

Exhibit No.:

Issues: Weather
Normalization

Witness: Shawn E. Lange

Sponsoring Party: MO PSC Staff

Type of Exhibit: Direct Testimony

Case No.: ER-2005-0436

Date Testimony Prepared: October 11, 2005

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

DIRECT TESTIMONY

OF

SHAWN E. LANGE

AQUILA, INC.

D/B/A AQUILA NETWORKS – MPS

AND AQUILA NETWORKS – L&P

CASE NO. ER-2005-0436

**Jefferson City, Missouri
October 2005**

**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 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

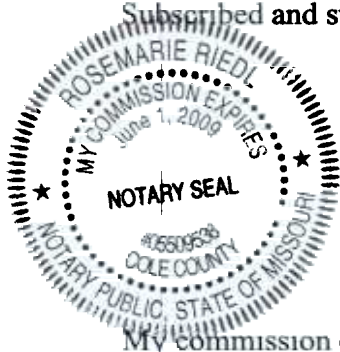
AFFIDAVIT OF SHAWN LANGE

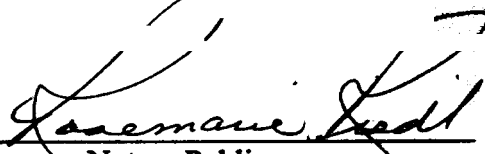
STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Shawn Lange, of lawful age, on his oath states: that he has participated in the preparation of the following Direct Testimony in question and answer form, consisting of 10 pages of Direct Testimony to be presented in the above case, that the answers in the following 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 Lange

Subscribed and sworn to before me this 12th day of October, 2005.




Notary Public

My commission expires June 1, 2009

1
2
3
4
5
6
7
8
9
10

TABLE OF CONTENTS

EXECUTIVE SUMMARY 2
 Normalization of Use 3
 Hourly Net System Loads..... 3
 Normal Weather Variables 4
NORMALIZATION OF USAGE..... 4
HOURLY NET SYSTEM LOADS..... 6
NORMAL WEATHER VARIABLES 9

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

DIRECT TESTIMONY

OF

Shawn E. Lange

AQUILA, INC.

D/B/A AQUILA NETWORKS – MPS

AND AQUILA NETWORKS – L&P

CASE NOS. ER-2005-0436

Q. Please state your name and business address.

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

Q. What is your present position with the Missouri Public Service Commission (Commission)?

A. I am a Utility Engineering Specialist I in the Engineering Analysis Section, Energy Department, Utility Operations Division.

Q. Would you please review your educational background and work experience.

A. In December of 2002, I received a Bachelor of Science Degree in Mechanical Engineering from the University of Missouri, at Rolla. Since then, I have pursued dual Masters Degrees in Mechanical Engineering and Business Administration at the University of Missouri, at Columbia. I joined the Commission Staff (Staff) in January 2005. I am a registered Engineer-in-Training in the State of Missouri.

Q. What is the purpose of your direct testimony?

Direct Testimony of
Shawn E. Lange

1 A. The purpose of my testimony is to recommend that the Commission adopt
2 the Staff's weather adjustments and days adjustments to class usage for the weather
3 sensitive rate classes of Aquila Networks - MPS (MPS) and Aquila Networks - L&P
4 (L&P). These adjustments are presented by rate class in Schedule 1. Staff witness Janice
5 Pyatte calculated the corresponding adjustments to class revenues based on these
6 adjustments to class usage. These adjustments to class usage were also included in my
7 calculation of hourly generation requirements.

8 I also recommend that the Commission adopt the hourly net system loads
9 that I calculated. Staff witness David W. Elliott used these hourly loads in his fuel model
10 to normalized fuel and purchase power expenses for the test year. A monthly summary
11 of the normalized net system load for L&P is shown on Schedule 2 and for MPS on
12 Schedule 3.

13 Q. To which of the Aquila, Inc. (Aquila) operations are you directing your
14 testimony?

15 A. This testimony only addresses the electric operations of Aquila in
16 Missouri.

17 **EXECUTIVE SUMMARY**

18 Q. Please provide a brief summary of your testimony.

19 A. The purpose of the testimony is to provide a general description of
20 weather normalization, describe the process I used, and present the results. The Staff's
21 recommendation to the Commission on weather normalization is to adopt the Staff's
22 weather adjustment, days adjustment, and the weather-normalized hourly net system
23 loads.

1 Schedule 1 contains the adjustments to sales by rate class for L&P and MPS,
2 Schedule 2 contains a monthly summary for the normalized net system load for L&P,
3 Schedule 3 contains a monthly summary for the normalized net system load for MPS, and
4 Schedule 4 contains a list of cases in which Staff's weather normalization method was
5 used in the normalization of net system loads.

6 The results of the weather normalization of sales were used by Staff Witness
7 Janice Pyatte to normalize revenues.

8 The weather-normalized loads were used as an input to the fuel run Staff Witness
9 David W. Elliott used to normalized fuel and purchased power expense.

10 **NORMALIZATION OF USE**

11 Electricity use is very sensitive to weather conditions. Because of the high
12 saturation of air conditioning and the presence of significant electric space heating in
13 Aquila's Missouri service territories, the level of sales and the magnitude and shape of
14 Aquila's load curve is directly related to daily temperatures.

15 The weather during the test year differed from normal conditions. The winter
16 months of January, February, March, and December 2004 were warmer than normal.
17 The summer months of June through August 2004 were cooler than normal. The effect
18 of both of these conditions was to lower the amount of electricity consumed relative to
19 normal levels.

20 **HOURLY NET SYSTEM LOADS**

21 The hourly loads were normalized using the method described in the document
22 "Weather Normalization of Electric Loads, Part A: Hourly Net System Loads"

Direct Testimony of
Shawn E. Lange

(November 28, 1990), written by Dr. Michael Proctor, Manager of the Economic
Analysis Department.

NORMAL WEATHER VARIABLES

The normal weather variables were developed using the method described in the
document “Weather Normalization of Electric Loads, Demonstration: Calculation of
Weather Normals,” October 25, 1991. The normal weather variables were developed
using the consecutive 30 years from January 1, 1971 to December 31, 2000.

NORMALIZATION OF USAGE

Q. Why is it necessary to weather normalize electricity usage?

A. Electricity use is very sensitive to weather conditions. Because of the high
saturation of air conditioning and the presence of significant electric space heating in
Aquila’s Missouri service territories, the magnitude and shape of Aquila’s load is directly
related to daily temperatures. The weather during the test year differed from normal
conditions. The winter months of January, February, March, and December 2004 were
warmer than normal. The warmer than normal temperatures, resulted in decreased
energy consumption and lower than normal heating usage. The summer months of June
through August 2004 were cooler than normal. The cooler than normal temperatures
resulted in decreased energy consumption and lower than normal cooling usage.

Q. What method did you use to calculate the weather adjustments to class
usage?

A. I used the Hourly Electric Load Model (HELM) to calculate the weather
adjustments to class usage. In this model, the response to daily weather is first estimated
for each of the rate classes from hourly class level load data. Weather normalized usage

Direct Testimony of
Shawn E. Lange

1 is then calculated for each month for each of the weather sensitive classes, given normal
2 weather variables based on the estimated response. The weather variables are carefully
3 matched to correspond to the usage in the time period over which usage was recorded.
4 The weather adjustment to class usage is calculated as the difference between the weather
5 normalized usage and the actual usage.

6 Q. What are the inputs to this model?

7 A. There are four data inputs into the model – monthly class usage, hourly
8 class load data, and actual and normal daily weather variables. The monthly class usage
9 and the hourly class loads were supplied by Aquila. I used the actual high and low
10 temperatures for the test year and the history of high and low temperatures for the Kansas
11 City International (KCI) Airport National Oceanic Atmospheric Administration (NOAA)
12 weather station.

13 Q. How was the days adjustment determined?

14 A. HELM includes a calculation of the adjustment necessary to convert the
15 billing month sales, which corresponds to how customer meters are read, to calendar
16 month sales. The model calculates the weather normalized usage on a daily basis and
17 then aggregates these daily usages to estimate the weather adjustment to both billing and
18 calendar month sales. I calculated the “days adjustment” as the difference between the
19 weather normalized calendar month sales and the weather normalized billing month sales.

20 Q. Did you make any adjustments or corrections to the billing cycle usage
21 data?

22 A. Yes. The monthly billing data, provided by Aquila, was disaggregated by
23 billing cycle. While reviewing the billing cycle data provided by Aquila, I noticed that

1 the usage in some billing cycles in certain months was negative. I used information on
2 specific billing corrections provided by Aquila to correct the monthly billing cycle usage
3 data.

4 Q. Did you calculate any adjustments to monthly sales to account for leap
5 year?

6 A. Yes. I calculated leap year adjustments to each month's sales as 1/366 of
7 that month's weather normalized sales.

8 Q. Do any Missouri electric utilities use HELM?

9 A. Yes. Aquila used HELM to weather normalized its billing month sales in
10 this rate case. Kansas City Power and Light Company (KCPL), Aquila, AmerenUE, and
11 The Empire District Electric Company (Empire) have all used HELM to analyze loads in
12 their Missouri resource planning process. KCPL and Empire both used HELM to
13 weather normalize billing month usage and hourly loads in their most recent rate design
14 cases. Empire also used HELM to weather normalize sales in its most recent rate case.

15 Q. Has Staff previously used HELM?

16 A. Yes, Staff has used HELM in rate cases involving Empire and Aquila.

17 **HOURLY NET SYSTEM LOADS**

18 Q. What is hourly net system load?

19 A. Hourly net system load is the hourly electric supply necessary to meet the
20 energy demands of company's customers and the company's own internal needs. It is net
21 of (i.e., does not include) station use, which is the electricity requirement of the
22 company's generating plants. The hourly loads used in my analysis of the test year
23 January 2004 through December 2004 were provided to Staff in response to Data Request

1 numbers 35 and 36 and the respective supplements to these requests. I also used hourly
2 load data submitted monthly by Aquila in compliance with the Commission's rule
3 4 CSR 240-3.190 to cross check and correct errors that were found in the data request
4 response.

5 Q. What method did Staff use to weather normalize net system hourly loads?

6 A. The Staff's weather normalization procedure was developed by the
7 Economic Analysis Department of the Commission in 1988. The process is described in
8 detail in the document "Weather Normalization of Electric Loads, Part A: Hourly Net
9 System Loads" (November 28, 1990), written by Dr. Michael Proctor, Manager of the
10 Economic Analysis Department.

11 Q. Briefly summarize the process you used.

12 A. In order to reflect normal weather, daily peak and average loads are
13 adjusted independently, but using the same methodology. Independent adjustments are
14 necessary because average loads respond differently to weather than peak loads.

15 Daily average load is calculated as the daily energy divided by twenty-four hours
16 and the daily peak is the maximum hourly load for the day. Separate regression models
17 estimate both a base component, which is allowed to fluctuate across time, and a weather
18 sensitive component, which measures the response to daily fluctuations in weather for
19 daily average loads and peak loads. The regression parameters, along with the difference
20 between normal and actual cooling and heating measures, are used to calculate weather
21 adjustments to both the average and peak loads for each day. The adjustments for each
22 day are added respectively to the actual average and peak loads for each day. The
23 starting point for allocating the weather normalized daily peak and average loads to the

Direct Testimony of
Shawn E. Lange

1 hours is the actual hourly loads. A unitized load curve is calculated for each day as a
2 function of the actual peak and average loads for that day. The corresponding weather
3 normalized daily peak and average loads, along with the unitized load curves, are used to
4 calculate weather normalized hourly loads.

5 This process includes many checks and balances, which are included in the
6 spreadsheets that are used. In addition, the analyst is required to examine the data at
7 several points in the process.

8 Q. Has this method been used in other rate cases?

9 A. Yes, this method has been used in several cases before this Commission.
10 Please refer to Schedule 4 for a list of these cases.

11 Q. What data was used in this process?

12 A. Actual hourly net system loads for the time period from October 1, 2003
13 through March 31, 2005 were provided by Aquila. The actual daily weather variables
14 from the NOAA KCI weather station were used. I calculated the normal weather
15 variables using a method developed by the Staff in 1991. The process is described in the
16 document "Weather Normalization of Electric Loads, Demonstration: Calculation of
17 Weather Normals," October 25, 1991 and summarized in the next section of my
18 testimony.

19 Q. Were modifications made to the test year weather normalized hourly net
20 system loads to account for Staff adjustments to test year usage?

21 A. Yes. I adjusted the weather-normalized hourly net system loads to be
22 consistent with the Staff's weather-normalized, annualized test year usage.

1 Q. How were the hourly loads adjusted to account for the annual adjustments
2 to usage?

3 A. I added wholesale sales and company usage to the Staff's weather-
4 normalized, annualized test year usage. Then, I increased the annual usage adjustment by
5 the loss factor supplied to me by Staff witness Alan J. Bax in order to obtain the
6 additional amount of generation (net system input) necessary to serve this additional
7 generation. A factor was applied to each hour of the weather-normalized loads to
8 produce an annual sum of the hourly net-system loads that equals the adjusted test year
9 usage, plus losses, and consistent with normalized revenues. A monthly summary of the
10 adjusted loads is shown on Schedule 2.

11 Q. Which Staff witness used your hourly-normalized net system loads?

12 A. Staff witness David W. Elliott used the test year hourly normalized system
13 loads in developing test year fuel and purchased power expense.

14 **NORMAL WEATHER VARIABLES**

15 Q. What did you use to represent normal weather in these calculations?

16 A. The normal weather used in both the normalization of class usage and
17 hourly net system loads was calculated using Staff's ranking method and daily weather
18 values for the time period January 1, 1971 through December 31, 2000. Staff's ranking
19 method estimates daily normal values, which range from the temperature value that is
20 "normally" the hottest to the temperature value that is "normally" the coldest.

21 Using ranked normals to estimate the weather adjustment to usage is important
22 because electricity use does not respond to temperature by a constant factor. Customer
23 response to a change in temperature of one degree from 70 to 71 is very different from a

Direct Testimony of
Shawn E. Lange

1 change in temperature of one degree from 90 to 91. The ranking method of calculating
2 normals allows for a more accurate estimate of changes in usage due to deviations from
3 normal weather.

4 Using ranked normals is also important in estimating fuel and purchased power
5 expense because these expenses are greatly impacted by daily weather extremes. Since
6 every year has days with extreme temperatures, the daily normals should also contain
7 extremes. The ranking method that was used estimates normal extremes.

8 Q. How are the daily normals derived?

9 A. The daily normal variables are calculated by ranking the temperatures in
10 each year of the history. These temperatures are then averaged by rank, not by the day of
11 the year. This results in the normal extreme being the average of the most extreme
12 temperatures in each year of the history. The second extreme normal variable is based on
13 the average of the second most extreme day of each year and so forth. The normal
14 variables calculated from this ranking are then assigned to the days in the test year based
15 on the rankings of the actual temperatures in the year. This assignment results in as small
16 a weather normalization adjustment to the hourly loads on each day as is possible for a
17 given annual adjustment.

18 Q. Does this conclude your direct testimony?

19 A. Yes, it does.

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential General Use (MO910)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	26,483,691	28,450,051	1,966,360	7.42%	(2,886,734)	25,563,317	(69,845)
Feb-04	24,551,405	24,084,725	(466,680)	-1.90%	(578,853)	23,505,872	(64,224)
Mar-04	21,563,028	22,476,797	913,769	4.24%	(1,515,414)	20,961,383	(57,272)
Apr-04	18,114,504	18,024,828	(89,676)	-0.50%	(2,105,092)	15,919,736	(43,497)
May-04	19,537,118	17,465,609	(2,071,509)	-10.60%	1,427,524	18,893,133	(51,621)
Jun-04	26,537,527	23,420,565	(3,116,962)	-11.75%	7,153,541	30,574,106	(83,536)
Jul-04	32,468,097	41,372,866	8,904,769	27.43%	8,670,909	50,043,775	(136,732)
Aug-04	32,918,495	44,808,866	11,890,371	36.12%	(3,820,794)	40,988,072	(111,989)
Sep-04	30,334,222	34,114,009	3,779,787	12.46%	(9,030,753)	25,083,256	(68,533)
Oct-04	23,192,507	22,017,574	(1,174,933)	-5.07%	(2,733,689)	19,283,885	(52,688)
Nov-04	18,172,618	18,300,880	128,262	0.71%	1,985,906	20,286,786	(55,428)
Dec-04	23,780,927	24,635,657	854,730	3.59%	2,867,368	27,503,025	(75,145)
Total	297,654,139	319,172,427	21,518,288	7.23%	(566,081)	318,606,346	(870,509)
Summer	122,258,341	143,716,306	21,457,965	17.55%	2,972,903	146,689,209	(400,790)
Other	175,395,798	175,456,121	60,323	0.03%	(3,538,984)	171,917,137	(469,719)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential General Use (MO911)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	209,446	228,534	19,088	9.11%	(29,986)	198,548	(542)
Feb-04	190,207	182,185	(8,022)	-4.22%	5,428	187,613	(513)
Mar-04	172,999	181,909	8,910	5.15%	(8,118)	173,791	(475)
Apr-04	139,974	137,438	(2,536)	-1.81%	(7,174)	130,264	(356)
May-04	178,073	155,491	(22,582)	-12.68%	7,576	163,067	(446)
Jun-04	244,306	218,551	(25,755)	-10.54%	37,372	255,923	(699)
Jul-04	278,266	370,845	92,579	33.27%	27,549	398,394	(1,089)
Aug-04	231,520	328,012	96,492	41.68%	8,304	336,316	(919)
Sep-04	266,330	273,920	7,590	2.85%	(63,328)	210,592	(575)
Oct-04	180,662	175,168	(5,494)	-3.04%	(12,779)	162,389	(444)
Nov-04	147,587	149,992	2,405	1.63%	9,453	159,445	(436)
Dec-04	188,857	194,901	6,044	3.20%	6,550	201,451	(550)
Total	2,428,227	2,596,946	168,719	6.95%	(19,153)	2,577,793	(7,043)
Summer	1,020,422	1,191,328	170,906	16.75%	9,897	1,201,225	(3,282)
Other	1,407,805	1,405,618	(2,187)	-0.16%	(29,050)	1,376,568	(3,761)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential Water Heat (MO913)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	8,557,922	9,166,790	608,868	7.11%	(774,566)	8,392,224	(22,930)
Feb-04	8,082,235	7,884,098	(198,137)	-2.45%	(120,534)	7,763,564	(21,212)
Mar-04	7,102,031	7,420,735	318,704	4.49%	(622,722)	6,798,013	(18,574)
Apr-04	5,866,808	5,984,567	117,759	2.01%	(511,060)	5,473,507	(14,955)
May-04	5,840,875	5,600,919	(239,956)	-4.11%	(8,337)	5,592,582	(15,280)
Jun-04	6,769,884	6,231,128	(538,756)	-7.96%	979,298	7,210,426	(19,701)
Jul-04	7,798,981	9,418,580	1,619,599	20.77%	1,712,471	11,131,051	(30,413)
Aug-04	7,822,915	10,026,713	2,203,798	28.17%	(846,004)	9,180,709	(25,084)
Sep-04	7,252,665	7,849,844	597,179	8.23%	(1,550,783)	6,299,061	(17,211)
Oct-04	6,186,002	5,955,312	(230,690)	-3.73%	(252,046)	5,703,266	(15,583)
Nov-04	5,550,409	5,614,673	64,264	1.16%	756,880	6,371,553	(17,409)
Dec-04	7,403,759	7,670,311	266,552	3.60%	1,032,957	8,703,268	(23,779)
Total	84,234,486	88,823,670	4,589,184	5.45%	(204,446)	88,619,224	(242,129)
Summer	29,644,445	33,526,265	3,881,820	13.09%	294,982	33,821,247	(92,408)
Other	54,590,041	55,297,405	707,364	1.30%	(499,428)	54,797,977	(149,721)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential Water Heat (MO914)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	5,275	5,604	329	6.24%	(34)	5,570	(15)
Feb-04	5,352	5,277	(75)	-1.40%	30	5,307	(15)
Mar-04	5,103	5,325	222	4.35%	(1,091)	4,234	(12)
Apr-04	3,698	3,768	70	1.89%	(435)	3,333	(9)
May-04	3,534	3,453	(81)	-2.29%	968	4,421	(12)
Jun-04	6,366	5,759	(607)	-9.54%	1,270	7,029	(19)
Jul-04	7,415	8,929	1,514	20.42%	1,544	10,473	(29)
Aug-04	7,521	9,667	2,146	28.53%	(1,064)	8,603	(24)
Sep-04	6,712	7,337	625	9.31%	(1,919)	5,418	(15)
Oct-04	4,682	4,485	(197)	-4.21%	850	5,335	(15)
Nov-04	5,283	5,277	(6)	-0.11%	(1,104)	4,173	(11)
Dec-04	4,182	4,355	173	4.14%	805	5,160	(14)
Total	65,123	69,236	4,113	6.32%	(180)	69,056	(189)
Summer	28,014	31,692	3,678	13.13%	(169)	31,523	(86)
Other	37,109	37,544	435	1.17%	(11)	37,533	(103)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential General Use (MO915)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	603,783	646,953	43,170	7.15%	(114,853)	532,100	(1,454)
Feb-04	508,803	500,785	(8,018)	-1.58%	(60,506)	440,279	(1,203)
Mar-04	371,265	386,226	14,961	4.03%	(77,914)	308,312	(842)
Apr-04	249,907	249,495	(412)	-0.16%	(37,738)	211,757	(579)
May-04	240,826	219,837	(20,989)	-8.72%	(21,217)	198,620	(543)
Jun-04	244,618	211,468	(33,150)	-13.55%	66,666	278,134	(760)
Jul-04	289,564	364,040	74,476	25.72%	101,433	465,473	(1,272)
Aug-04	321,705	434,971	113,266	35.21%	184,269	619,240	(1,692)
Sep-04	478,650	575,292	96,642	20.19%	(104,724)	470,568	(1,286)
Oct-04	561,939	530,704	(31,235)	-5.56%	125,150	655,854	(1,792)
Nov-04	653,090	652,973	(117)	-0.02%	(50,507)	602,466	(1,646)
Dec-04	664,894	689,445	24,551	3.69%	69,041	758,486	(2,072)
Total	5,189,044	5,462,189	273,145	5.26%	79,100	5,541,289	(15,140)
Summer	1,334,537	1,585,771	251,234	18.83%	247,644	1,833,415	(5,009)
Other	3,854,507	3,876,418	21,911	0.57%	(168,544)	3,707,874	(10,131)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential Space Heat (MO920)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	40,134,416	47,586,679	7,452,263	18.57%	(1,133,007)	46,453,672	(126,923)
Feb-04	44,337,060	41,160,120	(3,176,940)	-7.17%	(700,940)	40,459,180	(110,544)
Mar-04	33,071,091	36,829,247	3,758,156	11.36%	(8,128,826)	28,700,421	(78,416)
Apr-04	21,021,566	21,960,754	939,188	4.47%	(4,972,049)	16,988,705	(46,417)
May-04	17,056,475	16,553,446	(503,029)	-2.95%	(1,701,223)	14,852,223	(40,580)
Jun-04	17,423,373	16,350,998	(1,072,375)	-6.15%	1,578,610	17,929,608	(48,988)
Jul-04	19,349,063	22,544,946	3,195,883	16.52%	2,648,388	25,193,334	(68,834)
Aug-04	18,476,895	22,505,311	4,028,416	21.80%	(974,846)	21,530,465	(58,826)
Sep-04	18,261,937	19,182,704	920,767	5.04%	(3,487,038)	15,695,666	(42,884)
Oct-04	15,684,142	15,175,985	(508,157)	-3.24%	634,698	15,810,683	(43,199)
Nov-04	17,023,756	18,346,550	1,322,794	7.77%	7,508,231	25,854,781	(70,641)
Dec-04	32,126,171	34,867,480	2,741,309	8.53%	8,265,376	43,132,856	(117,849)
Total	293,965,945	313,064,220	19,098,275	6.50%	(462,626)	312,601,594	(854,103)
Summer	73,511,268	80,583,959	7,072,691	9.62%	(234,886)	80,349,073	(219,533)
Other	220,454,677	232,480,261	12,025,584	5.45%	(227,740)	232,252,521	(634,570)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential Space Heat (MO921)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	754,872	886,620	131,748	17.45%	329,613	1,216,233	(3,323)
Feb-04	1,173,226	1,149,878	(23,348)	-1.99%	(185,844)	964,034	(2,634)
Mar-04	870,957	948,890	77,933	8.95%	(208,469)	740,421	(2,023)
Apr-04	553,002	584,114	31,112	5.63%	(151,125)	432,989	(1,183)
May-04	436,457	423,893	(12,564)	-2.88%	(80,521)	343,372	(938)
Jun-04	392,556	360,172	(32,384)	-8.25%	39,942	400,114	(1,093)
Jul-04	415,062	474,416	59,354	14.30%	52,029	526,445	(1,438)
Aug-04	397,935	485,354	87,419	21.97%	(8,519)	476,835	(1,303)
Sep-04	393,196	425,852	32,656	8.31%	(85,155)	340,697	(931)
Oct-04	359,964	346,661	(13,303)	-3.70%	39,849	386,510	(1,056)
Nov-04	406,977	427,303	20,326	4.99%	167,469	594,772	(1,625)
Dec-04	689,223	754,147	64,924	9.42%	237,779	991,926	(2,710)
Total	6,843,427	7,267,300	423,873	6.19%	147,048	7,414,348	(20,258)
Summer	1,598,749	1,745,794	147,045	9.20%	(1,703)	1,744,091	(4,765)
Other	5,244,678	5,521,506	276,828	5.28%	148,751	5,670,257	(15,493)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential Space Heat (MO922)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	74,482	88,948	14,466	19.42%	(4,250)	84,698	(231)
Feb-04	83,803	75,768	(8,035)	-9.59%	(1,526)	74,242	(203)
Mar-04	55,939	63,223	7,284	13.02%	(17,675)	45,548	(124)
Apr-04	30,140	31,438	1,298	4.31%	(8,929)	22,509	(62)
May-04	21,325	20,725	(600)	-2.81%	(516)	20,209	(55)
Jun-04	25,942	24,398	(1,544)	-5.95%	4,675	29,073	(79)
Jul-04	34,921	41,229	6,308	18.06%	2,823	44,052	(120)
Aug-04	31,056	37,952	6,896	22.21%	(704)	37,248	(102)
Sep-04	31,385	32,499	1,114	3.55%	(8,051)	24,448	(67)
Oct-04	21,479	20,809	(670)	-3.12%	487	21,296	(58)
Nov-04	23,103	25,153	2,050	8.87%	13,012	38,165	(104)
Dec-04	52,867	57,220	4,353	8.23%	14,196	71,416	(195)
Total	486,442	519,362	32,920	6.77%	(6,458)	512,904	(1,401)
Summer	123,304	136,078	12,774	10.36%	(1,257)	134,821	(368)
Other	363,138	383,284	20,146	5.55%	(5,201)	378,083	(1,033)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO930)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	2,330,597	2,522,998	192,401	8.26%	(193,841)	2,329,157	(6,364)
Feb-04	2,167,245	2,097,338	(69,907)	-3.23%	(38,692)	2,058,646	(5,625)
Mar-04	1,952,230	2,035,506	83,276	4.27%	(177,956)	1,857,550	(5,075)
Apr-04	1,578,083	1,568,619	(9,464)	-0.60%	(153,071)	1,415,548	(3,868)
May-04	1,529,900	1,448,616	(81,284)	-5.31%	39,837	1,488,453	(4,067)
Jun-04	1,736,822	1,651,794	(85,028)	-4.90%	272,271	1,924,065	(5,257)
Jul-04	2,051,706	2,282,891	231,185	11.27%	50,372	2,333,263	(6,375)
Aug-04	1,858,019	2,129,308	271,289	14.60%	(9,463)	2,119,845	(5,792)
Sep-04	1,887,727	1,956,056	68,329	3.62%	(263,152)	1,692,904	(4,625)
Oct-04	1,566,266	1,525,082	(41,184)	-2.63%	40,109	1,565,191	(4,276)
Nov-04	1,645,751	1,661,317	15,566	0.95%	142,579	1,803,896	(4,929)
Dec-04	2,021,217	2,091,525	70,308	3.48%	221,294	2,312,819	(6,319)
Total	22,325,563	22,971,050	645,487	2.89%	(69,713)	22,901,337	(62,572)
Summer	7,534,274	8,020,049	485,775	6.45%	50,028	8,070,077	(22,049)
Other	14,791,289	14,951,001	159,712	1.08%	(119,741)	14,831,260	(40,523)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO931)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	4,034,708	4,370,066	335,358	8.31%	(369,786)	4,000,280	(10,930)
Feb-04	3,835,358	3,717,855	(117,503)	-3.06%	14,226	3,732,081	(10,197)
Mar-04	3,519,920	3,663,320	143,400	4.07%	(190,768)	3,472,552	(9,488)
Apr-04	3,102,796	3,082,296	(20,500)	-0.66%	(19,271)	3,063,025	(8,369)
May-04	3,519,704	3,329,902	(189,802)	-5.39%	283,370	3,613,272	(9,872)
Jun-04	4,280,490	4,065,574	(214,916)	-5.02%	475,872	4,541,446	(12,408)
Jul-04	4,780,174	5,317,337	537,163	11.24%	319,112	5,636,449	(15,400)
Aug-04	4,561,632	5,220,587	658,955	14.45%	38,907	5,259,494	(14,370)
Sep-04	4,662,351	4,850,784	188,433	4.04%	(627,405)	4,223,379	(11,539)
Oct-04	3,840,401	3,735,119	(105,282)	-2.74%	(411,877)	3,323,242	(9,080)
Nov-04	3,296,783	3,323,786	27,003	0.82%	106,977	3,430,763	(9,374)
Dec-04	3,682,969	3,811,299	128,330	3.48%	16,924	3,828,223	(10,460)
Total	47,117,286	48,487,925	1,370,639	2.91%	(363,719)	48,124,206	(131,487)
Summer	18,284,647	19,454,282	1,169,635	6.40%	206,486	19,660,768	(53,718)
Other	28,832,639	29,033,643	201,004	0.70%	(570,205)	28,463,438	(77,769)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO932)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	520,578	563,214	42,636	8.19%	(44,432)	518,782	(1,417)
Feb-04	531,304	512,859	(18,445)	-3.47%	(8,551)	504,308	(1,378)
Mar-04	444,559	463,153	18,594	4.18%	(123,544)	339,609	(928)
Apr-04	230,740	228,891	(1,849)	-0.80%	(7,598)	221,293	(605)
May-04	235,993	222,875	(13,118)	-5.56%	(7,135)	215,740	(589)
Jun-04	244,083	232,527	(11,556)	-4.73%	28,962	261,489	(714)
Jul-04	278,725	310,723	31,998	11.48%	17,510	328,233	(897)
Aug-04	272,188	312,512	40,324	14.81%	(4,190)	308,322	(842)
Sep-04	272,520	280,923	8,403	3.08%	(30,247)	250,676	(685)
Oct-04	233,069	227,065	(6,004)	-2.58%	(8,467)	218,598	(597)
Nov-04	226,796	229,622	2,826	1.25%	65,178	294,800	(805)
Dec-04	385,703	398,323	12,620	3.27%	116,704	515,027	(1,407)
Total	3,876,258	3,982,687	106,429	2.75%	(5,810)	3,976,877	(10,866)
Summer	1,067,516	1,136,685	69,169	6.48%	12,035	1,148,720	(3,139)
Other	2,808,742	2,846,002	37,260	1.33%	(17,845)	2,828,157	(7,727)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO933)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	2,379,778	2,580,309	200,531	8.43%	(92,723)	2,487,586	(6,797)
Feb-04	2,504,839	2,421,632	(83,207)	-3.32%	(67,773)	2,353,859	(6,431)
Mar-04	2,123,297	2,210,651	87,354	4.11%	(227,119)	1,983,532	(5,419)
Apr-04	1,641,441	1,633,547	(7,894)	-0.48%	(246,191)	1,387,356	(3,791)
May-04	1,484,401	1,404,906	(79,495)	-5.36%	6,151	1,411,057	(3,855)
Jun-04	1,687,226	1,610,168	(77,058)	-4.57%	160,862	1,771,030	(4,839)
Jul-04	1,779,088	1,983,132	204,044	11.47%	62,707	2,045,839	(5,590)
Aug-04	1,632,849	1,870,820	237,971	14.57%	16,010	1,886,830	(5,155)
Sep-04	1,645,116	1,705,719	60,603	3.68%	(152,677)	1,553,042	(4,243)
Oct-04	1,471,419	1,432,324	(39,095)	-2.66%	(83,939)	1,348,385	(3,684)
Nov-04	1,381,364	1,394,301	12,937	0.94%	298,276	1,692,577	(4,625)
Dec-04	2,129,890	2,203,013	73,123	3.43%	364,500	2,567,513	(7,015)
Total	21,860,708	22,450,522	589,814	2.70%	38,084	22,488,606	(61,444)
Summer	6,744,279	7,169,839	425,560	6.31%	86,902	7,256,741	(19,827)
Other	15,116,429	15,280,683	164,254	1.09%	(48,818)	15,231,865	(41,617)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO934)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	416,042	448,281	32,239	7.75%	(34,756)	413,525	(1,130)
Feb-04	392,523	381,919	(10,604)	-2.70%	2,301	384,220	(1,050)
Mar-04	369,098	385,391	16,293	4.41%	(35,507)	349,884	(956)
Apr-04	302,893	302,452	(441)	-0.15%	(56,436)	246,016	(672)
May-04	267,308	254,324	(12,984)	-4.86%	40,270	294,594	(805)
Jun-04	356,961	336,629	(20,332)	-5.70%	61,315	397,944	(1,087)
Jul-04	432,341	479,304	46,963	10.86%	79,415	558,719	(1,527)
Aug-04	473,122	539,205	66,083	13.97%	(29,767)	509,438	(1,392)
Sep-04	436,410	458,565	22,155	5.08%	(66,570)	391,995	(1,071)
Oct-04	360,598	350,331	(10,267)	-2.85%	(70,606)	279,725	(764)
Nov-04	265,623	267,012	1,389	0.52%	37,696	304,708	(833)
Dec-04	349,791	363,137	13,346	3.82%	51,027	414,164	(1,132)
Total	4,422,710	4,566,550	143,840	3.25%	(21,618)	4,544,932	(12,418)
Summer	1,698,834	1,813,703	114,869	6.76%	44,393	1,858,096	(5,077)
Other	2,723,876	2,752,847	28,971	1.06%	(66,011)	2,686,836	(7,341)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Large General Service (MO940)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	31,684,474	33,204,086	1,519,612	4.80%	(1,331,187)	31,872,899	(87,084)
Feb-04	31,683,610	31,080,136	(603,474)	-1.90%	(504,056)	30,576,080	(83,541)
Mar-04	30,874,599	31,431,516	556,917	1.80%	(3,429)	31,428,087	(85,869)
Apr-04	27,858,618	27,752,023	(106,595)	-0.38%	(322,324)	27,429,699	(74,945)
May-04	29,859,571	29,125,853	(733,718)	-2.46%	1,007,528	30,133,381	(82,332)
Jun-04	32,914,294	32,015,558	(898,736)	-2.73%	1,469,749	33,485,307	(91,490)
Jul-04	34,869,823	37,214,316	2,344,493	6.72%	369,804	37,584,120	(102,689)
Aug-04	32,928,800	35,680,016	2,751,216	8.36%	692,986	36,373,002	(99,380)
Sep-04	33,728,143	34,284,175	556,032	1.65%	(1,744,497)	32,539,678	(88,906)
Oct-04	30,642,853	30,097,069	(545,784)	-1.78%	(1,670,379)	28,426,690	(77,669)
Nov-04	27,094,587	26,830,917	(263,670)	-0.97%	885,000	27,715,917	(75,727)
Dec-04	32,424,806	32,703,645	278,839	0.86%	1,431,882	34,135,527	(93,266)
Total	376,564,178	381,419,310	4,855,132	1.29%	281,077	381,700,387	(1,042,897)
Summer	134,441,060	139,194,065	4,753,005	3.54%	788,042	139,982,107	(382,465)
Other	242,123,118	242,225,245	102,127	0.04%	(506,965)	241,718,280	(660,432)

Aquila Networks L&P
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO941)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	384,242	417,931	33,689	8.77%	(229)	417,702	(1,141)
Feb-04	435,399	417,830	(17,569)	-4.04%	(28,767)	389,063	(1,063)
Mar-04	325,030	338,820	13,790	4.24%	(71,022)	267,798	(732)
Apr-04	197,150	197,066	(84)	-0.04%	(39,762)	157,304	(430)
May-04	156,213	148,958	(7,255)	-4.64%	(5,894)	143,064	(391)
Jun-04	157,710	147,686	(10,024)	-6.36%	8,008	155,694	(425)
Jul-04	156,298	174,325	18,027	11.53%	13,925	188,250	(514)
Aug-04	152,324	174,812	22,488	14.76%	4,527	179,339	(490)
Sep-04	160,153	166,871	6,718	4.19%	(18,694)	148,177	(405)
Oct-04	146,051	142,102	(3,949)	-2.70%	152	142,254	(389)
Nov-04	162,811	164,624	1,813	1.11%	60,300	224,924	(615)
Dec-04	291,813	301,997	10,184	3.49%	52,948	354,945	(970)
Total	2,725,194	2,793,022	67,828	2.49%	(24,508)	2,768,514	(7,564)
Summer	626,485	663,694	37,209	5.94%	7,766	671,460	(1,835)
Other	2,098,709	2,129,328	30,619	1.46%	(32,274)	2,097,054	(5,730)

Aquila Networks MPS
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Small General Service (MO710 & MO711)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	66,130,542	69,613,760	3,483,218	5.27%	(4,339,885)	65,273,875	(178,344)
Feb-04	63,029,591	61,671,161	(1,358,430)	-2.16%	(2,454,143)	59,217,018	(161,795)
Mar-04	60,448,103	62,045,240	1,597,137	2.64%	(632,504)	61,412,736	(167,794)
Apr-04	53,057,711	52,149,549	(908,162)	-1.71%	(2,169,008)	49,980,541	(136,559)
May-04	55,874,030	52,989,520	(2,884,510)	-5.16%	3,545,981	56,535,501	(154,469)
Jun-04	65,256,529	62,441,401	(2,815,128)	-4.31%	6,004,835	68,446,236	(187,012)
Jul-04	72,738,811	81,136,201	8,397,390	11.54%	5,695,694	86,831,895	(237,246)
Aug-04	70,386,716	80,197,431	9,810,715	13.94%	(1,513,808)	78,683,623	(214,983)
Sep-04	69,297,606	71,474,745	2,177,139	3.14%	(8,643,917)	62,830,828	(171,669)
Oct-04	57,318,366	55,965,584	(1,352,782)	-2.36%	(3,602,043)	52,363,541	(143,070)
Nov-04	50,842,332	50,450,062	(392,270)	-0.77%	87,249	50,537,311	(138,080)
Dec-04	58,461,383	59,289,595	828,212	1.42%	5,667,737	64,957,332	(177,479)
Total	742,841,720	759,424,249	16,582,529	2.23%	(2,353,812)	757,070,437	(2,068,498)
Summer	277,679,662	295,249,778	17,570,116	6.33%	1,542,804	296,792,582	(810,909)
Other	465,162,058	464,174,471	(987,587)	-0.21%	(3,896,616)	460,277,855	(1,257,590)

Aquila Networks MPS
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Large General Service (MO720)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	65,628,433	69,104,643	3,476,210	5.30%	(3,179,708)	65,924,935	(180,123)
Feb-04	60,958,326	59,351,756	(1,606,570)	-2.64%	(2,664,510)	56,687,246	(154,883)
Mar-04	60,776,176	62,035,508	1,259,332	2.07%	1,406,841	63,442,349	(173,340)
Apr-04	55,265,864	54,581,578	(684,286)	-1.24%	287,134	54,868,712	(149,915)
May-04	61,385,710	59,854,691	(1,531,019)	-2.49%	2,420,880	62,275,571	(170,152)
Jun-04	64,173,931	62,777,298	(1,396,633)	-2.18%	3,206,062	65,983,360	(180,282)
Jul-04	74,095,046	79,658,217	5,563,171	7.51%	2,146,697	81,804,914	(223,511)
Aug-04	69,548,830	75,246,047	5,697,217	8.19%	1,349,280	76,595,327	(209,277)
Sep-04	73,205,264	74,142,207	936,943	1.28%	(4,277,403)	69,864,804	(190,887)
Oct-04	65,577,254	64,962,530	(614,724)	-0.94%	(1,637,720)	63,324,810	(173,019)
Nov-04	59,336,768	59,059,485	(277,283)	-0.47%	(1,929,064)	57,130,421	(156,094)
Dec-04	62,612,745	63,153,114	540,369	0.86%	3,277,341	66,430,455	(181,504)
Total	772,564,347	783,927,074	11,362,727	1.47%	405,830	784,332,904	(2,142,986)
Summer	281,023,071	291,823,769	10,800,698	3.84%	2,424,636	294,248,405	(803,957)
Other	491,541,276	492,103,305	562,029	0.11%	(2,018,806)	490,084,499	(1,339,029)

Aquila Networks MPS
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Schools and Churches (MO740)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	2,498,062	2,729,943	231,881	9.28%	(117,933)	2,612,010	(7,137)
Feb-04	2,546,554	2,450,763	(95,791)	-3.76%	(76,096)	2,374,667	(6,488)
Mar-04	2,299,877	2,422,898	123,021	5.35%	(167,775)	2,255,123	(6,162)
Apr-04	1,886,880	1,873,819	(13,061)	-0.69%	(113,610)	1,760,209	(4,809)
May-04	1,978,422	1,796,861	(181,561)	-9.18%	161,815	1,958,676	(5,352)
Jun-04	2,375,046	2,218,985	(156,061)	-6.57%	305,704	2,524,689	(6,898)
Jul-04	2,685,534	3,242,463	556,929	20.74%	576,767	3,819,230	(10,435)
Aug-04	2,812,256	3,470,514	658,258	23.41%	(287,866)	3,182,648	(8,696)
Sep-04	2,817,615	2,952,514	134,899	4.79%	(296,963)	2,655,551	(7,256)
Oct-04	2,420,044	2,330,925	(89,119)	-3.68%	(356,111)	1,974,814	(5,396)
Nov-04	1,846,116	1,821,185	(24,931)	-1.35%	71,026	1,892,211	(5,170)
Dec-04	2,192,189	2,263,654	71,465	3.26%	164,565	2,428,219	(6,634)
Total	28,358,595	29,574,524	1,215,929	4.29%	(136,477)	29,438,047	(80,432)
Summer	10,690,451	11,884,476	1,194,025	11.17%	297,642	12,182,118	(33,284)
Other	17,668,144	17,690,048	21,904	0.12%	(434,119)	17,255,929	(47,147)

Aquila Networks MPS
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential General Use (MO860)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	135,549,238	144,473,365	8,924,127	6.58%	(13,188,694)	131,284,671	(358,701)
Feb-04	124,359,768	121,476,175	(2,883,593)	-2.32%	(7,275,807)	114,200,368	(312,023)
Mar-04	104,451,798	108,490,241	4,038,443	3.87%	(3,488,645)	105,001,596	(286,890)
Apr-04	95,836,853	94,028,796	(1,808,057)	-1.89%	(9,733,890)	84,294,906	(230,314)
May-04	102,091,396	91,013,690	(11,077,706)	-10.85%	13,713,081	104,726,771	(286,139)
Jun-04	142,693,538	128,710,629	(13,982,909)	-9.80%	32,924,731	161,635,360	(441,627)
Jul-04	174,850,974	222,858,947	48,007,973	27.46%	48,729,901	271,588,848	(742,046)
Aug-04	177,341,342	239,534,616	62,193,274	35.07%	(21,444,724)	218,089,892	(595,874)
Sep-04	161,226,563	179,466,576	18,240,013	11.31%	(49,789,438)	129,677,138	(354,309)
Oct-04	119,870,797	114,364,036	(5,506,761)	-4.59%	(14,652,384)	99,711,652	(272,436)
Nov-04	93,459,936	93,558,281	98,345	0.11%	8,294,678	101,852,959	(278,287)
Dec-04	117,457,418	120,684,271	3,226,853	2.75%	12,421,924	133,106,195	(363,678)
Total	1,549,189,621	1,658,659,623	109,470,002	7.07%	(3,489,267)	1,655,170,356	(4,522,323)
Summer	656,112,417	770,570,768	114,458,351	17.44%	10,420,470	780,991,238	(2,133,856)
Other	893,077,204	888,088,855	(4,988,349)	-0.56%	(13,909,737)	874,179,118	(2,388,468)

Aquila Networks MPS
Actual and Weather Normalized Sales (kWh)
Jan-Dec 2004
Residential Space Heat (MO870)

Billing Month	Actual	Weather Norm	Weather Adj	% Weather Adj	Days Adjustment	Normalized (366 Days)	Leap Year Adjustment
Jan-04	97,964,741	113,071,265	15,106,524	15.42%	(2,773,172)	110,298,093	(301,361)
Feb-04	104,654,181	98,867,516	(5,786,665)	-5.53%	(4,682,089)	94,185,427	(257,337)
Mar-04	78,103,179	86,385,070	8,281,891	10.60%	(14,897,808)	71,487,262	(195,320)
Apr-04	56,379,997	58,092,559	1,712,562	3.04%	(13,453,087)	44,639,472	(121,966)
May-04	47,283,505	44,599,462	(2,684,043)	-5.68%	(1,682,661)	42,916,801	(117,259)
Jun-04	55,041,010	51,161,074	(3,879,936)	-7.05%	10,522,698	61,683,772	(168,535)
Jul-04	64,139,083	76,703,412	12,564,329	19.59%	11,784,135	88,487,547	(241,769)
Aug-04	64,243,379	80,243,036	15,999,657	24.90%	(4,461,560)	75,781,476	(207,053)
Sep-04	61,166,374	65,742,695	4,576,321	7.48%	(12,655,026)	53,087,669	(145,048)
Oct-04	51,564,178	49,597,057	(1,967,121)	-3.81%	(3,682,218)	45,914,839	(125,450)
Nov-04	46,012,181	48,402,234	2,390,053	5.19%	16,641,631	65,043,865	(177,715)
Dec-04	78,280,994	84,458,320	6,177,326	7.89%	(511,148)	83,947,172	(229,364)
Total	804,832,802	857,323,700	52,490,898	6.52%	(19,850,305)	837,473,395	(2,288,179)
Summer	244,589,846	273,850,217	29,260,371	11.96%	5,190,247	279,040,464	(762,406)
Other	560,242,956	583,473,483	23,230,527	4.15%	(25,040,552)	558,432,931	(1,525,773)

Aquila Networks - L&P
Net System Load
Normalized for 2004*
ER-2005-0436

Month	Monthly Usage (MWh)				Monthly Peaks (MW)				Load Factor	
	Actual	Normal	Adj	% Adj	Actual	Normal	Adj	% Adj	Actual	Normal
Jan-04	190,394	202,722	12,328	6.48%	357	351	(6)	-1.63%	0.72	0.78
Feb-04	170,388	172,112	1,724	1.01%	333	335	2	0.68%	0.74	0.74
Mar-04	154,480	157,542	3,062	1.98%	268	282	14	5.21%	0.77	0.75
Apr-04	135,975	132,710	(3,265)	-2.40%	242	237	(5)	-1.91%	0.78	0.78
May-04	153,318	142,295	(11,023)	-7.19%	332	301	(31)	-9.45%	0.62	0.64
Jun-04	159,827	169,652	9,825	6.15%	337	339	2	0.47%	0.66	0.70
Jul-04	181,798	217,583	35,785	19.68%	398	432	34	8.61%	0.61	0.68
Aug-04	172,487	190,546	18,059	10.47%	399	379	(20)	-4.99%	0.58	0.68
Sep-04	159,117	156,061	(3,056)	-1.92%	341	325	(16)	-4.64%	0.65	0.67
Oct-04	142,425	141,480	(945)	-0.66%	240	233	(7)	-3.09%	0.80	0.82
Nov-04	149,879	154,140	4,261	2.84%	284	275	(9)	-3.15%	0.73	0.78
Dec-04	178,991	185,857	6,866	3.84%	329	332	3	0.91%	0.73	0.75
Annual	1,949,079	2,022,702	73,623	3.78%	399	432	33	8.34%	0.56	0.53

Summer	673,229	733,843	60,614	9.00%	399	432	33	8.34%	0.58	0.58
Other	1,275,850	1,288,859	13,009	1.02%	357	351	(6)	-1.63%	0.61	0.63

* Normalized for weather, growth, and large customers

**Aquila Networks MPS
Net System Load
Normalized for 2004*
ER-2005-0436**

Month	Monthly Usage (MWh)				Monthly Peaks (MW)				Load Factor	
	Actual	Normal	Adj	% Adj	Actual	Normal	Adj	% Adj	Actual	Normal
Jan-04	513,600	542,769	29,169	5.68%	951	897	(54)	-5.70%	0.73	0.81
Feb-04	461,895	467,689	5,794	1.25%	893	889	(4)	-0.40%	0.74	0.76
Mar-04	427,767	434,916	7,149	1.67%	735	777	42	5.71%	0.78	0.75
Apr-04	387,591	374,272	(13,319)	-3.44%	689	651	(38)	-5.56%	0.78	0.80
May-04	468,836	427,996	(40,840)	-8.71%	1,064	879	(185)	-17.36%	0.59	0.65
Jun-04	497,124	532,022	34,898	7.02%	1,171	1,169	(2)	-0.18%	0.59	0.63
Jul-04	581,011	718,138	137,127	23.60%	1,344	1,412	68	5.05%	0.58	0.68
Aug-04	545,734	618,846	73,112	13.40%	1,335	1,338	3	0.25%	0.55	0.62
Sep-04	491,001	477,207	(13,794)	-2.81%	1,133	1,049	(84)	-7.43%	0.60	0.63
Oct-04	409,677	406,106	(3,571)	-0.87%	727	704	(23)	-3.13%	0.76	0.78
Nov-04	425,352	437,105	11,753	2.76%	864	833	(31)	-3.60%	0.68	0.73
Dec-04	501,823	519,782	17,959	3.58%	957	931	(26)	-2.75%	0.70	0.75
Annual	5,711,411	5,956,848	245,437	4.30%	1,344	1,412	68	5.05%	0.49	0.48
Summer	2,114,870	2,346,213	231,343	10.94%	1,344	1,412	68	5.05%	0.54	0.57
Other	3,596,541	3,610,635	14,094	0.39%	1,064	931	(133)	-12.53%	0.58	0.67

* Normalized for weather, growth, and large customers

Cases in Which Staff Weather Normalization Method Was Used
in the Normalization of Net System Loads

EO-87-175	ER-94-163	EM-2000-292
EO-90-101	ER-94-174	ER-2001-299
EO-90-138	ER-95-279	ER-2001-672
ER-93-37	ER-97-81	EC-2002-1
ER-93-41	EM-97-575	ER-2002-424
EO-93-351	ER-2004-0034	ER-2004-0570
ER-2005-0436		