

Exhibit No.:  
Issues: Weather  
Normalization  
Witness: Shawn E. Lange  
Sponsoring Party: MO PSC Staff  
Type of Exhibit: Supplemental Direct  
Testimony  
Case No.: ER-2007-0004  
Date Testimony Prepared: February 27, 2007

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY OPERATIONS DIVISION**

**SUPPLEMENTAL DIRECT TESTIMONY**

**OF**

**SHAWN E. LANGE**

**AQUILA, INC.**

**D/B/A AQUILA NETWORKS – MPS**

**AND AQUILA NETWORKS – L&P**

**CASE NO. ER-2007-0004**

**Jefferson City, Missouri  
February 2007**

**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 service areas. )

Case No. ER-2007-0004

**AFFIDAVIT OF SHAWN E. LANGE**

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

Shawn E. Lange, of lawful age, on his oath states: that he has participated in the preparation of the following Supplemental Direct Testimony in question and answer form, consisting of 3 pages of Supplemental Direct Testimony to be presented in the above case, that the answers in the following Supplemental Direct 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.

  
Shawn E. Lange

Subscribed and sworn to before me this 26<sup>th</sup> day of February, 2007.



SUSAN L. SUNDERMEYER  
My Commission Expires  
September 21, 2010  
Callaway County  
Commission #06942086

  
Notary Public

My commission expires 9-21-10

1                                   **SUPPLEMENTAL DIRECT TESTIMONY**

2  
3                                   **OF**

4  
5                                   **SHAWN E. LANGE**

6  
7                                   **AQUILA, INC.**

8  
9                                   **D/B/A AQUILA NETWORKS – MPS**

10  
11                                   **AND AQUILA NETWORKS – L&P**

12  
13                                   **CASE NO. ER-2007-0004**

14  
15           Q.     Please state your name and business address.

16           A.     My name is Shawn E. Lange and my business address is Missouri Public  
17 Service Commission, P.O. Box 360, Jefferson City, MO 65102.

18           Q.     Are you the same Shawn E. Lange who filed direct testimony in this  
19 proceeding?

20           A.     Yes, I am.

21           Q.     What is the purpose of your supplemental direct testimony?

22           A.     The purpose of my supplemental direct testimony is to present the results of  
23 Staff's updated weather normalization studies and updated hourly normalized net system  
24 inputs for Aquila Networks-L&P (L&P) and Aquila Networks-MPS (MPS).

25           Q.     What changes have you made to update your weather normalization study?

26           A.     As a result of meeting with Aquila in the settlement conference during the  
27 week of January 29 and subsequent conversations, Staff agreed to re-specify the weather  
28 response functions in the HELM model for the MPS rate class MO870 and the L&P rate class  
29 MO920.

Supplemental Direct Testimony of  
Shawn E. Lange

1 Q. Did this change the weather normalization methodology?

2 A. No. The change was not a change in the methodology. It consisted of a  
3 change in the specification of what data should be used to determine weather response  
4 functions. The methodology is still as described in my direct testimony on page 3.

5 Q. What needed to be recalculated because of this change?

6 A. I recalculated the weather adjustment for MPS rate class MO870 and L&P rate  
7 class MO920 as well as the hourly normalized net system input for MPS and L&P,  
8 respectively. The class weather adjustments for MO870 and MO920 are presented by rate  
9 class in Schedule SELSD-1 attached to this testimony.

10 Schedule SELSD-2 and Schedule SELSD-3 contain the components that make up the  
11 annual sum of the net-system load for L&P and MPS respectively.

12 A monthly summary of the normalized net system load for L&P is shown on Schedule  
13 SELSD-4 and for MPS on Schedule SELSD-5.

14 Q. Which Staff witnesses did you give your new class usages to?

15 A. I gave the new class usages to Staff witness Amanda C. McMellen to calculate  
16 updated customer growth, and to Staff witness Curt Wells to calculate the revenue impact.

17 Q. Did you make any other updates?

18 A. Yes. Staff witness David C. Roos supplied updated monthly steam MMBtu  
19 sales for each customer. I used those MMBtu sales to calculate the new hourly steam  
20 generation requirements.

21 Q. Which Staff witness did you give the new steam loads and new normalized  
22 hourly net system loads to?

Supplemental Direct Testimony of  
Shawn E. Lange

1           A.     I gave the new steam loads and the new hourly normalized net system input to  
2 Staff witness David W. Elliott.

3           Q.     Does this conclude your supplemental direct testimony?

4           A.     Yes, it does.

**Aquila Networks L&P**  
**Case No. ER-2007-0004**  
**Actual and Weather Normalized Sales (kWh)**  
**Jan-Dec 2005**  
**Residential Space Heat (MO920)**

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj
Jan-05	46,437,657	49,698,913	3,261,256	7.02%
Feb-05	38,829,517	41,876,576	3,047,059	7.85%
Mar-05	32,442,511	35,305,855	2,863,344	8.83%
Apr-05	22,891,169	23,134,139	242,970	1.06%
May-05	17,456,905	17,824,308	367,403	2.10%
Jun-05	17,577,999	17,081,305	(496,694)	-2.83%
Jul-05	23,265,508	22,724,070	(541,438)	-2.33%
Aug-05	23,943,188	23,431,249	(511,939)	-2.14%
Sep-05	21,834,169	20,080,600	(1,753,569)	-8.03%
Oct-05	17,158,199	15,937,132	(1,221,067)	-7.12%
Nov-05	19,628,828	21,511,005	1,882,177	9.59%
Dec-05	38,145,829	39,460,616	1,314,787	3.45%
<b>Total</b>	<b>319,611,479</b>	<b>328,065,768</b>	<b>8,454,289</b>	<b>2.65%</b>

<b>Days Adjustment:</b>	<b>(2,126,881)</b>
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**Aquila Networks MPS**  
**Case No. ER-2007-0004**  
**Actual and Weather Normalized Sales (kWh)**  
**Jan-Dec 2005**  
**Residential Space Heat (MO870)**

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj
Jan-05	110,143,059	117,017,884	6,874,825	6.24%
Feb-05	100,006,900	105,307,649	5,300,749	5.30%
Mar-05	82,274,373	87,950,299	5,675,926	6.90%
Apr-05	64,789,736	65,255,837	466,101	0.72%
May-05	51,771,861	52,304,759	532,898	1.03%
Jun-05	60,569,632	57,677,982	(2,891,650)	-4.77%
Jul-05	83,195,236	80,613,159	(2,582,077)	-3.10%
Aug-05	88,146,907	86,026,760	(2,120,147)	-2.41%
Sep-05	80,458,354	73,198,776	(7,259,578)	-9.02%
Oct-05	60,009,463	53,982,202	(6,027,261)	-10.04%
Nov-05	57,489,079	60,941,020	3,451,941	6.00%
Dec-05	99,053,155	102,884,463	3,831,308	3.87%
<b>Total</b>	<b>937,907,755</b>	<b>943,160,790</b>	<b>5,253,035</b>	<b>0.56%</b>

<b>Days Adjustment:</b>	<b>(750,076)</b>
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**AQUILA NETWORKS - L&P**  
**COMPONENTS OF ANNUAL NET SYSTEM INPUT**  
**ER-2007-0004**

	Energy (kWh)	Annualizations to kWh sales	Normalization for Weather	Additional kWh from Cust Growth/ Large Power	Total L&P Normalized kWh
Retail	1,915,179,254	(6,956,565)	(3,354,036)	125,260,268	2,030,128,921
Company Use	4,272,292				4,272,292
NSI w/o losses	1,919,451,546	(6,956,565)	(3,354,036)	125,260,268	2,034,401,213
Losses:	8.45%				
Total NSI:					2,222,175,001

**AQUILA NETWORKS - MPS**  
**COMPONENTS OF ANNUAL NET SYSTEM INPUT**  
**ER-2007-0004**

	Energy (kWh)	Annualizations to kWh sales	Normalization for Weather	Additional kWh from Cust Growth/ Large Power	Total MPS Normalized kWh
Retail	5,665,263,707	(32,580,354)	(60,396,957)	138,936,222	5,711,222,618
Wholesale	31,697,374	-	(366,579)	-	31,330,795
Company Use	8,899,837	-	-	-	5,742,553,413
NSI w/o losses	5,705,860,918	(32,580,354)	(60,763,536)	138,936,222	5,751,453,250
Losses:	6.63%				
Total NSI:					6,159,851,397



**AQUILA NETWORKS - L&P**  
**NET SYSTEM LOAD**  
**NORMALIZED FOR CALENDAR YEAR 2005\***  
**ER-2007-0004**

Month	Monthly Usage (MWh)				Monthly Peaks (MW)				Load Factor	
	Actual	Normal	Adj	% Adj	Actual	Normal	Adj	% Adj	Actual	Normal
Jan-05	197,011	217,173	20,162	10.23%	357	403	46	12.85%	0.74	0.72
Feb-05	155,928	178,617	22,689	14.55%	323	378	55	16.98%	0.72	0.70
Mar-05	159,874	173,776	13,902	8.70%	299	339	40	13.43%	0.72	0.69
Apr-05	138,324	149,692	11,368	8.22%	242	275	33	13.76%	0.79	0.76
May-05	147,759	156,864	9,105	6.16%	287	321	34	11.79%	0.69	0.66
Jun-05	181,534	190,926	9,392	5.17%	392	418	26	6.57%	0.64	0.63
Jul-05	204,534	220,267	15,733	7.69%	409	436	27	6.66%	0.67	0.68
Aug-05	198,457	209,574	11,117	5.60%	403	433	30	7.34%	0.66	0.65
Sep-05	172,600	174,280	1,680	0.97%	350	370	20	5.80%	0.68	0.65
Oct-05	155,942	163,661	7,719	4.95%	336	294	(42)	-12.58%	0.62	0.75
Nov-05	157,148	175,103	17,955	11.43%	308	338	30	9.82%	0.71	0.72
Dec-05	197,922	212,242	14,320	7.24%	374	399	25	6.56%	0.71	0.72
Annual	2,067,033	2,222,175	155,142	7.51%	409	436	27	6.66%	0.58	0.58

\* Normalized for weather, growth, large customers, and including losses

**AQUILA NETWORKS - MPS**  
**NET SYSTEM LOAD**  
**NORMALIZED FOR CALENDAR YEAR 2005\***  
**ER-2007-0004**

Month	Monthly Usage (MWh)				Monthly Peaks (MW)				Load Factor	
	Actual	Normal	Adj	% Adj	Actual	Normal	Adj	% Adj	Actual	Normal
Jan-05	529,928	551,057	21,129	3.99%	937	985	48	5.12%	0.76	0.75
Feb-05	431,280	463,238	31,958	7.41%	875	949	74	8.46%	0.73	0.73
Mar-05	448,654	460,511	11,857	2.64%	791	836	45	5.64%	0.76	0.74
Apr-05	397,431	401,903	4,472	1.13%	749	726	(23)	-3.08%	0.74	0.77
May-05	452,943	453,070	127	0.03%	1,019	1,052	33	3.24%	0.60	0.58
Jun-05	578,215	572,278	(5,937)	-1.03%	1,317	1,324	7	0.50%	0.61	0.60
Jul-05	663,340	675,266	11,926	1.80%	1,422	1,452	30	2.09%	0.63	0.63
Aug-05	642,730	638,640	(4,090)	-0.64%	1,403	1,410	7	0.49%	0.62	0.61
Sep-05	542,469	505,581	(36,888)	-6.80%	1,199	1,175	(24)	-2.00%	0.63	0.60
Oct-05	442,250	433,035	(9,215)	-2.08%	1,073	825	(248)	-23.12%	0.55	0.71
Nov-05	438,138	457,738	19,600	4.47%	906	945	39	4.32%	0.67	0.67
Dec-05	539,057	547,534	8,477	1.57%	1,048	1,060	12	1.16%	0.69	0.69
Annual	6,106,435	6,159,851	53,416	0.87%	1,422	1,452	30	2.09%	0.49	0.48

\* Normalized for weather, growth, large customers, and including losses