeting New Jersey's policy goals in a reliable, cost effective, and competitive fashion, the certainty of and timeframe for success of

these efforts remains unclear. Staff thus recommends that the Board undertake its own efforts to develop clean energy markets in parallel with ongoing regional market design efforts. New Jersey's effort will serve as a catalyst for a new market or markets to address these major gaps in our clean energy supply chain. The Board's own effort will either inform an eventual PJM solution or allow New Jersey and other interested states to move forward with a solution to these pressing issues. Specifically, Staff recommends that the Board find that:

- (i) An ICCM Would Result in Significant Cost Savings and Accelerate the Clean Energy Transition; New Jersey Should Continue to Advocate for its Adoption at the Regional Level;
- (ii) While Regional Efforts Continue Under Uncertainty, New Jersey Should Develop Regional Voluntary Clean Energy Markets; and
- (iii) New Jersey Should Favor Procurement of Clean Capacity Over Capacity From Emitting Resources.

In all cases, New Jersey Load Serving Entities would be required to participate in these new markets and purchase the new products on behalf of New Jersey customers. Additionally, Staff recommends that the Board open any new markets to voluntary participants outside of New Jersey, including other states, corporate buyers, municipalities or others. In order to further the Board's efforts to reduce carbon emissions, Staff also recommends that the Board consider indexing clean energy compensation to the carbon intensity of the grid at the time and location at which the clean energy is produced. The idea is to more efficiently incent greenhouse gas ("GHG") emissions reductions by providing higher compensation for clean energy produced when emissions are high and lower compensation to clean energy generated at times when the grid is relatively clean.

Taken in conjunction, these actions would substantially reduce carbon emissions and help drive the creation of green jobs in New Jersey and across the PJM region, while also providing

significant public health benefits by limiting the consumption of fossil fuels. Creating an independent clean energy market will ensure that these reforms, which are critical to cost-effectively meeting New Jersey's clean energy objectives, will not be delayed by the lengthy process of obtaining PJM stakeholder agreement and then the approval of the Federal Energy Regulatory Commission ("FERC"), which oversees PJM market rules. If PJM, its stakeholders, or federal regulators prove unwilling or unable to incorporate state and consumer preferences for clean energy into the PJM markets, this independent market will serve as a capable and valuable alternative.

Finally, this Progress Report highlights the need for New Jersey to continue developing realistic options should PJM or FERC policies hinder achievement of state policies. The 2021 Report noted that certain PJM capacity market rules, including the expanded Minimum Offer Price Rule ("MOPR"), could have increased consumer costs by hundreds of millions of dollars a year, and substantially delayed achievement of the State's clean energy policies. Among other options, the 2021 Report examined the impacts, potential benefits, and alternatives to New Jersey exiting the PJM capacity market. Given that PJM has since repealed the most egregious aspects of its 2019 Expanded MOPR rules and launched a good-faith investigation into how to more efficiently incorporate clean energy demand into its wholesale markets, Staff recommends that New Jersey not exit the PJM capacity market at this time. However, caution is warranted. While the current FERC appears friendlier to states than it did under the previous administration, the Board should continue to carefully monitor the ongoing litigation over the MOPR, particularly as it is possible that the matter will be appealed to the Supreme Court in the next several years. This litigation uncertainty is another reason Staff believes the Board should begin developing an independent market framework that it and other collaborating states could administer, while

simultaneously continuing regional efforts to advocate for incorporating state public policies into the PJM's markets.

I. Background on New Jersey's Goals, PJM Markets and the Board's Resource Adequacy Investigation

A. New Jersey's Clean Energy Efforts

New Jersey, under the leadership of Governor Phil Murphy, is combatting the negative health and environmental consequences of climate change through advancing and diversifying its clean energy portfolio to reduce the energy sector's GHG emissions. The State has therefore committed to eliminating most GHG emissions and achieving a predominantly clean energy economy by 2050. These goals are encapsulated in the Global Warming Response Act,² the Clean Energy Act,³ Governor Murphy's Executive Orders No. 28 and No. 315,⁴ and the 2019 EMP.⁵ To arrive at this clean energy future, New Jersey has adopted a target-based Renewable Portfolio Standard ("RPS") approach, requiring 35% of the energy sold in the state to come from qualifying energy sources by 2025 and 50% by 2030.⁶ By Executive Order, the Governor has since set a target of achieving a 100% clean energy standard by 2035 and required New Jersey to achieve a reduction of economy-wide GHG emissions to 50% below 2006 levels by 2030.⁷

² "The Global Warming Response Act" at N.J.S.A. § 26:2C-37 (P.L. 2007, c.112).

³ An Act Concerning Clean Energy, Amending and Supplementing P.L. 1999, c.23, Amending P.L. 2010, c.57, and Supplementing P.L.2005, c.354. ("Clean Energy Act" P.L. 2018, c.17).

⁴ New Jersey Government Executive Order No. 28, *issued May 23, 2018*; New Jersey Government Executive Order No. 315, *issued February 15, 2023*.

⁵ See [2019 New Jersey Energy Master Plan: Pathway to 2050](#).

⁶ See N.J.S.A. § 48:3-87(d)(2).

⁷ New Jersey Government Executive Order No. 274, *issued November 10, 2021*; New Jersey Government Executive Order No. 315, *issued February 15, 2023*.

New Jersey’s clean energy efforts date back to 1999 when the legislature established the State’s RPS, which set initial renewable targets for meeting a portion of the State’s electricity supply.⁸ The RPS has served as one of New Jersey’s primary tools for building a clean energy future. The RPS “encourage[s] the development of renewable sources of electricity and new, cleaner generation technology” and, among other things, “support[s] the reliability of the supply of electricity in NJ.”⁹ Eleven out of the fourteen PJM jurisdictions currently have comparable RPS programs. Acknowledging the need to recognize and facilitate the trading of renewable energy attributes, PJM created a Renewable Energy Certificate (“REC”) marketplace, the Generation Attribute Tracking System (“GATS”). GATS is a platform which allows buyers and sellers to trade renewable energy attributes produced by certified generators with predetermined state-selected characteristics. It does so by issuing RECs that represent and convey ownership of the renewable energy attributes of every megawatt-hour produced by these generators. States have the ability to define their resource preferences based on location restrictions, emissions output, generator fuel source, when the RECs were created, and the age of the generation unit.

New Jersey defines eligible resources that can contribute toward RPS goals based on the renewable energy attributes the resources produce and the age of the generation units. New Jersey has defined two broad categories of renewable resources, Class I Renewable Energy, and Class II Renewable Energy. Class I Renewable Energy sources include photovoltaic solar arrays, wind turbines, fuel cells powered by renewable fuel, geothermal technologies, small hydroelectric power facilities, and wave or tidal action generators, among others. Class II Renewable Energy consists of energy produced by eligible resource recovery facilities and

⁸ Electric Discount and Energy Competition Act, P.L. 1999, c. 23.

⁹ Renewable Portfolio Standards: *Purpose and Scope*, at N.J.A.C. § 14:8-2.1.

medium-sized hydroelectric power facilities. RECs that represent the attributes of Class I Renewable Energy are Class I RECs; those that represent the attributes of Class II Renewable Energy are Class II RECs. The State also tracks additional, more specific, clean energy attributes to meet the State’s more granular policy goals and has created a marketplace to reward eligible resources for producing these attributes.

New Jersey RPS rules require that each third party supplier (“TPS”) and basic generation service (“BGS”) provider that sells electricity to retail customers in the State include a certain level of renewable energy generation in their supply mix. Collectively, TPS and BGS providers are load serving entities (“LSEs”). LSEs must meet specific resource-type requirements to satisfy these standards. The RPS includes target levels of specific renewable energy attributes that increase annually, prescribed thus far until suppliers reach a total renewable energy level of 52.50% in 2033.¹⁰

Another key resource contributing to the overarching goal of a carbon-free future and transitioning to 100 percent clean energy by 2050 is the State’s non-renewable, yet carbon-free, nuclear fleet. In 2018, Governor Murphy signed a law directing the Board to establish a zero emissions certificate (“ZEC”) program¹¹ to accredit eligible nuclear generation with “fuel diversity, air quality, and other environmental attributes.”¹² While nuclear energy is not renewable, it is a carbon-free resource that provides reliable energy and reduces GHG emissions by displacing fossil fuel generation. Three in-state nuclear units are currently eligible and receive ZEC payments.

¹⁰ Renewable Portfolio Standards: *Amount of renewable energy required*, at N.J.A.C § 14:8-2.3.

¹¹ See N.J.S.A. § 48:3-87.3.

¹² New Jersey Board of Public Utilities Order “Motions to Intervene and Participate and Access to Confidential Information,” *Docket No. ER20080558*, issued September 15, 2020. Page 1.

B. PJM’s Energy and Capacity Markets

The regional marketplace serves as a resource pool for buyers to purchase energy, capacity, and ancillary services at transparent, cost-competitive prices. One critical goal of PJM markets is to ensure that the PJM grid has sufficient “Resource Adequacy,” meaning that there is a sufficient supply of electric generating capacity, in the right areas of the electric grid, to reliably meet customers’ electricity needs. This includes providing an adequate buffer or “reserve margin” to accommodate periods of unexpectedly high demand or stress on the electric grid, and to allow the grid to continue functioning even when several individual generation or transmission resources fail. Since restructuring, New Jersey has relied on the centralized, regional capacity market, known as the Reliability Pricing Model (“RPM”), run by PJM, to meet our resource adequacy needs.

The RPM structure procures capacity sufficient to meet a reliability standard of no more than one expected loss-of-load event in ten years (0.1 “LOLE” or “1-in-10”) based on forecasted peak loads plus an installed reserve margin (“IRM”). This reliability standard, or resource adequacy, is met through competitive, three-year-forward Base Residual Auctions (“BRAs”) that incorporate transmission system constraints into the determination of auction results. PJM, as the auction administrator, sets a downward-sloping demand curve, the Variable Resource Requirement (“VRR”) curve, based on supply and demand relative to the IRM.¹³ In auction years when supply exceeds resource adequacy needs, the RPM will produce low prices; in auction years when capacity supply is scarce, the RPM will result in high prices. Thus far, RPM “has been able to attract new investment and procure capacity that exceeds the reliability

¹³ PJM Interconnection Capacity Market & Demand Response Operations, “PJM Manual 18: PJM Capacity Market,” Revision 47, Section 3, *January 27, 2021*.

requirement, and at prices below the administrative estimate of Net [cost of new entry]” enabling PJM to meet its regional demand even while coal, nuclear, oil-fired, and high-heat-rate natural gas plants age and retire.¹⁴

As a participant in the PJM wholesale capacity market since its inception, New Jersey has relied on the regional marketplace to provide low-cost and reliable electricity, which are the stated goals of RPM. However, the current RPM is not designed to incorporate state public policies, and thus fails to procure capacity resources that are consistent with New Jersey’s long-term clean energy objectives. As the Resource Adequacy Investigation Report found:

While the regional competitive market has performed well in offering secure low-cost supply to New Jersey, the PJM wholesale power market was not designed to meet the State’s growing demand for a cleaner electricity supply mix. At best, the current wholesale market is indifferent to carbon emissions; at worst, the wholesale market is acting at cross purposes to environmental goals (e.g., through the application of MOPR to clean energy projects incentivized through state programs and by attracting investments in new gas-fired power plants).¹⁵

The BRA runs approximately three years in advance of the Delivery Year, to ensure that adequate resources exist to meet future peak demand periods. The goal of this “forward-auction” structure is to align capacity pricing with system reliability needs far enough in advance to allow market participants to respond to signals for needed investment realized through the transparent auction design.¹⁶ This feature makes expedited efforts to integrate clean energy goals with the RPM model crucial, as any capacity market reforms would not allow states to reap the benefits for at least three years after their first effective BRA. Each subsequent auction, without such

¹⁴ Abe Silverman, Kira Lawrence & Joe Delosa, N.J. Bd. of Pub. Utils. Staff, Alternative Resource Adequacy Structures for New Jersey: Staff Report on the Investigation of Resource Adequacy Alternatives, Docket #EO20030203 at 11 (June 2021), [https://www.nj.gov/bpu/pdf/reports/NJ%20BPU%20RA%20Investigation%20\(Final\).pdf](https://www.nj.gov/bpu/pdf/reports/NJ%20BPU%20RA%20Investigation%20(Final).pdf) (“Resource Adequacy Alternatives Report”).

¹⁵ Resource Adequacy Alternatives Report at 9.

¹⁶ PJM Manual 18: PJM Capacity Market, Section 1.1: Overview of the PJM Capacity Market.

reform, will only further delay the materializing of benefits from a regional capacity market design that accommodates the State’s clean energy goals.

While the RPM was not designed to incorporate state policy, a complex relationship between the two exists where certain aspects of the regional market are advantageous while other aspects hinder the State’s ability to meet its clean energy goals. PJM market structures support the new level of renewable, intermittent generation sources, by providing an adequate IRM to ensure reliable grid operations. However, under the current RPM design, the capacity market does not offer a means for states to demonstrate their preference for specific resource-types needed to comply with policy mandates.

1. PJM’s Minimum Offer Price Rule

In 2019, at the direction of FERC, PJM expanded the capacity market’s minimum offer price rule (“Expanded MOPR”) to apply a capacity market price floor to resources that receive state support.¹⁷ FERC justified the Expanded MOPR as a measure to protect the competitiveness of the market, which was “threatened” by out-of-market payments designed to incent states’ preferred generation resources.¹⁸ FERC reasoned that state policy resources could decrease capacity market prices, thus displacing fossil generation that could no longer compete.¹⁹ The Board’s view was that excluding state preferences from the RPM ignores customer demand for clean energy resources, and results in the over-procurement of capacity by PJM, as well as

¹⁷ Request for Rehearing of New Jersey Board of Public Utilities, FERC Docket No. EL16-49-000, filed July 30, 2018; Initial Argument of the New Jersey Board of Public Utilities, FERC Docket No. EL18-178-000 filed October 2, 2018, and Reply Argument of the New Jersey Board of Public Utilities, Docket No. EL18-178-000, filed November 6, 2018.

¹⁸ Calpine Corp., et al. v. PJM Interconnection, LLC, 169 FERC ¶ 61,239 (December 19, 2019).

¹⁹ Id.

substantially higher capacity prices. The Resource Adequacy Report found that the Expanded MOPR would increase capacity costs to New Jersey ratepayers by \$260 and \$300 million per year in 2025 and 2030 respectively, with increased costs of over \$1.7 billion per year across the entire PJM footprint.²⁰ For these reasons, the Expanded MOPR induced New Jersey to investigate alternative options for procuring capacity to maintain resource adequacy in the State.

C. The Board’s Investigation of Resource Adequacy Alternatives

On March 27, 2020, the Board initiated the “Investigation of Resource Adequacy Alternatives,” led by Staff and conducted through various stakeholder proceedings. The Board also hired a consultant, Brattle, to assist in the investigation, and to model and assess resource adequacy alternatives that support New Jersey’s clean energy transition. The Board launched this investigation as a direct response to the capacity market uncertainty created by the Expanded MOPR.

Approximately one year ago, the Board publically released the “Alternative Resource Adequacy Structures for New Jersey: Staff Report on the Investigation of Resource Adequacy Alternatives.” The 2021 Report modeled various alternative resource adequacy structures’ impact on prices and clean energy deployment, and compared these results to outcomes under the Expanded MOPR rules, as well as a “No MOPR” scenario. Most of these options involved leaving the PJM capacity market and procuring capacity through the FRR Alternative instead, which would have required directing a qualified FRR Entity to procure capacity for some or all of New Jersey’s customers outside of the PJM market. Additionally, the Report recommended

²⁰ Resource Adequacy Alternatives Report at 49.

various options for better integrating demand for clean energy into the PJM market through an ICCM structure or the related Forward Clean Energy Market (“FCEM”).

1. Description of an Integrated Clean Capacity Market

The ICCM design allows market participants to buy and sell both capacity and clean energy attributes on a forward basis in a single auction. Ideally, an ICCM would function similarly to the existing RPM, where PJM, or another market administrator, would conduct a three-year forward auction to procure megawatts (“MWs”) of capacity to meet resource adequacy needs consistent with PJM’s existing reliability standards. However, an ICCM would also simultaneously procure clean energy attribute credits (“CEACs”) with explicit demand expressed by states or voluntary customers, measured in MW-hours of clean electricity attributes.²¹ Under the ICCM, generators would submit a single, combined price at which they are willing to sell their capacity and, if qualified, their CEACs.²² The ICCM then generates a clearing price for both capacity and CEACs. This allows the ICCM to select the optimal mix of resources that satisfy both clean energy and resource adequacy requirements at the lowest overall cost.

In an ICCM, only those buyers who wish to purchase CEACs, or who are required to do so by state law, would pay for them. This would allow the regional market to accommodate the diversity of state policy goals by acknowledging that not all states wish to pay a premium for carbon-free resources, while enabling those states willing to pay such premiums to meet both their reliability and policy needs at competitive prices. The inclusion of regionally-defined clean

²¹ Resource Adequacy Alternatives Report, at 36.

²² Grant Glazer, Katie Siegner, Chaz Teplin & Sarah Toth, Rocky Mountain Inst., [*Scaling Clean: Assessing Market Options for Clean Energy and Capacity in PJM*](#), 2022.

energy attribute products will expand the pool of eligible clean energy resources and broaden buyer participation to not only LSEs in states that require REC purchases, but also to voluntary clean energy consumers, thereby driving down the cost of the clean energy transition.

The 2021 Report demonstrated that an ICCM construct would “procure capacity and clean energy requirements sufficient to meet all system and local reliability needs and serve all demand for clean energy attributes at the lowest combined cost.”²³ However, implementing an ICCM would either require FERC approval of a PJM proposal to comprehensively reform the RPM and BRA, or New Jersey to exit the PJM regional market, and operate its own co-optimized clean energy and capacity marketplace. As the 2021 Report explained:

[A] New Jersey-alone or multi-state ICCM could be implemented under the current PJM Tariff rules for an FRR. As with other FRR structures, this would necessitate establishing an independent auction administrator and FRR entities to engage in settlements with PJM.²⁴

Staff’s 2021 Report concluded that “New Jersey should continue to explore the option to implement a New Jersey or multi-state ICCM under the FRR structure” and “[i]n case ongoing regional reforms fail to deliver the clean energy marketplace that New Jersey requires, the State should maintain the option to utilize” a competitive auction design.²⁵

2. Description of a Forward Clean Energy Market

An FCEM is similar in concept to an ICCM, except that it is a forward auction only for CEACs and is entirely separate from the capacity market. An FCEM would run its auction prior to the BRA and drive down the cost for clean energy attributes demanded by the region, but

²³ 2021 Resource Adequacy Report at p. 37.

²⁴ *Id.* at 38.

²⁵ *Id.* at 4.

would not consider the capacity needs of clean energy purchasers. Capacity procurement would solely remain a function of the BRA. In other words, the FCEM does not co-optimize the procurement of CEACs and capacity products. Rather, a clean energy generator participating in an FCEM must commit to a price for its CEACs before it knows what its capacity revenue will be. Due to this additional risk, overall procurement costs tend to be slightly higher under an FCEM structure than under an ICCM structure. However, both an ICCM and FCEM would provide substantial potential cost savings to consumers, and the differences are rather small.²⁶ Specifically, an FCEM implemented in the PJM region would yield most of the same economic benefits that a PJM-run ICCM would realize.

The main advantage of an FCEM structure over an ICCM structure is that it requires less federal and PJM involvement than the ICCM, while still achieving many of the economic benefits. Consistent with the Board’s 2019 findings, market reform efforts at PJM and FERC may result in “never ending” stakeholder discussions. Yet the realities of climate change make quick implementation of any new market structure a high priority. The FCEM creates an alternate route for establishing a clean energy market outside of PJM’s market rules, and therefore outside of lengthy stakeholder processes necessary to realize an ICCM. A state or states could thus create an FCEM potentially faster than PJM could, and New Jersey could serve as a catalyst for forming such a market. Further, any FCEM market could be integrated into a PJM-run market if enough of the PJM and FERC implementation challenges are addressed.

²⁶ See FCEM potential cost savings in: Kathleen Spees, et al., “How States, Cities, and Customers Can Harness Competitive Markets to Meet Ambitious Carbon Goals: Through a Forward Market For Clean Energy,” September 2019 and the New Jersey Board of Public Utilities’ “Alternative Resource Adequacy Structures for New Jersey: Staff Report on the Investigation of Resource Adequacy Alternatives”, Docket No. EO20030203, July 2021.

Staff also notes that in January 2023, the Massachusetts Department of Energy Resources (“MA DOER”) proposed an FCEM design broadly similar to that proposed here.²⁷ Staff is pleased to find that the MA DOER proposal and associated findings are largely aligned with Staff’s own findings and recommendations. The main difference is that in MA DOER’s FCEM design would transact clean capacity credits (“CCCs”) and GHG abatement certificates in “sub-markets” in addition to transacting RECs and CEACs.²⁸ Yet this is mostly a difference in nomenclature and design details, whereas the overall anticipated benefits from the new market structure are similar to that found in this investigation. As explained below, Staff explored a CCC product and market structure aimed to create clean attribute products that directly reward GHG emissions reduction. Staff likewise is considering tracking GHG abatement of RECs and CEACs over creating an entirely separate GHG abatement product. Staff is encouraged by other states investigating similar clean energy market products and structures and is pleased to see states with similar policy objectives arriving at a similar best path forward.

D. Efforts with the Organization of PJM States, Inc. to Improve the Regional Market

New Jersey was not the only PJM state frustrated by its inability to incorporate its public policies in the RPM, even after the Expanded MOPR was repealed. In total, PJM States require approximately 82,000 MW of additional renewable generation capacity to achieve State RPS targets in 2035.²⁹ In September 2021, only a few months after the Board issued the 2021 Report,

²⁷ See Mass. Dep’t of Energy Res., *New England Forward Clean Energy Market: Proposed Market Rules, Version 1* (2023), <https://www.mass.gov/doc/ma-doer-fcem-design-proposal/download> (“Massachusetts FCEM Proposal”).

²⁸ See *id.* at 11 (listing the various products that the proposed FCEM would transact); *id.* at 24 (explaining that each FCEM product would have its own “sub-market”).

²⁹ PJM’s Offshore Wind Transmission Study Phase 1, *released October 2021*.

OPSI sent a letter requesting that PJM prioritize “allowing States, on a voluntary basis, to meet their policy objectives through the PJM markets.”³⁰ The OPSI Board further directed OPSI Staff to establish the Competitive Policy Achievement Working Group, or CPAWG, to develop a proposal for a new, voluntary, market procurement process that facilitates state policy goals.³¹

Since its establishment, the CPAWG has held regular meetings where commission staff from multiple states discussed similar ongoing efforts throughout the nation, heard from industry experts, and began identifying attractive market design components. On January 8, 2021, the OPSI Board sent a letter to PJM recommending the following four core principles to guide future discussions at the PJM stakeholder level regarding evolution of the regional market:

1. State procurements or competitive solicitations, policy choices, emissions levels, and clean energy requirements must be respected and accommodated, rather than over-ridden or made infeasible by PJM market rules.
2. States should have the option of specifying the clean energy, emission levels, or other content of their own resource mix, in whole or in part, which the PJM market would then account for or procure on a competitive, least-cost basis, consistent with reliability.
3. Because states retain primary authority for resource adequacy under the Federal Power Act, any re-imagined resource adequacy solution must continue to allow states the option of meeting resource adequacy through a mechanism independently, similar to the current Fixed Resource Requirement.
4. Effective and appropriate market power mitigation is imperative for a properly functioning market design, and for PJM-administered markets generally.³²

The CPAWG core principles are consistent with both Staff and the New Jersey stakeholders’ expressed desires and concerns for future regional market reform.³³

³⁰ OPSI Board [Resource Adequacy Letter to PJM](#), sent September 8, 2021, at 1.

³¹ OPSI Competitive Policy Achievement Staff Working Group [Guiding Principles](#), sent October 21, 2021, at 1.

³² OPSI [Board Letter to PJM](#) Re: The Future of Resource Adequacy, sent January 8, 2021.

³³ See Comments in New Jersey Board of Public Utilities Investigation of Resource Adequacy, BPU Docket No. EO20030203.

Recognizing the urgency of some states' clean energy policy timelines, OPSI's CPAWG began addressing the complexities involved in implementing such market reforms without waiting for PJM to launch its own efforts. The CPAWG has evaluated the various design components of a new market including but not limited to product-type, eligible technologies, procurement, participation, bid parameters, administration, governance, constraints, and integration with the RPM.

Following early discussions at PJM regarding potential future capacity market reforms, the OPSI Board sent another letter to the PJM Board of Directors, listing the market characteristics on which OPSI States have reached consensus:

- States and other buyers must be able to voluntarily purchase energy that meets State policy or consumer specifications, including the ability to preference capacity from certain resource types, purchase energy attributes which satisfy State objectives, or advance other State policies, in a manner that collectively meets these preferences on a competitive, least-cost basis, consistent with reliability.
- Purchases should be voluntary for States and other buyers, and respect existing jurisdictional boundaries.
- Any voluntary market for these products must respect and accommodate State procurements, competitive solicitations or policy choices and must allow States to continue to meet their energy policies/preferences without change to existing policies.
- Any reformed construct should enable a wide variety of voluntary buyers to participate, accommodate regulatory models represented across the PJM States, and continue to allow States the option of independently meeting resource adequacy needs through a mechanism such as the Fixed Resource Requirement.
- Effective and appropriate market power mitigation is imperative for properly functioning market design, and for enabling additional transparency to States and consumers regarding the cost and resources contained in their supply mix.³⁴

³⁴ OPSI [Board Letter to PJM](#) Re: Issue Charge for Initial Direction for Evaluation of Procurement of Clean Resource Attributes, *sent March 18, 2022*.

Board Staff is fully engaged in these conversations and continues to help shape the development of potential future market designs. The CPAWG has two expert consultants, Brattle and the Rocky Mountain Institute (“RMI”), that provide external education, research on existing state policy market constructs, and guidance on possible future implementation of such markets.

E. PJM’s Response to New Jersey’s and Other States’ Efforts to Improve Clean Energy Procurement.

PJM is in the process of considering major reforms to its market structures, in part to better integrate consumer demand for clean energy attributes. On April 27, 2022, at the behest of New Jersey and other interested stakeholders, PJM formed the Clean Attribute Procurement Senior Task Force (“CAPSTF”) to allow for focused consideration of various clean attribute procurement proposals, including both New Jersey’s ICCM proposal, the related FCEM proposal, and the clean capacity product proposals.

The first meeting of the CAPSTF was held on June 3, 2022 and included a detailed presentation from OPSI about state concerns and preferences for incorporating state demand for clean energy and other public policy resources into the PJM markets. The meeting identified the interests of its participating stakeholders, many of which align with the interests of the CPAWG. Participation in the CAPSTF thus far has indicated PJM is a potential avenue for arriving at the optimal, co-optimized ICCM structure. The CAPSTF work plan aims to “conduct [a] detailed design and develop market rules for implementation”³⁵ by June of 2023.³⁶ After which, PJM will conduct its formal stakeholder voting process and, if approved, file Tariff changes with

³⁵ Clean Attribute Procurement Senior Task Force [Issue Charge](#): Key Work Activity #8.

³⁶ [Clean Attribute Procurement Senior Task Force](#): June 28, 2022 Meeting Materials, Item 03- Work Plan.

FERC. While the CAPSTF’s initial meetings have left Staff hopeful, PJM’s market reform is contingent on stakeholder support and there is no guarantee that PJM will arrive at a satisfactory outcome through these efforts, as “no solution” is a potential solution. Furthermore, even if PJM files new Tariff language with FERC and the Commission approves the proposal, it would still take several years to implement a FERC-jurisdictional, regional clean energy and/or capacity market. In the interim, procurement of capacity and clean energy attributes needed to satisfy policy requirements would continue to be unnecessarily inefficient, absent additional action on the part of New Jersey.

II. Staff Recommendations for Future Action

In the time since the Board issued the Resource Adequacy Alternatives Report, Staff has continued to investigate various options for the best way to achieve New Jersey’s clean energy objectives. Staff’s analysis continues to support many of the key conclusions of the 2021 Report, which include:

1. Incorporating New Jersey’s clean energy goals into the regional market is the most efficient way to provide New Jersey consumers with reliable, affordable, and carbon-free electricity.
2. Existing PJM markets have fulfilled their design objectives to maintain reliability at competitive prices, but do not adequately include state clean energy policies.
3. Without further reform, the PJM market will continue to attract excessive investments in new fossil fuel plants rather than clean energy resources.
4. New Jersey should continue, in parallel, to explore the option to implement a New Jersey or multi-state forward clean energy market, whether under the FRR or other state-led structure.

After two years of intensive investigation and consultation with our fellow OPSI states, market design experts, and stakeholders, the 2022 Report affirms these findings and continues to see expanded access to competitive clean energy markets as critical to fulfilling New Jersey’s

ambitious clean energy goals at affordable prices. Staff recommends that the Board close the Investigation of Resource Adequacy Alternatives and direct Staff (1) work on establishing a market for the forward procurement of clean energy attributes, (2) to design a market framework capable of separately tracking CCCs, and (3) explore indexing clean energy products to track the amount of carbon displaced by CEACs/RECs and potentially CCCs. The proceeding will also investigate how to incorporate such new products into New Jersey's existing restructured market.

Staff recommends that the Board take these actions in parallel with continued efforts for regional market reforms. While the PJM reforms currently under consideration in the CAPSTF are a promising potential vehicle for implementing reforms, the benefits of regional markets are too compelling for New Jersey customers to rely solely on a PJM-focused effort. Moreover, many important policy and legal concerns with housing a clean energy market within PJM that will need to be resolved, including how to provide state regulators with an enhanced governance role over any new market design, before New Jersey can commit to participating in such a market.

Therefore, while the PJM efforts continue, Staff believes that it is in the State's best interest to pursue a stand-alone, clean energy market, open to voluntary participants, and a separate clean capacity tracking system that, in the aggregate, will yield many of the same benefits as a region-wide co-optimized approach to clean energy attribute and clean capacity procurement. Staff therefore recommends that the Board direct Staff to work on designing a forward clean energy market within the PJM footprint and a requirement for New Jersey LSEs to purchase capacity from certified clean resources.

A. An Integrated Clean Capacity Market Would Result in Significant Cost Savings and Accelerate the Clean Energy Transition; New Jersey Should Continue to Advocate for its Adoption at the Regional Level.

1. Implementing an Integrated Clean Capacity Market.

The Resource Adequacy Report identified the ICCM as the optimal forward clean energy market, largely because it integrates state clean energy goals into PJM’s best-in-class competitive market and takes advantage of PJM’s existing RPM structure. As proposed by Staff, the ICCM would “be a three-year forward auction to procure two products: (1) capacity in units of UCAP [(unforced capacity)] MW as under the current RPM; plus (2) clean energy in MWh of unbundled clean energy attributes.”³⁷ Buyers will determine the quantity of CEACs they wish to procure, including the ability for states to procure state-defined RECs subject to a downward sloping demand curve. Staff continues to believe that an ICCM represents the most economical solution for reliably achieving New Jersey’s clean energy vision.

Staff recognizes that an ICCM requires active cooperation from PJM and its stakeholders to become a reality, and that the PJM process can take a number of years. Any proposal must be approved by PJM’s membership, the PJM Board of Directors, and then FERC. Thus, while the ICCM provides the optimal economic solution to incorporating state clean energy goals into the regional electricity markets, it is also potentially more difficult to implement than other forms of regional forward clean energy markets.

2. Benefits and Challenges of a PJM-Wide ICCM.

A PJM-run ICCM would involve amending PJM’s existing RPM rules to incorporate aggregate clean energy demand from all participating clean energy buyers, and then determine

³⁷ Resource Adequacy Alternatives Report, at 36.

the least-cost, reliable, system capacity mix that also supplies the demanded clean energy. As set forth in the Resource Adequacy Report, the ICCM would be a single settlement, two-price market, comprised of a price for capacity and a price for CEACs. As the ICCM administrator, PJM would determine the capacity price by “adjust[ing] the selection of cleared resources” to identify “the most advantageous portfolio of resources in the system” capable of supplying sufficient capacity to meet PJM’s current 1-in-10 reliability standard.³⁸

Under the new ICCM construct, PJM would procure CEACs within the same regional marketplace that capacity commitments are made and with the same participants and resources that exist today, but with the ability to credit resources for providing clean energy attributes or other state-defined products. Consistent with the Report’s recommendations, Staff continues to view the ICCM as the optimal market solution.

3. Benefits and Challenges of New Jersey Creating its Own ICCM Through the FRR Alternative

The PJM tariff allows eligible load serving entities (“FRR entities”) to operate outside of the PJM capacity market. If utilized, an FRR entity is responsible for securing capacity commitments on behalf of its designated customers.³⁹ The FRR alternative was originally designed for vertically integrated utilities to conduct resource planning, outside of the competitive market and therefore not subject to the uncertainty and risks associated with the capacity market. New Jersey, while not a vertically integrated state, explored the FRR alternative as a possible response to the extra costs the Expanded MOPR would likely impose.

³⁸ Resource Adequacy Alternatives Report, at p. 38.

³⁹ PJM Manual 18: PJM Capacity Markets, Section 11.

On September 18, 2020 and November 9, 2020, the Board hosted a Technical Conference and Work Session, respectively, dedicated to investigating the FRR alternative.

While the investigation led Staff to believe that the FRR alternative could enable a more appropriate capacity market for the State’s clean energy needs, the investigation also surfaced certain risks associated with the FRR alternative that reduce its appeal, particularly in light of PJM’s repeal of the Expanded MOPR rules. These shortfalls include legal uncertainty, higher costs to ratepayers, unmitigated market power, and reliability risks.⁴⁰ Considering these “substantial implementation challenges,” the Resource Adequacy Investigation Report found that while it may help mitigate impacts of the Expanded MOPR, the FRR alternative would only be worthwhile if it was also used as a mechanism for implementing a New Jersey or multi-state ICCM construct.⁴¹

The main advantage of creating an ICCM through the FRR alternative (“FRR ICCM”) is that it would enable New Jersey to create an ICCM without having to secure the permission of PJM or FERC. Keeping the ICCM separate from PJM’s capacity market also makes this option less susceptible to disruption by future FERC administrations. Additionally, a New Jersey FRR ICCM would ensure that the market design is tailored to the State’s specific policy needs.

⁴⁰ See Comments of Atlantic Shores Offshore Wind, LLC; Vitol, Inc.; Direct Energy; Atlantic City Electric; Calpine Corporation; Calpine Retail Holdings, LLC; Electric Power Suppliers Association; Enel North America, Inc.; NRG Energy, Inc.; EDP Renewables North America LLC; Monitoring Analytics LLC; Institute for Policy Integrity; LS Power Development, LLC; Natural Gas Supply Association; New Jersey Conversation Foundation and New Jersey Sustainable Business Council; Large Energy Users Coalition; PJM Power Providers; New Jersey Division of Rate Counsel; Retail Energy Suppliers Association; Rockland Electric Company; and Vistra Energy in the New Jersey Board of Public Utilities Investigation of Resource Adequacy, BPU Docket No. EO20030203.

⁴¹ Resource Adequacy Alternatives Report, at 23.

The main disadvantage of an FRR ICCM is that it would likely result in higher capacity costs for New Jersey, especially given the fact that PJM's RPM is producing historically attractive procurement levels and prices. The 2023/2024 Delivery Year BRA, the first auction conducted since the repeal of the Expanded MOPR, resulted in an overall lower-carbon resource mix at clearing prices nearly half the price of the previous BRA.⁴² Under current market rules, absent the Expanded MOPR, exiting the competitive capacity market in order to create an FRR ICCM would likely lead to higher capacity prices for New Jersey consumers for two reasons. *First*, a single-state capacity market could create an increase in the market power of capacity sellers, from making capacity offers and contracts that are not subject to the downward cost pressures of a competitive market.. This market power could be mitigated through participation of other states or voluntary buyers, but their participation is not guaranteed under this go-at-it-alone approach. *Second*, electing the FRR alternative requires the FRR entity to meet resource adequacy needs and to be responsible for the performance of all committed resources under the FRR plan. If the FRR entity fails to procure adequate capacity, New Jersey consumers would be burdened with PJM penalty charges. Creating an FRR ICCM would therefore result in higher capacity costs for New Jersey ratepayers than if New Jersey were to remain in the current PJM capacity market or secure the implementation of a region-wide ICCM.

However, should the Expanded MOPR be reinstated as a result of the ongoing legal challenge to its repeal, the FRR ICCM remains an attractive alternative to an RPM subject to Expanded MOPR rules. As the Resource Adequacy Report found, the cost savings of shielding

⁴² [PJM Capacity Auction Secures Electricity Supplies at Competitive Prices: Auction for 2023/2024 Delivery Year Attracts a Diverse and Reliable Resource Mix at Lower Cost for Consumers](#). PJM [News Release](#), June 21, 2022.

New Jersey ratepayers from the Expanded MOPR would likely exceed the costs resulting from the inefficiencies of a New Jersey-only ICCM by over \$100 million per year.⁴³ Additionally, while Staff hopes that the efforts of CPAWG and CAPSTF bear fruit, there remains the possibility that all of these effort fall short of Staff’s expectations and never result in a regional, competitive, clean energy market structure. Staff therefore believes the Board should not rule out the FRR alternative, although it does not recommend proceeding to an FRR-based solution at this time.

B. While Regional Efforts Continue Under Uncertainty, New Jersey Should Develop a Regional Voluntary Clean Energy Market

In addition to the ICCM options, Staff has examined a series of other regional clean energy market designs that would serve both New Jersey customers and other interested voluntary participants, whether this be other states, municipalities, or corporate buyers. A Forward Clean Energy Market is a simplified version of an Integrated Clean Capacity Market and Staff’s analysis shows that the FCEM will yield most, though not all, of the benefits that implementing an ICCM would yield.

While slightly less economically efficient, an FCEM could potentially be implemented significantly quicker than an ICCM. An FCEM takes the concept of trading CEACs in a regional competitive market, similar to the ICCM, but separates these clean energy attribute products from PJM’s capacity market. The forward clean energy market will provide a platform for participating states and voluntary buyers to purchase CEACs in advance of PJM’s BRA and then allow market participants to continue to purchase their reliability needs through the RPM to maintain resource adequacy. An FCEM, as proposed in Staff’s 2021 report, “involves forward

⁴³ Resource Adequacy Alternatives Report, at 6.

contracting for clean energy resources by a state or group of states and has clean energy and economic outcomes that are almost as positive as an ICCM structure.”⁴⁴

The key difference between the ICCM and an FCEM is that the FCEM does not co-optimize auction outcomes, as capacity and CEACs would be traded in distinct markets. On the plus side, New Jersey has the ability to remain in the market no matter which market design is implemented.. However, in a separate FCEM and RPM structure, sellers in the FCEM will likely submit higher bid offers for CEACs to compensate for the risk of not knowing what their capacity market revenues will be. This risk premium will likely result in slightly higher CEAC clearing prices than in a co-optimized market.

Nonetheless, the FCEM will deliver results similar to the ICCM because it still enables market participants to purchase clean energy attributes in a centralized voluntary market, an option that does not exist today. Thus, the FCEM would also provide the competitive price-reducing advantages of a regional market. At the same time, the FCEM auctions would be designed to maintain the competitive structure and three-year ahead strategy of PJM’s BRA. Staff believes that the “forward” component of the FCEM will provide clean energy demand signals that the current PJM markets and bilateral trades do not and, therefore, will spur increased development of clean energy resources, while lowering the demand for future fossil fuel resources.

Additionally, clean resources tend to have high up-front capital costs but low ongoing operational costs.⁴⁵ Upfront costs are therefore the main financial hurdle for developers, which makes sending forward market signals for megawatts of clean energy crucial for accelerating the

⁴⁴ Resource Adequacy Alternatives Report, at 36. *See* footnote 61.

⁴⁵ *See* Comments of the American Council on Renewable Energy, at page 6. Investigation of Resource Adequacy, BPU Docket: 20030203.

clean energy transition. An FCEM, similar to the RPM, would send these signals three-years in advance, by enabling the forward procurement of CEACs and potentially CCCs, while also providing a revenue stream to help finance upfront capital costs.

Authorizing Staff to develop a FCEM market design will ensure that New Jersey continues to enjoy the benefits of the highly-competitive PJM market, while also introducing new competitive clean energy products at the regional level. Thus, Staff requests that the Board authorize Staff to further develop a FCEM market with the goal of having New Jersey LSEs purchase clean energy attributes sufficient to meet the State’s clean energy demand. This demand would then be aggregated with that of all other voluntary participants, in order to create a market of sufficient size to attract clean energy developers and facilitate the mass deployment of low-cost clean energy resources.

1. Establishing a Regional Market Would Provide Significant Benefits Beyond Those Realized by New Jersey.

One of the major findings of Staff’s initial Investigation into Resource Adequacy was that a regional clean energy market would more efficiently achieve New Jersey’s clean energy objectives.⁴⁶ Over the past year, Staff has continued to see enormous benefits from pursuing a regional clean energy market approach. For example, further investigation confirms that New Jersey can have an outsized impact on carbon emissions across the entire 65 million person-strong PJM footprint by catalyzing the development of a regional clean energy market. The evidence developed by Staff suggests that a such market structure would:

- Preserve reliability across the PJM footprint while growing the clean energy economy;

⁴⁶ See Resource Adequacy Alternatives Report at 3 (“Incorporating New Jersey’s clean energy goals in the regional market is the most efficient way to provide New Jersey consumers with reliable, affordable, and carbon-free electricity.”).

- Reduce GHG emissions across the PJM footprint, beyond what could be achieved by New Jersey alone;
- Create a transparent, forward price for clean energy attributes that does not currently exist in today's energy markets; and
- Create substantial net benefits for New Jersey consumers.

While New Jersey has positioned itself to be a leader in driving the formation of a regional clean energy market, Staff believes New Jersey can simultaneously sponsor a New Jersey-led FCEM. Such an FCEM would be open to voluntary external buyers and be designed with the ability to integrate into, or coexist with, any future proposal that may develop through the CPAWG or CAPSTF as regional efforts continue. Staff further believes that implementing a New Jersey-led forward market may help accelerate the development of a regional clean energy market. As noted above, a regional market remains Staff's ideal long-term solution but lacks a reasonable timeline for New Jersey's needs. Staff summarizes the evidence associated with each of these findings below.

2. A Forward Clean Energy Market Will Preserve Reliability Across the PJM Footprint While Growing the Clean Energy Economy.

Staff takes the Board's obligation to ensure electric reliability seriously, and recommends that any solution eventually developed must not diminish the high level of bulk system reliability that the PJM market currently secures for New Jersey customers. Staff fully supports the conclusion of the Resource Adequacy Report that "[e]xisting PJM markets have fulfilled their design objectives to maintain reliability at competitive prices."⁴⁷ Staff therefore recommends that New Jersey continue to rely on the PJM markets to meet reliability needs at competitive

⁴⁷ Resource Adequacy Alternatives Report at 3.

prices, so long as the BRA is not subject to the Expanded MOPR or any other mechanism inconsistent with New Jersey’s clean energy objectives

Critically, Staff believes that any regional ICCM or clean energy (or capacity) market structure should continue to enforce existing PJM reliability metrics, as established by PJM and FERC, including appropriate reserve margins, enforcement of localized transmission and generation constraints, and other operational parameters that have historically led PJM to have a high degree of bulk system reliability. Staff notes that each of Staff’s recommendations included in this report will allow PJM to secure the same high level of bulk system reliability that New Jersey consumers receive today.

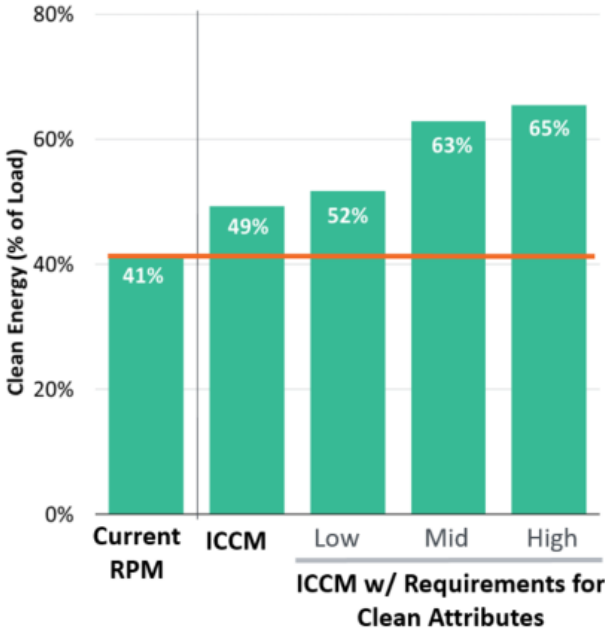
3. Regional Forward Markets Reduce Greenhouse Gas Emissions Across the PJM Footprint, Beyond What Could Be Achieved by New Jersey Alone.

As demonstrated in the chart below, New Jersey’s participation in regional clean energy markets could be a potential driver of substantial clean energy deployment, continuing the State’s natural role as a green economy leader. Note that the “Low,” “Mid”, and “High” Clean Attributes scenarios correspond to scenarios in which clean resources meet 27%, 41%, and 54% of the entire PJM system’s capacity needs respectively:⁴⁸

⁴⁸ See Resource Adequacy Alternatives Report at 62, 64.

Energy Mix

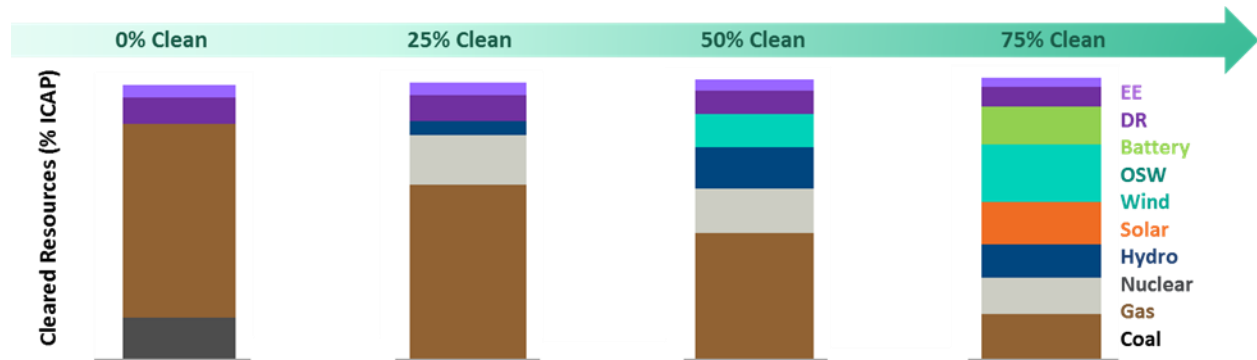
Regional marketplace can substantially accelerate clean energy investment



This investigation has found that a regional clean energy market can facilitate significant increases in regional clean energy investment by clearly showing aggregate clean energy demand and producing more transparent price signals. Through sponsoring the development of such a model, New Jersey can thus help increase the percentage of regional load met with clean energy resources. In combination with a separate structure to procure CCCs (described below), which Staff also recommends beginning to develop in parallel with regional efforts, the FCEM will send the same signals to developers and the market will also significantly increase investment in clean energy resources.⁴⁹

⁴⁹ See Appendix: Figure 1. The FCEM and a separate clean capacity market would procure CEACs and CCCs respectively, generating results similar to the ICCM co-optimization benefits. FCEM + CCC should yield similar resource mixes as well as health and environmental benefits, but at slightly higher costs than the ICCM due to the inefficiencies of multiple markets.

As illustrated in the graphic below, injecting additional clean energy capacity into the PJM footprint has a direct impact on the amount of coal and natural gas serving customers throughout the PJM region, which leads to significant emissions reductions.



Under the existing RPM rules, there is no ability to signal a preference for clean resources and thus an excessively high amount of fossil fuel resources will continue to clear. Forward purchases of clean capacity through CCCs or a clean capacity constraint on the BRA could significantly decrease the amount of cleared fossil fuel resources while continuing to ensure system-wide resource adequacy. Thus, increasing clean capacity requirements imposed on New Jersey LSEs would not only directly reduce fossil resources underlying the State’s supply of energy, but also reduce carbon emissions across the entire PJM region by between 14% and 40%⁵⁰ by relying on more carbon-free resources. Additionally, as the region’s reliance on fossil fuels decreases, the newly signaled demand for clean attributes will support the retention of nuclear resources throughout PJM. Indeed, the amount of nuclear resources that clear in the capacity market could potentially double,⁵¹ thereby providing a larger revenue stream for nuclear operators and decreasing the plants’ risk of shuttering from economic pressures.

⁵⁰ *Id.*

⁵¹ *See* Appendix: Figure 2.

C. Creation of a Transparent Forward Price Signal For Clean Energy Attributes Will Result in a More Efficient Market and Promote Low-Cost Procurement of Clean Energy.

Staff finds that a regional clean energy market has the potential to drive significant amounts of additional investment in the clean energy economy by providing clean energy buyers and sellers an efficient means of trading clean energy on a forward, competitive basis. Currently, buyers and sellers in the PJM market lack a transparent and easy-to-use mechanism for engaging in clean energy attribute transactions. This leaves many corporations, cities, municipalities and other interested voluntary buyers without access to a transparent means of purchasing clean energy at scale, while also denying clean energy developers a liquid market in which to sell their output. The lack of a low transaction-cost avenue for voluntary purchases also drives up costs for buyers who nonetheless manage to, or are mandated to, procure clean energy.

Currently, most purchasers procure clean energy through bilateral transactions, without the benefit of a regionalized market structure that would reduce the friction costs involved in purchasing clean energy attributes. Based on Staff's discussions with such voluntary buyers, there is real interest to participate in a centrally-cleared clean energy marketplace to reduce friction costs and make financing new energy infrastructure easier. Thus, Staff sees substantial evidence that a regional forward clean energy market, whether ICCM or FCEM structure, would drive additional private investment dollars into the clean energy economy by providing corporations, cities, municipalities and other interested voluntary buyers a liquid and transparent means of purchasing clean energy at scale, on a forward basis.

Further, a regional clean energy market structure could make it easier for clean energy suppliers to finance and build their projects by developing a market that allows the developer to sell long-term clean energy attributes at a fixed price. This can be accomplished by incorporating a "price lock" for a period of 7 to 12 years, to signal to developers that a project

receiving the price lock is guaranteed the price at which it sells its CEACs. A fixed contractual price for the project's output significantly reduces project risk, thereby enabling low-cost financing and savings that can be passed on to consumers. Further, because many clean energy resources produce variable amounts of electricity in any given year, Staff recommends that the Board explore how to incorporate a performance-based true up to hold developers accountable for supplying the CEACs.

Another advantage of a regional market approach is that it allows New Jersey to improve the “quality” of the underlying CEACs or RECs procured as part of the RPS program, by signaling a preference for *new* clean generation or by indexing CEAC/REC values to track the amount of GHG emissions abated. While RECs represent clean energy being added to the PJM grid at some time in the last two years, there is no mechanism for clean energy buyers to preferentially select RECs from new sources of clean energy. However, promoting the construction of new clean energy resources, a concept known as “additionality,” is a key feature for many voluntary buyers, including large corporate buyers, municipalities, and others.⁵² Staff likewise recommends that New Jersey explore “additionality,” possibly through requiring LSEs to source a portion of all clean energy attributes they use for RPS compliance from new clean energy facilities, and advocate for or create market structures that facilitate meeting this requirement. By making such a change, New Jersey would ensure that an increasing percentage of the clean energy attributes purchased on behalf of its consumers are sourced from new clean

⁵² See, e.g., Google, *Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond 6* (2016), <https://static.googleusercontent.com/media/www.google.com/en/green/pdf/achieving-100-renewable-energy-purchasing-goal.pdf> (“To ensure that Google is the driver for bringing new clean energy onto the grid, we insist that all projects be ‘recsal.’ This means that we seek to purchase energy from not yet constructed generation facilities that will be built above and beyond what’s required by existing energy regulations . . .”).

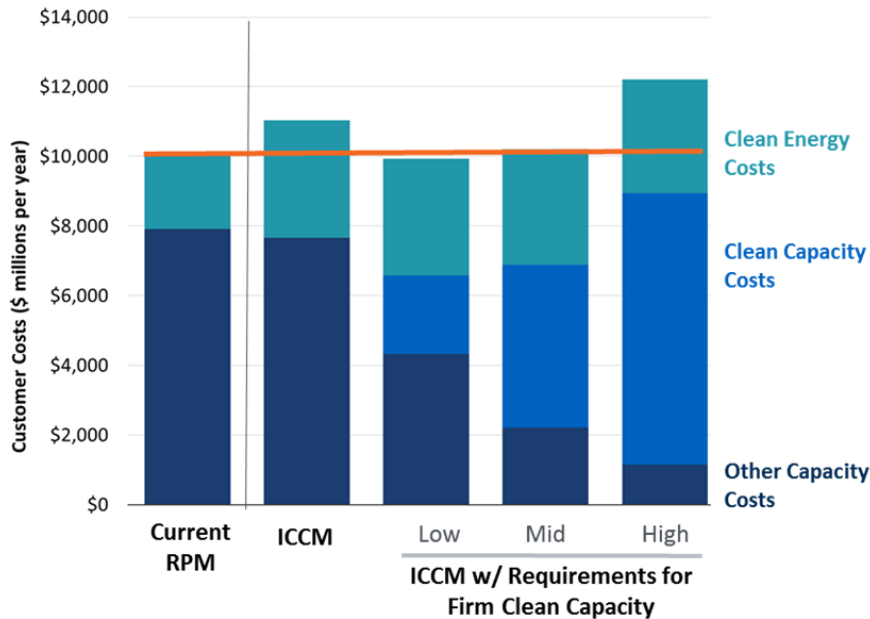
energy generation resources,⁵³ rather than existing resources, and therefore foster faster deployment of clean energy capacity.

D. Regional Clean Energy Markets Would Result in Significant Net Benefits to Consumers.

Staff's research also shows that a regional clean energy market structure is affordable for consumers, and provides significant net benefits. Indeed, an ICCM with a low requirement for clean capacity could actually reduce consumer costs below the level experienced under the current RPM.⁵⁴ However, the total impact on costs from a co-optimized regional clean energy market will ultimately depend on the stringency of any clean capacity constraint (or demand for CCCs) as well as the total demand for CEACs. Still, the model demonstrates that in all scenarios, using a regional, competitive market helps limit electricity price increases to modest levels. This ensures that the cost of clean energy attributes remains steady even when suppliers must procure large amounts of clean capacity and/or CEACs. Moreover, under any potential ICCM or FCEM market structure, only voluntary consumers and LSEs required to procure clean capacity or clean energy attributes by state law would bear any potential cost premium. This prevents any involuntary cost increase to consumers in other states that are uninterested in procuring clean energy attributes or clean capacity through regional markets.

⁵³ The 2019 EMP and the 2021 Resource Adequacy Report recommended two additional reforms that Staff also recommends that the Board consider in future proceedings. First, the 2019 EMP recommended ensuring that clean energy is produced in the same hour that New Jersey customers consume it. 2019 EMP at 94. Second, the 2021 Resource Adequacy Report recommended creating CEACs that have their value indexed to the amount of carbon they displace, in order to provide clean energy resources that abate more carbon emission with more revenue. 2021 Resource Adequacy Report at 43.

⁵⁴ Note that here a "low requirement" for clean capacity means meeting 27% of PJM's and 42% of New Jersey's overall capacity needs with clean capacity resources. 2021 Resource Adequacy Report at 62.



Moreover, due in part to the cost containment provided by regional markets, the value of the carbon reduction and human health benefits more than offset the price increases that occur under highly stringent CEAC and/or clean capacity procurement requirements.⁵⁵ This results from the fact that these requirements direct revenue away from fossil generating units and towards clean energy resources, which in turn shifts the capacity and generation mix towards cleaner resources. One can readily see this by comparing the decrease in the capacity revenue of

⁵⁵ As shown in Figure 1 in the Appendix, an ICCM with high requirements for clean capacity region-wide would limit annual carbon dioxide emissions from PJM generators to 204 million tons per year. That is a reduction of 138 million tons relative to the status quo case in which PJM generators emit 342 million tons of carbon dioxide per year. At the current federal social cost of carbon (“SCC”) estimate of \$51 per ton, that translates to an annual benefit of approximately \$7.0 billion. See Kevin Rennert et al., *Comprehensive Evidence Implies a Higher Social Cost of CO₂*, 610 *Nature* 687, 689 (2022), <https://www.nature.com/articles/s41586-022-05224-9> (noting that the mean SCC value the U.S. government currently use is \$51 per ton). Recent academic research, however, indicates that the federal SCC value is based on outdated data and a more realistic SCC value would be \$185 per ton. See *id.* at 687-89. At that SCC value, the annual climate benefits of a PJM-wide high clean capacity constraint would be approximately \$25.5 billion. As a PJM-wide high clean capacity constraint would only increase annual electricity costs by about \$2.2 billion, this means its climate benefits alone would provide a cost benefit ratio of about 3.2 (for an SCC value of \$51 per ton) to about 11.5 (for an SCC value of \$185 per ton). Adding in the additional human health benefits from improved air quality would only further increase the total benefit-cost ratio.

“other” resources and increased revenue to clean resources, in the form of payments for clean capacity and/or clean energy attributes, in each ICCM scenario. The combination of regional markets and aggressive clean energy goals thus results in significant net benefits.

In fact, an FCEM would yield similar carbon reduction and human health benefits as an ICCM, just at a slightly higher cost due to the loss of economic efficiency inherent in using two markets rather than a single co-optimized market. Implemented with additional tools, such as a clean capacity constraint in PJM’s RPM or a CCC product traded in a separate market, the FCEM can provide nearly all of the economic efficiencies, environmental benefits, and human health value that an ICCM structure would realize. Thus, apart from the cost increase, an FCEM combined with a separate CCC market would be equally capable of facilitating New Jersey’s clean energy goals.

1. Governance & Jurisdictional Issues

Should New Jersey elect to adopt either an ICCM or FCEM clean energy market structure, the Board must still address the key questions of who is in charge of setting the rules for the new market and how a regional market fits into the federal-state regulatory framework. Staff investigated a variety of governance models, including governance for an ICCM-style market that operates within or outside of the PJM system as well for an FCEM-style market that could operate outside of PJM. In all cases, the overarching questions are how does the market run; who sets the rules for the market; who administers the auction; and who oversees the market?

Staff believes that, whatever market design the Board selects, a strong State-led governance model will be critical to giving New Jersey and other states the confidence to participate in a regional clean energy market. Indeed, Staff has concluded that the fact that states

do not have any formal role in the PJM stakeholder process creates a disconnect between PJM efforts and the PJM states, and is a drawback to implementing an ICCM or FCEM within the existing PJM structure. To resolve this issue, New Jersey and other OPSI states have been exploring potential governance models that could oversee a new market structure.

Staff recommends that the Board continue to work with the larger OPSI group to design a governance model that:

- ▶ Provides state regulators a clear role in overseeing any market comparable to the rights exercised by the existing PJM Board of Directors, including appropriate filing rights at the Federal Energy Regulatory Commission;
- ▶ Provides participants in the clean energy market, including buyers, sellers, consumer advocates and state regulators with a dominant share of stakeholder votes;
- ▶ Ensures that states retain primary jurisdiction over their clean energy policies;
- ▶ Relies, as much as possible, on the existing PJM system for tracking environmental attributes, known as the PJM Generator Attribute Tracking System (“GATS”); and
- ▶ Includes a fully qualified and equipped market administrator, potentially a neutral, third party, to conduct the design work and run the auction.

Staff believes several different market administration models can satisfy these principles.

First, interested clean energy states could enter into an agreement, similar to the one governing operation of the Regional Greenhouse Gas Initiative (“RGGI”), which allowed participating states to jointly administer an emissions pricing regime. Currently, New Jersey and eleven other states participate in RGGI. A group of states could band together to form a comparable governance structure, and then carry out the design and administration of an FCEM and/or CCC market. *Second*, interested states could work within the existing PJM system to implement a new PJM-run market or markets with governance structures that respect states’ jurisdiction over the generation mix.

2. Implementation Mechanism

Under either an ICCM or FCEM concept, the obligation to contract with clean energy resources would rest with New Jersey LSEs. This means that New Jersey's basic generation suppliers and third party suppliers (all LSEs) would be assigned an obligation to purchase clean energy attributes, on a forward basis, for a minimum percentage of their load. Each New Jersey LSE would also be required to purchase a certain level of CCCs prior to meeting their capacity obligations in PJM's RPM auction. This design would function similar to the existing REC market in which TPS and BGS providers are required to purchase a certain level of their annual energy from the REC market, and meet additional technology-specific requirements, using the State's REC programs. CEAC and CCC purchase obligations for LSEs will also help induce clean resources to participate as sellers in a regional FCEM or ICCM, as well as any CCC market. This is key, as a critical mass of participating sellers is necessary for such markets to realize the benefits of regional competition and minimize the cost of reaching New Jersey's clean energy future.

E. New Jersey Should Consider GHG-Indexing RECs and CEACs

Staff recommends that the Board should consider a "GHG-indexing" mechanism that correlates the amount of compensation a clean energy resource receives for selling a REC or CEAC to the amount of GHG emissions abated by the generation of the corresponding MWh of clean energy. The purpose of such a mechanism is to incent production of clean energy at times that maximize GHG reduction. If REC prices are higher when renewable penetration is typically low, we are encouraging clean generation to perform when PJM's emission's rate is high and therefore offset fossil generation at a "dirtier" time. Indeed, insofar as the primary policy objective served by RECs and CEACs is GHG abatement, it is more economically efficient to tie REC and CEAC compensation to avoided emissions than to provide the

same level of compensation for a clean attributes without accounting for the contribution of offset emissions.

Staff recommends that the Board tie the value of RECs or CEACs with the level GHG abatement to determine a more accurate clean attribute value. Through preliminary discussions, Staff had identified establishing a certain level of GHG emission abatement to be met by NJ LSEs in addition to meeting CEAC or REC purchase obligations is a potential implementation pathway for this concept. As explained further below, Staff believes that N.J.S.A. § 48:3-87(c)(2) grants the Board the necessary statutory authority to impose such a mandate,⁵⁶ should the Board want to implement indexing in the future.

Further, PJM has recently announced that beginning in March 2023, the PJM EIS data based will be tracking hourly REC products with the marginal emissions data which will facilitate Staff's envisioned GHG-indexing by making information about GHG emissions avoided by the generation of the corresponding MWh of clean energy available. Specifically, the hourly RECs that PJM EIS will enable will record both the hour of generation and the location of the generator.⁵⁷ PJM's marginal emissions data likewise records marginal emissions rates for highly specific locations on the grid with 5-minute granularity.⁵⁸ Staff believes this marginal emissions data should provide a reasonable proxy for the additional GHG emissions that would have occurred but for the generation of a MWh of clean energy at a specific place and time and is excited to explore this concept further.

⁵⁶ See N.J.S.A. 48:3-87(c)(2) (“[T]he board shall adopt . . . a greenhouse gas emissions portfolio standard to mitigate leakage or another regulatory mechanism to mitigate leakage applicable to all electric power suppliers and basic generation service providers that provide electricity to customers within the State.”).

⁵⁷ See Press Release, PJM EIS, PJM EIS To Produce Energy Certificates Hourly (Feb. 13, 2023), <https://www.pjm.com/-/media/about-pjm/newsroom/2023-releases/20230213-pjm-eis-to-produce-energy-certificates-hourly.ashx>;

⁵⁸ PJM, *PJM Emission Data Sparks Innovative Approach to Reduce Carbon Footprint*, PJM Inside Lines (Oct. 21, 2021), <https://insidelines.pjm.com/pjm-emission-data-sparks-innovative-approach-to-reduce-carbon-footprint/#:~:text=The%20marginal%20emission%20data%2C%20published%20every%20five%20minutes,response%20to%20an%20increase%20or%20decrease%20in%20demand.>

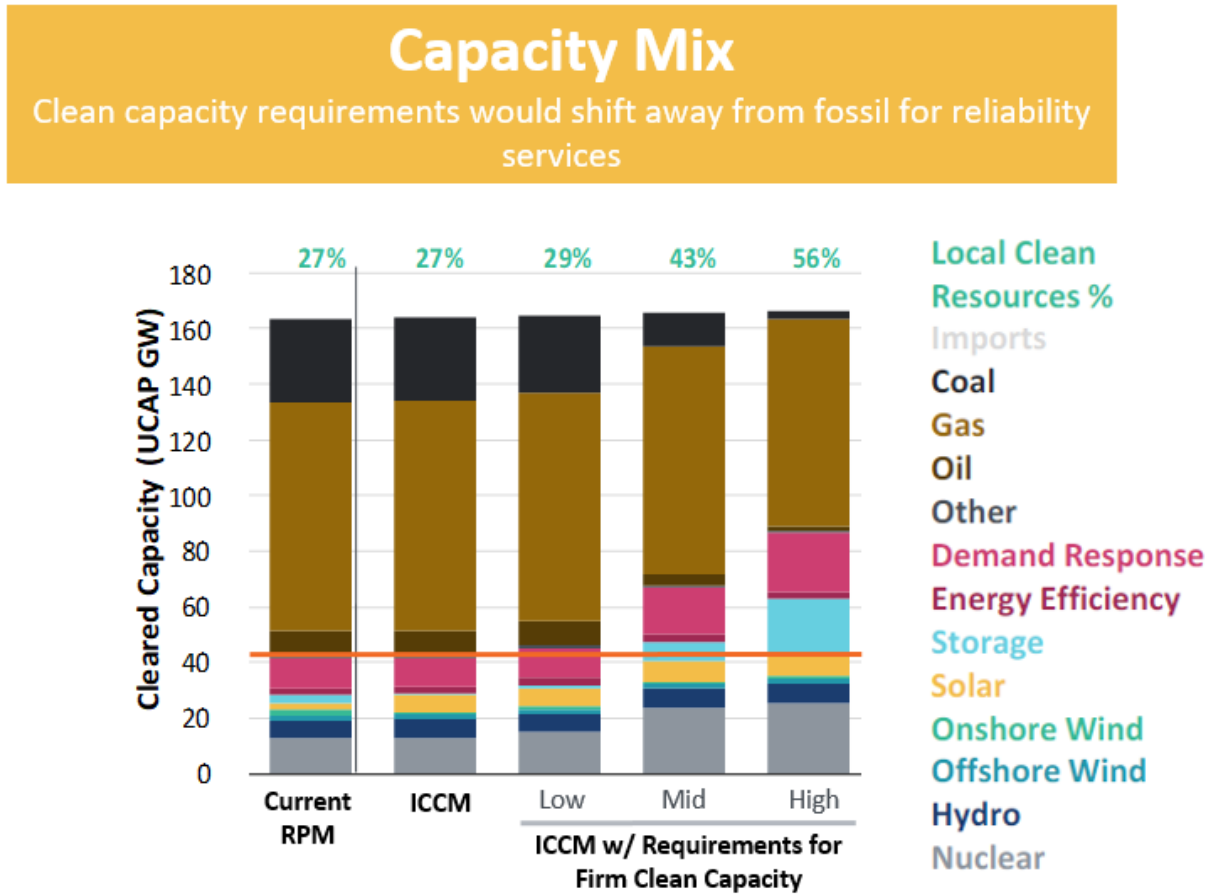
F. New Jersey Should Favor Procurement of Clean Capacity Over Capacity From Emitting Resources

Another main recommendation of this Report is that New Jersey should adopt a formal policy preference for purchasing capacity from clean resources over capacity produced by fossil fuel resources. Staff proposes to define clean capacity as capacity from a non-carbon emitting capacity resource, regardless of whether it is a generation resource, that contributes towards New Jersey's resource adequacy needs, as defined by PJM's existing one-in-ten-year loss of load expectation standard. A clean capacity requirement would promote multiple technologies that are of direct interest to New Jersey policy makers, including nuclear, demand response, energy efficiency and energy storage devices⁵⁹ – resources that will be critical to maintaining reliability during the clean energy transition but that currently do not have access to RECs or other RPS-based funding streams. For example, nuclear does not count towards the State's renewable energy goals, even though New Jersey will rely on its existing nuclear capacity to ensure reliability while reducing emissions for the foreseeable future.

As the following chart demonstrates, establishing a clean capacity procurement mechanism decreases the percentage of PJM load being served by fossil resources, while substantially increasing the percentage of load served by nuclear, demand response, energy storage, and other clean energy resources. Whereas under a competitive regional market with a clean capacity constraint, both the total local clean resources cleared in the BRA and, of specific interest to New Jersey, the amount of nuclear cleared can double. In fact, under such a regime,

⁵⁹ Staff further proposes that storage resources constitute clean capacity resources if their operation results in a net reduction in GHG emissions. Thus, a storage resource that charges when marginal GHG emissions on the grid are low (but not zero) and discharges when marginal GHG emissions are high would constitute a clean capacity resource, provided that such an operational profile still results in a net GHG reduction after accounting for the storage system's round-trip efficiency losses.

fossil fuel resources could decrease by approximately 40% and the regional capacity mix could significantly shift toward non-carbon emitting generation sources, potentially lowering PJM’s carbon footprint by up to 40%.⁶⁰



By providing a price signal that demonstrates demand for clean capacity, New Jersey LSEs and other interested buyers can use a transparent, competitive market structure to signal the increasing need for clean MWs of capacity years in advance and provide an additional stream of revenue to clean resources. This revenue will reward zero-carbon resources for providing capacity value in addition to clean energy, thereby providing a market-based incentive to develop and scale the types of resources needed to maintain reliability as the clean energy transition

⁶⁰ See Appendix: Figure 1.

continues. The State should be particularly interested in how such forward price signaling can provide additional revenue to existing resources, such as nuclear generators, for their carbon-free attributes, which will help create financial stability for the State’s nuclear fleet. Staff’s research shows that all of the clean energy market models discussed here achieve significant additional retention of nuclear power across the PJM footprint, as well as significant increases in the amount of energy storage and demand response capacity. Traditional Class I REC resources, including solar and wind, would also meet the criteria for producing CCCs, but also pose a legal question as to whether the CCC can be separated from other clean energy attributes, such as those represented by RECs.⁶¹

Staff proposes to define a CCC as representing the clean attribute of one UCAP-megawatt of capacity, as certified by PJM, for a particular delivery year or season, and particular PJM capacity zone that is produced by a resource that does not directly emit GHGs, including nuclear, energy storage, demand response, energy efficiency, a resource capable of producing Class I REC, or an emitting resource that either uses a 100% GHG-free feedstock or that ensures the capture and sequestration of 100% of the gross GHG emissions that it produces and/or

⁶¹ Staff’s preliminary view is that the renewable attributes RECs represent and convey are the attributes of the renewable *energy* produced by renewable generators, and thus were previously an inseparable component of an energy-only product. See *Wheelabrator Lisbon, Inc. v. Conn. Dep’t of Pub. Util. Control*, 531 F.3d 183, 186 (2d Cir. 2008) (“RECs are inventions of state property law whereby the renewable energy attributes are ‘unbundled’ from the *energy* itself and sold separately.” (emphasis added)); *Wheelabrator Lisbon, Inc. v. Dep’t of Pub. Util. Control*, 931 A.2d 159, 176 (Conn. 2007) (“[T]he renewable attribute of the energy generated by renewable energy sources is an inherent attribute of the *energy* In other words, the term ‘electricity’ necessarily included the renewable attribute that later was ‘unbundled’ from the *energy* and represented by [RECs].” (emphasis added)). It therefore follows that RECs do not convey ownership of any *capacity* attributes or products. Similarly, CCCs would represent and enable the unbundling of the clean capacity attributes of the currently bundled capacity product that clean resources produce, and would not convey ownership of any *energy* attributes or products. As such, there should be no overlap or double counting between the products CCCs and RECs represent.

induces.⁶² A CCC would be tracked similar to a REC or CEAC, in that the purchasing LSE would “retire” sufficient CCCs equal to a percentage of its PJM-determined total and locational capacity obligations. Unlike a REC, a CCC could only be used for a specific PJM Delivery Year, and would not be bankable, in order to maintain consistency with existing capacity market practices.

1. Role of New Jersey’s RPS in Meeting Clean Energy Targets and the Added Benefits of Enforcing a Clean Capacity Constraint.

It is important to recognize the critical role that New Jersey’s RPS plays in meeting our clean energy objectives; but also to recognize its limitations. The New Jersey RPS program pays for megawatt-hours of clean electricity equal to a certain percentage of annual retail sales in the state to be injected into the PJM system over the course of a given energy year. However, this is only one part of building a successful and reliable PJM grid capable of meeting New Jersey’s clean energy goals. REC markets cannot ensure that New Jersey’s resource adequacy needs are met with clean resources, especially in times of grid congestion, lack of availability of intermittent resources, or locational constraints when the grid is likely being supplied by predominantly fossil fuel technologies. New Jersey must ensure that it can meet increasing portions of its resource adequacy needs without relying on carbon-emitting resources and that its customers reap the full benefits of clean energy resources, which they pay a premium to receive, to ultimately achieve the State’s long-term clean energy and climate objectives.

⁶² Staff proposes that in order to qualify as using “a 100% carbon-free feedstock” or ensuring the “capture and sequestration of 100% of the gross GHG emissions that it produces and/or induces,” an emitting resource would need to have net zero GHG emissions on a lifecycle basis and ensure that any gross emissions are offset by negative emissions within a year.

Generally, RECs are produced by qualifying resources anywhere in the PJM system and thus typically provide the same financial incentive to clean energy generators located near load centers (which typically have more resource adequacy value to the system) as those that are far from load (which typically have less resource adequacy value). Similarly, RECs do not reward clean energy generators for producing power during peak demand periods, and therefore do not create an incentive for project developers to build system configurations optimized to provide the greatest possible capacity value.⁶³ Therefore, even with a very high RPS requirement, LSEs will likely continue to purchase capacity from carbon-emitting generators within the PJM region to maintain system reliability.

Under its current rules, PJM does not have any means of allowing buyers, including New Jersey's LSEs, to purchase capacity specifically from clean capacity resources. Therefore, without a clean capacity constraint or CCC purchase requirements, New Jersey consumers will continue to rely on GHG emitting generators to meet their resource adequacy needs, continuing the disconnect between state policy and wholesale markets. This forced reliance on emitting resources does not align with New Jersey's ultimate goal of achieving a net-zero electricity system and conflicts with the 2019 EMP, which specifically directed the Board to consider both in-state and out-of-state clean energy needs.⁶⁴

⁶³ While the PJM capacity market does send a price signal that favors resources with a high capacity value over resources with a low capacity value, that price signal is fairly attenuated and has not historically been a driver of clean energy resources.

⁶⁴ See, e.g., 2019 EMP, at p. 16, summarizing the results of the Integrated Energy Plan modeling exercise (“Both in-state investment and regional coordination are needed to meet New Jersey’s needs and emissions targets at least cost.”) and at p. 17 (“Coordination with neighboring states and regional markets can allow New Jersey to complement in-state renewables with low-cost, out-of-state resources.”)

2. The Central Purpose of a Clean Capacity Requirement

Staff believes the fundamental purpose of a CCC program or clean capacity constraint is to ensure a cost-effective and reliable transition to a 100% clean electricity system over the coming decades. In Executive Order 28, Governor Murphy set the goal of achieving “the total conversion of the State’s energy production profile to 100% clean energy sources on or before January 1, 2050.”⁶⁵ Energy-focused mechanisms that ensure an amount of clean energy generation that equals or exceeds annual New Jersey electricity consumption are necessary for achieving that goal, but are not sufficient alone to fully decarbonize the electric sector. New Jersey ultimately also needs to secure a portfolio of net zero capacity resources that can reliably meet the State’s real time energy needs whenever they are dispatched. This necessitates a focus on clean capacity in addition to clean energy, and Staff recommends that the Board implement policies that gradually transitions New Jersey’s capacity mix to clean resources over the coming decades, and which provide incentives for technologies needed to maintain reliability in a fully decarbonized system.

Staff also believes that achieving the overarching purpose of New Jersey’s clean energy policies—protecting its citizens from unchecked climate change—requires developing an electric decarbonization strategy that can be replicated across the PJM system. This will require not implicitly depending on other states retaining carbon-emitting resources in order to satisfy New Jersey’s reliability needs. Thus, a clean capacity requirement is necessary to ensure that New Jersey is using non-emitting resources to meet its reliability needs, and avoid the situation where New Jersey “leans” on emitting resources in other states in order to maintain reliability.

⁶⁵ New Jersey Government Executive Order No. 28 at 2, *issued May 23, 2018*.

In short, a fully decarbonized electricity grid needs to ensure system reliability at all times using only net-zero capacity resources. Transitioning to this kind of system over the coming decades will require mechanisms that mandate and/or incent the deployment of clean capacity resources. Staff believes that the simplest and most direct way of achieving that goal is to require the procurement of clean capacity, either through a clean capacity constraint integrated directly into the PJM capacity market or a CCC program.

3. Designing a Potential CCC Purchase Obligation

To enable an orderly transition to an electricity system that is 100% clean on an hour-by-hour basis over the coming decades, Staff recommends that the Board sponsor the creation of a new tracking system for CCCs. In a CCC program, LSEs would be required to purchase CCCs from eligible producers (whether bilaterally or through a future CCC market structure) and then retire the annual or seasonal CCCs in proportion to their load obligations. Staff proposes that New Jersey sponsor a product structure that could be utilized both by New Jersey-jurisdictional LSEs as well as voluntary participants from outside of New Jersey to create a robust, competitive marketplace, similar to the market for existing REC purchases.

Under Staff's proposal to establish a state-led CCC marketplace, the program administrator would aggregate clean capacity demand and track compliance with clean capacity mandates by requiring compliance entities to retire the appropriate quantity of CCCs in a given energy year. This would include ensuring that LSEs source a minimum share of the CCCs that they retire from capacity resources within the relevant capacity Locational Deliverability Areas ("LDAs"). Staff proposes that the minimum share of CCCs that an LSE must procure from a given LDA should equal a percentage of the overall capacity they must procure from that LDA to reliably serve their customers. For a resource supplying CCCs, each CCC they are issued

would either identify the resource's LDA, or note that the CCC came from a resource in an unconstrained region of PJM. This system will ensure that the clean capacity New Jersey LSEs procure is deliverable to New Jersey customers. This will enable the State, as well as interested buyers from outside of New Jersey, to begin the process of moving to a truly clean energy grid by steadily increased the share of capacity needs met with clean energy resources. Staff likewise recommends that the Board create an Alternative Compliance Payment ("ACP") option to ensure that CCC purchase requirements do not unduly increase retail electricity prices.

Staff notes that it would also be possible for PJM to administer a CCC market alongside or co-optimized with the RPM.⁶⁶ In that case, PJM would incorporate the minimum quantity of clean capacity LSEs and potentially other buyers demand into its existing RPM clearing engine. PJM would then produce two prices for each LDA; one for the base capacity product, and another for the clean capacity product. This would ensure that all reliability metrics continue to be met, while also allowing interested states and voluntary buyers with clean capacity goals to signal their willingness to meet their resource adequacy needs from non-emitting resources. Under the PJM integration model, LSEs within PJM would identify the amount of clean capacity that they wish to procure (either as a percentage of their total obligation or as a fixed quantity), along with a price premium that they are willing to pay for meeting their clean capacity preferences.

Both a State-administered and a PJM-administered CCC market would meet the fundamental goal of allowing New Jersey and other interested buyers to signal their preference

⁶⁶ It is possible that PJM's non-FERC-jurisdictional affiliate, PJM Environmental Information Systems ("PJM-EIS") would undertake the tracking and retirement of CCCs, However, PJM-EIS would be performing this function independent of PJM's administration of its FERC-jurisdictional wholesale electricity markets.

for sources of clean capacity. The main advantage of a state-sponsored CCC program is that it would be simpler to start, could be implemented by New Jersey without additional oversight or approvals from other bodies such as PJM or FERC, and would allow New Jersey to determine what resource types qualify as clean.

H. Legal Authority to Direct Changes to New Jersey’s Retail Suppliers

The legislature has granted the Board broad authority to regulate electric services in New Jersey,⁶⁷ including the procurement of clean electric power and assurance of electric system reliability.⁶⁸ The Legislature also specifically charged the Board with the authority to “require any public utility to furnish safe, adequate and proper service, including furnishing and performance of service in a manner that tends to conserve and preserve the quality of the environment and prevent the pollution of the waters, land and air of this State.”⁶⁹

In addition to granting the Board general authority over public utilities, the Legislature also directed the Board to “implement its responsibilities under [the RPS] in such a manner as to:

1. place greater reliance on competitive markets, with the explicit goal of encouraging and ensuring the emergence of new entrants that can foster innovations and price competition;
2. maintain adequate regulatory authority over non-competitive public utility services;

⁶⁷ See N.J.S.A. 48:2-13 (authorizing the Board to exercise “general supervision and regulation of and jurisdiction and control over all public utilities” and listing various electricity service functions subject to this public utility jurisdiction).

⁶⁸ See N.J.S.A. 48:3-87(c)(2) (“[T]he board shall adopt . . . a greenhouse gas emissions portfolio standard to mitigate leakage or another regulatory mechanism to mitigate leakage applicable to all electric power suppliers and basic generation service providers that provide electricity to customers within the State.”); N.J.S.A. 48:3-87(d) (directing the Board to require LSEs to procure a certain percentage of the electricity they sell at retail from renewable sources); N.J.S.A. 48:2-13(d) (“The board shall also maintain the necessary jurisdiction with regard to the production of electricity and gas to assure the reliability of electricity and gas supply to retail customers in the State . . .”).

⁶⁹ N.J.S.A. 48:2-23.

3. consider alternative forms of regulation in order to address changes in the technology and structure of electric public utilities;
4. promote energy efficiency and Class I renewable energy market development, taking into consideration environmental benefits and market barriers;
5. make energy services more affordable for low and moderate income customers;
6. attempt to transform the renewable energy market into one that can move forward without subsidies from the State or public utilities;
7. achieve the goals put forth under the renewable energy portfolio standards;
8. promote the lowest cost to ratepayers; and
9. allow all market segments to participate.”

The various proposals discussed herein, including the ICCM, FCEM, and CCC are all fully consistent with the Legislature’s directives to “place greater reliance on competitive markets” and to “promote ... Class I renewable energy market development, taking into consideration environmental benefits and market barriers,” among others. Further N.J.S.A. § 48:3-87(o) specifically directs that the Board, after notice and consultation with the Department of Environmental Protection and other interested stakeholders:

shall periodically consider increasing the renewable energy portfolio standards beyond the minimum amounts set forth in subsection d. of this section, taking into account the cost impacts and public benefits of such increases including, but not limited to:

1. reductions in air pollution, water pollution, land disturbance, and greenhouse gas emissions;
2. reductions in peak demand for electricity and natural gas, and the overall impact on the costs to customers of electricity and natural gas;
3. increases in renewable energy development, manufacturing, investment, and job creation opportunities in this State; and
4. reductions in State and national dependence on the use of fossil fuels.

Taken as a whole, Staff believes that these provisions of the Clean Energy Act of 2018 clearly provide the Board the authority to amend existing RPS compliance requirements so as to mandate participation in a regional or state-led clean energy market.

The Board’s statutory authority to implement “a greenhouse gas emissions portfolio standard to mitigate leakage or another regulatory mechanism to mitigate leakage applicable to all electric power suppliers and basic generation service providers” also enables the Board to require these entities to purchase GHG-indexed RECs, CEACs, and/or CCCs.⁷⁰ For the purposes of this provision, “leakage” means an increase in greenhouse gas emissions related to generation sources located outside of the State” that are not subject to the same GHG controls or requirements as in-state generators are.⁷¹ Staff thus believes that this provision grants the Board the authority to limit the net amount of GHG emissions that New Jersey LSEs may induce while serving New Jersey customers in order to mitigate such leakage. This is because LSEs purchase electricity in regional PJM markets that are dominated by generators not subject to the same emissions limitations as New Jersey generators are or will be.⁷² Consequently, the Board has the authority to require that LSEs demonstrate their REC, CEAC, and/or CCC purchases avoid a certain level of GHG emissions by procuring GHG-indexed products.

Staff further notes that the Board has the authority to direct changes to New Jersey’s retail supply design. This is clearly demonstrated by previous restructuring Orders that have benefitted New Jersey consumers. Most notably, on April 30, 1997, the Board issued an Order Adopting

⁷⁰ N.J.S.A. 48:3-87(c)(2).

⁷¹ N.J.S.A. 48:3-51.

⁷² See, e.g., 53 N.J.R. 1945(a) (Dec. 6, 2021) (proposing GHG emissions limits for fossil-fuel-burning generators located in New Jersey).

and Releasing Final Report,⁷³ which among other things adopted the findings in the report that would restructure the electric power industry. In 1999, through the Electric Discount and Energy Competition Act (the “Act”), the Board was granted authority to “implement electric retail choice” in a market that at the time supplied bundled product services. The Act provided the Board with guidelines and parameters for restructuring-related issues, but in many areas left important decision-making details to the expertise of the Board.⁷⁴ Since the restructuring of New Jersey’s electric business model, the Board has established a Basic Generation Service auction and created a BGS Master Service Agreement in which the State’s four electric distribution companies (“EDCs”) are required to participate.⁷⁵ Staff believes that there is ample evidence that it is in the ratepayer’s best interest to consider requiring LSEs to meet a portion of their RPS obligations through a regional clean energy market structure or CCC requirement, as this will help ensure that the State takes a cost-effective path in its clean energy transition.

Lastly, by Board Order Dated April 13, 2005, the Board established a program for EDCs to “develop and implement a voluntary retail program that will provide customers an option to support the development of renewable energy beyond the levels established by the [RPS] and foster the development of a competitive marketplace for renewable energy.”⁷⁶ The goals set by the Green Power Choice Program were to (1) empower choice and participation in a market for renewable energy, (2) expand markets for renewable energy and related certificates, and (3)

⁷³ New Jersey Board of Public Utilities Board Order Adopting and Releasing Final Report: *Restructuring the Electric Power Industry in New Jersey: Findings and Recommendations*, issued April 30, 1997.

⁷⁴ Electric Discount and Energy Competition Act, P.L. 1999, c. 23.

⁷⁵ See Board Decision and Order: In the Matter of The Provision Of Basic Generation Service Pursuant To The Electric Discount And Energy Competition Act, N.J.S.A. 48:3-49 et seq. BPU Docket No. EX01050303, issued December 11, 2001.

⁷⁶ See Board Order of Approval In the Matter of the Voluntary Green Power Choice Program BPU Docket #EO05010001, issued April 13, 2005.

expand access to clean products. Staff finds that the goals and intentions of establishing a regional clean energy market requirement are consistent with all of the Green Power Choice Program's goals.

III. Conclusion

Based on Staff's investigation with participating stakeholders, the status of ongoing regional market reform efforts and the findings above, Staff is confident in the following:

- (i) An Integrated Clean Capacity Market Would Result in Significant Cost Savings and Accelerate the Clean Energy Transition, and New Jersey Should Continue to Advocate for its Adoption at the Regional Level;
- (ii) While Regional Efforts Continue Under Uncertainty, New Jersey Should Develop a Regional Voluntary Clean Energy Market; and
- (iii) New Jersey Should Favor Procurement of Clean Capacity Over Capacity From Emitting Resources.

Staff recommends that the Board confirm these findings and direct Staff to work on designing a voluntary regional Forward Clean Energy Market, as well as explore development options for a Clean Capacity Credit program that implements New Jersey's preference for clean capacity.

Moving forward, Staff will continue to engage at the regional level and advocate for the optimal Integrated Clean Capacity Market solution. Furthermore, Staff also finds that GHG-indexing will be an effective tool for implementing a market structure that reaps the greatest environmental benefits.

APPENDIX⁷⁷

Figure 1

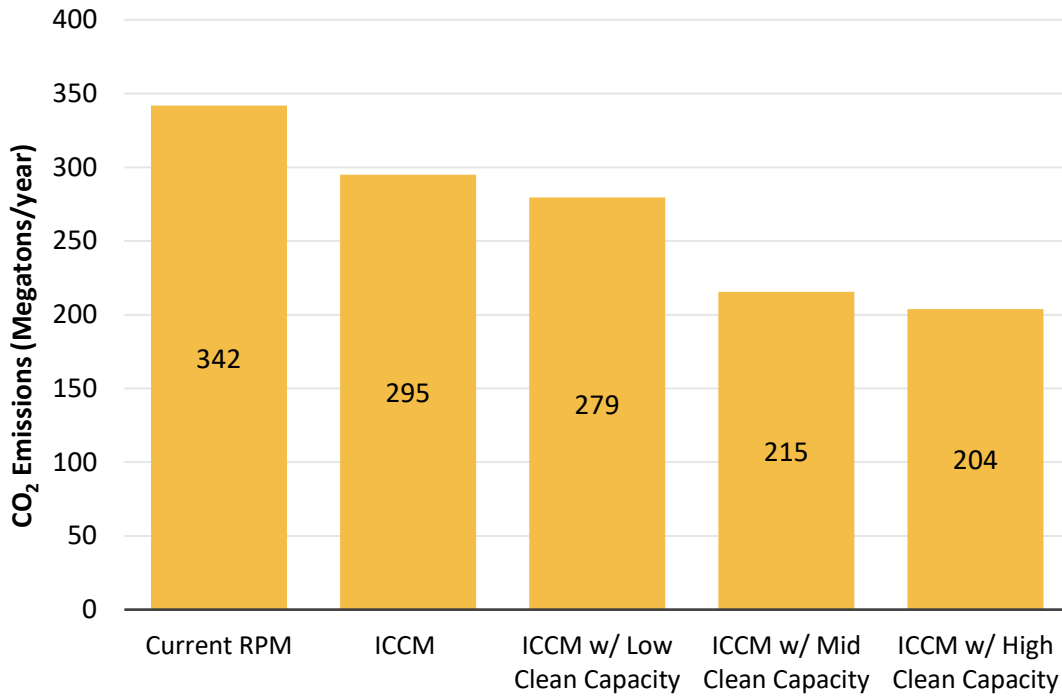
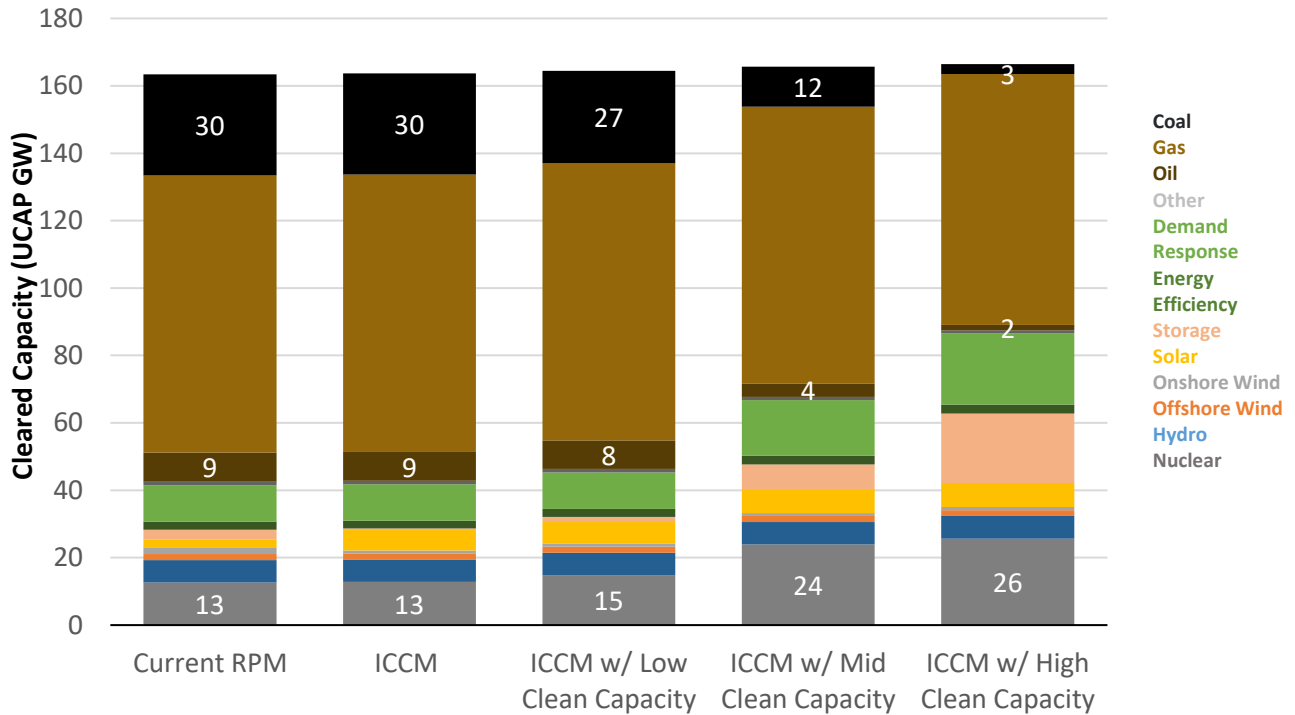


Figure 2



⁷⁷ All numbers are for the 2030 study year, in 2030 dollars.