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May 27, 2022

Jenifer French
Chair, Public Utilities Commission of Ohio
180 East Broad Street
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Re: *In the Matter of the Application Seeking Approval of Ohio Power Company's Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider, Case No. 14-1693-EL-RDR; In the Matter of the Application of Ohio Power Company for Approval of Certain Accounting Authority, Case No. 14-1694-EL-AAM*

Dear Chair French:

In accordance with Section III.B.2 of the December 14, 2015 Joint Stipulation and Recommendation, I am submitting AEP Ohio's 2022 State of the Market Report for the Commission's consideration.

Thank you for your attention to this matter.

Respectfully submitted,

/s/ Steven T. Nourse

cc: Parties of Record

State of the PJM Capacity and Energy Market June 2022

*A whitepaper presented by
AEP Ohio*



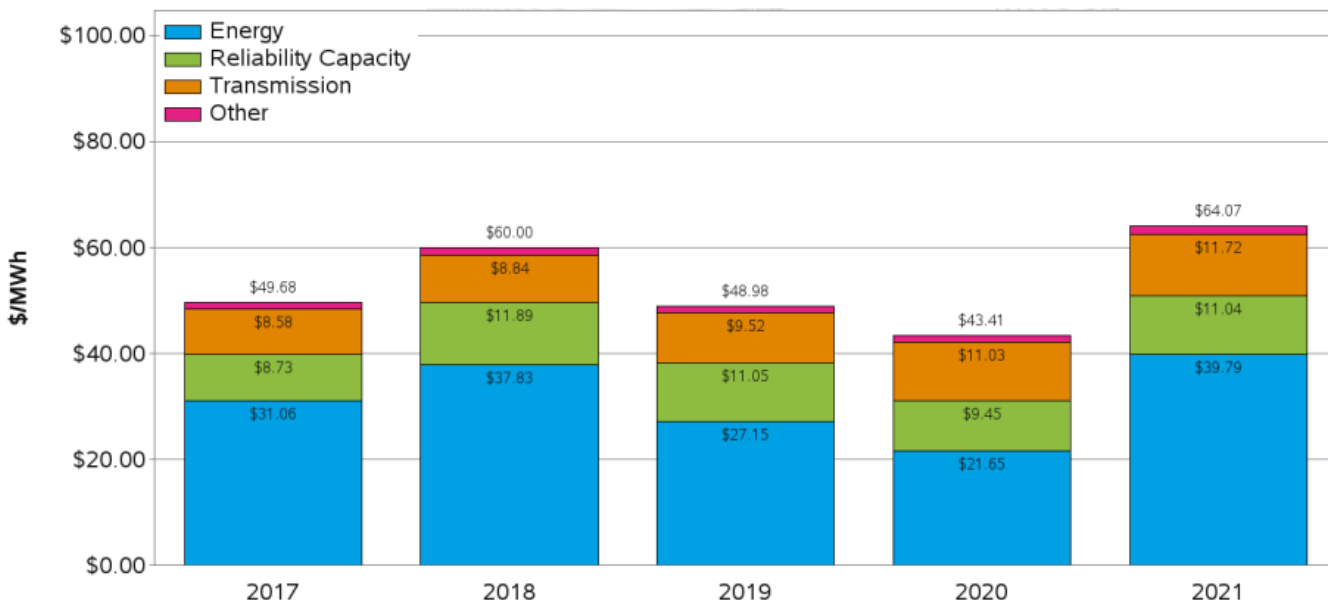
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Key Items

Introduction. AEP Ohio Power Company (“AEP Ohio” or the “Company”) is a longtime participant in the PJM Interconnection LLC (“PJM”) markets and recognizes the potential benefits associated with a market paradigm for both capacity and energy. However, AEP Ohio also believes that there is a balance between market paradigms and individual state policy goals. In 2021, this came to the forefront again with the Minimum Offer Pricing Rule (MOPR) capacity docket at FERC. Nevertheless, AEP Ohio continues to work diligently within the PJM process to deliver reliable, economic power to our Ohio customers.

Wholesale Prices. Wholesale prices increased over 47% from 2020 to 2021, rising from \$43.41/MWH to \$64.07/MWH. The primary driver was higher electricity usage compared to 2020 usage that was impacted by COVID-19 and the work from home requirements and higher energy costs resulting from elevated fuel costs.



The bar charts above show the total average wholesale market cost for serving load from 2017 through 2021. This excludes distribution and other state-specific charges outside of the PJM market.

- **Energy** comprises the largest portion of the all-in cost to serve wholesale load. The net effect was a 84% increase in energy costs in 2021 to \$39.79/MWH.
- **Capacity** prices (expressed here in \$/MWH on the charts rather than \$/MW-day) were up slightly (\$1.59/MWH) due to the change in clearing prices from the capacity auction.

- **Transmission** costs per MWH were up slightly (\$0.69/MWH).
- **Other** costs include ancillary services such as black start, regulation, and spinning reserves, and remain a small part of the overall wholesale price.

PJM's Capacity Auction

As noted in the Ohio State of the Market Report for 2020, FERC issued an order on December 19, 2019¹ directing PJM to expand its Minimum Offer Price Rules (MOPR) to apply to any new or existing resource that receives a state subsidy. PJM incorporated these changes for the 2022/23 capacity auction and posted the results in June 2021.

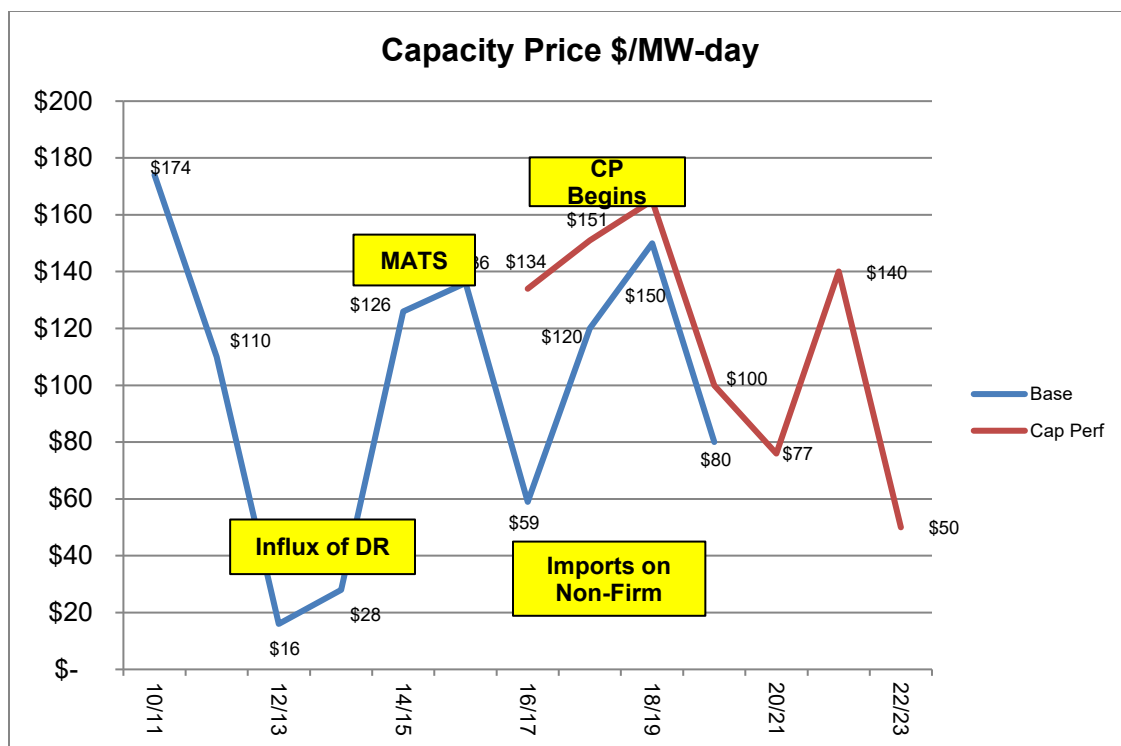
With the changing of the White House administration along with the change in the FERC chair, much concern was raised on the impact of the expanded MOPR on renewable resources and the ability of certain states (and individual companies) to implement their desired clean energy policies. PJM filed revisions to the MOPR on July 30, 2021. The four FERC commissioners were split 2-2 "as to the lawfulness" of PJM's proposed changes. Therefore, by operation of law, PJM's proposed MOPR changes are effective September 29, 2021. The changes will be implemented beginning with the 2023/24 capacity auction, which is scheduled to be held in June 2022.

History of Price Changes and Causes (Graph below). Although intended as an incentive to build new natural gas-fired generation resources, RPM has historically cleared at prices well below the cost of constructing a new natural gas unit (Cost of New Entry or CONE), which PJM posted for its 2022/23 auction as approximately \$247/MW-day². The reasons for the low clearing prices range from high reserve levels within the footprint to the economics of the natural gas/electric market.

¹ Docket #EL16-49-000

² PJM Planning Parameters for the 2022/23 RPM auction. Net CONE on a ICAP basis.

<https://pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2022-2023/2022-2023-planning-period-parameters-for-base-residual-auction.ashx>



AEP Ohio's view is that the capacity auction is not a true market mechanism. The demand curve is an administrative construct negotiated by stakeholders and approved by FERC. The supply offers are monitored by PJM's independent market monitor to assure offers are neither too high nor too low. Additionally, the MOPR order adds another layer of administrative oversight to this supposedly competitive process.

The RPM design does not reduce volatility, as can be seen from the graph. This is because the basic premise of the auction process remains: it provides a one-year price for a physical asset that is intended as a 30-year investment.³ This inherent volatility continues even after the adoption of multiple rule changes since the inception of the RPM in 2007.

Issues Affecting the Capacity/Energy Market

Price formation in shortage conditions. FERC approved PJM's proposal (#ER17-775) to make major revisions to the energy market price formation rules. The most significant requested revision was to increase reserve pricing during shortage conditions, where PJM proposed to allow the prices to increase significantly as reserves gradually get tighter. The changes were scheduled to begin in May 2022. However, the FERC Order was appealed to the D.C. District court. Prior to a court ruling, Chairman Glick requested the Order be voluntarily remanded back

³ The PJM Tariff actually requires new generator offers to reach a certain point in their construction and approval requirements before they are allowed to offer into the auction.

to FERC for further review. In December 2021, FERC issued an Order reversing portions of a previous FERC order for the reserve markets which also will impact the timing of upcoming capacity auctions. Primarily, the caps on prices paid during reserve shortage will remain at current levels and not increase as was previously ordered. Below is a chart showing the updated capacity auction dates.

Delivery Year	<u>Current</u> Capacity Auction Schedule	<u>Revised</u> Capacity Auction Schedule
2023/24	January 2022	June 2022
2024/25	August 2022	December 2022
2025/26	February 2023	June 2023
2026/27	August 2023	November 2023
2027/28 (back on schedule)	May 2024	May 2024

Coal Inventory Concerns: Due to geopolitical issues and resulting higher natural gas prices, coal generators have become much more economic and requested to operate more frequently. PJM coal generators have experienced supply limitations and PJM has been proactive in examining potential short-term and permanent solutions to address the current industry coal situation, maintain coal inventory levels for reliability, and ensure availability of coal units over peak periods. In addition, recent legislation in Illinois will restrict the output of natural gas resources due to emission requirements. This has prompted PJM to enact changes similar for Combustion Turbine natural gas units to ensure those units are available for peak conditions to maintain reliability. AEP Ohio supports these changes, which are designed to maintain the reliability of PJM’s system.

Fast Start Pricing and 5-minute Dispatch. Also in 2019, PJM had filed a recommendation to FERC regarding allowing fast-start generators (e.g. combustion turbines) to set energy prices when they are dispatched. Rather than ruling on the specific issue of this docket (#ER19-2722), FERC ordered PJM to realign their dispatch algorithm to more properly match the dispatch signals with the pricing signals. These dispatch signals are given every five minutes. PJM implemented these changes in the fall of 2021. AEP Ohio’s position is that both fast start pricing and 5-minute dispatch will properly address flaws in the system. However, we believe neither should have a significant impact on overall energy prices.

Capacity Values for Renewables and Energy Storage. As noted in last year’s report, FERC issued an order requiring PJM to file by October a proposal for addressing the capacity values of renewable and energy storage resources. PJM filed its proposal October 30, 2020. The proposal establishes a 10-year floor value for renewable and energy storage resources (referred to as the transition mechanism) using their Effective Load Carrying Capability (ELCC). ELCC evaluates the capacity contribution of a resource during hours with high system demand. The lower the output from these resources at the time of system need results in a lower capacity credit. FERC issued an order denying PJM’s proposal. While FERC appeared to agree with PJM’s ELCC methodology, they stated the transition mechanism (the 10-year floor values) is unjust and unreasonable. PJM re-filed the initial proposal without the transition mechanism. FERC approved

PJM's ELCC proposal with an effective date of August 1. These changes will be implemented starting with the 2023/2024 Delivery Year. AEP Ohio believes it is prudent and timely to evaluate the capacity value of renewables and storage units, as these resources will comprise a more significant part of the PJM dispatch in the future and will be evaluating PJM's initial brief and filing comments as appropriate.

Financial Transmission Rights. The *Report of the Independent Consultants on the GreenHat Default*⁴ included a recommendation to "conduct a general review of the FTR market...to evaluate the risks and rewards of potential structural reforms." PJM engaged London Economics International (LEI) to conduct a comprehensive review of ARR/FTR market design to ensure that load receives the maximum value of the ARR/FTRs they receive. LEI issued its report in December 2020⁵. PJM filed enhancements to the ARR and FTR market design along with increasing transparency into PJM's modeling at FERC on January 10, 2022. FERC approved the proposal on March 11, 2022. The FTR changes will be effective September 1, 2022 and the ARR revisions will be effective February 1, 2023.

GreenHat Default Wrap-up. As noted in prior year's, the financial firm, GreenHat L.L.C., defaulted on a three-year Financial Transmission Rights (FTR) trading position in the PJM market. PJM completed the liquidation of the portfolio in May 2021. The total amount of the default was approximately \$180M, with AEP Ohio's share estimated at about 1% of the total. PJM and stakeholders worked on changes to the credit and collateral shortcomings exposed by the GreenHat default. These changes have been approved by FERC.

Conclusion

AEP Ohio has divested all its de-regulated generation in Ohio. Nevertheless, AEP Ohio believes it is imperative to work with the Public Utilities Commission of Ohio to formulate the best strategy for serving our Ohio customers with clean, reliable, and diverse power supply for the long term.

⁴ <https://www.pjm.com/-/media/library/reports-notice/special-reports/2019/report-of-the-independent-consultants-on-the-greenhat-default.ashx?la=en>

⁵ <https://pjm.com/-/media/committees-groups/task-forces/afmtf/postings/lei-review-of-pjm-arrrs-and-ftrs-report.ashx>

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Case No(s). 14-1693-EL-RDR

Summary: Report AEP Ohio's 2022 State of the Market Report electronically filed
by Mr. Steven T. Nourse on behalf of Ohio Power Company