Exhibit No.:
Issues: Environmental Planning
Witness: Block M. Andrews
Sponsoring Party: Aquila Networks-MPS & L&P
Case No.: ER-

Before the Public Service Commission
of the State of Missouri

Direct Testimony

of

Block M. Andrews

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DIRECT TESTIMONY OF BLOCK M. ANDREWS
ON BEHALF OF AQUILA, INC.
D/B/A AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P
CASE NO. ER-_____

BEFORE THE PUBLIC SERVICE COMMISSION
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DIRECT TESTIMONY OF BLOCK M. ANDREWS
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D/B/A AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P
CASE NO. ER-_____

Q. Please state your name and business address.

A. My name is Block M. Andrews. My business address is 20 W. 9th Street, Kansas City, Missouri, 64105.

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

A. I am employed by Aquila, Inc. ("Aquila") as Director of Environmental Services.

Q. What are your responsibilities in this role?

A. My primary responsibility is compliance with environmental rules and regulations for all of Aquila's operations.

Q. Please describe your educational background and professional experience.

A. I graduated from the University of Denver in 1984 with a B.S. in Mechanical Engineering and from the University of Illinois in 1989 with a M.S. in Atmospheric Sciences. My working career has included three years as an Aerospace Engineer with Martin Marietta; thirteen years as an Environmental Engineer with Burns and McDonnell and the last four years with Aquila. During my tenure with Aquila, I have worked on environmental compliance issues.

EXECUTIVE SUMMARY

Q. What is the purpose of your testimony in this case before the Missouri Public Service Commission ("Commission")?

A. I will describe the regulatory requirements for the Environmental Protection Agency's Acid Rain Program sulfur dioxide ("SO2") reduction requirements. This testimony will describe how Aquila is complying with this regulation while maintaining the lowest cost compliance alternative which, at this time, dictates buying SO2 allowances.

DESCRIPTION OF ACID RAIN PROGRAM

Q. What is the Acid Rain Program?

A. The Acid Rain Program was a response to increased acidification of soils and lakes primarily in the eastern United States. It is believed that power plant sulfur dioxide and nitrogen oxides emissions were contributing to increased acidification of lakes and soil. The 1990 Clean Air Act Amendments was passed which included provisions to reduce the acidification. Congress delegated the Environmental Protection Agency ("EPA") to implement the Acid Rain Program. The program set a cap and trade system on nationwide sulfur dioxide emissions. The cap was set to achieve a 10 million ton reduction from 1980 SO2 emission levels. Under the cap, most electric utility's units greater than 25 MW were allocated allowances. The allowances were based on the average capacity factor, measured by heat input, of the units from 1985 to 1987 times an emissions factor of 1.2 lb/million Btu for coal-fired units. Similar sized units that had high capacity factors during this time frame, were given more allowances than units with a lower capacity factors.

Q. How did the SO2 reduction requirements of the Acid Rain Program affect Aquila?

A. The table below describes the average capacity factor for 1985 to 1987 and compares this to the current capacity factor.

Table I **Capacity factors**		
Unit	**1985 to 1987 average**	**Current**
Sibley	32%	67%
Lake Road	35%	81%
Iatan*	73%	85%
Jeffrey Energy Center*	86%	81%

**Iatan/JEC 1985-1987 based on EIA and EPA data and fuel sulfur estimates*

Table I shows that Sibley and Lake Road generating units have seen considerable increases in capacity factor while Iatan has had a modest increase and Jeffrey Energy Center has had a slight reduction. Because of the significant capacity increase at Sibley and Lake Road, Aquila is not allocated enough allowances to cover the emissions generated from its facilities. Also, Aquila has a power purchase contract with Gerald Gentleman station that requires Aquila to supply SO2 allowances for the power purchased at this plant. Unlike Aquila's ownership position in Iatan and Jeffrey that allows allocations, Aquila does not have any allowances from Gerald Gentleman's power purchase contract. Aquila's power purchase contract with Gerald Gentleman requires Aquila to buy approximately 2500 allowances per year.

AQUILA'S ACID RAIN COMPLIANCE PLAN

Q. How does Aquila comply with the SO2 reduction requirements of the Acid Rain regulations?

A. The Acid Rain Program allows a facility to meet its cap by either controlling emission

levels below the cap or to buy allowances from other sources, such as utilities that have excess allowances. Aquila has bought allowances to comply with the program.

Q. Has Aquila considered control technologies and if so, why has it not installed controls?

A. Aquila has considered placing either a dry or wet scrubber on some or all of its units. Based on Sargent and Lundy's May 2006 study, the least cost sulfur dioxide control will be around $3200/ton. Aquila's least cost alternative has been to buy allowances, which have ranged in price from around $200/ton from the mid 1990's to the end of December 2003 to about $1650/ton at the end of December, 2005.

Q. Given the recent volatility in allowance prices, does Aquila have a plan to manage allowance costs?

A. Yes. The Environmental Services Group meets with the Fuel Supply and Power Supply Groups at least once a year to develop a plan. The most recent plan (Schedule BMA-1) was developed in the spring of 2006. The sulfur dioxide plan is set up to have between one and three years of allowances. Based on Aquila's current fuel composition, Aquila currently has enough allowances to cover projected emissions in 2006, 2007 and 2008 (Schedule BMA-2). Aquila believes this strategy is flexible and will not require Aquila to buy allowances in desperation, allows Aquila to look for low cost buy-in for allowances, and it gives Aquila some time to install a scrubber if it appears long term allowance prices are going to be higher than control costs.

Q. Are there any future regulations that may impact Aquila's allowance purchasing plan or pollution control strategy?

A. Yes. The Clean Air Interstate Rule ("CAIR"), Clean Air Mercury Rule ("CAMR") and the Clean Air Visibility Rule ("CAVR") are all directed at emissions from coal-fired

boilers. CAIR regulates sulfur dioxide and nitrogen dioxide emissions. For sulfur dioxide, CAIR is very similar to the Acid Rain Program except the emissions cap has been reduced. For nitrogen oxides, CAIR establishes a cap and trade program for seasonal and annual nitrogen oxide emissions. This program is similar to the Acid Rain program except CAIR covers nitrogen oxides. CAMR is similar to CAIR except CAMR regulates mercury emissions. CAVR is a program designed to improve visibility in pristine areas. It is believe that sulfur dioxide and nitrogen oxide emissions affect visibility. CAVR requires units built between 1962 and 1977 to be evaluated and controlled if air dispersion modeling shows the unit(s) will have significant visibility impacts in pristine areas. The nearest pristine visibility area to our operations is Hercules Glade in southwest Missouri, which is over 200 miles from Aquila's plants. CAVR is not expected to have a significant impact on Aquila's operations, however, Aquila will not definitively know the results until the modeling is completed.

Q. How do CAIR, CAMR and CAVR affect Aquila's control or allowance plan?

A. The Sargent and Lundy study addresses expected compliance costs for CAIR and CAMR. For sulfur dioxide, the study results indicate that the least cost of control is about $3200/ton. Historically, the highest daily sulfur dioxide allowance price has been about ½ of the control cost. The highest average annual allowance price was in 2005 and was $929/ton. At this time, Aquila believes its least cost plan is to buy sulfur dioxide allowances. For nitrogen oxides, some controls will be installed on Aquila's boilers. Aquila is currently finalizing its plans for nitrogen oxide controls. For mercury, Aquila needs more emissions information prior to making a decision on controls. Therefore, Aquila is in the process of putting on Continuous Emissions Monitors ("CEMs") on its

Sibley unit to gather the needed data.

Q. Does this conclude your direct testimony?

A. Yes.

SO_2 ALLOWANCE PURCHASE PLAN
2006

1.0 Purpose

Aquila's Sibley and Lake Road Generating Stations have emissions higher than the number of SO_2 allowances allocated to the facilities. Relative to plant generation, both facilities have current capacity factors higher than during the 1985-1987 timeline EPA used as a baseline to allocate allowances, therefore the plant emissions exceed the allocated allowances. Aquila also has partial ownership of the Jeffrey Energy Center (majority owned and operated by Westar) and the Iatan Generating Station (majority owned and operated by KCPL). Both of those facilities will likely be short of SO_2 allowances in 2006 and are projected short in future years. Aquila also has a purchase power agreement for the NPPD Gerald Gentleman Station that requires Aquila to purchase allowances to cover emissions generated from the power purchased by Aquila.

Until 2004 the SO_2 allowance market had been fairly stable with low volatility. The SO_2 allowance price on December 30, 2003 was $216/allowance. As of March 10, 2006 the allowance price was $870/allowance and in December of 2005 the price for allowances exceeded $1,650/allowance. Underlying regulatory fundamentals, increased scrubber installation costs, increased demand brought on by Powder River Basin coal delivery issues and reduced supply of available SO_2 allowances are likely driving the allowance price increase and introducing higher volatility. For these reasons, Aquila has developed the current allowance purchase plan.

2.0 Previous Plan

In 2005 Aquila increased the number of allowances purchased to maintain two year worth of allowances in reserve. In 2005 – 14,780 current net vintage allowances were received. In addition in the first quarter of 2006 future year allowances were traded for current year vintage allowances adding another 12,600 current year allowances to the allowance pool. The average price paid per allowance in 2005 was $703.27. For Jeffrey Energy Center, Aquila and Westar entered into an agreement where Westar would purchase any required SO_2 allowances and bill them back to Aquila as part of the normal operating expense. For Iatan, prior to 2003, they had enough allowances to cover their emissions however in 2003 Iatan began burning a coal with higher sulfur content. In 2005 the Iatan annual allowance shortage was equal to 521 allowances. Iatan's expected allowance shortages were purchased in 2005 and transferred into the Lake Road account and then into the Iatan account in 2006.

3.0 Changes Since 2005 Plan

Several items have changed since the 2005 allowance purchase plan was made. One of the major changes since the 2005 plan was written was the partial completion of a draft study to determine the cost on a $/ton removed basis for adding controls to reduce SO2 emissions on Aquila owned and operated units. The estimated cost for removal of SO_2 according to the study performed by Sargent & Lundy was between $2,868/ton to $3,580/ton. Another significant change has been the commitment to place scrubbers on Iatan 1. Placing scrubbers on Iatan 1 will make Iatan 1 a net generator of SO_2 allowances. Most of the allowances generated on Iatan 1 will be utilized to cover allowance needs for Iatan 2. With both units being controlled by scrubbers at Iatan, additional SO_2 allowances will likely be generated which Aquila will have ownership rights. Another change has been the increased volatility of the SO_2 allowance market. The volatility has been both upward and downward. In mid-December 2005, the price for SO_2 allowances exceeded $1,600/allowance. The price in March 2006 has dropped to below $900/allowance.

Several factors have been discussed in trade publications concerning the causes of the increased volatility in SO_2 allowance prices. The major issues identified are reduced supply of allowances, increased cost and time required to install scrubbers, reduced availability of Powder River Basin coal and more utilities committing to installing scrubbers.

Several utilities, such as Aquila, received enough allowances during Phase I of Acid Rain (1995-1999) to accumulate extra allowances each year. Aquila utilized the extra allowances they accumulated in Phase I in the first year of Phase II (2000). Other utilities have continued using their extra Phase I allowances but the pool is now getting smaller causing a decrease in the supply of allowances.

The capital costs for scrubbers were routinely estimated at approximately $175/kw however in 2004 American Electric Power's scrubber capital cost for the Cardinal Power Plant was $333/kw. For utilities that are burning high sulfur coal the cost/ton of SO_2 removed for those units are typically lower than the cost of SO_2 allowances even when they were selling in the $600/allowance range. The allowance price rising above some utilities costs for controls caused them to move towards installing scrubbers. In addition, the Clean Air Interstate Rule (CAIR) reduces the value of allowances by 50% starting in 2010 and 65% in 2015 for States impacted by the Federal regulation, increasing the motivation to install scrubbers. The increased supply of scrubbers results in a decrease in demand for allowances causing the price to drop. The lower price of allowances has caused some utilities to reconsider installing scrubbers and reenter the market to buy allowances. These two opposing actions are likely a contributing factor to the current allowance price volatility.

Another issue that has increased volatility in the price of SO_2 allowances is uncertainty related to future fuel supplies. Rail line maintenance resulted in less powder river basin (PRB) coal being available and resulted in some utilities burning additional higher sulfur coals to make up for the lack of available PRB coal. The burning of additional high sulfur coal resulted in increased allowance use for the industry as a whole and therefore increased demand and price for SO_2 allowances. The reduced supply of PRB was considered a major factor in the new record high cost of allowances in December, 2005. In addition to the PRB supply issues last year, Aquila experienced some issues with the high BTU/ low sulfur blend coal not being available resulting in additional utilization of Illinois coal. As a result of burning the Illinois coal, Sibley utilized approximately 1,000 additional allowances in 2005 than normal.

Another major issue affecting allowance price volatility is the fact that several large utilities have committed to installing scrubbers and in at least one case commented the capital for installing the scrubbers would come from selling off of SO_2 allowances. When utilities make this type of an announcement it doubles the impact on the price of allowances. The installation of scrubbers means a reduced demand for allowances and selling the allowances results in an increase in supply. The last time such an announcement was made the result was a $500 drop in the price of allowances.

Another issue affecting SO_2 allowance price volatility is the increased time to install a SO_2 scrubber. During a recent meeting with Babcock and Wilcox, we were informed the time to install a scrubber has increased to approximately 3 years due to the increased demand for scrubbers. Several utilities planned on a 2 year time period that was previously considered standard. Now with a 3 year time period, some utilities have returned to purchasing allowances and increasing the demand and volatility.

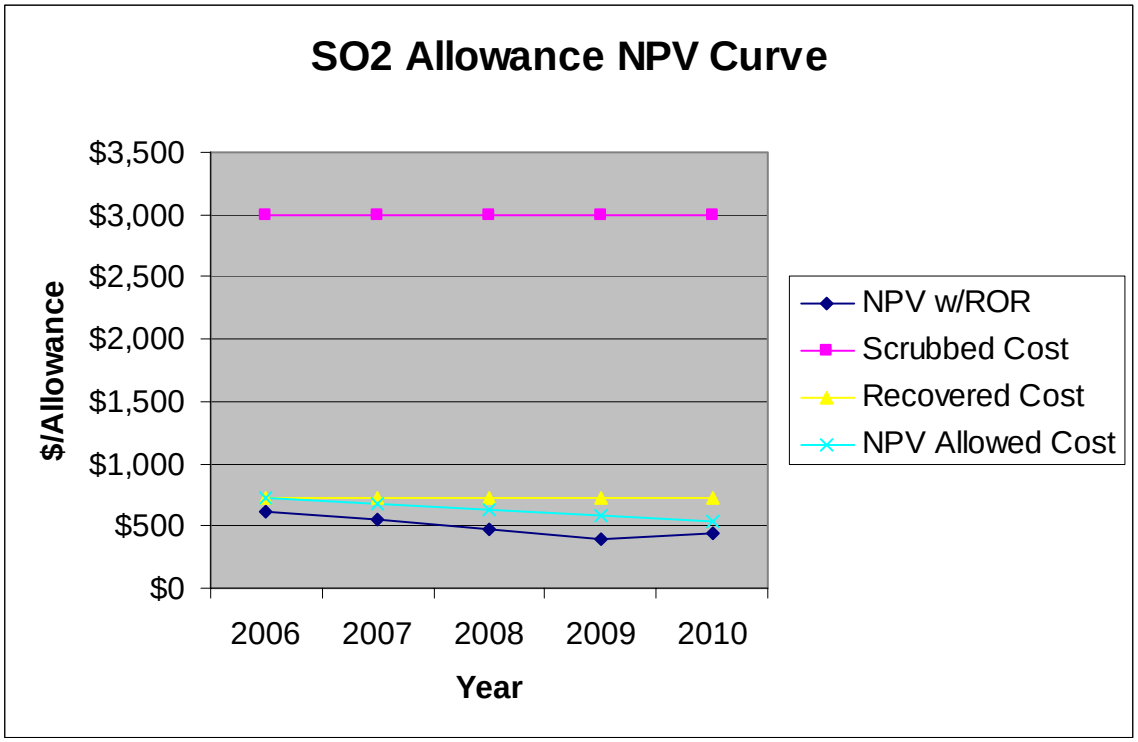
4.0 Current Plan

Currently Aquila has acquired enough allowances to cover the projected emissions for 2006, 2007 & 2008. Aquila's current plan is to maintain a minimum of one calendar year and a maximum of three calendar years of banked SO_2 allowances. Aquila currently has three calendar years of banked SO_2 allowances therefore additional allowance purchases are not planned for 2006. .

Historically, Energy Resources and Environmental Services have monitored the price of SO_2 allowances in order to identify buying signals by comparing multi day averages. This method has been effective however given the increased volatility of the allowance market a modification will be made and additional documentation provided for future allowance purchases. The following will be the strategy to be utilized for future SO_2 allowance purchases.

Environmental Services and Energy Resources will utilize allowance prices from Argus Air Daily or other reputable publicly available sources to determine the net present value of allowances utilizing Aquila's current cost of capital as provided by the CFO office and current rate of return as provided by Regulatory Services. This value will be graphed and compared to the cost of controls. As long as the price is below the costs of controls and at or below Aquila's recovery costs, three years worth of banked SO_2 allowances will be maintained. If the price of SO_2 allowances is above the recovery costs then other market conditions such as changes in regulatory requirements or quantity of planned control technology installations will be utilized to determine the appropriate action concerning purchasing additional SO_2 allowances, but at no time will the balance of allowances be allowed to drop below one year worth of banked allowances. In order to further reduce market risks, the quantity purchased shall not exceed 2,500 allowances unless approved by the Vice President of Generation/Energy Resources. The decision on when to complete the actual purchase of the SO_2 allowances will be determined by graphing the daily allowance prices. When the price curve has bottomed out and is recovering further allowance purchases will be considered.

The followings is an example of the graph that will be utilized to determine the appropriate action concerning purchasing of SO_2 allowances.



Aquila Missouri Operations
Estimated SO2 allowance costs for 2006 - 2008

	2006	**2007**	**2008**
SO2 Allowances Needed	28,030	28,030	28,030
Free allowances from EPA	16,780	16,780	16,780
Allowance shortage	11,250	11,250	11,250
Purchase Price	$8,275,250	$8,306,500	$8,339,300
Average Allowance Price	$735.58	$738.36	$741.27

Schedule BMA-2

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Aquila, Inc. d/b/a Aquila Networks-MPS and Aquila Networks-L&P, for authority to file tariffs increasing electric rates for the service provided to customers in the Aquila Networks-MPS and Aquila Networks-L&P area	))))))	Case No. ER-_____

County of Jackson)
) ss
State of Missouri)

AFFIDAVIT OF BLOCK M. ANDREWS

Block M. Andrews, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Direct Testimony of Block M. Andrews;" that said testimony was prepared by him and under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

Block M Andrews
Block M. Andrews

Subscribed and sworn to before me this 3rd day of July, 2006.

Terry D. Lutes
Notary Public
Terry D. Lutes

My Commission expires:

8-20-2008

Notary Public Notary Seal State of Missouri

TERRY D. LUTES
Jackson County
My Commission Expires
August 20, 2008