Exhibit No.:
Issues: Revenues
Witness: Eric L. Watkins
Sponsoring Party: Aquila Networks-MPS
[redacted]
Case No.: ER-

Before the Public Service Commission
of the State of Missouri

Direct Testimony

of

Eric L. Watkins

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI
DIRECT TESTIMONY OF ERIC L. WATKINS
ON BEHALF OF AQUILA , INC.
D/B/A AQUILA NETWORKS-MPS
CASE NO. ER-_____

Q. Please state your name and business address.

A. My name is Eric L. Watkins and my business address is 20 West 9th Street, Kansas City, MO, 64105 USA.

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

A. I am employed by Aquila Inc. ("Aquila" or "Company") as the Vice President-Risk Management reporting to the Chief Financial Officer of Aquila.

Q. Please describe your responsibilities in that position.

A. I am responsible for directing Aquila's risk pricing and structuring activities, middle office controls implementation and monitoring, fundamental analysis, and development of models and databases to weather normalize historical electric and gas sales, revenue and system loads for regulatory cases; forecast electric and natural gas sales, system loads, revenues, and customers; service area economic/demographic forecasts; market forecasts; and energy resource plans for Aquila's regulated electric and gas utility operations in the United States.

Q. Please describe your educational background.

A. I hold a Bachelor of Science degree in Mathematics from the University of Arkansas, and a Master of Business Administration degree in Finance from the University of Missouri-Kansas City.

Q. Please describe your professional work experience.

A. I have been employed by Aquila Inc. since June 1991. My experiences since that time have included regulatory analysis including weather normalization and forecasting duties for resource planning and budgeting, competitive and industry analysis for merger and acquisition candidates and new business ventures, structure desk analysis, and accounting and financial management. Before coming to Aquila Inc., I was employed by Burns and McDonnell Engineers-Architects-Consultants from February 1988 to May 1991.

Q. What is the purpose of your direct testimony in this proceeding?

A. The purpose of my direct testimony in this proceeding is to sponsor and recommend that the Commission adopt the weather normalization adjustment to class sales and revenue for Aquila Networks-MPS ("MPS")) shown on Schedules ELW-1 and ELW-2, the customer annualization adjustment shown on Schedules ELW-3 and ELW-4, and the weather normalized system hourly loads shown on Schedules ELW-5 and ELW-6. Aquila witness Jerry Boehm uses these weather normalized system hourly loads in estimating normalized fuel and purchase power costs.

Q. Do you have a recommendation for the Commission regarding weather normalization of MPS sales and revenue, customer annualization adjustment, and system hourly loads?

A. I recommend that the Commission adopt the weather normalization adjustments to MPS sales and revenue, customer annualization adjustment, and the weather normalized system hourly loads that I am sponsoring in this case.

WEATHER NORMALIZATION OF CLASS SALES AND REVENUE

Q. Please provide a description of the methods and models used to calculate the weather normalization adjustments to class kWh sales for MPS.

A. Weather normalization adjusts the test year sales and revenue for the impact of weather. Normal weather is based on daily temperatures over a 30-year historical period (1971-2000). A set of statistical models were developed to calculate the weather adjustments to weather sensitive rate class kWh sales for the test year ending December 31, 2002.

The weather sensitive rate classes that were weather normalized are listed below.

For MPS:

Residential (60-General Service, 70-Space Heat)
Small General Service (310-No Demand Meter, 311-Secondary, 316-Primary)
Large General Service (320-Secondary, 325-Primary)
Large Power (330-Secondary, 335-Primary)
Schools & Churches (340-Secondary)

A statistical model was developed for each of the rate classes listed above. The objective was to construct models that would yield an appropriate weather response function, which could be used to estimate kWh sales under normal weather conditions for the test year. The starting point for each of these models was to disaggregate monthly billed sales data into daily kWh sales. This was done using load research data for each of the rate classes for the test year ending December 31, 2002. This

hourly/daily information was used to determine appropriate ratios for allocating monthly billing cycle data into daily usage data. Daily weather response functions were then derived using MetrixND software for each rate class. Normal weather variables based on 1971-2000 average daily temperature (2-day rolling average) data for Kansas City, Missouri (MCI Airport) were used in each rate class model to estimate kWh sales under normal weather conditions and predicted actual weather conditions. In order to compute the 2-day rolling average daily temperatures, average daily normal temperatures for 1971-2000 were computed from daily maximum and minimum temperatures. The average daily temperatures were ranked in descending order by calendar month, averaged by rank order for each day during 1971-2000. The resulting normal average daily temperatures were then sorted into the same descending rank order as actual average daily temperatures for the test year. The weather adjustment to kWh sales is calculated as the difference between predicted normal minus predicted actual daily kWh sales. Daily weather adjustments were reallocated to billing months based on appropriate billing cycles for each rate class.

Q. Please describe the results of the weather normalization adjustment to kWh sales for the test year ending December 31,2002.

A. Schedules ELW-1 and ELW-2 provide the weather normalization adjustment to kWh sales for MPS . The total weather normalization adjustment for weather sensitive retail rate classes is (96,680,000) kWh for MPS for the test year ending December 31, 2002.

Q. Please describe the method for calculating the weather normalization adjustment to revenue for weather sensitive rate classes.

A. The method used for calculating the weather normalization adjustment for revenue for the test year ending December 31, 2002 for each weather sensitive rate class, is based on actual observed average rates by billing cycle for the test year. Actual average rates were multiplied by weather normalization adjustments (normal – actual) kWh sales by billing cycle for each rate class that was weather normalized to compute weather adjustments to revenue. This method assumes that weather normalization affects only the weather sensitive rate class sales, with no effect from customer charges or other fixed charges paid by customers

Q. Please describe the results of the weather normalization adjustment to revenue for the test year ending December 31,2002.

A. Schedules ELW-1 and ELW-2 provide the weather normalization adjustment to revenue for MPS . The total weather normalization adjustment to revenue for weather sensitive retail rate classes is ($6,778,862) for MPS as reflected in Adjustment R-10.

CUSTOMER ANNUALIZATION ADJUSTMENT

Q. Please describe the method for calculating the customer normalization adjustment to revenue for weather sensitive rate classes.

A. A customer annualization adjustment to the test year revenue is made to reflect additional sales and revenue that will occur in the future because of projected growth in the number of customers. This method is simple and requires dividing the weather normalized test year rate class revenues by average customers, and then multiplying the result by the projected customers as of September 30, 2003 to obtain customer annualized revenues. Customers were projected using MetrixND exponential

smoothing models based on trends over the past 5 years in these historical monthly customers by rate class. The customer annualization adjustment is the difference between the test year weather normalized revenues and the customer annualized revenues projected at September 30, 2003 customer levels.

Q. Please describe the results of the customer annualization adjustment to revenue at September 30, 2003.

A. Schedules ELW-3 and ELW-4 provide the customer annualization adjustment to revenue for MPS . The total customer annualization adjustment to revenue for weather sensitive retail rate classes is $6,455,699 for MPS based on projected customer levels at September 30, 2003 as reflected in Adjustment R-10.

WEATHER NORMALIZATION OF SYSTEM HOURLY LOAD

Q. Please describe the method and data sources used for weather normalizing system hourly load.

A. System hourly load in kW represents the hourly electric supply requirements for the energy demands of MPS electric customers and internal needs. Actual system hourly loads for 2001 and 2002 were weather normalized using the MetrixND software with methods and data sources consistent with the weather normalization of class sales, as previously described in my testimony. System hourly load data for 2001 and 2002 excludes two large MPS wholesale municipal customers (Harrisonville and Odessa), since it was assumed these customers would not be receiving service from MPS after their existing contracts expire. A weather response function was derived using daily weather variables (2-day average daily temperature)

in a cubic model specification along with other explanatory variables that affect system loads such as days of the week, holidays, and monthly intercepts. The weather normal results of the daily model were allocated to the hourly profile using the ratio of actual hourly loads to the total load for a given day, with the hourly ratios averaged for similar day types. MPS system hourly loads for 2003 were projected assuming an overall MPS system energy growth rate of 2.18% multiplied by 2002 weather normalized hourly loads.

Q. Please describe the results of the MPS weather normalized system hourly loads for 2002 and projection for 2003.

A. Schedules ELW-5 and ELW-6 provide a summary of the MPS weather normalized system hourly loads for 2002 and 2003, respectively.

The MPS weather normalized net energy for load is 5,440,192 MWH, and 5,558,852 MWH for 2002 and 2003, respectively, which results in annual energy growth of 118,660 MWH, or 2.18%. The adjustment from 2002 actual to 2003 normal system hourly loads is an increase of 2,259 MWH net energy for load. Weather normalized system hourly loads are used by Aquila witness Jerry Boehm for normalizing MPS fuel and purchased energy costs for the 2002 test year and 2003 projected year.

RECOMMENDATION

Q. What is your recommendation to the Commission?

A. My recommendation to the Commission is that it adopt the MPS weather normalization adjustment and customer annualization adjustment to rate class sales and revenue, and the weather normalized system hourly loads, which I am sponsoring in my testimony.

Q. Does this conclude your direct testimony?

A. Yes, it does.

ELECTRIC

Aquila Networks, Missouri Public Service Division
Weather Normalization Adjustment
Test Year Ending 12/31/02

MWh Sales Adjustment (Normal - Actual)

Rate Class	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Annual
60	316	2,160	611	(2,076)	(1,674)	(5,124)	(15,450)	(16,513)	(16,446)	(10,046)	(1,479)	375	(65,348)
70	4,277	5,528	608	(1,257)	243	(1,538)	(3,867)	(4,726)	(3,887)	(2,773)	(4,139)	1,207	(10,323)
310	227	236	25	(75)	(53)	(106)	(410)	(424)	(422)	(242)	(41)	82	(1,203)
311	121	343	83	(345)	(331)	(687)	(2,431)	(2,543)	(2,477)	(1,403)	(124)	81	(9,711)
316	(1)	(0)	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0	(0)	(2)
320	250	(23)	(29)	(305)	(456)	(372)	(1,920)	(1,727)	(2,139)	(900)	1,336	235	(6,049)
325	(72)	(49)	(1)	2	(6)	(14)	(38)	(39)	(37)	(17)	12	(17)	(278)
330	(119)	(64)	24	(87)	30	(166)	(262)	(215)	(351)	(121)	113	(61)	(1,280)
335	(128)	(71)	39	(72)	41	(150)	(203)	(141)	(208)	17	11	(55)	(921)
340	81	44	(113)	(190)	251	335	(57)	(718)	(1,009)	(422)	51	183	(1,564)
Total Retail	4,953	8,105	1,246	(4,404)	(1,956)	(7,822)	(24,639)	(27,046)	(26,977)	(15,908)	(4,261)	2,030	(96,680)
% Actual	1.2%	2.4%	0.3%	-1.2%	-0.6%	-2.0%	-4.7%	-4.7%	-5.2%	-4.0%	-1.2%	0.5%	-1.9%

ELECTRIC

Aquila Networks, Missouri Public Service Division
Weather Normalization Adjustment
Test Year Ending 12/31/02

Revenue Adjustment (Normal - Actual)

Rate Class	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Annual
60	19,560	134,550	39,078	(131,489)	(106,877)	(350,824)	(1,111,287)	(1,191,957)	(1,182,468)	(602,082)	(92,513)	22,250	(4,554,060)
70	185,649	248,192	26,340	(59,180)	12,590	(109,329)	(277,962)	(341,039)	(279,466)	(146,703)	(207,168)	53,722	(894,354)
310	11,781	12,275	1,394	(4,073)	(3,053)	(8,000)	(33,974)	(35,149)	(34,945)	(13,426)	(2,332)	4,401	(105,100)
311	6,197	17,778	4,369	(16,243)	(17,239)	(65,447)	(166,697)	(170,654)	(168,319)	(69,843)	(6,468)	4,062	(648,505)
316	(41)	(13)	4	(3)	(1)	(11)	(20)	(16)	(16)	(2)	2	(9)	(125)
320	10,994	(956)	(1,197)	(13,164)	(19,601)	(20,718)	(114,626)	(100,958)	(126,498)	(35,851)	58,121	10,191	(354,263)
325	(3,001)	(2,020)	(39)	63	(235)	(715)	(2,105)	(2,329)	(2,003)	(856)	448	(616)	(13,208)
330	(4,458)	(2,278)	906	(3,010)	1,055	(8,516)	(6,606)	(10,654)	(18,138)	(4,266)	4,322	(2,205)	(53,849)
335	(4,608)	(2,498)	1,403	(3,080)	1,239	(7,076)	(10,160)	(6,519)	(10,039)	599	367	(1,930)	(42,302)
340	4,099	2,314	(5,358)	(10,362)	13,600	23,565	(4,139)	(52,684)	(74,073)	(22,455)	2,834	9,564	(113,095)
Total Retail	226,171	407,342	66,899	(240,541)	(118,522)	(547,070)	(1,727,576)	(1,911,958)	(1,895,965)	(894,686)	(242,386)	99,430	(6,778,862)
Avg $/kWh	$ 0.0457	$ 0.0503	$ 0.0537	$ 0.0546	$ 0.0606	$ 0.0699	$ 0.0701	$ 0.0707	$ 0.0703	$ 0.0562	$ 0.0569	$ 0.0490	$ 0.0701
% Actual	1.0%	2.2%	0.3%	-1.2%	-0.7%	-2.0%	-4.8%	-4.8%	-5.3%	-4.2%	-1.3%	0.5%	-2.3%

ELECTRIC

Aquila Networks, Missouri Public Service Division
Customer Annualization Adjustment
Test Year Ending 12/31/02

Rate Class	Test Year 12/31/2002 Customers	Forecast 09/30/2003 Customers		Test Year 12/31/2002 Revenue/Cust	Forecast 09/30/2003 Revenue		Test Year 12/31/2002 WN Revenue	Forecast 09/30/2003 Cust Adj.
60	146,730	147,338		793.83	116,960,500		116,532,335	428,165
70	40,341	45,911		1,008.26	46,290,188		40,614,561	5,675,626
310	13,163	11,835		738.46	8,739,965		9,710,963	(970,999)
311	12,017	13,627		2,960.76	36,768,462		35,541,991	1,226,470
316	6	6		10,406.49	58,894		61,195	(2,301)
320	1,011	1,041		36,523.26	38,010,638		37,110,303	900,335
325	22	21		73,156.97	1,558,094		1,597,692	(39,598)
330	98	100		227,354.16	22,656,025		22,327,667	328,358
335	31	30		706,638.86	21,011,799		22,038,833	(1,027,035)
340	977	960		3,430.96	3,295,231		3,358,555	(63,324)
Total	214,395	220,868		1,337.22	295,349,795		288,894,096	6,455,699

Aquila, Inc, Missouri Public Service Division
System Load Summary
Year Ending 12/31/2002

	Net Energy for Load (MWh)				Monthly Peaks (MW)				Load Factor	
Month	Actual 2002	Normal 2002	Adj.	% Adj.	Actual 2002	Normal 2002	Adj.	% Adj.	Actual 2002	Normal 2002
Jan	436,770	466,117	29,347	6.7%	821	832	11	1.3%	0.72	0.75
Feb	383,695	398,538	14,843	3.9%	821	852	31	3.8%	0.70	0.06
Mar	413,362	405,191	(8,171)	-2.0%	785	731	(54)	-6.9%	0.71	0.75
Apr	377,429	366,809	(10,620)	-2.8%	776	678	(98)	-12.6%	0.68	0.75
May	398,805	405,932	7,127	1.8%	1,046	874	(172)	-16.4%	0.51	0.62
Jun	542,294	506,252	(36,042)	-6.6%	1,181	1,088	(93)	-7.9%	0.62	0.65
Jul	635,964	585,930	(50,034)	-7.9%	1,288	1,204	(84)	-6.5%	0.66	0.68
Aug	604,123	571,248	(32,875)	-5.4%	1,301	1,228	(73)	-5.6%	0.62	0.63
Sep	499,480	455,062	(44,418)	-8.9%	1,226	1,074	(152)	-12.4%	0.57	0.59
Oct	407,579	401,247	(6,332)	-1.6%	1,021	776	(245)	-24.0%	0.54	0.69
Nov	404,789	403,181	(1,608)	-0.4%	756	775	19	2.5%	0.07	0.72
Dec	452,303	474,685	22,382	4.9%	830	869	39	4.7%	0.73	0.73
Annual	5,556,593	5,440,192	(116,401)	-2.1%	1,301	1,228	(871)	-5.6%	0.49	0.51

Aquila, Inc, Missouri Public Service Division
System Load Summary
Year Ending 12/31/2003

	Net Energy for Load (MWh)				Monthly Peaks (MW)				Load Factor	
Month	Actual 2002	Normal 2003	Adj.	% Adj.	Actual 2002	Normal 2003	Adj.	% Adj.	Actual 2002	Normal 2003
Jan	436,770	476,291	39,521	9.0%	821	850	29	3.5%	0.72	0.75
Feb	383,695	407,227	23,532	6.1%	821	871	50	6.1%	0.70	0.06
Mar	413,362	414,036	674	0.2%	785	747	(38)	-4.8%	0.71	0.74
Apr	377,429	374,826	(2,603)	-0.7%	776	693	(83)	-10.7%	0.68	0.75
May	398,805	414,785	15,980	4.0%	1,046	893	(153)	-14.6%	0.51	0.62
Jun	542,294	517,284	(25,010)	-4.6%	1,181	1112	(69)	-5.8%	0.62	0.65
Jul	635,964	598,703	(37,261)	-5.9%	1,288	1230	(58)	-4.5%	0.66	0.68
Aug	604,123	583,700	(20,423)	-3.4%	1,301	1255	(46)	-3.5%	0.62	0.63
Sep	499,480	464,990	(34,490)	-6.9%	1,226	1097	(129)	-10.5%	0.57	0.59
Oct	407,579	409,994	2,415	0.6%	1,021	793	(228)	-22.3%	0.54	0.69
Nov	404,789	411,977	7,188	1.8%	756	792	36	4.8%	0.07	0.72
Dec	452,303	485,039	32,736	7.2%	830	888	58	7.0%	0.73	0.73
Annual	5,556,593	5,559,852	2,259	0.0%	1,301	1,255	(46)	-3.5%	0.49	0.51

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

County of Jackson)
) ss
State of Missouri)

AFFIDAVIT OF ERIC L. WATKINS

Eric L. Watkins, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Direct Testimony of Eric L. Watkins;" 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.

Eric L. Watkins

Subscribed and sworn to before me this 20th day of June, 2003.

Shelly R. Loulos
Notary Public

My Commission expires:

SHELLY R. LOULOS
Notary Public - Notary Seal
STATE OF MISSOURI
Lafayette County
My Commission Expires: February 24, 2006