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Witness: Wm. Edward Blunk
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Sponsoring Party: KCP&L Greater Missouri Operations Company
Case No.: HC-2010-0235
Date Testimony Prepared: October 22, 2010

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. HC-2010-0235

DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

ON BEHALF OF

KCP&L GREATER MISSOURI OPERATIONS COMPANY

Kansas City, Missouri
October 2010

Exhibit No. 105
Date 11-19-10 Reporter TM
File No. HC-2010-0235

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

AG PROCESSING INC., A COOPERATIVE,	)	
	)	
Complainant,	)	
v.	)	Case No. HC-2010-0235
	)	
KCP&L GREATER MISSOURI OPERATIONS COMPANY,	)	
	)	
Respondent.	)	

AFFIDAVIT OF WILLIAM EDWARD BLUNK

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

William Edward Blunk, affirms:

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

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of KCP&L Greater Missouri Operations Company consisting of thirty-five (35) 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 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 21st day of October 2010.

Nicole A. Wehry
Notary Public

My commission expires: Feb. 4, 2011

" NOTARY SEAL "
Nicole A. Wehry, Notary Public
Jackson County, State of Missouri
My Commission Expires 2/4/2011
Commission Number 07391200

TABLE OF CONTENTS

DIRECT TESTIMONY

OF

William Edward Blunk

Case No. HC-2010-0235

Q: Please state your name and business address.

A: My name is William Edward Blunk. My business address is 1200 Main Street, Kansas City, Missouri 64105.

Q: By whom and in what capacity are you employed?

A: I am employed by Kansas City Power & Light Company ("KCP&L") as Supply Planning Manager.

Q: What are your responsibilities?

A: My primary responsibilities are to facilitate the development and implementation of fuel and power sales purchase and risk management strategies for KCP&L and for KCP&L Greater Missouri Operations Company ("GMO" or "Company"), formerly known as Aquila, Inc. ("Aquila").

Q: What is your education, experience and employment history?

A: I was awarded a Bachelor of Science degree in 1978 in agricultural economics cum laude as an Honors Scholar from the University of Missouri at Columbia. I was awarded a Master in Business Administration degree in finance from the University of Missouri in 1980. I have also completed additional graduate courses in forecasting theory and applications.

Before graduating from the University of Missouri, I joined the John Deere Company in 1977 and through 1981 performed various marketing, marketing research, and dealer management tasks. I joined KCP&L in 1981 as Transportation Special Projects Analyst. My responsibilities included fuel forecasting, fuel planning, and other analyses related to commercial negotiations and disputes with railroads and coal companies. I was promoted to the position of Supervisor, Fuel Planning in 1984. This position was upgraded in 2007 to Manager, Fuel Planning. In 2009 my position was changed to Supply Planning Manager.

Q: What experience and expertise do you possess with regard to hedging and related financial instruments?

A: I first became acquainted with hedging during my studies at the University of Missouri in its agricultural economics program. The first futures markets were developed to meet the needs of farmers and agricultural producers, so agriculture has used hedging and similar concepts probably longer than any other industry. I have been involved in hedging coal and coal prices for KCP&L since the early 1980s. I have also been involved in the design and implementation of KCP&L's natural gas hedging program since it began in 2001.

Since joining KCP&L in 1981, I have attended a variety of training programs and conferences on risk management. I have also participated in a utility hedge plan benchmarking study. In developing KCP&L's natural gas hedge program I performed independent research into hedging strategies and programs. For the past several years I have served as Chairman of the Electric Power Research Institute's "Understanding Power & Fuel Markets & Generation Response" advisory group. I also participate in the

"Power Technology, Market Analysis & Risk" advisory group. Both of those groups address fuel market risk.

Q: Have you ever worked for Aquila, Inc., now known as KCP&L Greater Missouri Operations Company?

A: No. However, since Great Plains Energy Incorporated acquired Aquila in July 2008 and renamed that corporation GMO, my duties with regard to natural gas and other fuel purchase strategies have applied to GMO operations. In this regard, I have familiarized myself with the hedging and financial strategies employed by Aquila with regard to its regulated electric and steam generating operations.

Q: Have you previously testified in a proceeding at the Missouri Public Service Commission or before any other utility regulatory body?

A: I have previously testified before both the Missouri Public Service Commission ("MPSC") and the Kansas Corporation Commission ("KCC") in multiple cases on issues regarding fuel prices, fuel price forecasts, hedging and other strategies for managing fuel price risk, fuel-related costs, fuel inventory, and the management of sulphur dioxide emission allowance inventory.

Q: What is the purpose of your direct testimony?

A: The purpose of my direct testimony is to provide opinions on why the natural gas hedging program adopted by Aquila for its St. Joseph steam operations at the Lake Road Plant was reasonable and prudent at the time that Aquila established it. I will also provide comments on and critique the Direct Testimony of Donald E. Johnstone, submitted on September 22, 2010 on behalf of Ag Processing, Inc. I will refute Mr. Johnstone's allegations that the Aquila hedging program was imprudent.

Q: How is your testimony organized?

A: After introducing myself and describing the purpose of my testimony I present my testimony according to the following outline.

I. Hedging Strategies to Manage Fuel Market Risks

II. Review Of Aquila's Gas Hedging Program For Steam Operations

III. Refutation of Mr. Johnstone's Opinions

IV. Changes In The Natural Gas Market And Natural Gas Costs

V. Natural Gas Price Volatility

VI. Conclusion

I. HEDGING STRATEGIES TO MANAGE FUEL MARKET RISKS

Q: What is hedging?

A: Hedging refers to actions that constrain the future price one is obligated to pay for a commodity, achieved through the use of various contractual arrangements or financial instruments. Hedging is the use of financial instruments as part of a strategy to offset market risk. In other words, hedging is establishing a "paper" position opposite a physical position such that the physical risk exposure is offset by the "paper" position.

On February 24, 2006 the Commission received from MPSC Staff the 44-page *Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies* ("Joint Report"), which was described by Staff as a "consensus document" submitted by the parties to the proceeding. See Report, Case No. GW-2006-0110 (Feb. 27, 2006). The Joint Report defined hedging as "the management of a natural gas portfolio to mitigate adverse

upward price volatility." It went on to say that the "goal of hedging is not to 'beat the market' but rather to mitigate upward price volatility." See Joint Report at 8.

Q: What strategy would be employed if a company was concerned about increasing commodity prices?

A: That depends on the company's physical position. If the company needed to buy a commodity, it could hedge its "short" physical position by going "long" in a financial position, buying a call option or buying a futures contract. Buying a New York Mercantile Exchange ("NYMEX") natural gas call option would give the company the right to buy a NYMEX natural gas futures contract at a predetermined price before a preset deadline in exchange for paying a premium.

Q: Do companies interested in a particular commodity use both call options and put options in their hedging strategies?

A: Yes. Firms that want to be assured of the price they will receive or pay for a commodity will hedge their position by buying and selling calls and puts. For example, Massimo Mancini of Northwestern University's Kellogg School of Management reports that "Airlines use collars [a combination of calls and puts] to reduce the cost of the hedge."[1] A hedger with a short position might: (1) buy calls; (2) buy calls and sell puts to create a collar; (3) buy calls, sell puts, and sell calls to create a 3-way collar; or (4) buy futures

[1] Massimo Mancini, Kellogg Graduate School Of Management, Northwestern University, *Corporate risk hedging strategies and shareholders' value creation: the Southwest Airlines case*, at 16 (June 2, 2009), http://www.kellogg.northwestern.edu/research/risk/projects/Massimo%20Mancini%20Research.pdf.

contracts and buy puts to create a synthetic call. All four scenarios can protect against the risk of prices moving upward while allowing the hedger to follow market prices down to a certain degree, but each scenario has different premium costs and risk profiles.

Q: Do regulated public utilities such as GMO and KCP&L pursue hedging strategies?

A: Yes. Missouri utilities were using futures, options, and collars to hedge before 1998[2]. Moreover, the Commission has encouraged hedging through its Natural Gas Price Volatility Mitigation Rule, 4 CSR 240-40.018, which states that "natural gas local distribution companies should undertake diversified natural gas purchasing activities as part of a prudent effort to mitigate upward natural gas price volatility . . . ." That rule goes on to delineate call options, collars, futures contracts, financial swaps, options, and other instruments as tools for managing price and/or usage volatility. KCPL has engaged in natural gas hedging since 2001.

Q: The Commission's Natural Gas Price Volatility Mitigation Rule is directed to LDCs. How is it relevant to this case?

A: While the Commission has not issued a specific rule regarding natural gas price volatility mitigation for steam utilities, the LDC Natural Gas Price Volatility Mitigation Rule is instructive in identifying the Commission's concern about the impact of natural gas price

[2] Kenneth W. Costello, Senior Institute Economist, and John Cita, Ph.D, Chief, Economic Policy and Planning Kansas State Corporation Commission, *Use of Hedging by Local Gas Distribution Companies: Basic Considerations and Regulatory Issues*, The National Regulatory Research Institute, at 55–56 (May 2001) (discussing the Missouri Public Service Commission Roundtable, *Natural Gas Roundtable/Consumer Choice: Opportunities and Risks*, Kansas City, July 7, 1998).

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volatility on utility customers. The state's LDCs pass natural gas costs through a purchased gas adjustment (PGA) to their customers. Aquila passed natural gas costs through a Quarterly Cost Adjustment (QCA) to its steam customers. While PGAs and the QCA have differences, both sets of customers are ultimately exposed to the market price of natural gas.

Q: How is a hedging strategy developed?

A: The first step in developing a hedging strategy is to identify the hedger's purpose. What is the risk that causes concern and how does the hedger want to change that risk? There are a number of strategies that may be employed, depending on the objectives of the program. As a hedger, the goal of these strategies is to reduce risk. By contrast, a speculator assumes risk in the pursuit of profit.

Q: What was the objective of Aquila's hedging strategy?

A: Aquila's hedging strategy was designed to mitigate upward price volatility. It also provided some opportunity to take advantage of market price declines.

Q: Briefly describe Aquila's hedging strategy.

A: Aquila's hedging program divided the hedge volume into three equal parts. One-third of the volume was hedged using fixed price instruments. Another one-third was hedged using options or collars. The remaining one-third was left to float with the market.

Q: How did Aquila's hedging strategy change its risk?

A: The one-third of the volume that was hedged using fixed price instruments changed the risk from exposure to upward market prices to relatively certain prices but with no volume flexibility. The one-third that was hedged using options or collars changed the risk from the uncertainty of market prices to limited price exposure and limited volume

flexibility. The remaining one-third that was left to float with the market did not change the risk, but it helped mitigate the new risks of being committed to a fixed price should the market fall below that price and the exposure to lower than expected volumes. I will refer to this as the "One-Third Strategy."

Q: Has this Commission expressed any opinion on Aquila's gas hedging program for its steam operations?

A: No. Since February 2006 when the program began and the Commission issued its Order Regarding Stipulation and Agreement in Case No. HR-2005-0450 (Feb. 28, 2006), neither this Commission nor its Staff has claimed that Aquila's hedging for steam operations was imprudent or that any other aspect of the Quarterly Cost Adjustment process was imprudent.

Q: Has any public utility commission reviewed Aquila's gas hedging program for electric operations, which was the model for the hedging program implemented for steam operations?

A: Yes. Aquila presented a similar One-Third Strategy of gas hedging for its electricity operations to the Kansas Corporation Commission ("KCC"). See Schedule WEB-1. In response to Aquila's Application, KCC Staff filed a memorandum in support of a proposed Stipulation and Agreement that would approve the program, stating:

> This program is designed to reduce, but not eliminate the volatility of [Aquila's] monthly ECA [energy cost adjustment] prices. It is Staff's opinion the proposed program would work as designed.

Aquila-WPK submitted a well developed Application and the presentation of its 'preferred hedge plan' is the best Staff has ever seen. Aquila should be commended.

See Schedule WEB-2 at 5.

Q: Did the Kansas Corporation Commission approve the proposed Stipulation and Agreement?

A: Yes. In an Order issued December 27, 2005, the KCC granted the Joint Motion and approved the Stipulation, finding that it was "reasonable, in the public interest, and should be approved." See Schedule WEB-3.

II. REVIEW OF AQUILA'S GAS HEDGING PROGRAM FOR STEAM OPERATIONS

Q: In your capacity as Supply Planning Manager, have you reviewed the gas hedging program that Aquila adopted for its Lake Road Plant steam operations?

A: Yes, in my capacity as Supply Planning Manager I have responsibilities for KCP&L, as well as GMO, and have reviewed the relevant documents and data regarding the Aquila gas hedging programs for its steam operations.

Q: Did Aquila adopt a policy for gas hedging regarding its steam operations?

A: Yes. The policy is dated February 15, 2006 and is found at Schedule GLG-1, attached to the Direct Testimony of Gary L. Gottsch. As part of my review and analysis of that document, I prepared my own summary of the policy after Aquila was acquired by Great Plains Energy and became GMO in July 2008, which I have attached as Schedule WEB-4.

Q: Briefly describe Aquila's steam hedging plan?

A: Aquila's steam hedging plan was designed to be market neutral, meaning that Aquila did not try to predict the price of natural gas as either rising or falling, but rather purchased financial contracts that would result in an average market cost over two to three years in the future.

Under the One-Third Strategy:

1. One-third of the portfolio consisted of fixed price contracts bought on the New York Mercantile Exchange.

2. One-third of the portfolio consisted of NYMEX options (either long calls or a combination of long calls and short puts).

3. One-third of the portfolio consisted of purchases made on the current or spot market.

Q: Was this gas hedging program for steam operations based on a hedging program that had been previously used by Aquila?

A: Yes. My review of Aquila documents indicates that the gas hedging program for steam was similar to a program that Aquila established for the electric operations of Aquila Networks-MPS, as set forth in Schedule WEB-5,[3] which was approved by the Kansas Corporation Commission just a couple of months prior to the implementation of Aquila's gas hedging program for steam operations.

[3] Although this Memorandum from Aquila's Commodity Risk Management Group to its Energy Resources Group (Feb. 25, 2005) indicates that it is a "Highly Confidential" document, and was previously attached as an "HC"

This Memorandum indicates that Aquila presented its 2005-07 hedging plan to MPSC Staff and the Office of the Public Counsel at a July 9, 2004 resource planning update meeting. See Schedule WEB-5 at 3, n. 2.

Q: How does this One-Third Strategy program address the risk of rising natural gas prices?

A: Two-thirds of the portfolio is hedged with fixed price contracts and with options that would tend to benefit the purchaser in a market where natural gas prices are rising. The one-third of the portfolio that floats with the spot market would not provide price mitigation.

Q: How does this One-Third Strategy program address the risk of falling natural gas prices?

A: The one-third of the portfolio that floats with the spot market would take advantage of the declining prices. The one-third of options contracts would not be exercised when prices are declining, so the Company would be able to purchase another one-third of its portfolio in the open market. The fixed price futures contracts would result in higher than market cost for that one-third of the portfolio.

Q: Based upon your review of the documents and the testimony of Mr. Johnstone, do you believe that the Aquila gas hedging program for steam operations was prudent?

A: Yes. I believe that it was designed and administered in a prudent and reasonable fashion, given the facts that were available to Aquila at the time that the policy was designed and the purchases were made.

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document to the Direct Testimony of Charles R. Hyneman in Case No. ER-2005-0436 (filed Oct. 14, 2005), it is no longer considered Highly Confidential.

Q: Did Aquila compare the results of the One-Third Strategy for hedging natural gas with other programs that were being discussed by customers and Staff as alternative hedging programs at the request of customers and MPSC Staff?

A: Yes. Aquila ran a comparison study of what the results would have been if a gas hedging program administered by Kase & Company known as EZ Hedge had been used in 2006 and 2007. As shown on the steam hedge comparison chart attached to the Direct Testimony of Gary Gottsch as Schedule GLG-8, EZ Hedge would have lost $1,457,660 for 2006 and $3,686,720 for 2007. Both of these losses are significantly higher than the results of the One-Third Strategy for those same years: EZ Hedge would have lost $281,120 more than the One-Third Strategy for 2006 and $1,244,590 more than the One-Third Strategy for 2007. See Schedule GLG-8.

III. REFUTATION OF MR. JOHNSTONE'S OPINIONS

Q: What did Mr. Johnstone allege regarding the prudence of Aquila's hedge program?

A: On page 5 of his Direct Testimony Mr. Johnstone lists six factors that contributed to his opinion of imprudence. The essences of those factors are listed below:

1. "QCA mechanism effectively mitigates the effects of fuel cost volatility and price spikes . . . ."
   a. "the Aquila hedging program was not needed."
   b. "It was imprudent to ignore the QCA . . . ."
2. "Aquila's pass on the opportunity for important customer input . . . ."
3. "Aquila adopted a hedge program design without considering the nature of its natural gas usage as a swing fuel. Part and parcel of this problem was Aquila's forecast of natural gas requirements that was very far from the mark...."

4. "Because of the design [*sic*] Aquila's hedge program, and because the forecast of natural gas requirements was 2 or more times actual usage, the hedge program created volatility in fuel costs and price spikes."

5. "Aquila appears to have sold puts for speculative profit . . . ."

6. "Aquila began the hedge program on February 16, 2006 by executing all of its hedge positions for the remainder of 2006 (April through December). 2007 hedge positions were executed over several months in 2006."

Q: Did Mr. Johnstone identify any standards or guidelines for assessing hedging programs *ex ante*?

A: No. Mr. Johnstone did not identify any standards or guidelines that could be used to evaluate the reasonableness of a hedge program before it is actually implemented.

Q: Why is it important to consider standards or guidelines that could be used to evaluate the reasonableness of a hedge program before it is implemented?

A: In writing for the National Regulatory Research Institute, Kenneth W. Costello and John Cita, Ph.D. assert:

> The reasonableness of a hedging program should be evaluated before a program is actually implemented. If regulators decide to perform *ex post* reviews, they run the risk of creating unrealistic or inefficient performance

standards or both. The success of a risk-management program should not be evaluated strictly on how things turn out.[4]

Q: Mr. Johnstone asserts that the Aquila hedging program was not needed. Is that view consistent with the Commission's Rule regarding natural gas price volatility or with testimony submitted on behalf of Ag Processing, Inc. in Aquila's prior retail steam rate cases?

A: No. Mr. Johnstone's allegation that the Aquila hedging program was not needed is not consistent with Aquila's responsibility to mitigate commodity price exposure, the Commission's Rule regarding natural gas price volatility or testimony submitted on behalf of Ag Processing, Inc. in Aquila's prior retail steam rate cases.

Q: Why is Mr. Johnstone's assertion not consistent with the Commission's Rule regarding natural gas price volatility?

A: As I discussed earlier, the Commission's Natural Gas Price Volatility Mitigation Rule 4 CSR 240-40.018 states that "natural gas local distribution companies should undertake diversified natural gas purchasing activities as part of a prudent effort to mitigate upward natural gas price volatility . . . ." The Rule discusses the need to "mitigate upward natural gas price spikes," "balance market price risks, benefits, and price stability," and "dampen

[4] Kenneth W. Costello, Senior Institute Economist, and John Cita, Ph.D, Chief, Economic Policy and Planning Kansas State Corporation Commission, *Use of Hedging by Local Gas Distribution Companies: Basic Considerations and Regulatory Issues*, The National Regulatory Research Institute, at 51 (May 2001), http://nrri.org/pubs/gas/01-08.pdf.

upward volatility." It also states: "Financial gains or losses associated with price volatility mitigation efforts are flowed through the Purchased Gas Adjustment . . . ." As I read the Rule, it is intended to encourage prudent efforts to dampen upward price volatility.

Q: Why is Mr. Johnstone's assertion not consistent with testimony submitted on behalf of Ag Processing, Inc. in Aquila's prior retail steam rate cases?

A: On pages 4 and 5 of his Direct Testimony filed on behalf of Ag Processing, Inc. on October 14, 2005, in Aquila's steam rate case, Case No. HR-2005-0450, Maurice Brubaker discusses hedging. He states on page 5:

> Especially in light of the high and volatile gas prices currently being faced, it is appropriate for the effects of the hedging program to be reflected in determining the fuel and purchased power costs properly chargeable to consumers. . . . The fuel and purchased power prices that are the result of the hedging program should be used to determine the cost chargeable to customers, to the extent of the hedge.

See Schedule WEB-6 at 7.

Q: Did Mr. Johnstone's Direct Testimony in Case No. HR-2005-0450 also express a concern about natural gas price volatility?

A: Yes. On page 8 of his Direct Testimony in that case, Mr. Johnstone stated, "The high prices and volatility in the natural gas costs and markets are a concern." See WEB-7 at 11.

Q: What do you make of these statements by Mr. Brubaker and Mr. Johnstone on behalf of Ag Processing, Inc.?

A: I read both of their statements as expressing concern about high natural gas prices and the risk of those prices going higher. I interpret Mr. Brubaker's statement as encouraging Aquila to hedge its natural gas requirements for generating steam and as encouraging the Commission to charge the costs of such hedging activities to the steam consumers, including Ag Processing, Inc. In other words, it appears Mr. Brubaker was not only asking for a hedge program, but he was asking for the same program that was being used by Aquila for the electric side of the company. The program Mr. Brubaker was asking for was the One-Third Strategy.

Q: Mr. Johnstone alleges it was imprudent for Aquila to ignore the QCA in its hedge program. On page 11 of his Direct Testimony, he points to an email authored by Mr. Williams on February 15, 2006 as support for his position. What do you understand Mr. Williams' email to say?

A: The relevant sentence in Mr. Williams' email that Mr. Johnstone characterized as "fundamentally bad advice" reads as follows:

> We [Aquila] should follow whatever procedure we would normally take whether or not there is a *sharing mechanism* [emphasis added].

I read Mr. Williams' use of the phrase "*sharing mechanism*" the same way Mr. Johnstone described it in on page 3 of his Direct Testimony in Case No. HR-2009-0092. When describing Aquila's QCA as "the first such *sharing mechanism* in the State" (emphasis added), Mr. Johnstone explained that:

> [T]he goal of less than complete tracking of fuel cost was to provide for mechanisms that would maintain an alignment of the financial interest of Aquila and the financial interests of its customers in a low cost for fuel.

See Schedule WEB-8 at 5.

I read Mr. Williams' sentence saying the same thing as Mr. Johnstone did in his Direct Testimony in Case No. HR-2009-0092. That is, Mr. Williams appears to be advising Mr. Gottsch that the financial interest of Aquila and the financial interests of its customers in achieving a low cost for fuel are in alignment.

Q: How do you respond to Mr. Johnstone's claim that "Aquila passed on the opportunity for customer input"?

A: Earlier I discussed Mr. Brubaker and Mr. Johnstone's testimonies in Case No. HR-2005-0450. As I read Mr. Brubaker's testimony, Ag Processing, Inc. was effectively asking that the same hedging program Aquila was using for its electric operations be used for natural gas requirements for steam generation. A customer's sworn testimony submitted before this Commission is the best documentation of customer input that I can imagine.

Q: What are your concerns regarding Mr. Johnstone's claim that Aquila did not consider that natural gas was a swing fuel?

A: The documents that I have reviewed regarding Aquila's natural gas hedging program are terse. They do not state expressly whether natural gas is a swing or baseload fuel. However, since Aquila was obviously aware that natural gas was the marginal fuel at Lake Road, it is presumptuous to believe the fact was ignored. One must keep in mind that the documentation of any hedge program is in the context of other documentation or understandings. For example, the hedge program documentation does not address the credit risk associated with the hedges. That issue could be addressed in other documents or policies. Since the Aquila program used the NYMEX, it could have been understood

that credit risk was of minimal concern due to the widely recognized financial position of the NYMEX.

Q: Mr. Johnstone makes several references in his Direct Testimony at pages 20–30 to actual volumes being significantly different than budget or forecast volumes. Is it common for actual volumes to be significantly different than budget or forecast?

A: Yes. It is common for actual marginal or swing fuel volumes to be different than budget. Volume uncertainty is one of the risks that is managed by Aquila's hedge program.

Q: How did the Aquila hedge program manage the risk of volume uncertainty?

A: There were two parts of the hedge program that facilitated management of volume risk. One-third of the forecast volume requirements was not hedged. In other words, while it floated with the market, it also floated with fuel requirements. To a lesser degree, the one-third of the forecast volume that was hedged using options could potentially float with fuel requirements. In other words, by design the hedging program potentially had the capacity to manage downward volume risk of as much as 66%.

Q: Mr. Johnstone on pages 5, 15, 21, and 31 of his Direct Testimony characterizes Aquila's put option sales as "speculative" and not intended to provide price protection. Is that a proper characterization of the put option sales?

A: No. The main purpose of speculation is to profit from betting on the direction in which a market will be moving. Speculators do not have natural offsetting positions which would balance any gains or losses. Hedgers take an offsetting position in a derivative in order to balance any gains or losses in the physical market. When Aquila constructed price collars by purchasing call options and selling put options, it protected itself and its customers from upward price movement. Aquila then committed to buy gas that it fully

expected to need at prices that were below market at the time the deal was made. That is not speculation.

Q: Why did Aquila sell put options?

A: Aquila sold or wrote put options and turned some of the call options it had purchased into collars as a means of mitigating the hedge program's premium expense.

Q: Is it a common practice for hedgers to sell puts so as to mitigate a hedge program's premium expense?

A: Yes. The practice is described in the February 24, 2006 *Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies* as follows:

> Financial instruments can be used in combination to balance price risk or reduce the overall cost of hedging. One combination of financial instruments used by LDCs is a collar. A collar pairs a call option with a put option to set a ceiling and floor for the price of natural gas. A put option works as a floor on the price to be paid for natural gas whereas a call option places a ceiling on the price. For example, an LDC buys a call option with a strike price of $10/MMBtu for a premium of $0.50/MMBtu, and at the same time sells a put option with a strike price of $7/MMBtu for a premium of $0.20/MMBtu. This means that the LDC has basically "collared" the price of natural gas between $7 and $10/MMBtu, and the premium received for the put option offsets part of the premium paid for the call option. The call option sets the ceiling price and the put option sets the floor price for the covered volumes of gas. If the cost of the call option

and the price of the put option are equal, the arrangement is known as a costless collar.

See Joint Report, Case No. GW-2006-0110 (Feb. 27, 2006) at 12.

Q: **Mr. Johnstone at pages 14–15 of his Direct Testimony also talked about buying put options. Did Aquila purchase put options?**

A: No. It was not necessary for Aquila to buy puts as described by Mr. Johnstone. When Mr. Johnstone discussed using a put option in combination with a swap, he was describing a "synthetic" call. A synthetic call produces the same overall payoff as a call option. Aquila hedged the one-third options part of its hedge program with "plain vanilla" calls and collars.

Q: **In his Direct Testimony at lines 13 and 14 of page 15, in talking about Aquila's use of put options, Mr. Johnstone said: "Aquila sold price protection to others instead of buying protection for its account." Do you agree with that statement?**

A: No. Aquila purchased price protection for it and its customers by purchasing call options. It then employed a common hedge cost management strategy in that it sold put options to construct price collars and used the premiums from selling the puts to offset the cost of purchasing call options. Mr. Johnstone did not point out that all of the put option sales were tied to call option purchases and that puts were only sold when they would combine with a call to create a collar.

Q: **On page 21 of Mr. Johnstone's Direct Testimony, he observed that Aquila purchased 30,000 MMBtu in futures, 30,000 MMBtu in call options, and sold short 30,000 MMBtu in puts. How many MMBtus were hedged with those transactions?**

A: 60,000 MMBtus were hedged. The 30,000 MMBtus in futures were hedged at a fixed price. The 30,000 MMBtus of purchased call options and 30,000 MMBtus of sold put options combined to create a collar covering 30,000 MMBtus. The 30,000 MMBtus in futures plus the 30,000 MMBtus for the collar sum to 60,000 MMBtus hedged.

Q: Mr. Johnstone's sixth opinion at page 5 of his Direct Testimony seems to be focused on the timing of Aquila's hedges. What factors might affect the timing of a hedge?

A: There are multiple factors that might affect the timing of a hedge. The factors discussed in the Joint Report at pages 12–13 can be summarized as what one believes about the market and one's ability to predict the market. Mr. Gottsch addresses the factors that affected the timing of Aquila's 2006 and 2007 hedges. See Gottsch Direct at 11–13.

IV. CHANGES IN THE NATURAL GAS MARKET AND NATURAL GAS COSTS

Q: What was the outlook for natural gas in early 2006?

A: The U.S. was expected to be in a supply-limited environment with a number uncertainties concerning that supply. Consequently it was expected that average 2006 prices would be similar to 2005 prices. Moreover upside gas price volatility was expected to exceed downside price volatility especially during times of adverse weather.

Q: What was driving this expectation for high prices and risk of upward price volatility?

A: Weather forecasters were predicting that the 2006 hurricane season would have two times more activity than normal. At the end of 2005 2.5 Bcf/d (billion cubic feet per day) of production was still curtailed because of damage from Hurricanes Katrina and Rita. U.S. LNG (liquefied natural gas) imports had declined about 10% in 2005. Scheduled increases in worldwide regasification capacity exceeded scheduled increases in

liquefaction by more than 2 to 1. That meant there would be increased global competition for LNG. As a result the United States only expected modest increases in LNG imports.

Q: What changes have occurred in the natural gas market over the past ten years?

A: I would like to answer that question in two parts. The first part is how the natural gas market changed from 2000 to 2005. The second part is how the market changed since January 2006.

Q: Why do you want to break your analysis of the natural gas market into those parts?

A: Two reasons. First, to evaluate Aquila's actions and hedge program it is best to do this in light of information known at the time Aquila took those actions. Ken Costello, Senior Institute Economist of the National Regulatory Research Institute, put it this way:

> Hedging is one of those activities, similar to purchasing of insurance, where by design it is expected to result in a net loss to consumers. Consequently, hedging is vulnerable to *ex post* regulatory interpretation. But, in view of the intent to avoid large losses or harm – a 'peace of mind-type' benefit – hedging with the result of higher prices to consumers or lower profits to a utility can still be regarded as successful and prudent.

> ... [S]econd-guessing lies counter to the traditional prudence standard and discourages utility hedging.[5]

Second, there were very significant changes in the natural gas market in those time periods.

Q: How has the level of uncertainty changed in the market for natural gas?

A: Since about 2000, the level of uncertainty increased significantly for natural gas. The market shifted from being in a state of supply-surplus to being supply-limited. A characteristic of supply-limited environments is that prices are set by the marginal buyer rather than the underlying supply curve. That means prices will rise until sufficient demand is reduced as to bring supply and demand into balance. The specific factors driving demand and determining what price the marginal buyer will pay vary by commodity but are also interrelated.

Q: How did that shift from supply-surplus to supply-limited markets affect natural gas prices?

A: Prices are higher in supply-limited markets than in supply-surplus markets. Prices are also more uncertain and volatile in supply-limited markets than in supply-surplus markets.

Q: How did those changes impact the price of natural gas leading up to 2006?

[5] Ken Costello, Senior Institute Economist, National Regulatory Research Institute, *Regulatory Questions on Hedging: The Case of Natural Gas*, Electricity Journal at 51 (May 2002).

A: Since the turn of the new century, natural gas experienced significant price volatility. During the winter of 2000–2001 natural gas prices ranged between $4.485/MMBtu to $9.978/MMBtu. The Commission recognized this in its Order of January 23, 2001, where it noted "[r]ecent price increases in the commodity cost of natural gas" and established a Natural Gas Commodity Price Task Force. See In re Commission Inquiry into Purchase Gas Costs Recovery, Case No. GW-2001-398.

Natural gas in December 2004 was about $6.83/MMBtu. In December 2005 it reached a peak of $15.378/MMBtu, then dropped to $4.120/MMBtu in September 2006. These moves represented a price spike of 125%, followed by a decline of 73%. By July 2008 natural gas had returned to $13.58, but then dropped 82% to $2.508, a price level that the markets had not seen since March 2002. In the first nine months of 2010 the price of natural has ranged from $3.651 to $6.009.

Q: Please explain the shift in the natural gas market from supply-surplus to supply-limited and the effect of this shift on natural gas prices?

A: Following a decade of low natural gas prices, natural gas markets suffered a severe shock winter 2000/2001. That winter the natural gas market was supply-limited. As can be seen in Schedule WEB-9, which is a chart of population weighted winter heating degree days, the four winters preceding winter 2000/2001 were all warmer than normal with winters 1998/1999 and 1999/2000 being significantly warmer than normal.

Prior to the very cold winter of 2000/2001, the United States experienced a period of excess supply commonly referred to as the "gas bubble." As shown in Schedule WEB-10, natural gas storage levels were drawn down to unusually low levels in the very cold winter of 2000/2001. Natural gas prices responded by jumping to about

$10.00/MMBtu, which was more than double the all-time high price (NYMEX near-month close) before September 2000. The natural gas industry responded with increased drilling thereby increasing natural gas production. Before September 2000, there had never been more than 800 rigs devoted to natural gas. By May 2001 over 1,000 rigs were working on natural gas wells. Consequently, storage was restored to a new record level of 3,238 Bcf (billion cubic feet) in December 2001.

As shown by Schedule WEB-9, the following winter 2001/2002 was very mild resulting in lower than normal demand. Storage at the end of winter 2001/2002 was 1,491 Bcf, a record high end of winter level. Prices dropped to less than $2.00/MMBtu. The industry again responded but this time with decreased drilling. When prices started trending up later in 2002, the industry was much slower to respond. In fact, second quarter 2002 was the last quarter when U.S. marketed natural gas production was more than 5,000 Bcf. Production in third quarter 2005, which included some impact from Hurricanes Katrina and Rita, was only 4,668 Bcf. U.S. marketed natural gas production had not been that low since third quarter 1993. Moreover, production for October 2005 was slightly less than 85% of average production for the preceding ten Octobers. In brief, the United States was in a natural gas supply-limited environment which had driven prices up searching for a new demand/supply balance point.

Q: What factors were driving the increased price uncertainty in the natural gas market?

A: There are several factors which drove the increased price uncertainty in the U.S. natural gas market. While the following list is not exhaustive, I believe it covers the key drivers:

- Uncertainty about what price was required to reduce the marginal demand;

- The speed at which natural gas markets could swing from surplus of supply to being supply-limited;
- The influence of hedge funds; and
- Changes in demand projection paradigms.

Q: Why was there uncertainty about what price was required to reduce the marginal demand for natural gas?

A: The power industry tends to be the marginal customer for natural gas and effectively determines the upper bound on natural gas prices because of its ability as an industry to switch fuels. The complexity of determining when that fuel switching would take place had increased over the past few years. Traditionally, it was assumed that when natural gas was more expensive than oil on a $/MMBtu basis, fuel switching would take place. While this was still true in some situations, the fuel switch decision is made on a unit-by-unit basis. It is a function of regional anomalies such as taxes and fuel transportation rates, and of the unit's power generation technology (*i.e.*, steam generators, combustion turbine, or combined cycle), which in turn affects the unit's heat rate, emission levels, environmental constraints, and minimum run times.

Q: What do you mean by the speed at which the natural gas market could swing from surplus of supply to being supply-limited?

A: Significant weather events can have major immediate impacts on the supply/demand balance for natural gas. Summer 2005 and Winter 2000/2001, which I discussed earlier, both show just how quickly the natural gas market can swing from a supply surplus to being supply-limited. Summer 2005 was the warmest in many years, driving electric sector demand for natural gas to new levels. Exacerbating the supply and demand

imbalance was the loss of significant quantities of natural gas production due to hurricanes. Summer/Fall 2005 was probably the most active hurricane season on record. Hurricanes Katrina and Rita demonstrated just how much impact hurricanes can have on natural gas supply.

Hurricanes Katrina and Rita made landfall on August 28, 2005 and September 19, 2005, respectively. They were a major turning point for the natural gas industry. In the January 19, 2006 release of the U.S. Minerals Management Service's (MMS) *Impact Assessment of Offshore Facilities from Hurricanes Katrina and Rita*, MMS Regional Director Chris Oynes said:

> The overall damage caused by Hurricanes Katrina and Rita has shown them to be the greatest natural disasters to oil and gas development in the history of the Gulf of Mexico. Just last year [2004], in the devastating Hurricane Ivan, there were seven platforms destroyed, compared with the 115 platforms destroyed in Katrina and Rita.

Schedule WEB-11 shows that production following Hurricanes Katrina and Rita dropped to levels not seen since September 1989. Before Hurricanes Katrina and Rita, the MMS estimated that natural gas production in the Gulf of Mexico was about 10 Bcf/d. Five months after those hurricanes struck, at the end of January 2006, about 17% of Gulf natural gas production was still off-line. *Natural Gas Week* reported in its January 9, 2006, edition that "perhaps 200 Mcf/d to 1 Bcf/d may be gone for good." Consequently, the predictions based on long-range weather trends were that 2005 was the beginning of a decades-long season of

hurricanes like Katrina and Rita. Those predictions further increased the uncertainty of natural gas production and drove even more price uncertainty.

Q: How were hedge funds affecting the natural gas market in 2005?

A: The influx of new hedge funds into the energy market has increased market volatility and uncertainty. Ron Denhardt, vice president of natural gas services at Strategic Energy and Economic Research, stated in the April 22, 2005 edition of Platts' *Inside FERC's Gas Market Report*: "The way I'm seeing the market is that unless there is strong evidence the [supply/demand balance] is too loose, people playing the paper market can drive prices all over the place."

Q: How did changes in demand projection paradigms add uncertainty to the natural gas market?

A: Earlier demand forecasts were developed under different paradigms. Since 2005, the price for natural gas has been outside of the range of prices that would have been used to develop statistical price sensitivities. And as I discussed earlier, the algorithm for determining power sector demand had become more complex. It was no longer a simple comparison between the price of natural gas and oil on a $/MMBtu basis. In addition, from 1999 to 2004, gas-fired generation increased 27% and gas-fired capacity in the power industry more than tripled. That increase in demand and demand potential happened at the same time other natural gas demand was being reduced. Moreover, the natural gas markets had not yet seen what all of that new gas-fired capacity could do to demand.

Q: In January 2006 when did you expect the price uncertainty in natural gas markets to decrease?

A: In my January 2006 testimony in Case No. ER-2006-0314 I answered a similar question as follows:

> The lingering impact from Hurricanes Katrina and Rita, the expectation that hurricane seasons like 2005 may be the new norm, the possibility of a warmer than normal summer either followed or led by a colder than normal winter, were just a few of the factors that lead me to believe that while we may see lower prices, natural gas price uncertainty will not decrease until after new supply from sources such as liquefied natural gas ("LNG") imports increases significantly and that is not expected until 2007 or later.

Q: Did others hold a similar view?

A: Yes. The EIA's January 2006 *Short-Term Energy Outlook* showed Henry Hub natural gas prices, which averaged $9.00/MMBtu in 2005, were projected to average $9.80 in 2006 and $8.84 in 2007.

Q: Since January 2006 have there been any major unexpected changes in the fundamentals for natural gas?

A: Yes. Perhaps the single most significant change was the development of shale gas.

Q: How has shale gas changed the fundamental outlook for natural gas?

A: The main change has been the tremendous increase in natural gas reserves that are now perceived as economically recoverable. Natural gas proven reserves increased 12.6% from 2006 to 2007. Since 1950, that is double the next largest year-over-year increase of 6.3% in 1956. From 2004 to 2007 natural gas proved reserves increased 23.5%. That

compares to the next largest 3-year increase since 1950 of only 16.5%, which was set from 1954 to 1957.

As recently as 2002, the United States Geological Survey in its Assessment of Undiscovered Oil and Gas Resources of the Appalachian Basin Province calculated that the Marcellus Shale Field contained an estimated undiscovered resource of about 1.9 trillion cubic feet of gas. In early 2008, Terry Englander, a Geosciences professor at Pennsylvania State University, and Gary Lash, a Geology professor at the State University of New York at Fredonia, estimated that the Marcellus Shale Field might contain more than 500 trillion cubic feet of natural gas. That is 250 times the 2002 estimate!

In June 2009 the Potential Gas Committee, a widely recognized and knowledgeable non-profit organization affiliated with the Colorado School of Mines, released the results of its year-end 2008 assessment of the nation's natural gas resources, indicating that the United States possesses a total resource base of 1,836 trillion cubic feet. That is a 39% increase over the 2006 assessment, is the highest resource evaluation in the Committee's 44-year history, and was more than double the 18% increase from 2004 to 2006 reported in September 2007. Most of the increases from the prior assessments arose from re-evaluations of shale-gas resources. Shale now accounts for about 33% of the total resource base.

Q: Since the Commission's Natural Gas Commodity Price Task Force of 2001, has the Commission conducted any other inquiry relating to natural gas prices and markets?

A: Yes. In response to the Office of the Public Counsel's request that the Commission "ensure that natural gas utilities have done everything in their power to mitigate price

spikes and keep rates stable," the Commission ordered an investigation be opened.[6] The Commission expressed its concern regarding "gas acquisition strategies that will ameliorate price spikes" and agreed to "take evidence on this issue as requested by Public Counsel."[7]

Q: What was the result of the 2005 investigation?

A: On February 24, 2006 the Commission received from MPSC Staff the 44-page *Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies*, which was described by Staff as a "consensus document" submitted by the parties to the proceeding. See Report, Case No. GW-2006-0110 (Feb. 27, 2006). The cover of the Joint Report contained a satellite photograph of Hurricane Katrina approaching landfall and a graph depicting natural gas prices from the beginning of 2004 to the beginning of 2006.

Q: What observations did the Joint Report make with regard to hedging and hedging strategies?

A: The Joint Report noted that Commission Rule 4 CSR 240-40.018 contained the following purpose statement: "This Rule represents a statement of Commission policy that natural gas local distribution utilities should undertake diversified natural gas purchasing activities as part of a prudent effort to mitigate upward natural gas price volatility and

[6] Public Counsel's Motion to Open a New Case, In re Investigation into the State of Missouri's Natural Gas Local Distribution Companies' Compliance with Commission Rule 4 CSR 240-40.018, Case No. GW-2006-0110 (Sept. 12, 2005); Order Establishing Case, id. (Sept. 27, 2005).

secure adequate natural gas supplies for their customers." See Joint Report at 3. In this context, the Joint Report concluded:

> A central question is what is an appropriate hedging strategy? The answer depends on your view of hedging's objectives, benefits, costs and risks. Hedging strategies that obtain price certainty in lieu of price variability may not result in the lowest costs. If a utility sets an objective to achieve the lowest delivered cost to customers, and if market prices stay at, or increase from, current levels, then the lower the percentage of market price exposure, the better. If market prices drop significantly, the opposite will be true. If a utility has targeted its hedging strategy at limiting exposure to market price spikes, the appropriate level of hedging for that utility will depend on its perception of forecasted market price trends and the benefits, costs and risks of relative hedging mechanisms.

Id.

Q: How is this observation relevant to the Aquila gas hedging program at issue in this case?

A: It is very relevant because hedging strategies designed by a company like Aquila to mitigate price volatility, especially upward volatility, will utilize the same economic considerations and financial instruments regardless of whether the company is an LDC procuring gas for use by its customers or a steam utility procuring gas to be converted into steam service for its customers.

Stefan Nagel

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[7] Order Establishing Case, id. at 6.

Re: Personal Bio

My personal bio is attached.

NATURAL GAS PRICE VOLATILITY

Q: How does the price of natural gas during three-year period of 2006–2009 compare with natural gas prices from 2000 to the present?

A: Schedule WEB-12 shows the market price of natural gas from January 2000 through September 2010. It generally shows that the market dramatically spiked upwards four times: (1) Winter of 2000–2001; (2) Winter February-March 2003; (3) August 2005-February 2006; and (4) February–August 2008. It also spiked downward four times: (1) September 2004; (2) September–beginning October 2006; (3) September 2007; and (4) September 2009. The September–October 2006 downward spike is the only downward spike that came close to the magnitude of the four upward spikes.

In Schedule WEB-12 I highlight the price changes that occurred during this volatile period. As I noted earlier in my testimony, natural gas reached a peak of $15.38/MMBtu in December 2005, dropped to $4.20 in September 2006, then rose to $13.58 in July 2008, but then dropped 82% to $2.51 on September 3, 2009.

Q: How would you describe this period of 2005–2009 in terms of being able to predict the price of natural gas?

A: It was an exceedingly difficult time to attempt to predict the price of natural gas. In retrospect, although there have been periods of volatility in natural gas markets in recent history, the period from Memorial Day 2005 to November 2009 is unmatched by any other period in the past twenty years. Because it is impossible to predict prices in

markets relating to commodities like natural gas, an analysis conducted with the benefit of 20/20 hindsight must be done carefully.

Q: What are the issues that arise in conducting an historical analysis using 20/20 hindsight?

A: With the benefit of history, it is always easy to second guess what a company should have done to protect itself against financial and commodity risks. Pieces of evidence or trends that appear to be minor or insignificant at the time take on greater significance or major importance when viewed after the fact.

VI. CONCLUSION

Q: Based upon your experience in working with financial instruments and hedging programs utilized by public utilities, what is your opinion regarding the natural gas hedging program that Aquila used with regard to its steam operations at the Lake Road Plant in St. Joseph?

A: I believe that Aquila made a reasonable decision in early 2006 to implement the One-Third Strategy as a natural gas hedging program that would apply to steam operations in St. Joseph. Aquila had already demonstrated experience and expertise with hedging programs and other financial instruments, and adopted this relatively conservative program to avoid being criticized as engaging in speculative behavior.

The program was designed appropriately for the goal of mitigating price volatility. The hedging costs for 2006–2007 must be viewed in the context of the precipitous drop in natural gas prices, which could not have been predicted in early 2006, especially after the price increases seen in the aftermath of Hurricanes Katrina and Rita.

The subsequent advancements in shale gas technology and the sudden appearance of such resources could not have been anticipated in late 2005 or early 2006.

The program was also administered properly, given the expected volume information that was provided to Aquila by its steam customers at the time. Efforts were made to modify positions, as Mr. Gottsch noted in his Direct Testimony at 12–13, when such steps were feasible.

Overall, based on the information that was known and acted upon at the time, the gas hedging program for Aquila's steam operations was reasonable and prudent.

Q: Does that conclude your testimony?

A: Yes.