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Witness: Wm. Edward Blunk
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Sponsoring Party: KCP&L Greater Missouri Operations Company
Case No.: ER-2016-0156
Date Testimony Prepared: September 2, 2016

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2016-0156

SURREBUTTAL TESTIMONY

OF

WM. EDWARD BLUNK

ON BEHALF OF

KCP&L GREATER MISSOURI OPERATIONS COMPANY

Kansas City, Missouri
September 2016

" [redacted] **" Designates "Highly Confidential" Information.**
Certain Schedules Attached To This Testimony Designated "(HC)"
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All Such Information Should Be Treated Confidentially
Pursuant To 4 CSR 240-2.135.

SURREBUTTAL TESTIMONY

OF

WM. EDWARD BLUNK

Case No. ER-2016-0156

Q: Are you the same Wm. Edward Blunk who pre-filed Direct and Rebuttal Testimony in this matter on behalf of KCP&L Greater Missouri Operations Company ("GMO" or the "Company")?

A: Yes.

Q: What is the purpose of your Surrebuttal Testimony?

A: I will respond to the Rebuttal Testimony of Mr. John Riley submitted in this proceeding on behalf of the Office of the Public Counsel ("OPC") and Mr. Dana Eaves submitted in this proceeding on behalf the Staff of the Missouri Public Service Commission ("Staff") as they relate to hedging issues. I will also respond to certain aspects of Staff witness Mr. Cary Featherstone's discussion of transmission service for Crossroads.

I. HEDGING

Q: At page 2 of his Rebuttal Testimony, Mr. Riley lays out the foundation of OPC's argument that GMO should discontinue hedging for natural gas and power purchases is "GMO's lack of any significant volatility in natural gas prices over an extended period of time." What is volatility?

A: Market volatility is a measure of the variation in prices or returns over time. There are two types of volatility. Historic volatility is derived from a time series of past market prices or returns and is typically calculated as the annualized standard deviation of the percent change in price from one period to the next. Implied volatility on the other hand,

is forward looking. It is derived from the market price or premium for an option and represents the market's expectation of future volatility. Implied volatility is typically calculated by back solving the Black-Scholes option pricing model given its five other inputs: market price of the option, underlying price, strike price, time to expiration, and risk-free interest rate.

Q: How volatile are natural gas prices?

A: Since 1992, natural gas price volatility for every consecutive 20-day period has generally ranged from about 20% to 80%. In those 25 years, eight events have caused volatility to briefly exceed 100%. The most recent event causing volatility to exceed 100% was the polar vortex in early 2014. From January through July this year, 20-day volatility has ranged from 36% to 75%. In other words, volatility of natural gas prices today is about the same as it has been for a long time.

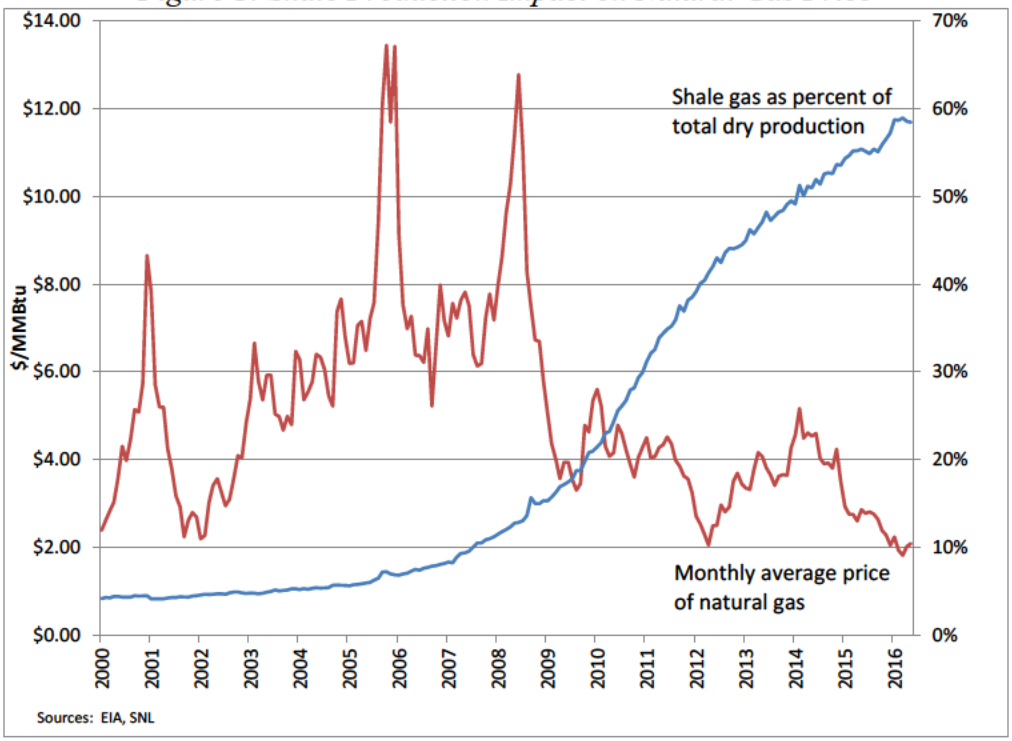
Q: At page 3, Mr. Riley points to one of the times the Commission described volatility as "[M]arkets in which prices are volatile tend to go up and down in an unpredictable manner". Have natural gas prices gone up and down in an unpredictable manner?

A: Yes. Of the 6,170 trading days since January 1, 1992 NYMEX natural gas prices for the prompt month went up from one day to the next 3,061 times or 49.6% of the time. For that same period natural gas prices went down from one day to the next 3,054 times or 49.5% of the time. From January through July this year, there were 145 trading days. 52.4% of the days were higher than the day before and 47.6% of those days were lower than the day before. Even by this simpler measure, natural gas market price volatility is about the same as it has been for the last 25 years.

Q: Also at page 3, Mr. Riley references your discussion about how the development of shale has depressed the long-term outlook for natural gas prices to suggest that has reduced volatility. How has the development of shale affected market price uncertainty?

A: Figure 1 below shows shale gas production as a percent total U.S. dry natural gas production and monthly average natural gas prices from January 2000 through May 2016. It shows that starting about 2009 increased gas production from shale is coincident with the overall market level moving lower, but even at those lower levels the prices continue to have significant up and down movement. We see large price swings on multi-year cycles, which could be characterized as trends, combined with swings about those trends. While the super peaks appear to have lessened, the swings about the trends do not look noticeably different.

Figure 1: Shale Production Impact on Natural Gas Price



Q: At page 4, Mr. Riley discusses how Southwest Power Pool's ("SPP") centralized dispatch has reduced the cost of providing power to GMO. At page 6, he observes that "purchased power from the SPP has proven to be an efficient, low cost method for the Company to meet its native load requirements…." How has SPP's centralized dispatch and Integrated Marketplace ("IM") affected power market prices?

A: The average price of power at MPS's (formerly Missouri Public Service Company) load price node for the 852 days before the March 1, 2014 implementation of the IM decreased from $12.32/MWh to $7.78/MWh for the first 852 days of the IM but the volatility of the price increased. As I discussed in my Rebuttal Testimony at pages 8-9, the coefficient of variation[1] of the power market prices at MPS's load increased from 43% before the implementation of the IM to 76%[2] following implementation of the IM. In other words, the standard deviation of power market prices increased from $5.28/MWh to $5.91/MWh.

[1] SPP's Market Monitoring Unit ("MMU") uses the coefficient of variation to measure power price volatility. The coefficient of variation is not directly comparable to volatility calculated as the annualized standard deviation of the percent change in price from one period to the next.

[2] The 57% reported at page 9 on line 9 of my Rebuttal Testimony is incorrect. The 76% value reported here is correct.

Q: At page 5, Mr. Riley asserts, "a major portion of the Company's coal requirements between expected rate case filings is locked in at a known price." At page 20 of your Direct Testimony you state that ** ** of GMO's expected coal burn from 2017 through 2020 was not under contract. What does your ** ** represent?

A: I assumed that the relevant time period for evaluating the Company's exposure to market prices was the four years following December 22, 2016, the day rates established by this proceeding will be effective. Section 386.266.4(3) requires a utility with a fuel adjustment clause ("FAC") to file a general rate case no later than four years after the effective date of the commission order implementing the FAC. For this FAC that four-year period would essentially be January 2017 through December 2020.

Q: For the coal that is under contract, are the prices for that coal reflected in the calculation of the FAC Base Factor?

A: Only for a few days. The FAC Base Factor is calculated using the prices that are in effect during the true-up month, which for this proceeding was July 2016. Coal contracts with deliveries more than one year in the future typically include some form of price adjustment. Consequently, the Base Factor calculation does not reflect the price that will be paid for coal that is currently under contract for delivery in 2017, 2018, 2019, or 2020. Of the four years the Base Factor may apply, it will represent the price of coal currently under contract for only 9 days, which is less than 1% of the time.

Q: At page 6, Mr. Riley says GMO cannot control the market price of fuels but, with the exception of hedging for natural gas and purchased power, it has been able to reasonably manage the majority of its fuel costs.

A: This is where understanding the percent of fuel under contract and at what time it is under contract is important. We are not able to manage the cost of fuel until we either place a hedge or enter some other form of contract. After we place a hedge or enter a contract the market price volatility is mitigated. The reason a fuel clause is justified is we do not have control of the market establishing the price that we are able to lock in by contract. What Mr. Riley is referring to is the benefit of reduced volatility produced by our hedge and procurement strategies after we enter hedges or contracts at then prevailing market prices.

Q: At page 6, Mr. Riley asserts that GMO does not face any near-term natural gas price volatility. Is there an objective way to determine if the market still expects near-term natural gas price volatility?

A: Yes. Earlier I mentioned that implied volatility is forward looking. It represents the market's expectation of future volatility in a commodity's price and is derived from the premium price for an option to buy or sell the underlying commodity.

Q: What is the market's current near-term expectation of volatility for natural gas?

A: As I am writing this, implied volatility for September 2016 through March 2017, natural gas options ranges from 39% to 58%. That is consistent with the range of historical volatilities for the last 25 years.

Q: At page 3 of his Rebuttal Testimony, Mr. Eaves contests the statement in your Direct Testimony at page 29 that GMO's natural gas hedging program has reduced GMO's natural gas cost by ** ** in the last five years. He points to GMO's total hedging adjustment as the evidence supporting his contention. How did you determine that GMO's natural gas hedging program has reduced GMO's natural gas cost?

A: The value reported by Mr. Eaves is the total hedge adjustment before it is apportioned between natural gas and power. The natural gas portion of the hedge adjustment for 2011-2015 is a net gain of ** **. I divided that gain by the ** ** natural gas commodity cost for that period to determine that GMO's natural gas hedge program resulted in a net gain of ** **.

II. CROSSROADS TRANSMISSION

Q: What aspects of Mr. Featherstone's discussion of Crossroads' transmission costs are you addressing?

A: At page 14 of his Rebuttal Testimony, Mr. Featherstone states,

> The problem with Crossroads relates **solely to the fact that the location** of this generating facility causes the incurrence of transmission costs. **[emphasis added]**

He also explains at page 12 that the location of the plant is the key point supporting Staff's recommendation to disallow recovery of Crossroads' transmission costs. What Mr. Featherstone does not fully explain is that because Crossroads is in Mississippi, **

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Q: Have GMO's customers been receiving the benefit of those lower natural gas transportation costs?

Yes. GMO's customers have been receiving the benefit of those much lower natural gas transportation costs while not paying the electricity transmission costs that make those much lower natural gas transportation charges available to them.

Q: How do those lower transportation costs compare to the transmission costs the Company is asking to recover?

A: Mr. Ronald Klote identified $8,241,949 of Crossroads transmission expense that was included in the Company's filing.[3] **[redacted]**

Q: Many choices have trade-offs. **[redacted]

A: Yes. Electricity transmission costs and natural gas transportation costs are trade-offs. That is, you must choose between two things that cannot be had at the same time. **[redacted]**

[3] Direct Testimony of Ronald A. Klote, Case No. ER-2016-0156, p. 38, line 16.
[4] Ibid, p. 38, line 13.

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[redacted]

Q: [redacted]

A: [redacted]**

Q: Why are those incremental costs of natural gas transportation service necessary?

A: SPP's *Planning Criteria* Section 4.4.2 Fuel Supply says:

[redacted]

[5] Rebuttal Testimony of Cary G. Featherstone, Case No. ER-2016-0156, p. 17, lines 17-22.

> **Assurance of having desired generating capacity depends, in part, on the availability of an adequate and reliable fuel supply.** Where contractual or physical arrangements permit curtailment or interruption of the normal fuel supply, sufficient quantities of standby fuel shall be provided. Due to the dependence of hydroelectric plants on seasonal water flows, this factor shall be taken into consideration when calculating capacity for capacity margin requirements.[6] **[emphasis added]**

Q: **[redacted]

[redacted]

A: [redacted]

[redacted]

Q: [redacted]

[redacted]

A: [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Q: [redacted]

[redacted]

A: [redacted]

[redacted]

[6] *Planning Criteria*, SPP, pp. 22-23, https://www.spp.org/documents/33003/spp%20effective%202016%20planning%20criteria%201.pdf, accessed

[redacted]

Q: [redacted]

A: [redacted]

**

Q: Do you believe the costs in Mr. Featherstone's table fail to accurately represent the different choices and can be misleading because of the varying volumes underlying their calculation?

A: Yes. As Mr. Featherstone explains on page 22, relative generation of one facility versus another can distort the per MMBtu unit costs when trying to compare them. Consequently, the numbers in Mr. Featherstone's table can easily mislead a user

considering alternative scenarios. The "Commodity with all transportation" lines include costs that are relatively fixed across time but different by facility. The quantities which were used as the denominator to determine the per MMBtu amounts are inconsistent from year to year and facility to facility. Only if the volumes were constant from year to year and the same for each facility would the values be comparable.

Q: Is it also wrong to compare the "Commodity" costs in Mr. Featherstone's table when considering the dispatch choices the Company faces?

A: Yes but the "Commodity" costs reflect a different distortion. The Commodity costs are the average cost of natural gas commodity purchased for the specified facility for the specified year. When units are dispatched to generate electricity, the lowest cost unit for that hour and day is dispatched first. Natural gas prices change daily and throughout a day. ** [redacted] ** The average Commodity cost reflected in Mr. Featherstone's table reflects the weighted average price for the days a unit at the specified facility was dispatched. Since GMO's natural gas units do not always run on the same days, that will result in averages that do not accurately reflect the choice the Company faced when dispatching the units.

Q: How significant are those distortions in the commodity cost of gas?

A: ** [redacted]

[redacted]

Q: [redacted]

A: [redacted]

[redacted]**

Q: At page 20, Mr. Featherstone states,

> **GMO gets its natural gas in the area known as the Midcontinent region of the United States—a location where natural gas prices tend to be lower than most of the other parts of the country and in the Gulf region area, Mississippi in particular. The Midcontinent region includes portions of Texas, Oklahoma and Kansas. Historically, natural gas prices in the Midcontinent region have been lower than at the Henry Hub area in Louisiana, where Crossroads gets its natural gas.**

**[redacted]

[redacted]

A: [redacted]

[redacted]

[redacted]

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[redacted]

[redacted]

[redacted]

[redacted]

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Q: [redacted]

A: [redacted]

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[7] *State of the Market Report, Spring 2014, March*-May, SPP MMU, July 15, 2014, page 3. https://www.spp.org/documents/22868/qsom_2014spring.pdf, accessed September 1, 2016.

Q: Starting at page 19 Mr. Featherstone references Mr. Heidtbrink's testimony regarding the difficulty of getting natural gas in Kansas City during the 2014 polar vortex. He then quotes portions of a document provided in response to Data Request 259 to say Crossroads has operational issues during cold weather. Please explain those issues.

A: The supposed issues Mr. Featherstone refers to were resolved some time ago. Mr. Featherstone points to a document drafted in July 2014, which in part effectively said that under certain cold weather conditions Crossroads had to generate above certain levels to avoid NOx limitations. In other words, the units could run at high levels of generation but not at low levels. That limitation did not keep SPP from dispatching Crossroads on the critical days of March 2 and 3, 2014. In November 2014, the units were tuned so they could run at low and high levels during winter.

Q: How do you respond to Mr. Featherstone's statement at page 22 of:

> **Equally important, the higher natural gas prices at Crossroads are consistent with the higher transmission costs to transport the energy from Crossroads back to Kansas City to serve GMO's customers. Greenwood and South Harper, both located in Kansas City area, do not cause GMO to incur any additional transmission costs to transport electricity from them to GMO customers.**

A: Since January 2010, Crossroads and South Harper have run about the same number of days and consumed about the same amount of natural gas. For the days that Crossroads actually ran, the price of natural gas near Clarksdale was 9% less than the price of natural gas in Missouri. In addition to these commodity cost differences, natural gas-fired units located in Missouri have other costs such as natural gas transportation services that offset the difference in electricity transmission costs.

Q: At page 22, Mr. Featherstone pointed out that Greenwood does not need firm transportation for natural gas because it is capable of using oil as a fuel source. Is that another one of those trade-offs like you discussed earlier?

A: Yes. SPP's *Planning Criteria* says, "Where contractual or physical arrangements permit curtailment or interruption of the normal fuel supply, sufficient quantities of standby fuel shall be provided." That is SPP recognizes there can be a trade-off between firm natural gas transportation and standby fuel. You must have one or the other. Greenwood does not need firm natural gas transportation because it maintains oil in storage on site and its units are capable of burning oil. To do that, it has among other things: two large oil storage tanks, fuel oil containment berms, additional piping, pumps, and duel fuel nozzles. The cost of owning and maintaining those resources is a trade-off to the cost of paying a reservation charge for natural gas transportation services.

Q: When Staff excluded the incremental transmission cost for Crossroads, did they add in the offsetting incremental cost of oil storage and making Crossroads oil-capable?

A: No. Staff did not make an adjustment for the incremental cost of oil storage and nor the cost of making Crossroads oil-capable.

Q: What is your recommendation regarding Staff's proposal to disallow the incremental cost of transmission for Crossroads?

A: Staff's position assumes the impossible. **[redacted]

[redacted] ** Therefore, I recommend that the Commission reject Staff's proposal to disallow the power transmission costs GMO is requesting in this case for Crossroads of approximately $8.2 million per year, because the ** [redacted] ** The commodity cost savings of Crossroads being in Clarksdale will continue to pass through the FAC to our customers.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of KCP&L Greater Missouri Operations	)	
Company's Request for Authority to Implement	)	Case No. ER-2016-0156
A General Rate Increase for Electric Service	)	

AFFIDAVIT OF WILLIAM EDWARD BLUNK

STATE OF MISSOURI)
) **ss**
COUNTY OF JACKSON)

William Edward Blunk, appearing before me, affirms and states:

1. My name is William Edward Blunk. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Generation Planning Manager.

2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony on behalf of KCP&L Greater Missouri Operations Company consisting of eighteen (18) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby affirm and state that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

William Edward Blunk

Subscribed and affirmed before me this 2nd day of September, 2016.

Notary Public

My commission expires: Feb 4, 2019

NICOLE A. WEHRY
Notary Public - Notary Seal
State of Missouri
Commissioned for Jackson County
My Commission Expires: February 04, 2019
Commission Number: 14391200

SCHEDULE WEB-3

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