

**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.)	EL18-178-000 (Consolidated)

**REPLY COMMENTS OF THE INSTITUTE FOR POLICY INTEGRITY AT
NEW YORK UNIVERSITY SCHOOL OF LAW**

Pursuant to the Federal Energy Regulatory Commission’s (“Commission” or “FERC”) June 29, 2018 Order Rejecting Proposed Tariff Revisions, Granting in Part and Denying in Part Complaint, and Instituting Proceeding Under Section 206 of the Federal Power Act (“June 29 Order” or “Order”),¹ and August 22, 2018 Notice of Extension of Time,² the Institute for Policy Integrity at New York University School of Law (“Policy Integrity”) hereby files these reply comments on potential revisions to the PJM Interconnection, L.L.C. (“PJM”) capacity market, the Reliability Pricing Model (“RPM”).³ Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

On October 2, 2018, Policy Integrity submitted initial comments regarding the

¹ *Calpine Corporation et al. v. PJM Interconnection L.L.C.*, 163 FERC ¶ 61,236, at P 172 (2018) (“June 29 Order”).

² Notice of Extension of Time, Docket Nos. EL16-49-000, ER18-1314-000, ER18-1314-001, EL18-178 (Aug. 22, 2018).

³ On July 6, 2018, Policy Integrity filed a timely motion to intervene in this proceeding by doc-less intervention. This document does not purport to present the views of New York University School of Law, if any.

Commission’s preliminary proposal, under Section 206 of the Federal Power Act,⁴ to revise PJM’s Open Access Transmission Tariff (“Tariff”) in order to address what the Commission characterizes as the price suppressive effects of “out-of-market payments” for certain resources.⁵ Policy Integrity provided comment on both of the high-level components of the Commission’s proposed replacement rate: (1) an expansion of the Minimum Offer Price Rule (“MOPR”) to new and existing resources that receive out-of-market payments as a result of state policies, and, (2) the development of a mechanism to nonetheless accommodate state policies by permitting resources subject to the expanded MOPR to opt-out from the RPM in conjunction with a comparable amount of load (“resource-specific FRR”).⁶

In these reply comments, Policy Integrity addresses a number of proposals for both the MOPR and resource-specific FRR components of a replacement rate that were submitted by other stakeholders in the initial comment period. In short, these comments make the following points:

- In determining the applicability of an expanded MOPR, the Commission should take into consideration the purpose of the organized energy and capacity markets to provide efficient signals for the operation, entry, and exit of resources.
- The Commission should recognize that well-designed policies can enhance economic efficiency by addressing market failures.
- The Commission can differentiate between economically efficient low prices and economically inefficient price suppression when reforming PJM’s capacity market, including in defining eligibility for the MOPR or when setting the MOPR Price Floor.

⁴ 16 U.S.C. § 824e.

⁵ Comments of the Institute for Policy Integrity at New York University School of Law, Docket No. EL18-178-000 (filed Oct. 2, 2018) [hereinafter “Initial Policy Integrity Comments”]. In the June 29 Order, the Commission interchangeably uses the terms “out-of-market payments” and “out-of-market support.” For consistency, in these comments we use the term “out-of-market payments.”

⁶ See June 29 Order at P 157.

- Neither of PJM’s proposals to reform the capacity market would be just and reasonable because they would not properly address overprocurement concerns, would distort efficient bidding incentives, and would lead to inefficient market outcomes.

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I. FIRST PRINCIPLES OF MARKETS

A. Market Efficiency and the Commission’s Role

Under the Federal Power Act, the Commission is tasked with regulating interstate transmission and wholesale sales of electricity,⁷ and ensuring that wholesale rates are “just and reasonable” and “not unduly discriminatory or preferential.”⁸ In the past, the Commission has relied on a variety of regulatory paradigms to achieve the task of ensuring just and reasonable rates, such as cost-of-service regulation. But, more recently, it has been relying on market-based mechanisms aimed at promoting economic efficiency to satisfy its mandate to ensure the justness and the reasonableness of rates.⁹

⁷ 16 U.S.C. § 824.

⁸ 16 U.S.C. § 824d(a), (b)

⁹ See Bethany Davis Noll & Burcin Unel, *Markets, Externalities, and the Federal Power Act: The Federal Energy Regulatory Commission’s Authority to Price Carbon Dioxide Emissions*, N.Y.U. ENVTL. L.REV. Forthcoming. available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3277675

In fact, the principle of “providing market participants with an efficient price signal” has been one of the Commission’s motivations in moving towards market-based solutions, rather than continuing to use administratively-determined prices.¹⁰ The Commission has often argued that price signals in “sustained competitive markets” should be relied on to encourage efficient allocation of resources, adjust supply, promote expansion, and help determine where new generators should be located.¹¹ And, courts have upheld this approach.¹²

Indeed, the most basic result of economic theory is that, under certain well-defined conditions, perfectly competitive markets are economically efficient because they maximize the total net benefit of market participants.¹³ In those markets, market prices reflect perfectly the social marginal costs and, therefore, serve as a signal for efficient allocation of society’s resources. Consequently, if a particular market satisfies certain conditions, the realized outcomes in that market are considered economically efficient.¹⁴ If the Commission’s rules could ensure

¹⁰ See, e.g., Michael J. Gergen, George D. Cannon, Jr., & David G. Tewksbury, *Market-Based Ratemaking and the Western Energy Crisis of 2000 and 2001*, 24 ENERGY L.J. 321, 333-34 (2003) (explaining that “FERC has consistently supported the concept of market-based ratemaking for wholesale sales of electric energy from a policy perspective by maintaining that the ‘benefit of a competitive market is that it enhances efficiency’” (quoting *City of Corona, California*, 101 FERC ¶ 61240, 62028 (Nov. 25, 2002))); Frequency Regulation Compensation in the Organized Wholesale Power Markets, 137 FERC ¶ 61,064, at P 128 (Oct. 20, 2011) (explaining that the market-based system had several benefits, including the fact that it would “encourage market participants to accurately bid their cost to provide the service” and that “better reflect current system conditions and need for frequency regulation”).

¹¹ See Order Directing Submission of Information with Respect to Internal Processes for Reporting Trading Data, 103 FERC ¶ 61,089, P 11 (Apr. 30, 2003); see also Regional Transmission Organizations, Order No. 2000, 65 Fed. Reg. 810, 811 (Jan. 7, 2000) (to be codified at 18 C.F.R. pt. 35) (“Competition in wholesale electricity markets is the best way to protect the public interest and ensure that electricity consumers pay the lowest price possible for reliable service.”); See *FERC v. Elec. Power Supply Ass’n*, 136 S. Ct. 760, 779 (2016) (explaining that FERC had made it a “mission” to “improve the competitiveness, efficiency, and reliability of the wholesale market”).

¹² See *Tejas Power Corp. v. FERC*, 908 F.2d 998, 1004 (D.C. Cir. 1990) (explaining that it is “rational to assume that the terms of their voluntary exchange are reasonable, and specifically to infer that price is close to marginal cost, such that the seller makes only a normal return on its investment”); see *FERC v. Elec. Power Supply Ass’n*, 136 S. Ct. 760, 779 (2016) (explaining that FERC had made it a “mission” to “improve the competitiveness, efficiency, and reliability of the wholesale market”).

¹³ ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 611-13 (7th ed. 2009) (explaining competitive markets will achieve an efficient allocation of resources).

¹⁴ *Id.* (explaining the conditions necessary for competitive markets to achieve efficiency and the conditions under which competitive markets “fail”); See also ANTONIO VILLAR, GENERAL EQUILIBRIUM WITH INCREASING RETURNS 6 (1996) (explaining that price-taking behavior, perfect information, complete markets and quasi-

that the wholesale energy market constructs satisfy such conditions, the resulting prices in these markets would be viewed as economically efficient and guiding society's resources to maximize net social welfare.

B. Market Failures and Deviations from Economic Efficiency

Yet, most markets fail to satisfy those basic conditions, and therefore fail to achieve economic efficiency without intervention. In most cases, markets are harmed by “market failures.”¹⁵ Market power gives sellers (or buyers) power to increase the market price above (or below) competitive levels.¹⁶ Information asymmetry allows buyers or sellers in a market to exploit their information advantage to their benefit.¹⁷ Public goods, such as reliability, are typically underprovided by markets.¹⁸ Externalities are costs or benefits of market transactions that are incurred by third parties and thus not considered by market participants.¹⁹ If there is any such market failure, the equilibrium market price no longer reflects the social marginal cost, and therefore cannot serve as a price signal to guide economically efficient resource allocation decisions of society. In such circumstances, intervention is needed to restore efficiency.

In fact, the Commission has consistently recognized these types of market failures exist in wholesale markets, and has intervened to correct them under its authority to ensure just and reasonable rates.²⁰ For example, sellers with market power can increase market price above

concave payoff functions defined over convex choice sets are required for competitive equilibria to exist and be efficient).

¹⁵ See PINDYCK & RUBINFELD, *supra* note 13, at 612-13.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.* See also PAUL KRUGMAN & ROBIN WELLS, MICROECONOMICS 433-438 (2d ed. 2009); see also Rudy Perkins, *Electricity Deregulation, Environmental Externalities and the Limitations of Price*, 39 B.C. L. REV. 993, 994 (1998).

²⁰ See generally Davis Noll & Unel, *supra* note 9.

competitive levels, and the Commission has implemented mechanisms to mitigate such market power to prevent inefficiently high market prices.²¹ Similarly, the Commission, in the past, has addressed concerns with asymmetric information,²² public goods,²³ and externalities.²⁴

C. Market Inefficiencies Caused by Greenhouse Gas Externalities

Commission-jurisdictional markets, including the PJM Energy Market, currently suffer from a major unaddressed market failure: externalities due to air pollutant emissions, in particular, carbon dioxide emissions.²⁵ As currently constructed, the PJM Energy Market fails to consider the harms that the emissions driven by electricity generation impose on society. In other words, the market does not take into account the full social costs of producing electricity.

Because emitting resources within PJM are not currently required to pay the full external costs that they impose on third parties, they can submit energy market bids below the actual social marginal cost of their generation. Given that emitting resources generate external costs for each MWh they produce in proportion to their emission rates, the more emitting the resource, the higher the divergence between the bid it submits and its true social cost of generation. As a result of these inefficiently low bids, emitting resources get dispatched more often and receive more revenue than is socially efficient. In other words, they receive an implicit subsidy by not having to pay the full social cost of their electricity generation. And, because the bids of resources participating in the market do not reflect the actual social marginal costs of those resources, the resulting prices are not economically efficient.

²¹ Davis Noll & Unel, *supra* note 9, at 25 -29 (explaining how the Commission addressed market power in the past).

²² Davis Noll & Unel, *supra* note 9, at 30-33 (explaining how the Commission addressed asymmetric information in the past).

²³ Davis Noll & Unel, *supra* note 9, at 33-35 (explaining how the Commission addressed public goods in the past).

²⁴ Davis Noll & Unel, *supra* note 9, at 36-38 (explaining how the Commission addressed externalities in the past).

²⁵ There are other air pollution externalities, but we are explicitly focusing on carbon dioxide emissions in the rest of our comments.

So long as these below-cost offers go uncorrected in the energy market, there are spillover effects in the capacity market as well. Given that revenues received from the energy market do not reflect social costs, resources will not bid their true social net going forward costs into the capacity markets. This discrepancy, driven by the inefficient price signals in the energy market, leads to socially inefficient capacity market prices. Therefore, the market failure caused in one market directly leads to inefficient results in the other, interrelated market. And, unless the inefficiencies in the energy market are addressed, capacity markets will continue to have inefficient price signals and will lead to inefficient entry and exit behavior.²⁶

D. Carbon Pricing in ISO/RTO Energy Markets to Address Greenhouse Gas Externalities

The solution prescribed by economics to the inefficiencies in the energy market created by greenhouse gas externalities would be to force emitting generators to internalize the costs associated with pollution through a carbon pricing policy.²⁷ The classically prescribed first-best policy to internalize externalities like carbon emissions is a carbon tax.²⁸ In case of such a tax, an emitting generator would be required to pay an amount equal to the damages it causes for each ton it emits (i.e., for CO₂ emissions, the Social Cost of Carbon).²⁹ Faced with a marginal cost of electricity generation that includes the damage from the CO₂ emissions that it causes, the emitting generator would be forced to revise upwards its bids in the energy market, thus likely

²⁶ See SYLWIA BIALEK & BURCIN UNEL, CAPACITY MARKETS AND EXTERNALITIES 12-3 (2018), http://policyintegrity.org/files/publications/Capacity_Markets_and_Externalities_Report.pdf [hereafter “CAPACITY MARKETS AND EXTERNALITIES”]

²⁷ CAPACITY MARKETS AND EXTERNALITIES, *supra* note 26 at 11-12.

²⁸ See A. C. PIGOU, THE ECONOMICS OF WELFARE (1920).

²⁹ CAPACITY MARKETS AND EXTERNALITIES, *supra* note 26 at 12; *see also* Richard L. Revesz, Michael Greenstone et al., Best Cost Estimate of Greenhouse Gases, 357 Science 655 (2017) (explaining that the federal Interagency Working Group Social Cost of Carbon used the best available economic models, and inputs and assumptions drawn from peer-reviewed scientific and economic literature, to produce highly rigorous estimates of climate damages caused by a marginal ton of carbon dioxide emissions).

clearing that market less often. And, because energy market revenues would change, bids in capacity markets would also change. Further, profits of the emitting resources may fall to the point that some of them receive an efficient signal to exit the market.

A carbon tax applied by the federal government, or a state government, is not the only mechanism to price carbon to correct the market inefficiencies that exist in the energy market and are spilling over into the capacity market. PJM itself can also incorporate the externalities of greenhouse gas emissions into the energy market to ensure the efficiency of its markets by establishing a carbon pricing mechanism similar to the one under discussion at the New York ISO.³⁰ Implementing such a carbon price would lead resources throughout the region to consider the true social costs of their generation into their energy market bids and enhance the efficiency of the energy and capacity markets.

As recent academic literature shows, the Commission has authority to approve a tariff that addresses the market distortions in the energy market caused by the inefficient bidding behavior in the presence of externalities.³¹ This authority stems from the same Federal Power Act authority the Commission has used to ensure just and reasonable rates and limit undue discrimination in the face of market failures that directly affect the marginal cost of generation, including externalities among others.³² And, the Commission's approval of ISO/RTO tariff

³⁰ See N.Y. INDEP. SYS. OPERATOR, CARBON PRICING PROPOSAL RECOMMENDATIONS (Oct. 31, 2018), https://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg_ipptf/meeting_materials/2018-10-29/2018-10-23_IPPTF%20Draft%20Recommendations%20FOR%20POSTING.pdf; see generally N.Y. Indep. Sys. Operator, *Integrating Public Policy Task Force: Meeting Materials*, https://www.nyiso.com/public/committees/documents.jsp?com=bic_miwg_ipptf (last accessed Nov. 5, 2018)

³¹ See Davis Noll & Unel, *supra* note 9 (evaluating FERC's authority to consider a carbon price in an ISO/RTO market based on its role as an economic regulator of efficient markets); See also Joel B. Eisen, *FERC's Expansive Authority to Transform the Electric Grid*, 49 U.C. DAVIS L. REV. 1788 (2016) (arguing that FERC has authority to address externalities because they directly affect rates); Ari Peskoe, *Easing Jurisdictional Tensions by Integrating Public Policy in Wholesale Electricity Markets*, 38 ENERGY L.J. 1, 2 (2017); Christopher J. Bateman & James T. B. Tripp, *Toward Greener FERC Regulation of the Power Industry*, 38 HARV. ENVTL. L. REV. 275, 329 (2014).

³² See generally Davis Noll & Unel, *supra* note 9.

changes to allow the cost of greenhouse gas emissions imposed by state programs to be included in bidding decisions demonstrates that the Commission has already accepted that market outcomes that reflect the social cost of emissions would be just and reasonable.³³

E. Well-Designed State Policies Can Improve Efficiency

In the absence of a carbon price that fully internalizes the externality, states have taken up the mantle of climate action by adopting policies that attempt to achieve a similar outcome to adoption of a carbon price—that is, to achieve carbon reductions through the retention and expansion of non-emitting generation, and heightened retirement of emitting generation. These policies are related to the idea of paying clean resources for avoiding generation externalities. As Policy Integrity has explained previously, these state “externality payment” policies, if well-designed, can move the markets closer to the socially efficient outcome.³⁴ To be clear, as explained above, doing so would be best achieved through the first-best approach of carbon pricing. But in the absence of direct carbon pricing policy, these externality payment policies can begin to address the existing market distortions.

The ability of externality payment policies to enhance market efficiency in a second-best way is well accepted. In his affidavit in support of PJM’s proposed revisions to the RPM, PJM Chief Economist Hung-Po Chao, Ph.D., explains that:

“well-accepted economic doctrine provides a respected framework for acknowledging state subsidies. Specifically, a state-sponsored subsidy program to assist domestic production could, in principle, be justified as a second-best policy intervention to promote the economic welfare of the state when there is . . . an external divergence between the marginal social cost (or value) of particular domestic production and the marginal private cost (or value) of that production. . .

³³ See *Cal. Indep. Sys. Operator Corp.*, 153 FERC 61,087, 61,603 (2015); See *Nat’l Grid Generation, LLC*, 143 FERC 61,163, 62,204 (2013).

³⁴ Policy Integrity Initial Comments at 9-10; Policy Integrity Capacity Repricing Comments at 15; CAPACITY MARKETS AND EXTERNALITIES, *supra* note 26 at 11.

. . . If a marginal divergence is caused by a market imperfection or externality of some kind then it is not considered a distortion.”³⁵

Dr. Chao goes on to explain how subsidies can reduce (which he calls “suppress”) market prices and cause a substitution of resources towards those that receive the subsidy.³⁶ However, Dr. Chao never argues that subsidies that address an externality are distortionary and that they reduce efficiency.³⁷ In fact, he specifically distinguishes between non-distortive state policies that addresses a market imperfection or externality, and distortive state policies that are not tailored to address a market imperfection or externality.³⁸

In addition, Dr. Chao leaves the question of whether the effects of non-distortive policies on market are “significant enough to warrant mitigative or corrective actions” as “a distinct question for the Commission.”³⁹ While, we agree with Dr. Chao that whether or not to mitigate non-distortive policies is a question for the Commission, based on the literature he cites, we go further to recommend that the Commission should not mitigate efficiency-enhancing, non-distortive subsidies.⁴⁰

Dr. Chao also cites to a report from four professors at Pennsylvania State University that assesses the literature on state policies and capacity markets.⁴¹ The Pennsylvania State

³⁵ PJM Initial Comments, Appendix C at P 5.

³⁶ *Id.* at P 6.

³⁷ In the remainder of his affidavit, Dr. Chao appears to assume that state out-of-market payments that would trigger the MOPR are “not tailored to address a market imperfection or externality,” *id.* at P 5. and so allow a subsidized resource to “offer below its economic costs, which will tend to reduce the clearing price below the efficient level that would be set by economic offers, giving rise to market distortions that reduce the long-run efficiency and the social value of the market.” *Id.* at P 8 However, he does analyze whether any particular policies begin to address greenhouse gas externalities.

³⁸ PJM Initial Comments, Appendix C at P 5.

³⁹ *Id.*

⁴⁰ See *infra* Section III.A for an explanation of how the divergence theory does not lead to a conclusion that mitigative actions are necessary for non-distortionary subsidies.

⁴¹ SETH BLUMSACK ET AL., ANALYSIS OF STATE POLICY INTERACTIONS WITH ELECTRICITY MARKETS IN THE CONTEXT OF UNECONOMIC EXISTING RESOURCES: A CRITICAL ASSESSMENT OF THE LITERATURE (Sept. 28, 2018), <https://www.emc.psu.edu/sites/default/files/files/Penn%20State%20Study%20FINAL.pdf>.

University report adopts the reasoning of Policy Integrity’s *Capacity Markets and Externalities* report in finding that the most efficient means of addressing environmental and other externalities is through a tax or similar pricing policy.⁴² These authors also conclude that “if the only two policy options were politically infeasible pollution taxes or targeted subsidies, th[e] argument” that subsidies are “better than leaving the externality unaddressed . . . may well be correct.”⁴³ Unless and until RTOs like PJM move forward with a carbon pricing approach, this is the very circumstance that the Commission is faced with as it determines which subsidies are distorting prices and should be subject to the MOPR, and which are not.

Policy Integrity strongly agrees with Dr. Chao’s and the Pennsylvania State University report’s characterization of the potential efficiency implications of state subsidies in the presence of externalities. State-directed payments that are well crafted to address market failures such as externalities can be efficiency enhancing, and should not all be considered distortionary, especially not without an actual analysis of their welfare implications.

On the other hand, that some policies that target externalities may be well-designed and so efficiency-enhancing does not preclude the possibility that other state policies can be distortionary. For example, policies that provide rent-seeking payments to resources are often distortionary because the value of the payment is not reflective of any particular social value provided by the resource and so the subsidy allows the resource to bid in a way that does not reflect its true net (social) costs.⁴⁴ Policies that pay resources for services for which they are

⁴² *Id.* at 20 (“Economic studies have long shown that pricing activities that internalize negative externalities in ways that are consistent with market competition (via emission taxes or tradeable permit systems) tends to be the most economically efficient mechanism to achieve emission reduction”).

⁴³ *Id.*

⁴⁴ For example, the Public Utilities Commission of Ohio approved a policy that would have provided substantial out-of-market revenue to plants in the state in order to prevent the closure of those plants primarily on the basis of “rate stability,” and “economic development.” *In the Matter of the Application of Ohio Edison Company et al. or Authority to Provide for Standard Service Offer in the Form of an Electric Security Plan* at 80, 88, Case No. 14-

already receiving market compensation may also be distortionary. For example, the state policies that guaranteed additional revenue to new natural gas generators in order to address an alleged in-state capacity deficiency⁴⁵ did not address any market failure because the RPM was specifically established to provide for the socially-efficient level of reliability-related capacity needs.⁴⁶

II. IMPLICATIONS FOR REFORM OF PJM MARKETS IN LIGHT OF STATE POLICIES

A. The Commission Should Differentiate Between Economically Efficient Low Prices and Economically Inefficient Price Suppression

1. Low prices are not necessarily inefficient

In their initial comments, a number of commenters have advanced the idea that state policies that pay resources for the provided environmental services are “suppressing” market prices. For these commenters, state policies have an identical purpose and outcome to the exercise of buyer-side market power—to suppresses prices to the benefit of favored market participants and to the detriment of others—and should be treated equivalently.⁴⁷ As a result, a number of commenters support the idea of a “clean MOPR” that applies broadly to any resource with state or federal support and without an option for any resources to opt-out of the RPM.⁴⁸

The logic of PJM’s extended resource carve out proposal (“Extended RCO”), described in detail

1297-EL-SSO (March 31, 2016), <https://dis.puc.state.oh.us/TiffToPDF/A1001001A16C31B41521H01842.pdf>; see also Complaint of Calpine Corporation et al. a 16-19, Docket No. EL16-49 (filed March 21, 2016).

⁴⁵ *New Jersey Board of Public Utilities v. FERC*, 744 F.3d 74, 99 (2014) (“New Jersey Petitioners claim that the new, gas-fired resources it seeks to build are needed to address New Jersey’s capacity deficiency”).

⁴⁶ PJM Interconnect LLC, 137 FERC ¶ 61,145 at P 89 (2011) [hereafter “November 2011 Order”] (rejecting state concerns that a state mandated resource exemption was necessary to meet reliability needs or congestion, because the RPM is itself designed to provide those attributes).

⁴⁷ Initial Brief of The Electric Power Supply Association at 20, Docket Nos. EL16-49-000, ER18-1314-000, ER18-1314-001, EL18-178-000 (filed Oct. 2, 2018) [hereafter “ESPA Initial Brief”].

⁴⁸ EPSA Initial Brief at 2; Initial Brief of the PJM Power Providers Group at 9-13, Docket Nos. EL16-49-000, ER-1314-000, ER1314-001, EL18-178 (filed Oct. 2, 2018) [hereafter “P3 Initial Brief”]; Initial Brief of NRG Power Marketing LLC at 3-4, Docket Nos. EL16-49-000, ER18-1314-000, ER18-1314-001, EL18-178-000 (filed Oct. 2, 2018) [hereafter “NRG Initial Brief”].

below, relies on a similar idea that state out-of-market support necessarily “suppresses” prices to the detriment of market participants and the efficient functioning of the market. Extended RCO includes “an explicit mechanism, not unlike PJM’s Capacity Repricing, to . . . ensure the market clearing price counters the price suppression that otherwise would result from” a policy that allows subsidized resources to negotiate capacity contracts outside of the RPM.⁴⁹

However, these commenters’ view that capacity prices under state externality payments are necessarily unjust and unreasonable because they are too low misunderstands the Commission’s role with regard to capacity market prices. The Commission’s responsibility under the Federal Power Act is not for prices to be high or for prices to be low. Rather, the goal is for prices to be efficient—that is, to reflect the true costs and value of resources participating in the market so that prices can provide signals for resources to operate, enter, and exit when doing so is most efficient.⁵⁰ Specifically, capacity markets are intended to facilitate just and reasonable energy prices by ensuring sufficient generation is available at peak times and the capacity market bids reflect the residual revenue resources need to enter or continue operating.⁵¹

Yet, because of the interrelationship of energy and capacity markets, the failure to take greenhouse gas externalities into account in the energy market have led to inefficient price

⁴⁹ Initial Submission of PJM Interconnection, L.L.C. at 10.-11, Docket Nos. EL16-49-000, ER18-1314-000, ER18-1314-001, EL18-178-000 (filed Oct. 2, 2018) [hereafter “PJM Proposal”].

⁵⁰ *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288, 1294 (2016) (“FERC extensively regulates the structure of the capacity auction to ensure that it efficiently balances supply and demand, producing a just and reasonable clearing price”); *New England Power Generators Ass’n, Inc. v. FERC*, 757 F.3d 283, 286 (2014) (“The regulatory scheme contemplates that the ISOs will ‘adopt transmission (and ancillary services) pricing policies to promote the efficient use of, and investment in, generation, transmission, and consumption’ of wholesale electric power in specific energy capacity systems.”) (quoting *Sithe/Independence Power Partners, LP v. FERC*, 285 F.3d 1, 2 (D.C. Cir. 2002)).

⁵¹ See Paul L. Joskow, *Capacity Payments in Imperfect Electricity Markets: Need and Design*, 16 UTIL. POLICY 159, 159–170 (2008); *Maine Pub. Utilities Comm’n v. FERC*, 520 F.3d 464, 479 (D.C. Cir. 2008), *rev’d on other grounds sub nom. NRG Power Mktg., LLC v. Maine Pub. Utilities Comm’n*, 558 U.S. 165 (2010) (finding FERC has jurisdiction over capacity markets because they “are designed to address pricing issues” in the energy markets).

signals for operation, entry, and exit for many resources. These inefficiencies in the energy market spill over into the capacity market so that instead of being “suppressed,” capacity market bids could be higher than they would likely be if the energy market inefficiencies were addressed.

Moreover, there are other actions and events that happen outside of the Commission-jurisdictional markets that can lower the capacity market bids of resources and are appropriately considered.⁵² For example, a technological advance that makes installing new solar capacity much cheaper would reduce the costs of providing capacity and so would lower the capacity market bids of new solar resources. This could ultimately reduce capacity prices, however such price reductions would not appropriately be characterized as “suppressed” or “inefficient,” even if that technological advancement was achieved as a result of an R&D subsidy. Similarly, new market demand for a by-product of electricity production could reduce the costs of providing capacity by reducing the residual revenue that resource needs to be available at times of peak demand. For example, demand for CO₂ by the oil and gas industry for the purposes of enhanced oil recovery could reduce the net revenue that a CO₂-producing resource needs to remain operational after accounting for energy and ancillary services revenue (i.e., the resource’s net going forward costs). Development of a new or more robust market for this byproduct, including a market spurred by public policy such as a tax credit for enhanced oil recovery,⁵³ has the potential to lower capacity market bids (and, ultimately, prices), but would not be “suppressing” prices.

⁵² *New York State Pub. Serv. Comm’n et al.*, 158 FERC ¶ 61,137 at PP 33-34 (Feb. 3, 2017) (rejecting application of MOPR to resources that receive revenue from retail demand response programs because that revenue is “actually for providing services that are separate and distinct from” FERC-jurisdictional capacity payments, and that application of the MOPR would create unnecessary and inefficient barriers to entry).

⁵³ 26 U.S.C. § 43.

2. The Commission should act only when policies cause economically inefficient price effects

It would not be economically efficient to adopt a policy that would mitigate any price reduction regardless of the cause of the reduction. In fact, the Commission has recognized on numerous occasions that mitigation of capacity bids beyond what is necessary (“overmitigation”) is just as detrimental to the functioning of the capacity markets as allowing persistent price suppression below a competitive level. For example in a recent order, the Commission rejected a PJM proposal to eliminate the unit-specific exemption from the MOPR as unjust and unreasonable.⁵⁴ The Commission recognized that eliminating the unit-specific exemption risked mitigating the capacity market bids of resources that had unit-specific costs that differed from the cost assumptions used to set the default MOPR price floor, and that applying the MOPR to the bids of such resources would force them to bid higher than necessary, ultimately inflating capacity market prices.⁵⁵

It is not enough, then, to assert that out-of-market payments will allow resources to bid lower than they would have been able to bid without that support. Lower capacity bids may reflect lower social net going forward costs. In order to conclude that out-of-market payments lead to not just lower prices, but to inefficient price *suppression*, the Commission must do the hard work of establishing a consistent principle of what constitutes an economically efficient

⁵⁴ *PJM Interconnection, L.L.C.*, 161 FERC ¶ 61,252, at P 43 (Dec. 2017) (“A properly designed MOPR should not erect an unnecessary barrier to entry that is detrimental to a competitive market. . . . Precluding certain resources that are not exercising market power from making a competitive offer may result in both undue discrimination against those resources and unjust and unreasonable rates because the auction potentially results in a higher clearing price than if those resources had participated”).

⁵⁵ *Id.* See also *New York Independent System Operator, Inc.*, 158 FERC ¶ 61,137 at P 34 (February 2017) (“NYISO’s existing buyer-side market power mitigation rules over-mitigate SCRs that have limited or no incentive and ability to artificially suppress ICAP market prices. Therefore, NYISO’s existing buyer-side mitigation rules impose an unnecessary barrier to the participation of demand response in NYISO’s wholesale markets.”).

competitive offer, and then explain how a particular form of out-of-market support enables resources to submit offers that diverge from that competitive offer.

B. Externalities Are Not a Free-For-All Concept

The Commission has expressed concern about “an ever-widening scope of justifications” for state programs.⁵⁶ But in establishing a just and reasonable reform of PJM’s capacity market, the relevant question is not the states’ *justifications* for a given out-of-market payment. Rather, the Commission, as an economic regulator, expert in questions of market efficiency, can and should exercise its judgment with regard to those different programs to evaluate whether they are, in fact, economically distortionary or corrective.⁵⁷

Externalities are not a free-for-all license for a state to invoke whenever it wants to subsidize favored resources for any reason or in any form. Rather, externalities are a well-defined concept in economics; ⁵⁸ air pollution externalities are perhaps the most widely discussed and easily identifiable form of externality; ⁵⁹ and policies can be readily identified for whether they actually move markets towards efficiency by beginning to internalize externalities or whether they merely pay lip service to doing so.⁶⁰

⁵⁶ June 29 Order at P 15.

⁵⁷ See *Elec. Power Supply Ass’n*, 136 S. Ct. at 782-83 (holding that FERC reasonably considered the detailed circumstances under a particular rate design would enhance efficiency and when it would not); *id.* at 783-84 (upholding FERC’s exercise of judgment that demand response resources should receive a higher energy market rate when doing so will facilitate efficiency by breaking down barriers to entry); *NextEra Energy Resources v. FERC*, 898 F.3d 14, 23 (D.C. Cir. 2018) (upholding FERC inclusion of a renewables exemption from the MOPR based on “balancing [that] requires an expert understanding of the market, which is well within the Commission’s realm of expertise”).

⁵⁸ See KRUGMAN & WELLS, *supra* note 19, at 437. See PINDYCK & RUBINFELD, *supra* note 13, at 645.

⁵⁹ See KRUGMAN & WELLS, *supra* note 19, at 437. See PINDYCK & RUBINFELD, *supra* note 13, at 315-16, 645.

⁶⁰ See *infra* Section II.D, for remarks on how the Commission could identify which state policies increase economic efficiency.

C. Incorporating Greenhouse Gas Externalities in PJM’s Energy Market Would Address Many of the Objections to an Expanded MOPR and the Need for a Resource-Specific FRR

A number of commenters have suggested that the Commission shift course and work to address the problem of market distortions caused by uninternalized externalities directly. These commenters have raised the possibility that a carbon price would be a more efficient mechanism to discourage the need for state externality payment policies. For example, Eastern Generation has argued that “carbon pricing will provide a long-term solution to address the price suppression problem identified in the June 29 order while also accommodating State policy goals.”⁶¹ Exelon also discusses the potential for a PJM-implemented carbon price to address many of the concerns underlying state policies and an expanded MOPR: “carbon pricing is the most efficient approach to addressing the environmental externalities of emitting generation, which is the primary driver underlying many of the state policies giving rise to this proceeding. Integrating a carbon price into PJM’s markets would reduce or eliminate the need for states to address carbon emissions from the power sector in other ways and would allow resources that will exit the RPM auction under the Commission’s Order to reenter that market.”⁶²

Policy Integrity agrees that the Commission should start considering carbon pricing in its jurisdictional markets, including PJM. The Commission could clearly signal to PJM its interest in incorporating a carbon price into the wholesale energy market as the first-best approach to addressing the market distortions that are giving rise to second-best solutions. With such a

⁶¹ Initial Brief of Eastern Generation, LLC at 6, Docket Nos. E116-49-000, ER18-1314-000, ER18-1314-001, EL18-178-000 (filed Oct. 2, 2018) [hereafter “Eastern Generation Brief”]. Eastern Generation also argued that a “clean MOPR” without a resource-specific FRR is appropriate until such time as PJM-wide carbon pricing is adopted. *Id.* at 10-12. As explained below, the Commission can take into account the economic distortions caused by externalities in its construction of MOPR to maximize efficiency.

⁶² Initial Brief of Exelon Corporation at 7, Docket Nos. EL18-178-000, ER18-1314-000, ER18-1314-001, EL16-49-000 (filed Oct. 2, 2018) [hereafter “Exelon Initial Brief”].

policy, state externality payments for avoiding carbon emissions that are the result of electricity generation may become unnecessary. If states respond by relying on the market price (including a carbon price) to address their own carbon reduction goals and reduce or phase out the subsidy programs,⁶³ capacity market corrections such as an expanded MOPR would become unnecessary. If states continue with duplicative policy to internalize externalities, capacity market reforms may be justified.⁶⁴

As has been suggested by both Eastern Generation and Exelon, the Commission can direct or encourage PJM to move forward with a stakeholder process to address the problem of market distortions by incorporating a carbon price into its energy market.⁶⁵ Rejecting the “clean MOPR” in favor of a process to address market distortions directly would have the twin benefit of moving the market towards a more efficient outcome and providing an incentive for stakeholders to come to the table on carbon pricing.

D. There Are Reliable Methods the Commission Can Use to Identify Which State Policies Increase Economic Efficiency and Therefore Should Not Be Subject to Mitigation

Regardless of whether the Commission decides to move forward by encouraging PJM to advance a carbon price in the energy markets, there remains the immediate question of how to address state policies. If the Commission decides to move forward with a replacement rate either instead of or until PJM develops a carbon pricing proposal, it should take into account the

⁶³ This type of state action is not unlikely. For example, when promulgating its Clean Energy Standard, including a ZEC program similar to Illinois’ program, the New York Public Service Commission explicitly stated that if the New York ISO “internalizes the value of the zero-emissions attributes in a manner that adequately replicates the economics of the program,” the state would likely discontinue ZEC payments. Clean Energy Standard Order at 144.

⁶⁴ While a PJM-wide carbon price could obviate the need for individual state policies predicated on carbon reduction, state policies could be well-tailored to address other non-greenhouse gas positive and negative externalities such as local pollution, in which case some state policy would continue to be economically justified.

⁶⁵ Eastern Generation Initial Brief at 17-18; Exelon Initial Brief at 7.

inefficiencies caused by the failure of the markets to address externalities in constructing that replacement rate.

Specifically, the Commission should recognize that not all state programs are created equally and evaluate whether a particular out-of-market payment is *inefficiently suppressing* capacity market prices (rather than merely efficiently lowering them) before deciding what action to take, if any. There are at least three ways that the Commission can recognize the distinction between efficiency improving state policies and rent-seeking policies that would inefficiently suppress prices:

1. The Commission can include an assumed carbon price in calculating the MOPR Price Floor

The Commission can take into account the current externality-related energy market distortions in the design of MOPR Floor Offer Price (“MOPR Price Floor”) that resources who receive out-of-market payments must use as a minimum bid. To-date, PJM has calculated the MOPR Price Floor at the Net Asset Class Cost of New Entry (“net CONE”) using default assumptions about the gross cost of new entry for resources of the same type, less the assumed expected revenue that the resource will obtain through Commission-jurisdictional energy and ancillary services markets.⁶⁶ PJM has proposed to retain the default net CONE approach for new capacity resources, with new default values for additional resource types.⁶⁷ For existing resources, PJM has proposed to set the MOPR Price Floor based on default assumptions about the resource’s going forward costs (defined as the Avoidable Cost Rate) net of assumed energy and ancillary services revenue (“net ACR”).⁶⁸

⁶⁶ See PJM Tariff Attachment DD at section 5.14(h)(3).

⁶⁷ PJM Initial Comments at 38, 41.

⁶⁸ PJM Initial Comments at 44.

In these calculations, the Commission could direct PJM to consider not only the private costs and revenues of a resource when evaluating the MOPR Price Floor of an individual unit, but also the impact of an assumed carbon price in the wholesale market. For example, all else equal, a carbon price of \$50 in the energy market would increase the LMP in a given zone by $\$50 \times \text{MER}$, where MER is the marginal emission rate of that zone. As a result, the expected revenue of a non-emitting generator would be adjusted by that amount. For an emitting generator, on the hand, the adjustment would be $\$50 \times (\text{MER} - \text{ER})$, where “ER” is that emitting generator’s emission rate. The Commission can direct ISOs/RTOs to use this formulation to adjust the expected energy market revenue calculations, and then use these externality-adjusted expected energy market revenues in the default calculation of *net* cost of new entry (for new resources) and *net* avoidable cost rate (for existing resources) for resources subject to the MOPR.⁶⁹

Adjusting the calculations this way would ensure that resources that received well-designed payments in line with their external benefits are not affected while, at the same time, mitigating the effects of any subsidy that does not bring a commensurate benefit. For example, a renewable resource would get higher energy market revenues under carbon pricing, and therefore its adjusted net CONE would be lower. Therefore, even if it is subject to a price floor of net CONE, that price floor would be lower and would not be binding unless the resources receives subsidies that are inefficiently high.

⁶⁹ See PJM Initial Comments at 40-42, 44 (describing how a MOPR price floor would incorporate expected energy market revenue for new and existing capacity resources).

2. The Commission can adopt capacity market reforms based on whether state policies are rationally tied to the externality value or were adopted by states based on a comprehensive cost-benefit analysis

The Commission can evaluate state policies and distinguish between those that enhance efficiency and those that reduce market efficiency when considering the application of the MOPR or the design of the MOPR floor. The Commission could consider two criteria for evaluating whether out-of-market payments are efficiency enhancing.

First, a rational link between the payment a resource receives for a good or service and the actual value it provides is core to the efficiency of markets. So, it is more likely that out-of-market payments for an attribute associated with a MWh of generation will increase efficiency if it is rationally tied to a quantifiable value that reflects the value provided society by that attribute.⁷⁰ Such a link ensures that the consumers would not be at the risk of overpaying for a non-existent value, and hence is more likely to increase economic efficiency.

Second, the Commission can consider out-of-market payments that were implemented after a state-conducted, thorough cost-benefit analysis to be efficiency-enhancing rather than suppressive. A thorough cost-benefit analysis is one that that considered both private and external costs and benefits of the program, including wholesale market impacts and air pollution externalities. If a state's well-conducted cost-benefit analysis shows that the external benefits of a state policy related to avoided emissions outweigh any potential negative effects on the wholesale markets, then that policy can be considered to be efficiency enhancing by the Commission.

⁷⁰ See Policy Integrity Initial Comments at 36; See JEFFREY SHRADER, BURCIN UNEL, AND AVI ZEVIN, VALUING POLLUTION REDUCTIONS: HOW TO MONETIZE GREENHOUSE GAS AND LOCAL AIR POLLUTANT REDUCTIONS FROM DISTRIBUTED ENERGY RESOURCES (2018) (explaining how to value air pollution externalities), <https://policyintegrity.org/publications/detail/valuing-pollution-reductions>.

The Commission can implement these criteria when designing the MOPR in one of two ways. First, the Commission can use these criteria for defining the appropriate scope of “out-of-market support to be mitigated by the expanded MOPR”⁷¹ (what PJM has termed “actionable subsidies”⁷²).

Alternatively, the Commission could use these criteria when establishing the MOPR Price Floor for individual resources. Under PJM’s existing Tariff, resources have the option for a unit-specific review of costs and revenue that can establish a MOPR Price Floor based on business practices and cost structures that differ from the assumptions used to establish the default MOPR Price Floor.⁷³ The Commission has explained that this type of resource-specific determination must be available in order to ensure that resources that differ from the default assumptions will not face unnecessary and inefficient mitigation.⁷⁴ Moreover, the Commission has explicitly recognized that resources may take into account revenue that they receive outside Commission-jurisdictional energy and ancillary services markets when evaluating a competitive bid that differs from the default MOPR Price Floor.⁷⁵

Recognizing this precedent, the Commission could allow resources with efficiency-enhancing out-of-market payments, such as well-designed externality payments, to include the expected revenue from those in their resource-specific net CONE or net ACR calculation. This

⁷¹ June 29 Order at P 165.

⁷² PJM Initial Submission at 14-34.

⁷³ PJM Tariff Attachment DD at section 5.14(h)(8).

⁷⁴ PJM Interconnection LLC, 161 FERC ¶ 61,252, at P 43 (reaffirming the need for a unit-specific review because “precluding certain resources that are not exercising market power from making a competitive offer may result in both undue discrimination against those resources and unjust and unreasonable rates because the auction potentially results in a higher clearing price than if those resources had participated”).

⁷⁵ *PJM Interconnection, L.L.C., PJM Power Providers Group v. PJM Interconnection, L.L.C.*, 137 FERC ¶ 61,145, at P 242-244 (2011) (rejecting claims that “revenues that occur in the ordinary course of a market participant's business—but which are not available to the benchmark unit”—should be ignored when considering whether a resource’s bid is “consistent with the competitive cost-based cost of new entry”).

approach would be consistent with the mechanism that PJM has proposed for determining the MOPR Price Floor in its comments to the Commission. PJM has proposed to retain the unit-specific net CONE approach for new capacity resources,⁷⁶ and to allow existing resources subject to the MOPR to demonstrate unit-specific going forward costs or expected revenue.⁷⁷ The Commission could use the criteria described above to evaluate which out-of-market payments are efficiency enhancing and included in net CONE or net ACR, and which are not.⁷⁸

3. The Commission can implement a net-benefit test similar to prior FERC practice

As a third alternative, the Commission can exempt state-directed out-of-market payments from the definition of “actionable subsidy” or incorporate out-of-market payments in a resource-specific MOPR Price Floor after an ISO/RTO-conducted cost-benefit analysis that takes external costs and benefits of the program into account. The Commission has, in fact, previously conditioned application of certain market reforms on those reforms passing a net-benefit test.⁷⁹ In that case, the Commission determined that paying demand response resources the locational marginal price (“LMP”) in organized energy markets would be just and reasonable only when the benefits of doing so outweighs the cost of doing so.⁸⁰ The Commission directed ISOs/RTOs to develop a net benefit test to determine under what conditions the customer savings from additional energy market supply from demand response resources would outweigh the additional

⁷⁶ PJM Initial Comments at 38, 41.

⁷⁷ PJM Initial Comments at 47.

⁷⁸ See also Policy Integrity Initial Comments at 25-33, 36 (describing relevant criteria for distinguishing between distortionary and corrective out-of-market payments for the purposes of defining which resources will be subject to the MOPR based on other out-of-market payments that the Commission regularly accepts as reflective of “true” costs and revenues that legitimately influence capacity market bidding behavior).

⁷⁹ See *Demand Response Compensation in Organized Wholesale Energy Markets*, Order No. 745, 76 Fed. Reg. 16,658 (Mar. 24, 2011), FERC Stats. & Regs. ¶ 31,322 at P 47-48 (2011) [hereafter “Order 745”].

⁸⁰ FERC v. Electric Power Supply Ass’n, 136 S. Ct. at 783.

costs borne by the remaining load of paying demand response full LMP.⁸¹ The Commission can require PJM to implement a similar net-benefit test here. Using that test, state out-of-market payments would be exempt from the definition of “actionable subsidy” when the externality benefits of encouraging those resources outweigh the market price impact of state payments. Alternatively, a resource would be allowed to incorporate out-of-market payments into their resource-specific MOPR Price Floor when PJM determines that the payments pass a net-benefits test.

Whichever approach that the Commission takes, it should recognize not only the potential for state policies to distort efficient market signals, but also for the lack of action by the Commission and states to distort efficient market signals.

III. PJM’S PROPOSALS WOULD NOT BE JUST AND REASONABLE APPROACHES TO ADDRESSING THE COMMISSION’S CONCERNS

This section evaluates two specific proposals —both from PJM—based on whether they meet the two objectives that the Commission expressed in the June 29 Order: (1) do they “ensur[e] that [resources receiving out-of-market support] are not able to offer below a competitive price”;⁸² and (2) do they provide a meaningful mechanism to nonetheless “accommodate” resources that benefit from state policy in order to “avoid the potential for double payment and over procurement.”⁸³

⁸¹ Order 745 at P 52-54, 78. (explaining the “billing unit effect” and the need for a net-benefit test and directing ISOs/RTOs to implement that test in order to evaluate when it is cost-effective to pay demand response LMP).

⁸² June 29 Order at P 158.

⁸³ June 29 Order at P 160.

A. Domestic Divergence Theory Does Not Support Mitigation of Second-Best Policies

In setting the stage for the necessity of reform, PJM invokes “domestic divergence” theory which focuses on welfare effects of various policies in the presence of “external divergence” between the marginal social cost (or value) of particular domestic production and the marginal private cost (or value) of that production.⁸⁴ However, this theory does not support the introduction of measures that will act to mitigate state policies explicitly targeting the problem of divergences.⁸⁵ On the contrary, the theory supports not changing the status quo with respect to policies targeting externalities, even if they are second-best policies.

The primary setting of divergence theory looks at welfare implications of government interventions when the marginal social costs in one of the economies in question is lower than the marginal private cost in that economy. Here, a production subsidy would maximize global welfare.⁸⁶ The setting under question for the Commission here is the mirror opposite of that primary setting, with the marginal social cost higher than the marginal private cost due to a pollution externality. In PJM’s case, the divergence theory would prescribe a corrective tax exactly reflecting the divergence between social and private values as the first-best policy.⁸⁷

The divergence theory further explains that, when first-best instruments are not available, second-best interventions are necessary to improve the *aggregate* welfare, and that they will still tend to be better than no intervention under its assumptions. It explicitly states that, in its primary setting, “it is better to impose the second-best optimum tariff than to do nothing at all.”⁸⁸

Translating this result to the PJM setting implies that well-designed externality policies like

⁸⁴ PJM Initial Comments at Appendix C ¶¶ 5, 6, 19

⁸⁵ See the comments below on how Extended RCO will in practice be similar to a broad MOPR.

⁸⁶ W. Max Corden, *Trade Policy and Economic Welfare*, Chapter 2 (1974), at 11.

⁸⁷ *Id.*, at 15.

⁸⁸ *Id.*, *Trade Policy and Economic Welfare*, Chapter 2 (1974), at 20.

payments for avoided emissions are second-best tools that can be used to improve aggregate welfare when first-best taxes are infeasible.

It is also important to acknowledge that the divergence theory focuses on a “divergence” occurring only in one of the trading areas, while in all other areas the marginal private costs and benefits reflect the social costs and benefits. The situation that PJM faces, on the other hand, is that all of the trading areas face the same “external divergence” but only some governments are attempting to tackle that divergence. Under assumptions of divergence theory, unilateral subsidies and corrective taxes focused on externalities increase the aggregate welfare. Consequently, the justification for corrective taxes and subsidies is even stronger in the situation that PJM faces.

Importantly, nowhere does the divergence theory state that subsidy policies addressing “divergences” should be mitigated. So, the divergence theory cannot be used to support PJM’s proposals. On the contrary, this theory supports a move toward the first best policy of carbon pricing, and, at a minimum, it should lead the Commission to think about how to differentiate between non-distortive, efficiency-enhancing second-best policies and other distortive state policies.

B. PJM’s RCO Proposal Would Not Be Workable and So Would Not Be Just and Reasonable

As explained in Policy Integrity’s initial comments, a resource-specific FRR can, if well designed, reduce the extent to which a broad expansion of the MOPR would cause overprocurement of capacity—capacity on the system beyond what PJM itself determines is economically efficient.⁸⁹ Limiting overprocurement is one of the reasons that the Commission

⁸⁹ Policy Integrity Initial Comments at 18-25.

proposed that a just and reasonable replacement rate may include a resource-specific FRR in addition to the MOPR.⁹⁰

However, the details of the resource-specific FRR construct will strongly affect market outcomes. For example, without a workable mechanism to match resources that would exit the RPM with commensurate load, resources may not have the appropriate economic incentives to take advantage of a resource-specific FRR, undermining their ability to address inefficiencies of a MOPR-only approach that the Commission is concerned about. Additionally, if the resource-specific FRR component of a replacement rate fails to account for the capacity provided by resources that benefit from out-of-market payments (for example, by failing to reduce the obligations of load serving entities (“LSE”) to procure capacity through the RPM when capacity is being provided to the system outside of the RPM), the market design will not address concerns about overprocurement.

PJM claims that its proposed construct, called a Resource Carve-Out (“RCO”), would achieve the same objectives that the Commission ascribes to the resource-specific FRR, including that it will “accommodate” resources that benefit from state policy in order to “avoid the potential for double payment and over procurement.”⁹¹ However, because of the way it is designed, RCO risks becoming only a theoretically-available construct that is not actually used in practice.

⁹⁰ June 29 Order at PP 161-62 (explaining that a resource-specific FRR would both “increase[e] the integrity of the PJM capacity market for competitive resources and load,” and “allow[] resources that receive out-of-market support to continue to be recognized as capacity on the system.”)

⁹¹ PJM Comments at 7-8 (“The Resource Carve-Out is designed to realize the concept suggested in the June 29 Order to offer an alternative to MOPR that would permit subsidized resources to obtain a capacity commitment, but do so without having to clear the PJM capacity market”).

Under PJM’s RCO construct, resources subject to the MOPR would have the opportunity to opt to receive payment for the capacity provided to the system outside of the RPM auction process (“Carved Out Resource”).⁹² PJM “anticipates” that Carved Out Resources will receive compensation for their capacity through a “mechanism to charge load.”⁹³ In order to agree to opt-out of RPM payments, cover net costs of new entry and net going forward costs, and accept the risk of non-performance penalties,⁹⁴ that mechanism will necessarily involve contracts between Carved Out Resources and load for capacity payments (“RCO contracts”).⁹⁵

Unlike the Commission’s outline of a resource-specific FRR option in its June 29 Order,⁹⁶ with RCO, the capacity demand curve (“VRR curve”) would remain unchanged even if LSEs sign RCO contracts. And, each LSE would continue to have capacity obligations as if they were procuring all needed capacity through RPM.⁹⁷ Resources that would have been subject to the MOPR in the RPM but that have instead chosen to receive compensation for capacity

⁹² Under PJM’s proposal, not all resources subject to the MOPR would be eligible to be a Carved Out Resource. Resources that are subject to the MOPR because they are eligible for state subsidies, but that have not yet received those payments would not be RCO-eligible. PJM Initial Comments at 52. Seasonal resources that have not been aggregated would not be RCO-eligible. PJM Initial Comments at 53. Resources that are subject to the MOPR solely due to federal subsidies would not be RCO-eligible. PJM Initial Comments at 31-32.

⁹³ PJM Initial Comments at 58.

⁹⁴ Under PJM’s proposal, Carved Out Resources will have similar obligations and face similar penalties as a Capacity Performance resource that cleared the RPM. PJM Initial Comments at 63. Consequently, a resource subject to the MOPR that elects to become a Carved Out Resource but fails to deliver during emergency periods will face significant non-performance charges.

⁹⁵ PJM’s discussion appears consistent with the expectation that load would be charged through some sort of contractual arrangement, which could be entered into voluntarily or mandated by the state. PJM Initial Comments at 59 (“This would not preclude, however, a *state (or generator)* from proposing (for Commission acceptance) other arrangements it might prefer to charge load for the capacity credit PJM has applied.”); *id.* at 61 (discussing the prospect for market-based rate authority for non-RPM capacity charges).

⁹⁶ See June 29 Order at P 160 (describing the resource-specific FRR alternative as “allow[ing], on a resource-specific basis, resources receiving out-of-market support to choose to be removed from the PJM capacity market, along with a commensurate amount of load”).

⁹⁷ PJM Initial Comments at 62-63. Note that PJM’s proposal contains some contradictory language, *id.* at 50 (“associated load would not obtain their commitment through PJM’s capacity market, and neither would make nor receive payments from the capacity market”). However, PJM’s proposed tariff language makes clear that this is not the case. PJM Initial Comments Attachment A at RAA, Schedule 8. As under the existing Tariff, load that has been carved out using the traditional fixed resource requirement (“FRR”) construct would not be included in the RPM. *Id.*

through side capacity payments would still be included in the supply stack for the RPM as price takers, and would still obtain a Capacity Performance obligation.⁹⁸ But, they would not be paid the RPM clearing price.⁹⁹ Because LSEs will continue to pay for the entire amount of cleared capacity through RPM, but the capacity from Carved Out Resources that is cleared through the market will not receive RPM payments, there will be a pool of undistributed money. PJMs RCO proposal includes a “default rule” for the allocation of that pool of money: “all LSEs located in the same state as [the Carved Out Resource] will have their Locational Reliability Charge reduced . . . pro rata” in the form of a “Resource Carve-Out Offset” credit.¹⁰⁰

As an initial matter, PJM’s proposal to allocate a credit to LSEs “in the same state” as the Carved Out Resource may create a problematic transfer.¹⁰¹ PJM justifies this default based on the assumption that “the subsidizing state will compensate the resource by proposing a mechanism to charge load in the state for the capacity value the subsidized resource brings to PJM.”¹⁰² But linking the “subsidizing state” with the Capacity Credit is the wrong way to think about which LSEs should, by default, be considered to have benefited from capacity enabled, in part, by externality payments. For example, while renewable resources can use REC revenue to complement other revenue in order to justify construction or continued operation, the LSEs responsible for purchasing those RECs are not purchasing capacity, which is a separate FERC-

⁹⁸ PJM Initial Comments at 57, 66.

⁹⁹ PJM Initial Comments at 58 (“the Carved-Out Resource (while counted as capacity) is not paid by the PJM market for its capacity”).

¹⁰⁰ PJM Initial Comments at 61-62. This “pro rata” credit is calculated based on the ratio of each LSE’s daily unforced capacity obligation in the state and total daily unforced capacity obligations of all LSEs in that state. PJM Initial Comments at 61-62.

¹⁰¹ Note that PJM’s Proposal is inconsistent in its language. The proposal generally says LSEs in the state where the Carved Out Resource is *located* will receive the Resource Carve-Out Offset credit. PJM Initial Comments at 61; *see also id.* at Appendix A, Tariff Attachment DD § 5.14(e)(ii). However, elsewhere the proposal says that the Resource Carve-Out Offset Credit will go to LSEs in the state that subsidizes the Carved-Out Resource. PJM Initial Comments at 62. These options can be inconsistent if the subsidized resource is located in a state other than the state whose LSEs are providing the subsidy.

¹⁰² PJM Initial Comments at 58.

jurisdictional product that they need to procure separately.¹⁰³ The capacity provided by the renewable resource provides reliability benefits to the entire system, not just the LSEs responsible for making the REC payments. And PJM has proposed not to remove Carved Out Resources or load from the RPM auction specifically because of this public good aspect of the reliability value of that capacity.¹⁰⁴ Providing the Capacity Credit to load in only a single state would violate long-standing cost-causation principles under which a just and reasonable market design is one in which there is “a match between cost-causation and cost-responsibility,” including for the “system of disbursing any surpluses accumulated.”¹⁰⁵

When taking PJM’s assumption that the appropriate way to design a capacity credit mechanism is to provide it to the LSEs paying for the out-of-market support, PJM’s default proposal fails to appropriately allocate the credit in light of the potential for interstate out-of-market payments. For example, under many state RPS programs, LSEs purchase RECs from renewable resources located in a different state.¹⁰⁶ Under this common circumstance, an LSE would pay out-of-state renewable resources for RECs but would not be eligible to receive a capacity credit. Rather, LSEs in the state whose customers are *not* paying the Carved Out Resource for RECs could receive the Resource Carve-Out Offset credit. If the appropriate allocation of a capacity credit is to the LSEs responsible for purchasing RECs from that resource due to a state policy, PJM’s proposal fails to allocate the surplus to the proper resources.¹⁰⁷

¹⁰³ See *WSP Inc.*, 139 FERC ¶ 61,061, at PP 18-21 (2012).

¹⁰⁴ PJM Initial Comments Attachment B at ¶ P 12 (“removing Carved Out Resources and their- associated load from the Base Residual Auction is inconsistent with real-time operations. The Carved Out Resource will be used by PJM to serve all PJM load and the carved out load will be served by the most economic set of resources in PJM even if it is not the Carved Out Resource. The explicit linkage between a resource and load in the capacity market is fundamentally inconsistent with PJM’s operation of its system.”).

¹⁰⁵ *Black Oak Energy, LLC v. FERC*, 725 F.3d 230, 237 (D.C. Cir. 2013).

¹⁰⁶ MONITORING ANALYTICS, STATE OF THE MARKET REPORT FOR PJM: JANUARY THROUGH JUNE 350 (2018), http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2018/2018q2-som-pjm-sec8.pdf.

¹⁰⁷ *Black Oak Energy*, 725 F.3d at 237.

Consequently, the PJM's proposal is internally inconsistent. However, the alternative—that the credit will be allocated to LSEs located in the state that is providing the out-of-market payment—is also likely to be unworkable. A single renewable resource may sell RECs to LSEs in multiple states, either directly, or indirectly through the secondary market, and may not know whether their RECs will be ultimately used by LSEs in any particular state.¹⁰⁸

Second, this default Resource Carve-Out Offset does not necessarily align incentives between would-be Carved Out Resources and LSEs to reach a mutually-agreeable RCO contract. Namely, an LSE that chooses to enter into a RCO contract would need to fully compensate the counterparty for becoming a Carved Out Resource. At the same time, PJM's proposal would not remove load from the RPM and thus would not fully reduce an LSE's capacity obligation, even if it made side capacity payments through a RCO contract. Instead, the LSE would receive only a partial credit for the value of the side payment in the form of a pro-rata share of the capacity market revenue that would have gone to the Carved Out Resources had they received the market clearing price. Because LSEs would receive this pro-rata split regardless of whether it agreed to (or were required to) enter into a RCO contract with a Carved out Resource, LSEs will have no or weak incentive to individually enter into RCO contracts and make side capacity payments.

With no incentives for load to provide payment to Carved Out Resources for capacity outside of the RPM and no incentive for resources to opt to become Carved Out Resources without RCO payments, PJM's default construct would likely result in few resources using the RCO opt out. Therefore, in states with multiple LSEs, unless the state steps in to coordinate out-of-market capacity contracts between potential Carved Out Resources and all LSEs, the RCO

¹⁰⁸ TODD JONES, TWO MARKETS, OVERLAPPING GOALS: EXPLORING THE INTERSECTION OF RPS AND VOLUNTARY MARKETS FOR RENEWABLE ENERGY 12 (2017), <https://resource-solutions.org/wp-content/uploads/2017/08/RPS-and-Voluntary-Markets.pdf>

option will likely go unused in that state.¹⁰⁹ As a result, the default approach that PJM has developed to implement a resource-specific FRR risks becoming an expanded MOPR in practice, without a mechanism to limit overprocurement.

Without a workable mechanism to limit overprocurement, PJM's RCO proposal would not be just and reasonable. As the Commission has previously acknowledged, mitigating capacity bids of resources that "will be constructed with or without" RPM revenue will lead to overprocurement that is inconsistent with the Commission's mandate under the Federal Power Act.¹¹⁰ Therefore, the Commission should reject PJM's RCO proposal.

C. PJM's Extended RCO Proposal Would Not Be Just and Reasonable

PJM also offered a second proposal called "Extended RCO" for the Commission's consideration.¹¹¹ PJM believes that Extended RCO will do more to "correct the [purported] price suppressive effect of the residual market" by building a two-stage capacity auction on top of the RCO proposal.¹¹²

Like RCO, the first stage of Extended RCO assigns capacity commitments to those resources that bid below the bid of the most expensive resource needed to meet the demand,

¹⁰⁹ Another option, in theory, would be for states to directly provide resources subject to the MOPR with a sufficient financial incentive to become Carved-Out Resources, such as through higher levels of externality payments for those that do so. However, there is at least some legal uncertainty regarding whether states could condition a higher level of state externality payment (to compensate for the forgone potential capacity payment and risk of a performance charge) on participation or non-participation in some form of jurisdictional capacity construct (RPM or resource-specific FRR). See *Hughes v. Talen Energy Marketing, LLC*, 136 S. Ct. 1288, 1297 (2016) (holding that state policy conditioned on participation in PJM capacity market is preempted); *Elec. Power Supply Assoc. v. Star*, 2018 WL 4356683, Docket Nos. 17-2433 & 17-445 at *5 (7th Cir. Sept. 13, 2018) ("*Hughes*, the most recent of these decisions, draws a line between state laws whose effect depends on a utility's participation in an interstate auction (forbidden) and state laws that do not so depend but that may affect auctions (allowed).clarifying that the FPA preempts state policies only insofar as they are conditioned on participation in FERC-jurisdictional markets").

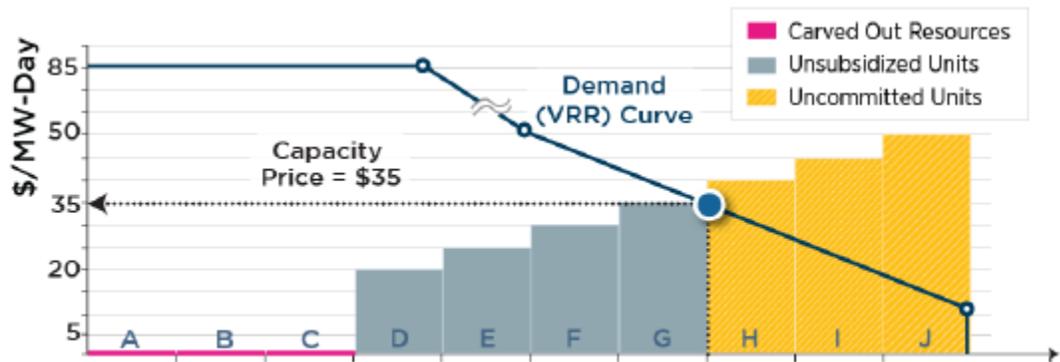
¹¹⁰ See *NextEra Energy Resources*, 898 F.3d at 20-21 (citing *ISO New England Inc. and New England Power Pool Participants Committee*, 158 FERC ¶ 61,138, at PP 8-9, 48 (Feb. 3, 2017)).

¹¹¹ PJM Initial Comments at 64-75.

¹¹² PJM Initial Comments at 11.

represented by the (unadjusted) VRR curve. Carved Out Resources are treated as price takers for the purpose of determining which resources clear this first stage of the RPM auction.¹¹³ This step is presented in Figure 1.

Figure 1 First stage of Extended RCO – establishing the capacity commitments



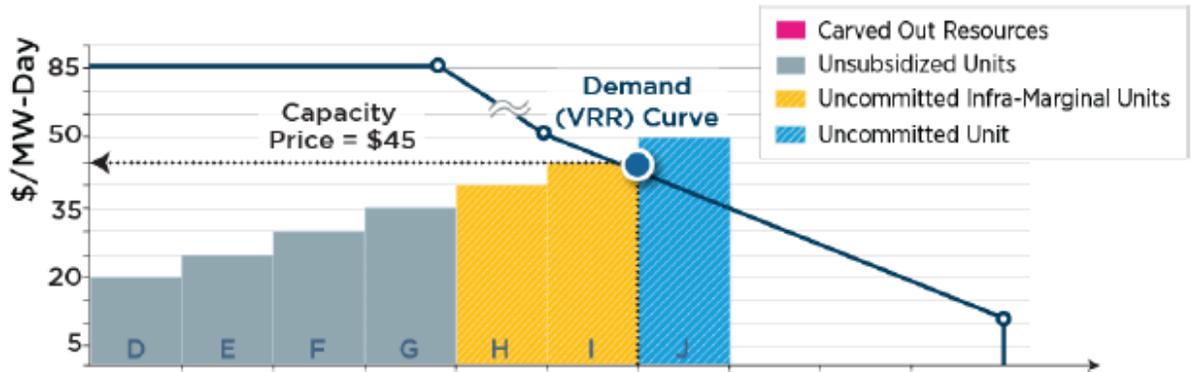
Source: PJM Initial Comments

At the second stage, however, PJM changes the supply curve by removing from the supply stack all Carved Out Resources.¹¹⁴ The new supply curve is used together with the unchanged demand curve to establish the clearing price, as shown in Figure 2. As with RCO, all load will be charged the resource clearing price. And, the load in states with Carved Out Resources will receive a pro-rata credit back for the payments they would have received had they been in the market.

¹¹³ PJM Initial Comments at 66.

¹¹⁴ PJM Initial Comments at 66.

Figure 2 Second stage of Extended RCO – establishing the clearing price



Source: PJM Initial Comments

With the disconnect between how capacity commitments and clearing price are established, some resources will receive no capacity contract despite bidding below the capacity clearing price. PJM refers to these resources as “uncommitted infra-marginal” resources. They will be the most expensive of the stage two units that bid below clearing price and their MW quantity will depend on the amount of MWs of Carved Out capacity and the properties of the VRR curve.¹¹⁵ PJM proposes that uncommitted infra-marginal resources receive a payment calculated as the difference between their bid and the Resource Clearing Price (“infra-marginal payments”).¹¹⁶ These infra-marginal payments made to non-clearing resources will be recovered from Carved Out Resources.¹¹⁷

Even if the PJM’s logic to mitigate state policies were to be accepted, the Extended RCO alternative proposal has serious flaws that will make its implementation costly and inefficient.

¹¹⁵ A flatter curve would lead to fewer uncommitted infra-marginal units.

¹¹⁶ PJM Initial Comments at 71.

¹¹⁷ PJM Initial Comments at 74.

1. Extended RCO decouples prices from quantities and thus creates misleading signals for investment

The price that is determined in the second stage of Extended RCO does not reflect the willingness-to-pay for the incremental reliability benefit for a given level of available capacity in the market as determined by PJM's capacity market demand curve. PJM decides how to set this demand curve based on an elaborate analysis.¹¹⁸ Even though this demand curve is administratively designed and set, bifurcating how the quantities and prices for capacity are determined ignores the logic behind instituting this downward-sloping demand curve in the first place. The second-stage price in PJM's proposal would reflect the willingness-to-pay for additional capacity as if the sponsored resources were offering capacity at the PJM-specified prices, often making them look prohibitively expensive. But, if the offers were indeed this high, and, hence, the supply curve truly corresponded to the supply curve PJM would use in the second-stage auction, PJM's downward sloping demand curve would have led PJM to clear a lower level of contracted capacity in a single-stage auction than the amount that would clear in the first-stage auction of the Extended RCO proposal.

In other words, the second stage of Extended RCO results in a price and quantity pair that is not on the demand curve that PJM has adopted. This outcome totally undermines the basic logic of setting a downward-sloping demand curve: willingness-to-pay for additional capacity decreases with the amount of cleared capacity because the incremental reliability benefit of additional capacity also decreases as capacity increases. This creates windfall rents for generators at the expense of load.

¹¹⁸ SAMUEL A. NEWELL ET AL., THE BRATTLE GROUP, FOURTH REVIEW OF PJM'S VARIABLE RESOURCE REQUIREMENT CURVE 35 (2018), <http://pjm.com/-/media/library/reports-notice/special-reports/2018/20180420-pjm-2018-variable-resource-requirement-curve-study.ashx?la=en>.

The Commission acknowledged this problem when rejecting PJM’s repricing proposal in its June 29 Order.¹¹⁹ Currently, there is no evidence or discussion that Extended RCO, despite this disconnect between the price setting from commitment setting, could avoid sending incorrect market signals. In fact, compared to PJM’s repricing Proposal, the decoupling problem is reinforced by additional design problems described below.

2. Extended RCO distorts bidding incentives, thus decreasing market efficiency

PJM is mistaken in its claim that “Extended RCO (...) restores every non-RCO seller’s incentive to submit an economic offer at its avoidable costs.”¹²⁰ The design of the Extended RCO changes the bidding incentives for infra-marginal units that expect not to be committed and creates underbidding incentives.

In uniform price auctions, such as capacity auctions, units normally do not have any incentive to bid below their costs. If a unit clears the auction without underbidding and is not the marginal unit, the decrease in bid does not affect the price it receives. If, on the other hand, the unit is the marginal unit, bidding below costs will lead to losses once the unit needs to fulfil its obligations.¹²¹ Consequently, bidding below costs is never profitable.

However, under the Extended RCO proposal, infra-marginal units never need to fulfill any obligations, which will distort their bidding incentives. This distortion can be best seen by analyzing unit H in Figure 2. Assuming that the bid shown in the Figure represents the resource’s marginal avoidable costs, it is clear that the unit would profit from cutting its bid from \$40 to \$35.1. By doing so, the resource would increase its “inframarginal rent” revenue from the

¹¹⁹ June Order at 29.

¹²⁰ PJM Initial Comments at 73.

¹²¹ Similarly, for a unit that fails to clear the auction when bidding its marginal costs, underbidding would lead to losses.

capacity market by \$4.9 per MW, while keeping its status as an infra-marginal unit and incurring no additional costs.

To the extent that resources have some information about the supply stack and can form expectations about being “infra-marginal,” especially when the amount of Carved Out Resources in the market reaches a substantial level, there will be incentives to underbid to increase inframarginal rent payments. This distortion in bidding behavior will impede the efficiency of the auctions.

3. Extended RCO will not restore the level of prices that PJM deems competitive

PJM, in its Extended RCO proposal is motivated by the goal of restoring Resource Clearing Prices to a counterfactual “competitive level” that would be achieved without states’ policies.¹²² As explained above, this price level targeted by PJM would not reflect social marginal cost unless externalities are addressed and would not be efficient. However, leaving that issue aside, PJM is mistaken even in their belief that Extended RCO will restore the price levels to the striven counterfactual price levels.

First, the above described incentives to decrease bids will distort the prices compared to the counterfactual that PJM attempts to restore. When resources no longer have incentives to bid their marginal costs, the auction outcome is no longer guaranteed to be efficient.

Second, Extended RCO removes Carved Out Resources from the RPM irrespective of whether those units would clear the auction. Even in the simplest example of the MOPR Floor for the RCO resource being lower than the first round market clearing price, PJM proposes to

¹²² PJM Initial Comments at 64-65.

remove the RCO unit from the RPM in the second round.¹²³ If resources would have cleared the RPM auction even when MOPR is applied to them, treating these resources as if they would not have cleared by removing them from the supply stack in the second stage and assuming the next unit in the supply stack would have cleared is incorrect. As a result, the second-stage capacity price would be higher than even PJM’s definition of “competitive,” failing to achieve PJM’s stated goal.

4. The infra-marginal payments will not contribute to restoring counterfactual outcomes

PJM’s logic that infra-marginal payments represent the “same infra-marginal rent that any competitive seller receives by offering an efficient resource with costs below the clearing price” is also incorrect.¹²⁴ Because of the distorted bidding incentives and because the clearing price would not represent the competitive price level, the rents received by the infra-marginal units will deviate from the counterfactual rents that PJM intends to provide. Moreover, PJM’s failure to consider the fact that some Carved Out Resources could have cleared the RPM had they not elected to be carved out undermines the logic underling the proposal to recover inframarginal rents from Carved Out Resources in the form of “deadweight-loss cost.”

In addition, while Policy Integrity agrees with Dr. Chao that “infra-marginal rents play an important function in a market economy”, PJM’s justification for infra-marginal payments clashes with the logic underlying capacity bids. Capacity markets, while being a market, are unique in their construction and in their interpretation. As Dr. Chao notes, capacity markets exist

¹²³ Given some uncertainty about capacity price developments and potential benefits from entering a RCO contract with LSEs instead of participating in RPM, ex post it might turn out that some units receiving state subsidies chose the RCO option even if they could ultimately have obtained a MOPR Price Floor below the market clearing prices.

¹²⁴ PJM Initial Comments at 71.

to ensure revenue sufficiency and resource adequacy, and capacity prices will depend on whether the revenues from energy and ancillary markets are sufficient.¹²⁵ Essentially, capacity markets exist because energy markets do not provide sufficient infra-marginal revenue to drive investment for a variety of reasons, including price caps.

So, one way to interpret the capacity market bid of a new resource is that it is a proxy for the missing infra-marginal energy market revenue that a new resource needs to enter a market. In that case, it is not the infra-marginal rent in the capacity market that would drive the investment, but the capacity bid – the missing infra-marginal energy market revenue – itself would drive the investment. The new resource would need the entire missing infra-marginal energy market revenue, in other words, its entire capacity market bid, to recover its fixed costs and enter the market. So, investors, upon realizing that with some positive probability, they would receive only the infra-marginal payment and not their full bids, might decide against investing in a new resource, despite PJM’s logic that infra-marginal capacity market revenue would lead that investment to be made.

Similarly, units entertaining retirement might still decide to retire if they receive the infra-marginal payment but not the full clearing price. So, they would retire, despite PJM’s premise that they would stay in the market if they are paid the infra-marginal rent. As a result, “infra-marginal payments” PJM proposes cannot restore the type of counterfactual outcomes that PJM is pursuing.

5. The infra-marginal payments and the two-stage pricing mechanism will lead to additional inefficiencies

Even assuming that the discouragement effect of pro-rata crediting for signing RCO contracts could be solved, other design features of the Extended RCO will inefficiently distort

¹²⁵ PJM Initial Comments at Appendix C ¶¶ 13.

the market outcomes. And, as a result, the entry and exit incentives created by Extended RCO will be distorted and will not lead to efficient outcomes.

First, by introducing infra-marginal rents paid by RCO resources, PJM imposes an additional cost of an uncertain magnitude on the RCO generators. As a result, with the infra-marginal payment, the capacity prices negotiated under RCO contracts will have to be higher than just the usually-assumed net going forward costs of providing capacity adjusted by expected performance penalties and the forgone capacity performance payments as the RCO resources will now need to also cover the expected payments to infra-marginal resources.

Importantly, the increase in the contract prices might be disproportionately high as infra-marginal payments impose a substantial uncertainty on the RCO resources and generators might require correspondingly higher risk premium. Depending on the market outcome, RCO resources could end up paying uncommitted infra-marginal resources even more than they receive for becoming RCO units. For example, such an outcome is possible if the supply curve of the non-RCO generators is relatively steep and if more units are declared as RCO units than it was expected when the RCO contracts were in negotiations stage. And while the market participants will have some foresight about the capacity market outcomes, predicting the amount of infra-marginal payments requires predicting the aggregate amount of RCO capacity and the supply curve of non-RCO resources, both highly speculative at the moment of negotiating an RCO contract. That new dimension of uncertainty introduced by infra-marginal payments, as well as higher costs, will make RCO contracts more difficult to negotiate and agree on, thus exacerbating the problem of RCO being a theoretical option that hardly finds application.

Second, because the capacity market clearing prices will get inflated by the repricing mechanism, some of the higher cost subsidized resources that would not have been attractive to

LSEs before, would become a feasible option for a RCO contract. Because LSEs would be free to sign RCO contracts whenever they consider beneficial, the MW price for RCO contract is expected to be equal to the expected RPM clearing price as LSEs will rationally look for the least expensive options to satisfy their reliability requirements. Consequently, one should expect a subsidized resource that would not manage to clear RPM under the status quo (no MOPR, no RCO option) to also not attract an RCO contract.¹²⁶

However, because Extended RCO inefficiently inflates clearing prices in the second stage, some of the higher cost subsidized resources that would not have been attractive for LSEs before the price inflation due to repricing, become a feasible option for a RCO contract. Consequently, not only costlier units will inefficiently attract RCO contracts, but also more units will be carved out of the supply stack in the second stage, leading to even higher clearing prices. These higher prices, in turn, would give more incentive for LSEs to search for RCO options. The strength of the upward spiral will depend on the relative magnitude of the increase in capacity clearing price and the magnitude of infra-marginal rents assigned to a carved-out unit. And, again, because prices are higher, the whole system is more expensive for load than it would have been even under PJM's definition of competitiveness.

Which of these two effects will dominate and the direction of the price effect will depend on several factors such as the supply and the demand curve, and cannot be determined without a formal analysis. However, it is unlikely that they will exactly counteract each other, other than a mere coincidence. As a result, the price signals that the RCO-candidates will receive will be distorted, even when the logic of infra-marginal payments is accepted.

¹²⁶ Note that with infra-marginal payments implemented as currently described in PJM's proposal, some of the more expensive units subject to MOPR would be expected not manage to attract an RCO contract even though they would clear the market under status quo.

To sum up, as described in detail above, Extended RCO proposal suffers from many serious flaws on the top of the basic problems connected with the RCO design. And, even if the goal restoring the “counterfactual” outcomes that would occur absent states’ policies could be accepted as a correct goal, PJM’s Extended RCO proposal will not achieve it. And, PJM’s Extended RCO proposal would not be just and reasonable because it would exacerbate overprocurement concerns, would distort efficient bidding incentives, and would lead to inefficient market outcomes. Therefore, the Commission should reject PJM’s Extended RCO proposal.

Respectfully submitted,

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Dated: November 6, 2018

CERTIFICATE OF SERVICE

In accordance with Rule 2010 of the Commission's Rules of Practice and Procedure, I hereby certify that I have this day serviced by electronic mail a copy of the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

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

Respectfully Submitted,

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