

**UNITED STATES OF AMERICA
BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**

**Technical Conference on Modernizing Electricity Market Design:)
Resource Adequacy in the Evolving Electricity Sector)**

Docket No. AD21-10-000

**COMMENTS OF PUBLIC INTEREST ORGANIZATIONS IN RESPONSE TO NOTICE INVITING
POST-TECHNICAL CONFERENCE COMMENTS**

Pursuant to 18 C.F.R. Part 385, the Sierra Club, Sustainable FERC Project, and Natural Resources Defense Council (collectively “Public Interest Organizations”) respectfully submit and request consideration of these comments regarding the Federal Energy Regulatory Commission’s (“Commission” or “FERC”) Notice Inviting Post-Technical Conference Comments.¹ In these comments, we focus primarily on the new questions in the April 5th notice, but begin by addressing several fundamental issues raised during the March 23, 2021 Technical Conference.²

I. The Commission Should Restore the Original, Limited Purpose of Capacity Markets

In the first panel of the March 23 technical conference, the Commission focused on the crucial question of what the goals of centralized capacity markets should be in the face of increased state energy policies and an evolving resource mix. With regard to PJM Interconnection LLC’s (“PJM”) Reliability Pricing Model (“RPM”), its only viable future lies in a return to its origins. In 2005, PJM described the purpose of the Base Residual Auction (“BRA”) as “enabl[ing] commitment of capacity resources needed to satisfy remaining capacity needs of LSEs *after taking account* of their owned and contracted resources.”³ In its initial order approving the RPM, FERC found that the “RPM has the potential to provide price signals and price stability that will enable LSEs to purchase capacity, and generators to offer to provide capacity, in a more informed and efficient fashion.”⁴ But FERC emphasized that PJM was never intended to become “a centralized planner and procurer of capacity,” rather that the RPM was intended to serve as a benchmark against which “LSEs will still make their own business decisions about how much capacity to build or procure in long-term contracts and at what cost, and how much to obtain through PJM’s

¹ Notice Inviting Post-Technical Conference Comments re Modernizing Electricity Market Design, Docket No. AD21-10-000 (Apr. 5, 2021), Accession No. 20210405-4004.

² Supplemental Notices of Technical Conference on Resource Adequacy in The Evolving Electricity Sector re Modernizing Electricity Market Design, Docket No. AD21-10-000 (Mar. 9, 2021 and Mar. 16, 2021), Accession Nos. 20210309-3071 and 20210316-3086.

³ *PJM Interconnection, LLC*, 115 FERC ¶ 61,079 at P 55 (2006) (emphasis added).

⁴ *Id.* at P 169.

auction.”⁵ Additionally, it was envisioned that the capacity market would eventually diminish in importance in favor of energy markets.⁶

The central concepts embodied in these statements should still hold true today—RPM should act as a residual market for load-serving entity (“LSE”) resource procurement, and to provide accurate price signals, with the expectation that greater reliance will be placed on energy markets. But the Minimum Offer Price Rule (“MOPR”) in its current form is anathema to these fundamental goals. The Commission’s December 2019 determination that the MOPR is needed to protect the capacity market from “the price-suppressive effects of resources receiving out-of-market support”⁷ reflected a fundamental departure from the initial concept of the RPM and one without any justification rooted in RPM’s purpose. Under the expanded MOPR, price signals are fundamentally disconnected from market supply or demand⁸ and no longer indicate whether the region or any individual zone is short or long on capacity. By artificially raising RPM prices and overprocuring supply, prices will become further depressed in the energy market. And the expanded MOPR has intruded into state generation decisions that the original RPM was designed to avoid.⁹

PJM President and CEO Manu Asthana has recognized the conflict between the MOPR and the fundamental purpose of the capacity market, noting the double-procurement problem that arises from excluding state-supported resources and the MOPR’s conflict with long-established public power business models and state traditional regulatory models.¹⁰ Given the increasingly active role that states play in resource procurement decisions, the capacity market must return to its original purpose as a voluntary backstop mechanism for the sale and purchase of capacity to meet reliability needs. It is also essential that the capacity market not serve as a vehicle to guarantee the earnings of any market participants. Rather, the capacity market should complement state and LSE resource procurement, with each of these mechanisms supported by (and secondary to) robust energy and ancillary service markets.

⁵ *Id.*

⁶ *Id.* at P 170–171.

⁷ *Calpine Corp. et al. vs. PJM Interconnection, LLC*, 169 FERC ¶ 61,239 at P 5 (2019).

⁸ See Protest of Clean Energy Parties, Attach. A: Dr. Kathleen Spees & Dr. Samuel A. Newell, *The Economic Impacts of Buyer-Side Mitigation in New York ISO Capacity Market*, at 15–16, Docket No. EL21-7-000 (Nov. 18, 2020), Accession No. 20201118-5165 (“Nov. 2020 Brattle Report”).

⁹ 115 FERC ¶ 61,079 at P 172.

¹⁰ Transcript of Technical Conference on Resource Adequacy in the Evolving Electricity Sector, at 7, 34 (Mar. 23, 2021).

Although the justification underpinning administrative pricing rules in the capacity market has been to improve price signals for entry and exit, the evidence suggests that many investors look to other market and policy signals beyond a single-year price in the capacity market.¹¹ Simply put, investors make decisions based on their longer-term view of market value, including likely revenues in PJM’s energy and ancillary service markets, as well as their own forecasts of how capacity market revenues might change over the economic life of the asset.¹² A survey conducted by the ISO/RTO Council revealed that banks heavily discount capacity revenues when looking at whether to finance projects, due to the volatility in prices.¹³ That research concluded that “the fundamental strictures of supply/demand balance,” remained the primary factor driving investment decisions, not market design.¹⁴

As PJM acknowledged in 2018, “capacity market auctions have seen tens of thousands of megawatts of new combined-cycle gas enter in the face of historically low wholesale energy prices, flat to declining load growth, increased transmission investment and reduced congestion rents, and very robust reserve margins, over 23% from capacity commitments in the most recent BRA. From the perspective of traditional utility planning, this new entry is not ‘needed’ by an administrative determination of target capacity.”¹⁵ PJM finds instead that this entry is due to expectations of continued low natural gas prices, combined cycle efficiency, and innovative financing. Economists at Grid Strategies LLC have likewise observed that exit of uneconomic resources is not occurring, despite continued entry of new generation and reserve margins that greatly exceed targets, indicating a failure of market signals.¹⁶

Funding sources outside of the capacity market are important in signaling and supporting specific types of resource development. For example, investors have noted that reliance on market funds was not sufficient for storage although this resource “is going to be a vital component balancing the overall market.”¹⁷ One investment

¹¹ See, e.g., James F. Wilson, *Forward Capacity Market CONEfusion*, The Elec. Journal, Vol. 23, Issue 9, at 29 (Nov. 2010). This is not to say that capacity market prices do not influence investment in PJM, but these effects are concentrated for certain resource and investment models.

¹² See *id.* at 30.

¹³ ISO/RTO Council, *Resource Investment in the Golden Age of Energy Finance*, at 18–19, Market Reform (noting discounts of 50-70%) (May 2015), https://www.eenews.net/assets/2017/05/23/document_ew_01.pdf.

¹⁴ *Id.* at 5.

¹⁵ Capacity Repricing or in the Alternative MOPR-Ex Proposal: Tariff Revisions to Address Impacts of State Public Policies on the PJM Capacity Market, at 10–11, Docket ER18-1314 (Apr. 9, 2018) (“PJM Jump Ball Filing”), Accession No. 20180409-5056.

¹⁶ Rob Gramlich & Michael Goggin, *Too Much of the Wrong Thing: The Need for Capacity Market Replacement or Reform*, Grid Strategies LLC (Nov. 2019) (“*Too Much of the Wrong Thing*”), <https://gridprogress.files.wordpress.com/2019/11/too-much-of-the-wrong-thing-the-need-for-capacity-market-replacement-or-reform.pdf>.

¹⁷ Taryana Odayar, *PFR Hedging & Offtake Strategies Roundtable 2020/21*, Power Finance & Risk, Vol. XXIV, No. 3, at 12 (Jan. 25, 2021), <http://www.powerfinancerisk.com/Article/3971993/PFR-Hedging-and-Offtake-Strategies-Roundtable-202021.html#.YIIzQH1ueLo>.

manager stated that “the economics of stand-alone battery projects remain ‘cuspy’ though their functionality is now such a critical part of operating a power grid that we expect utilities to be strong buyers of such projects in the near-term.”¹⁸ Furthermore, as shown in the models developed by Cornell University professor Jacob Mays, capacity markets disproportionately support investment in relatively low capital cost, high marginal-cost resources.¹⁹ To the extent the capacity market sends a signal to invest, this signal is relatively weak for the technologies that are fundamental to state clean energy objectives, which tend to require longer-term contracts. As the cost structure of the supply mix changes, FERC must move away from the idea that the only valid benchmark for whether resources are “competitive” is how well they can be financed based on a single-year capacity price.

It is of particular note that the original RPM was created in response to PJM’s assessment that the “existing [capacity] construct will, in the future, fail to achieve the intended goal of ensuring reliable service,” because it did not reveal locational reliability problems, send price signals for necessary solutions to reliability problems before they occurred, allow transmission and demand response to compete on a level playing field to solve reliability problems, and was compounded by a lack of price signals sent by the energy markets – a combination of elements FERC found to be unjust and unreasonable.²⁰ Yet today’s RPM – especially with the Expanded MOPR – places the reliability of the PJM grid in similar if not greater jeopardy in the face of a rapidly decarbonizing energy sector. In sum, a capacity construct designed to incent production of gas-fired peaker plants and biased against the clean energy resources demanded by states and necessary to address climate change will not meet any of the required elements for future reliability and, as such, is not a just and reasonable capacity construct.²¹

II. Responses to Questions in the April 5th Notice

Question 1:

In PJM’s early years, numerous states already had renewable portfolio standards.²² Since PJM’s establishment of RPM, state support for renewable energy has grown through adoption of new requirements and

¹⁸ *Id.*

¹⁹ Jacob Mays et al., *Asymmetric risk and fuel neutrality in electricity capacity markets*, Nature Energy 4, 948–956 (2019), <https://doi.org/10.1038/s41560-019-0476-1>. EIA, *Average U.S. construction costs for solar and wind generation continue to fall*, Today in Energy (Sept. 16, 2020) (higher upfront costs for wind and solar versus new fossil generation), <https://www.eia.gov/todayinenergy/detail.php?id=45136>.

²⁰ 115 FERC ¶ 61,079 at P 29.

²¹ See, e.g., *Too Much of the Wrong Thing* at 11–18.

²² See examples cited in Protest of Clean Energy Advocates, Docket No. ER18-1314, at 10–15, 38–39 (May 7, 2018), Accession No. 20180507-5222.

strengthening of existing standards.²³ In addition to Renewable Portfolio Standards (“RPS”), states have adopted a number of policies in the intervening years to compensate generators for their environmental attributes, or otherwise support the development or retention of particular facilities.²⁴

In 2018, PJM analysis showed that state renewable energy requirements as a percentage of PJM load increased from just over 2% in 2009 to just over 8% in 2020, up to a forecasted 13.5% in 2033.²⁵ Since then, clean energy requirements have increased substantially in several PJM states as shown in response to Question 2. We estimate that by 2030, the currently effective set of renewable portfolio standards, offshore wind, and energy storage requirements in PJM states will cause the nameplate value of solar constructed in the region to reach 22.7 gigawatts (GW), onshore wind 10.7 GW, and offshore wind 8.2 GW.²⁶

Virginia and the District of Columbia have 100% clean energy requirements, while New Jersey and Maryland have 50% requirements. Requirements at these levels fundamentally change the investment dynamics in the region. The nature of the state generation policies has changed as well to include specific clean energy technologies, and several PJM states require procurement of offshore wind, energy storage, and solar.²⁷ Some state

²³ 20 Ill. Comp. Stat. 3855/1-75 (2007), <https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5>; Ind. Code § 8-1-37 (2011), <http://iga.in.gov/documents/8850f79f>; 2016 Mich. Pub. Acts No. 342 (2016), <http://www.legislature.mi.gov/documents/2015-2016/publicact/htm/2016-PA-0342.htm>; N.C. Gen. Stat. § 62-133.8 (2017), https://www.ncleg.net/EnactedLegislation/Statutes/HTML/BySection/Chapter_62/GS_62-133.8.html; Ohio Rev. Code Ann. § 4928.64 et seq. (2019), <https://codes.ohio.gov/ohio-revised-code/section-4928.64>; H.B. 1526, 2020 Sess. (Va. 2020), <https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB1526>; Md. Code Ann., Pub. Util. § 7-701 et seq. (2019), <https://mgaleg.maryland.gov/mgawebsite/Laws/StatuteText?article=gpu§ion=7-701&enactments=false>; D.C. Code § 34-1431 et seq. (2019), <https://code.dccouncil.us/dc/council/code/titles/34/chapters/14A/>; Del. Code Ann. tit. 26, § 351 et seq. (2005), <https://delcode.delaware.gov/title26/c001/sc03a/index.html>; New Jersey Clean Energy Act P.L. 2018, ch. 17 (NJ 2018), https://www.njleg.state.nj.us/2018/Bills/AL18/17_.PDF; S.B. 516, 2019 Reg. Sess. (Md. 2019), http://mgaleg.maryland.gov/2019RS/Chapters_noln/CH_757_sb0516e.pdf.

²⁴ See, e.g., 20 Ill. Comp. Stat. 3855/1-75(d-5) (2016); S.B. 2313, 2018–2019 Reg. Sess. (N.J. 2018), https://www.njleg.state.nj.us/2018/Bills/PL18/16_.PDF; H.B. 6, 133rd Gen. Assemb. (Ohio 2019), <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA133-HB-6>. State actions of this type are not limited to statutes but also include regulatory actions. For example, in 2013, West Virginia regulators adopted support payments for two existing coal plants by approving a transfer of ownership to companies with cost-of-service regulation. See Commission Order, Cases Nos. 12-1571-E-PC and 13-1272-E-PW (W.V. Pub. Serv. Comm’n Oct. 7, 2013), <http://www.psc.state.wv.us/scripts/WebDocket/ViewDocument.cfm?CaseActivityID=380380&NotType=%27WebDocket%27>.

²⁵ See PJM Jump Ball Filing, Attach. F (Affidavit of Dr. Anthony Giacomoni on Behalf of PJM Interconnection, L.L.C.), at Attach. 1 (Renewable Energy Requirements by PJM State (MWh)) (Percent of PJM Load row).

²⁶ Estimates reflect Lawrence Berkeley Lab 2021 retail sales projections. Assumes onshore wind capacity factors of 32–35%; offshore wind capacity factors of 40%; solar capacity factors range from 18–21%, based on the simple average of utility-scale and distributed solar capacity factors in each state. RPS levels not subject to carve-out are presumed to be met 50% by solar and 50% by onshore wind. Full analysis available upon request to counsel for Sierra Club.

²⁷ See Table in Question 2 response below.

energy policies also include labor requirements, such as the Virginia Clean Economy Act's requirement that hiring and training of veterans, local workers, and workers from historically economically disadvantaged communities be prioritized.²⁸ These types of provisions reflect the broader trend among state policymakers toward decarbonization strategies that help to promote other social and economic goals.²⁹

In order to meet these needs, RPM must evolve to reflect the increasingly important and unique role of state and local policy drivers for generation development in resource adequacy that cannot be counteracted or undermined without causing severe harm to consumers and the efficiency of FERC-jurisdictional markets. Rather than designing RPM as if it procures 100% of the reliability requirement in a vacuum, PJM should design it to produce prices and quantities that reflect these other drivers of investment and sources of revenue.

Question 2:

Since 2018, states have increased clean energy requirements or other actions to compensate for environmental attributes. Significant examples include:

State, Year	Action	Relevant provisions re state-supported resources
Maryland, 2019	Maryland Clean Energy Jobs Act, MD PUB. UTIL § 7-703 ³⁰	RPS increased from 25% in 2020 to 50% in 2030. Solar requirement increased from 2.5% in 2025, to 14.5% in 2030 Offshore wind requirement had previously been a quantity to be determined by PSC, not to exceed 2.5%; now minimum quantity of 1.2 GW
New Jersey, 2019	Executive Order 92 ³¹	Increased offshore wind goal from 3,500 megawatts (MW) by 2030 to 7,500 MW by 2035
New Jersey, 2019	New Jersey Board of Public Utilities Orders in Docket Nos. EO18121338, EO18121339, EO18121337 (April 18, 2019) ³²	Awarding zero-emission credit payments for Salem I, Salem II, and Hope Creek nuclear units -- representing approximately 3700 MW.
District of Columbia, 2019	Act A22-0583 ³³	Increased RPS from 50% by 2032 to 100% by 2032; solar requirement increases from 5.5% in 2032 to 10% in 2041

²⁸ H.B. 1526, 2020 Sess. (Va. 2020), <https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB1526>; see also Md. Code Ann., Pub. Util. § 7-704.1(e)(1)(i).

²⁹ Shelley Welton, *Electricity Markets and the Social Project of Decarbonization*, 118 Colum. L. Rev. 1067, 1097 (2018).

³⁰ S.B. 516, 2019 Reg. Sess. (Md. 2019), http://mgaleg.maryland.gov/2019RS/Chapters_noln/CH_757_sb0516e.pdf.

³¹ Exec. Order No. 92 (N.J. 2019) ("Executive Order 92"), <https://nj.gov/infobank/eo/056murphy/pdf/EO-92.pdf>.

³² Order Determining the Eligibility of Hope Creek, Salem 1, and Salem 2 Nuclear Generators to Receive ZECs, Docket Nos. EO18121338, EO18121339, EO18121337 (N.J. Bd. of Pub. Utils. April 18, 2019).

³³ Council Bill 220904, 2017–2018, 22nd Council (Washington D.C. 2019), <https://legiscan.com/DC/bill/B22-0904/2017>.

Ohio, 2019	Creates Ohio Clean Air Program (H.B. 6) ³⁴ Revise electric utility service law; repeal portions of H.B. 6 (H.B. 128) ³⁵ (terminating portions relating to nuclear facilities)	1) Provides revenues for two nuclear facilities and two coal plants, payments to solar facilities that had already obtained certificates of construction. 2) Reduced the state's target for clean energy from 12.5 by 2026 to 8.5 percent.
Virginia, 2020	Virginia Clean Economy Act ³⁶	1) Schedule for retirement of electric generating units located in the Commonwealth that emit carbon; 2) 100% RPS by 2050; 3) 3,100 MW of energy storage capacity by 2035; and 4) 5,200 MW offshore wind by 2034.
Delaware, 2021	An Act to Amend Title 26 of the Delaware Code Relating to Renewable Energy Portfolio Standards. ³⁷	Increased RPS from 25% in 2025, with solar requirement of 3.5% to 40% in 2035, with solar requirement of 10%

Numerous PJM cities and counties have also enacted requirements for 100% clean energy, including through mechanisms such as community choice aggregation.³⁸

The Expanded MOPR is unlikely to significantly affect the entry of resources needed to meet these state requirements, but it is likely to prevent these resources from obtaining capacity supply obligations.³⁹ In a recent analysis for the Maryland Energy Administration, the Brattle Group estimated that as a result of the MOPR, across PJM approximately 3,600 unforced capacity ("UCAP") MW of policy resources are at risk of not clearing by 2025, and up to 5,800 UCAP MW by 2030.⁴⁰ These estimates reflect conservative assessments of the capacity value of

³⁴ H.B. 6, 133rd Gen. Assemb. (Ohio 2019), <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA133-HB-6>.

³⁵ H.B. 128, 134th Gen. Assemb. (Ohio 2021), <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA134-HB-128>.

³⁶ H.B. 1526, 2020 Sess. (Va. 2020), <https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB1526>.

³⁷ S.B. 33, 151st Gen. Assemb. (Del. 2021), <https://legis.delaware.gov/BillDetail?legislationId=48278>.

³⁸ See, e.g., Sierra Club, Ready for 100, <https://www.sierraclub.org/ready-for-100/map?show=committed> (last visited Apr. 26, 2021).

³⁹ The circumstances in which Expanded MOPR could actually impede the entry of these resources are if the facilities are unable to obtain interconnection rights as a result of the lack of a capacity supply obligation, or if the lack of capacity revenues causes the projects' renewable energy credit prices to exceed any applicable alternative compliance payment ("ACP") caps. We are not aware of any comprehensive analysis of the possible impact of ACP caps on RPS compliance in light of MOPR, although Brattle concluded that solar prices were likely though not certain to decline quickly enough that even the lack of capacity revenues would not cause the Maryland ACP to be triggered. Kathleen Spees et al., *Alternative Resource Adequacy Structures for Maryland*, at 28–29, Brattle Group (Mar. 2021) ("Brattle Maryland Analysis"), https://brattlefiles.blob.core.windows.net/files/21870_alternative_resource_adequacy_structures_for_maryland_-_review_of_the_pjm_capacity_market_and_options_for_enhancing_alignment_with_marylands_clean_electricity_future.pdf.

⁴⁰ Brattle estimates that a much larger quantity of state-supported resources will be subject to the MOPR, but the currently applicable offer price floors for multi-unit nuclear plants are low enough to clear, thus lessening the quantity of state-supported resources whose entry to the capacity market is affected. See *id.* at 27. See also Kathleen

wind and solar—other analyses have estimated that more than 14 GW UCAP of state-supported resources would be excluded from the auction by 2030.⁴¹

Question 3:

The primary impact will be on new clean energy resources, since they are the most likely resources to be built, and the default offer floors for most existing resources subject to MOPR are well below recent clearing prices.⁴² Offshore wind resources are unlikely to clear the capacity market as a result of the Expanded MOPR, because the default offer floor exceeds the maximum price on the Variable Resource Requirement curve.⁴³ This will affect at least 13,320 GW (nameplate) of offshore wind resources, including 620–1320 MW developed to meet Maryland requirements,⁴⁴ 7500 MW by 2030 in New Jersey,⁴⁵ and 5200 MW by 2034 in Virginia.⁴⁶ A comparison of PJM’s default offer floor prices for new resources with state subsidies to recent Base Residual Auction clearing prices shows that new onshore wind, solar, and battery energy storage facilities are also unlikely to

Spees et al., *Alternative Resource Adequacy Structures for New Jersey*, at slide 5, Brattle Group (Mar. 19, 2021) (“Brattle New Jersey Analysis”), [https://www.nj.gov/bpu/pdf/ofrp/2021-03-11%20RA%20economic%20analysis%20results%20deck%20\(1\).pdf](https://www.nj.gov/bpu/pdf/ofrp/2021-03-11%20RA%20economic%20analysis%20results%20deck%20(1).pdf). Brattle notes that the UCAP values presented reflect expected declining capacity value of variable resources as their penetration grows.

⁴¹ See Michael Goggin & Rob Gramlich, *A Moving Target: An Update on the Consumer Impacts of FERC Interference with State Policies in the PJM Region*, at 11, Table 4, Grid Strategies LLC (May 2020), <https://gridprogress.files.wordpress.com/2020/05/a-moving-target-paper.pdf>.

⁴² Compare PJM, *2022/2023 Base Residual Auction Default Gross ACR Values Applicable to Determination of MOPR Floor Offer Price of Cleared Capacity Resources with State Subsidy*, <https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2022-2023/2022-2023-default-gross-acr-for-cleared-capacity-resources-with-state-subsidy.ashx> (last visited Apr. 23, 2021) (Subtraction of indicative net E&AS revenue offsets yield Net ACR values for comparison with recent clearing prices); and PJM, *Default MOPR Floor Offer Prices for New Entry Capacity Resources with State Subsidy*, <https://pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2022-2023/2022-2023-default-mopr-floor-offer-prices-for-new-entry-capacity-resources-with-state-subsidy.ashx> (“Default Price Floors for New Resources”) with PJM, *2021/2022 PJM Base Residual Auction Results*, Fig. 2 at 16 <https://pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2021-2022/2021-2022-base-residual-auction-report.ashx> (last visited Apr. 23, 2021) (“PJM Auction Results”).

⁴³ Compare Default Price Floors for New Resources with PJM, *2022/2023 RPM Base Residual Auction Planning Period Parameters*, <https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2022-2023/2022-2023-planning-period-parameters-for-base-residual-auction.ashx> (showing specifications for maximum point on VRR curve) (“RPM Base Residual Auction Planning Period Parameters”).

⁴⁴ Brattle Maryland Analysis at 26. In addition to the 120 MW of the Skipjack offshore wind project procured in Round 1, Brattle anticipates that only 500 MW of the offshore wind required under the Round 2 procurement will be able to be procured within the budget cap, *id.*; this constraint is reflected in the lower end of this range, while the upper end reflects the full Round 2 requirement of 1200 MW by 2030. *Id.* at 12 n.12.

⁴⁵ Executive Order 92; see also NJ Clean Energy, *New Jersey Offshore Wind Solicitations*, Board of Public Utilities, <https://www.njcleanenergy.com/renewable-energy/programs/nj-offshore-wind/solicitations> (establishing NJ Board of Public Utilities schedule for procurements pursuant to Exec. Order).

⁴⁶ Va. Code Ann. § 56-585.1:11(B).

clear as a result of the expanded MOPR, although the gap varies widely across zones and resource types.⁴⁷ The PJM Independent Market Monitor (“IMM”) and others assert that many renewable energy facilities will be able to obtain resource-specific offer floors that are low enough to clear in the auction.⁴⁸ However, there is substantial uncertainty about the outcomes of this process, and attempted reassurances regarding an opaque and largely unreviewable administrative process cannot be relied upon to lessen concerns regarding artificially elevated prices and double-payment. This is especially true in light of the IMM’s view that it is unlikely any resource will be able to demonstrate an asset life longer than 20 years⁴⁹—a critical variable in obtaining lower offer floors. Furthermore, the limited public information regarding resource-specific offer floor review processes across RTOs demonstrates that factors unique to particular projects, including innovative cost-saving measures such as lower-cost financing, are often rejected by the entities responsible for determining these price floors.⁵⁰

Question 4:

As explained previously, under the Expanded MOPR, state policy-supported resources that are expected to be in service will not be accounted for in the capacity market. However, PJM also does not consider the output of those resources in determining the required Installed Reserve Margin (IRM),⁵¹ resulting in an overstatement of the amount of capacity needed to meet resource adequacy standards by an amount roughly equal to the UCAP of policy resources prevented from clearing by the MOPR, estimated at between 5,400 MW and 14.6 GW in 2030.⁵² PJM concedes this point.⁵³ The costs of this excess capacity to consumers is significant: Brattle found that “average

⁴⁷ See *supra* note 42. One exception to this trend is for tracking solar PV resources in the BGE zone, with a default offer floor price of \$164.22, compared to the last BRA result of \$200.30 for the BGE zone. PJM Auction Results at 1.

⁴⁸ Monitoring Analytics, *Potential Impacts of the MOPR Order*, at 3 (Mar. 20, 2020), http://www.monitoringanalytics.com/reports/Reports/2020/IMM_Potential_Impacts_of_the_MOPR_Order_20200320.pdf (citing Gabel Associates, *Minimum Offer Price Rule Unit-Specific Inputs* (Feb. 28, 2020), <https://pjm.com/-/media/committees-groups/committees/mic/2020/20200228-mopr/20200228-item-04b-mopr-unit-specific-inputs.ashx>).

⁴⁹ Comments of the Independent Market Monitor for PJM, at 16, Docket Nos. ER18-1314-003, EL16-49-000 and EL18-178-000 (May 8, 2020) Accession No. 20200518-5067.

⁵⁰ See Joshua Macey & Robert Ward, *MOPR Madness*, University of Chicago Coase-Sandor Institute for Law & Economics (Oct. 18, 2020), <http://dx.doi.org/10.2139/ssrn.3714345>; See also Johannes Pfeifenberger et al., *Second Performance Assessment Of PJM’s Reliability Pricing Model*, at 150, Brattle Group (Aug. 26, 2011), http://files.brattle.com/files/7932_second_performance_assessment_of_pjm's_reliability_pricing_model_pfeifenberger_et_al_aug_26_2011.pdf (noting that “there will also be legitimate other reasons for low bids that would be difficult to verify,” in the resource-specific offer floor process, thus increasing the likelihood of over-mitigation).

⁵¹ See Resource Adequacy Planning, *PJM Manual 20: PJM Resource Adequacy Analysis*, at 20–22, (Mar. 21, 2019) <https://www.pjm.com/-/media/documents/manuals/m20.ashx>.

⁵² Response to Q. 2, *supra*.

⁵³ PJM Jump Ball Filing at 43.

capacity prices paid by Maryland consumers would include a MOPR-driven premium of \$34/MW-day in 2025 and \$24/MW-day in 2030.”⁵⁴ Overall, the costs of capacity for Maryland, under the Expanded MOPR status quo, will be \$167 million higher in 2025, and \$119 million higher in 2030 – not including the additional costs to pay for MOPRed resources.⁵⁵ PJM-wide, Brattle projects annual costs to consumers from the Expanded MOPR to be \$2.3 billion by 2025 and \$1.9 billion by 2030.⁵⁶

Excess procurement in the capacity market will also have negative consequences for the energy and ancillary services market by depressing prices that will “make it . . . harder for otherwise economic resources to compete in those markets.”⁵⁷ This will place a special burden on “renewable and limited-duration resources that rely more heavily on energy market revenues than capacity market revenue”⁵⁸ and on the policy resources prevented by the MOPR from receiving capacity revenues.

The artificially elevated quantity of capacity procured under the Expanded MOPR will not provide adequate incentive for higher emission resources to exit the market. Under current market conditions, existing coal, diesel, and CT units face retirement decisions.⁵⁹ An expected result of the Expanded MOPR will be continued operation of these units in excess of actual resource adequacy needs.

The Commission’s task in regulating capacity markets is to “ensure that there is enough generation to reliably meet load” without “overcharging . . . customers for unnecessary capacity.”⁶⁰ By ignoring the resource adequacy contribution of state-supported resources, the expanded MOPR raises capacity market prices, causes procurement of unnecessary capacity, and ultimately sets up a structural misalignment between consumer demand

⁵⁴ Brattle Maryland Analysis at 28.

⁵⁵ *Id.* at 51 (difference calculated between “Status Quo” and “No-MOPR RPM” Scenarios). While costs will hit consumers in states with clean energy requirements hardest, costs will go up for all PJM consumers, by design. Brattle notes that its estimate is at the low end of other public estimates, including results from ICF International, estimating \$25-35/MW-day short term, \$30–50/MW-day mid-term, and \$50–70/MW-day long-term price effects due to implementation of MOPR with no additional FRR. See ICF International, *The potential impacts of FERC’s PJM Minimum Offer Price Rule order*, at slide 27 (Feb. 14, 2020) <https://www.icf.com/insights/energy/impacts-ferc-pjm-minimum-offer-price?success=true&video=dac8cc6009724998bbb659a6c0513990>.

⁵⁶ Brattle New Jersey Analysis at 6.

⁵⁷ PJM Filing at 57; see also Monitoring Analytics, *PJM State of the Market Report – 2020*, at 334 (Mar. 11, 2021), https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2020/2020-som-pjm-vol2.pdf (“PJM State of the Market Report – 2020”) (“The result of that additional capacity is to reduce the level and volatility of energy market prices and to reduce the duration of high energy market prices. This, in turn, reduces net revenue to generation owners which reduces the incentive to invest.”).

⁵⁸ Sylwia Bialek, Ph.D. & Burcin Unel, Ph.D., *Capacity Markets and Externalities*, at 2, Institute for Policy Integrity (Apr. 30, 2018), https://policyintegrity.org/files/publications/Capacity_Markets_and_Externalities_Report.pdf

⁵⁹ See PJM State of the Market Report – 2020 at 361–362.

⁶⁰ *ISO New England, Inc.*, 118 FERC ¶ 61,157 at P 49 (Feb. 28, 2007).

and generation supply that goes against basic economic principles of competitive markets.⁶¹ The Federal Power Act's requirement that rates be just and reasonable prohibits setting rules in a manner that so fundamentally misses the mark by design.

Question 5:

The Expanded MOPR presents a difficult choice for states with ambitious clean energy requirements and has caused several states to explore whether to instead require LSEs to rely upon the Fixed Resource Requirement ("FRR"). Exiting the PJM capacity market can enable LSEs subject to state clean energy requirements to procure capacity from state-supported resources rather than being required to support unnecessary emitting resources, and to avoid paying RPM prices artificially increased by the Expanded MOPR.⁶² While the Commission has previously asserted that the Expanded MOPR does not prevent states from implementing their policies,⁶³ this claim ignores that many PJM states have greenhouse gas reduction requirements that require the displacement of carbon-emitting generation, not just the construction of carbon-free generation.⁶⁴ Moreover, states aim to implement their clean energy requirements without foisting unreasonable costs upon ratepayers.⁶⁵

At least one large LSE—Dominion Energy Virginia—has already elected FRR since the imposition of Expanded MOPR.⁶⁶ In prior testimony before the Virginia State Corporation Commission, Dominion Energy's Director of Strategic Planning Glenn Kelly links this decision to FERC's decision to impose the Expanded MOPR.⁶⁷

Evaluations of the FRR are underway in at least four additional PJM jurisdictions.

⁶¹ Nov. 2020 Brattle Report at 15–16, 28 (The application of MOPR to state policy resources “imposes unnecessary excess costs on customers and society, interferes with the ability to achieve State policy goals, and effects a wealth transfer from customers to incumbent capacity sellers.”).

⁶² For a general description of the benefits of electing the FRR from the state's perspective, see Miles Farmer & Rob Gramlich, *Whether to Frrexit: Information States Need on the Costs and Benefits of Departing the PJM Capacity Construct* (May 2020), <https://gridprogress.files.wordpress.com/2020/05/whether-to-frrexit-paper7.pdf>.

⁶³ *Calpine Corporation et al. v. PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,034 at P 66 (Apr. 16, 2020).

⁶⁴ See, e.g., Md. Code Ann., Env't § 2-1204.1; N.J.S.A 26:2C-37; Va. Code Ann. § 10.1-1308.

⁶⁵ Va. Code Ann. § 56-585.5(C)(5) (establishing alternative compliance payment level); Md. Code Ann., Pub. Util. § 7-704.1(e)(1)(iii) (rate impact cap for offshore wind procurements).

⁶⁶ See RPM Base Residual Auction Planning Period Parameters at cell H56.

⁶⁷ Transcript of Hearing, Vol. 2, Case No. PUR-2020-00035, at 244:4–12 (Oct. 27, 2020 Virginia State Corp. Comm'n) (testifying that “if the MOPR goes through as written” it was “not really a matter of if, it's a matter of when” Dominion would elect the FRR).

- In early 2020, the New Jersey Board of Public Utilities initiated an Investigation of Resource Adequacy Alternatives,⁶⁸ which has included FRR as a primary focus of consideration, including a November 2020 work session on FRR designs,⁶⁹ and evaluation of the costs and benefits of FRR.⁷⁰
- The Maryland General Assembly convened a FERC Legislative Working Group to explore the impacts of MOPR and the FRR option, many members of which also filed comments at the Commission regarding PJM's June 2020 compliance filing.⁷¹ The Maryland Energy Administration recently published an assessment entitled Alternative Resource Adequacy Structures for Maryland, which evaluates two different structures for the FRR in Maryland.⁷²
- In December 2020, the District of Columbia Department of Energy and the Environment published a notice of funding for a "PJM Capacity Market Withdrawal Feasibility and Alternatives Study."⁷³
- The Clean Jobs, Workforce and Contractor Equity Act – legislation introduced in both houses of the Illinois General Assembly – grants authority to the Illinois Power Agency to conduct a capacity auction if a utility in the state elects the FRR, and establishes criteria for development of a procurement plan.⁷⁴

Question 6.a.:

Increased reliance on the FRR provides greater flexibility for states and LSEs in meeting their capacity obligations, giving suppliers and purchasers a greater array of contracting options and allowing performance to be assessed on a portfolio basis, which facilitates the greater use of seasonal and intermittent resources currently penalized by RPM.⁷⁵ This will also put downward pressure on capacity prices in zones that remain in the market. An analysis by ICF International showed that in the near term, election of the FRR by LSEs in two to four PJM

⁶⁸ Order Initiating Proceeding, Docket No. EO20030203 (N.J. Bd. of Pub. Utils. Mar. 27, 2020).

⁶⁹ Notice of Work Session – Investigation of Resource Adequacy Alternatives, Docket No. EO2003020 (N.J. Bd. of Pub. Utils. Oct. 28, 2020).

⁷⁰ Notice of Work Session – Investigation of Resource Adequacy Alternatives, Docket No. EO2003020 (N.J. Bd. of Pub. Utils. Mar. 15, 2021).

⁷¹ Joint FERC Order Work Group, *House Economic Matters Committee and Senate Finance Committee Agenda*, (Oct. 21, 2020) <http://www.mgaleg.maryland.gov/pubs-current/ECM%20-%20Meeting%20Material%20-%20October%2021,%202020.pdf>; *Calpine Corp. et al. v. PJM Interconnection, L.L.C.*, 173 FERC ¶ 61,061 at P 62 (2020).

⁷² See Brattle Maryland Analysis.

⁷³ DC Department of Energy & Environment, *Notice of Funding Availability - PJM Capacity Market Withdrawal Feasibility and Alternatives Study* (Dec. 18, 2020), <https://doee.dc.gov/release/notice-funding-availability-pjm-capacity-market-withdrawal-feasibility-and-alternatives>.

⁷⁴ S.B. 1718 & H.B. 804, 102 Gen. Assemb., (Il. 2021–2022) (proposed new subsection (k) to 20 Ill. Comp. Stat. Ann. 3855/1-75).

⁷⁵ Farmer & Gramlich, *supra* note 62 at 9.

states would result in substantially lower near- and mid-term BRA prices.⁷⁶ Monitoring Analytics' analysis of how election of FRR by certain LSEs would affect prices in the rest of PJM were directionally similar.⁷⁷ These lower prices result from the overall reduction of demand in RPM, since FRR entities need only procure enough capacity to meet the installed reserve margin target, rather than the much higher reserve percentage that has cleared in recent auctions. Such lower prices are actually a correct signal as they would more precisely reflect the actual supply needed to meet PJM's resource adequacy target without the excess procurement that results from the mis-calibrated Variable Resource Requirement ("VRR") curve.⁷⁸

Question 6.c.:

The Expanded MOPR affects a range of voluntary, bilateral transactions where the transaction is motivated or enabled in some way by state or local policy, including transactions involving public power entities and vertically-integrated utilities. Specifically, the MOPR applies to private, voluntary transactions of longer than one year if a self-supply entity is responsible for offering the capacity resource, or if the contract resulted from a procurement that was not fuel-neutral or was for the purpose of supporting the development of a capacity resource.⁷⁹ These provisions significantly limit the ability of self-supply entities to enter into private voluntary, bilateral transactions that meet their customers' needs, or that reflect the self-supply entities' business judgment regarding the value of long-term contracts. Likewise, it constrains the ability of resources to obtain the kind of long-term contracts that are often essential to reasonably priced financing.

Question 9:

Yes, the Expanded MOPR should be eliminated or significantly revised for the reasons stated in response to Questions 8 and 12–14. Consistent with the logic of eliminating the Expanded MOPR, the PJM Tariff should also be

⁷⁶ S&P Global, *Analysis finds MOPR could cause collapse in PJM capacity market pricing*, (Feb. 5, 2020), <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/analysis-finds-mopr-could-cause-collapse-in-pjm-capacity-market-pricing-56962056>.

⁷⁷ See, e.g., Monitoring Analytics, *Potential Impacts of the Creation of Ohio FRRs*, at 3 Tbl. 1 (July 17, 2020), https://www.monitoringanalytics.com/Reports/Reports/2020/IMM_Potential_Impacts_of_the_Creation_of%20Ohio_FRRs_20200717.pdf (showing rest-of-PJM prices declining by 11–26% depending on the scenario). For additional Monitoring Analytics reports for Illinois, New Jersey, and Maryland, see Monitoring Analytics, *Reports – 2020*, <https://www.monitoringanalytics.com/reports/Reports/2020.shtml> and Monitoring Analytics, *Reports – 2019*, <https://www.monitoringanalytics.com/reports/Reports/2019.shtml> (last visited Apr. 26, 2021).

⁷⁸ See generally James F. Wilson, *Over-Procurement of Generating Capacity in PJM: Causes and Consequences*, Sierra Club (Feb. 2020), <https://www.sierraclub.org/sites/www.sierraclub.org/files/blog/Wilson%20Overprocurement%20of%20Capacity%20in%20PJM.PDF>.

⁷⁹ See *Calpine Corp. et al. v. PJM Interconnection, L.L.C.*, 173 FERC ¶ 61,061 at PP 76, 87 (2020).

modified to maximize FRR flexibility (e.g., by removing the initial 5 year election period and permitting LSEs to procure less than 100% of load), or to make LSE participation in the capacity market voluntary subject to the LSE otherwise meeting resource adequacy requirements, as further discussed in Questions 15–16 below. No other changes to the PJM Tariff need accompany elimination of the Expanded MOPR in order to ensure resource adequacy, reliability, or just and reasonable rates.

Question 10:

No. The proper determination of resources' reliability value (their UCAP, in PJM terms) is an independent question from market power mitigation. The Commission's relevant orders⁸⁰ have never suggested that the MOPR is intended to protect against a situation where state-supported resources would be displacing non-state-supported resources, but *not* providing equivalent capacity value; recent claims to the contrary appear to have been manufactured from whole cloth. In any event, offer mitigation would be a poor tool towards this end, as it would fail to address resource adequacy concerns arising from improperly counted non-state-supported resources.

Resource accreditation is currently being addressed under a separate proceeding to consider tariff revisions to implement a capacity accreditation method known as Effective Load Carrying Capability that replaces older heuristics with a method based firmly on empirical analysis.⁸¹ Arguments that MOPR reform should be linked to correcting alleged shortcomings in capacity accreditation rules relate to long-debunked claims regarding the reliability value of renewable resources, and would lead to needless delay in MOPR reform. In any case, the bloated reserve margins in PJM undermine any claim of exigency to revisit capacity accreditation in conjunction with MOPR reform.⁸²

Question 12:

A MOPR designed to address only buyer-side market power would be a clear improvement over the Expanded MOPR. However, without a clear definition or evidence of buyer-side market power, even a Targeted

⁸⁰ *Calpine Corp. et al. v. PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,236 (2018); and *Calpine Corp. et al. v. PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,239 (2019).

⁸¹ See Transmittal Letter, Docket No. ER21-278-000, *PJM Interconnection L.L.C., Effective Load Carrying Capacity Construct*, at 2–3 (Oct. 30, 2020), Accession No. 20201030-5238. (“The primary objective of the ELCC construct is to ensure that non-traditional resources, as a group, cannot offer to provide more capacity than their aggregate reliability value.”) See also *id.* Attachment C, *Affidavit of Dr. Patricio Rocha Garrido on Behalf of PJM Interconnection, L.L.C.* at 10.

⁸² See Alex Engel et al., *Cutting Carbon While Keeping the Lights On*, Rocky Mountain Institute (Mar. 2021) <https://rmi.org/insight/cutting-carbon-while-keeping-the-lights-on/> (finding that PJM has excess dispatchable capacity, such that the region meets its reserve margin without accounting for any renewables currently on the system).

MOPR runs the risk of over-mitigating and thus doing more harm than good. An overly broad definition of buyer-side market power would detract from PJM's stated goal to "respect and accommodate state resource preferences and facilitate competitive, least-cost procurement of these policy choices,"⁸³ and fail to alleviate Manu Asthana's stated concerns with the MOPR, including double procurement and impediments to state policy goals.

As former chairman Norman Bay observed, the label of buyer-side market power "is imprecise and somewhat of a misnomer"; and "while the Commission applies elaborate screens to detect the exercise of seller market power, it does not apply similar screens to detect buyer-side market power in capacity markets. The Commission simply assumes it exists."⁸⁴ Buyers in the PJM capacity market, with its administrative demand curve, also lack the means conventionally associated with an exercise of market power, such as forcing sellers to accept prices below the marginal cost, or "withholding purchases in order to lower prices."⁸⁵ Under the Commission's precedent, buyers are presumed to have market power (without any analysis of whether they can influence the market price through their actions *as buyers*), and to have exercised that power by taking an action that influences the supply curve (an action which depends in no way on the buyer's dominance *as a buyer*).⁸⁶

The disconnect from any commonly understood concept of buyer-side market power laid the groundwork for the Commission's more recent decisions to do away with any pretense that such market power must be present to justify mitigation of an offer that has the potential to lower capacity prices. The Commission's obligation to protect consumers from excessive rates requires a nuanced approach, as overmitigation deprives consumers of the benefits of competition as well as the value of the revenue they have already provided to generators through state and local policies.⁸⁷

Any bright line test for "the intent to suppress price ex-ante in a way that sufficiently accommodates state resource preferences"⁸⁸ poses challenges. For example, using an equation that determines whether a resource

⁸³ PJM, Capacity Market Workshop #4—Next Steps, at 6 (Mar. 26, 2021) ("March 26 Workshop"), <https://www.pjm.com/-/media/committees-groups/committees/mic/2021/20210326-workshop-4/20210326-item-03-capacity-market-workshop-4-next-steps.ashx>.

⁸⁴ *Order on Reh'g*, 158 FERC ¶ 61,138 (2017) (Bay, Comm'r, concurring).

⁸⁵ *See, e.g.*, Aff. of Rob Gramlich in Support of Comments by Key Capture Energy, LLC, at P 10, Docket No. EL19-86-000 (Aug. 19, 2019), <https://gridprogress.files.wordpress.com/2019/08/affidavit-on-new-york-iso-buyer-side-mitigation-for-key-capture-energy.pdf>.

⁸⁶ *See generally* Jay Morrison, *Capacity Markets: A Path Back to Resource Adequacy*, 37 Energy L.J. 1, 48–49 (2016).

⁸⁷ *Id.* at 33 ("Mitigation of self-supply bids can very easily chill pro-competitive legitimate conduct unless very carefully limited to prevent abusive behavior.").

⁸⁸ March 26 Workshop at 13.

procurement reduces prices paid by load more than the cost of the resource, such as proposed by E-Cubed,⁸⁹ could sweep in legitimate state procurements that happen to increase supply and as a result of economic fundamentals, lower prices. If a resource receiving payments under state policies (such as a bilateral contract with an offshore wind project) produces a savings to consumers that exceed such payments (either in a single year or on a net present value basis) that is not a demonstration of market power. Moreover, a competitive bidding process is designed to procure resources that are the most cost-effective subject to meeting state policy goals; customers should not be penalized for state policies that achieve net savings.

The Commission has in the past relied on unit-specific offer floors to address the risk of over-mitigation that inevitably results from ex-ante, bright line rules.⁹⁰ However, there is reason to believe the unit-specific offer floor process fails to recognize factors that legitimately lower costs, as discussed in response to Question 3, above. Even if the Commission were to put in place a Targeted MOPR, it would be critical to establish rules that prevent seller-documented costs or revenues from being ignored simply because they depart from a market average, and to ensure that revenues earned outside of FERC's markets, including through state policy mechanisms, are fully credited in determining a unit's offer.

Question 13:

To the extent there is a Targeted MOPR, it should apply extremely narrowly, and include exemptions as discussed in Question 14 below. For example, the Targeted MOPR should be limited only to new natural gas-fired generation resources, as RPM was originally designed, based on the initial rationale that because such resources have lower capital costs and can generally be constructed prior to the next capacity auction, they would be the choice for an entity seeking to exercise buyer-side market power.⁹¹ PJM should also create a new tariff provision requiring a periodic analysis of whether other types of resources could be vehicles for the exercise of buyer-side market power. A Targeted MOPR should also apply only to new resources as existing resources tend to already have a lower competitive threshold since they offer at their avoidable costs.

Question 14:

⁸⁹ E-Cubed, *Capacity Market Design Principles* (Mar. 4, 2021), <https://pjm.com/-/media/committees-groups/committees/mic/2021/20210304-workshop-2/20210304-item-03q-e-cubed-capacity-market-principles-memo.ashx>.

⁹⁰ See *Calpine Corp.*, 171 FERC ¶ 61,034 at PP 32, 38.

⁹¹ *Calpine Corp. et al. vs. PJM Interconnection, LLC*, 169 FERC ¶ 61,239 (2019) (Glick, Comm'r, dissenting at P14).

While no MOPR is preferable to a Targeted MOPR, if there were to be a Targeted MOPR it should be designed with extreme caution to avoid the problems discussed in response to Question 12. In addition to limiting it to new natural gas resources as described above, there should be clearly defined categories of resources that are fully exempt from the Targeted MOPR, including:

- Resources developed pursuant to state and local legislative or executive mandated procurements or policy goals;
- Resources procured to supply power to customers of utilities that retain an obligation to serve customers, and/or meet the policy goals of the utility's governing body, in the case of public power and cooperative utilities, or the state laws or regulations applicable to the utility; and
- Bilateral contracts, including virtual power purchase agreements, arranged with corporate entities, municipalities, and other non-utility purchasers to meet corporate, government or other institutional environmental goals.

A Targeted MOPR that hews closely to the notion of buyer-side market power, rather than more amorphous notions of price suppression, should exclude resources developed pursuant to state and local law from its scope, since the state is not a buyer. While this may seem to obviate the need for an exemption, given uncertainty about the interpretation of a Targeted MOPR and the importance of the issue to states, the Commission must leave no ambiguity with respect to state policy-supported resources.

Question 15:

The FRR has been a component of RPM since its inception, and while it has traditionally been used mostly by vertically-integrated utilities, it can readily be adapted for use in restructured states to help meet clean energy requirements at lower cost.⁹² The FRR does not threaten to balkanize the market or roll back the broader benefits of regionalization, as utilities electing the FRR could remain empowered to contract with capacity outside their state's boundaries to the extent transmission is available. The FRR may allow states to better harmonize their capacity procurement with their clean energy procurements, and can enable innovation at the state level, as seen in New Jersey's consideration of the Integrated Clean Capacity Market at the state or multi-state level.⁹³ Given FERC's

⁹² See Farmer & Gramlich, *supra* note 62.

⁹³ See New Jersey Board of Public Utilities & Brattle Group, *Integrated Clean Capacity Market A Competitive Market for Powering the Clean Electricity Future* (Jan 21, 2021), <https://www.nj.gov/bpu/pdf/publicnotice/Public%20Notice%20for%20RA%20Work%20Session%20on%20Clean%20Energy%20Markets.pdf>.

long-standing precedent that it will allow states to pursue a variety of models to ensure resource adequacy, the FRR should remain as an option for utilities and states to pursue.⁹⁴

For states that do not desire to achieve resource adequacy entirely outside of the capacity auction, we agree that greater flexibility for self-supply arrangements should be explored. In particular, the Commission should consider implementing a voluntary residual market design in which LSEs can meet a mandatory reliability requirement through a combination of bilateral arrangements and purchases through the capacity auction. This issue is discussed further in response to Question 16.

Question 15.a.:

The FRR option should be made more flexible by allowing utilities to secure some supply through market mechanisms outside of the RPM, but still have the option to participate in the RPM as needed. This is functionally similar to making RPM a residual market, though there could be some differences in implementation. This flexibility would not only enable LSEs to continue to rely on the centralized auction to the greatest extent consistent with their policy objectives, but would also enable the market power mitigation mechanisms in the auction to better discipline offers in the bilateral market. See the response to Question 16 for more detail on this.

Question 16:

Yes, LSEs should be empowered to procure capacity outside of the RPM. The capacity auctions themselves have not generally provided incentives for resource development with the exception of new merchant generation, which tends to finance their plants with riskier and higher-cost financing, such as equity and Term Loan B debt, to account for the greater risks of volatility.⁹⁵ The vast majority of this merchant-built generation has been gas-fired and constructed in the Eastern RTOs, primarily in PJM where there is a glut of such resources. For resources procured by LSEs (including in compliance with state requirements) and renewable resources developed by independent power producers, bilateral contracting represents the most efficient methodology for providing long-term market signals justifying investments in new generation that could be designed to last for upward of forty years.⁹⁶ At least half of the new storage capacity constructed in recent years was built under bilateral contracts or

⁹⁴ *California Indep. Sys. Operator*, 116 FERC ¶ 61,274 at P 1117 (2006). FERC recently re-committed to this structure in *CXA La Paloma, LLC v. California Independent System Operator*, 165 FERC ¶ 61,148 (2018).

⁹⁵ Elise Caplan, *How new generation is funded*, American Pub. Power Ass'n (Aug. 29, 2018), <https://www.publicpower.org/blog/how-new-generation-funded>.

⁹⁶ Jay Morrison, *Capacity Markets: A Path Back to Resource Adequacy*, 37 Energy L.J. 1, 48–49 (2016) (“In a way that centralized capacity constructs cannot, the bilateral markets permit investors and LSEs to customize their

ownership by a utility,⁹⁷ a trend that will likely increase with the development of hybrid storage and renewable projects. Such bilateral contracting would be used within an FRR, with a residual capacity auction available for LSEs to secure additional capacity to cover the bulk of their needs or offer surplus for sale where actual demand is below expectations.

The combination of state and integrated utility capacity procurements through bilateral contracts, energy and ancillary services markets and a residual auction would provide sufficient incentives for new capacity supply resources to enter or remain in the market—or for specific technology types to be developed. The residual auction’s demand curve would reflect the level of reliability requirement remaining after removing the quantity of load already procured outside the auction, and the auction would clear the quantity of resources needed to meet that demand curve. If low prices occurred in the residual auction, this would necessarily correspond to a surplus of supply and thus a high level of resource adequacy.⁹⁸

As a practical matter, a residual market should still exist as a viable primary option for all LSEs to secure their capacity obligation, as well as a backstop to ensure all LSEs that prioritize self-supply are meeting their obligation. And generation owners, whether independent power producers or LSEs with excess resources, should then be permitted to compete to serve that remaining shortfall. Transforming the capacity market from a mandatory, primary mechanism, to one that is voluntary would dramatically expand states’ abilities to procure needed capacity through innovative methods. A similar market design has served Midcontinent Independent System Operator (“MISO”) well for years.⁹⁹

Question 17:

As partially explained in Question 10 above, we agree that removing the Expanded MOPR will not adversely affect resource adequacy or reliability, and instead it will remove a market rule that intentionally overprocures capacity in PJM.¹⁰⁰ But there is also no basis for concern that it will cause a shortfall in supply. It bears

transactions to monetize each of the different potential value streams, to manage risk amongst each other, and to provide long-term secure income streams to support the investments.”).

⁹⁷ American Pub. Power Ass’n, *Financial Arrangements behind New Generating Capacity, 2018–2019 Update*, at 8–9 (Oct. 2020) (showing merchant storage was about one-third of the total storage megawatts built in 2018–2019), <https://www.publicpower.org/resource/financial-arrangements-behind-new-generating-capacity>.

⁹⁸ Nov. 20 Brattle Report at 17.

⁹⁹ See *MISO*, 139 FERC ¶ 61,199 (2012); *MISO*, 153 FERC ¶ 61,229 at P 3 (rejecting MISO’s 205 filing that proposed to impose a mandatory capacity market).

¹⁰⁰ Michael Hogan and David Littell, *Get What You Need: Reclaiming Consumer-Centric Resource Adequacy*, Regulatory Assistance Program (“RAP”), at 2 (June 2020) (achieving resource adequacy also means not requiring consumers to pay for capacity beyond the point at “which the incremental cost of additional resources would exceed

noting that even though PJM has yet to run an auction under the Expanded MOPR, the region has consistently exceeded its installed reserve margin targets.¹⁰¹ To the extent that prices decline absent an Expanded MOPR, they cannot fall lower than the cost of the marginal unit needed to meet demand—accounting for all sources of revenue for that unit. If supply grows scarcer, and other sources of revenue are not available to increase such supply, then capacity prices will rise and attract new entrants.

As discussed above, no centralized capacity auction can truly provide sufficient incentive on its own for investments in new generation because the signals are too uncertain and short-term compared to the time horizon that must be considered before investing in new energy infrastructure. Moreover, capacity is not a fungible product and the capacity market does not signal the types of resources that are most needed. The defining trend of the past several years, even without expanded MOPR in place, was an excess procurement of new capacity based on merchants' misreading price signals; there is no reason to add yet another thumb on the scale for excess investment.¹⁰²

Question 19:

Merchant resources, by their definition, are participating in a competitive market where they take on a greater level of risk in exchange for receiving a potentially higher reward by virtue of the fact that they do not have a regulated profit level. This higher level of risk is reflected in the generally greater capital cost for financing these plants.¹⁰³ Resource procurement through self-supply or pursuant to public policy goals is one of many risks that investors absorb in markets.¹⁰⁴ This is, in fact, the point of a competitive market: not all investments may pan out if the market results in lower prices than those investors expected, but it is not the job of the market to fulfill the expectations of those who invest in it.

their incremental reliability value to consumers in reducing the risk of involuntary service interruptions.”) (“Hogan & Littell”). This view of resource adequacy is consistent with FERC’s own standards for determining whether capacity market demand curves will result in just and reasonable rates. *See, e.g., ISO*, 161 FERC ¶ 61,035 at P 38 (2017) (establishing that the demand curve “should produce prices high enough to meet the reliability standard but not so high as to add unnecessary costs”).

¹⁰¹ PJM Jump Ball Filing at 35–39.

¹⁰² James F. Wilson, “*Missing Money*” Revisited: *Evolution of PJM’s RPM Capacity Construct*, American Pub. Power Ass’n, at 6 (Sept. 2016).

¹⁰³ Potomac Economics State of the Market Reports for ISO and New York Indep. Sys. Operator (“NYISO”) estimate a greater weighted average cost of capital for merchant than regulated resources by about two percentage points. *See, for example, David B. Patton et al., 2019 State of the Market Report for the NYISO Markets*, Potomac Economics, at 37 (May 2020).

¹⁰⁴ *See* Letter to Chairman Chatterjee and Commissioners LaFleur, McIntyre, Glick and McNamee of the American Public Power Association, et al., Docket No. EL16-49 (Dec. 21, 2018), Accession No. 20181221-5253.

It is also worth noting that the majority of new capacity that came online in recent years in PJM was gas-fired merchant capacity, which was built at a time of excess capacity procurement and growing state-sponsored renewable resource development. This history raises questions about the rationality of the decision making of developers of merchant natural gas resources,¹⁰⁵ and demonstrates the absence of any justification for price protections for entities making such decisions.

Question 19.a.:

As noted above, we do not agree that rates would be unjust and unreasonable, in the absence of Expanded MOPR, simply because certain merchant generation projects may find it more challenging to obtain financing in a market where there is less demand for their product. That said, it is of course important for the Commission to ensure that prices in the capacity market are sufficient to support needed investment in the region accounting for all resources, after energy and ancillary service revenues are considered. The proper approach, as the Commission has long held, is to ensure that the Net cost-of-new-entry (“CONE”) value used to establish the capacity market demand curve accurately reflects the actual cost of new entry.¹⁰⁶ The Commission should not impose or invite any anticipatory changes of the type described in this question, as doing so is likely to result in a Net CONE that is less reflective of reality. Any future adjustments to Net CONE inputs should be based on observed and demonstrated changes in the expected economic life or cost of capital experienced by developers of capacity supply resources.¹⁰⁷ Anticipatory changes that would increase the level of Net CONE would be especially unreasonable in light of the chronic excess capacity that has cleared in the BRA over the last decade.¹⁰⁸

Question 19.b.:

¹⁰⁵ In 2019, S&P Global reported that investors were reassessing the value of these merchant combined-cycle plants in the face of low capacity prices and high reserve margins, and that many merchant owners had been selling these plants at a discount—further demonstrating that entities were not properly reading or outright ignoring the price signals. Steve Piper, *Overpowered: Power plant sales in PJM: A buyer’s market*, S&P Global Market Intelligence (Dec. 3, 2019), <https://www.spglobal.com/marketintelligence/en/news-insights/trending/elgCSmNgBtyFr0xx-EHjIw2>. See also James Kennedy & Eric Hsieh, *Assessing the economics of newbuild gas plants in the PJM market*, 31 *The Elec. Journal* 10, 10–15 (Jan. 2018).

¹⁰⁶ See, e.g., *PJM*, 129 FERC ¶ 61,090 at P 9 (2009) (“Ideally, the administrative value of CONE should be a reasonable approximation of the “true” value of CONE, that is, the lowest capacity payment required to foster the market-based investment in a new reference resource.”).

¹⁰⁷ Future review of these parameters may also reveal that it makes sense to switch to a different reference resource, such as one that is consistent with widely shared state policy goals in the region, rather than sticking with a resource that is built with less and less frequency. See, e.g., *NYISO*, 175 FERC ¶ 61,012 at P 3 (Apr. 9, 2021) (Glick, Comm’r, dissenting in part).

¹⁰⁸ See Wilson, *supra* note 11.

Transparent and predictable state policies aid investors in making informed decisions about what types of resources will provide the greatest return. Investors who fail to pay attention to this information should not be bailed out for the resulting losses. As Brattle recently testified in response to a complaint seeking to expand buyer-side mitigation policies in New York, “[m]erchant generation investors operate in a market and regulatory context that has always included environmental regulations from which they should not expect to be indemnified any more than they should be charged when regulations work in their favor.”¹⁰⁹ Sophisticated investors are more than capable of making long-term investment decisions while assessing both market and regulatory risks.

Of course, existing investments do not always go according to plan: market conditions change, regulatory priorities change, and any policy change is inevitably going to create winners and losers among investors. The role of the Commission and the RTOs is to design markets that harmonize with and react to shifts in market and regulatory conditions while ensuring that there are sufficient generation resources at any given time. Again, Brattle’s testimony offers helpful context: investors could have and should have seen the regulatory changes New York has undergone over the past decade as it has sought to minimize its greenhouse gas emissions; “[t]hey chose to bear the risks and rewards associated with changing market conditions and regulations,” and it has worked out better for some investors than others.¹¹⁰ The ability to understand the regulatory environment and make new investments accordingly is a natural and foreseeable demand of investment practice.

Question 19.c.:

LSEs are subject to resource adequacy requirements and will therefore procure resources as needed through multiple measures, with the goal of the capacity market to develop prices to accurately reflect those actions. A Targeted MOPR, as designed for the very rare occasions (if at all) of buyer-side market power, would not impede the ability of the capacity market to develop price signals for any capacity needed net of those resource decisions. As explained previously, if a Targeted MOPR is broader in scope, there is a real risk that it could overprocure resources at an unnecessarily elevated price, which is inconsistent with the goals of resource adequacy to minimize customer cost.

Question 20:

¹⁰⁹ Nov. 20 Brattle Report at 19.

¹¹⁰ *Id.* at 20.

Energy and ancillary services markets should be empowered to provide accurate signals and incentives for needed resources, including flexible resources, storage, and demand-response, during all time intervals. The details of what market changes would help achieve this could be the subject of an entire proceeding; but scholars at the Institute for Policy Integrity at New York University provide an apt summary in a recent paper:

With the growing presence of renewables, flexibility will play an increasingly important role in grid balancing. Sustaining resources and business models capable of providing that flexibility requires more granular price formation than has been provided for historically. For energy-plus-capacity market design, raising energy price caps and expanding existing scarcity pricing elements (with emphasis on reserve procurement) is particularly relevant, facilitating investment without imposing capacity markets' bias in favor of gas-fired peaker plants.¹¹¹

Similarly, the Regulatory Assistance Project notes that that “energy market price formation is the foundation for well-functioning markets,” with needed reforms including allowing price caps to rise to the value of lost load.¹¹² But RAP also notes that higher price caps must be accompanied by effective seller market power mitigation.¹¹³

The Commission and the RTOs/ISOs should continue to explore such improvements to energy and ancillary service price formation to fully value flexibility and availability to generate power during times the grid is stressed, and to avoid artificially capping the revenues to be earned in these markets than in capacity markets. Doing so will strengthen and refine investment signals in wholesale markets.

One concrete change could be eliminating the RPM's historic overprocurement of capacity resources, which itself dampens the effects of any energy and ancillary services price signals, as noted in response to Question 4. By eliminating the Expanded MOPR, and addressing other sources of overprocurement in PJM, the Commission can break this cycle and unleash the capability of energy and ancillary service markets to drive investment that best reflects the needs of the changing grid.

Question 21:

FERC's responsibility toward such states is to ensure that the capacity market rules enable resource adequacy requirements to be met at a reasonable cost to consumers.¹¹⁴ The Expanded MOPR does not meet this objective, but instead forces consumers in *all* states to pay higher capacity prices. States that have not overtly

¹¹¹ Sylwia Bialek et al., *Resource Adequacy in a Decarbonized Future*, Institute for Policy Integrity, New York University School of Law, at 35 (Mar. 2021).

¹¹² Hogan & Littell at 12.

¹¹³ *Id.*

¹¹⁴ *NYISO*, 172 FERC ¶ 61,058 (2020) (Glick, Comm'r, dissenting at P 5).

provided support for specific resource types¹¹⁵ are not harmed by policies in other states. As explained in response to Question 19.c, the lower capacity prices that result from allowing state supported resources to offer at their true net CONE or net avoidable cost rate, will never fall lower than the level of the marginal resource needed to meet the resource adequacy standard.¹¹⁶ For this reason, states can choose to rely solely on revenues from FERC-jurisdictional markets to incent the development of supply resources needed to support resource adequacy.¹¹⁷

Moreover, it is not the job of the wholesale markets to insulate each state from other state policies as doing so would contradict a central benefit of a centrally operated energy market—the efficiency of centralized least-cost dispatch across a geographic region of the full array of resources.

Question 22:

The Commission should make this reconciliation a top priority and substantially eliminate the Expanded MOPR as soon as possible. Prompt action is needed in order to rebuild trust with states that will be needed for state-federal collaboration as the electricity sector undergoes rapid transformation in the coming years. Prompt action is also needed to prevent consumers from overpaying for capacity in the next three BRAs, which will happen in relatively rapid succession in the coming 20 months. Finally, keeping the MOPR in place for longer than absolutely necessary will only invite inefficient resource investment decisions based on artificially elevated price signals, and prolong the uncertainty investors currently face.

Following elimination of the Expanded MOPR, the Commission should consider more structural changes to better align RTO resource adequacy mechanisms with state authority over the resource mix. Given the frequency with which the Commission has changed its view on the scope of buyer-side market mitigation in the last decade, investors and states have reason to be concerned that MOPR reforms today will not be durable enough to provide the needed foundation for lasting federal-state coordination. The Commission should consider two categories of more structural changes, which are not mutually exclusive: (1) governance reform to provide states with a more substantial role in RTO resource adequacy decision-making, including influence over PJM's exercise of Section 205

¹¹⁵ Public support for different generation resources and fuel development are pervasive in the PJM region. See Protest of Clean Energy Advocates, *supra* note 22, at 2 and App. E, *passim*.

¹¹⁶ Because of the shape and position of the VRR curve, it is possible for the quantity of capacity cleared to fall below the Installed Reserve Margin, but such a circumstance would result in very high clearing prices that would drive new resource development and retention of even costly existing units in subsequent years.

¹¹⁷ Of course, such “non-policy” states’ load is also met with supply from resources supported by other states’ policies and paid for by ratepayers of those other states, as is the nature of a regional grid.

filing rights on certain issues,¹¹⁸ and (2) replacement of the mandatory capacity auction in PJM with a voluntary residual market design.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that the foregoing has been served in accordance with 18 C.F.R. § 385.2010 upon each party designated on the official service list in this proceeding by email.

Dated: April 26, 2021.

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¹¹⁸ See, e.g., Jennifer Chen and Gabrielle Murnan, *State Participation in Resource Adequacy Decisions in Multistate RTOs* (Mar. 2019) (noting that states in PJM have no formal role in PJM's governance structure, especially as compared to Regional State Committees in other RTOs and ISOs, which likely contributes to the conflicts between market designs and state policies), <https://nicholasinstitute.duke.edu/publications/state-participation-resource-adequacy-decisions-multistate-regional-transmission>.

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