UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Calpine Corporation, *et al.*	)	Docket Nos. EL16-49-000
	)	
v.	)	
	)	
PJM Interconnection, L.L.C.	)	
	)	
PJM Interconnection, L.L.C.	)	ER18-1314-000
	)	ER18-1314-001
	)	
PJM Interconnection, L.L.C.	)	EL18-178-000 (Consolidated)

REPLY BRIEF OF NRG POWER MARKETING LLC

Pursuant to the Commission's June 29, 2018 Order requesting briefing in the above referenced dockets (the "Order"),[1] NRG Power Marketing LLC ("NRG") respectfully submits its reply brief, as well as the reply affidavit of Robert Stoddard attached hereto ("Stoddard Affidavit").

I. INTRODUCTION

Thousands of pages of comments in this docket make clear that the Fixed Resource Requirement Alternative ("FRR-A") proposal would be destructive to the wholesale and retail competitive markets in the PJM footprint. Let's call FRR-A what it is: a proposal to re-regulate a substantial portion of the competitive wholesale market. Adopting FRR-A would signal a retreat from the competitive markets that the Commission has espoused since its landmark Order No. 888. Like all massive government interventions in the market, FRR-A would stifle the efficient allocation of private capital, shift costs and risks to consumers, and replace private, at-

[1] *Calpine Corp. v. PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,236 (2018) ("Capacity Order").

risk investment with ratepayer-backed investment. While proponents cannot even agree on many of the key details, the following negative outcomes are common elements of all the various flavors of FRR-A:

1. Wandering onto the slippery slope of removing customers from the competitive market for multiple years, depriving customers of the benefits of competitive forces that discipline prices and drive innovation;

2. Encouraging the exercise of monopsony buyer-side market power by making it profitable for state regulators to "subsidize" the most expensive units in the supply stack, with the goal of removing them from the price formation process;

3. Forcing retail customers to purchase their capacity from FRR-A subsidized units, instead of promoting free market competition between various retail choice providers and allowing customers to make their own informed choices;

4. Allowing utility affiliates to mandate contracts between captive customers and the subsidized generators at potentially excessive rates; and

5. Yielding, in the case of many of the FRR-A proposals the same economic outcomes as having no Minimum Offer Price Rule ("MOPR") at all, which the Commission has already rejected.

Given these insurmountable problems, the Commission should abandon its flirtation with carving load and generation out of the market. Leadership from the Commission on true market reform requires a principled and consistently applied approach, rooted in an understanding of the durable benefits that competition creates, as well as the strength to resist the transient gratification that accompanies handing out anti-competitive carveouts to various politically connected stakeholders.

The FRR-A will, at best, erode the benefits of competition to PJM consumers, and at worst, cause permanent harm. The best and proven approach, consistent with free market principles, is to institute a strong MOPR. Strong MOPR allows the Commission to address the problems it identified in the *Calpine* complaint before the upcoming Base Residual Auction ("BRA") in August and immediately restore the ability of these markets to function properly.

The threat to the competitive market is very real: PJM's scenario analysis shows that had 6,000 MW of capacity entered the 2021/22 BRA as price takers, capacity prices in RTO would have gone from $140.00 MW/Day to $92.08 MW/Day.[2] From NRG's perspective, a substantial price decrease threatens the viability of our coal-fired power plants (and the attendant loss of fuel security attributes and jobs).

Under many of the FRR alternatives it becomes "profitable" for state regulators to exercise buyer-side market power by putting certain high-cost generation resources (or even new entrants that should be setting price) into ratebase. As Mr. Stoddard notes, the capacity market price suppression caused by the FRR-A, including the PJM Resource Carve Out ("RCO") proposal, can more than offset the cost of the subsidies to the state's consumers, providing an incentive and ability to use subsidies to bludgeon the competitive market:[3]

> The bottom line is clear: when the PJM Tariff allows subsidies to distort PJM market price, states do not bear the costs of their policy choices. Because the states do not see the full cost of their policy choices, they have incentives to grant ever increasing rounds of subsidies to save preferred resources—preferred for their environmental attributes, local job creation, or acumen of their lobbyists—from the consequences of the resulting price suppression.

Any delay in implementing adequate market protections will cause irreversible harm to the market. To prevent this harm, the Commission must direct PJM to implement a protective market mechanism prior to the next BRA, scheduled for August 2019.

However, if the Commission insists on adopting an FRR-A type approach, then PJM's

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[2] The PJM Scenario Analysis is available at:

https://pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2021-2022/2021-2022-bra-scenario-analysis.ashx?la=en.

[3] Stoddard Affidavit at 28.

repricing approach, referred to by PJM as "Extended RCO," is the only credible path forward. While imperfect, Extended RCO, with these three modifications, could ensure that capacity market prices continue to reflect competitive market prices:

First, rather than excluding the subsidized resources from the second market run, those resources should be left in the second run with a unit-specific MOPR price floor. Excluding assets from the supply stack entirely "may overstate the true societal cost of securing adequate resources and, consequently, lead to higher prices than are just and reasonable."[4]

Second, all two-tier proposals inherently result in some over-supply of generation in the capacity market that requires an administrative mechanism that "bleeds off" the excess. PJM preemptively addresses this over-supply issue by simply denying some otherwise inframarginal units a capacity commitment. Rather than allowing subsidized generation to push economic resources from the market, NRG proposes to reduce the commitments of all inframarginal resources across the entire PJM market.

Third, PJM correctly recognizes that equity and fundamental fairness require compensating inframarginal resources forced out of the market in favor of subsidized units. However, PJM's proposal to pay these displaced resources a unit-specific opportunity cost leaves these resources no practical option but to retire if they do not clear in stage 1. Instead, NRG recommends that the difference between the stage 2 clearing price and stage 1 clearing price be paid to the megawatts forced from the market (either the pro-rationed megawatts pushed from the market under NRG's proposed pro-rationing approach or the megawatts of the in-between units pushed from the market under PJM's proposed approach).

[4] Initial Brief of NRG Power Marketing, LLC, Affidavit of Robert B. Stoddard on Behalf of NRG Power Marketing, LLC Docket No. EL18-178-000, *et al.*, at 55 (filed Oct. 2, 2018) ("Stoddard Initial Affidavit").

Longer term, NRG agrees that the Commission's jurisdictional markets must evolve to reflect changing customer preferences, which can be accommodated most efficiently through healthy, competitive wholesale and retail markets, but are often reflected in the actions of state legislatures as well. NRG is an advocate for the cooperative federalism enshrined in the Federal Power Act ("FPA"), which balances our state laboratories of democracy and the Commission's federal role in ensuring just and reasonable rates. In striking such a balance, discarding competitive markets in favor of carve-outs in large swaths of the wholesale and retail markets would be a fundamentally flawed approach. Instead, the Commission should direct stakeholders to seriously address the need to "achieve" state policy desires through the jurisdictional markets.[5]

II. ARGUMENT

A. A Strong MOPR is the Best Solution to Uphold Market Integrity.

1. A Strong MOPR Will Produce Capacity Prices that Reflect Competitive Market Outcomes.

Many commenters recognize that a strong MOPR, with few to no exemptions, remains the most economic approach to protect the market from price suppression. As one example, the Public Utilities Commission of Ohio ("PUCO") concludes that MOPR with few to no exemptions "will preserve Ohio's fully developed and functioning retail electric market."[6] The bulk of the commenters opposing a MOPR-only solution do not refute this fact, but argue that the Commission should avoid market rules that (i) over-procure generation and (ii) impose

[5] For example, PJM has already successfully incorporated limited demand response and other policy mechanisms into its capacity market, and has suggested that it can accommodate state-specific carbon pricing as well. There is no reason why PJM cannot adopt a similar, market-based approach to achieving other state-level preferences through the lowest-cost suite of resources.

[6] Argument Submitted on Behalf of the Public Utilities Commission of Ohio, Docket No. EL18-178-000, *et al.*, at p. 9 (filed Oct. 2, 2018) ("PUCO Initial Brief").

unnecessary costs to consumers.[7] Decisions to procure uneconomic generation or impose new costs on consumers that modify the outcomes of competitive markets are being made by state regulators. Rather than rely on federal preemption,[8] the Commission has elected to remedy the impact of these subsidies in wholesale market auctions. Inaction in the face of state actions that are inconsistent with the competitive wholesale markets is simply not an option.

As to double-payment, as discussed in NRG's initial comments, the courts have decided that the Commission is not required to avoid having customers paying twice for capacity as a result of state policy decisions.[9] Further, if a state so chooses to subsidize its generation, it is not a double-payment because the state is choosing to have its ratepayers pay for something the state values.[10]

Further, some commenters seem confused on the role of the wholesale market and the capacity market. The Joint Consumer Advocates suggest that "[t]he capacity market must respect states' authority."[11] Contrary to this assertion, the Commission has recognized the various goals of the capacity market:[12]

> A capacity market should facilitate robust competition for capacity

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[7] *See* Joint Brief of Consumer Advocates, NGOs, and Industry Stakeholders, Docket No. EL18-178-000, *et al.* at p. 4 (filed Oct. 1, 2018) ("Joint Brief"); Initial Brief of Exelon Corporation, Docket No. EL18-178-000, *et al.* at p. 8 ("Exelon Brief") (filed Oct. 2, 2018); Comments of Clean Energy and Consumer Advocates, Docket No. EL18-178-000, *et al.*, at p. 1 (filed Oct. 2, 2018) ("Comments of Clean Energy and Consumer Advocates"); Comments of the Institute for Policy Integrity at New York University School of Law, Docket No. EL18-178-000, *et al.* at pp. 12-13 (filed Oct. 2, 2018).

[8] Brief for the United States and the Federal Energy Regulatory Commission in Support of Defendants-Respondents and Affirmance, *Vill. of Old Mill Creek v. Star*, Nos. 17-2433 and 17-2445 (consolidated) (7th Cir. May 29, 2018).

[9] Initial Brief of NRG Power Marketing, LLC, Docket No. EL18-178-000, *et al.*, at p. 12 (filed Oct. 2, 2018) ("NRG Initial Brief").

[10] *Id.*

[11] Comments of Joint Consumer Advocates, Docket No. EL18-178-000, *et al.*, at p. 4 (filed Oct. 2, 2018) ("Joint Consumer Brief").

[12] ISO New England, Inc., 162 FERC ¶ 61,205 at P 21 (2018) ("CASPR Order").

> supply obligations, provide price signals that guide the orderly entry and exit of capacity resources, result in the selection of the least-cost set of resources that possess the attributes sought by the markets, provide price transparency, shift risk as appropriate from customers to private capital, and mitigate market power. Ultimately, the purpose of basing capacity market constructs on these principles is to produce a level of investor confidence that is sufficient to ensure resource adequacy at just and reasonable rates.

To approach market design in the fashion suggested by the Joint Consumer Advocates would undo the benefits PJM markets provide. Such an approach will not facilitate any of the aforementioned goals of the capacity market set forth by the Commission.

Parties that oppose a strong MOPR also argue that capacity prices will drastically increase and be unreasonably high.[13] After reviewing such arguments as put forth by the New Jersey Board of Public Utilities ("NJBPU") and the Organization of PJM States, Inc. ("OPSI"), Mr. Stoddard concludes that it is a "fundamental economic fallacy" to suggest "that restoring a market price to its competitive equilibrium could be unreasonable."[14] It is an "unsurprising observation" that pricing subsidized generation capacity the system is relying on for reliability at its actual costs and reflecting those costs in the auction may increase capacity prices to levels higher than if those subsidized resources were removed from the supply stack. However, as Mr. Stoddard puts it simply, "[i]t does not follow, however, that some quantity of resources should be allowed to offer below their full cost so that prices can be suppressed below their competitive levels."[15]

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[13] Initial Argument of the New Jersey Board of Public Utilities, Docket No. EL18-178-000, *et al.*, at pp. 6-11 (filed Oct. 2, 2018) ("NJBPU Brief"); Argument of the Organization of PJM States, Inc., Docket No. EL18-178-000, *et al.*, at pp. 6-10 (filed Oct. 2, 2018) ("OPSI Brief").

[14] Stoddard Affidavit at 7.

[15] *Id.* at 7.

2. A Strong MOPR Cannot Include Categorical Exemptions for Self-Supply.

While the proposal set forth in PJM's filing includes various exemptions to the proposed MOPR, only some of them are consistent with the Commission's directive to develop an expanded MOPR, with few or no exceptions to protect PJM's capacity market from the price suppressive effects of subsidized resources to prevent those resources from offering below competitive prices.[16] As Mr. Stoddard concludes, the *de minimis* exemptions for resources that are 20 MW or less or receiving a subsidy that is equal to 1% or less of its expected revenues "are unlikely to have a meaningful impact on market prices."[17] Thus, the aforementioned exemptions are within the Commission's directives.

However, PJM's proposed categorical exemption for self-supply resources including public power entities, single customer entities and vertically integrated utilities fall outside the Commission's directive. As Mr. Stoddard concludes, "allowing significant amounts of self-supply resources and integrated utility resources to participate in the RPM without review or mitigation is likely to result in significant price distortions."[18] Further, Mr. Stoddard points out that any self-supply exemption is made redundant by PJM's proposed RCO (either the base proposal or the Extended RCO), under which any self-supply resource can elect to receive full credit for its resource.[19] Thus, "there is no logical reason why they should be exempted" from the MOPR.[20] The only rationale to allow both a self-supply MOPR exemption plus a RCO/FRR-

[16] Capacity Order at P 158.

[17] Stoddard Affidavit at 4.

[18] *Id.* at 5.

[19] *Id.*

[20] *Id.*

A approach is to allow self-supply to move the clearing price which directly runs afoul of the Commission's directive to adopt a MOPR with few to no exemptions to prevent subsidized resources from offering below a competitive price.

While some parties argue that federal subsidies should not trigger MOPR, federal subsidies have the same ability to impact capacity prices as any other subsidy and should be subject to MOPR. NRG supports PJM's eloquent approach to achieve a middle ground. PJM proposes that federal subsidy programs enacted into law prior to March 21, 2016 (the effective date of the Calpine Complaint) should be exempted from PJM's proposed definition of Material Subsidy.

B. Despite the Proposals by Various Commenters, an FRR-A Approach will Result in Suppressed Capacity Prices and Remains Unjust and Unreasonable.

While commenters propose a wide assortment of FRR-A flavors, all (other than, possibly, PJM's Extended RCO, discussed separately below) suppress capacity prices. Few, if any of the FRR-A options even meet the minimal standard of protecting the capacity market from the exercise of monopsony power.[21] And none of the various proposals address the fundamental problems created by carving-resources out of the competitive market, including the harm to retail choice markets or promoting rampant affiliate abuse.

1. Matching Carved-Out Generation with Load.

Many of the most vexing problems with all of the various flavors of FRR-A proposals are around how to match subsidized generation with load. The Commission raised the question of how to match load with carved-out generation in the Capacity Order, and none of the comments have proposed a feasible solution. As an example, the Maryland Public Service Commission

[21] *See* NRG Initial Brief at p. 16.

concludes that "pinpointing the commensurate amount of load in each state associated with the specific resources providing the environmental attributes three years in advance of actual production is nearly impossible and renders the [FRR-A] unworkable."[22] The PUCO raises the practical concern that retail customers are expected to grow in the states and that there will not be a sufficient quantity of non-shopping load to match with carved-out subsidized generation.[23]

There are a vast number of suggestions from commenters as to the methodology that should be used for matching subsidized generation and load. Some subsidy-seeking generators suggest that the capacity resource itself should be responsible for identifying matching load.[24] Such an approach is akin to letting the fox guard the hen house. Even if the Commission should elect to require PJM to adopt a version of the FRR-A, there is no credible reason the resource should elect its own matched load. The PUCO summarizes the concerns surrounding resources selecting the load to be matched with, "[t]he PUCO believes that this is not a decision that can be made unilaterally by the owner of the resource due to the far-reaching impacts that such a decision will have on the retail electricity markets in our state."[25]

The quantity of load that should be matched to the carved-out subsidized generation is also an open question. The Comments of the Clean Energy and Consumer Advocates, together with the supporting affidavit from Mr. James Wilson, propose that the amount of load paired with the carved-out FRR-A resource be determined using the target Installed Reserve Margin. As discussed in NRG's Initial Brief, because the carved-out load is relying on the rest of the

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[22] Initial Comments of the Maryland Public Service Commission, Docket No. EL18-178-000, *et al.*, at p. 7 (filed Oct. 2, 2018) ("MPSC Brief").

[23] PUCO Initial Brief at p. 8.

[24] *See, e.g.*, Exelon Brief at p. 22 ("A resource electing the FRR-RS should also be required to identify . . . what corresponding load will be removed from the auction.").

[25] PUCO Initial Brief at p. 7.

system for reliability, the reserve margin for the carved-out load should be larger than the Realized Reserve Margin.[26] Using only the target Installed Reserve Margin would replicate the reliability outcomes in a market with a *vertical* demand curve, and Mr. Wilson's proposal is an attack on the benefits of a downward sloping demand curve. There is no need for the Commission to accept Mr. Wilson's invitation to re-litigate the Commission's longstanding (and economically-sound) support for sloped demand curves. In response to Mr. Wilson's proposal, Mr. Stoddard further explains that using the target Installed Reserve Margin not only results in inequitable cost-shifting, but "will create a positive incentive for loads to use the FRR-A ever more to avoid paying for the actual level of reserves from which they are benefiting."[27]

Even if the mathematics of matching load with carved-out generation are solved, a fundamental issue remains: how to match specific load with specific carved-out generation. Several parties suggest this task is easy, but in truth, no party has put forward a workable solution. For example, in the Joint Brief, the parties suggest that PJM "simply deduct the UCAP of the FRR-RS resource(s) from the capacity requirement for the applicable zone."[28] The Comments of Clean Energy and Consumer Advocates suggest that the answer is as easy as allowing the subsidized capacity to select the load with which it wishes to be paired.[29]

The reality is far more complicated. It is near-impossible to separate the impact on the customers within an LDA that are "carved-out" from competition, with the impact on customers that remain in the market. There is inevitably cross-subsidization between the carved-out

[26] NRG Initial Brief at pp. 20-22. The "Realized Reserve Margin" is the reserve margin for non-FRR regions resulting from PJM RPM commitments calculated by the market in a manner that maximizes consumer reliability.

[27] Stoddard Affidavit at 15.

[28] Joint Brief at p. 9.

[29] Comments of Clean Energy and Consumer Advocates at p. 9.

customers and those that remain competitive, depending on whether the market prices are above or below the level of the subsidy in any given year.[30] The problem becomes even more acute when an LDA crosses state lines. There, customers in the subsidizing state are directly affecting the price of capacity in the neighboring state, which frustrates the Commission's stated goal that the impact of state subsidy decisions should rest entirely on the consumers of that state.[31] The parties suggesting that there is a simple solution to carving-out load ignore these very real difficulties. These complexities simply highlight the need for the Commission to rely on existing market mechanism, such as a strong MOPR, to protect consumers.

2. The Question of Separate State-Sponsored Capacity Payments for Carved-Out Capacity.

The concept of FRR-A sketched out in the Commission Capacity Order did not specifically contemplate that carved-out subsidized resources would receive a separate capacity payment from outside the PJM market. Nonetheless, a host of parties suggest that a carved-out resource would receive not only the subsidy payments from customers, but a separate stream of "capacity" revenues from customers as well. As an example, First Energy Solutions suggests in the absence of a separate state capacity compensation mechanism for carved-out resources, the applicable alternative retail Load Serving Entity shall compensate the FRR entity at the PJM-determined capacity price.[32] Multiple parties likewise suggest that state regulators should have the option to utilize the PJM settlement system to funnel pseudo-capacity contract dollars to the

[30] NRG Initial Brief at pp. 19-20.

[31] As then-Commissioner Powelson noted in his concurrence, "[t]he tradeoff is that the states will bear the cost responsibility of their resource-specific decisions, which is consistent with the fundamental ratemaking principle of cost-causation."

[32] Initial Comments of FirstEnergy Solutions Corp, Docket No. EL18-178-000, *et al.*, at pp. 10-11 (filed Oct. 2, 2018).

carved-out resource. Specifically, these parties envision that states could opt to have PJM collect payments for FRR-A resources, according to the terms of a separate Commission-jurisdictional bilateral contract.[33]

First, pseudo-capacity "credits" to load in the amount of the RPM clearing price turns this whole proceeding into a sham, where opted-out resources continue receiving capacity payments under the table as a payment back to load, that in turn is paid to the subsidized resource via a non-bypassable surcharge equal to the credit. The Commission should not allow capacity payments to subsidized generation indirectly when it already prohibited PJM from doing so directly in the Capacity Order.[34] The Capacity Order was not ambiguous on this point, holding that it is "unjust and unreasonable, and unduly discriminatory or preferential, for a resource receiving out-of-market payments to benefit from its participation in the PJM capacity market, by not competing on a comparable basis with competitive resources."[35] Yet that is exactly what would happen if subsidized resources receive, even indirectly, a capacity payment.

Second, NRG requests that the Commission clarify that if carved-out resources do receive a shadow capacity payment from state regulators, the utilities or any other party, the payment is a FERC-jurisdictional payment, since it is explicitly for the sale of capacity. Otherwise, it will become impossible for the Commission to ensure that consumers are paying just and reasonable, and not unduly discriminatory or preferential rates.

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[33] Joint Brief at p. 10 ("[A] state could opt to have PJM collect payments to FRR-RS resources. . . ."); Exelon Brief at p. 23 ("For ease of administration, PJM should provide states the option of using PJM's existing billing and accounting mechanisms to collect FRR-RS costs from the matched load and disperse payment to FRR-RS resources."); NJBPU Brief at p. 26 ("[T]he mechanics of settlement for a state-determined rate could be addressed through PJM's existing settlement processes.").

[34] Indeed, this is a major concern with PJM's Extended RCO proposal, where PJM proposes to replace payments to subsidized resources with payments credited to load.

[35] Capacity Order at P 66.

Third, there is no language in the Capacity Order suggesting that carved-out resources would be due a separate non-PJM capacity payment. Such payment would be contrary to the Commission's rationale in the Capacity Order. In rejecting PJM's initial repricing proposal, the Commission expressed concern about increasing prices for load and paying the higher price as windfall to the same resources that caused the price suppression.[36] Attaching a separate bilateral payment to the FRR-A under a FERC jurisdictional contract seems to do just that – it will indirectly increase bills to load, since the customers will be footing both a pseudo-capacity price, as well as the underlying subsidy.

Finally, as discussed below, if the Commission allows additional bilateral contracts, it will create a host of retail and affiliate abuse concerns that must be protected against. As Mr. Stoddard notes, "[s]imply replacing capacity revenues, which are competitive and determined transparently, with opaque, non-competitive bilateral contracts leads to a plethora of negative implications, including: lack of transparency, affiliate abuse and negative impacts on retail choice."[37]

3. Many of the FRR-A Proposals Would Undermine Retail Competition.

Many of the FRR-A proposals necessarily undermine retail competition in states that have adopted retail choice because certain customers will be artificially forced out of the competitive market and forced to purchase capacity from subsidized generation. The remaining load would continue to benefit from free market competition. The Retail Energy Supply Association ("RESA") summarized the concern, "[r]emoving . . . load without customer consent is akin to 'slamming' these customers back to the incumbent utility and denying their ability to

[36] *Id.* at 67.

[37] NRG Initial Brief at pp. 27-31.

choose the electric product and supplier that best meets their individual needs."[38] All of the various FRR-A proposals necessarily involve circumscribing customer choice and replacing it with the administrative slamming described by RESA. The slammed customers appear to have little choice in the matter, as competitive choice is replaced by administrative directives.

Not only are customers deprived of the choice of who to purchase from in the market, but they also appear to have no control over the *price* at which they are required to transact, under all of the various FRR-A proposals. And the subsidy-takers seem determined to further abuse customers by suggesting that state-sponsored clean capacity procurements should be exempted from the Commission's affiliate transaction rules – even when the buyer and seller are under common control or affiliation.[39] Exelon, one of the worst offenders in this particular regard, argues for a "blanket authorization," stating that clean energy contracts present no affiliate abuse concerns because the transaction does not result from "the generator's exploitation of the utility's captive customer base to exercise market power," but from "a determination by a democratically accountable political body that the transaction is in the public interest and must occur."[40] According to Exelon, "[a]ny affiliate relationship between the buyer and seller is a happenstance irrelevant to the state directing the procurement, not the motivating reason for the sale, as is true in cases of affiliate abuse."[41]

Once captive customers are forced to pay for a particular good or service, they lose the disciplining effects of competition that underlie the Commission's grant of market-based rate

[38] Argument of the Retail Energy Supply Association, Docket No. EL18-178-000, *et al.*, at p. 8 (filed Oct. 2, 2018).

[39] Joint Brief at pp. 11-12.

[40] Exelon Brief at p. 26.

[41] *Id.*

authority and affiliate waivers. A deal between a utility and its affiliate, where the utility simply passes through costs to captive ratepayers, no matter how unreasonable, no matter what the guise, necessarily creates an uneven playing field. An above market contract between the two could still lead directly to the utility's profit without any requirement for the subsidized entity to return the excess to consumers. This is precisely the type of customer harm that the affiliate abuse rules are intended to prevent from happening. All of the concerns about the potential for affiliate abuse set forth in NRG's initial brief remain.[42] As Mr. Stoddard recognizes:[43]

> A bilateral contract for capacity, particularly between affiliates, may not be structured so as to be competitively neutral. If a generous state subsidy allows the generation affiliate to sell its capacity to its load-serving affiliate at a discount to market, then there are two economic issues: first, competing retailers are put at a cost disadvantage, thwarting the state's goals for competitive retail supply; and second, consumers paying the cost of the subsidy are not receiving the benefit of the capacity they are supporting.

If the Commission adopts an FRR-A structure, the Commission should, at a minimum, require that any Capacity Market Seller proposing to elect FRR-A treatment for a subsidized resource make a filing under section 205 of the FPA if and to the extent that costs of the capacity costs under the bilateral contracts will be recovered by an affiliated utility through a non-bypassable charge or assigned to specific default service or shopping customers.[44]

Finally, the Commission should categorically reject any shifting of the burden from the utility-proponent of the affiliate contract to consumers. It is black letter law that the affiliate bears the financial burden of making a section 205 filing, as well as the burden of proving that its proposed rate is just and reasonable and not unduly discriminatory or preferential. To do as

[42] NRG Initial Brief at pp. 28-31.

[43] Stoddard Affidavit at 13.

[44] NRG Initial Brief at p. 30.

Exelon suggests – bury these financial arrangements in Electronic Quarterly Reports, make consumers dig to find them, and then require complainants to bear the financial burden and burden of proof associated with a complaint under section 206 makes a mockery of the FPA's protections.

4. Many of the FRR-A Proposals Allow the Blatant Exercise of Buyer-Side Market Power.

Another fatal flaw in many of the FRR-A proposals is that they do not protect the market against the exercise of buyer-side market power. Unless the Commission seeks to start policing which subsidies are legitimate, and which are intended to suppress prices, then any credible FRR-A solution must prevent the exercise of buyer-side market power. For many years, the Commission has had a steely-eyed appreciation for the harm caused by state subsidies to select generators, and the destructive impact when buyers exercise market power to crush the market.[45] Mr. Stoddard's affidavit discusses how, for example, the State of Illinois might find it profitable to provide ZECs (or any other subsidy) to the marginal unit in the capacity market, thus removing the subsidy recipient from the price formation process.[46]

This potential harm is hardly theoretical. Exelon is already preparing to ask Illinois legislators for an additional round of ZEC subsidies for the remainder of its Illinois-based

[45] *See TC Ravenswood, LLC v. FERC*, 705 F.3d 474 at 476 (D.C. Cir. Jan. 22, 2013) (uneconomic entry "occurs when a large net buyer of capacity makes a capacity purchase or investment and then offers the capacity for sale at auction at reduced prices, thus lowering the market-clearing price"); *ISO New England, Inc. et al.*, 135 FERC 61,029 at P 170 (2011) ("the Commission has previously found that uneconomic entry can produce unjust and unreasonable prices by artificially depressing capacity prices, and therefore, the deterrence of uneconomic entry falls within the Commission's jurisdiction"); *New England Power Generators Ass'n v. FERC*, 757 F.3d 283 (D.C. Cir. 2014) ("Out-of-market resources—whether self-supplied, state-sponsored, or otherwise—directly impact the price at which the Forward Capacity Market auction clears.").

[46] Of course, an Extended RCO or other repricing scheme would make such a strategy unprofitable.

nuclear units and is highlighting the price suppression benefits of subsidizing the Exelon nuclear fleet. Mr. Stoddard's analysis explains why Exelon is advancing this argument:[47]

> The 10-year cost of this initial round of ZEC contracts is given as $3.58 billion. . . . if the presence of the subsidized Quad Cities lowered the Resource Clearing Price in the 2021-2022 BRA by merely $24.81/MW-day, **then the cost of Quad Cities's ZEC payments was entirely covered by the capacity cost savings to ComEd zone customers.**
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> Put a different way, the price suppression shifted the cost of Illinois' ZEC program from Illinois customers to competitive Illinois capacity suppliers (other than those receiving the subsidy). If the BRA price impact was greater than $24.81/MW-day, as seems likely, then the ZEC program not only subsidized Exelon's nuclear units but created a windfall savings for Illinois customers, entirely unrelated to the stated policy goal of carbon reduction.

Mr. Stoddard further explains that the economics of the FRR-A give Illinois "every incentive to double down" on the subsidies.[48] He finds that increasing the ZEC to encompass Exelon's 1,797 MW Dresden generating station (which did not clear in the 2021-2022 BRA) "would lower clearing prices by about $21/MW-day, with an annual $192 million annual savings in capacity payments—very close to the annual average cost of ZECs awarded to Quad Cities."[49] Of course, "[t]hese "savings" are not actually savings, in the sense of reduced societal costs, but rather a transfer of cash from competitive suppliers to Exelon."[50]

C. PJM's Repricing Proposal, with Modifications, Provides the Best of the FRR-A Alternatives.

If the Commission elects to go down the FRR-A road instead of the vastly preferable clean MOPR approach, NRG recommends that the Commission build off of PJM's Extended

[47] Stoddard Affidavit at 28.

[48] *Id.*

[49] *Id.*

[50] *Id.*

RCO proposal and reject other flavors of FRR-A. PJM's repricing approach largely counters the price suppressive impacts of an FRR-A or RCO-only approach as discussed in Sections II.B and II.D, and proceeds from the assumption that capacity prices need to reflect the marginal economics of the residual fleet of merchant resources. Otherwise, subsidized units will be allowed to crowd out other infra-marginal *merchant* resources or PJM will be forced to procure more capacity than dictated by the demand curve. Extended RCO also partially addresses the monopsony market power concerns discussed above, because the repricing component of Extended RCO would render such a strategy unprofitable.

Extended RCO, however, raises three primary questions that go to the heart of how the Commission wants PJM's capacity market to function:

1. If otherwise economic merchant units are crowded out by subsidized units in order to maintain the integrity of the PJM Variable Resource Requirement ("VRR") curve, how should PJM handle the overage?

2. Should the crowded-out merchant units receive a severance payment?

3. How should the level of that severance payment be determined?

Mr. Stoddard discussed revisions to three design flaws in PJM's proposal that should be remedied. *First*, to produce capacity prices that are not higher than the economically efficient level, Mr. Stoddard proposes letting RCO-elected units support price formation via their unit-specific MOPR floor price. PJM had proposed to eliminate these resources entirely from the price formation process, so this proposal will have a disciplining effect on prices. *Second*, Mr. Stoddard suggests that all inframarginal resources clearing in the second round of the auction be awarded a capacity commitment, but then to reduce each merchant generator's awarded capacity, on a prorata basis, until the excess is exhausted. *Third*, Mr. Stoddard recommends an innovative approach to determine the severance payment, which is based on PJM's proposal to pay in-

between resources an opportunity costs payment, but uses market principles to assign a single price to the value of the pro-rated megawatts.

1. The Repricing Approach Need Not Produce Capacity Prices Greater than the Economically Efficient Price Level.

First, Mr. Stoddard explains that PJM's election to exclude the subsidized resources electing the RCO from the second market run "is unsupportable and will result in prices that are higher – potentially much higher – than the economically efficient level."[51] While NRG is an existing generator participating in the capacity market, we nonetheless share the concern expressed by some other parties that PJM's proposed repricing may lead to prices that are not economically efficient.[52]

Mr. Stoddard recommends that PJM include all resources in the second stage auction run at their applicable MOPR price. Thus, rather than excluding the carved-out resources from the second stage auction run entirely, the subsidized resources electing the RCO should be left in the second run and the MOPR applied. Such approach will reflect the true economic value of the resources left in the market to provide reliability. As Mr. Stoddard states, "[t]o exclude those assets from the market may overstate the true societal cost of securing adequate resources and, consequently, lead to higher prices than are just and reasonable."[53]

The rationale underlying the use of MOPR in the second stage is that some subsidized resources electing RCO may be economic and do not need special treatment, because they could have potentially cleared the auction if the MOPR was applied in the second stage auction run.

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[51] Stoddard Affidavit at 33.

[52] *See, e.g.*, Brief of the Independent Market Monitor for PJM, Docket No. EL18-178-000, *et al.*, at pp. 24-26 (filed Oct. 2, 2018).

[53] Stoddard Initial Affidavit at 55.

Because a subsidized resource may have cleared the second stage auction run at its MOPR cost, if that resource was excluded from the supply stack, a higher priced merchant resource could theoretically take its place and set the clearing price, thereby increasing prices. Mr. Stoddard discusses a hypothetical situation where a constrained area, like New Jersey, which includes Locational Deliverability Areas ("LDAs") that have cleared at a premium to RTO, subsidizes all of its nuclear facilities. He concludes that under PJM's repricing approach "[r]emoving these entirely from the RPM could leave insufficient resources in the LDA to meet the locational capacity requirements, causing the capacity price to be set at the top of the VRR curve, signaling scarcity even when there is none."[54] If PJM applies the MOPR to subsidized units in the second stage of the auction, "[t]he resulting price will necessarily be lower than under PJM's proposed approach" and the assigned prices would reflect true costs, which are "necessarily less than infinity."[55] Thus, applying the MOPR to subsidized units in the second stage auction run would achieve a more economically efficient outcome.

2. The Repricing Approach Should Not Push Otherwise Economic Resources From the Market.

Second, NRG recommends a modification to the manner in which PJM treats the over-supply of generation that will result from the repricing proposal. Fundamentally, two-tier proposals result in some over-supply of generation in the capacity market. PJM's repricing preemptively addresses this over-supply issue by denying the otherwise economic merchant units a capacity commitment to allow for the subsidized units (known as "in-between" units). Rather than pushing these otherwise economic resources from the market, NRG proposes to reduce the commitments of all the resources clearing in the second stage (except for the subsidized

[54] Stoddard Affidavit at 33.

[55] *Id.* at 35.

resources) in proportion to the megawatts of the subsidized resources electing the RCO option. The megawatts would be cut across the entire PJM footprint as broadly as possible, "while respecting the need to maintain sufficient capacity commitments within import-constrained Locational Deliverability Areas . . .".[56] As Mr. Stoddard concludes "allocating all of the displacement to the resources with the highest offer prices . . . has a particular, and quite possibly misplaced, impact on those 'between' resources."[57]

Specifically, as further described by Mr. Stoddard, under this approach, the megawatts of all the resources clearing stage 2 will be reduced by the percentage of (i) the quantity of the uncleared RCO units divided by (ii) the total second stage cleared non-RCO quantity.[58] Resources will not have capacity supply obligations for the megawatts that were reduced to accommodate the subsidized resources.

As described by Mr. Stoddard rather than denying otherwise economic units from receiving a capacity obligation and causing a race to the bottom in bidding behavior, the proposed approach would allow individual market participants to decide their fate.[59] Units with pro-rationed megawatt deductions could use future incremental auctions to obtain capacity obligations for the megawatts that were reduced or they could decide to sell out of the obligations they received on the majority of their megawatts, thus enabling the resource to leave the market. Nonetheless, the approach puts the resource owner in the driver's seat and does not

[56] Stoddard Affidavit at 42. This approach differentiates itself from a CASPR-like framework as proration seeks to maintain otherwise inframarginal resources; relies on repeatable application of MOPR; and permits otherwise reliable resources to exit the market when price signals no longer support continued operation instead of relying on compensation to depart the market.

[57] Stoddard Affidavit at 41.

[58] *Id.* at 43.

[59] *Id.* at 44.

take the drastic step of pushing otherwise economic resources out of the market solely to accommodate those resources taking a handout.

3. Resources or Megawatts Pushed From the Market to Accommodate Subsidized Resources Should Receive Appropriate Compensation.

Third, under PJM's repricing proposal, PJM takes a step in the right direction in recognizing that otherwise economic units pushed from the market to accommodate the subsidized resources should be compensated. However, PJM's proposal does not go far enough. PJM's proposed payment of a lost opportunity cost in the form of the difference between the resource's offer price and the auction clearing price is the worst of all worlds: it leaves severed generators with no viable option to remain in service.

PJM is correct that compensation should be paid to any megawatts being pushed from the market to accommodate the subsidized resources. As Mr. Stoddard notes, such payments are analogous to the lost opportunity cost payments made by every RTO and ISO in its ancillary services markets to resources whose costs to generate are below the Locational Marginal Pricing but are dispatched down to provide reserves. In the reserves market, the lost opportunity cost ("LOC") of the "marginal reserve resource (*i.e.*, the one with the lowest incremental energy cost) sets the clearing price for *all resources* providing the same product."[60] Rather than following this model, however, PJM proposes to pay resources a unit-specific severance payment equal to the difference between the resource's offer price and the clearing price. PJM's calculation creates an insidious incentive for resources to offer *below* their true costs, in an attempt to increase their LOC payments should they be unlucky enough to be displaced by subsidized

[60] *Id.* at 37.

resources. Bid shaving of this kind, although economically rational from the point of view of each market participant, is fatal to the market over the longer term:[61]

> First, it is likely to change bidding behavior. Relatively high-cost resources, knowing that they are at risk of being a "between" resource, could rationally choose to under-bid their costs, hoping to clear and let some other resource take the fall. This strategy is rational in a multi-year auction, because by pushing a competing resource into retirement, the short-bidder in year 1 can bid full costs in subsequent years, after the market over-hang has been cleared.
>
> Second, if many resources take this strategic view, then the RPM will not select the most economically efficient resources from the competitive suppliers, but rather those who have bid most aggressively to stay in the market, rewarding deep-pocket firms instead of economic resources. This raises consumer costs in the long run because the supply resources are no longer least-cost.

Mr. Stoddard proposes to remedy this issue by using the same methodology used in PJM's reserve markets under which the difference between the locational stage 2 clearing price and the locational stage 1 clearing price should be paid to all resources or megawatts pushed out of the market.[62] This approach will utilize the revenues that would have otherwise been paid to the subsidized resources electing the RCO that will no longer receive a capacity payment and will more adequately compensate resources and/or megawatts being pushed from the market to accommodate them.

D. PJM's Proposed RCO Approach on its own is Not Just and Reasonable.

PJM's blanket assertions that RCO alone is just and reasonable are woefully unsupported. As Mr. Stoddard concludes RCO "as a standalone market reform [ ] is still fatally flawed."[63] PJM itself recognizes the price suppression that will be caused by a RCO alone approach, but

[61] *Id.* at 41.

[62] *Id.* at 42.

[63] Stoddard Affidavit at 21.

ultimately makes the curious decision that it is an acceptable amount of price suppression.[64] Even PJM's own expert economist, Dr. Chao, recognizes that, RCO is akin to having no MOPR at all,[65] which the Commission already found was not just and reasonable.[66]

> While I am not addressing whether the RCO, standing alone, will cause price suppression at a level that warrants corrective action, I do note that the economic effects of the RCO generally should be expected to be the same as those that would result from the subsidized resource submitting an offer at zero price. If a subsidized (state sponsored) resource is allowed to satisfy a fixed quantity of demand carved out of the capacity auction, it would have the same economic effects (price suppression and resource substitution) on the capacity market as a zero-price offer in the capacity market.

Dr. Chao's recognition that RCO alone will lead to price suppression and have the same effect as no MOPR is contrary to the language in the Capacity Order explicitly finding that a market structure that suppresses prices is not just and reasonable: "[t]hese subsidies allow resources to suppress capacity market clearing prices, rendering the rate unjust and unreasonable."[67] Requiring PJM to adopt a RCO-only approach thus runs afoul of the Commission's findings in the Capacity Order and is not a serious answer to the difficult question of how the Commission should accommodate state policies. As Mr. Stoddard concludes, under RCO "price formation in the competitive market will be distorted by state subsidies and procurements."[68] And Mr. Stoddard goes on to recognize that:[69]

> By allowing subsidies to distort capacity prices, states can shift some, all, or more than all of the costs of its subsidies to ratepayers

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[64] Initial Submission of PJM Interconnection, L.L.C., Docket No. EL18-178-000, *et al.*, at pp. at n. 9, pp. 10-11 (filed Oct. 2, 2018) ("PJM Initial Brief").

[65] PJM Initial Brief, Affidavit of Hung-Po Chao, Ph.D. on Behalf of PJM Interconnection, L.L.C., at P 9.

[66] Capacity Order at P 149.

[67] *Id.*

[68] Stoddard Affidavit at 22.

[69] *Id.* at 23.

> in other states or to competitive suppliers. Thus RCO goes beyond accommodating state policy resources—it actively encourages states to adopt ever more subsidies.

Nonetheless, RCO does address some of the questions raised by the FRR-A. Some salient features of PJM's RCO proposal:

- Requiring the RCO election to run throughout the life of the subsidy and placing requirements on the resource when it re-enters the market (as further discussed below).

- Leaving load in the BRA avoids the insurmountable issues surrounding carving out load from the market.[70]

- Issuing a capacity obligation to the carved-out subsidized resources and subjecting them to the corresponding capacity requirements, including performance penalties and bonuses, but not having those resources receive capacity payments through the auction provides the same financial incentives to subsidized and merchant resources.[71]

While some commenters suggest the term of the RCO (and the FRR-A) election should have no minimum period of time,[72] or that the RCO unit should have no conditions to come back to the market,[73] PJM recognizes the potential harm to the market that would occur. Under PJM's eloquent proposal, the RCO election will (i) run for the life of the subsidy and (ii) upon re-entry to the auction of a previously carved-out asset, the unit will be subject to a MOPR floor price set at the unit's Avoidable Cost Rate at time of the RCO election, plus the cost of investments throughout the election of the RCO, plus the subsidy cost. These twin features are essential to preventing resources from toggling between the higher of market or subsidy. Mr. Stoddard notes

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[70] NRG Initial Brief at p. 36.

[71] *Id.*

[72] Joint Brief at p. 11 ("The Joint Stakeholders do not believe that resources should be obligated to elect FRR-RS for any minimum period of time."); Comments of the Nuclear Energy Institute, Docket No. EL18-178-000, *et al.,* at p. 9 (filed Oct. 2, 2018) ("There Should be No Stay-Out Period For Capacity Resources Selecting The Resource-Specific FRR Alternative."). ; NEI page 9.

[73] Exelon Brief at p. 29.

that he discussed in his initial affidavit that allowing such toggling is "highly detrimental to the market."[74] Mr. Stoddard concludes that PJM's proposed approach is superior to a "cooling-off period" once the subsidy expires and explains that the approach is directly analogous to the current application of the MOPR to planned resources, under which the planned resource must first clear the auction at its full cost.[75]

While other parties suggest that participation in either a RCO or FRR-A carve out be subject to a cap,[76] RCO with a cap, is still not just and reasonable. Specifically, LS Power suggests that participation "be capped at no more than 50 percent of the price-sensitive portion of the VRR curve (which would have been equivalent to 3.9 percent of the Reliability Requirement or 6.0 GW in the 2021-2022 BRA)."[77] While the proposed cap would in theory limit the price suppression once the cap takes effect, the price suppression would continue so long as the amount of subsidized resources is under the cap. LS Power's own experts acknowledge that even with a more conservative lower cap than what is proposed, "the effect on the market could be significant."[78] Mr. Stoddard agrees that the resulting price suppression, even with a more conservative cap than proposed, "would be highly disruptive to competitive markets."[79]

Further, to even attempt to offer any protection to the market any cap would need to go into perpetuity and could not be increased in subsequent years. The ability to increase the cap would eliminate any alleged comfort market participants and investors gained by having a cap in

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[74] Stoddard Affidavit at 18.

[75] *Id.* at 19.

[76] Initial Brief of LS Power Associates, L.P., Docket No. EL18-178-000, *et al.,* at p. 23 (filed Oct. 2, 2018) ("LS Power Brief").

[77] *Id.*

[78] *Id.*, Affidavit of Kurt G. Strunk and Willis P. Geffert on Behalf of LS Power Associates at P 47.

[79] Stoddard Affidavit at 25.

place. Of course, this Commission cannot bind future Commissions, and thus the cap would substantially undermine confidence in the PJM market and do little to eliminate the price suppression that will occur under FRR-A or RCO approaches.

Finally, under PJM's proposed RCO, PJM suggests that sellers must self-certify whether they have an actionable subsidy 150 days prior to the auction.[80] Under PJM's proposal, sellers appear to have an ongoing obligation to provide updated information to PJM and the IMM upon their request, but there does not appear to be any affirmative obligation for the seller to report the existence of a subsidy within 150 days of the auction. If the Commission is inclined to consider the RCO approach, it must require PJM to place an affirmative obligation on sellers to report a subsidy within 10 days of receipt and the MOPR should apply to the resource if there is not sufficient time for the resource to select the RCO option. The PJM Consumer Representatives put it succinctly, "[s]ubsidized resources that qualify as PJM Capacity Resources should not be allowed to accept an actionable subsidy and then withhold capacity by not undertaking efforts to clear in the BRA."[81]

E. Other Proposed Approaches.

1. Modifications to the Energy and Ancillary Services Markets.

Rather than pursuing a carve out approach or another accommodation strategy to account for the participation of subsidized resources in the market, various market participants suggested making changes to the energy, capacity and ancillary services markets.[82] While NRG agrees that

[80] PJM Initial Brief at pp. 34-35.

[81] Comments of the PJM Consumer Representatives, Docket No. EL18-178-000, *et al.*, at p. 7 (filed Oct. 2, 2018).

[82] Comments of the FirstEnergy Utilities, Docket No. EL18-178-000, *et al.*, at pp. 2-7 (filed Oct. 2, 2018) (suggesting that the energy, ancillary and capacity markets should be reworked); Comments to Protect Electric Consumers From Paying Subsidies in PJM Markets by the Office of the Ohio Consumers' Counsel, Docket No. EL18-178-000, *et al.*, at p. 10 (filed Oct. 2, 2018) (stating that FRR-A should apply

in a more optimal market design, environmental attributes could be accounted for in the market, either through energy or ancillaries, the issue is timing. Because price suppression continues to occur in the capacity market so long as subsidized resources can bid their resources into the BRA at zero, there is an immediate need to revise the market to prevent the subsidized plants from continuously suppressing capacity prices. Price formation issues, including pricing carbon, are clearly key long-term goals, but this docket is not the place to address these issues.

2. The Maryland Public Service Commission's Proposed Carve Out.

In another approach, in recognizing the importance of competition, the Maryland Public Service Commission proposes a carve out under which a certain amount of load associated with the implementation of state policies is carved out of the existing capacity market, but proposes a separate competitive carve-out auction to meet the capacity needs associated with those mandates. While NRG supports efforts to develop a means of fostering competition between the subsidized resources, the proposal does not address the fundamental price suppression issue created by carving subsidized resources from the market.[83] As Mr. Stoddard concludes, the Maryland Public Service Commission proposal "by design, does not address the core economic issues raised by the FRR Alternative: that the subsidized entry would effectively be treated as zero-cost supply in the competitive auction, lowering capacity prices paid to competitive resources."[84]

to capacity, energy and ancillary services); Comments of the Illinois Commerce Commission, Docket No. EL18-178-000, *et al.,* at pp. 7-11 (filed Oct. 2, 2018) (arguing that price formation in energy and ancillary markets should be fixed).

[83] Stoddard Affidavit at 14.

[84] *Id.*

3. The Clean Energy and Consumer Advocates Proposal.

The Comments of the Clean Energy and Consumer Advocates, together with the supporting affidavit from Mr. James Wilson propose two tweaks to the FRR-A (that the amount of load paired with generation be determined based on the Installed Reserve Margin and that carved-out resources have no minimum time period in which they have to remain out of the PJM capacity auction). The multiple concerns surrounding those two concepts are discussed and dismissed above.[85]

Curiously, Mr. Wilson goes on to argue that an expanded MOPR with an FRR-A type approach, "can be expected to continue to send accurate price signals, and to continue to attract and retain sufficient resources to meet resource adequacy objectives."[86] Mr. Wilson reasons that the PJM capacity market is dynamic and "[i]n the real world, market participants are continuously monitoring changes to market demand, market supply, and market rules, and updating their expectations of future capacity prices. Their plans to bring forth new resources, or to retire existing resources, will reflect updated expectations of prices and the need for such resources . . ."[87] As Mr. Stoddard concludes, Mr. Wilson offers no mechanism to offset the price suppressive effects of an FRR-A type proposal, only a description of this supposed dynamic equilibrium. And in that description he fails to consider both "the increased risk to merchant entry created when wholesale prices can be suppressed without check by action of individual

[85] *See supra* Sections II.B.1 and II.D.

[86] Comments of Clean Energy and Consumer Advocates, James F. Wilson Affidavit at 37 ("Wilson Affidavit").

[87] Wilson Affidavit at 40.

states" and "the incentive for states to expand procurements, possibly for the explicit goal of suppressing prices."[88]

V. CONCLUSION

NRG respectfully requests that the Commission consider the long-term proposal set forth herein and require PJM to implement a MOPR with no exemptions in time for the 2019 BRA.

November 6, 2018

Respectfully submitted,

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[88] Stoddard Affidavit at 20.

Certificate Of Service

I hereby certify that I have served a copy of the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Princeton, New Jersey this 6th day of November, 2018.

/s/ *Maria DeLuca*

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Calpine Corporation, *et al.*	
v.	
PJM Interconnection, L.L.C.	Docket Nos. EL16-49-000
PJM Interconnection, L.L.C.	ER18-1314-000 ER18-1314-001
PJM Interconnection, L.L.C.	EL18-178-000 (Consolidated)

REPLY AFFIDAVIT OF ROBERT B. STODDARD ON BEHALF OFF NRG POWER MARKETING LLC

I, Robert B. Stoddard, being duly sworn, depose and say:

I. QUALIFICATIONS

1. My name is Robert B. Stoddard. I am an economist and principal of Power Market Economics LLC at 28 Monument Square, Portland, Maine 04101. My qualifications are included in my affidavit filed with the Initial Comments of NRG Power Marketing LLC ("NRG").

II. PURPOSE AND SUMMARY

2. I have been asked by NRG to review and respond to the first round of filings in this docket. In this affidavit I address four themes in these filings and reach, in summary, the following conclusions:

    - Will a strong MOPR with limited exceptions lead to unreasonable prices?

    No, because a strong MOPR restores prices to their competitive levels. Evidence offered that existing subsidies result in much lower prices underscores the unreasonable price suppression these subsidies have already caused.

- Can various tweaks to the FRR Alternative produce just and reasonable results?

No. There is near unanimity among the experts who filed testimony about the FRR Alternative, including myself, concluding that the FRR Alternative would result in substantial price suppression and resulting failures of the competitive market.[1] No tweak proposed in the initial comments saves the FRR Alternative from its intrinsic flaws.

- Does PJM's RCO proposal alone result in a just and reasonable market?

No. Without the additional elements of the Extended RCO, the RCO is functionally similar to the FRR Alternative and shares its core economic flaws.

- Is PJM's Extended RCO proposal a sound basis for an accommodative market design?

Sound market design ensures that prices reflect true costs, and no accommodative approach can fully achieve this goal. Recognizing that there is a need to develop a workable accommodation promptly, however, PJM's Extended RCO is the best framework offered. I support three changes to better harness market forces:

- Include all supply offers in the second stage, including RCO resources at their individual MOPR-floor offer prices;
- Use a market price for the "exit payment" made to cost-effective MWs displaced by RCO resources; and
- Rather than pushing in-between resources out of the market entirely, pro-ration the capacity commitment to all non-RCO resources to allow the market to determine whether and which resources will exit.

3. The remainder of my affidavit is arranged in four sections, addressing each of these themes in turn.

[1] See, *e.g.*, Affidavit of Robert B. Stoddard on behalf of NRG Power Marketing LLC ("Initial Affidavit") at 18-30;Affidavit of Hung-Po Chao, Ph.D., on behalf of PJM Interconnection, L.L.C ("Chao Affidavit") at 8--11; Affidavit of Paul M. Sotkiewicz, Ph.D. on behalf of the Electric Power Supply Association at 13-26; Affidavit of Christopher J. Russo on behalf of Vistra Energy Corp. and Dynegy Marketing and Trade, LLC at pp.9-12; Brief of the Independent Market Monitor for PJM ("IMM Brief") at pp.6-8.

III. PRICES UNDER AN EXPANDED MOPR ARE CONSISTENT WITH COMPETITIVE, UNSUBSIDIZED OUTCOMES

4. The expanded MOPR proposed by PJM ("Expanded MOPR") is generally consistent with the Commission's directive to implement an "expanded MOPR, with few or no exceptions, [to] protect PJM's capacity market from the price suppressive effects of resources receiving out-of-market support by ensuring that such resources are not able to offer below a competitive price."[2] PJM proposes certain *de minimis* exemptions for resources that are either small (20 MW or less) or receiving an unimportant amount of subsidy (1 percent or less of expected revenues). These *de minimis* exemptions reduce the administrative burden on PJM, the Market Monitor and suppliers. I support these exemptions because resources under these thresholds, individually or collectively, are unlikely to have a meaningful impact on market prices.

5. PJM deviates from the "few exceptions" directive by proposing a blanket exemption for self-supply and vertically integrated utilities, exemptions that could encompass tens of gigawatts of capacity.[3] I concur with the objections raised by Exelon to this proposed exemption.[4] As Exelon notes, there is no basis to believe that these cost-of-service resources will be offered at their competitive costs. Consequently, allowing significant amounts of self-supply and integrated utility resources to participate in the RPM without review or mitigation is likely to result in significant price distortions. This risk is evidenced by the historical price impact of FRR resources documented in the Affidavit of Dr. Paul M. Sotkiewicz.[5] Moreover, this exemption is not needed in PJM's proposed market design. PJM has not proposed its Expanded MOPR in isolation, but rather in combination with a Resource Carve-Out ("RCO"). A self-supply exemption is made redundant by the RCO, because any utility can use the RCO to claim credit for its offered resources. Given this mechanism to get full credit for their self-supplied resources, there is no logical reason why they should be exempted from the Expanded MOPR and consequently allowed to affect the capacity clearing prices paid in the competitive side of PJM's capacity market.

6. Some intervenors argue that the prices resulting from the Expanded MOPR will be unreasonably high. The Initial Argument of the New Jersey Board of Public Utilities ("NJBPU") compares the price suppression that the Commission found unreasonable in

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[2] *Calpine Corp. v. PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,236 (2018) ("June 29 Order") at 158.

[3] Initial Submission of PJM Interconnections, L.L.C. ("PJM Brief") at pp. 32-34.

[4] Initial Brief of Exelon Corporation at pp. 18–20.

[5] Filed with Initial Brief of the Electric Power Supply Association.

the Calpine Complaint to an alleged price increase that would occur under PJM's proposed Expanded MOPR and, thus, attempts to lead the Commission to conclude that the resulting price would be unreasonably high.[6] Similarly, the Argument of the Organization of PJM States ("OPSI") asserts that the Expanded MOPR should be delayed for some indefinite, "sufficient time and opportunity" for states to pass new laws and develop new regulatory provisions to utilize the FRR Alternative.[7] OPSI argues that "a MOPR without accommodation ... would dramatically disrupt competition in the market and, by distorting RPM prices, create unjust and unreasonable rates."[8]

7. Such arguments proceed from a fundamental economic fallacy: that restoring a market price to its competitive equilibrium could be unreasonable. The NJBPU argument seems to boil down to an unsurprising observation: that removing a large quantity of zero-priced resources from the offer stack has a larger impact than adding that same quantity into that bid stack—a result that follows logically from the upward curvature of the supply curve. It does not follow, however, that some quantity of resources should be allowed to offer below their full cost so that prices can continue to be suppressed below their competitive levels. Nor is it logical to compare, as OPSI does, suppressed rates arising under a tariff that the Commission has already found to be not just and reasonable to market rates that would arise from assuring that all offers reflect the underlying costs of service.

8. OPSI offers as evidence that current rate levels are not unreasonably suppressed the fact that PJM has seen substantial new entry in recent years. OPSI cites a report by The Brattle Group and Sargent & Lundy that determines that the administrative estimate of Net CONE used to establish the Variable Resource Requirements is too high. This is unsurprising, as PJM conducts a new Net CONE study every four years – the restudy necessarily determines that the CONE rate is either "too high" or "too low" and adjusts it accordingly. This is not evidence of market dysfunction or anything other than the fact that costs and revenues change over time. The logical corrective measure is for PJM and its stakeholders to consider a change to Net CONE, not—as OPSI appears to suggest—to tolerate continued price suppression caused by subsidized resources.

[6] NJBPU at pp. 5–7.

[7] OPSI at p.6.

[8] OPSI at p.9.

IV. PROPOSED TWEAKS TO THE FRR ALTERNATIVE DO NOT FIX ITS FUNDAMENTAL FLAW

9. It is noteworthy that even PJM's expert economist finds that allowing subsidized resources to opt out of the RPM is equivalent to allowing subsidized resources to offer at zero prices.[9] This impact is the same as providing an unlimited MOPR exemption to all subsidized resources, exactly the opposite of the "few or no exceptions" MOPR envisioned by the Commission's Order. As I and others detailed, the FRR Alternative does not insulate the competitive markets from the effects of subsidized resources. Quite the opposite, it would provide a clear field for states to subsidize resources for any reason whatsoever—including the intentional distortion of competitive market prices.

10. Various intervenors have offered various refinements to the FRR Alternative. Indeed, most intervenors do not even agree what the FRR Alternative entails. None of the designs, however, fix the fundamental problem that removing equal quantities of load and non-economic generation suppresses prices and results in the same pricing outcomes as no MOPR.

11. The Initial Brief of Exelon Corporation ("Exelon") makes two recommendations that could lead to highly inequitable results. First, Exelon proposes that the *resource* electing FRR-A status would "identify ... what corresponding load will be removed from the auction."[10] Second, Exelon proposes that the Commission should provide advanced authorization for affiliate transactions arising from a state-directed procurement.[11] Both proposals raise serious issues of equity and competition.

12. On the question of whether a RCO resource should designate load itself, I largely concur with the numerous issues raised on this point in the Maryland Public Service Commission's Initial Comments. Cross-state subsidy programs, such as RECs, present a clear example of the issue: while costs are spread broadly across consumers in many states, a resource might tag loads in one state only, perhaps where it has a bilateral contract, or perhaps with an affiliated distribution company. As I discussed in my initial affidavit, equity requires that loads bearing the cost of opt-out capacity receive the credit. But a bilateral contract with a subsidized resource may be at rates well below market prices, if the resource's subsidy rate exceeds the gap between its costs and the costs of competitive, economic supply. In this case, part of the capacity charge is included in the subsidy—paid broadly—and part in the bilateral contract. Sorting out exactly who gets

[9] Chao Affidavit at 9.

[10] Exelon at p.22.

[11] Exelon at p.25.

the corresponding credit is challenging. The choice is not competitively neutral, either: competitive retail suppliers whose customers pay subsidies but do not receive credits are placed at a disadvantage to other suppliers who do receive those credits.

13. Moreover, to Exelon's second proposal, a bilateral contract for capacity, particularly between affiliates, cannot be structured so as to be competitively neutral. If a generous state subsidy allows the generation affiliate to sell its capacity to its load-serving affiliate at a discount to market, then there are two economic issues: first, competing retailers are put at a cost disadvantage, thwarting the state's goals for competitive retail supply; and second, consumers paying the cost of the subsidy are not receiving the benefit of the capacity they are supporting. Given that there is a high potential for gaining a competitive advantage through such bilateral contracts, it is essential that the Commission retain full review of such bilateral capacity sales between affiliates to ensure a level playing field for retail competition.

14. The Initial Comments of the Maryland Public Service Commission ("the MDPSC") rightly points out the difficulties in many of the FRR Alternative proposals and the harm that occurs to competitive resources. To promote competition between "opted out" resources, the MDPSC proposes a bifurcated market with two separate auctions, one for competitive suppliers and one for resources matching state policy preferences.[12] The MDPSC's proposal, by design, does not address the core economic issues raised by the FRR Alternative: that the subsidized entry would effectively be treated as zero-cost supply in the competitive auction, lowering capacity prices paid to competitive resources. However, as a means of establishing a transparent price and promoting competition between "opted out" resources, the MDPSC proposal may have more merit, particularly if it could be structured as a market that sets an attribute price competitively but allows the capacity value of the resource to be determined by the RPM—much as the Regional Greenhouse Gas Initiative does. I have been working actively on such a design, the Dynamic Clean Energy Market, with several New England states, and I discussed a sketch for such a market at a Commission technical conference last year.[13] But there are many details that would have to be worked out, including harmonization of states' laws and regulations with the new market design, and based on my recent experience in New England, these efforts would take several years to be implemented. A market structure to

[12] MDPSC at pp. 9-11.

[13] *State Policies and Wholesale Markets Operated by ISO New England Inc., New York Independent System Operator, Inc., And PJM Interconnection, L.L.C.*, FERC Docket No. AD17-11-000. Prefiled comments "RTO Markets Must Change to Accommodate State Policies", April 2017, and invited remarks at FERC Technical Conference, May 2017.

help states achieve policy goals competitively and economically could be worth discussing as a means of fostering increased competition between subsidized resources in connection with an Extended RCO proposal, but it does not address the current issue—namely, where subsidies operating outside of a competitive market framework impact the wholesale markets—nor would it address future subsidies programs if a state opted not to use the new competitive procurement process.

15. The Comments of the Clean Energy and Consumer Advocates, together with the supporting affidavit from Mr. James Wilson, discusses other tweaks to the FRR Alternative. Mr. Wilson's espoused first principle of the design is to meet resource adequacy objectives, when accounting for the resources and loads participating through the FRR-RS."[14] I agree. But the design he then advocates for in the FRR Alternative completely ignores this principle, and instead fails to develop competitive pricing for the competitive resources cleared in the RPM, finding "fatal flaws" in the PJM proposal for repricing while offering no alternative other than to allow FRR-A to suppress capacity prices indefinitely.

16. I have several specific issues with Mr. Wilson's proposal.

17. First, Mr. Wilson proposes that the amount of load paired with a FRR-A resource be determined using the *target* Installed Reserve Margin. As I discussed in my initial affidavit, this allocation then forces all remaining load (*i.e.* load paying for capacity through the RPM) to pay for all the capacity procured in the RPM *above* this target IRM. Today, when the RPM clears more capacity than the IRM, those costs are allocated to all RPM load—who also enjoy a higher degree of reliability and lower energy prices from having surplus supply resources available.[15] For example, suppose the target IRM is 15.8%, but the cleared quantity resulted in a 17.8% margin. The extra 2 percentage points of supply is paid for by all consumers. Now suppose that 11,580 MW of generation opts for the FRR Alternative or RCO. Under Mr. Wilson's proposal, 10,000 MW of load would be matched to those resources. Without FRR-A/RCO, however, those customers would have been allocated the costs of 11,780 MW of supply. With their exit, 200 MW of supply costs now shifts from those customers to the remaining customers—effectively raising the capacity costs for all loads served by competitive supply. Not only is this cost-shifting inequitable, but from a dynamic perspective will create a positive incentive for loads to

[14] Affidavit of James F. Wilson in Support of the Comments of the FRR-RS Supporters ("Wilson Affidavit") at 19.

[15] FRR loads are not included in this allocation, even though they too benefit from the higher reserve margin. I believe that this design is in error, an error that should not be expanded.

use the FRR-A ever more to avoid paying for the actual level of reserves from which they are benefiting.[16]

18. Second, Mr. Wilson proposes that resources have no minimum stay period in the FRR-A. This approach allows resources to choose the higher of cost (recovered through subsidies and contracts) or market. For example, a vertically integrated utility with full recovery through rates for its generation costs could choose to use FRR-A in years when capacity prices are below its internal capacity costs, relying on ratepayer recovery for its uneconomic resources, but then place them back in the market if it anticipates the clearing price will exceed its internal costs. As another example, a state seeking to suppress capacity and energy prices could offer a one-time, upfront subsidy to bring new generation into the market. In the first year, the resulting generators could opt for FRR-A and secure a capacity commitment. Thereafter, because they are no longer receiving any subsidy, they could return as a nominally competitive resource, thus achieving the price-suppressive goal, albeit with a short delay. As I discussed in my initial affidavit, allowing such "toggling" between market and cost is highly detrimental to the market.

19. PJM's thoughtful restrictions on shifting from opt-out to market address these issues well.[17] I had initially argued for a cooling-off period, but PJM proposes a superior approach. PJM would allow any resource that is no longer a Capacity Resource with Actionable Subsidy to return to the competitive side of the RPM as soon as the Actionable Subsidy ends, but PJM would place a MOPR Floor Offer Price equal to the Avoidable Cost Rate at the time of the RCO election, plus the highest amortized project investment that may have occurred in the intervening years. This proposed rule is directly analogous to the current application of the MOPR. Under current market rules, the Avoidable Cost Rate for a planned resource includes all of the construction and financing costs of that resource. If the resource does not clear but elects to begin construction anyway, its Avoidable Cost Rate does not decline. The tariff requires that a planned resource clear once at its full cost-to-construct before resetting the Avoidable Cost Rate to the lower costs incurred by existing resources. PJM's proposed treatment of resources returning from RCO is exactly parallel: the resource must first clear at its full cost. This rule would eliminate the potential for states to "stuff" the market with one-

[16] Mr. Wilson appears to contemplate that the VRR curves for the non-FRR-A loads would be redrawn and the RPM conducted on a residual market. As PJM explains in its introduction the its RCO concept, pulling load and resources out of the RPM cannot assure locational reliability. Moreover, as Mr. Wilson acknowledges at PP 34–36, redrawing VRR curves can lead to competition issues in zones.

[17] PJM Brief at pp.48, 55–56.

shot subsidies to selected units, or to fund substantial retrofits to aging power plants and then turning them back over to the market.

20. Finally, Mr. Wilson offers no mechanism to offset the price suppressive effect of his proposal. Instead he offers a description of a supposed "dynamic equilibrium." Mr. Wilson's assessment, however, fails to consider several key issues. He fails to consider the increased risk to merchant entry created when wholesale prices can be suppressed without check by action of individual states. He also fails to consider the incentive for states to expand procurements, possibly for the explicit goal of suppressing prices. When these additional factors are included into Mr. Wilson's though experiment, it is hard to see how the "anything goes" approach he advocates can ever support unsubsidized entry in PJM.

V. PJM'S STAND ALONE RESOURCE CARVE OUT PROPOSAL IS FATALLY FLAWED

21. In my initial affidavit I opined that "although the [RCO] encompasses several improvements in implementation of the FRR Alternative concept, as a standalone market reform it is still fatally flawed. State action will be left unchecked to influence capacity prices, crowding out efficient existing resources and private investment in new, efficient market-based resources, just as the FRR Alternative would."[18] My opinion was based on PJM stakeholder discussions, of course, not PJM's actual filing.

22. PJM's filing addresses several concerns I had—such as MOPR requirements for RCO resources returning to the market and the equitable allocation of reserve margin costs to all customers—the core PJM proposal of the RCO—still suffers the same core flaw as the FRR Alternative: price formation in the competitive market will be distorted by state subsidies and procurements. As Dr. Hung-Po Chao, PJM's Senior Director, Economics, states in his testimony:

> the economic effects of the RCO generally should be expected to be the same as those that would result from the subsidized resource submitting an offer at zero price. If a subsidized (state-sponsored) resource is allowed to satisfy a fixed quantity of demand carved out of the capacity auction, it would have the same economic effects (price suppression and resource substitution) on the capacity market as a zero-price offer in the capacity market.[19]

[18] *Ibid*. at 47.

[19] Chao Affidavit at 9.

23. By allowing subsidies to distort capacity prices, states can shift some, all, or more than all of the costs of its subsidies to ratepayers in other states or to competitive suppliers. Thus, RCO goes beyond accommodating state policy resources—it actively encourages states to adopt ever more subsidies.

24. This potential is particularly pernicious because a state can adopt a generator subsidy program for any reason. The RPM rules cannot distinguish between "good policy" subsidies and "price suppression" policies. The current MOPR design intended a rough sort by limiting its application to the most obvious price suppression policy (at the time): subsidies to new gas-fired generators. Simply accommodating any and all state policies without some form of repricing, as PJM proposes in its MOPR/RCO base proposal, is an open invitation to states to identify capacity resources that are most likely to set the clearing price and take them out of the market through subsidies. For example, Illinois' ZEC program has the practical effect of taking "economically challenged" nuclear plants in Illinois out 0f the market, plants that might set the clearing price in the BRA or fail to clear altogether. According to Exelon, "across all of PJM, 10,643 megawatts of nuclear capacity did not clear in the [2021/2022 BRA] auction, compared with 3,243 megawatts that failed to clear last year."[20] Exelon explicitly stated that its nuclear plants in Illinois, including its 1,819 MW Quad Cities station, fared well "as a result of Illinois legislation that fairly compensates certain nuclear plants for their environmental attributes."[21] The cost of these subsidies will be paid in part or in full not by the states' consumers but rather by competitive wholesale suppliers (who receive a suppressed capacity price). News accounts already anticipate a "potential [Illinois] state response, including seizing responsibility for capacity .... If that happens, look for Exelon to bolster other of its Illinois nukes that are ailing financially."[22] The appetite for layering on yet more subsidies to uneconomic generation is fueled by the ability of states to fund these subsidies, in whole or in part, by using PJM's markets to transfer money from competitive suppliers, as I discuss in more detail below.

25. One purported solution to this issue is offered in the Initial Brief of LS Power Associates, L.P. ("LS Power"). LS Power and its experts, Mr. Strunk and Mr. Geffert, concur that the FRR Alternative (and by extension, the RCO) "suffers from fundamental flaws and will

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[20] Exelon Corporation, "Exelon Announces Outcome of 2021-2022 PJM Capacity Auction", May 24, 2018 available at http://www.exeloncorp.com/newsroom/exelon-announces-outcome-of-2021-2022-pjm-capacity-auction

[21] *Ibid*.

[22] Crain's, "Get ready to rumble again over nukes and coal, Illinois" (October 26, 2018) available at https://www.chicagobusiness.com/utilities/get-ready-rumble-again-over-nukes-and-coal-illinois .

not address the price suppression that has jeopardized the 'integrity and effectiveness' of the RPM market over the last few years."[23] LS Power offers two amendments, however, "to the extent the Commission remains committed to such an approach." The second amendment, to apply the *same* installed reserve margin for both RCO load and RPM load, I agree with strongly and is the subject of P 17 above. LS Power's first proposed amendment, however, I do not support. LS Power proposes a cap of 6 GW on RCO resources, which is "50 percent of the price-sensitive portion of the VRR curve ...."[24] LS Power's experts acknowledge that an even more conservative cap of 5.2 GW (44 percent of the price-sensitive portion of the VRR curve) yields poor market outcomes: "Even with this lower cap, the effect on the market could be significant, potentially leading to capacity prices of about 33 percent of Net CONE."[25] Notwithstanding this impact, they justify this cap as "appropriate" by reference to historical capacity prices, noting that the RPM has "generally clear[ed] below 50 percent of Net CONE."[26] But as PJM's updated administrative estimate of Net CONE shows, the revenue requirement of competitive new generation has decreased since the last Net CONE reset proceeding. Were the VRR curves restated using this lower estimate, then the impact on the market of allowing prices to be suppressed to 33 percent of this new, lower Net CONE would be highly disruptive to competitive markets. The resulting price suppression undermines the RPM's ability to attract and retain competitive resources and would likely result in further rounds of state subsidies.

26. Further, this principle highlights the dangers associated with any arbitrary cap. Market conditions change with time, and any cap that creates an "acceptable" level of price suppression (to the extent that such a level ever exists) in one set of market conditions is highly likely to create "unacceptable" levels of price suppression under different market conditions. Thus, I strongly recommend that the Commission steer clear of arbitrary caps, or else risk an endless cycle of litigation as the market struggles to accommodate the administrative interference of a cap.

27. Repricing is the only market mechanism that prevents a destructive cycle of subsidies, which beget more subsidies to facilities made uneconomic by earlier subsidies. To ensure that subsidies do not distort the efficient, competitive prices that would have arisen but for the subsidies, some corrective mechanism, such as the Extended RCO, must be added

[23] LS Power at p.22, quoting the June 29 Order at P 1.

[24] LS Power at p.23

[25] Affidavit of Kurt G. Strunk and Willis P. Geffert on Behalf of LS Power Associates, L.P., at 47.

[26] *Ibid* at 46.

to the tariff. Otherwise, the resulting market design creates an open path for states to subsidize ever increasing amounts of resources with marginal economics, take them out of the price formation process, and enjoy lower capacity prices paid to all other resources. This design is effectively a form of price discrimination, rather than a competitive market.

28. For example, returning to Illinois, although about 8,700 MW of Exelon's PJM nuclear capacity cleared the last BRA, its 1,797 MW Dresden station did not, as well as a small portion of its Byron station.[27] The BRA set a Resource Clearing Price of $195.55/MW-day in ComEd, a $55,50/MW-day premium over the Rest of RTO price of $140.05/MW-day.[28] This premium adds $1.3 million *per day*, or $476 million per year, of capacity charges to ComEd load.[29] These facts lead me to two parallel observations:

    - First, but for the existing ZEC program supporting 1,819 MWs of nuclear resources that would otherwise not have cleared, this premium would have been much higher. The 10-year cost of this initial round of ZEC contracts is given as $3.58 billion.[30] The capacity in PJM (Quad Cities) represents 63% of the contract, so its average annual ZEC value is $226 million – less than half of the remaining capacity cost premium. To put this in perspective, if the presence of the subsidized Quad Cities lowered the Resource Clearing Price in the 2021-2022 BRA by merely $24.81/MW-day, then the cost of Quad Cities's ZEC payments was entirely covered by the capacity cost savings to ComEd zone customers. Put a different way, the price suppression shifted the cost of Illinois' ZEC program from Illinois customers to competitive Illinois capacity suppliers (other than those receiving the subsidy). If the BRA price impact was greater than $24.81/MW-day, as seems likely, then the ZEC program not only subsidized Exelon's nuclear units but created a windfall savings for Illinois customers, entirely unrelated to the stated policy goal of carbon reduction.

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[27] Exelon Corporation, *op.cit.*

[28] PJM Interconnection, "Summary of 2021/2022 Base Residual Auction Results" available at https://pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2021-2022/2021-2022-base-residual-auction-results.ashx?la=en.

[29] These figures were calculated from the Base Zonal UCAP Obligation and Preliminary Zonal Net Load Prices in the PJM spreadsheet.

[30] Illinois Commerce Commission, Public Notice of Successful Bidders and Average Price, Illinois Power Agency January 2018 Procurement of Zero Emission Credits from Facilities Fueled by Nuclear Power, January 25, 2018, available at https://www.ipa-energyrfp.com/?wpfb_dl=1450 .

- Second, Illinois has the opportunity to expand its ZEC program (which I understand is already underway) and, with the flawed BRA mechanics allowing such an expansion to shift some, all, or more than all of the costs to competitive capacity suppliers, Illinois also has every incentive to double down. Exelon's 1,797 MW Dresden generating station did not clear in the 2021-2022 BRA. Presumably it would have had it also received ZEC payments like Quad Cities. Adding 1,797 MW into the ComEd zone would clearly have an impact on the Resource Clearing Price in the BRA. PJM's scenario analysis did not consider this case exactly, but adding just 751.9 MW of zero-bid resource into ComEd, along with additional quantities in other zones, lowered the Resource Clearing Price by about $9/MW-day.[31] Dresden is approximately 2.4 times this quantity, and if it had a proportional 2.4 times impact on the clearing price, then adding Dresden to the ZEC program would lower clearing prices by about $21/MW-day, with an annual $192 million annual savings in capacity payments—very close to the annual average cost of ZECs awarded to Quad Cities.

- Third, Illinois lawmakers could rate-base all of 10,518 MW of Exelon's Illinois nuclear fleet. Under PJM's RCO proposal, without repricing, these resources would be removed from the market—causing capacity prices to be set by lower-cost, unsubsidized resources. Shifting all nuclear plants in ComEd to RCO status could lead to the elimination of the price premium for power plants located in and around Chicago. Under this scenario, ComEd customers would have paid almost $1 billion less in the 2021/2022 BRA. Of this sum, $695 million are market capacity payments not made to the nuclear units, money that presumably would be collected as a non-bypassable surcharge in retail rates. But an additional $287 million of "savings" would accrue from paying competitive, non-subsidized resources a suppressed capacity price. See Table 1. These "savings" are not actually savings, in the sense of reduced *societal* costs, but rather a transfer of cash from competitive suppliers to Exelon.

[31] I acknowledge that it is difficult to extrapolate from the published scenario analysis to different scenarios. For example, counterintuitively, doubling the zero-bid resources (going from scenario 3 to scenario 5) resulted in an *increase* in the ComEd RCP, presumably because of interactions with changing supply curves in the other zones.

Table 1

Potential Market Savings to Rate-basing all ComEd Nuclear Stations

	Base Zonal UCAP Obligation (UCAP MW)	2021/2022 BRA Price ($/MW-day)	Price with all ComEd nuclear under RCO ($/MW-day)	Annual Revenue change ($MM)
RCO capacity*	9,887	$192.69	$0	$695
Market-based capacity	1,5096	$192.69	$140.53	$287
Total	24,983			$983

* assumes 94% capacity rating for nuclear units.

The bottom line is clear: when the PJM Tariff allows subsidies to distort PJM market price, states do not bear the costs of their policy choices. Because the states do not see the full cost of their policy choices, they have incentives to grant ever increasing rounds of subsidies to save preferred resources—preferred for their environmental attributes, local job creation, or acumen of their lobbyists—from the consequences of the resulting price suppression.

VI. *EXTENDED RCO WITH MODIFICATIONS OFFERS A REASONABLE, ALBEIT SECOND-BEST, FRAMEWORK FOR ACCOMMODATION*

29. In its Order the Commission appeared to seek a "bifurcation" between resources procured competitively through the wholesale market and those procured by states. RCO neatly separates *quantities* between these two markets but fails to separate the impact on price formation. Both are needed to achieve a clean separation while ensuring that price formation under RPM can continue to attract and retain sufficient resources.

30. While there is no question that a strong MOPR presents a simpler and better approach to running the PJM market, I agree that the Extended RCO framework presents the best starting point for a viable approach to accommodate state-sponsored resources in the capacity base while retaining a meaningful wholesale capacity market, if that is the path the Commission elects. Simply put, the Extended RCO ensures that the *price* paid to competitive supply is not distorted by sponsored resources but does reduce the *quantity* of competitive supply procured to ensure that there is no over-procurement. Thus, although Extended RCO still allows higher-cost subsidized resources to displace lower-cost resources, the Resource Clearing Prices would remain undistorted, providing a

transparent, true cost of ensuring resource adequacy—or it can, with adjustments discussed below.

31. PJM has made three design choices that I believe require modification to enhance the efficiency of the market:

    - All resources should be included in the second stage, with RCO resources included at their individual MOPR offer price;
    - The Lost Opportunity Cost payment should be determined as it is in the energy and ancillary services markets, not on a pay-as-bid basis; and
    - Competitive MWs displaced to accommodate uneconomic RCO resources should be distributed broadly, prorationed among all cleared competitive supply, to allow the secondary market to determine which, if any, resources should exit.

VI.A. Include all resources in the second stage offer stack

32. Under the Extended RCO and PJM's proposal that the subsidized resources electing RCO are removed from the second stage of the auction run, Dr. Chao concisely summarizes the first of these design choices:

> One could determine (and submit in the auction) an economic offer price for the resource, as is done in the MOPR process. Alternatively, one could rely on all economic offers actually submitted in the auction to determine a competitive clearing price. PJM proposes the latter approach in this filing. For that purpose, all offers from resources for which the RCO has not been elected are economic offers, including any mitigation of such offers under MOPR or other provisions of the PJM Open Access Transmission Tariff.[32]

33. Dr. Chao does not provide any economic support or underlying rationale for removing the subsidized resources electing RCO from the second stage of the auction run. In my view, it is unsupportable and will result in prices that are higher—potentially much higher—than the economically efficient level. Suppose a constrained area like New Jersey subsidized all of its nuclear facilities. Removing these entirely from the RPM could leave insufficient resources in the LDA to meet the locational capacity requirements, causing the capacity price to be set at the top of the VRR curve, signaling scarcity even when there is none. In theory, this price increase might be mitigated by offers from new, competitive supply, but in practice it is costly to bring generation projects far enough

[32] Chao Affidavit at 10.

along the development cycle to qualify for RPM participation, and such projects are unlikely to be in development when it is unlikely that they will actually be selected as a capacity resource.

34. To avoid these problems, PJM should adopt the first option presented by Dr. Chao: leave all resources in the supply stack but at their particular mitigated prices, as is done in the MOPR process. This alternative assures that the supply curve reflects the true (unsubsidized) cost of each available resource and, consequently, that the resulting price will be equal to the least-cost marginal capacity resource.

35. The resulting price will necessarily be lower than under PJM's proposed approach. PJM's approach is functionally equivalent to leaving all resources in the supply curve but assigning a price of infinity on RCO and MOPR units. The alternative that I support is to assign prices that reflect true costs, which are necessarily less than infinity. This second approach will have effect when *some* RCO or MOPR capacity is economic when *all* RCO and MOPR capacity offers at cost. This situation seems very likely. For example, wind and solar both receive substantial REC payments in some states, but may also be economic even without those state subsidies even as new resources, and certainly as existing resources. To exclude economic resources from the price-setting process merely because they are receiving some level of subsidy is not consistent with sound economics, particularly when the process of establishing unit-specific mitigated offer prices is already established.

36. The potential price impact from this difference could be large. The Independent Market Monitor has estimated that, if all 23,741 MW of "Units at Risk of Retirement" were subsidized by the states, PJM's proposal could increase prices from $140/MW-day to almost $240/MW-day.[33] But at a capacity price of $240, how many of these resources would no longer be at risk of retirement but, instead, financially stable? Surely some, and these resources would be offering at a price below $240, thus helping moderate the resulting price.[34]

[33] IMM Brief, Attachment A at p.2.

[34] The IMM also includes a cost estimate for this scenario, forecasting a $8.4 billion increase. This estimate, however, appears to omit the return to load of the capacity charges associated with the RCO capacity. Although there is not enough detail in the Appendix to back-compute this figure exactly (recognizing that there are locational price differences), it is on the order of $234.67 × 23,741 × 365 = $2 *billion*.

VI.B. Pay a market-based rate for Lost Opportunity Cost

37. PJM correctly recognizes that some payment is appropriate for economic capacity that is crowded out of the market by subsidized resources, a concept I discussed in my initial affidavit.[35] These payments are directly analogous to Lost Opportunity Cost payments PJM (and every other RTO and ISO in the nation) makes in its ancillary services markets to resources whose cost to generate energy is below the LMP but are dispatched down to provide reserves. In the reserves market, the LOC of the *marginal* reserve resource (*i.e.* the one with the lowest incremental energy cost) sets the clearing price for *all* resources providing the same product.

38. In its filing, PJM inexplicably deviates from this model in its proposed LOC payments for capacity. Instead, PJM proposes a "pay as bid" payment, in which *each* resource receives just enough payment to close the gap between its offer price and the restated clearing price. This approach creates bad incentives for bidders, encouraging those that anticipate their resource is likely to be not selected in the first round to offer at a price below their true cost with the goal of increasing their LOC payments. This incentive issue is endemic to every "pay as bid" structure, which is why every PJM and others rely solely on first-price auctions for all market products.

39. Fortunately, there is a simple solution to this issue: use the same methodology in PJM's reserve markets. That is, the locational LOC payment to all crowded-out capacity is set by the marginal crowded-out capacity. I illustrate the difference between these approaches in Exhibit RBS-1. As a functional matter, computing the market-based LOC rate is straightforward:

    - Compute the set of locational Resource Clearing Prices in the first stage, with all capacity included as offered (RCO at $0);
    - Compute the set of locational Resource Clearing Price in the second stage (preferably, as per §VI.A, including all resources at mitigated offer prices);
    - Set the LOC payment per MW-Day in each LDA at the difference between the two Resource Clearing Prices, floored at zero.[36]

[35] Initial Affidavit at 61-62.

[36] As I discuss in my initial affidavit, it is possible for prices in some locations to *fall* between stage 1 and stage 2.

This locational LOC rate is then paid to all MWs that were offered below the applicable locational Resource Clearing Price but did not receive a capacity commitment because it was displaced by RCO supply. In PJM's proposal, these MWs are the highest in the offer stack; in the next section, I discuss an alternative and why it is superior.

VI.C. Let the markets decide which, if any, resources exit

40. Accommodating high-cost subsidized capacity in the market necessarily crowds out lower-cost unsubsidized capacity. Each megawatt of carved-out resources displaces a megawatt from a market-based resource. A question of substantial importance is how these displaced megawatts are allocated across the market-based resources.

41. PJM answers this question by allocating all of the displacement to the resources with the highest offer prices. This allocation has a particular, and quite possibly misplaced, impact on those "between" resources. The consequences for those resources is dire: with no capacity payments, many of these "between" resources would be economically unviable and would likely exit—if not after one year of non-payment, perhaps, then after a string of years. This "feast or famine" allocation creates two economic distortions:

- First, it is likely to change bidding behavior. Relatively high-cost resources, knowing that they are at risk of being a "between" resource, could rationally choose to under-bid their costs, hoping to clear and let some other resource take the fall. This strategy is rational in a multi-year auction, because by pushing a competing resource into retirement, the short-bidder in year 1 can bid full costs in subsequent years, after the market over-hang has been cleared.

- Second, if many resources take this strategic view, then the RPM will not select the most economically efficient resources from the competitive suppliers, but rather those who have bid most aggressively to stay in the market, rewarding deep-pocket firms instead of economic resources. This raises consumer costs in the long run because the supply resources are no longer least-cost.

42. I propose instead that the displacement be allocated to *all* cleared, market-based resources *pro rata*. The pro-rationing would be as broadly spread as possible across the entire RTO footprint, while respecting the need to maintain sufficient capacity commitments within import-constrained Locational Deliverability Areas, as I discuss in more detail below. In the first instance—before bilateral trading of capacity commitments—this leaves all competitive suppliers a little long (*i.e.* with more physical capacity than capacity commitments). This net long capacity creates the potential for

trades or export, revenues from which can offset the lost capacity revenues. For example, a resource that is likely uneconomic can sell its capacity commitment to other resources and exit, while resources that want to take on their full capacity commitment level can buy out existing resources. Thus the market, not PJM, will both determine which (if any) resources are uneconomic and what the "buy out" price should be. By contrast, PJM's approach unequivocally flags which resources are to be squeezed out of the market—possibly by retiring or going into reserve shut-down—based on a one-year cost. Indeed, the loss of a full-year's capacity payment is likely to drive many of these resources out of the market permanently. But that is not necessarily the best outcome.

43. The mechanics of pro-rationing are relatively straightforward:

- Compute the sum of all capacity from RCO resources. Call this quantity Q_{RCO}.
- Compute the sum of all cleared capacity in Stage 2. Call this quantity Q_C.
    - If my recommendation to include RCO resources in Stage 2 is adopted, then Q_{RCO} and Q_C are both computed excluding any RCO resources that cleared in Stage 2 based on their mitigated offers.
- Reduce the capacity commitment of all non-RCO resources that cleared Stage 2 by the ratio $\rho = (Q_C + Q_{RCO})/Q_C$. Note that $Q_C = \rho Q_C + Q_{RCO}$ by construction, meaning that the final capacity commitments equal the total capacity commitments from Stage 2.
- Check that resulting capacity commitments (to both market-cleared and RCO resources) in each LDA have not been reduced below the minimum required level. If any minimums have been violated, then reduce ρ for resources in that LDA to set capacity commitments at the minimum required level, and increase ρ in other LDAs as needed to restore the total Q_C.

44. My approach provides market participants the option to remove resources from the market to accommodate the subsidized resources but does not force them out of the market. Resources with some portion of their MWs cut can decide, through future incremental auctions to sell out of their remaining capacity positions and leave the market. Additionally, allocating the "crowded out" megawatts to all resources creates a portion of each resource that is available for replacement capacity sales. Efficient trading will put these capacity commitments onto the "best" resources in the market as resources with higher fixed costs and/or lower expected capacity performance sell their capacity

commitments to superior resources, *i.e.* those with the lower costs and/or higher expected performance. Resource owners that choose to sell all of their capacity may then choose to retire those resources. This is an efficient market outcome. PJM's approach yields the same outcome if, and only if, the capacity offer prices of all resources reflects all of the costs and value of the resource, including its long-term option value and opportunity costs to sell into other markets. Given PJM's tight proscriptions on offer prices from existing resources, this condition seems unlikely to hold and, consequently, PJM's allocation of "crowded out" megawatts likely diverges from the first-best outcome that can be achieved by allocating these megawatts *pro rata* and letting the markets sort out the results efficiently.

45. This concludes my testimony at this time.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Calpine Corporation, *et al.*	
v.	
PJM Interconnection, L.L.C.	Docket Nos. EL16-49-000
PJM Interconnection, L.L.C.	ER18-1314-000 ER18-1314-001
PJM Interconnection, L.L.C.	EL18-178-000 (Consolidated)

AFFIDAVIT OF ROBERT B. STODDARD
ON BEHALF OF NRG POWER MARKETING LLC

I, Robert B. Stoddard, being duly sworn, depose and state that the contents of the foregoing Affidavit on behalf of the NRG Companies is true, correct, accurate and complete to the best of my knowledge, information and belief.

Robert B. Stoddard

SUBSCRIBED AND SWORN
before me this 5 day of November 2018

Notary Public

My commission expires: 10/13/2022

HANNA DANIEL
Notary Public, Maine
My Commission Expires October 13, 2022

Exhibit RBS-1
Setting Market-Based LOC Rate

