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| Exhibit No.: | |
| Issue: | Fuel Expense |
| Witness: | David W. Elliott |
| Sponsoring Party: | MO PSC |
| Type of Exhibit: | Surrebuttal Testimony |
| Case No.: | ER-2005-0436 |
| Date Testimony Prepared: | December 13, 2005 |

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY OPERATIONS DIVISION**

# SURREBUTTAL TESTIMONY

**OF**

**DAVID W. ELLIOTT**

**AQUILA, INC. D/B/A AQUILA NETWORKS-MPS**
**AND AQUILA NETWORKS L&P**

**CASE NO. ER-2005-0436**

**Jefferson City, Missouri**
**December, 2005**

****Denotes Highly Confidential Information****

**NP**

## BEFORE THE PUBLIC SERVICE COMMISSION

## OF THE STATE OF MISSOURI

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| In the Matter of Aquila, Inc. d/b/a Aquila Networks-MPS and Aquila Networks-L&P, for Authority to File Increasing Electric Rates For the Service Provided to Customers in the Aquila Networks-MPS and Aquila Networks-L&P Area. | ) ) ) ) | Case No. ER-2005-0436 |

### AFFIDAVIT OF DAVID W. ELLIOTT

**STATE OF MISSOURI** )
) **ss**
**COUNTY OF COLE** )

David W. Elliott, of lawful age, on his oath states: that he has participated in the preparation of the following Surrebuttal Testimony in question and answer form, consisting of 7 pages of Surrebuttal Testimony to be presented in the above case, that the answers in the following Surrebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

David W. Elliott

Subscribed and sworn to before me this 9th day of December, 2005.

ROSEMARIE RIEDL
MY COMMISSION EXPIRES
June 1, 2009
NOTARY SEAL
#05509538
COLE COUNTY
NOTARY PUBLIC, STATE OF MISSOURI

Notary Public

My commission expires June 1, 2009

# TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... 2

PRODUCTION COST MODEL RESULTS ..... 3

SPOT PURCHASED POWER ..... 3

**SURREBUTTAL TESTIMONY**

**OF**

**DAVID W. ELLIOTT**

**AQUILA, INC. D/B/A AQUILA NETWORKS-MPS**
**AND AQUILA NETWORKS-L&P**

**CASE NO. ER-2005-0436**

Q. Please state your name.

A. David W. Elliott.

Q. Are you the same David W. Elliott who has previously filed Direct and Rebuttal testimony in this case?

A. Yes, I am.

Q. What is the purpose of your Surrebuttal testimony?

A. The purpose of my Surrebuttal testimony is to provide the Staff's revised production cost simulation results reflecting two changes made by the Staff, and to address the criticisms of Staff's purchased power pricing methodology raised in the Rebuttal testimony filed by Aquila, Inc (Aquila) witness Andrew Korte. These criticisms are:

1. The written procedures pertain to the use of Lotus123 software, while the Staff used Excel software.

2. Staff's methodology for developing spot purchased power prices and availability is inaccurate for the following reasons:

a) It does not account for the relationship between natural gas price and spot purchased power prices; therefore, it produces unreasonably low prices for the spot market.

b) It creates a bias by overestimating the number of high price outliers and underestimating the number of low outliers before calculating the distribution of prices.

c) It produced a spot purchased power price curve that is not credible as shown by the fact that Staff's maximum spot power price is higher in December than in July.

## EXECUTIVE SUMMARY

Q. Please provide an executive summary of your testimony.

A. This testimony identifies the updated production cost simulation results due to a change in the hourly system load and a change in coal prices, and addresses Aquila's criticisms of the spot purchased power price methodology used by Staff. The hourly load change and the coal price change results in a revised electric joint fuel cost of ** _____ ** which is an increase of ** _____ ** over the production cost simulation results for my Rebuttal testimony, and a revised steam sales cost of ** _____ ** which is a decrease of ** _____ **.

This testimony also responds to the Rebuttal testimony of Aquila witness Andrew Korte in regard to Staff's spot purchased power price methodology. Contrary to the assertion of Mr. Korte, the Staff's methodology does not have any bias in determining high and low outliers, as the same method is used to identify both the high and low outliers. Staff's July prices are higher than the December prices because they are based on the weighted average prices at which Aquila's actual purchases were made during those months. Staff relies on an analysis of actual hourly spot power prices and availability in order to calculate the spot purchased power prices to be used in the fuel model.



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## PRODUCTION COST MODEL RESULTS

Q. What are the results of the revised production cost simulation?

A. The results of the revised electric and steam production cost simulations are shown in Schedule 1 attached to my Surrebuttal testimony. These results indicate that the appropriate level of annual fuel and purchased power cost for Aquila, Inc. (Aquila) is ** _____ ** for electric joint dispatch and ** _____ ** for steam sales.

Q. What caused the change from the fuel cost appearing in your rebuttal testimony?

A. There are two reasons. A revision to the hourly system load is one of the reasons for this change. Staff witness Shawn E. Lange's Surrebuttal testimony explains this change. The other reason for this change is a revision to the coal prices, Staff witness Graham A. Vesely's Surrebuttal testimony explains this change.

## SPOT PURCHASED POWER

Q. Please discuss Aquila's concern with the spreadsheet software used for the calculation of the spot purchased power prices.

A. Aquila witness Korte addresses the fact that Staff's written procedures for calculating spot purchased power prices, which Mr Korte labels a policy paper, describe using a Lotus123 spreadsheet, and that Staff actually used an Excel spreadsheet. He states "The method described in the policy paper was developed using different programming software than either the Staff or Company now uses. The policy paper method describes using Lotus123 as the software to calculate the averages." (Korte Rebuttal testimony page 9, lines 1 through 3).

Q. What is your response to this?



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A. Staff did use Lotus123 to develop the methodology, and to create a spreadsheet used to calculate the spot purchased power prices. After the policy paper was written, Staff was required to switch from Lotus123 to Excel, as the Information Services Department no longer supported Lotus123. The Staff has not rewritten the policy paper, as nothing has changed in the methodology or procedures and the formulas used to calculate the spot purchased power prices in the Excel spreadsheet are the same as those used in the Lotus123 spreadsheet. At the time the conversion was done, the Staff did verify that the results from the Excel spreadsheet matched the results of the Lotus123 spreadsheet.

Q. Please discuss the concern raised by Aquila regarding the fact that Staff doesn't account for the strong correlation between natural gas prices and the spot purchased power prices.

A. Aquila witness Korte states "The major flaws with the staff method are a) no correlation with natural gas market prices ….". (Korte Rebuttal testimony page 9, lines 11 through 12.) He indicates that there is a "strong" correlation between power and natural gas prices in their respective markets (Korte Rebuttal testimony page 9, lines 20 through 23).

Q. Does Staff believe there is a "strong" correlation between natural gas prices and spot purchased power prices?

A. Staff believes that there is some degree of correlation between annual average purchased power costs and the level of natural gas prices. However, Staff also believes that the price and availability of spot market energy is dependent on a number of other variables, such as the generating units available, the transmission system availability, and the generation costs for not only neighboring utilities but also utilities in

the region. Aquila attempts to model all of these, but varies only one of them, gas prices, in the course of determining forecasted purchased power prices.

Q. Did Mr. Korte provide any support for his assertion that there is a strong correlation between natural gas prices and spot purchased power prices?

A. I could find no such support for his statement in his testimony. I have since submitted a data request for any documentation that would support Aquila's contention that natural gas and spot purchased power prices are strongly correlated.

Q. Please discuss the concern raised by Mr Korte regarding Staff's method of identifying price outliers.

A. Mr. Korte states "The most glaring source of bias comes from the appearance that the method over-estimates the number of high outlier data points, discarding valid information while under-estimating low outliers." (Korte Rebuttal testimony page 10, lines 21 through 23). Actually, the Staff uses the same statistical method (the mean plus or minus 2.39 times the standard deviation) to identify both the low outliers and the high outliers. By using the same statistical method Staff ensures that there is no bias in the identification of either the high or the low outliers. Once the outlier prices are identified they are adjusted either down to the maximum or up to the minimum; they are not discarded.

Q. Please discuss the concern raised by Aquila regarding Staff's December and July spot prices.

A. Mr. Korte states "For example, the peak price for power in December is 5.9% higher than the peak price in July. Most market observers would assume that for the Midwest, July prices should be higher than December prices." (Korte Rebuttal testimony page 11, lines 12 through 14). Regardless of what "most market observers

would assume", the actual data used by Staff, which was provided by Aquila, indicates that December and July prices do not always behave that way. As Aquila's actual data shows, on December 22, 2004 at hour 1700 Aquila purchased ** ___ ** MWH at a price of ** ____ **/MWh. By comparison, the highest price Aquila paid for spot power in July was on July 16, 2004 at hour 2200, when it purchased ** _ ** MWH at a price of ** ____ **/MWh.

Q. After your review of Aquila's forecasted spot purchased power prices, what did you find?

A. I found that Aquila's forecasted spot purchased power prices yielded the same type of supposedly anomalous result I just discussed. In this instance, we are talking about comparing February prices to July prices. Spefically, Aquila's forecasted February peak was 3.6% higher than its forecasted July price. In fact, Aquila had four hourly prices in February (** _____ **) that were higher than the peak hourly price in July (** _____ **). (See Schedule 2 attached to my surrebuttal testimony.)

Q. Did you make a comparison of spot purchased power prices used in both Staff's and Aquila's model?

A. Yes. I reviewed the spot purchased power prices Aquila used in its model and graphed these model input prices along with the actual prices and Staff's input prices. This price duration graph appears in Schedule 3, attached to this testimony. The graph clearly shows that there is a marked difference between Staff's prices based on historical prices and Aquila's five levels of forecasted prices.



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Q. Having addressed the criticisms in Mr. Korte's Rebuttal testimony, what do you consider to be the fundamental difference between Aquila's spot purchased power pricing methodology and Staff's methodology?

A. I believe that the fundamental difference is that Aquila calculates a price based on a projected natural gas price as the primary driver, whereas Staff uses Aquila's prices of actual power purchased and sold to develop its pricing. Staff uses the actual spot market prices and the actual megawatt-hours purchased to determine its model inputs because, by definition, the actual data takes into consideration all factors that would affect the prices, as opposed to attempting to model how a forecast of one single factor might affect the spot market prices in the future.

Q. Does this conclude your Surrebuttal testimony?

A. Yes, it does.

# SCHEDULES

# 1, 2 AND 3

# ARE

# HIGHLY CONFIDENTIAL

# IN

# THEIR

# ENTIRETY