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April 5, 2021

**VIA ELECTRONIC MAIL ONLY**

Aida Camacho-Welch, Secretary  
New Jersey Board of Public Utilities  
44 South Clinton Avenue  
Trenton, New Jersey 08625  
Board.secretary@bpu.nj.gov

**Re: Jersey Central Power & Light Company's Comments on Brattle Financial  
Analysis  
Investigation of Resource Adequacy Alternatives  
BPU Docket No. EO20030203**

Dear Secretary Camacho-Welch:

On March 9, 2021, the New Jersey Board of Public Utilities ("Board" or "BPU") released a notice of a third working session in its Investigation of Resource Adequacy Alternatives. The purpose of this working session was to discuss Brattle's financial analysis of the various capacity procurement alternatives proposed by itself and other stakeholders in this proceeding. On March 15, 2021, the working session notice was supplemented with a copy of Brattle's presentation to be given at the stakeholder meeting. Brattle's analysis evaluated the expected financial outcome of several different capacity procurement proposals under differing assumptions, including: (1) the status quo Reliability Pricing Model ("RPM") market with the Minimum Offer Price Rule ("MOPR") in place; (2) the RPM without the MOPR in place; (3) a Fixed Resource Requirement ("FRR") alternative implemented across all of New Jersey; (4) an FRR implemented across all of New Jersey using the Independent Market Monitor's ("IMM") pricing assumptions; (5) a single service territory FRR in JCP&L's service territory; (6) an Integrated Clean Capacity Market ("ICCM") implemented in New Jersey only; and (7) an ICCM implemented across PJM's footprint. Brattle's analysis concluded that an RPM procurement approach without the MOPR was likely the most financially advantageous for New Jersey; however, it noted that an ICCM could result in greater procurement of clean energy at the most reduced cost (of the alternatives being considered) compared to the status quo. Similarly, Brattle noted that the IMM's analysis of an FRR was a "worst case scenario", which Brattle described as likely resulting from poor implementation decisions.

JCP&L thanks the Board for the opportunity to provide these comments on Brattle's analysis and Brattle's efforts in providing a thorough discussion of its analysis. As JCP&L has indicated in the past, the Company's focus remains on: (1) providing its customers with safe and reliable service at reasonable prices; and (2) ensuring that its customers are not disproportionately impacted by the costs of New Jersey's clean energy transition. With those goals in mind, JCP&L

offers the following specific comments on Brattle's financial analysis and general comments regarding the ongoing process at PJM and the Board.

**I. Should the Board decide it wants to potentially pursue one of the alternative capacity procurement approaches, the Board and stakeholders would benefit from further proceedings to develop the details of any such alternative capacity procurement approach.**

During past stakeholder meetings, Staff has expressed its plan to submit a report to the Board (without a recommendation) on the various alternative proposals that have been offered in this proceeding.<sup>1</sup> Now that Brattle has conducted its financial analysis of the proposals, it is time for Staff to submit its report. But what comes next?

As JCP&L noted previously, the “devil is in the details” when it comes to implementing proposed procurement alternatives. As Brattle's presentation at the most recent stakeholder meeting noted, there is a “worst case scenario”, driven by poor implementation, that could result in any of the chosen alternatives being significantly worse for New Jersey than the status quo. Moreover, there are ongoing developments at PJM and at the federal level which could result in the elimination of the MOPR—meaning that a poorly implemented procurement approach could be even worse for New Jersey's customers. As such, it is important for New Jersey to ensure that any chosen procurement approach will be implemented properly prior to the Board declaring that a new path forward must be taken.

JCP&L again encourages the Board to institute working groups and/or convene additional stakeholder proceedings to further develop and evaluate any proposal it believes may have merit. By doing so, the Board will increase the likelihood that a poorly implemented alternative approach (if one is deemed necessary) does not end up harming New Jersey's customers compared to the current market and the market that may result after the conclusion of ongoing developments at PJM and the federal level.

**II. The best utility service territory for an FRR depends on the Board's goals in implementing a single utility FRR approach.**

When considering the implementation of an FRR in a single service territory, Brattle's analysis focused on an FRR in JCP&L's service territory. When asked about its reasoning for considering the JCP&L territory only, Brattle indicated that it believed JCP&L's load to be “right-sized” for an FRR. However, as noted in the Company's November 23, 2020 comments, JCP&L's analysis indicates that the best service territory for a single territory FRR depends on the assumptions used and the Board's goals for implementing the FRR. Such goals for implementing the FRR could potentially include, but are not limited to: (1) implementing an FRR plan utilizing only non-emitting capacity; (2) maximizing the potential for total cost savings; (3) minimizing residual capacity procurement costs and risk; (4) minimizing direct exposure to the RPM market going forward; (5) minimizing administrative complexity and market power concerns; and (6)

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<sup>1</sup> JCP&L provided its own analysis of various FRR scenarios, conducted by the Company's consultant Charles River Associates (“CRA”), as an attachment to its November 23, 2020 comments.

instituting an incremental deployment of an FRR structure.<sup>2</sup> Depending on the Board's priorities, each of these goals could potentially be achieved by implementing an FRR in different utility service territories. As such, JCP&L again encourages the Board to institute further working groups and/or stakeholder proceedings to analyze the appropriate service territory for an FRR if the Board determines that it wants to pursue a single territory FRR approach.

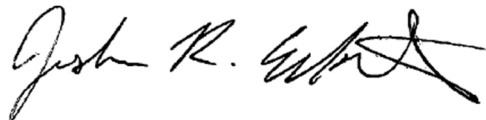
**III. A procurement approach can be designed to incentivize participation in an FRR implementation.**

Consistent with Brattle's analysis, JCP&L believes that an FRR can be designed to promote resource participation and mitigate market power issues; however, also consistent with Brattle's analysis, such an implementation will necessarily cost more because of the need to incentivize participation by generators. Attached for the Board's reference is an analysis that was performed by JCP&L's consultant, CRA, showing how such a design could be implemented. JCP&L offers this additional analysis not to discourage the Board from pursuing an FRR alternative if one is determined to be appropriate for New Jersey; rather, the Company provides this information as another data point for the Board to consider in its analysis of the alternatives available for the State's clean energy transition.

\* \* \*

JCP&L again thanks the Board for the opportunity to provide this feedback and for its continued commitment to an open and transparent process while it continues to contemplate New Jersey's clean energy future. If you have any questions about these comments, please do not hesitate to contact me.

Respectfully submitted,



Joshua R. Eckert  
Counsel for Jersey Central Power & Light Company

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<sup>2</sup> CRA's report attached to the Company's November 23, 2020 comments lists these priorities and offers suggested FRR scenarios based on the Board's prioritization of same.

# Capacity Procurement Alternatives in New Jersey: A Response to RPM Reforms

February 2021

Working Document on FRR Procurement Design Detail

**CRA** Charles River  
Associates

Prepared for:

**Jersey Central<sup>®</sup>**  
**Power & Light**

*A FirstEnergy Company*

**DRAFT FINAL**

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# FRR Residual Procurement: Working Document Overview

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- In fulfilling the FRR Obligation for the entity electing the FRR, any capacity not satisfied by NJ preferred resources (nuclear, OSW, utility-scale solar) will need to be procured from the broader PJM footprint – accounting for constraints – on a bilateral basis, though the structure that defines which entities receive contracts remains flexible per the PJM RAA.
- Procuring residual capacity for an FRR Plan, while still part of the broader PJM construct, creates unique challenges and incentives for the FRR Entity.
- CRA has developed a “strawman” of a procurement design – to be run by the FRR procurement administrator – that we believe should account for challenges and incentives specific to an FRR procurement while maintaining the benefits of competition. This is achieved in part by linking FRR procurement prices to RPM outcomes.
- The following slides present our detail CRA’s proposed procurement design **for the specific purposes of this working document, with a focus on illustrating how CRA’s strawman design would function.**
- Here, we also **present a possible approach to adding locational pricing** to the version of the CRA strawman that has been presented in prior versions of this report.
- Following the main slides, supplemental slides include the following relevant supporting information from CRA’s main report on capacity procurement alternatives, including description of incentives faced by generators and further discussion of design details and tradeoffs in an FRR procurement structure.

# FRR Residual Procurement: Initial Notes

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- This document and the presented strawman procurement design is specific to “residual capacity” – that capacity in excess of any capacity included in the FRR Plan by default or through other procurement pathways.
  - It is our expectation that NJ preferred resources, particularly those that are expected to be precluded from selling capacity into RPM owing to the expanded MOPR rules, are included in the FRR Plan as the “base” set of capacity resources to fulfill the FRR capacity requirements. Residual capacity is then procured to “top off” the FRR procurement requirement. Logically, if NJ subsidized resources do not sell capacity through RPM and are not included in the FRR Plan, it entirely defeats the purpose of this exercise (which is to ensure they receive capacity credit and to avoid duplicative capacity procurement).
  - We note that some NJ preferred (i.e., subsidized) resources may face low MOPR offer thresholds (e.g., utility-scale solar and nuclear resources) and may still be able to successfully sell into RPM. For these resources, we withhold judgement as to what should be required of them. Depending on the terms of their contracts, it may make no difference how they market capacity as long as they successfully take on a capacity obligation in every delivery year.
  - In our role as economic and regulatory consultants, we do not draw any conclusions about potential legal or contractual issues related to requiring participation in the FRR Plan by generating resources subsidized by NJ ratepayers and taxpayers.
- Given that resources in the FRR Plan may change from year to year, we do not see a need to procure residual capacity for multi-year terms. Doing so could be beneficial, but also raises concern about uneconomic lock-in and is not conceptually consistent with our suggested approach. Under different residual procurement structure, offering long-term contracts to residual supply could hold benefits of improved pricing terms in exchange for multi-year price certainty. However, this benefit could be outweighed by its drawbacks and would need to be considered carefully.

# Residual Capacity: Incentives & Procurement Design

## *Proposed FRR Residual Capacity Auction Structure*

CRA proposes the following “straw man” auction design, which attempts to create offer incentives that will lead to efficient procurement outcomes. In short, this **design is a pay-as-bid auction with a price floor at a pre-determined premium to the EMAAC price a set in the BRA**. FRR Plan resources are selected in advance of the BRA, and final compensation levels are determined after the BRA is run.

### Procurement Timing

- Procurement to take place ahead of BRA to ensure available capacity supply
- Were procurement to occur after BRA, only available supply would be high-cost supply not cleared in the primary PJM capacity auction

### Supply and Demand

- Supply to be made up of offers from all resources eligible to sell capacity into EMAAC
- Demand would effectively be a vertical demand curve at the FRR procurement target

### Market Clearing

- Sealed-bid auction
- The FRR procurement will establish which resources are to be included in the FRR plan (quantity), based on the lowest cost set of offers, but not the price that will be provided to contributing resources
- Cleared resources will be guaranteed the EMAAC price – determined in the BRA that follows – plus an adder (e.g., \$5/MW-day), effectively creating an FRR price floor
- Resources that cleared in the FRR procurement but offered at price levels above the FRR price floor will be compensated on a pay-as-bid basis
- Potential to allow resources to offer to take a premium that is *lower* than the default premium, an offer parameter that could be used to break ties and could be used on a pay-as-offer basis to minimize capacity payments by NJ customers

### Locational Constraints

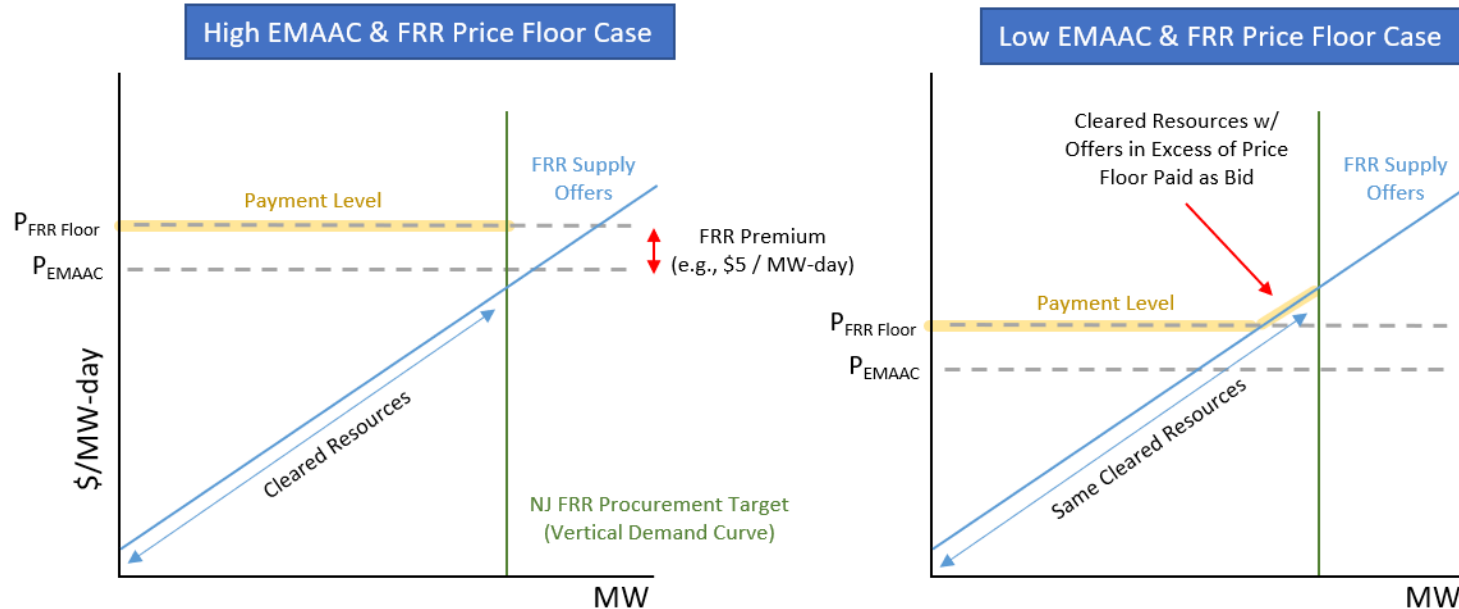
- PJM CETLs and minimum internal resource requirements will be respected
- May be implemented with or without locational pricing or LDA “break outs”



# Residual Capacity: Incentives & Procurement Design

## *Proposed Residual Capacity Auction Illustration and Incentives*

The following illustrates the two potential pricing scenarios under CRA's "straw man" procurement design. In both cases, the FRR price floor is benchmarked to EMAAC pricing outcomes in the BRA after the FRR auction. In the High EMAAC price case, the FRR price floor is sufficiently remunerative for all resources necessary to fulfill the FRR requirement (left). If the EMAAC prices plus the FRR Premium is insufficient for certain resources procured in the FRR auction (e.g., high cost resources in PSEG), those higher cost resources receive their stated price offer from the FRR auction process (right).

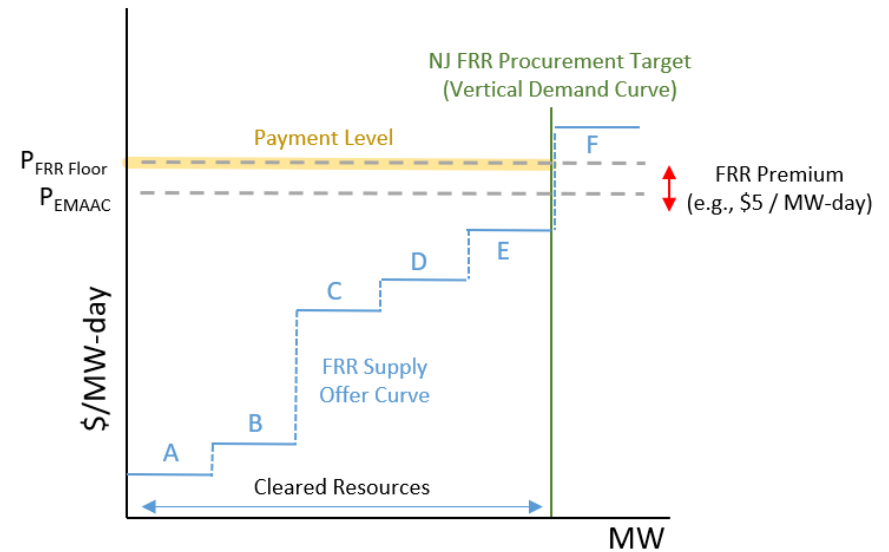


- This auction design creates both incentives to participate and to submit competitive offers
  - Providing a guaranteed premium over the price available in RPM ensures that capacity resources are interested in participating – mitigating concerns over the opportunity cost of BRA participation – including being willing to take on incremental administrative burden associated with the FRR procurement process.
  - Providing a guaranteed premium for providing capacity creates an environment in which resources will compete to be included in the FRR plan and offer the minimum compensation they would be willing to receive (a "true" economic offer), which should align offer structures with those experienced in RPM proper.
  - The suggested design should eliminate incentives to offer above or below cost, both of which could lead to inefficient outcomes and both should be avoided with an effective design. Above cost offers risk resources missing an opportunity they would have been willing to take, and below cost offer risk resources taking on an obligation at a loss.

# Residual Capacity: Strawman Procurement Design

## Example of Procurement Results – High(er) RPM EMAAC Price Scenario

- Here, we provide a stylized example of the proposed strawman procurement structure in a case where the EMAAC clearing price exceeds that of the highest price capacity resource selected in the FRR Plan.
- **Resources A-E** are selected as the lowest cost set of resources offered into the FRR procurement and sufficient to fulfill the procurement target. This is done in advance of the BRA.
- **All selected resources** are paid the EMAAC price from the BRA plus the promised price premium (here: \$5/MW-day).
- Notes about example:
  - As shown, the procurement is agnostic to resource type and all resources are equally sized for simplicity
  - Procurement target in this stylized example is **100 MW**

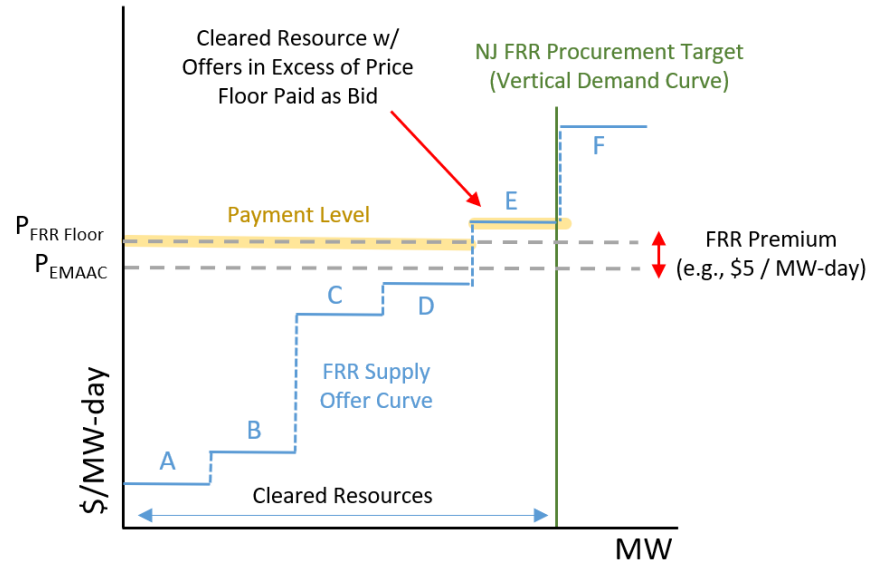


Established and/or determined ahead of BRA					Determined post-BRA	
Offeror	Location	Quantity Offer (MW UCAP)	Price Offer (\$/MWh)	Selected in FRR Plan	BRA Price (EMAAC)	Resource Payment
Resource A	EMAAC	20	\$ 5	Yes	\$160 / MW-day  (with \$5 premium, FRR price floor is \$165 / MW-day)	\$165
Resource B	MAAC	20	\$ 10	Yes		\$165
Resource C	EMAAC	20	\$ 100	Yes		\$165
Resource D	MAAC	20	\$ 120	Yes		\$165
Resource E	EMAAC	20	\$ 150	Yes		\$165
Resource F	MAAC	20	\$ 200	No		N/A

# Residual Capacity: Strawman Procurement Design

## Example of Procurement Results – Low(er) RPM EMAAC Price Scenario

- In this example, all resources offer at the same levels with the same procurement target. However, in this case the EMAAC clearing price is lower than the highest price capacity resource selected in the FRR Plan.
- Resources A-E** are selected as the lowest cost set of resources offered into the FRR procurement and sufficient to fulfill the procurement target. This is done in advance of the BRA.
- Resources A-D** are paid the EMAAC price from the BRA plus the promised price premium (here: \$5/MW-day), which is the FRR procurement price floor.
- Resource E**, whose offer is greater than the FRR price floor, is compensated consistent with its economic offer, which ensures that it receives compensation no lower than the level it identified when placing its capacity sell offer.



Established and/or determined ahead of BRA					Determined post-BRA	
Offeror	Location	Quantity Offer (MW UCAP)	Price Offer (\$/MWh)	Selected in FRR Plan	BRA Price (EMAAC)	Resource Payment
Resource A	EMAAC	20	\$ 5	Yes	\$130 / MW-day  (with \$5 premium, FRR price floor is \$135 / MW-day)	\$135
Resource B	MAAC	20	\$ 10	Yes		\$135
Resource C	EMAAC	20	\$ 100	Yes		\$135
Resource D	MAAC	20	\$ 120	Yes		\$135
Resource E	EMAAC	20	\$ 150	Yes		<b>\$150 (as bid)</b>
Resource F	MAAC	20	\$ 200	No		N/A

# Residual Capacity: Strawman Procurement Design

## *Adding Locational Pricing to FRR Procurement Design*

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- CRA had proposed the strawman with no locational pricing elements. Originally, all pricing and compensation would be based off the EMAAC price.
- In initial discussions regarding the CRA strawman procurement design, there were questions about whether and how locational pricing could be incorporated into the design and pricing algorithm.
- CRA has considered this, and **proposes the following procurement design modifications**, should they be determined appropriate:
  - Price premium and procurement price floor logic can be applied on an LDA-specific basis.
  - Same logic is employed in selecting the lowest cost set of resources *ex ante* to the BRA.
  - Following the BRA, the floor prices (LDA BRA price plus FRR premium) would be set on a zonal basis.
  - Low-cost selected resources in a lower priced capacity zone (e.g., MAAC) would be paid the floor price in that zone, rather than the EMAAC price plus the established FRR premium.
  - If a resource's price offer exceeds the LDA-specific price floor where it is located, it is compensated on a pay-as-bid basis.
  - Overall, these design elements maintain the tie to market pricing from RPM with the locational element intact as well as the guarantee that no resource is forced to take on a capacity commitment at a compensation level lower than its offer.
- The following slide provides an illustration of how this would be implemented using the same stylized example as for the FRR Strawman procurement without locational pricing.
- Generally, we view this addition of locational pricing considerations as practically implementable and consistent with effective procurement design. Incentives should be maintained for resources to participate and to submit offers that reflect their costs. Furthermore, we see no reason that implementing such locational pricing measures should meaningfully constrain incentives for participation such that inadequate supply would be available to fulfill FRR procurement targets.

# Residual Capacity: Strawman Procurement Design

## Example with Locational FRR Pricing

- In this example, all resources offer at the same levels with the same procurement target as with prior examples. However, in this case we include the following three elements:
  - The locational pricing logic as described on the prior slide.
  - The EMAAC clearing price is lower than the highest price capacity resource selected in the FRR Plan in EMAAC.
  - The MAAC clearing price is lower than the EMAAC price, and lower than the highest price capacity resource selected in the FRR Plan in MAAC.
- Resources A-E** are selected as the lowest cost set of resources offered into the FRR procurement and sufficient to fulfill the procurement target. This is done in advance of the BRA.
- Resources A and C** are paid the EMAAC price from the BRA plus the promised price premium (EMAAC price floor).
- Resource B** is paid the MAAC price from the BRA plus the promised price premium (MAAC price floor).
- Resource D**, whose offer is greater than the locationally relevant price floor (MAAC), is compensated consistent with its economic offer, which ensures that it receives compensation no less than the level it identified when placing its capacity sell offer.
- Resource E**, whose offer is greater than the locationally relevant price floor (EMAAC), is treated the same as resource D.

Established and/or determined ahead of BRA					Determined post-BRA	
Offeror	Location	Quantity Offer (MW UCAP)	Price Offer (\$/MWh)	Selected in FRR Plan	BRA Price (\$/MW-day)	Resource Payment
Resource A	EMAAC	20	\$ 5	Yes	EMAAC = \$130 (\$135 locational price floor)	\$135
Resource B	MAAC	20	\$ 10	Yes		\$115
Resource C	EMAAC	20	\$ 100	Yes		\$135
Resource D	MAAC	20	\$ 120	Yes	MAAC = \$110 (\$115 locational price floor)	<b>\$120 (as bid)</b>
Resource E	EMAAC	20	\$ 150	Yes		<b>\$150 (as bid)</b>
Resource F	MAAC	20	\$ 200	No		N/A

# Residual Capacity: Strawman Procurement Design

## *Adding Locational Pricing to FRR Procurement Design*

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- However, we identify (at least) two potential issues that may need to be addressed, or at least understood and accepted, associated with the addition of the locational pricing element of the FRR procurement strawman:
  - **Treatment of pricing for child LDAs of the LDA where the FRR entity resides:** Consider a case in which resources from MAAC, EMAAC, and PSEG are all treated on equal footing and priced consistent with the same set of rules regarding locational pricing and compensation. Also, assume that the pricing for PSEG > EMAAC > MAAC and that the FRR Entity is either AECO or JCP&L. Selecting resources from PSEG in advance of the BRA would lead to an increase in total FRR capacity procurement cost owing to a commitment to pay the PSEG resources at least the higher PSEG BRA price *plus* the promised premium. Alternatively, disallowing the PSEG LDA to have its own higher, LDA-specific price floor would lead to behavior where resources from PSEG would submit offers based not on “true” cost but on their expectation for BRA pricing outcomes – such resources would not want to commit to sell capacity at any price less than the expected price they could receive from the BRA, which could exceed the EMAAC price. This outcome is also undesirable from an incentives standpoint, though would be unlikely to lead to increased FRR costs. A third alternative would be to altogether preclude participation of resources from child LDAs below the level of the FRR LDA, as long as they are not included in the FRR territory. However, this could raise issues related to the non-discriminatory nature of the procurement process.
  - **Potential concerns about higher-than-necessary total procurement costs:** In instances where the MAAC price clears below the EMAAC price, it will be easy to concoct examples where FRR procurement could have been structured to have resulted in lower total cost. Complaints would likely allege that total cost to NJ ratepayers would have been lower had additional resources been procured from MAAC rather than purchasing higher-cost resources from EMAAC. Without explicitly preferencing the procurement of resources in less constrained zones, we do not see a way around this issue. The necessity of running the FFR procurement ahead of knowing BRA prices makes it impossible to guarantee – in a procurement design linked to RPM prices – that the absolute lowest cost set of resources are procured for the FRR Plan. Nonetheless, the proposed locational modifications to the FRR plan should result in total FRR procurement costs that are *no greater than* the version without locational pricing, and will likely lead to a reduction in any case in which EMAAC breaks out from MAAC.

# Supplemental Slides

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# Residual Capacity: Incentives & Procurement Design

## *Residual Capacity Auction – Further Issues*

Consideration	Discussion
<b>Product Definition</b>	<ul style="list-style-type: none"> <li>• Product is UCAP, consistent with PJM definition. No bundled attributes. Uniform contracts across suppliers.</li> <li>• Term is one year, equivalent to RPM definition. This avoids challenges with structuring pricing with longer or differentiated commitment terms. Also, longer commitment terms are often justified to support new resources, and we expect that this auction would primarily procure existing resources</li> </ul>
<b>RFP vs. Auction</b>	<ul style="list-style-type: none"> <li>• Given that the UCAP product is well-defined and resources are pre-qualified, we see no benefit of an RFP as opposed to an auction. An RFP could be used instead, but the results would be no more efficient and could be less efficient.</li> </ul>
<b>Auction Type</b>	<ul style="list-style-type: none"> <li>• Auctions for capacity are often discussed in terms of sealed-bid, descending clock, or a hybrid of the two. Here, because of the proposed pricing rules and the fact that the auction result is not a price but simply an identification of the resources to be designated in the FRR plan, a descending clock auction would not be appropriate as there is not a single clearing price result</li> <li>• Sealed bid is also appropriate because the auction requires information about cost below the clearing quantity</li> </ul>
<b>Pay-as-Bid Compensation (for some resources)</b>	<ul style="list-style-type: none"> <li>• Pay-as-bid is often disfavored over concerns about participants attempting to forecast the clearing price, which leads to inefficiencies, particularly for infrequent auctions like in capacity markets. As described, the straw man design should not face this shortcoming.</li> <li>• Pay-as-bid faces critique over paying resources different amounts to provide the same product, which may be considered unduly discriminatory. However, state default procurements frequently employ a pay-as-bid approach and pay-as-bid is more common in bilateral market environments</li> <li>• Pay-as-bid also mitigates some concerns about market power, because high remuneration levels (resulting from exercise of market power) are not paid to all resources</li> </ul>
<b>Appropriateness of long- and short-term incentives</b>	<ul style="list-style-type: none"> <li>• Incentives for efficient entry and (more importantly) exit should generally be maintained (though less relevant for RE), as pricing is ultimately pegged to RPM outcomes (to the extent RPM achieves these objectives)</li> <li>• Potential shortcomings around locational incentives, should constraints increase (lower CETLs)</li> </ul>
<b>Volume Risk and Procurement Contingency</b>	<ul style="list-style-type: none"> <li>• Given the newness of an FRR capacity procurement in a setting with primarily merchant suppliers, there may be uncertainty regarding whether sufficient volumes can be procured to fulfill FRR Plan requirements.</li> <li>• We suggest that this concern can be mitigated by robust procurement design, clear and early communication with potential suppliers, and process steps that include pre-showings of participation interest.</li> <li>• Selecting an FRR Entity with more limited residual procurement needs will limit this concern.</li> <li>• In any case, we suggest developing a contingency plan for such an outcome.</li> </ul>



# Residual Capacity: Incentives & Procurement Design

## *Conventional Capacity Market Offer Incentives*

- Theory suggests that resources will submit capacity sell offers based on the opportunity cost of not taking on a capacity market obligation.
- In the status quo RPM environment, there were two primary considerations when developing such an offer: (1) avoidable going forward costs and (2) capacity performance opportunity costs.
- A “rational” offer would be based on the higher of these two opportunity cost considerations.

### Offer Basis

### Practical Observation

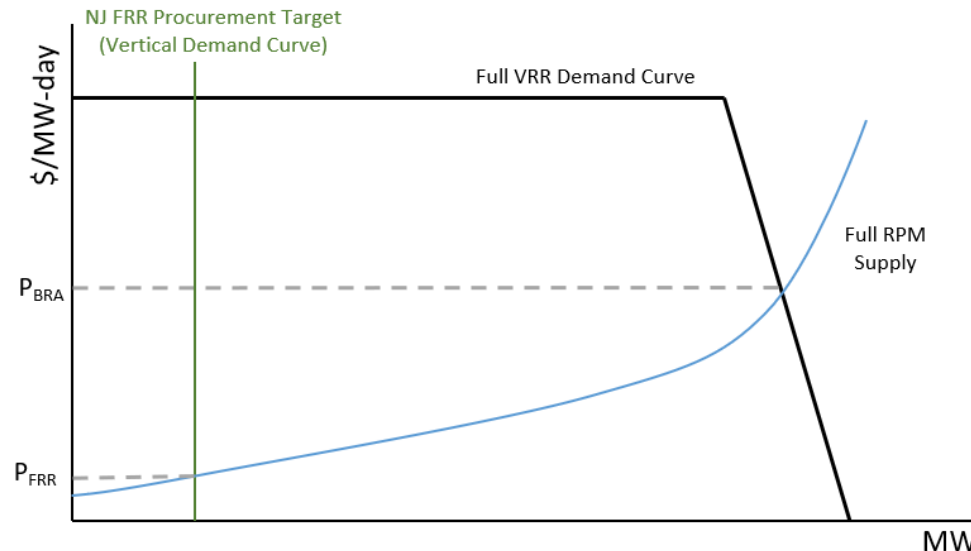
<p><b>Avoidable Going Forward Costs</b></p>	<p>Resources would be expected to offer such that they would be better off receiving a capacity payment, plus expected energy and ancillary revenue, than mothballing or retiring, which would allow avoidance of certain O&amp;M costs.</p>	<p>For many resources, this calculus yields a low or zero offer price. Older resources and/or resources facing significant environmental compliance costs generally have the highest calculated net avoidable costs (and will ultimately set market prices).</p>
<p><b>Capacity Performance Opportunity Cost</b></p>	<p>Under the CP rules, resources would also be expected to consider the possibility of receiving (sizeable) bonus payments for full generation quantities during performance events should they not take on a capacity obligation. Offers should reflect a risk-adjusted, probability weighted expectation of capacity performance bonus payments for a non-committed resource.</p>	<p>CP events have been less frequent than expected since the program began.* Also, we expect that generator operators prefer the certainty of capacity revenues over the uncertainty of potentially large (or zero) CP bonus payments. Thus, the impact of CP implementation on capacity market offers and outcomes has been limited. (This consideration may depend on how CP risk is shared within the FRR Plan portfolio.)</p>

\* **Note:** with the proposed MOPR reforms and the resulting duplicative procurement, we expect that the market will be even longer on energy and capacity than it already is, which will in turn further reduce the expected frequency of CP events.

# Residual Capacity: Incentives & Procurement Design

## *Inapplicability of Conventional Incentives in FRR Procurement*

- In an FRR procurement, there are additional considerations associated with offering a sale of capacity:
  - If they sell into the FRR procurement, they forgo the opportunity to sell into the BRA at whatever price is produced by that auction.
  - The price in the BRA is expected to be higher than what the FRR procurement would produce should resources offer based on a conventional “rational” offer construct for RPM.
- Because the FRR procurement would represent only a limited fraction of total market demand for capacity, a supply curve of conventional offers would likely yield a dramatically lower price ( $P_{FRR}$  below, rather than  $P_{BRA}$ ).
- This suggests a *third* opportunity cost-type consideration for resources offering to sell FRR capacity.



\* **Note:** A similar dynamic is observed in the NYISO ICAP capacity market, wherein there are three auctions (strip, monthly, spot) and the full demand curve is only employed in the spot market. It is our understanding that, for this reason, in the ICAP construct the majority of non-bilateral market transactions occur in the spot market.

# Residual Capacity: Incentives & Procurement Design

## *Additional Capacity Offer Incentives in FRR Procurement*

- Accounting for the realities of selling capacity into an FRR plan, resources should also be expected to account for the opportunity cost of selling into the BRA, which would be expected to have a higher price than the FRR procurement if resources were to offer into the FRR procurement based only on conventional considerations.
- In a single-clearing price procurement (i.e., structured similarly to the BRA) a “rational” offer would be based on the higher of these *three* opportunity cost considerations.
- Creating circumstances where resources face incentives – as they may in an FRR procurement – to offer based on expected outcomes and not “true” costs threatens to create inefficiencies. This has long been the concern with “pay-as-bid” procurements.

	Offer Basis	Practical Observation
<b>Avoidable Going Forward Costs</b>		
<b>CP Opportunity Cost</b>		
<b>BRA Opportunity Cost</b>	A rational offer would consider the possibility of selling into the BRA, in which all demand would be represented and the price would be expected to be higher.	All else equal – and depending on the procurement rules – resources offering into the FRR plan will be expected to attempt to offer at the estimated BRA price, potentially plus an adder to account for uncertainty and additional administrative burden. Historically, forecasting RPM prices has been a fraught endeavor. CP risk pooling arrangements could also be a factor (discussed later in more detail).

FRR procurement design should attempt to reorient incentives so as to eliminate the need to for capacity resources to offer based on expected results.