UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	)	Docket No. ER23-557-000

COMMENTS OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rule 211 of the Commission's Rules and Regulations, Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor ("Market Monitor") for PJM Interconnection, L.L.C. ("PJM"), submits these comments in support of the filing submitted by PJM on December 2, 2022 ("December 2nd Filing"). In the December 2nd Filing, PJM proposes revisions to the market rules for Start-Up Costs (including revisions to OA Schedule 1 § 6.4.3A(a) & Schedule 2 § 1.3(a)), and changes to the definitions of Start-Up Costs and Start Fuel. The December 2nd Filing also includes revisions related to the inclusion of environmental credits and emission adders in non-zero cost-based offers (OA Schedule 2 §§ 2.5 and 3.1). Approving the December 2nd Filing will allow generators to better reflect the costs incurred during starts, taking into account PJM's current modeling limitations, and will require appropriate accounting for environmental costs and credits.

I. COMMENTS

A. The Proposed Revisions to the Start Cost Definition Make Start Costs More Accurate.

Generator energy offers in PJM are comprised of three parts, an incremental energy offer curve, no load cost and start cost. In cost-based offers, all three parts are capped at the level allowed by Schedule 2 of the Operating Agreement, the Cost Development Guidelines (Manual 15) and fuel cost policies reviewed by the Market Monitor and approved by PJM. In price-based offers, the incremental energy offer curve is capped at $1,000 per MWh (unless the verified cost-based offer exceeds $1,000 per MWh up to a maximum of $2,000

per MWh). Generators are allowed to choose whether to use price-based or cost-based no load costs and start costs twice a year. If price-based no load and start costs are selected, the no load and start costs do not have a cap, but the offers cannot be changed for six months (April through September and October through March). If cost-based no load and start costs are selected, the caps are the cost-based no load and start costs included in the cost-based offers, and the offers can be updated daily or hourly. Most generators, 89 percent between January and September 2022, elected to have cost-based start costs in their price-based offers.

The December 2nd Filing addresses the level of cost-based start costs. Start costs are mainly used by PJM to determine unit commitment. PJM's day-ahead energy market objective is to meet energy and reserves while minimizing system production cost. The start cost is part of the system production cost.

It is essential to have start costs that include the short run marginal costs incurred during starts to ensure proper unit commitment and to ensure that units that operate following PJM's commitment and dispatch direction do not operate at a loss.

The current start costs are defined in the Operating Agreement as the costs incurred as resources move from shutdown conditions to synchronization.[1] The costs incurred during starts include fuel, maintenance, operation, emissions, labor and station service. This definition was modified in the Cost Development Guidelines (Manual 15) for combined cycles. Typical combined cycles have at least two components that are synchronized to the grid. In the simplest configuration, a 1x1 combined cycle will initially synchronize the generator of the combustion turbine and later synchronize the generator of the steam turbine. Manual 15 captured this additional time (soak time) in the combined cycle start cost definition by allowing combined cycles to include the fuel needed to synchronize the

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[1] PJM Operating Agreement § 1 Definitions.

steam turbine in the combustion turbine start costs. Once the combustion turbine is synchronized, the unit starts injecting energy into the grid and receiving revenues. As a result, it was also necessary to offset the combined start costs with the hypothetical energy revenues received during the soak time. The special definition for combined cycle start costs required the calculation of this generation revenue offset. The Market Monitor developed a method to account for this energy in a way that the total start fuel heat input (in MMBtu) is reduced by the generation offset (converted in MMBtu using the unit's heat input curve).

The current definition and application of start costs has three main issues:

1. The current application of the start cost definition per Manual 15 was inconsistent with the definition of other units with a steam process.
2. The method developed to account for the generation offset in combined cycles was practical but not accurate.
3. PJM's day-ahead clearing engine does not account for all the start costs incurred by steam units, including combined cycles, leaving the balance to be accounted for in real time.

During the stakeholder process, the Market Monitor initially developed a proposal to apply the current start cost definition to all units consistently. This meant that the start cost of all units was going to be defined as the cost from shutdown conditions to synchronization of the first generator. The proposal also included creating the soak related parameters (i.e. soak time, soak cost, soak energy output). Soak is a general term used to describe the process required by generators to become dispatchable (i.e. reach economic minimum) after synchronization.[2] The soak process is the heating of the steam turbine so

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[2] *See* "Start and Soak Costs Proposal," Market Monitor Presentation to the Cost Development Subcommittee (June 14, 2021), which can be accessed at: <*http://www.monitoringanalytics.com/reports/Presentations/2021/IMM_CDS_Start_and_Soak_Costs_Proposal_20210614.pdf*>.

that it can operate without causing damage to the steam turbine components. Due to the unknown time required for PJM to incorporate correct soak time related parameters, the Market Monitor modified its initial proposal to incorporate soak costs into the start cost definition. This proposal was a joint package between the Market Monitor and PJM. The December 2nd Filing reflects the Market Monitor's proposal.[3]

Even though the Market Monitor developed this proposal and supports the December 2nd Filing, it is important to recognize that this should be temporary until PJM implements an approach that reflects soak time, soak costs and soak energy output. The main shortcoming of the proposal (which is a current issue) is that PJM models do not properly value the energy produced during the soak process (soak energy output). Instead, the proposal simple assumes that such MWh are valued at PJM's station service rate.

One key aspect of the PJM proposal is that the referenced start cost will be defined by the operating parameter limits separately approved by PJM for each unit. This ensures that the period used in the calculation of the start fuel and station power will not exceed the operating parameter limits, specifically the notification, start and minimum down time parameters. For example, if a unit has a five hour notification plus start time limit, the fuel included in the start cost should not be for a period that exceeds five hours. This point is not completely clear in PJM's filing but should be made clear in the manual.

B. Renewable Energy Credits and Production Tax Credits Should Be Included in Cost-Based Offers for All Unit Types.

The Market Monitor also supports PJM's clarification that all resources that wish to offer nonzero cost-based offers should account for revenues received from variable environmental credits such as Renewable Energy Credits (RECs) and Production Tax Credits (PTCs). Inclusion of these revenues is currently required only for wind units. Under

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[3] *See* "Start Cost Alternate Proposal," Market Monitor Presentation to the Cost Development Subcommittee (December 2, 2021), which can be accessed at: <*http://www.monitoringanalytics.com/reports/Presentations/2021/IMM_CDSC_Start_Cost_Alternate_Proposal_20211202.pdf*>.

PJM's filing, other unit types, including unit types that can have positive offers (e.g. landfill, waste coal), would also be required to include this revenue as offsets to their costs.[4]

II. CONCLUSION

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

Respectfully submitted,

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[4] *See* "Cost-Based Offers and Renewable Energy Credits," Market Monitor Presentation to the Cost Development Subcommittee (March 7, 2022), which can be accessed at: <*http://www.monitoringanalytics.com/reports/Presentations/2022/IMM_CDS_Cost_Based_Offers_and_Renewable_Energy_Credits_20220307.pdf*>.

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 22nd day of December 2022.

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