



Legal Department

June 1, 2016

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Public Utilities Commission of Ohio
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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 Chairman Haque:

In accordance with Section III.B.2 of the December 14, 2015 Joint Stipulation and Recommendation, I am submitting AEP Ohio's 2016 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 2016

*A whitepaper presented by
AEP Ohio*



Executive Summary:

AEP Ohio is a longtime participant in the PJM markets, and recognizes the potential benefits associated with a market paradigm for both capacity and energy. However, in the view of AEP Ohio, PJM needs to recognize that there is a place within PJM for generation supported both by the market, and by traditional cost-of-service regulation. PJM has never been a one-size-fits-all organization, and its strength is in its diversity.

Capacity. The Reliability Pricing Model (RPM) is an administrative construct for capacity that attempts to replicate market outcomes. As noted throughout the narrative below, unexpected outcomes related to imports, demand response, and speculative bidding have caused PJM and its stakeholders to continually make changes to this capacity construct. RPM does not provide long-term price support for investments in long-life assets, especially in the western part of the PJM footprint. As a result, almost all generation in rest-of-market has, or is seeking, some type of retail rate support.

Although PJM has one of the most mature organized energy markets in the world, the RPM was created fewer than ten years ago and is still evolving. Various changes over the years have resulted in extreme price volatility, jeopardizing future reliability and complicating long-term infrastructure investment decisions. The Capacity Performance product revisions will expose generators to significant new penalties, although the basic, flawed capacity auction structure remains the same.

Implementing solutions is hindered by the laborious PJM stakeholder process. Long-term decisions regarding retirements and construction of new generation resources must be made continually while trying to anticipate ever-changing tariff rules. In the long run, AEP Ohio envisions ever-increasing costs and reduced revenue for new and existing generation resources.

Energy. PJM's energy market design is more liquid and closer to a competitive market than the capacity construct. But it is not without challenges. Historically, the energy market has been extremely volatile, largely following the commodity price of natural gas.

Large financial players also affect PJM's day-ahead and real-time dispatch decisions disproportionately. The participation of renewable resources, energy efficiency, and demand response each pose unique challenges to the operation of an efficient energy market. None of these factors are necessarily bad for the market, but they all add to its complexity.

PJM Capacity Market

Key Observations

- Auction structure produces a one-year clearing price, three years in advance.
- No integrated planning for fuel, plant, or ancillary service diversity.
- Capacity Performance product includes potentially large non-performance assessments. Any improvement in terms of long-term price signals is uncertain.
- Stakeholders and PJM continue to propose changes to address shortcomings.

Characteristics of Capacity Market Design. The PJM Reliability Pricing Model Capacity Market (RPM) was approved by the Federal Energy Regulatory Commission (FERC) in 2007. Within the RPM, the Base Residual Auction (BRA) is an annual capacity auction that sets prices and quantities for a single-year product, three years in advance. Although the intent of the construct is to provide incentives for continued investment, it does not provide multi-year revenue stability or protection from price volatility, and does not have a minimum clearing price, or price floor, for existing resources.

The basic auction design involves both an administrative demand curve and a partially-mitigated supply curve. The demand curve was negotiated in the original 2006 FERC settlement and re-negotiated in a stakeholder process in 2015. The curve is based on a PJM load forecast and target reserve margins. The curve is steep, such that a small change in the supply curve causes a significant change in clearing prices.¹ The BRA rules impose offer caps, but no minimum price floor.

The entire demand curve is constructed around the cost of constructing a new gas combustion turbine. It is constructed around the promotion of a single fuel source: gas. There are no rules around diversity of capacity resources or diversity of fuel.

The supply curve for the BRA is based on offers submitted during the annual auction. These offers are submitted only once at the beginning of the auction (in contrast to a descending clock auction where suppliers can make decisions on whether to participate as prices decline). However, suppliers that submit offers above a certain price² must submit their offer to the PJM Market Monitor for review to determine if it is cost-based. Once a generation unit is cleared in the BRA, there is no guarantee for clearing at the same price in future auctions. This is particularly troublesome for existing generators with a long remaining useful life on their investment. The key point here is that these market participants more doing more than merely making financial speculations for the future – an offer into the capacity performance construct means a commitment to construct a real physical asset with a useful life of 20-30+ years.

¹ In its 2014 review of the capacity market, the Brattle Group recommended a change in the curve shape to be consistent with a more gradual decline in reliability value at higher reserve margins. AEP supported the recommendations, which were largely adopted by PJM.

<http://www.pjm.com/~media/documents/reports/20140515-brattle-2014-pjm-vrr-curve-report.ashx>

² For the 2019/20 BRA, this level was approximately \$250/MW-day.

Vertically integrated utilities that have both load obligations and generating assets can opt out of the RPM auction as long as they meet the reserve margin set by PJM. This alternative is called a Fixed Resource Requirement (FRR). Even though FRR entities do not have to participate in the BRA, they are held to the same operating requirements and non-performance assessments as the entities participating in the BRA. AEP's regulated operating companies in PJM outside of Ohio and Duke Energy Kentucky currently meet their load and reserve obligations under an FRR capacity plan.

History of Volatility: Although intended as an incentive to build new gas-fired generation resources, RPM has historically cleared at prices well below the cost of constructing a new gas unit (Cost of New Entry or CONE), which is currently estimated to be \$300/MW-day. Even though clearing prices have been well below Net CONE,³ the auction has exhibited extreme price volatility for a variety of reasons. (Table 1, Graph 1)⁴.

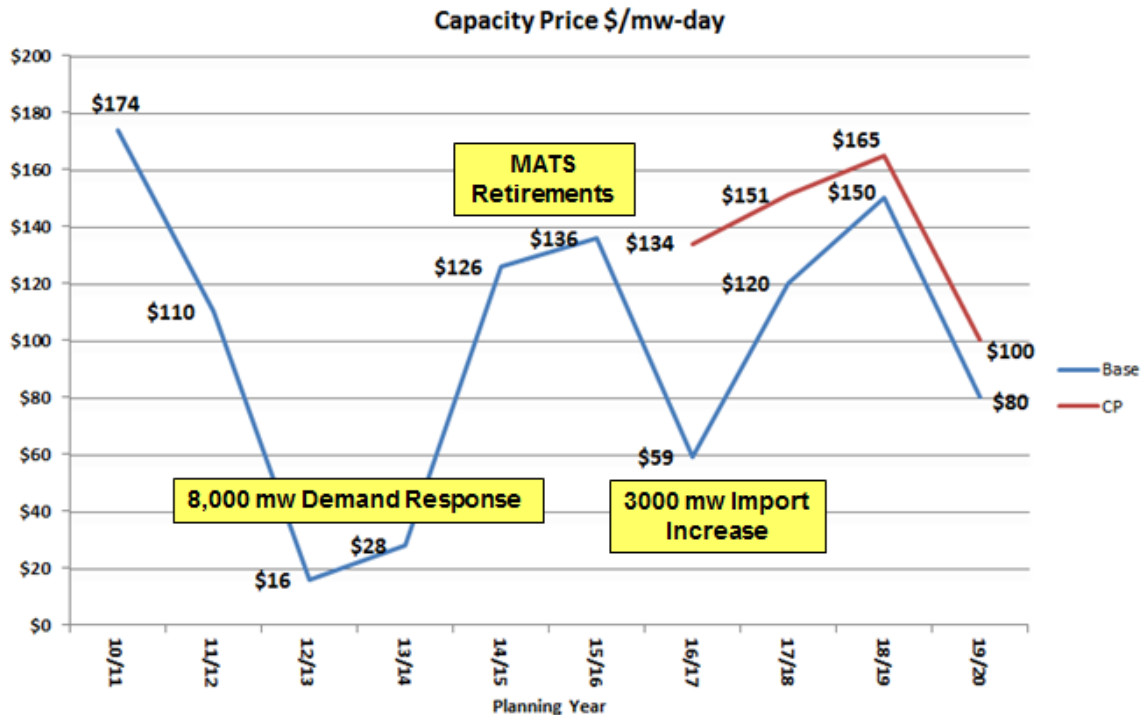
Table 1

Volatility in Capacity Market Auctions			
	2010/11-2012/13	2012/13 - 2014/15	2015/16-2016/17
Change	\$174 to \$16/MW-day	\$16 to \$126 MW-day	\$136 to \$59 MW-day
Cause	8,000+ MWs of additional Demand Response	EPA MATS rules causing announced retirements of 15,000+ MWs of older coal units	3,000 MWs of additional capacity imports (2,700 on non-firm transmission, and some from as far away as Louisiana.)

³ Net CONE: Estimated cost to construct a new combustion turbine plant in PJM, net of energy and ancillary services revenues. For the 2019/20 Delivery Year, Net CONE was approximately \$300/MW-day per the 2019/20 RPM Planning Parameters report.

⁴ PJM annual Base Residual Auction Reports.

Graph 1



The volatility related to Demand Response was caused unintentionally, in part, by the terms and conditions of PJM’s governing documents, the Open Access Transmission Tariff (OATT) and associated manuals. As noted in Table 1, before the 2012/2013 BRA, PJM revised various rules to allow Demand Response (DR) to participate the same as a physical generating unit. As a result, 8,000 MWs of additional DR offered in the market (5,682MWs cleared), forcing prices down to \$16/MW-day.⁵

As another example, the OATT was silent on the need for firm transmission to import into the capacity market until 2,700 MWs were accepted on non-firm transmission in the 2016/17 auction.⁶ PJM quickly revised the Tariff to require firm transmission for offers in the 2017/18 auction, but the negative impact to the auction clearing prices had already been done.

⁵ Base Residual Auction Report 2012/13, page 8. <http://www.pjm.com/~media/markets-ops/rpm/rpm-auction-info/2012-13-base-residual-auction-report-document-pdf.ashx>

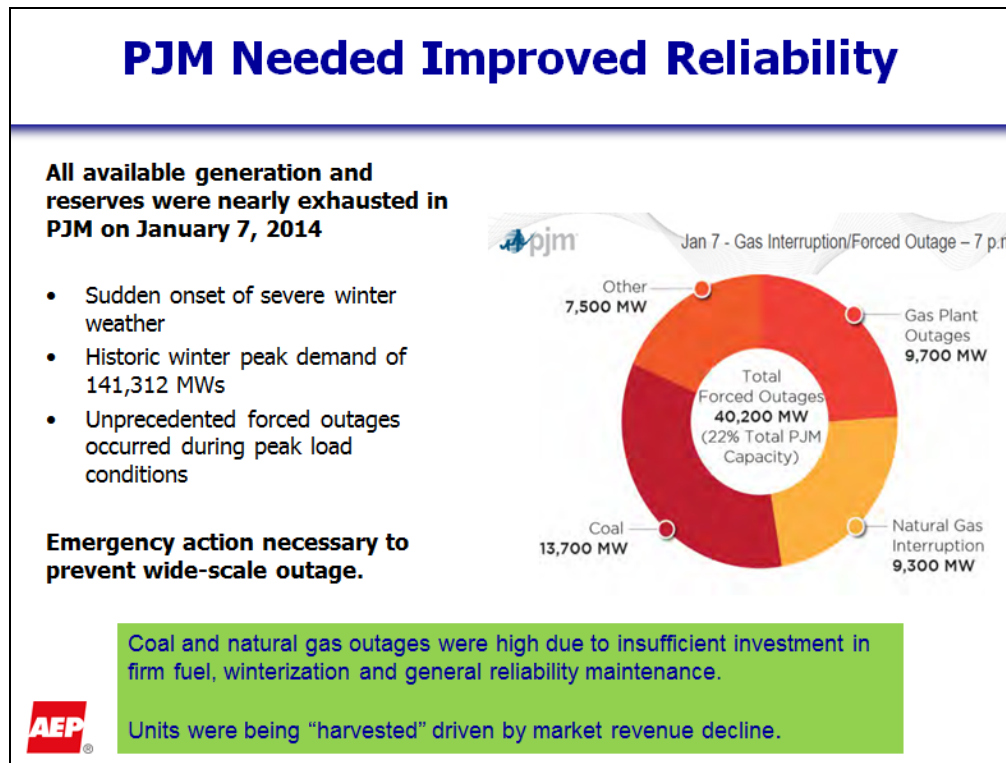
⁶ Base Residual Auction Report 2016/17, page 7. “Of the 7,482MW of imports that cleared in the auction, 4,788MW (64%) has firm transmission service.....” (7,482-4788 = approx. 2,700 MW). <http://www.pjm.com/~media/markets-ops/rpm/rpm-auction-info/2016-2017-base-residual-auction-report.ashx>

Also, because the rules do not prevent speculative bidding in the RPM, market participants are able to offer into the BRA and receive the clearing price, and then buy out of their position in the incremental auctions, potentially earning a substantial profit with no intention of providing capacity. This practice puts additional downward pressure on clearing prices, in this instance from market participants with only a financial incentive. Even the PJM Market Monitor has made note of this, issuing two reports in which he observes that up to 30% of the offers in the capacity market from DR were bought back in the incremental auctions.⁷

Capacity Performance: During the January 2014 polar vortex, PJM experienced an all-time winter peak load combined with unprecedented generator outages.⁸ PJM summarized the event which occurred on January 7, 2014, in the slide below. The polar vortex, which occurred over several days in January and February of 2014, caused PJM to revisit the capacity market rules. PJM's primary objective was to provide for greater reliability during peak emergency events. PJM was concerned about the 22% forced outage rate on January 7, a significant portion of which involved gas units, and about the potential risks to the system during the winter versus the summer. PJM concluded that the Tariff did not provide sufficient disincentives for non-performance on peak days.

⁷ IMM Analysis of Replacement Capacity for RPM Commitments: June 1, 2007 to June 1, 2013. Page 7, table 6 shows 10,780MW of UCAP DR initially cleared for delivery year beginning June 1, 2013 and 3,314MW replaced before the delivery year ($3,314/10,780 = 30.7\%$).
http://www.monitoringanalytics.com/reports/Reports/2013/IMM_Report_on_Capacity_Replacement_Activity_2_20130913.pdf

⁸ Docket No. AD14-8-000 Statement of Michael Kormos, EVP-Operations PJM. April 1, 2014.
<http://www.pjm.com/~media/documents/reports/20140331-testimony-of-michael-kormos-regarding-polar-vortex-ferc-20140401.ashx>



Ultimately, in December 2014, PJM created a new product – Capacity Performance (CP) – which FERC approved in June 2015.⁹

The intent of the CP rules is to improve reliability within the PJM footprint, primarily using the potential of extremely high assessments for non-performance during emergency events. The new rules require a higher level of performance during emergency hours, and levy higher assessments (\$3,500 per MWh¹⁰) for non-performance in comparison to the previous rules which only measured average performance over the course of a year. In return, generation owners and certain annual DR resources may receive a higher clearing price in the auction, largely because capacity offers are expected to incorporate a risk premium to account for the non-performance assessments. By the May 2017 RPM auction, for the 2020/21 delivery year, all generation offering in RPM will be subject to the CP rules.

AEP’s view is that the additional assessments¹¹ without changes to the underlying market design will not reduce volatility or increase reliability, because the basic premise of the RPM remains: it provides a one-year price for a physical asset that cannot be liquidated as if it were a

⁹ Docket No. ER15-623.

¹⁰ Non-Performance Assessment Rate for CP Resources (\$/MWh) = [LDA Net CONE (\$/MW-day) * 365]/30. The Net Cone value for AEP is \$281.49. (\$281.49/MW-Day*365/30 = \$3425)

<http://www.pjm.com/~media/markets-ops/rpm/rpm-auction-info/2018-2019-bra-planning-parameters.ashx>

¹¹ A 1,000 MW unit that incurred a tube leak at the beginning of a 10-hour emergency event could be penalized \$35 million for a single outage. If that same unit received capacity revenue of \$59/MW-day, its annual revenue from the capacity market would be just \$21.5M.

financial product.¹² This is true whether that long-term investment is for a new unit to be constructed, or an existing unit with several years of useful life remaining. This inherent volatility was again evident in the May 2016 auction for 2019/20, which saw capacity clearing prices again decrease significantly from \$165/MW-day for 2018/19 to \$100/MW-day for 2019/20.

Beginning in late 2013, AEP began working with other generation owners in Western PJM to address our mutual concerns with RPM and the new CP product. Throughout 2014 and 2015, we advocated for a fair and equitable capacity market for all regions of PJM. Through participation in PJM stakeholder processes, discussions with PJM executives, and comments filed at FERC, we have seen a degree of progress on imports, DR and the shape of the demand curve.

Ongoing Stakeholder Processes: Even before the first Capacity Performance year begins on June 1, 2016, PJM and its stakeholders have initiated several discussions about additional changes to RPM. These include:

- **Minimum Offer Price Rule.** Currently, PJM's Minimum Offer Price Rules (MOPR) apply only to new units constructed under a regulatory regime. The MOPR rules contain exemptions for regulated entities that are within certain net-long or net-short positions. The current rules were approved by FERC after New Jersey and Maryland created initiatives to build new generation in their states,¹³ but were negotiated primarily between PJM and a small group of stakeholders. It is likely that PJM stakeholders will undertake yet another revision to these rules in 2016. In addition, a complaint filed at FERC by Calpine in March, 2016, is pending before the FERC in which certain generators have argued that a MOPR requirement should be imposed on all generators receiving a certain types of non-market financial support.¹⁴
- **Long-Term Capacity.** PJM Executives have expressed support for a multi-year clearing price to provide augmented long-term pricing signals. AEP supports these objectives, but notes that PJM stakeholders have unsuccessfully engaged in such stakeholder discussions twice in the past five years. Critical issues for a longer-term capacity product include: a) voluntary or mandatory participation, b) percentage of long-term versus annual capacity, and c) credit requirements. Behind these threshold problems is the

¹² 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.

¹³ In 2012 both Maryland and New Jersey enacted an RFP process within the state to build power plants within the states and offer them into the PJM capacity auction. On April 19, 2016, the United States Supreme Court disallowed the compensation arrangement for a new, in-state power plant. *Hughes v. Talen Energy, fka PPL EnergyPlus* (14-614 et al.) <https://www.snl.com/InteractiveX/articleabstract.aspx?ID=36211339&KPLT=2>

¹⁴ FERC has not issued an Order in this docket (EL16-49), and several parties have moved to dismiss the Complaint. However, FERC may order PJM to initiate a stakeholder process to explore whether the MOPR should be expanded to include certain existing units.

reality that buyers and sellers of capacity have a significantly different view of future capacity prices.

- **Seasonal Capacity.** The CP order in 2015 essentially eliminated summer-only demand response from being considered a reliable year-round resource. However, PJM and DR providers are re-evaluating the possibility of summer-only resources.
- **Imports.** Generation resources clearing recent RPM auctions have been located as far away as Louisiana. PJM has raised appropriate concerns about whether imported resources can reliably deliver capacity to the PJM market. Stakeholders are reviewing the deliverability issue, and whether imports provide the necessary reliability to be counted as capacity. The import situation is exacerbated by a proposal from MISO to supply these capacity imports from a slice-of-system in the MISO territory rather than from the specific committed unit.

Within PJM, the stakeholder process moves at a deliberate pace. Stakeholder initiatives often take many months to reach a definitive conclusion. In addition, the Stakeholder process is controlled by sector-weighted voting, which gives several smaller interest groups significant voting power. The AEP operating companies (including AEP Ohio) own or represent 10-15% of load, generation, and transmission facilities in PJM. Yet because of the governance rules, AEP has a cumulative voting impact of less than 2% in sector-weighted voting. AEP's voting power is equal to that of smaller utilities in AEP's sector that do not own generation.

Clean Power Plan and Capacity: The Clean Power Plan (CPP) creates even more uncertainty with regard to capacity planning. Although the CPP currently is stayed, AEP expects that some form of new carbon emission compliance rules will be in effect within the next few years. There are multiple challenges associated with meeting both the CPP and PJM's Capacity Performance plan.

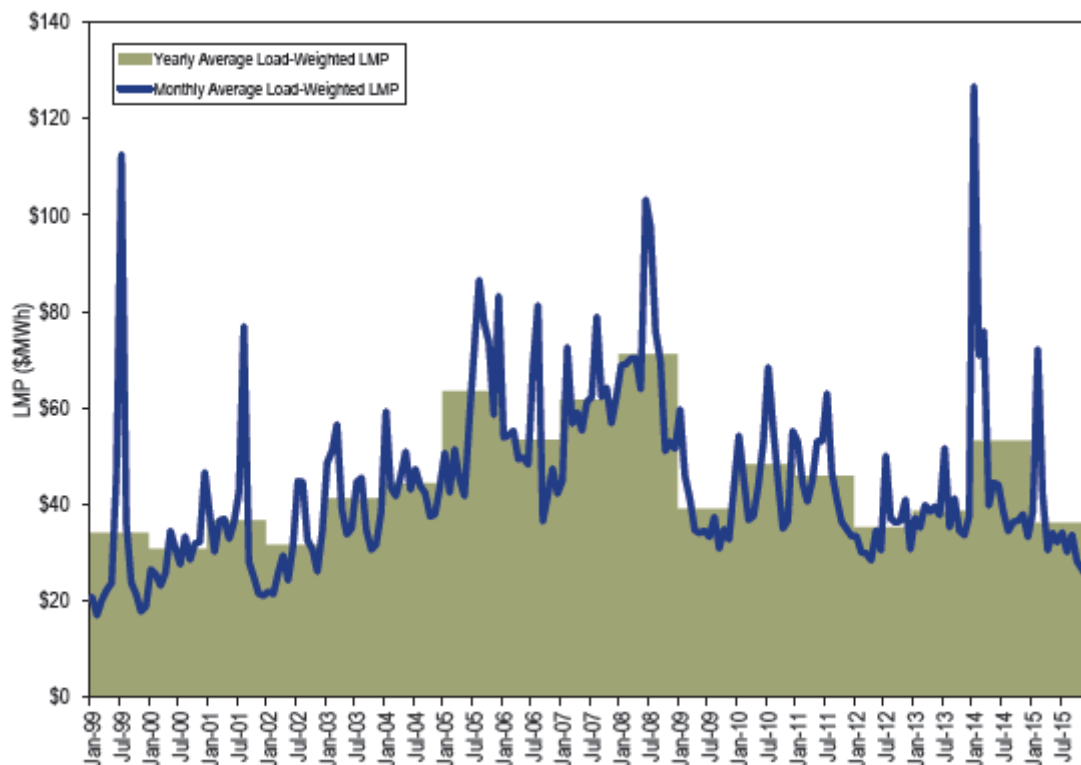
- **Timing.** Generation owners may have to make a decision on offering into the RPM without complete understanding of the implications of a state's CPP implementation plan.
- **Renewables and CP.** One of the key blocks of the CPP is the use of renewables to meet the state emission requirements. However, due to the intermittent nature of most renewable products, they either do not qualify as CP resources, or they have to be combined with other renewable products at a greatly discounted capacity value.
- **Ancillary Services.** The EPA expects many of the remaining coal plants on the system to retire. Most of the existing coal plants provide significant ancillary services to PJM and other RTOs in the form of spinning reserves, regulation, and voltage support. Renewables generally do not have the same level of ancillary service capability.

PJM Energy Market

The PJM energy market is a short-term market characterized by day-ahead offers followed by real-time dispatch and settlement adjustments. Although the energy market is more mature and has fewer significant problems than the capacity market, there are still multiple complications inherent in this market.

- **Volatility.** Similar to the capacity market, wholesale energy prices in PJM have also been volatile over the last several years. See Graph 2 below, which was taken from the Monitoring Analytics report for 2015.¹⁵

Graph 2

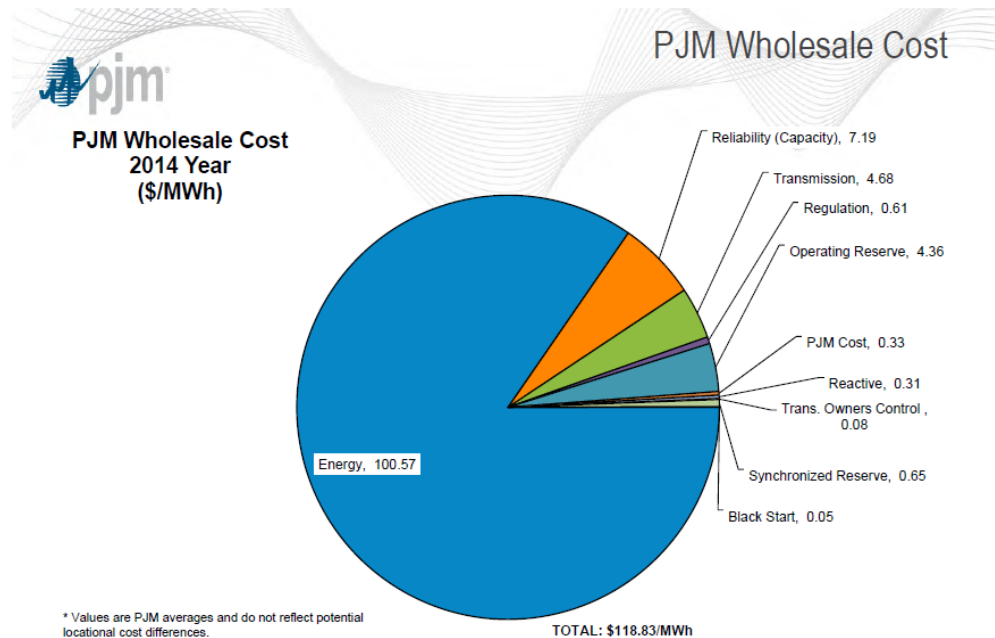


Much of this volatility comes from significant downward pressure on natural gas prices. The January-February 2014 polar vortex proves, however, that spikes in natural gas prices are also possible, even in an otherwise low-price natural gas environment. In the two-month polar

¹⁵ 2015 State of the Market, Section 3, Figure 3-35, page 129

vortex period alone, the wholesale price of electricity averaged over \$118/MWH for all hours. See Graph 3 for the January/February 2014 cost breakdown.¹⁶

Graph 3



- **Financial Participants.** PJM allows financial market participants to offer virtual transactions into the day-ahead energy market. Although these are purely financial transactions, PJM clears them as if they were MWs of generation or load. These virtual transactions have a significant impact on the market clearing, and affect both day-ahead generation commitments as well as real-time dispatch decisions. In fact, in 2015 the virtual transactions accounted for 20% of the day-ahead total supply.¹⁷ In 2015, over 75% of the day-ahead transactions were cleared based on the marginal bid of a virtual transaction.¹⁸ Although this might appear to have only a short-term impact on the energy market, energy price signals drive investment in both transmission and generation.
- **Gas/Electric Coordination.** Natural gas prices have had a profound effect on the energy market over the last five years. Coal energy production has declined from approximately 55% in 2007 to approximately 35% in 2015,¹⁹ and gas capacity has overtaken coal

¹⁶ PJM's Member Committee Information Webinar February 2014 Markets Report.
<http://www.pjm.com/~media/committees-groups/committees/mc/20140324-webinar/20140324-item-08a-markets-report.ashx>

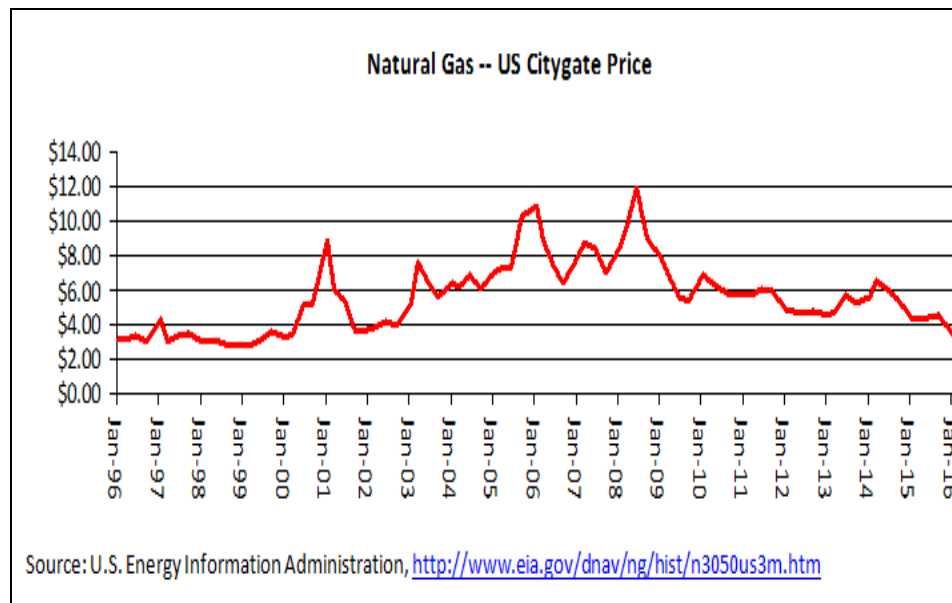
¹⁷ 2015 SOTM at Table 3-12.

¹⁸ 2015 SOTM.

¹⁹ 2015 SOTM.

capacity cleared in the capacity market. Although the downward pressure on energy prices inherent from these economics has been good for the consumer in the last few years, a historic look at gas prices shows the volatility of this commodity. Graph 4 shows city-gate gas prices from 1996-2016.²⁰ It demonstrates the historic volatility of the gas industry.

Graph 4



- **Renewables.** Wind, solar, biomass and hydro generation are a growing part of the PJM generation footprint.²¹ The challenge facing PJM dispatch with these resources is the lack of control over their output. As has been experienced in ERCOT, when the wind blows, the energy from these resources is free, but can swiftly create significant transmission congestion. Solar can provide valuable capacity on summer afternoons, as long as there is no cloud cover, but it typically does not provide any capacity to meet winter peaks, which occur largely in the early morning and evening when solar conditions tend to be poor. Solar and wind facilities typically rely on tax credits to finance construction and ongoing operations.
- **Demand Response.** While DR clears approximately 10,000 MWs of capacity in the PJM market today, it does not have the same day-ahead bidding requirements or operating requirements as generation. Further, under the CP construct, summer-only DR will be eliminated by 2020/21. We will not know until the May 2017 BRA, for the 2020/21 planning year, how this change will affect the capacity market.

²⁰ U.S. Energy Information Administration Independent Statistics & Analysis

²¹ In 2015 renewables accounted for less than 5% of total energy production in PJM. 2015 SOTM.

PJM Report on Resource Investment

On May 6, 2016, PJM published a paper entitled *Resource Investment in Competitive Markets* (Investment Whitepaper). PJM set out to answer the question:

Can we rely on PJM's organized wholesale electricity market to efficiently and reliably manage the entry and exit of supply resources as external forces create tremendous uncertainty and potential industry transformation?²²

The Investment Whitepaper describes how the cost-of-service regulated construct provides new investment in capacity using long range planning, and compares that construct to how de-regulated investors develop new capacity using short-term capacity and energy prices in PJM markets. The Investment Whitepaper challenged the rate of return finance structure and even challenged the need for existing long term generation resources that were built in previous years, when the economics justified those investments (i.e. baseload coal and nuclear units). And finally, the Investment Whitepaper discussed the subsidies inherent in wind, solar, and other renewable projects and how those subsidies send improper market signals.

AEP Ohio is concerned the Investment Whitepaper, by embracing short-term markets as the primary tool for implementing long-term investments in energy infrastructure, presents a risky approach to a host of complex economic, social and labor issues. For example, the Investment Whitepaper implies that baseload coal and nuclear units should be retired the first year their going forward costs (regardless of investment costs) fail to clear a capacity auction.

To raise the awareness of our concerns to PJM and other stakeholders, AEP and several other energy companies submitted a letter to the PJM Board on May 19, 2016.²³ In the letter, the coalition of energy companies, which collectively own 44,000 MWs of capacity in the PJM footprint and have been in the generation business for many decades, provided guidance to PJM on shortcomings of the current PJM capacity construct, many of which are explained above. The letter suggests that PJM would benefit from further dialogue on these issues with interested stakeholders. Further, the letter from the coalition encouraged the discussion to focus on a market design that ensures robust competition while incorporating diverse capacity resources and acknowledging “the roles and responsibilities of the States in providing a comprehensive approach to least-cost reliability for consumers.”

To assist the Commission in its review of the guidance provided by the energy company coalition to PJM, AEP provides the following information.

²² Resource Investment in Competitive Markets whitepaper, May 5, 2016, page i.

²³ <http://www.pjm.com/~media/about-pjm/who-we-are/public-disclosures/20160519-coalition-pjm-board-letter.ashx>. Other companies are FirstEnergy, Duke Energy Kentucky and Ohio, East Kentucky Power Cooperative, Buckeye Power Company and Dayton Power & Light (AES).

Questionable Source Material for the Investment Whitepaper. The Investment Whitepaper appears to contain inaccurate information about the amount of generation being developed in PJM. To aid the Commission in its review of the Investment Whitepaper, the following clarifying information is provided:

- The Investment Whitepaper states that 19,500MWs went into service from 2010-2015²⁴, but PJM's auction reports show that just 15,000MWs of new capacity was offered into the RPM market for those delivery years.²⁵
- On May 4, 2016, the Market Monitor published a report stating that new generation capacity additions for the 2009/2010 through 2014/2015 period were just over 8,600MWs, nearly 11,000MWs less than PJM's claimed 19,500MWs, and 6,400MWs less than reported in PJM's published auction results.²⁶
- The Investment Whitepaper indicates that 74,000 MWs are in "active development"²⁷, and that is evidence of the fact that prices are adequate to encourage development.²⁸ Historically, only a small percentage (11% from PJM data) of these queue requests are likely to go into service.²⁹
- The Investment Whitepaper does not contain a comprehensive discussion of how many units put in service from 2010-2015 were constructed in a cost-of-service environment. AEP Ohio believes this is a significant oversight. Specifically, in addition to the RFPs issued in New Jersey and Maryland for 1,800 and 1,000MWs, respectively, the three units in Virginia total 3,280MWs³⁰. Further substantiating the fact that a significant percentage of new construction in recent years has been done under a regulated construct, the Market Monitor's New Gen Report states that "from 2007/2008 to 2014/2015 ... capacity from new units based on non-market funding was 3,964.5MW (40.5 percent)."³¹

Historical Construction Came from Regulated Construct. The Investment Whitepaper does not recognize that, when the RPM construct began in 2007, PJM already had a large reserve

²⁴ Resource Investment in Competitive Markets whitepaper, May 5, 2016, page ii.

²⁵ PJM's Auction Report accompanying each of the Base Residual Auction results lists all offered capacity.

²⁶ Monitoring Analytics New Generation in the PJM Capacity Market: MW and Funding Sources for Delivery Years 2007/2008 through 2018/2019 (New Gen Report). This report lists capacity that came into service during the period. Data comes from New Gen Report at Page 4 and Table 5
http://www.monitoringanalytics.com/reports/Reports/2016/New_Generation_in_the_PJM_Capacity_Market_20160504.pdf

²⁷ Resource Investment in Competitive Markets whitepaper, May 5, 2016, page ii.

²⁸ May 20, 2015 Va SCC VSB 34th National Regulatory Conference – Sotkievicz Clean Power Plan presentation

²⁹ 6/11/16 PJM Queue Status Update, page 4. <http://www.pjm.com/~media/committees-groups/committees/pc/20150611/20150611-item-09-queue-status-update.ashx>

³⁰ Resource Investment in Competitive Markets whitepaper, May 5, 2016, page 15, footnote 38.

³¹ New Gen Report at Page 7.

margin. Specifically, in 2005 PJM's peak load was 133,763MW³² and their installed capacity as of 12.31.05 was 163,471MW³³. This equates to a reserve margin of 22.2% as of the end of 2005, when discussions began on forming the Reliability Pricing Model capacity construct. Most of those existing units also provided the necessary ancillary services of spinning reserves, supplemental reserves, regulation, and voltage support. And virtually all of the preexisting units that supported that level of reliability were constructed under a full cost-of-service paradigm.

Diversity of Risk and Fuel Supply. Diversity of risk is a rational and essential part of maintaining reliability. PJM's capacity construct provides incentives for a single fuel source: gas. The Market Monitor recently confirmed in the 2015 State of the Market Reports that new coal or nuclear plants would not earn sufficient revenues to remain viable.³⁴ This means that without future changes to the incentives in the capacity construct, the PJM system will eventually be phased out in favor of a combination of natural gas generators and intermittent renewables, which will affect both reliability and fuel diversity in the region.

AEP Ohio and the energy company coalition take the position that cost-of-service regulation inherently takes a long-term view of investments necessary to maintain proper fuel diversity, plant type diversity, transmission needs, and reliability. This results in reduced market volatility and consumer benefits in the longer run.

Market Support for Baseload Units. According to the Market Monitor's State of the Market Report, in 2015, 38% of existing sub-critical coal units and 50% of super-critical coal units did not recover their avoidable costs from all PJM markets.³⁵ The actual net revenues show that 28 units totaling 11,908 MWs of capacity are at risk of retirement³⁶, in addition to the announced retirements. Of the 28 units, 23 are coal units and account for 99% of the capacity at risk. PJM's Investment Whitepaper submits that this is a clear signal for some of the existing units to retire. AEP Ohio suggests that this short-term thinking is the result of inaccurate pricing signals produced by the PJM markets.

Conclusion. AEP Ohio has sought to guide PJM on the risks and returns associated with regulated energy companies, which is a matter of state regulation. Regulated entities have a long-term commitment to serve customers. By contrast, companies not supervised by state regulatory regimes, such as market-based generators, must rely solely on the volatile returns of speculative markets. They have no long term commitment to serve customers in Ohio – or any state – and can simply shutter operations if their investments do not earn an adequate return.

³² 2005 State of the Market (SOTM) report, page 135.

http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2005/20060407-som.pdf

³³ 2005 SOTM, page 58.

³⁴ 2015 SOTM at Page 251, Overview.

http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2015/2015-som-pjm-volume2-sec7.pdf

³⁵ 2015 SOTM at Table 7-30.

³⁶ 2015 SOTM at Table 7-31.

**June 2016 State of the PJM Capacity and Energy Market
AEP Ohio Whitepaper**

AEP Ohio takes the position that cost-of-service regulation inherently takes a long-term view of investments necessary to maintain proper fuel diversity, plant type diversity, transmission needs, and reliability. This results in reduced market volatility and consumer benefits in the longer run. In the experience of AEP Ohio, the state utility commissions seriously consider the risks, costs and benefits accruing to retail customers as a result of the actions of integrated utilities.

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Summary: Report -AEP Ohio's 2016 State of the Market Report electronically filed by Mr. Steven T Nourse on behalf of Ohio Power Company