UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	))))	Docket Nos. EL15-73-000 & ER16-372-000

PROTEST OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rule 211 of the Commission's Rules and Regulations,[1] Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM[2] ("Market Monitor"), submits this protest responding to the compliance filing to implement hourly offers submitted by PJM Interconnection, L.L.C. ("PJM") on November 20, 2015 ("November 20 Filing").

The November 20 Filing is submitted in response to the Commission's investigation pursuant to Section 206 of the Federal Power Act and the Commission's directive that PJM file "tariff changes that (a) allow market participants to submit day-ahead offers that vary by hour and to update their offers in real time, including during emergency situations, and (b) make any associated modifications to its market power mitigation rules" ("June 9 Order").[3]

PJM's proposal is likely to create significant market power and market manipulation opportunities and the MMU opposes the November 20 Filing for that reason.

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1 18 CFR § 385.211 (2015).

2 Capitalized terms used herein and not otherwise defined have the meaning used in the PJM Open Access Transmission Tariff ("OATT"), the PJM Operating Agreement ("OA") or the PJM Reliability Assurance Agreement ("RAA").

3 *PJM Interconnection, L.L.C., et al.*, 151 FERC ¶ 61,206, ordering para. (D) (2015).

The Market Monitor supports the Commission's objectives to introduce hourly offer flexibility so that changes in cost may be reflected in offers, and to make the associated changes in market power mitigation rules to ensure that competitive markets are protected.

The Market Monitor makes an alternate proposal which is fully consistent with the Commission's stated objectives.

The November 20 Filing does provides offer flexibility, but does not limit that flexibility to hourly changes in cost and does not address the required changes in market power mitigation rules. The November 20 Filing adds substantial and unnecessary complexity to the tariff rules and leaves critical elements of the rules addressing market power and uplift payments vague and incomplete. The November 20 Filing does not comply with the June 9 Order and should be rejected.

I. BACKGROUND

A. Investigation of Hourly Offers

On May 5, 2014, Duke Energy Corporation filed a complaint against PJM Interconnection and in the alternative, a request for waiver of certain tariff provisions, to recover its losses in natural gas procurement through make-whole payments.[4] In the June 9 Order, the Commission denied Duke's complaint and the requested waiver. However, the Commission found that "aspects of PJM's current tariffs may be unjust, unreasonable, unduly discriminatory or preferential because they do not appear to allow market participants to submit day-ahead offers that vary by hour and do not appear to allow market participants to update their offers in real time, including during emergency situations."[5]

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[4] *See* Docket No. EL14-45-000.

[5] June 9 Order at P 69.

The Commission instituted a new proceeding, under section 206(b) of the Federal Power Act under Docket No. EL15-73-000 directing PJM:

> [E]ither to (1) report whether it will propose tariff changes that (a) allow market participants to submit day-ahead offers that vary by hour and to update their offers in real time, including during emergency situations, and (b) ***make any associated modifications to its market power mitigation rules***; such report must include a proposed timeline from PJM explaining how it will implement such changes by November 1, 2015, or as soon as practicable thereafter; or (2) explain why such changes are not necessary. (Emphasis added.)[6]

The Commission found that "PJM's OATT and Operating Agreement similarly fail to provide opportunities for Generation Capacity Resources like Duke to update their real-time bids to reflect changes in cost and to submit buy-back bids to reflect costs that may become sunk between the Day-ahead and Real-time Energy Markets."[7]

The Commission stated:

> In light of the potential for significant ***changes in costs*** between the time for submitting offers in the day-ahead market and real-time operation, ensuring market participants greater flexibility to structure and modify their offers in such markets will allow resources in PJM to ***better reflect their actual costs in their offers***. Such flexibility will also support proper price formation and efficient real-time dispatch. (Emphasis added.)[8]

The November 20 Filing was submitted to implement the Commission's directive.

B. Current PJM Energy Market Offer Rules

Market Sellers of generation resources are required to submit cost-based offers and may submit market-based (or price-based) offers in the PJM Day-Ahead Energy Market and

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6 *Id*. at P 73.

7 *Id* at P 70.

8 *Id* at P 71.

Real-Time Energy Market.[9] Generation resources may have multiple cost-based schedules, but only one of them may be made available at any given time for use by PJM, in the event that the resource is used to provide relief for a transmission constraint. Generation resources may have two price-based schedules, one of which must be a price-based parameter limited schedule (PLS) for use by PJM during a Maximum Generation Emergency.[10]

Each offer is fixed for the entire 24 hour period of a given operating day after the day-ahead market has cleared and the rebid period for resources that did not clear in the day-ahead market has closed. The only exception is that a limited set of operating parameters may be changed hourly.

While this is not a substitute for hourly offer flexibility, PJM has permitted generation owners to switch cost schedules in real time to reflect changes in fuel cost for more than ten years under certain conditions. These rules were recently revised in the Gas Unit Commitment Coordination (GUCC) process. If a resource is not committed in the day-ahead market or the Reliability Assessment Commitment (RAC) run, it may choose to be committed on cost-based offers only in the real-time market, and make a different cost-based offer available for use up to three hours prior to the operating hour.

Price-based offers can be up to $1,000 per MWh without reference to cost and without limits on operating parameters. PJM requires a price-based parameter limited schedule (PLS) offer with the same limits on five operating parameters as the cost-based offers, which are used during emergency conditions.

Cost-based offers are the short run marginal cost of energy. Cost-based offers include limited operating parameters intended to reflect the physical capability of

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9 "Market-based offer" and "price-based offer" are used interchangeably throughout the document. "Offer" and "schedule" are also used interchangeably throughout the document,

10 *See* PJM Manual 11 (Energy & Ancillary Services Market Operations) at 15.

generation resources, to prevent resources from operating inflexibly when mitigated to the cost-based offers and to prevent resources from extracting unnecessary uplift payments.

Cost-based offers are used when the owner of the resource fails the market power test, if resources are committed for reliability reasons (black start and reactive support), or if resources are committed in advance of the day-ahead market for conservative operations.

By default, PJM commits generation resources on price-based offers unless the owner of the resource fails the Three Pivotal Supplier (TPS) test or units are committed for reliability reasons.

C. Market Power Mitigation

The interaction of volatile prices for natural gas and the timing of PJM day-ahead and real-time markets has created bad incentives for gas fired generators at times. For example, if a unit is not taken in the day-ahead market but is called on in real time, the cost of gas in real time may be quite different than the expectation of gas prices at the time the unit owner submitted its offer in the day-ahead market. The unit owner, if called on at its day-ahead offer price, may lose money when generating because the cost of gas has increased. This creates an incentive for the unit owner to declare an outage rather than take the risk. This also creates an incentive for the unit owner to make a very high offer in the day-ahead market. Both options are exercises of market power, the first is physical withholding and the second is economic withholding.

A preferred option would be to permit the unit owner to change its offer in real time in order to reflect the actual current cost of gas at the time PJM dispatches the unit. This would create the appropriate incentives for the unit to run in real time and would result in energy market prices that reflect the actual current market value of gas.

Given that, for units with volatile fuel costs, the option to change offers hourly in real time has efficiency benefits under some conditions, the question becomes how to implement such a change in the PJM market while retaining effective market power mitigation rules.

The existing requirement to have a single offer daily for every unit was introduced as a market power mitigation measure with the original PJM market design in 1997 and was consistent with PJM offer rules that predated the creation of the PJM market. If a unit has to make a single offer for the day, it has a strong incentive to make a competitive offer to ensure that it will run. If the unit can change its offer hourly, the unit has the ability to increase its markup over marginal cost and its offer when demand is high and thus to exercise market power by increasing the market price above the competitive level. This rule has been one of the key elements of market power mitigation rules in PJM since the markets began operating in 1999. In addition to the fixed daily offer rule, the overall energy market offer cap of $1,000 per MWh served as an extreme upper bound to limit the exercise of aggregate market power.

The only explicit test for market power in the PJM energy market design is the TPS test which is run when there is a binding transmission constraint that creates a local market, smaller than the aggregate market. The TPS test is a test for the existence of structural local market power. The local market power mitigation rules cannot prevent the exercise of aggregate market power. There are no explicit market power tests for the existence of structural aggregate market power. While local market power is defined as the ability to exercise market power in a local market created by a binding constraint, aggregate market power is defined as the ability to exercise market power in the aggregate market when no constraint is binding or in the balance of the market when a constraint creates a local market.

Aggregate market power exists when a generation owner or a group of two or three generation owners can increase the market price above the competitive level. Aggregate market power occurs when the overall energy market is tight, with high demand relative to available supply. Such conditions occur on a regular basis on hot summer days and cold winter days. Recent examples include hours in January 2014 and in February 2015. As the MMU has pointed out, some unit owners did take advantage of these conditions and increased their markups even under existing rules. The proposed rules would make the exercise of aggregate market power easier and less risky for generation owners.

PJM does not have a rule explicitly governing aggregate market power. But PJM does have rules that address aggregate market power in a less direct way. One such rule is the requirement that units may make only one offer per day in the energy market. This rule was part of the PJM market design from the beginning precisely because it limited the exercise of aggregate market power. This is the rule that PJM proposes to modify. While the MMU supports modifying the rule, the changes should not and do not need to weaken the market power mitigation impacts of the existing rules, as PJM's proposal does.

II. PROTEST

A. The Market Monitor Supports Hourly Offer Flexibility with Protections Against the Exercise of Market Power.

The Market Monitor agrees that the current PJM tariff provisions do not allow generators to reflect changes in costs in real time. The Market Monitor agrees that offer flexibility provisions in PJM should allow generators to accurately reflect the intra-day variation in costs by allowing generators to make hourly day-ahead offers based on changes in cost and by allowing generators to update their offers in real time to reflect changes in costs. The Market Monitor supports appropriate rules that allow flexibility in generator offers to reflect the variation in cost. The Market Monitor believes it is critical to allow generator offers to accurately reflect the cost of generating energy for proper price formation and efficient dispatch.

The Market Monitor believes that appropriate offer flexibility rules should not allow market sellers to exercise market power. The Market Monitor believes that the fundamental objective of creating incentives for competitive behavior and protecting consumers against the exercise of market power and market manipulation should go together with the offer flexibility rules.

Offer flexibility rules can be implemented together with rules that will protect against the exercise of market power, but this will not occur unless such rules are proposed, developed and incorporated into a coherent market design. The November 20 Filing does not meaningfully address the market power mitigation issues raised by the implementation of hourly offer flexibility. The November 20 Filing includes rules that facilitate the exercise of market power and that are not required in order to allow offer flexibility.

Under PJM's proposal, the owner of a unit could increase the markup from $10 per MWh to $500 per MWh in the middle of the day without any change in the costs to operate the unit. If the unit owner increased the markup in order to increase market prices and the unit's output was needed to meet demand, the unit would have market power and would set the price at a level greater than the competitive level. The unit would exercise aggregate market power and cause energy market prices to exceed the competitive level.

In addition to creating the aggregate market power issue, there are specific problems with the application of the local market power mitigation rule (i.e., the TPS test) that would be exacerbated by the implementation of PJM's proposed rules on hourly offers. These problems would weaken the TPS test and therefore weaken market power mitigation even for local market power.

PJM's proposal would permit the exercise of aggregate market power and would permit the exercise of local market power even when the TPS test is failed and mitigation is applied. PJM's proposal also creates the potential to use hourly changes in unit parameters to exercise market power.

The Market Monitor's proposal permits hourly offer changes and includes corresponding modifications to the market power mitigation rules. The Market Monitor's proposal addresses these issues in a simple and easy to implement manner that permits the offer flexibility that can increase market efficiency while not permitting the exercise of market power.

PJM fails to provide any tariff provisions that define the consequences of not following the new offer flexibility rules. This leaves the responsibility to verify offer validity ex post by the Market Monitor and potential referrals to the Commission. This process can take a long time and creates uncertainty for generation and load. While ex post verification and referral of market participants by the Market Monitor are valuable tools to check market power and market manipulation, it is important to define explicit consequences in the tariff if it is determined that the rules are misused. Such an approach is necessary to protect the markets and to ensure just and reasonable rates.

B. The November 20 Filing Should Be Rejected Because It Does Not Comply with the June 9 Order, Fails to Comply with the Rule of Reason, and Includes Flawed Proposals Outside of the Scope of Compliance.

The November 20 Filing is deficient and should be rejected. The revisions included in the November 20 Filing relax the existing market power mitigation rules to allow offer flexibility, they provide no meaningful alternative means to address market power concerns. The November 20 Filing adds substantial and unnecessary complexity to the tariff rules, goes beyond the requirements of the June 9 Order, and leaves critical elements of PJM's inadequate rules on market power and uplift payments that result from this complexity addressed only in vague and incomplete terms.

To the extent PJM has statements addressing market power and uplift only in its transmittal letter or indicates an intention to include provisions related to its inadequate market power rules and uplift calculations in the manuals, the proposal fails the rule of reason, which requires that "all practices that significantly affect rates, terms and conditions fall within the purview of section 205(c) of the FPA, and, therefore, must be included in a tariff filed with the Commission."[11]

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[11] *See, e.g., Cal. Indep. Sys. Operator Corp.*, 119 FERC ¶ 61,076, at P 656 (2007) ("Our policy is that all practices that significantly affect rates, terms and conditions fall within the purview of section 205(c) of the FPA, and, therefore, must be included in a tariff filed with the Commission. Further, we have found that our 'rule of reason' test requires a case-by-case analysis...."); *see also Prior Notice and Filing Requirements Under Part II of the Federal Power Act*, 64 FERC ¶ 61,139 (1993), citing *City of Cleveland v. FERC*, 773 F.2d 1368, 1376 (D.C. Cir. 1985) ("[There] is an infinitude of practices affecting rates and service. The statutory directive must reasonably be read to require the recitation

Even as the November 20 Filing is deficient in important respects, it includes flawed proposals that exceed the scope of what is needed to comply with the June 9 Order. Offer cap flexibility to address changes in cost does not require an unlimited ability to increase mark up on an hourly basis. Offer flexibility does not require rules that exempt self-scheduled resources from being offer capped. These deficiencies and others require rejection of the November 20 Filing. PJM should be directed to prepare a new proposal that corrects the flaws identified in this pleading.

1. The November 20 Filing Fails to Comply with the June 9 Order.

The failure to include appropriately revised market power mitigation rules ignores the Commission's explicit direction that PJM address market power mitigation as part of the compliance filing. PJM's description of implementation procedures for market power mitigation in its transmittal letter mean nothing without the inclusion of explicit tariff provisions. The inclusion of "associated modifications to its market power mitigation rules" is necessary to comply with the June 9 Order.

PJM's only attempt to address the Commission's requirement to make modifications to its market power mitigation rules is inconsistent with hourly offer flexibility, creates unintended consequences and ignores the real market power issues.

PJM states in its transmittal letter (at 11):

> Thus, in order to ensure that Market Sellers do not exercise market power, Market Sellers with previously committed resources will be prohibited from increasing their market-based offers relative to any market-based offer in effect at the time their resource was

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of only those practices that affect rates and service *significantly*, that are realistically susceptible of specification, and that are not so generally understood in any contractual arrangement as to render recitation superfluous. It is obviously left to the Commission, within broad bounds of discretion, to give concrete application to this amorphous directive."); *Public Service Commission of New York, et al. v. FERC,* 813 F.2d 448, 454 (D.C. Cir. 1987) (held that the Commission properly excused utilities from filing policies or practices that dealt only with matters of "practical insignificance" to serving customers).

> committed. This is due to the fact that once committed, the Market Seller can generally assume that they will operate in real-time for those committed hours. Additionally, while their resource is operating the Market Seller is able to easily observe the state of the market and trends in real-time clearing prices. As a result, the Market Seller could then leverage knowledge of real-time market conditions and increase its offer price for a given resource in real-time to a level that aims to extract additional profit from the market without pricing the resource out of the market. If the resource is marginal in real-time and thus sets the real-time LMP, it would raise the clearing price for the entire market. If the resource's offer is not marginal, it may still have the impact of elevating the clearing price for the entire market when megawatts from the resource with an increased offer need to be replaced by different resources on the system.

The transmittal letter also states (at 12):

> Therefore, while not necessarily increasing the price paid to the resource originally dispatched in the Day-ahead Energy Market, the resource's Market Seller may have increased the price paid to all other resources.[24] This in turn could enable Market Sellers to manipulate the market to the benefit of either an individual resource or their entire resource fleet by inappropriately altering their bidding behavior.
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> Due to this concern, PJM is proposing that once a Market Seller's resource is committed, it will be prohibited from later submitting an increased market-based offer for the applicable clock hour relative to its market-based offer in effect at the time the resource is committed. It is appropriate to limit market-based offers in this manner, and not cost-based offers, because market-based offers are not restricted by anything other than overall energy offer caps. By contrast, cost-based offers are restricted by the Cost Development Guidelines.

The lengthy excerpt from the PJM transmittal letter is included because PJM articulates the ways in which market power can be exercised but then proposes an inadequate approach to solving the issue. PJM correctly points out that "… market-based offers are not restricted by anything other than overall energy offer caps."

PJM's points about how market power can be exercised are what the Market Monitor refers to as aggregate market power. PJM does not explain why its concerns about market power are fully addressed by its proposal to limit price-based offers for committed resources only. Exactly the same issues exist for units that were not previously committed. Exactly the same issue exists for units that are putting hourly offers into the day-ahead market. While PJM states the market power issue, PJM's proposal to address market power mitigation is inadequate.

PJM's proposal would inappropriately limit the ability of units to change their price-based offers in real time. This is inconsistent with the first requirement of the June 9 Order. PJM's proposal would not adequately modify the market power mitigation rules to address the issues that they identify. This is inconsistent with the second requirement of the June 9 Order.

The Market Monitor's proposal to limit hourly changes in both cost-based and price-based offers to changes in cost fully addresses the market power concerns that PJM defines while being fully compliant with the June 9 Order. The Market Monitor's proposal would permit units with price-based offers to change their offers in real time. The Market Monitor's proposal would fully address the market power mitigation issues that both the Market Monitor and PJM have identified.

2. The Proposed Revisions Are Not Adequate Under the Rule of Reason.

The PJM transmittal letter also includes a description of the application of the proposed market power mitigation rules. PJM describes certain scenarios to explain how market power mitigation rules will be implemented in practice, without any corresponding rules in the OATT.[12]

> In addition to describing the proposed market mitigation rules, PJM believes it is important to explain how such rules will be

[12] *See* PJM Compliance Filing, Docket No. EL15-73 at 31 (II.F.5) (November 20, 2015).

> implemented. Accordingly, PJM is outlining several common scenarios describing how its rules and operating practices will work together.
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> First, a Market Seller of a resource that is committed in the Day-ahead Energy Market on a market-based offer will not be dispatched by the Office of the Interconnection at a price level above that market-based offer unless the Market Seller subsequently submits a cost-based Real-time Offer above that amount and the Market Seller requests to run on its cost-based schedule for the remainder of the day. This applies to Market Sellers of Flexible Resources and non-Flexible Resources.

The PJM scenario creates unintended consequences in the implementation of market power mitigation. PJM proposes to switch a unit's offer to a higher cost-based offer during a commitment period, but does not propose tariff language to accomplish that objective.

Under the current tariff rules, units are committed on the market-based offer by default. If a unit owner fails the TPS test and the unit owner chooses a market-based offer lower than its cost-based offer, the unit is committed on the market-based offer because it is cheaper than the cost-based offer.

PJM proposes to change the practice to switch a unit's operating offer to the higher cost-based offer, but does not include explicit tariff language to accomplish this. This is core to how market power mitigation is implemented and should be included in the tariff if PJM's approach is adopted.

PJM's proposed changes also unnecessarily increase the complexity of uplift payment rules. For example, PJM's filing states that units are going to be made whole based on the lesser of the final offer and the committed offer. PJM does not specify how this determination will be made. The determination is complex, especially because other parameters such as minimum run time, may affect which offer is lower. Another complexity is the exclusion from the uplift calculation of any energy payments or charges that result from energy produced or not produced due to an updated offer.

As one example of the complexity and uncertainty introduced by PJM's approach and recognized as uncertain by PJM, footnote 22 (at 10) of PJM's filing states:

> Market Sellers must specify values for several variables that comprise an offer, depending on whether their offer is cost-based or market-based, and depending on the specific characteristics of the Market Seller's resource. Such variables include, but are not limited to, price, megawatt quantity, and parameters such as Minimum Run Time and Minimum Down Time. The specific details and business rules governing how such values may or may not be updated by the Market Seller under PJM's proposal will be appropriately elaborated upon in PJM's Manuals.

In this footnote, PJM states that it will address at some unspecified date all the details of how key parameters may or may not be permitted to change hourly in PJM Manuals. These are not minor details; they are significant rules that must be included in the tariff. It is not possible to fully evaluate the PJM proposal without knowing the answers. For example, it is possible that PJM will permit hourly changes to unit parameters. This is a significant issue and a potential example of PJM making a change to the rules which is outside the scope of the June 9 Order. But it is impossible to know PJM's intentions. Permitting hourly changes in parameters is not necessary and would add unnecessary complexity and additional opportunities to exercise market power.

The rule of reason requires that rules as significant as those for protecting the markets against market power and for calculating uplift payments be included in the tariff. Vague pledges in the transmittal letter or new rules in the manuals which are not yet written and which are not reviewed by the Commission are not sufficient under the rule of reason.[13]

Application of the rule of reason means that the November 20 Filing should be rejected.

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13 *See* November 20 Filing at 10 n.22 and 31–33.

The Market Monitor requests that the Commission reject the November 20 Filing both because it is not responsive to the Commission's direction and because the proposed tariff language is incomplete and leaves significant areas to PJM's discretion.

3. The November 20 Filing Includes Flawed Proposals That Should Be Rejected Because They Are Beyond the Scope of Compliance Required in the June 9 Order.

The Commission routinely rejects proposed rule changes included in compliance proposals when such changes are outside the scope of its compliance directive.[14] A number of proposals included in the November 20 Filing do not concern offer flexibility or market power mitigation rules. Accordingly, such changes should be rejected.

Even if the out-of-scope proposals had merit, which they do not, they should be submitted separately pursuant to Section 205 with the appropriate process for receiving input and review.

Under the November 20 Filing, generation owners will be able to offer their units in the Day-Ahead Energy Market with different offers in each hour. While cost-based offers must be based on hourly differences in cost, price-based offers may vary without any basis.

Offers in the energy market consist of two basic elements, short run marginal costs and markup. Short run marginal costs include the cost of fuel, emissions and a small amount of variable operating and maintenance expense. Markup exists when units offer at more than the short run marginal cost. The difference between the price-based offer and the

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[14] *See, e.g.*, *Duke Carolinas, LLC, et al.*, 151 FERC ¶ 61,021 at P 122 (2015); *El Paso Natural Gas Co., L.L.C.*, 152 FERC ¶ 61,038 at P 45 (2015); Tampa Elec. Co., et al., 151 FERC ¶ 61,013 at P 59 (2015); *PJM Interconnection, L.L.C.*, 137 FERC ¶ 61,216, at P 16 (2011) ("If PJM wishes to propose changes with respect to circumstances that were not addressed by the Commission's section 206 action in Order No. 745, the appropriate forum for such a proposal would be a separate section 205 filing."); *Midwest Indep. Transmission Sys. Operator, Inc.*, 137 FERC ¶ 61,212, at P 37 (2011) ("If MISO wishes to propose changes with respect to circumstances that were not addressed by the Commission's section 206 action in Order No. 745, the appropriate forum for such a proposal would be a separate section 205 filing."); *Avista Corp.*, 122 FERC ¶ 61,204, at P 33 (2008); *S.C. Elec. & Gas Co.*, 147 FERC ¶ 61,126, at P 108 (2014).

cost-based offer for a unit is the markup. All units in the PJM energy market may make both a cost-based and a price-based offer. The cost based offer includes only short run marginal cost while the price-based offer may include markup without limit. PJM dispatches units on their price-based offers unless the units are subject to offer capping to mitigate market power in which case the units are dispatched on the lower of their price-based or cost-based offers.

The current rules permit units to use a single cost based offer for the day and a single price based offer for the day. Units may have multiple cost based schedules, but only one of them may be active while units may have only a single price based schedule. Units are required to submit offers prior to the close of the day-ahead market. If the units are committed in the day-ahead market, the offers may not be changed. If the units are not committed in the day-ahead market, the offers may be changed during the rebid period following the close of the day-ahead market.

The purpose of the rule change is to permit units to reflect intraday changes in fuel costs, primarily the cost of natural gas.[15]

Any change to the rules governing the frequency of offer changes must address both the efficiency gains and the market power mitigation issues that result from permitting units to change offers hourly to reflect changes in fuel cost. The FERC order directing a compliance filing by PJM was clear on both these points.[16]

In the absence of a requirement that offers change only based on changes in cost, the opportunities for the exercise of market power are expanded substantially. The only element required by the June 9 Order is to reflect changes in fuel cost. PJM could have proposed permitting hourly offer changes unrelated to fuel cost changes at any time. PJM is using the November 20 Filing to substantially modify the basic offer rules. PJM is asserting

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15 *See Id*. at PP 69–74.

16 *Id*. at PP 72–73.

that the FERC directive is much broader than it is. The FERC directive is not to permit units to change offers hourly for any reason, but only for changes in cost. The FERC directive is to permit units to change offers hourly in order to permit units to reflect the actual changes in fuel cost and thus to improve efficiency and competitiveness of the PJM energy markets.[17]

PJM's proposal to permit unlimited hourly changes in markup is outside the scope of the June 9 Order. PJM's proposal would permit the exercise of aggregate market power without limits.

4. PJM's Proposal Would Exacerbate Existing Problems with the Application of the TPS Test.

Under PJM's proposal, resources would have the opportunity to circumvent mitigation and exercise market power by strategically varying markup across the output range of the resource. Market power can also be exercised when generation owners extract additional revenue from the system through uplift payments.

PJM mitigates local market power by committing the units of generation owners that fail the TPS test on the lower of their cost-based or price-based offers as the applicable offer. Price-based offers can have negative markup over cost-based offers because competitive pressures may incent resources to offer at the short run marginal cost without including the ten percent adder that is allowed in the cost-based offer. It is the market seller's choice to make price-based offers with negative markups. When cost-based offers intersect with price-based offers or when units have negative and positive markups in different hours of the day, the determination of which is the cheaper offer cannot be made clearly and consistently. If the goal of mitigation is to avoid having prices above competitive levels, the

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17 *Id*. at P 71 ("In light of the potential for significant changes in costs between the time for submitting offers in the day-ahead market and real-time operation, ensuring market participants greater flexibility to structure and modify their offers in such markets will allow resources in PJM to better reflect their actual costs in their offers… Such flexibility will also support proper price formation and efficient real-time dispatch.").

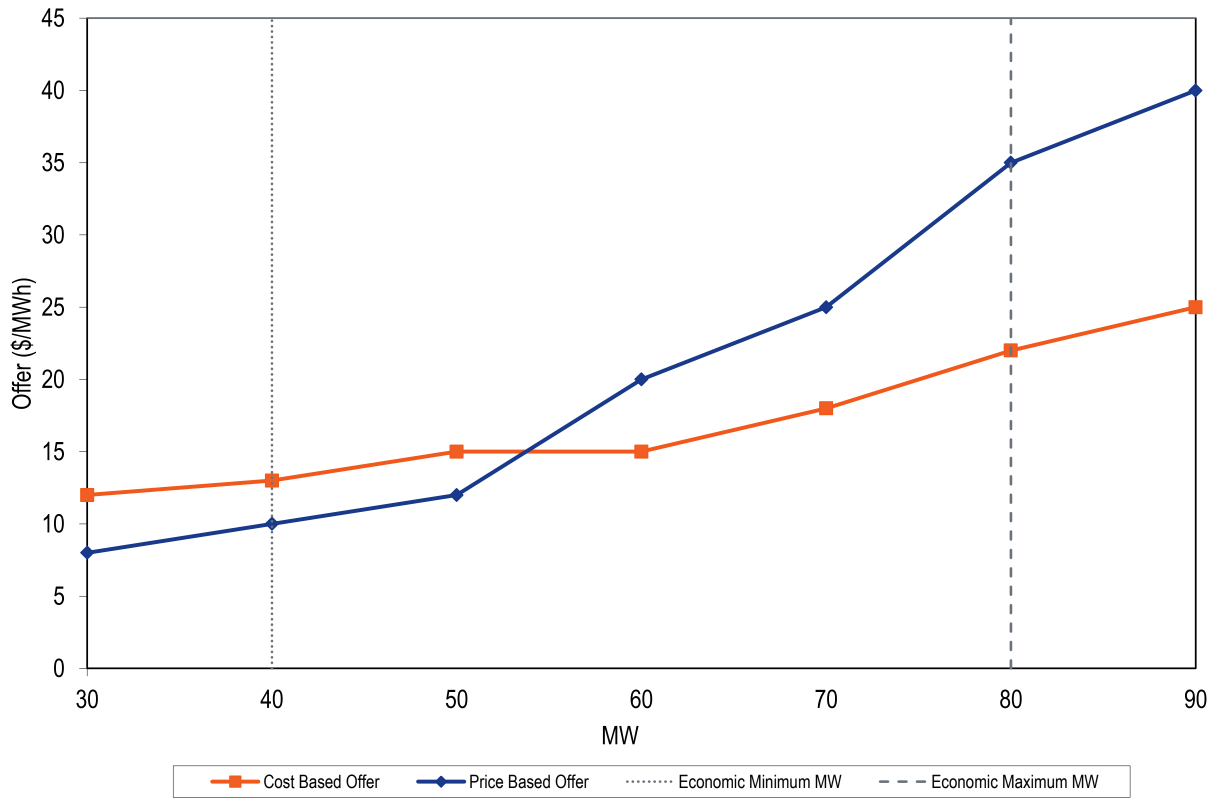
determination may result in one offer. If the goal of mitigation is to minimize uplift payments, the determination may result in another offer.

Properly formulated rules would make the two determinations the same. The Market Monitor's proposal includes such rules.

There are specific problems with the application of the local market power mitigation rule (the TPS test) that would be exacerbated by the implementation of PJM's proposed rules on hourly offers. These problems would weaken the TPS test and therefore weaken market power mitigation even for local market power.

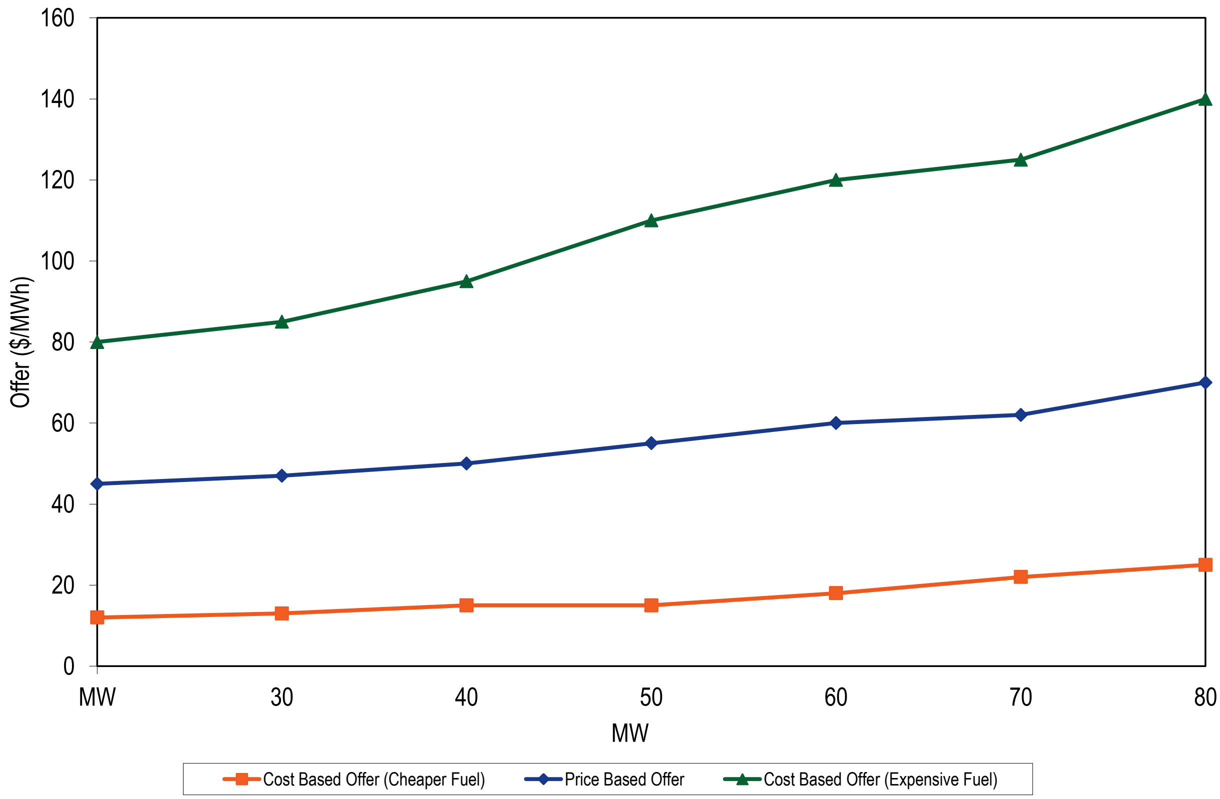
For example, Figure 1 shows a unit that has a price based offer that is cheaper than the cost based offer at the economic minimum point but crosses the cost based offer and is more expensive at the economic maximum point. If a unit fails the TPS, it is offer capped meaning that it is put on the lower of its price or cost based offer. Given that PJM evaluates which offer is lower based on the economic minimum point, PJM will select the price based offer if a unit fails the TPS. But this outcome will permit the exercise of market power when the unit is dispatched up by PJM because the offer will include substantial markups at higher output levels.

Figure 1 Offers with varying markups at different MW output levels



In the case of dual fuel units, if the price based offer uses a cheaper fuel and the cost based offer uses a more expensive fuel, the price based offer will appear to be lower cost even when it includes a markup. Figure 2 shows an example of offers by a dual fuel unit, where the active cost-based offer uses a more expensive fuel and the price-based offer uses a cheaper fuel and includes a markup over the cheaper cost-based offer. PJM will select the price-based offer if a unit fails the TPS test. But this outcome will permit the exercise of market power when the unit is dispatched by PJM because the price based offer on the cheaper fuel will include substantial markups but still be less than the cost-based offer on the more expensive fuel.

Figure 2 Dual Fuel Unit Offers



In addition, units can offer a different economic minimum MW level, different minimum run times, different start up and notification times on the cost-based and price-based offers to avoid mitigation. For example, a unit may offer a lower economic minimum MW level on the price-based offer than the cost based offer. Such a unit may appear to be cheaper to commit on the price-based offer even with a positive markup because the total cost of commitment (calculated as a product of MW and the offer in dollars per MWh plus the startup and no-load cost) can be lower on price-based offer at the lower economic minimum level compared to cost-based offer at a higher economic minimum level. A unit may offer its price-based offer with a negative markup over its cost-based offer, but have a longer minimum run time (MRT) on the price-based offer.

PJM's undefined approach to permitting hourly changes in unit parameters will make these problems worse. The November 20 Filing does not address the market power mitigation rules in the proposed tariff rules as directed by the Commission in the June 9 order.

The November 20 Filing does not clarify how resource offers will be selected if they change offers by hour and how this variation will affect the TPS test in the Day-Ahead Energy Market. There are at least two possible approaches: (i) Generators can be scheduled with different offers for each hour based on what is determined to be cheaper for that hour for all the scheduled run hours in the day-ahead market. This ensures that prices for each hour remain competitive; or (ii) Generators can be scheduled on a single offer that is determined to be cheaper overall for the entire commitment period. This may not result in competitive prices for each hour but lowers the cost of commitment over the entire commitment. Under the current design, since offers are fixed for the 24 hour period, both approaches result in the same outcome. With hourly offers, they may result in different outcomes. Allowing price-based offers to have more flexible operating parameters (e.g. shorter Minimum Run Time) than cost-based offers makes the determination even more complex and susceptible to gaming.

The November 20 Filing does not include adequate market power mitigation rules and the rules that are included are not adequate or are incorrect. The lack of proposed rules and tariff language on mitigation creates significant uncertainty for both market sellers and market buyers, and leaves too much discretion to PJM.

The November 20 Filing should be rejected for these reasons.

C. The November 20 Proposal Is Incomplete and Unclear and Internally Inconsistent.

PJM's proposed tariff revisions lack clarity and detail and are inconsistent with other tariff provisions that PJM did not modify. PJM indicated in its filing that some important rules regarding the application of hourly offers will be defined in PJM Manuals instead of the tariff. The introduction of hourly offers is a major market design change that impacts multiple areas of the PJM tariff.

The Market Monitor reviewed all the tariff changes proposed by PJM and identified issues that could make the November 20 Filing impossible to implement or possible to implement only based on PJM's unknown future interpretation of its own revised and unclear language. Most of the issues result from the unnecessary complexity of PJM's approach and could be resolved by adopting the Market Monitor's simple and direct approach to the June 9 Order.

§ 1.3.1B.01B, Committed Offer: PJM defined this offer in the proposed tariff as "the offer on which a resource was scheduled by PJM for a particular clock hour." This definition is inadequate and creates substantial uncertainty about how it would be applied. In the transmittal letter, PJM specified that "for resources scheduled in the Day-ahead Energy Market, the Committed Offer is the hourly market-based or cost-based offer on which the resource received a commitment. For resources scheduled outside of the Day-Ahead Energy Market, the Committed Offer is the offer on which PJM dispatchers based their commitment decision for the resource."

The Market Monitor also recommends defining what the Committed Offer will be for self-scheduled resources. The Committed Offer for self-scheduled resources scheduled in the Day-Ahead Energy Market should be the price-based or cost-based offer on which the resource cleared the Day-Ahead Energy Market. The Committed Offer for self-scheduled resources outside the Day-Ahead Energy Market should be the price-based or cost-based offer at the time the unit comes online.

Not having Committed Offers clearly defined in the tariff will lead to conflicting interpretations. For example, a resource clears the Day-Ahead Energy Market at an offer of $100 per MWh but the resource decreases its offer in real time to $80 per MWh and PJM schedules the resource based on the $80 per MWh. The tariff language does not clearly specify whether the Committed Offer is $100 per MWh or $80 per MWh. The lack of a clear definition of the core concept of Committed Offer also makes other tariff provisions subject to conflicting interpretations.

§ 1.3.4A, Final Offer: PJM defined this offer in the proposed tariff as "the offer on which a resource was dispatched by PJM for a particular clock hour." The tariff is not clear on whether the Final Offer could be different by hour during a resource commitment period. PJM should clarify if a resource's Final Offer could be its price-based offer for a subset of its commitment hours and its cost-based offer for the balance of its commitment hours. This is an important clarification because PJM stated in its transmittal letter that resources owned by market sellers that fail the TPS test are capped at the lower of their cost-based or price-based offer. If this is true and market sellers are not going to be allowed to increase the price-based offers of their committed resources as PJM proposes, there are scenarios in which a resource's lower offer for the first dispatched hour is its cost-based offer and, after updating their cost-based offer in real time, the price-based offer is the lower offer. It is not clear from the filing whether PJM would switch the Final Offer of the resource under these circumstances.

PJM should clarify that the Final Offer will be based on the lower offer on every interval of the commitment period based on the output level in each interval, for example, if a generation owner fails the TPS test and one of its offer capped units has a cost-based offer that intersects with its price-based offer, the Final Offer determination should be based on the lower of cost and price for each interval.

§ 1.3.11A.02, LOC Deviation: PJM defined this MW value in the proposed tariff as the MW deviation used to compensate resources for energy and reactive lost opportunity cost credits. The LOC Deviation is the difference between the actual MW output of a resource that has been backed down by PJM and the desired MW output based on the real-time LMP and the resource's offer. The November 20 Filing includes two offer definitions that could be used to calculate prices and uplift payments, a Committed Offer and a Final Offer. The two offer definitions result in different calculations of LOC deviations.

PJM proposes to use the Final Offer to determine the LOC deviation MW which are eligible to receive lost opportunity cost credits. But the LOC Deviation should be based on the Committed Offer, not the Final Offer. If the LOC Deviation is based on the Final Offer, resource owners will have the ability to increase their lost opportunity cost credits simply by decreasing their resources' offers in real time. This outcome is possible because PJM compares the actual MW value of the resource to the desired MW value based on a resource's offer curve. If the resource owner decreases its offer, the desired MW value could increase, therefore increasing the LOC Deviation and subsequently the LOC payment. PJM proposes to use the Final Offer to determine the MW for LOC Deviation but to pay for the deviations based on greater of the Committed Offer or the Final Offer.

§ 1.3.33D, Total Lost Opportunity Offer: PJM defined this offer in the proposed tariff as "the applicable offer used to calculate lost opportunity credits." For pool-scheduled resources, PJM defined the lost opportunity offer to be "the greater of the Committed Offer or last Real-Time Offer submitted for the offer on which the resource was committed." For self-scheduled resources, PJM defined the lost opportunity offer to be "either the cost-based offer on which the resource was dispatched or the offer curve associated with the highest available offer submitted."

The PJM tariff does not have provisions for lost opportunity credits. The PJM tariff does contain provisions for lost opportunity cost credits. It is not clear why PJM excluded the word cost from this definition. The Market Monitor assumes that the "last Real-Time Offer submitted for the offer on which the resource was committed" means the last update to the Committed Offer (either cost-based or price-based). This language is not clear and must be clarified if it is to be implementable.

§ 1.3.33E, Total Operating Reserve Offer: PJM defined this offer in the tariff as "the applicable offer used to calculate Operating Reserve credits." PJM defined this offer to be the lesser of the Committed Offer curve or the Final Offer curve for each hour. It is not clear whether this only applies to balancing operating reserve credits or if it also applies to day-ahead operating reserve credits. It is not clear how PJM will take into account no load and startup costs that differ between cost-based and price-based offers in the calculation of balancing operating reserve credits.

Not having this distinction clearly defined could result in an unfavorable outcome in which resources' operating reserve compensation is increased because PJM did not take into account no load and startup costs in the determination of the lesser offer. For example, a resource's offer curve could result in $1,000 of costs on its Committed Offer and $800 on its Final Offer, but the no load and startup cost on its Committed Offer add to $3,000 and add to $5,000 on its Final Offer. Under the November 20 Filing, the total offer used to calculate operating reserve credits will be the higher cost, $5,800 based on the Final Offer, instead of the lower cost, $4,000 based on the Committed Offer.

It is not clear how PJM will determine the applicable MW output when the MW differ between the Committed Offer and Final Offer. For example, a resource could be dispatched at 100 MW based on its Committed Offer and 200 MW based on its Final Offer. The applicable MW output determines the amount of operating reserve credits the unit will be paid.

The tariff should not use different offers to separately determine the offer level (in dollars per MWh) used to calculate operating reserve credits and the MW output used to calculate operating reserve credits.

§ 1.10.1A(d). PJM should delete "other services" because there are no other services in the Day-Ahead Energy Market.

§ 1.10.1A(d). Second Paragraph i). It is not clear if minimum run times for generation resources and minimum down times for demand resources can be different by hour. For example, it is not clear whether resources can submit hourly differentiated minimum run times in the day-ahead market that would also apply in real time and if resources can change minimum run times in real time.

There are significant potential impacts of these options, separately and in combination. If minimum run times can be changed, resource owners would be given another variable that they could use to either avoid commitment or impose a commitment on PJM that could result in additional uplift payments. For example, a resource may clear the Day-Ahead Energy Market with a two hour minimum run time, and the unit updates its minimum run time to six hours in real-time. If PJM uses the updated value, PJM may decide not to commit the resource for the longer minimum run time, and therefore the resource could avoid commitment.

PJM does not have tariff or manual rules that specify how market power mitigation is implemented in the Day-Ahead Energy Market. It is unclear how PJM performs offer capping in the Day-Ahead Energy Market now, and it is unclear how PJM will take into account hourly differentiated minimum run times for offer capping resource owners that have market power. PJM must propose clear rules for the application of the TPS test in the Day-Ahead Energy Market.

§ 1.10.1A(d) Second Paragraph vi). The current tariff states that resources' offers must remain open (available) through the operating day for which the offers were submitted. PJM's proposed tariff revisions to this section would allow resources to change the availability of their offer in real time.

This is a significant change to the tariff and is not required by the Commission order and is not related to compliance with the Commission order. Under the current tariff, offer availability cannot be changed after the day-ahead market posting for resources that clear the Day-Ahead Energy Market or the rebid period for resources that did not clear the Day-Ahead Energy Market. Allowing changes to offer availability could result in resource owners circumventing other measures proposed by PJM to avoid the exercise of market power. For example, if the updated cost-based offer of a committed resource becomes higher than the price-based offer, the resource owner may elect to make the resource's price-based offer unavailable, after being committed on the price-based offer, which will give PJM no other choice than to select the resource's cost-based offer.

§ 1.10.1A(d) Second Paragraph vii). The current tariff states that resources' offers are "final as to the price or prices at which the Market Seller proposes to supply energy" and "such prices are guaranteed by the Market Seller." Under the current tariff, resources committed by PJM are guaranteed to be made whole to their submitted offers as long as they follow PJM's direction. Under the current tariff, the prices that a resource receives are the same prices at which the energy is supplied. In PJM's proposed tariff changes, PJM introduces a disconnect between the price that a resource receives, based on its cleared day-ahead offer, and the price at which energy is supplied, based on the real-time hourly offer. PJM revised this section but it did not address this important distinction. This section should be revised to only allow resource owners to change the prices at which they are willing to provide energy but not the price they are paid after their resources have been committed.

§ 1.10.1A(e). PJM revised this section to allow hourly regulation offers and allow updates to resources' regulation offers. The Market Monitor agrees that there is a small component of cost-based regulation offers that vary with fuel cost. This component is attributed to lower efficiency when generators provide frequency regulation services. The current rules allow for a 0.35 percent heat rate degradation factor. The Market Monitor does not consider that this component of regulation market cost-based offers significant enough to warrant a modification of the regulation market offer rules. The Market Monitor recommends not allowing hourly offers or hourly updates for regulation offers. Effective regulation offers already change hourly under the current tariff as a result of changes in opportunity costs which are calculated hourly by PJM and constitute most of the regulation offers.

§ 1.10.1A(j). PJM revised this section to allow hourly synchronized reserve offers and allow updates to resources' synchronized reserve offers. Synchronized reserve offers are not dependent on fuel cost. The Market Monitor recommends not allowing hourly offers or hourly updates for synchronized reserve offers.

§ 1.10.9B(a). In this section, PJM states that a committed resource cannot submit a new price-based offer higher than the price-based offer available at the time of the commitment for any committed hour, regardless of whether the commitment is on the cost-based or price-based offer. It is not clear what constitutes a committed hour for resources that did not clear the Day-Ahead Energy Market and were committed in real time. For example, a resource committed in real time could be committed for their minimum run time or committed for all hours remaining in the day. It is not clear if the committed hours from resources that clear the Day-Ahead Energy Market can be superseded by a real-time commitment instruction. Resource owners will not know when and why they will not to be allowed to change their price-based offers if these issues are not clearly defined in the tariff.

As part of the Market Monitor's overall recommendation on hourly offer flexibility, the Market Monitor recommends allowing committed resources to update their price-based offers up or down based on changes in the underlying fuel cost. This recommendation is effective only if the other Market Monitor recommendations, including constant markup, are implemented.

§ 1.10.9B(c). In this section, PJM states that resources that update their price-based offers and have an available cost-based offer that is noncompliant with PJM rules must update their cost-based offer when the new cost-based offer is lower than the available cost-based offer by $5 per MWh. It is not clear to what part or parts of the cost-based offer the $5 per MWh threshold applies. Does it apply to startup cost or no-load cost or each segment of the incremental offer curve? Does it apply to the cost including all three of these components?

PJM should rewrite this section to state that generation owners that elect to update the price-based offer of their resources must also update their cost-based offer whenever the cost-based offer decreases by any amount, because otherwise it creates a safe-harbor provision for non-compliance.

§ 6.4.1(e). PJM revised this section to explicitly exclude self-scheduled resources from the offer capping construct. PJM states that self-scheduled resources are not eligible for offer capping because they are not running at PJM's direction. This statement is not correct. PJM should treat self-scheduled resources as eligible for offer capping. It appears that the current tariff requires such offer capping although it is not stated explicitly.

PJM states in their cover letter (at P 27): "In other words, resources that are self-scheduled are not eligible for offer capping since they are not running at PJM's direction.

These changes clarify how PJM implements the TPS test today and how it proposes to going forward."

PJM should not attempt to modify the application of market power mitigation in this filing, as they are doing here.

Self-scheduled resources are not committed by PJM but they can be dispatched by PJM. Generation available from a self-scheduled resource should be treated in the same way as generation available from pool-scheduled resources. PJM is incorrect in the assertion that self-scheduled resources cannot exercise market power. For example, if a unit self schedules at economic minimum, makes the unit available for dispatch above economic minimum and PJM needs the output above economic minimum to relieve a constraint the unit should be subject to the three pivotal supplier test. If there are fewer than three owners that can provide relief to that constraint, that owner of the self-scheduled resource has market power. Unlike pool-scheduled resources, self-scheduled resources are automatically selected on their price-based offer. Therefore, if a self-scheduled resource is marginal and the owner is determined to have market power by the TPS test, the owner is effectively exercising market power if the price-based offer is above its cost-based offer.

§ 6.4.1(f)(v). PJM introduced this section to reevaluate offer capping only for generation resources scheduled in the Day-Ahead Energy Market, but that will only operate if PJM provides further instructions in real time. All other generation resources that are scheduled in the Day-Ahead Energy Market will not be subject to offer capping reevaluation. This section also states that generation resources committed in real time will not be subject to further offer capping until their minimum run time has elapsed.

All units that change their offers in day ahead or real time should be subject to the TPS test and offer capping if appropriate. The ability to change offers hourly provides an enhanced ability to exercise local market power that must be explicitly addressed.

It is not clear in the proposed tariff which generation resources are given further instructions and which ones are not. In its transmittal letter PJM defines these resources as "flexible units" for example a "combustion turbine that can start within an hour and has a minimum run time of an hour." But this is misleading. If this is the definition PJM intends to use to determine which generation resources are subject to further commitment instructions, the entire November 20 Filing should be rejected.

The problem is that under the November 20 Filing, any unit committed day ahead or real time will have the ability to change its cost-based offer and decrease its price-based offer. Any unit that updates their offer will, in actual operations, be subject to further instruction from PJM because the updated offer may, for example, make the unit uneconomic and PJM may de-commit the unit. As a result, all units that update offers should be subject to offer capping reevaluation.

D. PJM's Filing Fails to Provide Tariff Revisions to Adapt Rules Affecting Energy Offers to Offer Flexibility.

The Market Monitor reviewed PJM's current tariff and identified sections that need to be modified in order to make the implementation of hourly offers possible without subjective interpretation by PJM and any Market Participant. PJM did not propose changes to these sections.

§ 1.10.1A(f) states that generation resources with notification times or startup times longer than 24 hours have to make binding offers for the next seven days. PJM should clarify that units with these parameters will not be able to update their offers in real time.

§ 1.10.2(a) states that pool-scheduled resources will be selected by PJM based on the "prices offered." PJM should clarify in this section which price offers apply in this section, the Committed Offer or the Final Offer.

§ 1.10.2(d) states that pool-scheduled generation resources that begin the start sequence but are canceled before the resource has synchronized are compensated for their actual incurred costs capped at the resource's startup cost. PJM should clarify in this section which startup cost will apply in this section, the startup cost of the Committed Offer or the startup cost of the last Real-Time Offer. PJM should revise this section to clarify that the startup cost used to cap this compensation should be based on the startup cost of the Committed Offer and not the last real-time Offer.

§ 1.10.3(b) states that offered prices of resources that are self-scheduled will not be considered by PJM in the LMP determination. PJM should clarify the application of this section. Currently, self-scheduled resources can set LMP. This is why self-scheduled resources should be subject to offer capping. PJM should delete this section.

§ 1.10.8(a) states that PJM will determine the least-cost means of satisfying the projected hourly requirements for energy, operating reserves and other ancillary services of the Day-Ahead Energy Market and the least-cost means of satisfying the operating reserve and other ancillary service requirements of any portion of the load forecast in excess of that scheduled in the Day-Ahead Energy Market taking into account the offers submitted by Market Sellers. PJM should clarify in this section which offers will be used to determine the least-cost solution. This must be clarified because PJM could determine two different optimal solutions, one based on the Committed Offers from resources that cleared the Day-Ahead Energy Market and another based on their updated real-time offers.

§ 3.2.3(c)(ii)(A) determines how operating reserve credits are categorized between deviation and reliability credits. One criterion used to determine if the operating reserves paid to a generation resource will be categorized as deviation or reliability credits is based on the difference between the LMP and the applicable offer. PJM should clarify which offer is applicable for determining if balancing operating reserve credits are deviation credits or reliability credits.

§ 3.2.3(e) states that the segment of hours used to calculate operating reserve credits depend on generation resources' minimum run times. PJM should clarify in this section which minimum run time will apply in the determination of operating reserve segments, the minimum run time of the Committed Offer or the minimum run time of the Final Offer.

§ 3.2.3(o) specifies the rules governing units' deviations. Generation resources that do not follow PJM's direction are allocated a portion of the total operating reserve charges for their deviations. PJM calculates units' deviations based on a ramp-limited desired MW output. PJM should clarify in its tariff if generation resources are going to be allowed to change their ramp rates. If generation resources are going to be allowed to change their ramp rates in real time, PJM should include tariff revisions that will not exempt generation resources from operating reserve deviation charges if their deviations results from updating their ramp rates in real time.

E. Market Monitor's Alternate Proposal

The change in the rules should be designed to address the issues by the Commission but not attempt to add additional objectives or complexity.[18]

The Market Monitor's proposal is based on those design objectives. The PJM proposal goes well beyond those objectives, significantly changes offer rules and does not adequately address the market power mitigation issues.

The Market Monitor's proposal would permit units to have different offers by hour in the day-ahead market and in the real-time market only if those offers are based on differences in the cost of fuel. The Market Monitor's proposal would permit units to have different day-ahead offers by hour if based on different fuel costs by hour. The Market Monitor's proposal would permit units to have different real-time offers by hour, if based on different fuel costs by hour. This means that both the cost-based and the price-based offers could change, but only by the change in fuel costs. The offers would shift in parallel. The markup would not change.

The Market Monitor's proposal is an internally consistent approach to implementing hourly offer flexibility and the associated required modifications to market power mitigation rules. The Market Monitor's proposal accomplishes exactly what the Commission requested but no more and it does so in a simple and logical manner.[19]

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18 The Market Monitor wants to ensure that PJM not create new rules that are vulnerable to exploitative behavior. *See In re Make-Whole Payments and Related Bidding Strategies*, 144 FERC ¶ 61,068 (2013).

19 The Market Monitor presented an alternate proposal in the PJM stakeholder group (GOFSTF) that addresses all the issues raised by the Commission in the June 9 Order, and preserves the incentives and ability for generation owners to offer competitively.

1. Day-Ahead Offers

The Market Monitor's proposal would allow market participants to submit one cost-based offer, one price-based offer and one price-based parameter limited schedule offer for each fuel type in the Day-Ahead Energy Market. Each offer includes a no load component, startup component, incremental offer, and operating parameters. Each price-based offer is equivalent to a cost-based offer plus a markup component that can be positive, negative or zero.

a. Cost Components

Under the Market Monitor's proposal, each of the offers can vary hourly, but the variation is limited to changes in specific components in the offer that are a result of changes in the underlying fuel costs, and in case of dual fuel units, are a result of fuel switching. For example, if a gas fired resource has different costs during the two different gas days that span the electric day, it could offer one no load, startup and incremental offer component for the first 10 hours of the operating day (first gas day) and a different no load, startup and incremental offer component for the remaining 14 hours of the operating day (second gas day).

A resource may select a sloped curve or a step curve constructed using the price, MW pairs submitted for each offer in the energy market. The Market Monitor proposes that resources not be allowed to vary the choice from sloped to step curve by hour. Hourly variation in the choice of sloped to step curve results in different price signals to the generator even if everything else remains constant that could result in operational issues. There is no reason and no market efficiency gain associated with the ability to switch between sloped and step offer curves.

The Market Monitor proposes, for a specific fuel type, a generator would be required to have the same MW points in the incremental offers in cost-based, price-based and price-based PLS offers. This allows for accurate comparisons of the offers at any MW output level for any given hour. There is no physical reason and no market efficiency reason to have different MW points.

Under the current rules, a Market Seller may have a positive, negative or zero markup in the market-based offers over the cost-based offers, but that markup is constant for the entire day. If hourly changes in cost-based and price-based offers are the result only of changes in cost, the markup will be constant for the day. In order to ensure that hourly changes in cost-based and market-based offers result only from changes in cost, the Market Monitor proposes to explicitly require that the markup component be constant in the offer in the Day-Ahead Energy Market.

b. Operating Parameters

Under the Market Monitor's proposal, the operating parameters that are allowed to vary hourly under the current rules would also be allowed to vary hourly in order to reflect changes in the physical conditions at the unit. For example, the economic minimum MW, emergency minimum MW, economic maximum MW and emergency maximum MW are currently allowed to vary hourly to allow generation owners to reflect deratings, outages and other physical conditions at a resource.

Parameters that are based on resource characteristics like Minimum Run Time, Minimum Down Time, Startup Time, Maximum Run Time, Ramp Rate, and cooling times (hot to cold, hot to intermediate) and Maximum daily starts and Maximum weekly starts are not expected to vary by hour.[20] The Market Monitor proposes to not allow hourly variation in these parameters. There is no physical or market efficiency reason to allow theses parameters to vary hourly.

c. Market Power Mitigation

The Market Monitor does not propose changes to the TPS test calculations. The Market Monitor's proposal would ensure that the results of the TPS test would be effective and efficient market power mitigation. The Market Monitor's proposal on markup would

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[20] Some of these parameters are expected to vary by fuel type for dual-fuel units.

ensure that resources that are mitigated for market power are consistently committed on the lower of the cost or price-based schedule.

The Market Monitor proposes that the price based parameter limited schedule be used for mitigation when the price-based offer is cheaper than the cost-based offer unless the price-based offer parameters are more flexible. This ensures that resources that appear to have a cheaper price-based offer do not impose inflexible parameters in order to increase uplift payments.

The Market Monitor's proposals would ensure that the TPS test can accurately capture the cheaper offer in any given hour for resources subject to market power mitigation.

d. Self-Scheduled Resources

The Market Monitor proposes that self-scheduled units that allow PJM to dispatch them above the economic minimum output level be tested for market power and mitigated if the resource owner fails the TPS test. These units can offer a dispatchable range above the economic minimum and follow PJM dispatch signals to ramp up or down. This proposal would ensure that self-scheduled resources cannot circumvent the market power mitigation mechanism.

2. Real Time Updates

The Market Monitor proposes that a Market Seller may update generation resource offers submitted in the day-ahead market up to 60 minutes prior to the beginning of the applicable operating hour subject to specific rules:

a. Cost Components

The Market Monitor proposes that a Market Seller may decrease the no-load, startup, and incremental components of any offer without limit. A Market Seller may only increase the no-load, startup and incremental components of any offers if it is the result of an increase in fuel cost.

The Market Monitor proposes that a Market Seller be permitted to increase both the cost-based offer and the price-based offer in real time for committed and uncommitted resources. This would permit the market to reflect the current value of fuel, particularly natural gas. PJM’s proposal does not permit a Market Seller to increase its price-based offer in real time for committed resources.

The Market Monitor proposes that a Market Seller may not modify the markup component of the market-based offers in real time from what was submitted in the day-ahead market. This allows the accurate reflection of hourly changes in cost in real time and protects the market from the exercise of market power.

b. Operating Parameters

The Market Monitor proposes to continue to allow resources to update certain parameters, specifically, economic minimum MW, emergency minimum MW, economic maximum MW and emergency maximum MW in the real-time market to allow generation owners to reflect deratings, outages and other physical conditions as they arise at a resource.

Parameters that are based on resource characteristics like Minimum Run Time, Minimum Down Time, Startup Time, Maximum Run Time, Ramp Rate, and cooling times (hot to cold, hot to intermediate) and Maximum daily starts and Maximum weekly starts do not vary within an operating day for resources operating on a specific fuel. The Market Monitor proposes that such parameters not be changed hourly unless a dual fuel unit switches to a schedule based on a different fuel with different parameters.

c. Market Power Mitigation

The Market Monitor proposes that for resources that are committed in the Real-Time Energy Market and tested for market power, the applicable offers that are in place for each hour at the time of commitment be used so that the cost of commitment can be accurately calculated.

The Market Monitor proposes that for resources that are committed in the Real-Time Energy Market based on the real-time TPS test results, such resources be retested every interval if a resource changes its offers. This ensures that resource owners that may have passed the market power test using offers applicable at the time of commitment, but have changed the offers after commitment, cannot circumvent the real-time market power mitigation mechanism.

3. Uplift Rules

The Market Monitor's market power mitigation proposals allow continued reliance on the current uplift rules instead of adding the unnecessary complexity of the PJM proposal. The Market Monitor recommends that the uplift rules be developed so as to ensure that generators' cleared MWh in the Day-Ahead Energy Market are not compensated above or below the offer used in the Day-Ahead Energy Market and that generators' MWh that are produced above what cleared in the Day-Ahead Energy Market are not compensated above or below the offer used to commit the resource. This is the current construct and it should remain going forward under the offer flexibility rules. This approach ensures that only resources that operate according to PJM dispatch instructions are paid uplift.

Regarding lost opportunity cost payments, under the current rules, a resource cannot affect PJM's decision to reduce its output or to not commit the resource. This is a result of the fact that resources cannot make themselves less economic in real time. with hourly offer flexibility, this is no longer true. If a resource's increase in its offer results in PJM reducing its output or not committing the resource, the resource should not be compensated for lost opportunity cost. The Market Monitor proposes that any resource that increases its offer will not be compensated for lost opportunity cost.

4. Summary

The Market Monitor provides an approach to hourly offer flexibility, which it presented during the stakeholder process at the Generator Offer Flexibility Senior Task Force (GOFSTF), that would allow generators to reflect changes in costs while ensuring that the incentives to offer competitively remain in place. The Market Monitor's proposal addresses market power mitigation issues and uplift rules to ensure that the energy market rules provide incentives for competitive behavior.

Because this proceeding comes pursuant to Section 206(b), the Commission is not bound to accept the public utility's proposal even if the utility's approach is inferior to alternatives. The Commission could achieve what it sought in its directive by approving the Market Monitor's approach.

III. CONCLUSION

The Market Monitor respectfully requests that the Commission afford due consideration to these comments as it resolves the issues raised in this proceeding.

Respectfully submitted,

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Dated: December 14, 2015

CERTIFICATE OF SERVICE

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

Dated at Eagleville, Pennsylvania,
this 14 day of December, 2015.

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