



June 24, 2020

VIA ELECTRONIC MAIL

Ms. Aida Camacho-Welch
Secretary of the Board
New Jersey Board of Public Utilities
44 South Clinton Avenue
Trenton, NJ 08625
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Re: Joint Reply Comments of PSEG and Exelon Generation Company LLC

**Investigation of Resource Adequacy Alternatives
BPU Docket No. EO20030203**

Dear Secretary Camacho-Welch,

PSEG and Exelon Generation Company, LLC (“Exelon Generation”) respectfully submit the following joint reply comments in response to the Board of Public Utilities’ (“Board’s”) Request for Written Comments dated March 27, 2020 and Supplemental Notice for Written Comments dated April 17, 2020.

Three main themes emerge from comments submitted by those opposed to New Jersey’s adoption of the Fixed Resource Requirement Alternative (“FRR”).

The first is delay. These commenters claim it is premature for the Board to move forward with studying and developing a proposed design for the FRR, because it is still unclear how significantly the new Minimum Offer Price Rule (“MOPR”) imposed by the Federal Energy Regulatory Commission (“FERC”) will impact the clean resources New Jersey has chosen to support. Delay would be a mistake. Designing and implementing an FRR requires significant lead time, and beginning next spring, PJM will conduct several capacity auctions in quick succession, with procurement activity for the 2024/25 delivery year beginning in late 2021. Unless the Board begins working now to formulate a structure for the FRR, the option will be

unavailable to the State when the full effect of the new MOPR is felt by consumers. Moreover, the Board is currently in the process of reformulating the State's renewable energy credit ("REC") programs. Now is the time to ensure that these new programs can be integrated into capacity procurement and harmonized with the State's other programs to support clean resources.

Relatedly, the Board should not delay work on an FRR in favor of relying on PJM to implement a region-wide carbon price. PSEG and Exelon Generation strongly support carbon pricing. But the Board should not be under any illusion that PJM, FERC, or Congress will implement a carbon price in a timeframe that would protect New Jersey's consumers from the impact of the MOPR. Arguing for PJM-wide carbon pricing, to the exclusion of other steps like the FRR, is just cover for inaction. Indeed, the companies suggesting that the Board rely on PJM to develop, and FERC to approve, a regional carbon price include the very same fossil generators who filed and supported the MOPR complaint at FERC that has placed New Jersey in its present dilemma. During the years it would take PJM to implement carbon pricing, these fossil generators will benefit from the frustration of New Jersey's environmental goals. Significantly, the Natural Resources Defense Council and Sierra Club support the FRR, precisely because they recognize that it represents the best opportunity to achieve New Jersey's environmental goals in a cost-effective manner.¹

The second main theme emerging from those commenters who are opposed to the FRR is concern about the potential cost. These commenters rely heavily on the analysis by Monitoring Analytics, LLC ("the IMM").² However, for reasons discussed below and in the accompanying report by the NorthBridge Group, the IMM's analysis is seriously flawed. For one thing, in calculating the FRR cost, the IMM fails to account for the fact that, without the FRR, the State will need to increase its financial support of clean resources (essentially paying twice for their capacity value), unless it gives up on its environmental goals. The FRR avoids these costs, which will grow quickly as New Jersey increases its commitment to clean resources. Indeed, the MOPR could increase the total costs of achieving New Jersey's clean energy goals

¹ Comments of Natural Resources Defense Council and the Sierra Club ("NRDC/Sierra Club Comments") at 1-2 ("The urgent need for decarbonization does not allow time for states to wait and hope for changes in FERC policy. Instead, New Jersey must be proactive and take control of its resource mix in order to achieve state goals and avoid large increases in the cost of electricity. While New Jersey must use all the tools available to reform PJM's markets, the Fixed Resource Requirement ... is the best near-term means within the state's unilateral control to avoid the harms of the MOPR.").

² Monitoring Analytics, LLC, *Potential Impacts of the Creation of New Jersey FRRs* ("IMM Report"), attached to Comments of Monitoring Analytics, LLC ("IMM Comments").

by between \$65 million and \$270 million per year by 2025, and by up to \$400 million per year by 2030.³

Moreover, the IMM's analysis depends upon assumptions about market power and locational constraints that can be avoided with thoughtful program design. For example, PSEG and Exelon Generation's opening comments proposed a structure that would apply the FRR in an unconstrained zone and use prudence caps designed to prevent the FRR Entity from paying any more for State-supported clean capacity than a Board- or legislatively determined amount. If the cost of procuring these clean capacity resources exceeds that amount, the FRR Entity would instead procure capacity from nearly 45 GW of available resources in EMAAC and MAAC, potentially including gas plants. Through such a structure, the State can control the cost of the program, and can also prevent the exercise of market power. A properly structured FRR can result in savings that will increase substantially over time as New Jersey brings increasing quantities of new renewables online. By 2030, the net savings from an FRR will amount to hundreds of millions of dollars a year.

Third, certain parties seek to use this proceeding to advocate sweeping changes to the Basic Generation Service ("BGS") structure. But there is no need to alter the BGS program in order to implement an FRR structured as we proposed in our initial comments. BGS works well and is a model for state-sponsored energy procurements. The Board should not alter it.

I. The Board Should Not Delay Consideration of the FRR.

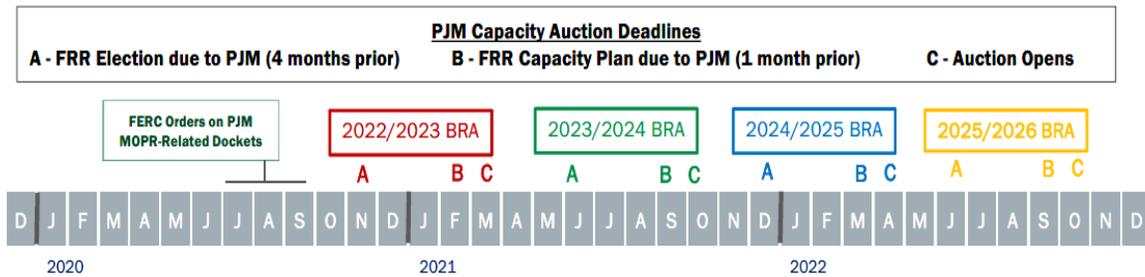
Several commenters warn the Board against rushing into an FRR arrangement. They note that it involves a five-year commitment, while the impact of the new MOPR rule is still unclear and judicial challenges are still pending.⁴ These commenters need not worry. The FRR is not a structure that any state can rush into. Adopting any FRR within the State will require careful planning, and significant lead time to conduct a procurement and provide PJM with the required notice. Further, incorporating certain of the beneficial features proposed in our opening comments and below will require new legislation.

The fact that an FRR will take time to implement makes it all the more important that the Board use this time to identify a workable structure, so that the State will be in a position to act once it has more information about the impact of the new MOPR. As shown in the timeline below, FERC action on the various MOPR-related dockets by September could result in a series

³ The NorthBridge Group, *Evaluation of the PJM IMM's Potential Impacts of the Creation of New Jersey FRRs*, June 2020 ("NorthBridge Report") at 2, 4-5, attached hereto.

⁴ See, e.g., Comments of Calpine Corporation ("Calpine Comments") at 2-6; Comments of the Electric Power Supply Association ("EPSA Comments") at 4-5, 7; Comments of LS Power Development ("LS Power Comments") at 17-18; Comments of Advanced Energy Economy *et al.* ("AEE Comments") at 22-24; Comments of the New Jersey Large Energy Users Coalition ("NJLEUC Comments") at 17-18; Comments of the PJM Power Providers ("P3 Comments") at 11-12; Comments of the Division of Rate Counsel ("Rate Counsel Comments") at 1-2.

of PJM capacity auctions in relatively quick succession — beginning with the auction for the 2022/23 delivery year, followed, within 12 to 14 months, by the auctions for the 2023/24 delivery year and the 2024/25 delivery year. If the Board waits until after the 2022/23 auction results to begin planning for an FRR, it will be hard-pressed to have an FRR in place by the 2024/25 auction, which is the first in which New Jersey-supported offshore wind is scheduled to participate.



Thus, the more prudent course is for the Board to invest the time now to identify the best FRR structure for the State, so that the FRR can be implemented in time for the 2024/25 auction. Ironically, opponents of the FRR complain about its inflexibility,⁵ but they are the ones who would hamstring the State by leaving it unprepared to deploy this tool in a timely manner, should doing so prove necessary.

Instead, these commenters urge the Board to pursue carbon pricing or other approaches to the exclusion of the FRR.⁶ Preparing to implement an FRR and pursuing meaningful PJM-wide carbon pricing, however, are not mutually exclusive. By all means, the State should pursue conversations concerning the facilitation of a regional carbon price. We agree that a meaningful PJM-wide carbon price would be an efficient way to reduce carbon emissions.⁷ Moreover, if leakage is appropriately addressed, a New Jersey-only carbon price also could be effective—but whether leakage will be addressed is not under New Jersey’s control, and would require either coordinated action with other States, or leadership by PJM and FERC.

⁵ See, e.g., Rate Counsel Comments at 21-23.

⁶ See, e.g., EPSA Comments at 8-9, 11-13; P3 Comments at 3-4; Comments of the Natural Gas Supply Association (“NGSA Comments”) at 2-4; Comments of Vistra Energy (“Vistra Comments”) at 3-5. EPSA also urges the Board to propose to PJM that it change its tariff to include a form of capacity repricing akin to the Competitive Auctions for Sponsored Policy Resources (“CASPR”) mechanism used in ISO-New England. EPSA Comments at 9-10. But PJM already proposed a similar repricing concept to FERC, which rejected it. See *Calpine Corp. v. PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,239, P 6 (2019).

⁷ However, a carbon price cannot by itself ensure achievement of the Energy Master Plan’s technology-specific goals.

The Board should not be under any illusion, however, that PJM action on carbon pricing is a practical near-term solution. It is extremely unlikely that PJM, in advance of the 2024/25 auction, will put into place either a regional carbon price or border adjustments to prevent leakage. PJM has repeatedly stressed that it will not set a carbon price itself. Thus, PJM will not implement a regional carbon price until all member states have agreed on an approach; PJM stakeholders with diverse (if not diametrically opposed) interests have coalesced on that solution; PJM has developed workable border adjustment provisions (which would be necessary even with a PJM-wide price to prevent leakage to other regions like MISO and SERC); and FERC has approved those provisions. That is a years-long project, and it may never succeed. As EPSA candidly admits, there are “undoubtedly political realities that may create roadblocks to the achievement of the optimal path” of a PJM-wide carbon pricing mechanism.⁸

Thus, the practical effect of deciding to place hope in PJM to implement a regional carbon price, to the exclusion of developing an FRR for potential use by the State, is to resign consumers to paying for unnecessary capacity from emitting plants for the foreseeable future. Unsurprisingly, the most forceful proponents of relying on PJM to develop carbon pricing include some of the very same fossil generators who complained to FERC that New Jersey’s clean energy programs were distorting the wholesale markets, and who instigated the litigation that resulted in the new MOPR bidding rules that will prevent New Jersey from recognizing the capacity provided by state-supported clean energy resources.⁹ Meanwhile, environmental organizations like the Natural Resources Defense Council and Sierra Club—who undoubtedly wish to reduce carbon emissions—recognize that an FRR is the State’s best near-term hope to do so. As they note, “While PJM has initiated a stakeholder process to address leakage associated with state and regional carbon prices, the process is in its early stages and it could be years until PJM is able to obtain approval from FERC for the needed tariff changes and implement the border adjustments needed to address leakage.”¹⁰

Other commenters contend that there is no need for an FRR, because PJM’s markets have successfully reduced carbon emissions.¹¹ It is true that PJM’s actual emissions have decreased by about one-third since 2005, largely due to coal-to-gas switching, but there is a long way to go to reach even an 80% or 90% reduction in carbon emissions, let alone New Jersey’s zero-emissions goal. Moreover, projections from the Energy Information Administration indicate that the emissions reductions achieved in PJM will level out by 2025, as

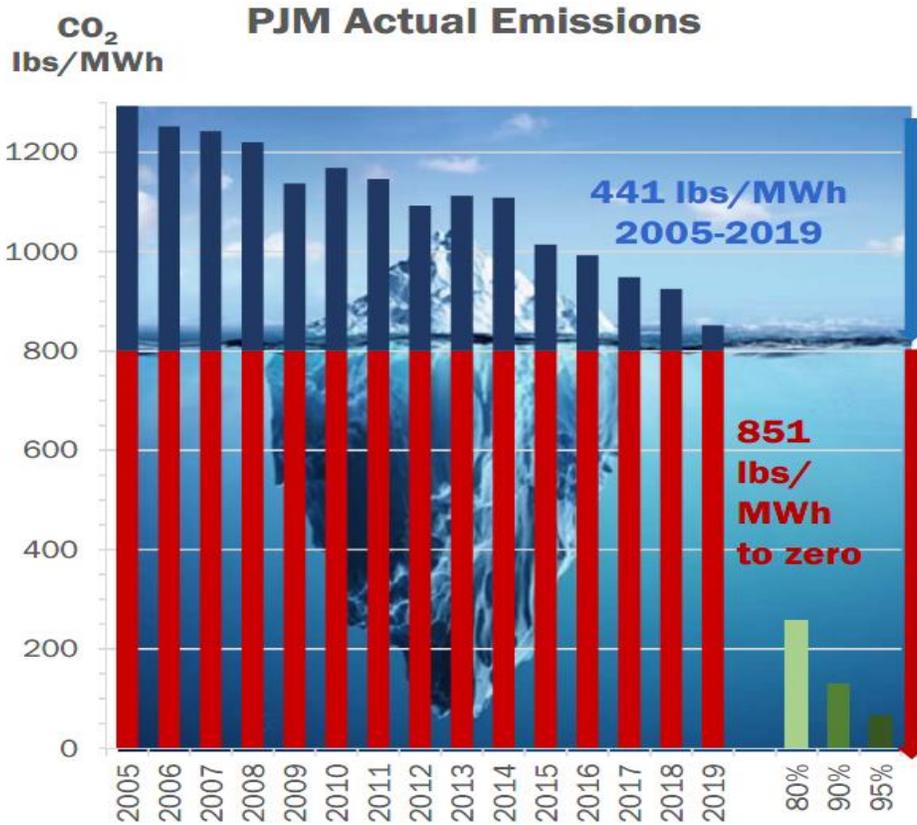
⁸ EPSA Comments at 11.

⁹ Comments of Competitive Power Ventures (“CPV Comments”) at 4; EPSA Comments at 8-9; NGS Comments at 5-6; P3 Comments at 3-4; Vistra Comments at 3-5.

¹⁰ NRDC/Sierra Club Comments at 35 n.84.

¹¹ EPSA Comments at 4, 7.

coal retirements diminish and gas-fired generation expands.¹² Commenters touting the success of the PJM markets in reducing emissions tell only one side of this story. In the figure below, the blue bars show the emissions reductions in PJM since 2005, while the red bars show the remaining two-thirds of actual emissions. The green bars show reductions of 80%, 90%, and 95%. Emission reductions to date are just the tip of the iceberg:



Accordingly, the Board should develop an FRR structure that it can use to make progress on the State’s clean energy goals, in the likely event that regional carbon pricing remains stalled prior to the 2024/25 auction. As we discussed in our opening comments, the FRR mechanism can be designed to integrate a carbon price if one eventually is adopted. For example, if an FRR contract is awarded at an all-in price less forecasted energy and ancillary services revenue, as we have proposed (and similar to the OREC structure the State has adopted), then compensation through the FRR will decline as forecasted energy revenues rise due to the implementation of a carbon price.¹³ But in the meantime, New Jersey will be able to make

¹² U.S. Energy Information Administration (EIA) Annual Energy Outlook 2020, reference case Tables 54.10-54.13 https://www.eia.gov/outlooks/aeo/tables_ref.php (Jan. 2020).

¹³ Comments of PSEG and Exelon Generation, LLC (“PSEG/Exelon Comments”) at 8.

progress on its clean energy goals, and will have a mechanism in place to assure continued progress if a carbon price fails to materialize.

Finally, the Board is currently in the midst of revisiting how best to structure the State's environmental attribute programs. It is considering creating a new kind of renewable energy credit for solar and is also preparing to receive applications for the next ZEC program period. Now is the best time for the Board to consider how the new MOPR rules will impact the cost of the State's attribute programs, and to develop a plan to integrate the attribute programs with capacity procurement to prevent that cost increase.

II. Thoughtful Program Design Can Ensure That the FRR Will Save New Jersey Money.

Commenters opposed to the FRR chiefly focus on cost concerns, relying heavily on a recent analysis by the IMM.¹⁴ We point out the flaws in the IMM's analysis below, but as an initial matter, the Board should not credit abstract concerns about cost, disconnected from a discussion of any concrete program structure.¹⁵ The FRR is simply a tool that states can use to exercise greater control over the procurement of capacity resources. The cost of an FRR depends on how a state uses that tool—in other words, on how it structures its program. A poorly designed FRR may indeed result in cost increases. But in our opening comments, we explained how New Jersey can structure an FRR program in a way that will ensure its cost effectiveness and is wholly consistent with the PJM tariff.¹⁶

First, New Jersey can use its authority to regulate the prudence of utility purchases to ensure that the procurement of clean capacity remains affordable to retail customers and offers cost savings compared to continued participation in the PJM capacity auction. For example, with respect to the procurement of capacity from offshore wind, the State can decide that it is prudent for a utility to pay only so much for offshore wind capacity; if offshore wind capacity can only be procured for more than that amount, then the utility should procure the capacity from other, less costly clean resources instead. The same approach can be used to limit New Jersey's willingness to pay for solar capacity or nuclear capacity. Ultimately, if State-supported clean capacity cannot be procured for a price within New Jersey's willingness to pay,

¹⁴ Calpine Comments at 2-3; Rate Counsel Comments at 7-9, 15-18; EPSA Comments at 5-7; P3 Comments at 14; NJLEUC Comments at 12-15; Comments of the Retail Energy Supply Association ("RESA Comments") at 5-6; Comments of Rockland Electric Company ("Rockland Comments") at 2-3.

¹⁵ Direct Energy cites the prices paid in two prior FRR plans, the 2010 AEP Ohio plan and the 2012 AEP Michigan plan. Comments of Direct Energy ("Direct Comments") at 4. Others cite prices paid by Appalachian Power and the cost of Dominion's Integrated Resource Plan. P3 Comments at 14; EPSA Comments at 6. But those plans largely sourced self-supply resources owned by the utilities. The costs incurred by other utilities, which pursued FRRs structured in a completely different manner for reasons having nothing to do with New Jersey's policy goals, have no bearing at all on the wisdom of adopting a well-designed FRR in New Jersey.

¹⁶ PSEG/Exelon Comments at 7-10.

then the State can import clean capacity from other PJM regions, and if necessary, can procure low-emitting fossil generation.

Second, New Jersey can use competitive solicitations to reduce cost. For example, with respect to the limited capacity set aside for offshore wind, New Jersey can oversee a competitive RFP process, just as it does under the OREC statute.

Third, the State can structure the procurement to seek, from the resource types that New Jersey currently supports through attribute programs, capacity bundled with environmental attributes for an “all-in” cost less projected energy revenues and an allowance for ancillary services revenues. This structure will ensure that any increase in forecasted energy prices will be offset by reduced compensation for clean capacity—thereby protecting consumers.

Fourth, New Jersey can select an FRR zone that is not transmission constrained. To the extent the FRR Entity will need to procure at least some capacity from resources that are not State-supported—either because additional capacity is needed to fill out an FRR Capacity Plan even after accounting for all State-supported resources, or because State-supported resources cannot be procured at a cost below a level deemed imprudent—the State can strive to access the broadest potential market possible.

Finally, the ability to select a single FRR zone—rather than directing the entire State to adopt an FRR—allows the State to initiate the FRR approach on a smaller scale and evaluate the results, before expanding the FRR to other zones. Our opening comments explained how the State could do so while ensuring that customers of the FRR Entity pay no more for capacity than customers in other parts of the State, and that all customers in the State share the cost of procuring environmental attributes from these resources. Moreover, legislation could authorize the securitization of the FRR Entity’s cost recovery to ensure that the FRR-related contracts would have no impact on the utility’s balance sheet.¹⁷

The Board should not discard the FRR because of misguided cost concerns, without evaluating in detail the ways an FRR procurement can be structured to alleviate such concerns.

A. The IMM’s Report Does Not Accurately Project FRR Costs.

Unfortunately, the IMM’s report and its various proponents fail to account for the various ways that an FRR procurement could be structured to minimize costs. Instead, the IMM uses a flawed methodology to calculate the potential cost of poorly designed FRR procurements.

¹⁷ PSEG/Exelon Comments at 9-10.

The IMM's report is flawed in two broad respects. *First*, the report analyzes FRR costs against the wrong baseline. It compares an FRR to *historical* capacity market impacts.¹⁸ But the question is not whether the FRR will be more costly than past purchases of capacity. Rather, the question is whether, in the future, New Jersey customers will be better off procuring capacity through an FRR, or instead procuring capacity through the PJM auction while being forced to increase their state support of clean resources to replace capacity revenue those resources no longer will receive because of the new MOPR rules. The IMM never addresses that question, and thus the report overlooks the very purpose of pursuing an FRR structure in the first place. Continuing to procure capacity through the PJM auction could increase the total cost of achieving New Jersey's clean energy goals by between \$65 million and \$270 million per year by 2025, and by up to \$400 million per year by 2030,¹⁹ because new State-supported clean resources, and potentially existing nuclear resources receiving ZECs, will not be compensated for their capacity.

Second, in estimating FRR costs, the IMM uses flawed assumptions that would be avoided by good program design. These include unrealistically high FRR price assumptions, overly restrictive locational procurement requirements, and erroneous assertions about market power, all of which can be addressed through an efficient program structure.

If the IMM's analysis were corrected to ask the right question and to eliminate flawed assumptions, it would show significant savings for all New Jersey customers—even before accounting for the \$400 million per year New Jersey will save by 2030 if State-supported resources are able to receive compensation for their capacity.

1. The IMM Compares FRR Costs to the Wrong Baseline.

The IMM's analysis fails to address the question faced by the Board: Is it more economical for New Jersey to purchase capacity through an FRR that will integrate the State's reliability obligations and environmental aims, or would New Jersey obtain a better value by meeting its capacity obligations through the PJM auction and its environmental objectives through separate support programs? Instead of answering this question, the IMM estimates FRR costs by comparing the historical cost of procuring primarily fossil resources from the PJM capacity market to the projected cost of procuring those same fossil resources in an FRR.²⁰ That is a meaningless comparison. The right analysis would compare (a) the cost of a well-designed FRR that procures clean resources in the quantities set forth in the Energy Master Plan ("EMP"), with (b) the total cost of procuring capacity through the PJM auction plus the cost of replacing

¹⁸ IMM Report at 1-2 (comparing costs under different FRR scenarios "to the results of the 2021/2022 RPM BRA").

¹⁹ NorthBridge Report at 2.

²⁰ IMM Report at 1-2.

missing capacity revenues for the clean resources targeted by the EMP that will not clear in the PJM auction as a result of the MOPR.

As we explained in our opening comments and as the Board's order initiating this proceeding also explains, the effect of the MOPR is to deny capacity revenue to State-supported resources by raising the price they are allowed to bid in the PJM capacity auction to a level that is higher than the likely market price.²¹ In order for these resources nevertheless to be built or remain in operation, New Jersey will need to increase its support to replace the missing capacity revenue. For example, if offshore wind does not clear in the RPM auction, then the net OREC cost will increase by the amount of the lost capacity revenue. Without an FRR, New Jersey similarly would need to increase State support for new renewables and for nuclear units receiving ZECs to replace the capacity revenue taken away by the MOPR, or those resources will not be economically viable.

The additional cost to achieve New Jersey's clean energy goals, imposed as a result of the MOPR, is significant. The EMP seeks 100% clean capacity by 2050; 50% renewable energy by 2030; and technology-specific goals, including 3,500 MW of offshore wind, 12,200 MW of solar, and 2,000 MW of storage by 2030, and the continued operation of 3,500 MW of nuclear serving the State. After accounting distributed generation resources, that amounts to approximately 11,500 MW of clean capacity participating in RPM by 2030.²²

By 2025, the State's progress toward these targets will amount to 2,700 MW of offshore wind, utility-scale solar, and storage, along with another 3,470 MW of nuclear, for a total of 6,170 MW. Assuming that offshore wind, new utility-scale solar, and storage are unable to clear in the PJM capacity market and thus go uncompensated for their capacity, New Jersey will need to increase its support by about \$65 million per year by 2025 to replace their missing capacity revenue.²³ If State-supported nuclear is unable to clear in the PJM capacity market, that number rises to more than \$270 million per year by 2025. These figures are shown in Table 1 below.²⁴

By 2030, as New Jersey progresses on its clean energy goals, State-supported resources' missing capacity revenue will grow even higher. For offshore wind, new utility-scale solar, and storage, those revenues, which New Jersey will need to increase its support to

²¹ PSEG/Exelon Comments at 2.

²² This assumes that 100% of the State's offshore wind target and 75% of the State's solar and storage target is achieved in 2030, and that half of new solar is utility-scale.

²³ This assumes a capacity price based on the 2021/22 PJM capacity price for EMAAC, which was \$165.73/MW-day.

²⁴ NorthBridge Report at 4.

replace, will amount to \$191 million per year. If State-supported nuclear is unable to clear, the amount rises to nearly \$400 million per year.²⁵

Table 1

	2025						2030				
	UCAP		Capacity	Capacity			UCAP		Capacity	Capacity	
	Capacity	Value	UCAP	Price	Value	Capacity	Value	UCAP	Price	Value	
	(MW)	(%)	(MW)	(\$/MWD)	(\$MM/yr)	(MW)	(%)	(MW)	(\$/MWD)	(\$MM/yr)	
Offshore Wind	1,100	26%	286	166	17	3,500	26%	910	166	55	
Utility-scale Solar	1,000	55%	550	166	33	3,000	55%	1,650	166	100	
Storage	<u>600</u>	40%	<u>240</u>	166	<u>15</u>	<u>1,500</u>	40%	<u>600</u>	166	<u>36</u>	
Total w/o Nuclear	2,700		1,076		65	8,000		3,160		191	
Nuclear	<u>3,470</u>	99%	<u>3,418</u>	166	<u>207</u>	<u>3,470</u>	99%	<u>3,418</u>	166	<u>207</u>	
Total	6,170		4,494		272	11,470		6,578		398	

The IMM, however, entirely fails to account for the additional costs that the MOPR will impose on New Jersey if the State continues to pursue its environmental agenda, while relying on the PJM auction to procure capacity. Yet the amount New Jersey will save each year in pursuit of its environmental goals by being able to count the capacity provided by State-supported resources more than offsets even the IMM’s unrealistic cost estimates for the FRR. (The flaws in the IMM’s estimates are discussed below.) By 2025, even if nuclear is able to clear the auction despite being subjected to the MOPR, the cost savings from being able to count capacity provided by State-supported clean resources will still more than offset the IMM’s estimated change in capacity costs in three of the six scenarios he considers. If nuclear is unable to clear, then the cost savings more than offsets the IMM’s estimated FRR costs in five of the six scenarios he considers. By 2030, the benefit of the FRR rises to \$398 million, more than offsetting even the IMM’s unrealistically high cost estimates in all six scenarios.

Some commenters contend that the MOPR will prevent only offshore wind from clearing. They contend that the default offer floors proposed by PJM will allow nuclear to clear, and that new solar will be able to clear at unit-specific levels below the default floors, based in part on an assumption of a significantly longer lifetime over which costs can be amortized.²⁶ This optimism is misplaced. First, the final default offer floors will be significantly higher than those proposed by PJM in its compliance filing, as a result of FERC’s directive to use forward pricing rather than historical pricing in calculating the Energy & Ancillary Services offset. The default offer floor reflects the *net* avoided cost rate—that is, going-forward costs less projected energy and ancillary services revenues. Because forward energy prices are significantly lower than the historical prices that PJM proposed to use, the net avoided cost rate (and therefore the default offer floor) will be higher. The effect of this change will be particularly significant for nuclear units, which rely heavily on energy revenue and sell energy at all hours. As the IMM

²⁵ NorthBridge Report at 4-5.

²⁶ Calpine Comments at 4; Comments of Enel North America at 2; AEE Comments at 9-10.

recognizes, “Changes in forward energy market prices can significantly affect expected profitability of nuclear plants in PJM. The current analysis, based on forward prices for energy and known forward prices for capacity, shows that no plants would cover their annual avoidable costs in 2020.”²⁷ Second, as for the notion that new solar can avoid the default offer floors through the unit-specific review process, there is strong reason to doubt that FERC (having approved the MOPR to prevent what it regards as market distortions resulting from state subsidy programs) or the IMM (having already asked FERC to limit the unit-specific flexibility proposed by PJM²⁸) will allow unit-specific review to become the exception that swallows the rule.²⁹ Furthermore, new storage, which has a very high offer floor price, is an important part of New Jersey’s clean energy plan and will add to MOPR-related costs.

Finally, the IMM neglects to consider the environmental benefits of the FRR. If New Jersey continues to procure capacity through the PJM auction, then it will be contributing to the financial well-being of the very same emitting plants on which the State is trying to eliminate its dependence by investing in clean resources. The potential air quality benefits of that investment in clean energy will be diluted by the continued operation of excess amounts of emitting generation.³⁰

2. The IMM’s Report Is Based on Flawed Assumptions That Drive Up Estimated Costs.

The IMM not only fails to conduct the proper comparative analysis, but also makes flawed assumptions that result in unrealistically high cost estimates. The IMM presents cost estimates for six scenarios, summarized in the table below.³¹

²⁷ Monitoring Analytics LLC, *2020 Quarterly State of the Market Report for PJM: January through March (2020)*, at 344.

²⁸ See Comments of the Independent Market Monitor for PJM, Docket No. ER18-1314-003 (May 15, 2020) at 16 (“While it is true that generation assets based on a range of technologies have a physical life substantially longer than 20 years, there has been no demonstration that any asset type has a financial life longer than 20 years. The Market Monitor is open to unit specific demonstrations that have the financial life of any asset is longer than 20 years but the authority to make such demonstrations should be limited to a reasonable financial life, e.g., 25 or at most 30 years.”).

²⁹ See Comments of Calpine Corporation, FERC Docket No. ER18-1314 (May 15, 2020) at 3-6; *id.* at 6 (urging that the IMM and PJM “vigorously review any such submissions to ensure that the seller has adequately demonstrated that it is reasonable to assume an asset life of more than 20 years for the specific resource at issue” ” and that “lax standards ... in this process will turn the intended ‘safety valve’ into a sinkhole”).

³⁰ NorthBridge Report at 5.

³¹ IMM Report at 6-7.

Table 2

Scenario	FRR zone(s)	Capacity Price
1	AECO, JCPL, PSEG, RECO	\$235/MW-d (offer cap)
2	AECO, JCPL, PSEG, RECO	\$186/MW-d (21/22 price)
3	PSEG	\$244/MW-d (offer cap)
4	PSEG	\$204/MW-d (21/22 price)
5	JCPL	\$217/MW-d (offer cap)
6	JCPL	\$166/MW-d (21/22 price)

These scenarios and their assumptions about the resulting capacity price, however, do not reflect a thoughtful program design. As we explained, the State should phase in any FRR plan by beginning with a single zone that is sized to accommodate the offshore wind and nuclear resources currently supported by the State, and near to midterm growth in new solar and offshore wind.³² That rules out scenarios 1 and 2, which contemplate a full-State FRR. We also explained that the State should choose an FRR zone that was not transmission constrained, so that any residual procurement of capacity could draw upon the broadest set of competitors.³³ That rules out scenarios 3 and 4, as the PSE&G zone has significant transmission constraints. Finally, we explained that the State should use its power to regulate the prudence of purchases to ensure that it did not overpay for capacity from State-supported resources. That rules out scenario 5, which envisions that resources would be paid a price equal to the default maximum offer in the PJM auction, which is the Net Cost of New Entry for a gas-fired combustion turbine.³⁴ Between the use of prudence limits to discipline offer prices by State-supported resources, and robust competition from the nearly 45 GW of clean capacity and gas resources located throughout EMAAC and MAAC to serve the 1.6 GW of residual capacity that would be needed in scenario 5 after State-supported resources are accounted for, there is no reason to expect that customers will need to pay the default maximum offer price to obtain FRR capacity.³⁵

As for scenario 6, the IMM overestimates costs there, too. As an initial matter, the IMM concedes that scenario 6 will be cheaper than the PJM capacity auction for customers in the FRR zone. However, he projects that, State-wide, the cost will be \$29 million more costly than the PJM capacity auction.³⁶ But that is *before* accounting for the significant savings from being able to count the capacity provided by clean State-supported resources (and avoiding the need

³² PSEG/Exelon Comments at 7, 16-17.

³³ See also AEE Comments at 17-19.

³⁴ IMM Report at 7.

³⁵ See NorthBridge Report at 9-10.

³⁶ IMM Report at 4.

to procure redundant capacity through the PJM auction). By 2025, as noted above, an FRR will avoid \$65 million in redundant capacity payments, dwarfing the IMM's cost estimate for scenario 6—even if State-supported nuclear resources are able to continue to clear in the PJM capacity auction. The costs avoided by an FRR are even greater—\$270 million by 2025—if State-supported nuclear resources are unable to clear because of the MOPR.

Moreover, the IMM overestimates the cost of scenario 6 because of misguided assumptions. First, the IMM assumes that “[t]here would be capacity imports into New Jersey FRRs only from capacity resources needed to cover any shortfall in meeting the FRR obligation.”³⁷ There is no basis for that assumption. Certainly, the PJM market rules do not require FRR plans to procure all in-zone capacity before procuring out-of-zone capacity. Instead, PJM determines the minimum internal resource requirements for each FRR capacity plan to reliably serve load given transmission constraints. For example, for the 2021/22 delivery year, scenario 6 would require procurement of roughly 83% of the FRR capacity from the EMAAC zone, and the remainder located in MAAC. Assuming similar constraints for the 2024/25 auction, the FRR zone could fill 75% of its capacity needs from State-supported resources plus energy efficiency; one-third of the remaining 25% could be imported from elsewhere in EMAAC, and the rest could be imported from elsewhere in MAAC.³⁸

Second, the IMM assumes that “[t]he price of imports to New Jersey from capacity resources outside New Jersey is ... the same as the price paid to the capacity resources in New Jersey meeting the FRR obligation.”³⁹ Again, there is no basis for that assumption. Our proposal envisions a pay-as-bid procurement structure, and the opportunity cost for MAAC resources to participate in the FRR procurement—and thus the price they will look to exceed in the FRR procurement—is the price those resources would expect to receive in the PJM auction. In the 2021/22 auction, the MAAC capacity price cleared at a 15% discount to EMAAC, and in prior auctions has cleared at a discount as great as 50%.⁴⁰

As a result of these flawed assumptions, the IMM estimates a higher weighted average price for capacity in scenario 6 than the one likely to be paid. Moreover, the IMM's assumption that an FRR Entity would favor in-state resources over imports results in an overestimation of the costs to New Jersey customers located *outside* the FRR zone. That assumption reduces the quantity of EMAAC generation available to other EDCs in New Jersey—thus increasing the price of EMAAC generation for the other EDCs in New Jersey.

In fact, a properly structured FRR—in which the FRR Entity would import as much lower-priced capacity as it could from MAAC consistent with its resource adequacy obligations under

³⁷ IMM Report at 7.

³⁸ NorthBridge Report at 8-9.

³⁹ IMM Report at 7.

⁴⁰ NorthBridge Report at 6.

the PJM tariff—would tend to reduce capacity costs for New Jersey customers outside the FRR zone (just as the IMM concedes would occur for the “Rest of PJM Market”).⁴¹ That is because, under the FRR construct, the FRR Entity would acquire sufficient capacity to just meet or slightly exceed its reliability target; by contrast, the downward-sloping demand curve in the PJM capacity auction has historically resulted in the procurement of capacity significantly in excess of the targeted reserve margin. By electing the FRR Alternative and avoiding the procurement of an excessively large reserve margin, the FRR Entity will “free up” capacity that will be made available to other load-serving entities in EMAAC—namely, the difference between the target level procured under the FRR procurement and the higher level that would have been procured if the FRR Entity had participated in the PJM auction. The resulting extra supply available for the rest of EMAAC will tend to lower the clearing price in that region.

B. Market Power Concerns Are Misplaced.

The IMM’s assumption that the FRR Entity must prefer in-state resources to imports also creates potential market power issues that could be avoided in a properly structured FRR procurement. Indeed, the potential for market power is a theme that runs through many of the comments in opposition to an FRR.⁴² Those concerns, however, do not arise if the FRR procurement is properly structured.

In our opening comments, we proposed an FRR procurement that would occur in two tiers.⁴³ Tier One would consist of State-supported clean resources, with technology-based carve-outs for a certain quantity of offshore wind and new solar. Tier Two would procure residual capacity from any clean capacity resource available subject to PJM’s locational constraints. If needed, Tier Two could also procure gas resources.

For Tier One, each of the technology-based carve-outs, and the entire first tier as a whole, would be subject to a prudence determination based on the State’s willingness to pay

⁴¹ IMM Report at 4; NorthBridge Report at 7-8. The IMM’s report also suggests that customers in an FRR would miss out on a discount payment, known as Capacity Transfer Rights (CTRs), that is part of PJM RPM accounting. IMM Report at 22. Under CTR accounting, load receives a rebate – the CTR – reflecting the ability to import lower price supply resources that clear outside the zone. But a properly structured FRR will capture this same value. The IMM illogically assumes that the FRR Entity will instead pay the higher EMAAC price to all FRR resources. See NorthBridge Report at 7; see also PJM Manual 18: PJM Capacity Market, Revision: 45 (May 28, 2020) at 220 (“Capacity Transfer Rights (CTRs) are implicitly allocated to the FRR LSE in the determination of the Percentage of Internal Resources Required in a [Locational Delivery Area.]”), <https://www.pjm.com/-/media/documents/manuals/m18.ashx>.

⁴² Calpine Comments at 7; NJLEUC Comments at 12-14; Rate Counsel Comments at 16-18 & Wilson Aff., attached to Rate Counsel Comments, at para. 22. Several commenters also express concern about potential affiliate transactions. For the reasons explained in our opening comments, see PSEG/Exelon Comments at 17-19, this concern would be misplaced under an FRR procurement structure in which the Board selects the resources to serve the zone.

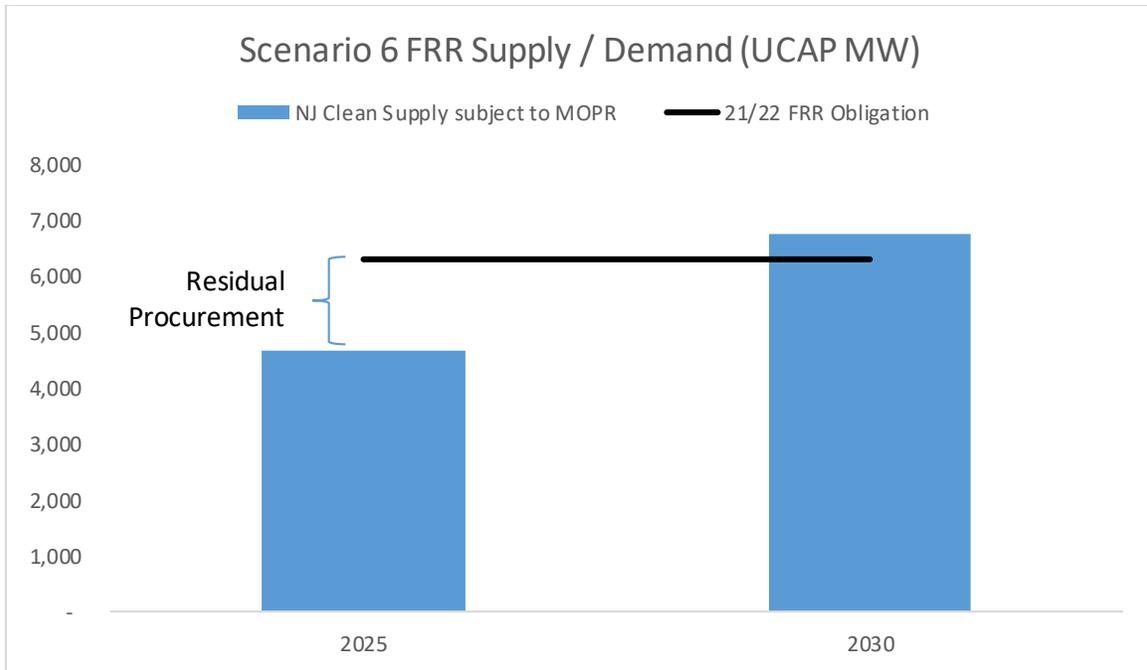
⁴³ See PSEG/Exelon Comments at 7-10.

for the capacity and environmental attributes provided by these resources. For example, the State could decide it is willing to pay an all-in cost up to \$105/MW-hour less forecasted energy revenues for new offshore wind, which, based on the recent OREC procurement, is a competitive price. If the State only receives offers in excess of that amount, then it can decide that it would be imprudent to procure offshore wind, and the FRR Entity should instead procure capacity from other resources. Similarly, the State could decide that, for all capacity and attributes procured in Tier One other than the amounts carved out for solar and offshore wind, it is willing to pay no more than a specified level deemed prudent for State-supported nuclear capacity and attributes, equal to a specified all-in price less forecasted energy and ancillary services revenues.⁴⁴ If the State receives offers from Tier One resources in excess of that amount, then it could decide that the procurement of those resources is imprudent, and the FRR Entity should instead procure capacity from other clean resources located in MAAC and EMAAC in Tier Two. The use of prudence limits of this kind—which can be based on an assessment of cost or competitive benchmarks—takes away the ability of a Tier One resource to exercise market power.

As for the Tier Two resources needed to fill out the FRR Capacity Plan, their procurement would be highly competitive in a properly structured FRR program. Returning to the IMM's example of scenario 6, a total of 6.3 GW of capacity would be needed in the FRR Plan. In the first year of the FRR, 4.5 GW would be procured from Tier One resources, 0.2 GW would be procured from energy efficiency, and the remaining 1.6 GW of residual capacity would be procured from Tier Two resources.⁴⁵ The size of the residual procurement would shrink further as the quantity of state-supported resources increase.

⁴⁴ See PSEG/Exelon Comments at 8-9. Calpine contends that nuclear units do not need any State support, and that "revenues from PJM's markets are sufficient to cover the costs of nuclear facilities even without additional ZEC payments." Calpine Comments at 4. But the Board found otherwise in evaluating ZEC applications, see Order Determining the Eligibility of Hope Creek, Salem 1, and Salem 2 Nuclear Generators to Receive ZECs, *In the Matter of the Implementation of L. 2018 c. 16 Regarding the Establishment of a Zero Emission Certificate Program for Eligible Nuclear Units*, Docket Nos. EO18080899 *et al.* (April 18, 2019), at 13-16. Moreover, as noted above, the IMM likewise recognizes that "the current analysis, based on forward prices for energy and known forward prices for capacity, shows that no plants would cover their annual avoidable costs in 2020," and that the IMM's projected surplus in 2021 is insufficient to cover the projected shortfall in 2020. Monitoring Analytics LLC, *2020 Quarterly State of the Market Report for PJM: January through March* (2020), at 344 & tbl. 7-25.

⁴⁵ NorthBridge Report at 9-10.



There is no reason to require that this residual capacity be located within New Jersey, as the IMM appears to assume. To the contrary, the majority of required capacity for any New Jersey FRR can come from a generator anywhere in the EMAAC LDA, which includes all of New Jersey, all of Delaware, part of Maryland, and part of Pennsylvania. The remainder of the required capacity can come from a generator anywhere in MAAC, which includes all of EMAAC as well as most of Maryland and almost all of Pennsylvania.

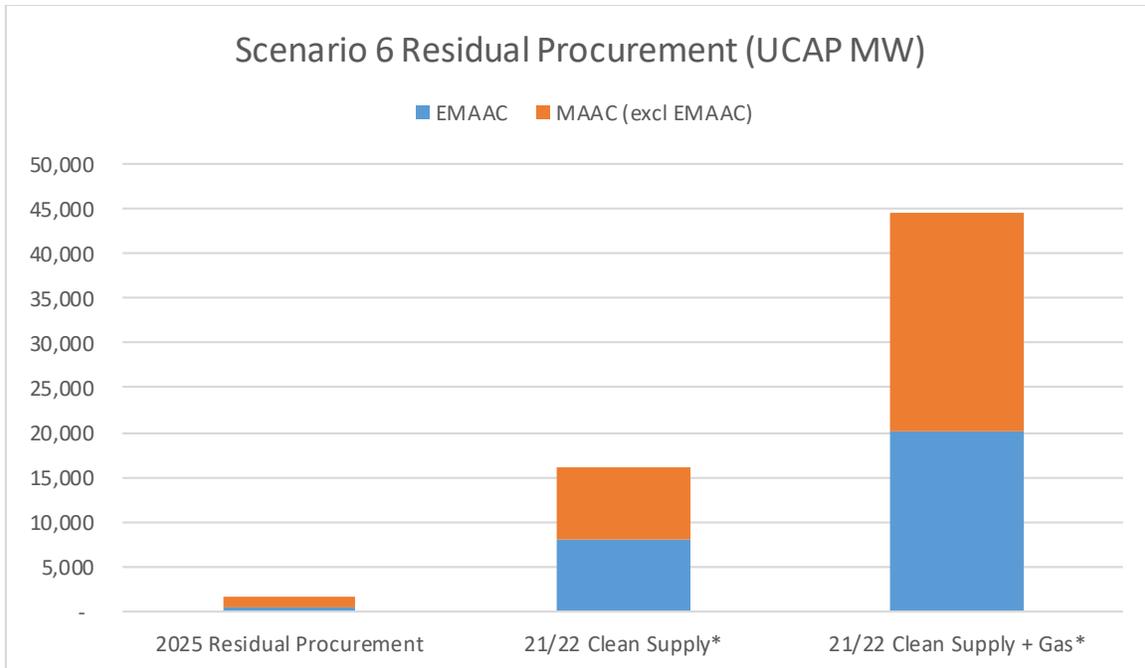
Moreover, because State-supported resources are all located in EMAAC, the majority of Tier Two residual capacity can be located anywhere in MAAC. In scenario 6, of the approximately 1.6 GW of residual capacity needed for the first year of an FRR, approximately 0.5 GW would need to come from EMAAC, and the remaining 1.1 GW could come from anywhere inside of MAAC.⁴⁶

That is a miniscule portion of the capacity supply available in those regions.⁴⁷ There is roughly 8 GW of clean capacity in EMAAC, excluding New Jersey-supported resources; and another 8 GW of clean capacity in MAAC. Counting gas resources in addition to clean capacity, there is about 20.2 GW of available capacity in EMAAC, again excluding New Jersey-supported resources; and another 24.2 GW of available capacity in MAAC. That is roughly twenty-five times what would be needed for the Tier Two residual procurement under scenario 6.⁴⁸

⁴⁶ NorthBridge Report at 8-10.

⁴⁷ For these same reasons, the concern raised by some commenters that New Jersey might be unable to procure sufficient capacity to fill out an FRR Plan is unfounded. See P3 Comments at 13.

⁴⁸ NorthBridge Report at 8-10.



*Note: Does not include NJ clean supply subject to MOPR

Thus, the market power concerns raised by commenters are misplaced. They are inapplicable to a well-designed program structure.⁴⁹

C. Other Concerns Raised by Commenters Should Not Dissuade the Board from the FRR.

Commenters raise a number of other concerns that the Board can readily dismiss. Calpine, for example, claims that the FRR will provide customers with less reliability than the PJM capacity auction, because the FRR will target a standard of one outage in 10 years, whereas the PJM capacity auction currently procures enough capacity to limit the likelihood of an outage to once in 25 years.⁵⁰ That is not correct. The “one-in-25” standard is used in

⁴⁹ Calpine suggests that resources selling into an FRR may not be permitted to rely on market-based rate authority, thereby creating legal uncertainty for the FRR program. Calpine Comments at 7-8. Calpine’s concern is unfounded. The FRR has been an available option in PJM’s tariff since its inception, and when FERC has granted market-based rate authority to generators in PJM, it has never limited that authority to capacity sales into the PJM auction. Instead, the market-based rate authority also encompasses bilateral sales. As FERC has explained, that is because the availability of the auction, and the benchmark pricing it provides, disciplines the bilateral market. *Refinements to Horizontal Mkt. Power Analysis for Sellers in Certain Reg’l Transmission Org. & Indep. Sys. Operator Markets*, Order No. 861, 168 FERC ¶ 61,040 at P 60 (2019), *order on reh’g*, Order No. 861-A, 170 FERC ¶ 61,106 (2020).

⁵⁰ Calpine Comments at 3.

calculating import limits for zones studied for localized capacity requirements.⁵¹ This feature would be retained in PJM's determination of import limits for an FRR zone.

Calpine is correct, however, that an FRR would procure a lower reserve margin than the PJM capacity auction has procured in recent years. But that is a *benefit* to New Jersey customers of the FRR, not a defect. The reliability standard adopted by the North American Electric Reliability Corporation ("NERC") is one outage in 10 years. PJM's capacity auction procures far more capacity than it needs to meet the NERC standard, because of the downward slope of the demand curve—and New Jersey customers currently bear the cost of this additional capacity. The auction's effective reserve margin will be even higher when the MOPR, by failing to count the capacity provided by State-supported resources, forces consumers to procure redundant capacity from the PJM auction.

The IMM and some others claim that the FRR is a "nonmarket" approach and an abdication of market principles and competition.⁵² That is wrong, on two levels. First, the PJM capacity auction is itself an administratively managed auction in which suppliers submit administratively controlled offers to sell an administratively created product (capacity) to satisfy an administratively determined demand (peak load). The depiction of the PJM auction as an unbridled free market is a fantasy. The FRR is simply a different administratively managed procurement for a different product—capacity bundled with environmental attributes—that integrates the State's reliability planning objectives with its clean energy goals. Second, the FRR does not foreclose competition or amount to a "command-and-control style regime."⁵³ New Jersey has made the decision, through its EMP, to promote a portfolio of clean technologies. The Integrated FRR Procurement we proposed in our opening comments satisfies those objectives while still relying on competition among clean resources to reduce costs to customers, consistent with the achievement of New Jersey's EMP goals. Resource owners and

⁵¹ The "one in 25" standard is used in calculating the amount of capacity that can be reliably imported into resource adequacy study zones without appreciably increasing PJM's system-wide loss of load expectation ("LOLE") above the "one in 10" standard. The calculated import quantity, called the "Capacity Emergency Transfer Objective" ("CETO"), is the minimal amount of import capability needed to ensure that the risk of the study area needing to shed load due to insufficient import capability does not exceed one expected event in 25 years. The calculation of the CETO is part of the transmission planning function. The formation of an FRR would not have any impact upon how it is performed by PJM. See *generally*, PJM Manual 14b: PJM Region Transmission Planning Process (Aug. 28, 2019) at 75 ("The Transmission System is tested at a LOLE of 1/25 so that the transmission risk does not appreciably diminish the overall target of a 1/10 LOLE for PJM."), available at <https://www.pjm.com/~media/documents/manuals/m14b.ashx>; see also Comments of PJM Interconnection, L.L.C. ("PJM Comments") at 14-17 (discussing role of CETO and calculation of "Internal Resource Requirements," i.e. the percentage of capacity resources needed to be acquired from inside a Locational Delivery Area, for potential FRR service areas within New Jersey).

⁵² IMM Comments at 3-4.

⁵³ Comments of Vitol, Inc. ("Vitol Comments") at 4.

developers of the different technologies identified by New Jersey’s EMP would compete to supply Tier One capacity and attributes, like offshore wind developers currently do in the State’s OREC process; and Tier Two residual capacity would likewise be procured through a competitive process drawing upon a large pool of potential suppliers.

Vitol contends that an FRR would “disconnect New Jersey from the PJM energy markets.”⁵⁴ The FRR would do no such thing. The FRR is an option within PJM’s tariff that allows states to exercise greater control over resource adequacy, while still remaining connected to, and participating in, PJM’s energy markets. EPSA emphasizes that “[a]ccess to a regional portfolio is particularly beneficial when assessing reliability needs based on peak demands or emergencies, which impact different parts of the region differently.”⁵⁵ But the FRR would not prevent New Jersey from accessing PJM’s regional portfolio of resources (or prevent those resources from selling into New Jersey). Indeed, nothing about PJM’s real-time dispatch of energy changes in the presence of an FRR.

Certain commenters also express concern about the inflexibility of long-term contracts.⁵⁶ As an initial matter, though, only Tier One resources would receive long-term contracts. And it makes sense that they should: these are resources on which New Jersey will need to rely to meet its long-term clean energy commitments, and which New Jersey has made the decision to support with environmental attribute payments. For new solar resources, long-term contracts will reduce development risk, thereby reducing costs relative to a structure in which payments fluctuate from year to year. And for nuclear resources receiving ZECs, our proposed structure—an all-in payment less forecasted energy revenues and an allowance for ancillary services revenues—will also save customers money. If energy prices increase over the next decade, as the Board’s projections predict, customers will benefit from this pricing structure through reduced capacity and attribute payments. That is preferable to the current ZEC structure, in which an attribute price is locked in for three years and does not respond to changes in the energy market. And if energy prices decrease over the contract term, the all-in price ensures that nuclear plants will receive what they need in order to remain in operation. That, too, is preferable to the current ZEC structure, under which a decline in energy prices can leave nuclear units significantly in the red—and therefore at risk of retirement despite being eligible for an award of ZEC payments. Ultimately, long-term contracts can offer opportunities for greater flexibility than the current structure.

As for Tier Two resources, there is no need for long-term contracts. Instead, those resources could be procured each year for one delivery year. As PJM explains in its comments, the commitment to elect the FRR is made for five years, but the FRR Plan detailing the capacity

⁵⁴ Vitol Comments at 1.

⁵⁵ EPSA Comments at 3.

⁵⁶ See *e.g.*, Vitol Comments at 7, 10; Direct Comments at 4-5.

resources on which the FRR Entity will rely is made each year. “This means that the resources that comprise an FRR Entity’s FRR Plan may change from one delivery year to the next. Additionally, FRR Plan resources do not necessarily need to be procured by the FRR Entity for the full five-year FRR election term at the outset of the FRR election.”⁵⁷

Other commenters raise the prospect that New Jersey could be faced with deficiency charges if it is unable to attract sufficient capacity to fill out an FRR Capacity Plan.⁵⁸ But given that State-supported resources alone will account for 4.5 GW of capacity for 2024/25, and will grow to more than 6.5 GW by 2030, commenters provide no reason to think that New Jersey will be unable to procure the small amount of needed residual capacity at highly competitive prices.

III. The Board Should Not Overhaul the BGS Procurement.

Several parties have used this proceeding as an opportunity to urge sweeping reforms to the BGS procurement and to the State’s retail energy supply market.⁵⁹ But this proceeding is focused on how New Jersey can continue to achieve its EMP goals notwithstanding FERC’s adoption of the new MOPR rule that will make it more costly to support clean resources within the PJM auction structure. As we explained in our opening comments, that problem can be addressed through an FRR without affecting the existing BGS structure or the retail choice market in New Jersey. Notably, because the BGS auction for a delivery year takes place after the capacity for that year has already been procured, capacity prices will be known by BGS bidders at the time of the BGS auction—just as they are now.

Further, the cost allocation we have proposed for the costs of the FRR procurement would ensure that customers in the FRR zone pay the same capacity charges that they would have paid if they had participated in the PJM auction; the remaining costs reflect the environmental attributes of procuring *clean* capacity, which benefit all New Jersey residents and should be paid for by all New Jersey customers. BGS suppliers thus will know the amount they will need to reimburse the FRR Entity for their customers’ capacity charges, which they will reflect in their supply offers—just as now they know the wholesale capacity auction results, which they also reflect in their BGS supply offers.

Finally, the FRR structure will maintain parity among third-party suppliers. A third-party supplier would pay the FRR Entity for their proportional share of the capacity procured by the FRR Entity to serve the third-party supplier’s load, but would retain the ability to procure

⁵⁷ PJM Comments at 9.

⁵⁸ AEE Comments at 22-23.

⁵⁹ *See generally* Comments of American Council on Renewable Energy (“ACORE Comments”); Comments of NRG Energy, Inc. at 4-14; *but see generally* Comments of NextEra Energy Resources (arguing that the Board should not change BGS).

capacity on its own, provided it does so before the FRR Entity conducts its own procurement for a particular delivery year.

The Board should reject broad calls to reform BGS and New Jersey's retail energy market. For one thing, that subject is outside the scope of this proceeding.⁶⁰ But more fundamentally, BGS is working well. The procurement process is highly competitive, and residential and small commercial and industrial customers on BGS enjoy the benefit of price stability driven by the existing and proven structure of the BGS auction.

IV. Conclusion

We look forward to working with the Board and other stakeholders to further develop an FRR procurement in furtherance of New Jersey's clean energy goals.

Very truly yours,



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⁶⁰ Also outside the scope of this proceeding, not to mention incorrect, is the statement in a report attached to ACORE's comments that "[a] recent analysis suggests the PSE&G should allocate \$190 million per year to its default service." Report, p. 18. This statement apparently refers to testimony submitted by one of the authors of the report on behalf of affiliates of Direct Energy in a PSE&G rate case previously before the Board. There is no support for this claim in the record here, and PSE&G opposed this claim in the rate case proceeding which was settled without increasing the allocation of costs to BGS, through a unanimous stipulation accepted by all parties including Direct Energy. See *In the Matter of the Petition of Pub. Serv. Elec. & Gas Co. for Approval of an Increase in Elec. & Gas Rates & for Changes in Tariffs for Elec. & Gas Serv., B.P.U.N.J. No. 16 Elec. & B.P.U.N.J. No. 16 Gas, & for Changes in Depreciation Rates, Pursuant to N.J.S.A. 48:2-18, N.J.S.A. 48:2-21 & N.J.S.A. 48:2-21.1, & for Other Appropriate Relief et al.*, BPU Docket Nos. ER18010029 & GR18010030 *et al.*, 2018 WL 5793209 (Oct. 29, 2018).

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Evaluation of the PJM IMM's Potential Impacts of the Creation of New Jersey FRRs, May 2020

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June 2020

Executive Summary

In a series of recent orders, the Federal Energy Regulatory Commission has required that PJM’s centralized capacity auction, the Reliability Pricing Model (“RPM”), be modified to include the expansion of the application of the Minimum Offer Price Rule (“MOPR”) to resources that receive a state subsidy. In response, stakeholders are seeking to better understand the magnitude of the potential cost consequences for customers, and considering alternatives to participation in the RPM, including use of the Fixed Resource Requirement (“FRR”) option provided for in PJM’s tariff. In May 2020, the PJM Independent Market Monitor (“IMM”) published an analysis of a set of potential New Jersey FRR scenarios.¹ This report provides an evaluation of the IMM’s New Jersey FRR report.

The IMM’s New Jersey FRR report contains two broad sets of flaws:

- The primary flaw of the IMM’s report is that it is narrowly focused on analyzing historical capacity market impacts and ignores the significant future impact of the MOPR on the total cost of achieving New Jersey’s clean energy goals. By requiring New Jersey ratepayers to “double-pay” for excluded state-supported clean capacity, the MOPR could increase the total costs of achieving New Jersey’s clean energy goals by \$65 to \$270 million per year by 2025 and up to \$400 million per year by 2030. One of the key questions for New Jersey is whether, given these future MOPR impacts, it is better to utilize FRR or continue to participate in PJM’s RPM capacity procurement going forward. The IMM’s narrow focus on the impact on historical capacity market costs overlooks the primary purpose of pursuing an FRR structure.
- The IMM also makes flawed assumptions and reaches inaccurate conclusions regarding the capacity market impacts under an FRR compared to the RPM. The IMM’s analysis appears to be driven by an assumption that New Jersey will develop a highly inefficient FRR structure. The IMM utilizes artificially high FRR price assumptions and overly restrictive locational procurement requirements. These assumptions overstate FRR costs and lead to misleading market power claims.

Despite its flaws, the IMM’s results demonstrate the relative merit of pursuing an FRR for New Jersey through the JCPL zone.

- Because the JCPL zone has relatively few transmission constraints and there is a very large quantity of eligible capacity suppliers in the Eastern Mid-Atlantic Area Council (“EMAAC”) and Mid-Atlantic Area Council (“MAAC”) zones, it is reasonable to assume that the cost of capacity for a JCPL FRR would be comparable to historical RPM capacity costs. Under that scenario, the IMM calculates \$8 million per year of cost savings for JCPL customers relative to RPM, and, if corrected, would also show significant savings for all New Jersey customers. And most importantly, the FRR would prevent the \$65 to \$400 million per year cost increase on New Jersey clean energy programs.

¹https://www.monitoringanalytics.com/reports/Reports/2020/IMM_Potential_Impacts_of_the_Creation_of_New_Jersey_FRRS_20200513.pdf

- Even under the IMM’s unrealistically high capacity cost scenario, the cost impact of the JCPL FRR is far lower than the potential New Jersey customer cost increase caused by the MOPR.

Although overlooked by the IMM, a JCPL FRR is well-sized to prevent the impacts of the MOPR on New Jersey clean energy programs. The JCPL load capacity requirement is somewhat larger than the amount of clean resources currently supported by New Jersey’s environmental programs and roughly equivalent to the amount of state-supported clean capacity in 2030 based on the New Jersey Energy Master Plan (whereas the AECO and RECO zones would be too small, and the PSEG zone would be significantly larger and import-constrained).

Background

The PJM IMM analyzed the impacts of the creation of FRR entities in New Jersey. As shown in Table 1, the analysis included six scenarios which matched 3 sets of FRR zones with an assumed capacity price equal to the PJM default offer cap used in RPM or the historic RPM capacity clearing price (2021/22).

Table 1

Scenario	FRR zone(s)	Capacity Price
1	AECO, JCPL, PSEG, RECO	\$235/MW-d (offer cap)
2	AECO, JCPL, PSEG, RECO	\$186/MW-d (21/22 price)
3	PSEG	\$244/MW-d (offer cap)
4	PSEG	\$204/MW-d (21/22 price)
5	JCPL	\$217/MW-d (offer cap)
6	JCPL	\$166/MW-d (21/22 price)

The IMM scenario results for the change in capacity cost are summarized below in Table 2.

Table 2 (\$millions)

Scenario	FRR	Rest of NJ	All of NJ	Rest of RTO
1	\$386	n/a	\$386	(\$784)
2	\$32	n/a	\$32	(\$784)
3	\$199	(\$42)	\$157	(\$1,144)
4	\$47	(\$42)	\$4	(\$1,144)
5	\$110	\$63	\$178	(\$519)
6	(\$8)	\$37	\$29	(\$433)

The IMM concluded that the creation of a New Jersey FRR, a PSEG FRR or a JCPL FRR, is likely to increase payments for capacity by customers in New Jersey. The IMM posits that the creation of any New Jersey FRR creates market power for the small number of local generation owners from whom generation must be purchased in order to meet the reliability requirements of the FRR entities, which will lead to high costs of FRR capacity.

MOPR Impact on New Jersey Environmental Policy Goals

The IMM’s analysis attempts to evaluate the historical capacity cost of procuring primarily fossil resources from the PJM capacity market compared to the cost of procuring those same fossil resources in an FRR. But this is not the relevant comparison for New Jersey or any state pursuing clean energy goals. The relevant comparison is total customer costs -- including capacity, energy, and state payments (RECs, ORECs, ZECs, etc.) -- and environmental impacts of utilizing PJM’s RPM capacity procurement versus an FRR to achieve clean energy goals.

The New Jersey Energy Master Plan (EMP) lays out the following power sector goals:

- 100% clean energy by 2050
- 50% renewable energy by 2030
- 2030 technology-specific targets:
 - 3,500 MW offshore wind
 - 12,200 MW solar
 - 2,000 MW storage
 - Continued operation of 3,500 MW existing nuclear

Based on these clean energy goals, roughly 11,500 MW of clean capacity will be subject to MOPR by 2030.² As shown in Table 3, this translates to total unforced capacity (UCAP) of roughly 6,600 MW with a capacity value of roughly \$400 million per year based on the 2021/22 PJM capacity price for EMAAC. Based on 2025 targets, the capacity value of state-supported resources is \$65 million for non-nuclear resources and \$270 million for all clean resources.

Table 3

	2025						2030				
	UCAP		UCAP	Capacity	Capacity	Capacity	UCAP		Capacity	Capacity	
	Capacity	Value	UCAP	Price	Value		Capacity	Value	UCAP	Price	Value
	(MW)	(%)	(MW)	(\$/MWD)	(\$MM/yr)	(MW)	(%)	(MW)	(\$/MWD)	(\$MM/yr)	
Offshore Wind	1,100	26%	286	166	17	3,500	26%	910	166	55	
Utility-scale Solar	1,000	55%	550	166	33	3,000	55%	1,650	166	100	
Storage	600	40%	240	166	15	1,500	40%	600	166	36	
Total w/o Nuclear	2,700		1,076		65	8,000		3,160		191	
Nuclear	3,470	99%	3,418	166	207	3,470	99%	3,418	166	207	
Total	6,170		4,494		272	11,470		6,578		398	

The MOPR undermines the state-supported resources related to EMP goals in two ways. First, if the state-supported clean capacity is prevented from clearing in RPM, the state program payments to those resources must increase by exactly the same amount as the foregone capacity revenue in order to maintain the target level of resource deployment at the same cost, i.e. customers must “double-pay” for the unused capacity. For example, if offshore wind does not clear in the RPM auction, the net OREC cost will increase by the amount of the lost capacity revenue. The increased customer cost of the state

² Assumes 100% offshore wind target and 75% of solar and storage target achieved in 2030 and half of new solar is utility-scale.

environmental programs under RPM/MOPR is the new status quo. The FRR provides the only mechanism going forward to monetize clean capacity which is a customer benefit of up to \$400 million per year. This benefit dwarfs even the unrealistically high IMM FRR cost estimate for JCPL (Scenario 5).

The exact customer benefit over time from avoiding double-payments will depend not only on the quantity of clean resources, but also on default MOPR floor prices, ability of resources to obtain a lower floor price through a resource-specific exception, and capacity market prices. For zones in New Jersey, the default MOPR floor prices proposed by PJM for new renewables and storage are all well above the most recent EMAAC capacity price. Based on New Jersey's targets, the capacity value related to these resources is \$65 million in 2025 increasing to \$190 million in 2030. Even if all of New Jersey's solar were somehow able to obtain a very low resource-specific MOPR price, the customer benefit from avoiding double-payments for new resources would be about \$30 million in 2025 increasing to \$90 million in 2030.

Existing nuclear in New Jersey is likely to have a default MOPR floor price in 2022/23 that is less than the most recent EMAAC capacity price, but this gap will be much lower than indicated in PJM's March compliance filing. Based on recent FERC decisions, the floor price will increase due to two factors related to how energy revenues are estimated: 1) the use of unit-specific prices versus zonal prices and 2) the use of forward prices versus historical prices. So, while existing New Jersey nuclear may clear in the next capacity auction, the risk that the floor price exceeds the capacity market price increases over time which could result in total costs of up to \$400 million by 2030.

Second, since clean capacity is artificially excluded from the market, PJM will contract with redundant emitting resources through RPM and maintain the very resources that the clean capacity is intended to replace. So even after customers are forced to "double-pay" for clean programs, the potential air quality benefits are diluted by the continued operation of excess amounts of emitting generation.

IMM's Flawed Assumptions and Misleading Conclusions

In evaluating their response to the expanded MOPR, states will want to understand the potential cost differences between FRR and RPM capacity procurement. While the IMM has provided some useful data and information in its FRR report, most of the IMM's conclusions reflect unsupported opinion and flawed assumptions.

Artificially High Price Assumptions

In all scenarios, high FRR cost levels are an input to the analysis and not an output. Scenarios 1, 3, and 5 each assume that FRR resources would be compensated at the PJM RPM capacity market offer cap (which is based on the Net Cost of New Entry for a gas-fired peaking generator). However, no justification is offered as to why this is a reasonable assumption. Scenarios 2, 4, and 6 also implicitly assume a high compensation level due to overly restrictive locational requirements. Unsurprisingly, the analysis will yield an unreasonably high cost when the scenario input assumption is an unreasonably high price. These scenarios presume their conclusion.

The IMM implies that market power will enable FRR capacity suppliers to receive much higher prices than under RPM, but the IMM's concern appears to be driven by an assumption that New Jersey will develop a highly inefficient FRR structure. Specifically, as discussed in more detail below, the IMM assumes that

New Jersey will utilize overly restrictive locational requirements and that market power will be related to artificially concentrated zonal ownership of capacity resources rather than broader market participation. Contrary to the IMM's assumption, an FRR need not create additional market power that is not already present in the PJM RPM procurement.

Further, the reason that New Jersey is evaluating an FRR is because there is a significant amount of state-supported clean capacity that will be subject to the MOPR. Resources subject to the MOPR cannot rely on RPM for capacity revenue, and therefore have no attractive alternatives to the FRR. As a consequence, if state-supported capacity comprises much of an FRR plan, the state will be able to integrate support payments with the FRR to secure the majority of capacity needs and then procure remaining requirements at competitive price levels.

Overly Restrictive Locational Requirements

The IMM analysis reflects overly restrictive locational capacity requirements yielding over-estimated costs.

The IMM states:

There would be capacity imports into New Jersey FRRs only from capacity resources needed to cover any shortfall in meeting the FRR obligation. The price of imports to New Jersey from capacity resources outside New Jersey is assumed to be the same as the price paid to the capacity resources in New Jersey meeting the FRR obligation.³

However, the PJM market rules have no such requirement for FRR plans to include all the capacity in the zone or pay the same price to resources located in different zones. Instead, PJM determines the minimum internal resource requirements for each FRR capacity plan to reliably serve load given transmission constraints. For example, a JCPL FRR capacity plan for the 2021/22 delivery year would require procurement of roughly 83% of the FRR capacity from the EMAAC zone, and the remaining 17% from MAAC. This is similar to how the BRA price clearing algorithm allows lower-cost capacity from less-constrained regions to be utilized in a more-constrained regions. Importantly, the 2021/22 MAAC capacity price cleared at a 15% discount to EMAAC (and has previously cleared at a 50% discount).

There are several implications of this flawed assumption:

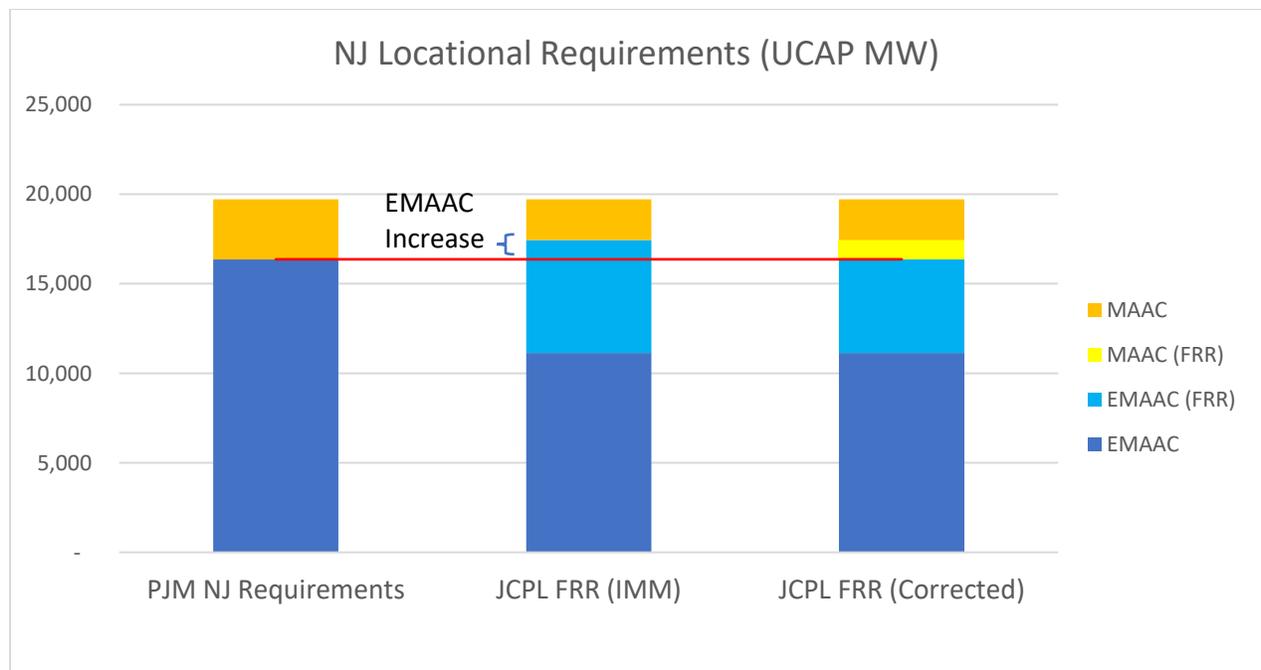
- The “weighted-average” prices used in Scenarios 2, 4, and 6 do not reflect the weighted-average of the price paid in the 2021/22 BRA to resources that meet the applicable zone’s capacity needs. It attributes a price to PSEG and JCPL that does not reflect the ability of these utilities to use lower-priced imported capacity and overstates the cost of an FRR in these scenarios.
- As explained in more detail below, this assumption also results in an artificial increase in the EMAAC price with a JCPL FRR which incorrectly indicates an increase in the capacity costs for New Jersey ratepayers located outside the FRR. A properly structured FRR will not increase the cost of customers outside of the FRR zone, and in fact, often leads to a cost reduction for non-FRR customers (as the IMM’s own report shows for the “Rest of PJM Market”).

³ Ibid, Assumption 3 on page 7

- The IMM’s report suggests that customers in an FRR would miss out on a discount payment, known as Capacity Transfer Rights (CTRs), which is part of PJM RPM accounting. Under CTR accounting, load receives a rebate – the CTR – reflecting the ability to import lower price supply resources that clear outside the zone. But a properly structured FRR will capture this same value. For example, a JCPL FRR can purchase 17% of its supply from the lower-priced MAAC region to capture the same value as JCPL’s CTRs. The IMM illogically assumes JCPL will instead pay the higher EMAAC price to all FRR resources.

Under a least-cost FRR procurement, suppliers outside of constrained zones would naturally bid lower than suppliers within a constrained zone due to expectations of lower clearing prices in RPM (which would be the best alternative for capacity revenue outside of the FRR). The FRR entity would accept the lowest price bids first until limited by the PJM locational constraints, which results in a higher price for higher value resources.

A properly structured FRR will have either a neutral or beneficial capacity cost impact on New Jersey customers outside of the FRR zone. However, the IMM concludes that a JCPL FRR will increase costs for the rest of New Jersey. This is illogical and is based on flawed assumptions similar to those above. The IMM assumes that “the JCPL FRR would need to contract with resources in the rest of EMAAC only to meet its FRR Obligation.”⁴ And “in Scenarios 5 and 6, the PJM Capacity Market would not include the JCPL LDA.”⁵ There is no such PJM requirement for JCPL FRR to contract 100% EMAAC capacity. As indicated above, a JCPL FRR can include lower-cost MAAC capacity for up to 17% of its total requirement. Effectively, the IMM is assuming that the JCPL FRR procurement will be poorly designed and will use up “extra” EMAAC capacity that will not be recognized by PJM. As illustrated below, the IMM effectively increases the NJ EMAAC requirement by 1,070 MW as part of its JCPL FRR analysis with no justification.



⁴ Ibid, pg 37

⁵ Ibid, Assumption 1, pg 7

Increasing the JCPL FRR EMAAC requirement by 1,070 MW has two impacts on the IMM’s results. First, the JCPL FRR is more expensive than necessary, since MAAC resources can be expected to be lower cost than EMAAC resources. Second, when clearing the RPM market, the analysis results in an artificially raised EMAAC clearing price for the non-FRR New Jersey customers. The IMM states “the reduced supply, which would be greater than the change in the demand curve, in the EMAAC LDA, a constrained LDA in the 2021/2022 RPM BRA, would result in a higher clearing price for EMAAC.”⁶ This is a purely assumption-driven result. JCPL will not buy “extra” EMAAC supply since lower cost MAAC supply is eligible to satisfy its FRR obligation. If JCPL procures the same amount of EMAAC supply that was procured under the 2021/22 RPM procurement, the RPM EMAAC clearing price (and the price to non-FRR New Jersey customers) will be unaffected by a JCPL FRR. But the IMM notes that “[i]f a JCPL FRR service area were created, the load in the service area would be required to procure 6,295.9 MW UCAP, 242.6 MW (3.7 percent) less than if the JCPL LDA remained in the PJM Capacity Market.”⁷ If the JCPL FRR procures slightly less EMAAC supply than would have been procured under RPM, there will be a larger amount of EMAAC supply available for the remaining RPM buyers, and potentially lower RPM clearing prices for non-FRR New Jersey customers.

Misleading Market Power Analysis

The IMM’s overly restrictive locational assumptions result in a misleading market power analysis. For example, the IMM contends that there are market power concerns in the JCPL zone based on several indicators, but all of the IMM’s JCPL zone analysis is irrelevant. The JCPL zone is unconstrained and is not a relevant market. It is a small part of a much larger tightly interconnected transmission region. As indicated below in Table 4, the JCPL zone was not a PJM-modeled LDA, meaning there was not a minimum requirement for generation to be located in the JCPL zone for the 2021/22 delivery year. In fact, the majority of required capacity for any New Jersey FRR can come from any generator in the EMAAC LDA, which includes all of New Jersey, all of Delaware, most of Maryland, and part of Pennsylvania. As shown in Table 4, roughly six times as much capacity is available in the EMAAC region as is necessary to be included in a JCPL FRR capacity plan, and about twelve times as much capacity is available in MAAC.

Table 4

A JCPL FRR would require 6,300 MW of capacity commitments to meet the load requirements. As shown in the table below, there is significant generation available to meet the required commitment.			
Resource Requirements and Available Supply for JCPL Only FRR			
LDA	2021/22 Minimum Internal Resource Requirement		Internal Capacity Offered in 21/22 BRA
	%	MW UCAP	MW UCAP
EMAAC	83%	5,226	32,045
MAAC	100%	6,296	73,578

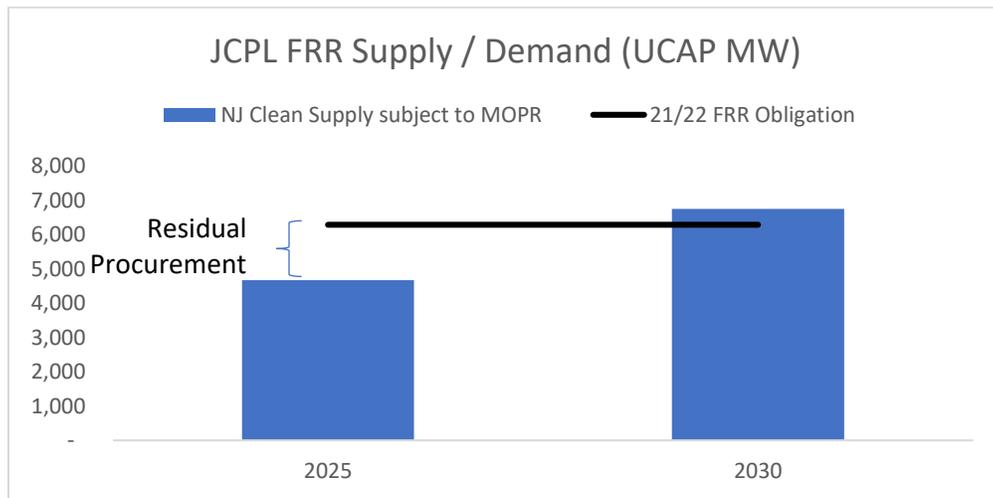
⁶ Ibid, pg 37

⁷ Ibid, pg 36

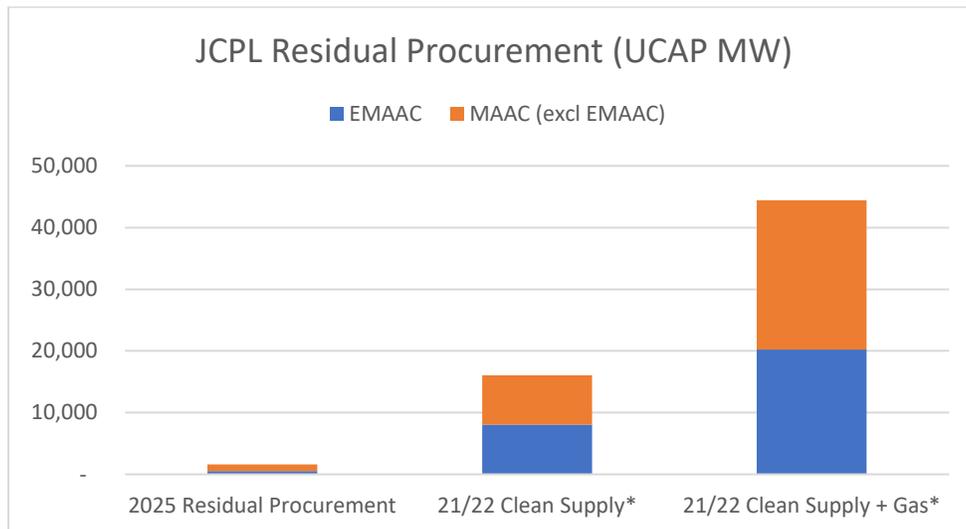
A proper market power analysis must compare the available PJM resources in the various LDAs to the minimum internal resource requirements of the FRR.

JCPL Zone FRR

The JCPL zone is aptly sized for an FRR that eliminates the impacts of the MOPR on current state-supported resources, while allowing for growth in such resources and limited additional procurements as this growth is achieved over time. The chart below shows that state-supported resources in 2025 would cover about 75% of JCPL zone FRR capacity needs and by 2030 such resources could cover just over 100% of needs.



The additional procurement quantity needed to meet JCPL needs would be about 1,600 MW in the next few auctions declining to zero by 2030. This additional procurement could be open to clean resources only or clean and gas-fired resources subject to locational constraints. As shown below, with either approach, the supply competing is significantly more than demand and the supply to demand ratio will decline over time.



**Note: Does not include NJ clean supply subject to MOPR*

As long as the MOPR is in place, an FRR is the only guaranteed way for state-supported capacity to monetize capacity value. Although an FRR has a five-year commitment, state-supported clean capacity subject to the MOPR have remaining lives far greater than five years and a JCPL FRR can be expected to remain attractive for at least that long. Because the JCPL FRR will be primarily sourced from state-supported clean capacity, only a modest quantity of additional generation must be procured through the annual residual procurement. This minimizes the risks of developing an FRR plan because annual residual procurement volumes can be easily adjusted in response to annual load changes and changes in minimum locational requirements or other factors.

The JCPL FRR could maintain and improve the cost-effectiveness of current NJ clean programs, when considering all customer costs for energy, capacity, and RECs/ZECs.

- Eliminates the impacts of the MOPR by minimizing cost of state programs, and preventing avoidable capacity payments to emitting generators
- Reduces the quantity of required capacity purchases due to lower FRR reserve margin (while maintaining reliability)
- Reduces capacity performance penalties by allowing the pooling of FRR portfolio resources under the physical non-performance assessment

The JCPL FRR could be structured to achieve these benefits for the state, while ensuring that JCPL customers pay no more for capacity than they would have in the PJM capacity market and no more than other utilities in the state with similar locational constraints that remain in the PJM capacity market.

Conclusion

The IMM's analysis is flawed in both its framework and input assumptions, which lead to several inaccurate and misleading conclusions about the costs of a New Jersey FRR procurement. Most significantly, the IMM ignores the adverse impact of the MOPR on New Jersey's clean energy programs, which is the primary motivation of pursuing an FRR in the first place. Despite its narrow focus, the IMM analysis provides substantial support for utilizing a JCPL FRR to mitigate the impact of the MOPR and to facilitate the achievement of New Jersey clean energy goals at the lowest customer cost.

About the Authors

This study was prepared by members of The NorthBridge Group, John Hutchinson (Partner) and Frank Huntowski (Partner). The NorthBridge Group is an independent economic and strategic consulting firm serving the electric and natural gas industries, including regulated utilities and companies active in the competitive wholesale and retail markets. NorthBridge has a national practice and long-standing relationships with restructured utilities in Regional Transmission Organization (“RTO”) markets, vertically-integrated utilities in non-RTO markets, and other market participants. Before and throughout the restructuring process of the U.S. electricity industry, the authors have assisted clients with wholesale market design, competitive market analysis and strategy, regulated power supply procurement, state regulatory initiatives and strategy, and mergers and acquisitions.

Certification of Frank Huntowski

I, Frank Huntowski, certify that the foregoing statements set forth in the report entitled Evaluation of the PJM IMM's Potential Impacts of the Creation of New Jersey FRRs, May 2020 are true. I am aware that if any of the foregoing statements made by me are willfully false, I am subject to punishment.

6/24/20
Date


Signature