Exhibit No.:
Witness: Sharon Hennings
Type of Exhibit: Direct Testimony
Issue: Fuel
Sponsoring Party: Federal Executive Agencies
Sedalia Industrial Energy Users' Association
St. Joe Industrial Group
Case No.: ER-2005-0436

Before the Public Service Commission of the State of Missouri

In the Matter of the Tariff Filing of Aquila, Inc., to Implement a General Rate Increase for Retail Electric Service Provided to Customers in its MPS and L&P Missouri Service Areas.	))))	Case No. ER-2005-0436

Direct Testimony and Schedules of

Sharon Hennings

On behalf of

Federal Executive Agencies
Sedalia Industrial Energy Users' Association
St. Joe Industrial Group

Project 8415
October 14, 2005

BRUBAKER & ASSOCIATES, INC.
ST. LOUIS, MO 63141-2000

Before the Public Service Commission
of the State of Missouri

In the Matter of the Tariff Filing of Aquila, Inc., to Implement a General Rate Increase for Retail Electric Service Provided to Customers in its MPS and L&P Missouri Service Areas.	))))	Case No. ER-2005-0436

STATE OF WISCONSIN)
) **SS**
CITY OF DANE)

Affidavit of Sharon Hennings

Sharon Hennings, being first duly sworn, on his oath states:

1. My name is Sharon Hennings. I am an independent consultant under contract with Brubaker & Associates, Inc. I reside at 914 Birch Haven Circle, Monona, Wisconsin, 53716. We have been retained by the Federal Executive Agencies, the Sedalia Industrial Energy Users' Association and the St. Joe Industrial Group in this proceeding on their behalf.

2. Attached hereto and made a part hereof for all purposes is my direct testimony and one or more schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. ER-2005-0436.

3. I hereby swear and affirm that the testimony and schedules are true and correct and that they show the matters and things they purport to show.

Sharon Hennings

Subscribed and sworn to before this 13th day of October 2005.

Notary Public

My Commission Expires April 1, 2007.

TERRY BRUNDISH
NOTARY PUBLIC
STATE OF WISCONSIN

Before the Public Service Commission
of the State of Missouri

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Direct Testimony of Sharon Hennings

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A My name is Sharon K. Hennings. My business address is 914 Birch Haven Circle, Monona, Wisconsin, 53716.

Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A I received a BBA Degree with a Major in Accounting from the University of Wisconsin – Madison. I am a Certified Public Accountant, licensed in Wisconsin. I worked as an auditor at the Public Service Commission of Wisconsin from January 1982 to February 2001. During the last 16 years of my employment with the Commission, I was team leader for electric fuel cost audits.

Since April 2001, I have worked for BAI on various projects involving fuel costs and electric utilities, and I have testified on numerous occasions before the Wisconsin Public Service Commission in rate cases and special proceedings to set fuel cost rate surcharges and credits. In 2001 and 2002, I was the Wisconsin Industrial Energy Group's representative in a collaborative process that rewrote Wisconsin's Administrative Code for ratemaking treatment for fuel costs of Wisconsin's investor-owned electric utilities. I am currently participating in my third

rate case before the Nova Scotia Utility and Review Board. I have also written reports and provided analysis for projects in Alberta, Canada and Georgia.

Q ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A I am testifying on behalf of Federal Executive Agencies, The Sedalia Industrial Energy Users Association and the St. Joe Industrial Group.

Q ARE YOU FAMILIAR WITH THE TESTIMONY OF AQUILA WITNESS BOEHM WITH RESPECT TO THE ACQUISITION OF COAL?

A Yes. I have reviewed the direct testimony of Mr. Boehm, the relevant direct testimony of other witnesses, workpapers and the responses to numerous data requests.

Q WHAT ISSUES WILL YOU BE ADDRESSING IN TESTIMONY FOR THIS CASE?

A There are three issues. The first deals with coal purchases, the second deals with forecasting the use of tire derived fuel in the 2006 forecast, and the third deals with the forecast of a 2006 generation levels for MPS's steam generating plants.

Coal Purchases

Q WHAT IS THE ISSUE WITH RESPECT TO COAL PURCHASES IN THIS PROCEEDING?

A Essentially, Aquila blends low sulfur western coal with higher Btu coal in its Sibley and Lake Road generating stations. Aquila entered into a contract with C.W. Mining Co. to provide high Btu coal for these units. The contract was for deliveries from 2004 through 2006 with an option to extend.

Mr. Boehm notes that prior to the commencement of shipments, C.W. Mining notified Aquila that a labor dispute would affect performance under the contract and to expect reduced shipments. Aquila has received less than 30% of the contracted coal. Aquila further reports that as a result of the shortfalls, it has replaced coal that otherwise would have been expected to cost less than $20 per ton with coal from alternative sources that cost as much as twice that amount. Aquila is proposing to pass these higher costs through to its customers, both steam and electric, in this case.

Petroleum Coke

Q WHAT IS PETROLEUM COKE?

A Petroleum coke (pet coke) is a by-product of upgrading the heaviest fractions of crude oil into more valuable lighter oil products in coking furnaces. About 65% of the petroleum coke produced in the United States is used as fuel.

Q HOW IS PETROLEUM COKE USED AS FUEL IN THE GENERATION OF ELECTRICITY?

A Petroleum coke is used as a Btu booster in a blend with coal that has low sulfur and low Btu content, such as the Powder River Basin (PRB) coal used at Sibley, Lake Road, and other generation units. Pet coke enables utilities to meet emissions standards using generating units that were originally designed to burn high sulfur, high or moderate Btu coal. It is usually used in a blend with a lower priced coal with low sulfur and Btu content. Pet coke may be purchased in a range of sulfur contents between 3% and 6%, with lower prices for the higher ranges of sulfur content. Its heat content is typically 14,000 Btu per pound.

In the Midwestern United States, PRB coal is the coal most often used with petroleum coke. PRB coal has a typical sulfur content of 0.5% and heat content of 8,200 to 8,900 Btu. A blend of 10% pet coke at 14,000 Btu and 90% PRB coal at 8,800 Btu will produce an average a heat content of 9,320 Btu per pound. If coal with a heat content of 11,500 Btu is used in a blend with 8,800 Btu PRB coal, a 20% blend of the higher Btu coal will be required to produce the same average 9,320 Btu heat content.

Q WHAT IS THE COST OF PETROLEUM COKE?

A Please see Schedule 1 attached to my testimony. This schedule is a summary of the petroleum coke purchases that were recorded in 2004 and 2005 in the Federal Regulatory Energy Commission (FERC) Form 423 Reports, "Cost and Quality of Fuels for Electric Plants." The Form 423 Reports collect data on the cost and quality of fossil fuels delivered to electric generating plants. The forms are completed by each jurisdictional electric power producer for each of its electric generating plants with total steam turbine electric generating capacity or combined-cycle generating capacity of 50 or more megawatts. Fuel received for use in gas turbine generator or internal combustion units that are not associated with a combined cycle operation is not reported. The forms are required to be filed within 45 days of the end of each reporting month and the data is entered into FERC's database within 90 days of when the filing was received.

According to the FERC Form 423 Reports, United States' utilities purchased 3.38 million tons of petroleum coke in 2004 and 1.25 million tons through May of 2005 as fuel for generation. The average delivered price of the 2004 purchases was $0.88 per MMBtu, $24.67 per ton, for pet coke at a heat content of 14,100 Btu per pound.

The average delivered price for 2005 through May has been $1.32 per MMBtu, $37.18 per ton, for pet coke with a heat content of 14,100 per pound. Most of the petroleum coal purchases in 2005 were identified as being made on the spot market.

Q WHAT IS THE AVERAGE DELIVERED PRICE OF THE COALS THAT AQUILA HAS BEEN BLENDING WITH PRB COAL?

A According to the Form 423 reports, the 2004 average delivered price of Aquila's Uinta Basin purchases of coal of the same quality as that from C.W. Mining contract was $1.66 per MMBtu at Sibley and $1.88 per MMBtu at Lake Road. When averaged with its C.W. Mining contract purchases, the delivered price is $1.60 per MMBtu at both Sibley and Lake Road. The 2005 average delivered price for similar coal was $2.18 at Sibley and $1.93 at Lake Road. Aquila also used a small amount of Illinois Basin coal with a higher sulfur content than the Uinta Basin coal it has using for blends. The Illinois Basin coal that Aquila used averaged $1.73 per MMBtu during 2005.

Q HOW MUCH COULD AQUILA HAVE SAVED BY SWITCHING TO A BLEND WITH PETROLEUM COKE DURING 2004?

A In 2004, Aquila paid an average of $1.60 per MMBtu for 9,397,000 MMBtu of Uinta Basin coal, including both the C.W. Mining coal and the replacements for that coal. It could have replaced that coal with pet coke at about $0.88 per MMBtu, for a savings of nearly $6.8 million, less any additional cost of sulfur credits. No calculations for the additional cost of the sulfur credits have been made for my analysis because the sulfur dioxide credits are based on plant emissions, not on the content of the fuel. The precipitators and other emission control equipment can modify the emissions.

Sulfur emissions are unique to different generating plants although the plants may use the same coal.

Q FOR THE TEST YEAR IN THIS PROCEEDING, WHAT WOULD BE A REASONABLE PRICE TO USE FOR PETROLEUM COKE?

A A reasonable price would be between $1.00 and $1.50 per MMBtu, or $28 to $42 per ton delivered to Aquila's plants. This is the range of prices for Midwestern spot market purchases of petroleum coke most recently reported in the preliminary FERC Form 423 for July 2005. With the damage to the refineries on the Gulf Coast, there is now a temporary premium to the cost of petroleum coke. Only short-term purchases of petroleum coke should be undertaken in the current market. No term contracts should be signed until the Gulf Coast refineries are back on line and the prices of petroleum coke begins moderating.

If an assumption is made that Aquila should have investigated and purchased petroleum coke under a long-term contract a year or two ago, the reasonable price range for petroleum coke would be $0.50 per MMBtu less expensive, resulting in a price of $0.75 to $1.00 per MMBtu.

Q DO YOU KNOW HOW MUCH THIS WOULD CHANGE THE TEST YEAR FUEL COST?

A No. I have provided this price information to Mr. Brubaker, and understand that he will make this calculation.

Q HAS AQUILA EVER USED PETROLEUM COKE IN ITS COAL BLENDING OPERATION?

A Yes. According to its responses to SIE-0001 and 0002, Aquila burned petroleum coke at its Sibley Generating Station prior to 2001, but has not used it since then and does not plan to use it during the foreseeable future. The reason Aquila gives for ceasing use of petroleum coke is that SO2 credit prices increased, making it uneconomical to burn.

Q DID AQUILA PERFORM ANY STUDIES TO DETERMINE THE OPTIMUM-PRICE BLEND OF COALS AND PETROLEUM COKE TO PURCHASE?

A According to SIE-0005, Aquila has performed no such studies for at least the past three years.

Q IN YOUR OPINION, SHOULD AQUILA HAVE BEEN STUDYING THE USE OF PETROLEUM COKE AS A SUBSTITUTE FOR HIGH BTU WESTERN COAL IN ITS COAL BLENDS AT SIBLEY AND LAKE ROAD?

A Yes. It is apparent from Schedule 1 that many other utilities are doing so, and the economics of petroleum coke compared to the high Btu coals that Aquila has recently substituted for the non-performing C.W. Mining contract clearly indicate that it would be a lower cost solution.

Q WHAT MEASURES COULD HELP AQUILA OPTIMIZE ITS FUEL PURCHASES?

A First, Aquila should become aware of all the options that are available for reducing its fuel costs. It should study the replacement of its high Btu Western coal with petroleum coke and the relative costs of the coal and the sulfur credits that will be

needed, comparing not only different qualities and delivered prices of high Btu coal, but also different qualities and delivered prices of petroleum coke. Second, Aquila should study the possibility of reducing the percentage of high Btu coal in its blends. With the cost of coal increasing, many utilities are reducing the percentage of higher Btu coal in their blend ratios, and sometimes even eliminating that portion of the blend entirely. Third, Aquila should decide whether capital improvements or operational changes can allow it to burn a less expensive blend of coals in its generators.

Tire Derived Fuel

Q YOUR SECOND ISSUE DEALS WITH A 2006 FORECAST THAT INCLUDES TIRE DERIVED FUEL. COULD YOU PLEASE EXPLAIN WHY THIS FUEL SHOULD BE INCLUDED IN THE 2006 FORECAST?

A Tire derived fuel (TDF) has been used as an economic and environmentally responsible fuel in Aquila's Sibley and Lake Road plants ever since 1997. The annual level burned in 2004 was 12,690 tons at Sibley and 1,242 tons at Lake Road, according to SIE-0003. However this same response reveals that Aquila has not included a projection of any TDF in its 2006 forecast.

Q WHAT EFFECT WILL USING TDF IN THE AQUILA FORECAST HAVE ON ITS FORECAST OF FUEL COSTS?

A TDF has a BTU content of 15,000 BTU per pound and a 2005-6 market price of about $30 per ton in the Midwest or a price of $1.00 per MMBtu, delivered. If TDF is included at an annual level of 14,000 tons, it can replace 420,000 MMBtu of high BTU coal, at a spot market price of approximately $2.20 per MMBtu, and a price savings of

$1.20 per MMBtu. Thus, the annual fuel cost savings would be $500,000, of which $450,000 would be applicable to MPS and $50,000 to L&P.

MPS Electric Generation

Q WHAT IS THE ISSUE THAT YOU ARE ADDRESSING REGARDING MPS'S 2006 FORECAST GENERATION LEVELS FOR ITS STEAM GENERATING PLANTS?

A The economic dispatch of MPS's generating plants should incorporate the results of MISO Day 2 dispatch. The MISO system has been dispatching Aquila's plants against the remainder of the generating plants in the MISO system ever since April 2005. I have prepared Schedule 2 that ranks the coal costs of the top 25 coal-fired steam generators in the MISO system from the April 2005 FERC Form 423 Report. According to Schedule 2, Aquila's Sibley plant has the sixth least expensive coal receipts of the 25 MISO plant locations listed.

Q HOW WILL MISO DAY 2 DISPATCH DECISIONS INCREASE SALES FOR RESALE REVENUES AND DECREASE THE AVERAGE COST OF FUEL GENERATION AS COMPARED WITH THE PREVIOUS METHOD OF SYSTEM DISPATCH FOR AQUILA PLANTS ALONE?

A MPS's coal-fired generation will likely be dispatched at higher levels and more often than it was before MISO Day 2 became effective. The relative amount of coal-fired generation dispatched will increase for the low-cost coal utilities within MISO's dispatch area, thereby decreasing the average cost of the generation that the utility will reflect in costs and revenues during the period. The low-cost generation will be dispatched more, and higher cost plants will be idled longer. This effect is only marginally dependent on generating unit efficiency.

A major factor controlling the cost of generating units, especially coal-fired steam generation, is the proximity of the unit to the low-cost coalmines in the Powder River Basin (PRB) in Wyoming. MPS's coal-fired generating plants have lower fuel costs than most of MISO's other generating plants. In the past, Aquila's dispatch of its own generating plants first filled its own requirements and next it competed with higher or lower cost generating plants on other systems. Under MISO Day 2 dispatch, Aquila's generating plants will compete head-to-head with other generating plants in the MISO system, not just for the marginal energy requirements of those systems, but to supply the entire MISO area. MPS's generating plants are very competitive with the other plants in the MISO System, especially those generating plants that burn PRB coal and are located further from the Wyoming coalmines. Many other generating plants in MISO's system burn Eastern coal. Aquila's coal-fired plants are even more competitive with those plants. Eastern coal doubled in price two years ago and continues to cost over $60 per ton. PRB coal went from a price around $6 per ton for the last few years to a price near $9 per ton this summer.

Q WERE THESE DIFFERENCES IN DISPATCH INCORPORATED INTO THE FORECAST?

A If the forecast doesn't incorporate the MISO Day 2 dispatch assumptions and continues to rely on an assumption that MPS's plants will continue to supply its own native requirements and the sales and purchase transactions will be made the same as when Aquila did its own dispatch. Under MISO Day 2, Aquila generating plants will likely be pushed to their maximum potential during 2006. Aquila will receive additional revenues for the production in excess of its own system requirements.

When this happens, AQUILA could pocket the additional revenues that weren't included in its forecast.

Q HOW CAN THIS PROBLEM BE CORRECTED FOR THE 2006 RATE CASE FORECAST?

A The best alternative would be to change the dispatch of MPS's coal-fired generation to reflect the MISO Day 2 dispatch. This may be done by either modeling the dispatch of plants in the entire MISO transmission system of generating plants or by modeling separately from the other MISO plants, but with an assumption that MPS's plants will be dispatched whenever they are available and the additional result will be sold as sales for resale to other MISO utilities. If this is not done and 2006 ratemaking is based on a forecast Aquila system dispatch without the other MISO plants, Aquila will receive windfall profits from the estimated 2006 dispatch of its coal-fired plants.

Q DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A Yes, it does.

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Aquila Rate Case

Petroleum Coke Quantities and Costs on a Delivered Basis
For the 2004 Calander Year and for 2005 Through May
Source of Data: FERC Form 432 Reports

Company	Plant	(000) Tons	BTU/lb.	$/MMBTU	$/Ton
2004 Fuel Data					
Ameren - UE	Sioux	66.24	14,697	$ 0.64	$ 18.93
Empire District Electric Company	Riverton	3.02	14,315	0.93	26.55
IES Utilities, Inc	Sutherland	5.57	14,100	1.09	30.78
JEA	Northside and St Johns River	1,473.09	14,209	0.90	25.52
Lakeland Dept of Elec Wtr Utils	Mcintosh	8.00	14,130	1.36	38.41
Manitowoc Public Utilities	Manitowoc	54.19	13,936	0.71	19.81
Michigan South Central Power	Endicott	0.18	13,948	1.24	34.48
Northern Indiana Public Service	Rollin Schahfer	101.90	14,002	0.95	26.51
Northern States Power	King and Riverside	219.62	14,113	0.43	12.13
Seminole Electric Coop	Seminole	777.97	14,153	1.06	30.01
Southern Illinois Power Coop	Southern Illinois Power Cooperative	73.52	14,110	1.13	31.98
Tampa Electric	Big Bend and Transfer Facility	446.09	13,521	0.73	19.78
Wisconsin Electric Power	Presque Isle	44.25	13,678	0.87	23.70
Wisconsin Power and Light	Nelson Dewey	101.70	13,931	0.64	17.97
2004 Totals and Averages		3,375.34	14,080	$ 0.88	$ 24.67
2005 Fuel Data through May					
JEA	Northside and St Johns River	552.84	14,147	$ 1.33	$ 37.75
Lakeland Dept of Elec Wtr Utils	Mcintosh	33.00	14,045	1.85	51.88
Manitowoc Public Utilities	Manitowoc	12.24	14,284	0.70	20.00
Michigan South Central Power	Endicott	2.90	14,284	1.74	49.59
Northern States Power	King and Riverside	88.56	13,848	0.43	12.00
Seminole Electric Coop	Seminole	345.89	14,201	1.69	47.95
Southern Illinois Power Coop	Southern Illinois Power Cooperative	15.79	14,502	0.95	27.53
Tampa Electric	Big Bend and Transfer Facility	125.39	13,986	1.10	30.69
Wisconsin Electric Power	Presque Isle	19.99	13,948	1.11	30.99
Wisconsin Power and Light	Nelson Dewey	55.74	13,768	0.68	18.59
2005 Totals and Averages YTD through May		1,252.33	14,108	$ 1.32	$ 37.18

Aquila Rate Case

Average Cost of Coal Delivered to MISO Plants
According to the April 2005 FERC Form 423 Reports

Rank	Company Name	Plant Name	Cents per MBTU
1	Ameren - UE	Labadie	86.97
2	Ameren - UE	Rush Island	90.60
3	Interstate Power	Lansing	95.24
4	Wisconsin Electric Power	Pleasant Prairie	95.93
5	Wisconsin Power and Light	Nelson Dewey	97.96
6	Missouri Public Service	Sibley	98.32
7	Lower Colorado River Authority	Fayette	100.03
8	Interstate Power	M. L. Kapp	100.20
9	Indianapolis Power and Light	Petersburg	103.28
10	Ameren - UE	Meramec	103.58
11	Ameren - UE	Sioux	104.46
12	PSI Energy, Inc	Wabash River	107.04
13	Southern Illinois Power Coop	Southern Illinois Power Cooperative	108.74
14	Wisconsin Public Service Corp	Weston 3	110.01
15	Springfield Wtr Lt and Pwr Dept	Lakeside	111.90
16	Hoosier Energy R E C	Merom	112.03
17	Wisconsin Power and Light	Columbia	112.30
18	Wisconsin Public Service Corp	Pulliam	115.39
19	Wisconsin Power and Light	Edgewater	117.83
20	Cincinnati Gas and Electric Co	Zimmer	119.65
21	Wisconsin Electric Power	Oak Creek	119.90
22	Hoosier Energy R E C	Frank E Ratts	120.14
23	Springfield Wtr Lt and Pwr Dept	Dallman	123.00
24	Louisville Gas and Electric	Cane Run	126.62
25	Louisville Gas and Electric	Mill Creek	129.52