

Exhibit No.: 1101  
Issues: Depreciation and Accumulated  
Depreciation Reserve  
Witness: Rosella L. Schad  
Sponsoring Party: MoPSC Staff  
Type of Exhibit: Direct Testimony  
Case No.: ER-2004-0034

*Date Testimony Prepared: December 16, 2003 as modified February 27, 2004*

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY SERVICES DIVISION**

**FILED<sup>2</sup>**

**FEB 27 2004**

**DIRECT TESTIMONY**

Missouri Public  
Service Commission

**OF**

**ROSELLA L. SCHAD**

**AQUILA, INC. d/b/a AQUILA NETWORKS-MPS (Electric)**

**CASE NO. ER-2004-0034**

*Jefferson City, Missouri  
December 2003*

**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

In the matter of Aquila, Inc. d/b/a Aquila Networks    )  
L&P and Aquila Networks MPS to implement a    ) Case No. ER-2004-0034  
general rate increase in electricity.                    )

AFFIDAVIT OF ROSELLA L. SCHAD, PE

STATE OF MISSOURI    )  
                                  )        ss.  
COUNTY OF COLE     )

Rosella L. Schad, PE, of lawful age, on her oath states: that she has participated in the preparation of the following direct testimony as modified on February 27, 2004, in question and answer form, consisting of 16 pages to be presented in the above case; that the answers in the following direct testimony as modified on February 27, 2004, were given by her; that she has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of her knowledge and belief.

Rosella L. Schad, PE  
Rosella L. Schad, PE

Subscribed and sworn to before me this 27<sup>th</sup> day of February 2004.



Toni M. Charlton  
Notary Public

TONI M. CHARLTON  
NOTARY PUBLIC STATE OF MISSOURI  
COUNTY OF COLE  
My Commission Expires December 28, 2004

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ROSELLA L. SCHAD**

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**CASE NO. ER-2004-0034**

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1 Q. Please describe your duties while employed by the Commission.

2 A. I am responsible for engineering analyses and depreciation rate determinations  
3 of companies regulated by the Commission.

4 Q. Have you previously filed testimony before this Commission?

5 A. Yes. As shown in Schedule 1, attached to my testimony, is a list in which I  
6 have previously filed testimony and the issues that I addressed.

7 **DEPRECIATION ISSUES**

8 Q. Please state the purpose of your testimony in this case.

9 A. The purpose of my testimony is to make recommendations for Aquila, Inc.  
10 d/b/a Aquila Networks-MPS (Electric)  
11 (Company) concerning the depreciation rates that will allow the Company to collect the  
12 original cost of its investment over the life of these assets. I will also offer testimony  
13 regarding the treatment of the plant depreciation reserves.

14 Staff's proposal in this case is:

- 15 1. That Staff's Proposed Depreciation Rates based on Staff's Average  
16 Service Lives (ASLs), as shown in the attached Schedule 3-1, be  
17 effective on the date of the Commission's order in this case.  
18 2. That the relative magnitude of the Company's over-accrued  
19 depreciation reserve be noted but not reduced at this time.

20 Q. What expert knowledge, skill, experience, training or education do you have in  
21 these matters?

22 A. I have acquired general knowledge of these topics through my experience and  
23 analyses in prior rate cases before this Commission as noted above and as I assisted in Staff's

1 filings in Case Nos. GR-2000-512, WR-2000-844, ER-2001-299, and ER-2001-672. I have  
2 also reviewed prior Commission decisions with regard to depreciation issues. I have  
3 reviewed the testimony, workpapers and responses to Staff's data requests addressing these  
4 issues in prior cases.

5 I have attended the National Conference of Regulatory Commission Engineers'  
6 meeting and symposiums offered on-site on current topics of regulation. I have received  
7 formal depreciation training offered by Depreciation Programs, Inc., the Society of  
8 Depreciation Professionals, and Gannett Fleming Valuation and Rate Consultants, Inc. I have  
9 had on-going discussions with Gannett Fleming technical personnel regarding the  
10 functionality of the software, including data input requirements and statistical analysis and  
11 interpretation and application of the user's manual.

12 I have attended electric utility IRP (Integrated Resources Planning) meetings  
13 with Staff, where resource planning, capacity upgrades, and proposed generation additions are  
14 discussed. I have toured all the major generating facilities of all regulated electric companies  
15 in the state of Missouri and met with their engineers, operating personnel and management to  
16 discuss plant operations, both past and present, as well as any future activities being  
17 considered.

18 I am currently enrolled at the University of Missouri in a Masters of Public  
19 Administration with an anticipated completion date of March 2004. My coursework has  
20 included accounting, statistics, research methods, and economics classes. Finally, I  
21 successfully passed the Professional Engineering Exam for Mechanical Engineers, which  
22 covers engineering design and analysis principles, as well as standards and codes.

1 Q. When were depreciation rates for the Company last adopted by a Commission  
2 order?

3 A. Depreciation rates were last adopted for the Company by a Stipulation And  
4 Agreement in Case Nos. ER-2001-672 and EC-2002-265, effective March 21, 2002 for plant  
5 assets of Aquila Networks-MPS-Electric.  
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9 **DEPRECIATION STUDY**

10 Q. What is the definition of depreciation?

11 A. Depreciation is the loss, not restored by current maintenance, which is due to  
12 all factors causing the ultimate retirement of the property. These factors embrace wear and  
13 tear, decay, inadequacy and obsolescence. Annual depreciation is the loss that takes place in  
14 a year. Thus, annual depreciation expense, distributed over the life of each asset, yields the  
15 full recovery of the original cost of the utility's assets.

16 Q. Please describe the depreciation study of the Company's electric and steam  
17 property that you conducted in this case.

18 A. I performed a broad group-average life depreciation study. Under the broad  
19 group (BG) procedure, all units of plant within a particular depreciation category, usually a  
20 plant account or sub account, are considered to be one group. Development of accrual rates is  
21 based upon assets' placement history, an estimation of the average service lives (ASL), and  
22 dispersion characteristics of the assets' retirements. ASL is a dynamic feature of assets in a  
23 plant account, and therefore must be periodically analyzed and revised. The ASL, stated in

1 units of years, is the average expected life of all units of the group regardless of the placement  
2 date. The ASL is determined by an analysis of records of actual annual additions and  
3 retirements by vintage (year of placement).

4 Q. What are the steps involved in life estimation?

5 A. The four primary steps involve: (1) reviewing the Company's historical  
6 placement and retirement plant data for reasonableness and adequacy of sufficient data;  
7 (2) touring Company facilities and meeting with Company engineers and plant operations  
8 personnel, as well as other Staff, to discuss current developments that may affect the life of  
9 plant in service; (3) performing a statistical life analysis of the plant's retirement experience  
10 using the Gannett Fleming Depreciation Analysis Software; and (4) applying experience and  
11 informed judgment to the results of the software analysis for reasonableness of the ASL  
12 results.

13 Q. If the data are insufficient or the results of the analysis are unreasonable, how  
14 does Staff make life estimations?

15 A. Staff uses informed judgment and recognition of current developments to make  
16 a recommendation for life estimation.

17 Q. How does the Gannett Fleming Depreciation Software develop an ASL?

18 A. The Company's historical plant data for an account are inputs to the  
19 depreciation analyses software. Plant data are plant additions (\$) by calendar year, called a  
20 vintage, and retirements (\$) from each vintage, by calendar year. The software uses a  
21 mathematical computation to derive the percentage of dollars surviving, as a function of age,  
22 for all vintages combined. The results are graphed as a survivor plot and, using a least



1 squares method, the results are mathematically fitted to an Iowa-type curve (defined below).

2 A numerical integration of the area under the curve determines the ASL.

3 Q. What are the Iowa-type curves?

4 A. The Iowa curves are widely used models of the life characteristics of utility  
5 property. The system of Iowa curves is a family of curve shapes empirically derived from  
6 analysis of mortality data of 176 types of utility and industrial property. The curves were  
7 developed at the Iowa Engineering Experiment Station at what is presently known as Iowa  
8 State University. The Iowa curves were first published in 1935 and reconfirmed in 1980.

9 Q. What are some developments that may be potential reasons that an account's  
10 ASL may change over time?

11 A. Current developments such as technology changes, environmental regulations,  
12 regulatory requirements or accounting changes can modify an account's ASL. Changes in the  
13 materials from which different vintages of plant were manufactured or changes in the  
14 construction process to place these different vintages of plant may affect the number of years  
15 newer plant remains in service. This would affect the ASL.

16 Q. Please describe the depreciation system used by Staff.

17 A. A depreciation system can be defined with three components: a method, a  
18 procedure and a technique. The system used in Staff's depreciation study is the Straight Line  
19 Method, a Broad Group Procedure, and the Whole Life Technique. Parameters estimated  
20 from service life studies, selection of an appropriate depreciation system, experience and  
21 informed knowledge are all utilized to develop an annual depreciation accrual rate.

22 Q. Why should depreciation studies be conducted periodically?

1           A.     Depreciation studies are needed to assess the continuing reasonableness of  
2 parameters and accrual rates derived from prior estimates. Property accounts contain many  
3 vintages of plant, placed in service over many years. While the plant function may be the  
4 same, the material and construction process may change significantly over time. Other factors  
5 that might affect ASL are accounting system changes for designation of unit of property or  
6 changes in the method of recording construction costs as current expense or capital  
7 investment.

8           Q.     How is an ASL used to establish the annual depreciation expense?

9           A.     An account's ASL divided into 100% ( $100\% / \text{ASL}$ ), where the 100%  
10 represents all of the plant in service for the account being studied, is the account's  
11 depreciation rate, expressed as a percentage. The depreciation rate is used for recovery of  
12 original cost of plant over the used and useful life of each account's plant. The Company's  
13 annual depreciation expense is the sum of each account's depreciation rate multiplied by the  
14 original cost of assets currently in that plant account for each year.

15          Q.     Why is Staff's process for developing an appropriate annual depreciation  
16 accrual rate significant to both the Company and the ratepayer?

17          A.     Annual depreciation expense is a portion of the Company's revenue  
18 requirement. Allocating costs to the appropriate recovery period is important because it  
19 spreads the Company's capital costs over the years that the Company's assets provide  
20 services. Development of appropriate depreciation expense is important because the  
21 depreciation rates significantly influence the amount that customers will pay to the Company  
22 for the capital plant used to provide service.

1 **DEPRECIATION STUDY OF AQUILA NETWORKS-MPS (ELECTRIC)**  
2

3 Q. Did you perform a depreciation study of the Company's capital plant?

4 A. Yes.

5 Q. Please describe the assignment of the Company's capital plant to the different  
6 operating divisions.

7 A.

8 Aquila Networks-MPS Electric is Total MPS Electric and identifies total  
9 MPS electric operations, including Electric, Common, and an allocation of Corporate  
10 facilities.

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14 Q. Please describe the assignment of general plant to "General," "Common  
15 General," and "Corporate General."

16 A. Assignment of plant to the function "General" is plant specifically used by the  
17 utility division for the operation of that service, i.e. electric service. Assignment of plant to  
18 the function "Common General" is plant specifically used by the utility division for the shared  
19 operation of multiple services in a jurisdiction, i.e. gas, electric . The  
20 Company's administrative offices are located in Raytown, MO  
21 . Assignment of plant to the function "Corporate General" is plant specifically  
22 used at the Company's corporate headquarters at 20 West 9<sup>th</sup> St, Kansas City, MO. and  
23 allocated to each utility division. The corporate headquarters is where the corporate  
24 executive's offices and the corporate computer system are located.

1           Q.     How did Staff make a life estimate for the Company's "Steam Production"  
2 accounts?

3           A.     Staff made life estimates by using judgment and statistical life analyses of the  
4 Sibley steam production plant accounts.

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14 Staff recommends its life analyses of the Sibley steam production accounts be utilized to set  
15 depreciation rates for the Company's "Steam Production" plant accounts. Given that the plant  
16 assets in the respective accounts should be similar, the historical retirement activity should  
17 also be similar.

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21           Q.     How did Staff make a life estimate for the Company's "Other Production,"  
22 "Transmission," "Distribution," and "General" plant accounts?

1           A.       Staff made life estimates by using judgment and statistical life analyses of the  
2 MPS facilities, with the exception of two transmission plant accounts, Account 357.000,  
3 Underground Conduit, and Account 358.000, Underground Conductors and Devices. These  
4 two accounts had insufficient historical placement and retirement activity for a software  
5 analysis. Staff recommends its life analyses of two distribution plant accounts with  
6 comparable plant assets, Account 366.000, Underground Conduit, and Account 367.000,  
7 Underground Conductors and Devices, be utilized to set depreciation rates for the two  
8 transmission plant accounts. Given that the plant assets should be comparable, the historical  
9 retirement activity should be comparable.

10                               Staff recommends its life analyses of the MPS' "Other  
11 Production," "Transmission," "Distribution," and "General" plant accounts be utilized to set  
12 depreciation rates for the Company's "Other Production," "Transmission," "Distribution,"  
13 and "General" plant accounts.

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16           Q.       How did Staff make a life estimate for the Company's "Common General" and  
17 "Corporate General" plant accounts?

18           A.  
19  
20                               Staff recommends its life analyses of the MPS' general plant accounts be utilized to  
21 set depreciation rates for the Company's "Common General" and "Corporate General" plant  
22 accounts. Given that the plant assets in the respective accounts should be similar, the  
23 historical retirement activity should also be similar.

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Q. Has Staff provided the Company the details of Staff's work?

A. Yes. On December 9, 2003 Staff provided the Company a copy of the Schedule 3-1 identifying plant accounts; their respective proposed depreciation rates; proposed ASLs and Iowa Curve selections; currently ordered depreciation rates; the difference in annual depreciation accrual between Staff's proposed depreciation rates and currently ordered depreciation rates as of September 30, 2003; and analysis of the accrued depreciation reserve and theoretical reserve (discussed below) as of December 31, 2002 for corporate accounts and as of December 31, 2001 for the remaining accounts. Staff has also provided the Company on December 9, 2003 a copy of Staff's depreciation study and workpapers.

1 Q. In summary, what is Staff's recommendation for depreciation rates for the  
2 Company's plant accounts?

3 A. Staff's recommended depreciation rates for the Company's plant assets are  
4 presented in Schedule 2-1.

5 **DEPRECIATION RESERVE ANALYSIS**

6 Q. What other analyses are performed in a depreciation study?

7 A. Another analysis performed in a depreciation study is an examination of the  
8 adequacy of the booked depreciation reserve and identification of any reserve over- or under-  
9 recovery.

10 Q. Why does Staff examine the booked depreciation reserve?

11 A. The analysis is performed to measure how the actual depreciation reserve  
12 compares to the dollars that should be in the depreciation reserve based on currently  
13 determined ASLs and curve types for each account.

14 Q. Why is the analysis significant to consumers?

15 A. This analysis allows the analyst to detect whether prior depreciation estimates  
16 have differed significantly from actual experience. Based on this information, the analyst  
17 determines whether the cost of service needs adjustment to reflect and correct a significant  
18 historical deviation. Cost of service adjustments are reflected in consumer rates.

19 Q. Did Staff perform an analysis of the booked depreciation reserve?

20 A. Yes.

21 Q. Please describe the analysis.

22 A. An analysis of the booked depreciation reserve is performed by comparing the  
23 amount of the booked depreciation reserve as of a certain date to a theoretical depreciation

Direct Testimony of  
Rosella L. Schad

1 reserve amount that is determined with the revised average service life and dispersion  
2 characteristics of the selected Iowa-type curve on that same date for each account. The  
3 theoretical depreciation reserve can be viewed as the **difference** between the original booked  
4 cost of plant presently in service and the summation of annual depreciation expense collected  
5 between now and the date of final retirement of that plant, using the ASL and dispersion  
6 characteristics of the Iowa-type curve selected as the basis for the future depreciation rates.  
7 Theoretically, this **difference** is the amount that should be the current booked depreciation  
8 reserve, theoretically.

9 **DEPRECIATION RESERVE ANALYSIS FOR AQUILA NETWORKS-MPS**  
10 **(ELECTRIC)**

11 Q. What were the results of Staff's examination of the Company's booked  
12 depreciation reserve?

13 A. Staff's results found an approximate \$168 million over-accrual of the  
14 depreciation accrued reserve for the MPS-Electric and Common plant.

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16  
17 Staff results found an approximate \$10 million under-accrual of the depreciation  
18 accrued reserve for MPS' "Corporate General" plant.

19  
20 Q. What are Staff's bases for adjustment for any booked reserve imbalance?

21 A. The need for, the magnitude of, and the timing of the actual adjustment should  
22 be based upon consideration of several factors: the characteristics of the account, the causes  
23 of the difference, and the year-to-year volatility of the accumulated provision for depreciation



1 as well as the magnitude of the imbalance. Future service life cannot be estimated to a degree  
2 of certainty that guarantees that the actual life will not be different. In fact, it is possible that  
3 the currently determined ASL will differ from the ASL that occurs.

4 Q. Can Staff identify any factors that created the \$168 million dollar over-accrual  
5 in the booked reserve for MPS' Electric and Common plant?

6 A. Yes. Past depreciation rates included a component for cost of removal and  
7 gross salvage. The magnitude of this collection was several times the actual amount spent  
8 annually. As an example of this, the component of the depreciation rates for cost of removal  
9 multiplied times the plant balance for 12-31-2001 generated over \$14.5 million annually for  
10 cost of removal. As indicated in Staff witness Cary G. Featherstone's direct testimony, the  
11 average net amount, for the five years 1998-2002, spent annually for cost of removal was  
12 approximately \$1.5 million. For interim cost of removal, the Company was on average  
13 charging to its MPS-Electric customers over \$13 million annually more than the net amount  
14 actually spent.

15 Q. Can Staff identify any factors that created the \$10 million under-accrual in the  
16 booked reserve for MPS' "Corporate General" plant?

17 A. Yes. The ordered depreciation rate from Case No. ER-97-394 for  
18 "Common General" computer plant accounts was 0%. The ordered depreciation rate from  
19 Case No. ER-2001-672 for "Common General" computer plant accounts continued at 0%. It  
20 is my understanding that the Company used this ordered rate for the MPS "Corporate  
21 General" plant account, creating the existing under-accrual.

22 Q. What are Staff's recommendations regarding the booked reserve?

1           A.       Staff's first recommendation is that the over-accrual of the booked reserve for  
2 the Company's electric, common assets be noted, but that no adjustment to the  
3 reserve made at this time because of the dynamics of depreciation estimation process. After  
4 another depreciation study is conducted, trends in the over-accrual can be identified and  
5 appropriate steps can be proposed. Evaluation of these booked reserves should be made in  
6 future rate filings and, if appropriate, addressed if the relative magnitude changes.

7           Staff's second recommendation at this time is that the under-accrual of the  
8 booked reserve for MPS' "Corporate General" plant assets be noted, but that no  
9 adjustment to the reserve made at this time. Again, after another depreciation study is  
10 conducted, trends in the under-accrual can be identified and appropriate steps can be  
11 proposed. Evaluation of these booked reserves should be made in future rate filings and, if  
12 appropriate, a transfer of dollars from over-accrued accounts to under-accrued accounts be  
13 proposed.

14           Q.       Are there any other issues for Staff to address regarding the booked reserve for  
15 the Company's "Corporate General" plant accounts?

16           A.       Yes. Staff is currently conducting additional discovery on the booked reserve  
17 for these accounts. For further discussion, see Staff witness Steve M. Traxler's direct  
18 testimony. Again, Staff is recommending no additional adjustments to the booked reserve be  
19 made at this time.

20       **STAFF'S RECOMMENDATIONS**

21           Q.       Can you provide a summary of Staff's proposals for depreciation rates and  
22 accumulated depreciation reserve?

1           A.     Yes.   Staff recommends the Commission order that Staff's Proposed  
2 Depreciation Rates based on Staff's ASLs, as shown in the attached Schedule 3-1, be  
3 effective on the date of the Commission's order in this case.

4           Q.     Does Staff have any further concerns relating to the Company's depreciation  
5 issues?

6           A.     Yes.   Staff's concern with the relative magnitude of the Company's  
7 net over-accrued depreciation reserve should be noted, but Staff is recommending that the net  
8 over-recovery not be reduced at this time. After another depreciation study is conducted,  
9 trends in the net over-accrual can be identified and appropriate steps can be proposed.  
10 Evaluation of the Company's booked reserves should be made in future rate filings.

11          Q.     Does this conclude your direct testimony?

12          A.     Yes, it does.

**CASE PROCEEDING PARTICIPATION**

**ROSELLA L. SCHAD**

<b>COMPANY</b>	<b>CASE NO./ FILING</b>	<b>ISSUES</b>
Union Electric Company d/b/a AmerenUE	GR-2003-0517	Depreciation; Retirement of Production Plant
Northeast Missouri Rural Telephone Company and Modern Telecommunications Company	TM-2002-465 Rebuttal	Depreciation; Plant Upgrades and Improvements
Laclede Gas Company	GR-2002-356 Rebuttal	Decommissioning
Laclede Gas Company	GR-2002-356 Direct	Depreciation
Union Electric Company d/b/a AmerenUE	EC-2002-1 Surrebuttal	Depreciation; Steam Production Plant Retirement Dates; Decommissioning Costs; Callaway Interim Additions
Laclede Gas Company	GR-2001-629 Direct	Depreciation
Ozark Telephone Company	TC-2001-402 Direct	Depreciation Rates
Northeast Missouri Rural Telephone Company	TR-2001-344 Direct, Surrebuttal	Depreciation Rates
Oregon Farmers Mutual Telephone Company	TT-2001-328 Rebuttal	Depreciation Rates
KLM Telephone Company	TT-2001-120 Rebuttal	Depreciation Rates
Holway Telephone Company	TT-2001-119 Rebuttal	Depreciation Rates
Peace Valley Telephone Company	TT-2001-118 Rebuttal	Depreciation Rates
Iamo Telephone Company	TT-2001-116 Rebuttal	Depreciation Rates
Osage Water Company	WR-2000-557 Direct	Depreciation
Osage Water Company	SR-2000-556 Direct	Depreciation

**AQUILA, INC. d/b/a AQUILA NETWORKS-MPS (Electric)**

**CASE NO. ER-2004-0034**

<b>ACCOUNT NUMBER</b>	<b>ACCOUNT</b>	<b>Depreciation Rates (%) Staff Proposed</b>
	<b><u>ER-2004-0034</u></b>	
	<b><u>STEAM PRODUCTION PLANT</u></b>	
311.000	Structures and Improvements	2.22
312.000	Boiler Plant Eq.	2.22
314.000	Turbogenerator Units	2.22
315.000	Accessory Electric Eq.	2.63
316.000	Miscellaneous Power Plant Eq.	2.86
	<b><u>STEAM DISTRIBUTION PLANT</u></b>	
375.009	Structures and Improvements	2.22
376.009	Mains	2.27
379.009	Measuring and Regulating Station Eq.-City Gate	2.27
380.009	Services	2.27
381.009	Meters	4.00
	<b><u>OTHER PRODUCTION PLANT</u></b>	
341.000	Structures and Improvements	1.67
342.000	Fuel Holders and Accessories	2.86
343.000	Prime Movers	3.33
344.000	Generators	3.33
345.000	Accessory Electric Eq.	2.63
346.000	Miscellaneous Power Plant Eq.	2.86
	<b><u>TRANSMISSION PLANT</u></b>	
352.000	Structures and Improvements	1.67
353.000	Station Eq.	1.92
354.000	Towers and Fixtures	1.85
355.000	Poles and Fixtures	1.85
356.000	Overhead Conductors and Devices	1.67
357.000	Underground Conduit	1.43
358.000	Underground Conductors and Devices	1.92

**AQUILA, INC. d/b/a AQUILA NETWORKS-MPS (Electric)****CASE NO. ER-2004-0034**

<b>ACCOUNT NUMBER</b>	<b>ACCOUNT</b>	<b>Depreciation Rates (%) Staff Proposed</b>
	<b><u>ER-2004-0034</u></b>	
	<b><u>DISTRIBUTION PLANT</u></b>	
361.000	Structures and Improvements	1.67
362.000	Station Eq.	1.92
364.000	Poles, Towers and Fixtures	2.27
365.000	Overhead Conductors and Devices	1.82
366.000	Underground Conduit	1.43
367.000	Underground Conductors and Devices	1.92
368.000	Line Transformers	3.23
369.001	Overhead Services	2.27
369.002	Underground Services	2.27
370.001	Meters	2.00
370.002	Load Research Meters	8.33
371.000	Installations on Customers Premises	4.17
373.000	Street Lighting and Signal Systems	3.33
	<b><u>GENERAL PLANT</u></b>	
390.001	Structures and Improvements	2.22
391.001	Office Furniture and Eq.	4.55
391.003	Computer Hardware	14.29
391.004	Computer Software	14.29
391.005	Computer Systems Development	14.29
392.000	Transportation Eq.	8.33
393.000	Stores Eq.	3.70
394.000	Tools, Shop and Garage Eq.	3.70
395.000	Laboratory Eq.	3.45
396.000	Power Operated Eq.	6.25
397.000	Communications Eq.	3.45
398.000	Miscellaneous Eq.	4.35

**Aquila, Inc. dba Aquila Networks-MPS (Depreciation Rates ER-2004-0034)**

ACCOUNT NUMBER	ACCOUNT	Adjusted Jurisdictional Plant Balance (\$) 09/30/03	Average Service Life (Years) Staff Proposed	Average Service Life (Years) Company Proposed	Iowa Curve Staff Proposed	Depreciation Rates (%) Ordered	Depreciation Rates (%) Staff Proposed	Depreciation Rates (%) Company Proposed	Annual Accrual (Ordered Depreciation Rates) (\$) 9/30/03	Annual Accrual (Staff Proposed Depreciation Rates) (\$) 9/30/03	Annual Accrual (Company Proposed Depreciation Rates) (\$) 9/30/03	Plant Balance (\$) 12/31/01	Accrued Reserve (\$) 12/31/01	Theoretical Reserve (\$) 12/31/01	(Accrued - Theoretical Reserve) Difference (\$) 12/31/01
<b>ER-2004-0034 MPS ELECTRIC</b>															
<b>MPS ELECTRIC</b>															
<b>STEAM PRODUCTION PLANT</b>															
<b>JEFFREY ENERGY CENTER PLANT</b>															
311.000	Structures and Improvements	18,021,105	45	39.39	R0.5	3.23	2.22	2.34	582,082	400,069	421,694	18,228,211	12,530,615	4,868,731	7,661,884
312.000	Boiler Plant Eq.	58,268,059	45	37.25	R2	2.58	2.22	2.44	1,503,316	1,293,551	1,421,741	58,347,427	38,461,008	20,965,923	17,495,085
314.000	Turbogenerator Units	17,438,656	45	31.75	R4	3.70	2.22	3.06	645,230	387,138	533,623	16,905,473	7,346,698	5,323,497	2,023,201
315.000	Accessory Electric Eq.	6,282,221	38	44.07	R1.5	3.46	2.63	1.91	217,365	165,222	119,990	5,920,401	3,827,584	2,206,171	1,621,413
316.000	Miscellaneous Power Plant Eq.	1,501,241	35	28.17	R5	3.13	2.86	3.78	46,989	42,935	56,747	1,462,927	373,430	394,298	(20,868)
	Jeffrey Energy Center Steam Production Plant:	101,511,282							2,994,982	2,288,915	2,553,795	100,864,439	62,539,335	33,758,620	28,780,715
<b>SIBLEY PLANT</b>															
311.000	Structures and Improvements	36,733,820	45	24.68	R0.5	3.23	2.22	4.58	1,186,502	815,491	1,682,409	38,543,083	22,471,308	8,384,301	14,007,007
312.000	Boiler Plant Eq.	137,225,849	45	23.36	R2	2.43	2.22	4.98	3,334,588	3,046,414	6,833,847	132,699,434	66,732,757	36,344,012	30,388,745
314.000	Turbogenerator Units	54,113,141	45	21.28	R4	2.60	2.22	5.37	1,406,942	1,201,312	2,905,876	57,803,236	28,000,921	18,113,825	9,887,096
315.000	Accessory Electric Eq.	14,581,584	38	23.29	R1.5	3.46	2.63	4.86	504,523	383,496	708,665	17,977,336	8,451,115	5,910,595	2,540,520
316.000	Miscellaneous Power Plant Eq.	558,583	35	28.72	R5	3.13	2.86	3.86	17,484	15,975	21,561	610,605	380,481	337,255	43,226
	Sibley Steam Production Plant:	243,212,977							6,450,039	5,462,688	12,152,358	247,633,694	126,036,582	69,089,988	56,946,594
<b>OTHER PRODUCTION PLANT</b>															
341.000	Structures and Improvements	1,319,412	60	23.25	R2	2.49	1.67	3.34	32,853	22,034	44,068	2,133,946	952,953	296,731	656,222
342.000	Fuel Holders and Accessories	468,703	35	21.81	R5	3.06	2.86	3.58	14,342	13,405	16,780	1,286,981	985,824	352,802	633,022
343.000	Prime Movers	6,676,157	30	19.46	R2	4.15	3.33	4.78	277,061	222,316	319,120	10,957,158	2,990,982	1,464,042	1,526,940
343.001	Wind Turbines	179,373	30	23.45	R2	4.15	3.33	4.22	7,444	5,973	7,570	179,373	20,756	13,399	7,357
344.000	Generators	8,682,169	30	23.43	R5	3.13	3.33	3.39	271,752	289,116	294,326	11,133,659	5,939,906	3,438,867	2,501,039
345.000	Accessory Electric Eq.	1,996,503	38	21.58	R1.5	3.19	2.63	3.70	63,688	52,508	73,871	3,049,611	1,492,284	582,807	909,477
346.000	Miscellaneous Power Plant Eq.	20,000	35	13.66	R5	2.75	2.86	7.13	550	572	1,426	851,895	(36,277)	17,507	(53,784)
	Other Production Plant:	19,342,317							667,691	605,924	757,160	29,592,623	12,346,428	6,166,155	6,180,273
<b>GREENWOOD ENERGY CENTER PLANT</b>															
341.000	Structures and Improvements	1,940,749	60	23.25	R2	2.49	1.67	3.34	48,325	32,411	64,821	0	0		
342.000	Fuel Holders and Accessories	1,949,278	35	21.81	R5	3.06	2.86	3.58	59,648	55,749	69,784	0	0		
343.000	Prime Movers	28,128,541	30	19.46	R2	4.15	3.33	4.78	1,167,334	936,680	1,344,544	0	0		
344.000	Generators	6,656,186	30	23.43	R5	3.13	3.33	3.39	208,339	221,651	225,645	0	0		
345.000	Accessory Electric Eq.	4,875,977	38	21.58	R1.5	3.19	2.63	3.70	155,544	128,238	180,411	0	0		
346.000	Miscellaneous Power Plant Eq.	0	35	13.66	R5	2.75	2.86	7.13	0	0	0	0	0		
	Greenwood Energy Center Plant:	43,550,731							1,639,189	1,374,729	1,885,205	0	0		
<b>TRANSMISSION PLANT</b>															
352.000	Structures and Improvements	2,816,863	60	60.36	S6	2.22	1.67	1.60	62,534	47,042	45,070	2,641,211	1,060,357	894,446	165,911
353.000	Station Eq.	70,732,971	52	60.17	R1.5	2.00	1.92	1.63	1,414,659	1,358,073	1,152,947	70,387,348	23,303,271	16,101,158	7,202,113
354.000	Towers and Fixtures	319,399	54	53.92	L5	1.82	1.85	1.35	5,813	5,909	4,312	332,143	265,873	178,905	86,968
355.000	Poles and Fixtures	45,766,593	54	55.05	S0.5	2.08	1.85	2.71	951,945	846,682	1,240,275	40,942,159	13,674,165	8,523,615	5,150,550
356.000	Overhead Conductors and Devices	39,817,040	60	59.92	R2	1.85	1.67	2.12	736,615	664,945	844,121	36,918,960	15,581,196	9,095,284	6,485,912
357.000	Underground Conduit	0	70		R2		1.43		0	0	0	0	0	0	0
358.000	Underground Conductors and Devices	57,200	52	60.27	L2	3.13	1.92	1.69	1,790	198	967	57,959	37,602	23,075	14,527
	Transmission Plant:	159,510,066							3,173,358	2,923,749	3,287,692	151,279,780	53,922,464	34,816,483	19,105,981

**Aquila, Inc. dba Aquila Networks-MPS (Depreciation Rates ER-2004-0034)**

ACCOUNT NUMBER	ACCOUNT	Adjusted Jurisdictional Plant Balance (\$) 09/30/03	Average Service Life (Years) Staff Proposed	Average Service Life (Years) Company Proposed	Iowa Curve Staff Proposed	Depreciation Rates (%) Ordered	Depreciation Rates (%) Staff Proposed	Depreciation Rates (%) Company Proposed	Annual Accrual (Ordered Depreciation Rates) (\$) 9/30/03	Annual Accrual (Staff Proposed Depreciation Rates) (\$) 9/30/03	Annual Accrual (Company Proposed Depreciation Rates) (\$) 9/30/03	Plant Balance (\$) 12/31/01	Accrued Reserve (\$) 12/31/01	Theoretical Reserve (\$) 12/31/01	(Accrued - Theoretical Reserve) Difference (\$) 12/31/01
<b>DISTRIBUTION PLANT</b>															
361.000	Structures and Improvements	4,431,460	60	60.04	R3	2.33	1.67	1.82	103,253	74,005	80,653	3,354,806	955,391	747,013	208,378
362.000	Station Eq.	62,330,057	52	54.62	R1	2.27	1.92	1.89	1,414,892	1,196,737	1,178,038	56,207,405	16,606,811	9,841,286	6,765,525
364.000	Poles, Towers and Fixtures	106,567,056	44	43.16	L4	2.50	2.27	4.03	2,664,176	2,419,072	4,294,652	96,704,253	45,902,961	32,358,677	13,544,284
365.000	Overhead Conductors and Devices	63,276,199	55	54.82	R2	2.00	1.82	2.36	1,265,524	1,151,627	1,493,318	59,931,318	23,158,544	14,742,573	8,415,971
366.000	Underground Conduit	27,122,517	70	54.91	R2	1.82	1.43	2.00	493,630	387,852	542,450	22,660,951	4,350,642	2,601,935	1,748,707
367.000	Underground Conductors and Devices	73,336,707	52	44.91	L2	2.70	1.92	2.66	1,980,091	1,408,065	1,950,756	66,527,910	18,350,441	12,250,922	6,099,519
368.000	Line Transformers	110,051,478	31	30.02	R2.5	3.45	3.23	3.80	3,796,776	3,554,663	5,181,956	99,095,931	31,934,540	31,757,096	177,444
369.001	Overhead Services	12,115,199	44	55.07	R5	2.08	2.27	4.58	251,996	275,015	554,876	11,774,224	9,420,248	5,358,032	4,062,216
369.002	Underground Services	39,996,050	44	35.05	S3	3.57	2.27	3.26	1,427,859	907,910	1,303,870	36,748,862	15,010,918	8,802,640	6,208,278
370.001	Meters	22,909,713	50	50.18	R3	2.50	2.00	2.08	572,743	458,194	476,522	21,420,615	10,142,768	7,051,265	3,091,503
370.002	Load Research Meters	2,036,703	12	12.16	S6	10.00	8.33	7.95	203,670	169,657	161,918	2,045,596	1,081,366	1,239,048	(157,682)
371.000	Installations on Customers Premises	12,001,385	24	24.97	R2	5.00	4.17	5.19	600,069	500,458	622,872	11,384,984	4,968,709	3,437,371	1,531,338
373.000	Street Lighting and Signal Systems	19,929,409	30	30.36	L1	3.70	3.33	3.59	737,388	663,649	715,466	18,265,202	6,237,359	4,496,592	1,740,767
	Distribution Plant:	556,103,933							15,512,068	13,166,904	17,557,349	506,122,057	188,120,698	134,684,450	53,436,248
<b>GENERAL PLANT</b>															
390.001	Structures and Improvements	8,846,812	45	40.26	R1.5	2.22	2.22	2.74	196,399	196,399	242,403	8,627,571	847,289	2,092,511	(1,245,222)
391.001	Office Furniture and Eq.	1,197,081	22	18.17	L4	3.60	4.55	4.76	43,095	54,467	56,981	843,885	90,631	216,147	(125,516)
391.003	Computer Hardware	1,600,957	7	5.99	S2	10.00	14.29	13.10	160,096	228,777	209,725	1,981,733	108,350	851,544	(743,194)
391.004	Computer Software	226,663	7	6.02	S2	10.00	14.29	8.33	22,666	32,390	18,881	247,261	45,720	116,614	(70,894)
391.005	Computer Systems Development	39,699	7		S2		14.29		0	5,673	0	0	0	0	0
392.000	Transportation Eq.	1,966,925	12	13.46	S5	0.00	8.33	5.38	0	163,845	105,821	466,243	262,289	198,356	63,933
393.000	Stores Eq.	90,682	27	26.25	L1	5.56	3.70	3.09	5,042	3,355	2,802	98,332	61,831	35,341	26,490
394.000	Tools, Shop and Garage Eq.	3,032,056	27	23.37	L0	6.25	3.70	3.79	189,504	112,186	114,915	2,467,415	2,105,229	597,735	1,507,494
395.000	Laboratory Eq.	1,879,224	29	27.98	R2.5	4.00	3.45	2.94	75,169	64,833	55,249	1,805,261	920,506	591,852	328,654
396.000	Power Operated Eq.	3,504,203	16	14.65	S6	0.00	6.25	5.42	0	219,013	189,928	2,583,837	1,119,345	1,262,893	(143,548)
397.000	Communications Eq.	6,915,177	29	26.50	S2	6.25	3.45	3.08	432,199	238,574	212,987	5,962,555	5,091,471	2,287,200	2,804,271
398.000	Miscellaneous Eq.	133,162	23	22.41	L4	5.00	4.35	3.23	6,658	5,793	4,301	121,170	92,462	53,523	38,939
	General Plant:	29,432,641							1,130,827	1,325,305	1,213,993	25,205,263	10,745,123	8,303,716	2,441,407
	MPS Electric Utility Plant:	1,152,663,947							31,568,154	27,148,214	39,407,552	1,060,697,856	453,710,630	286,819,412	166,891,218
<b>MPS ELECTRIC COMMON GENERAL UTILITY</b>															
390.001	Structures and Improvements	6,093,869	45	39.73	R1.5	2.22	2.22	2.44	135,284	135,284	148,690	6,228,235	1,038,051	1,322,663	(284,612)
391.001	Office Furniture and Eq.	1,039,834	22	19.72	L4	7.69	4.55	3.88	79,963	47,312	40,346	1,241,962	900,971	689,908	211,063
391.003	Computer Hardware	401,322	7	10.04	S2	0.00	14.29	7.65	0	57,349	30,701	150,782	102,362	47,901	54,461
391.004	Computer Software	1,288	7		S2	0.00	14.29		0	184	0	0	0	0	0
391.005	Computer Systems Development	0	7		S2		14.29		0	0	0	0	0	0	0
392.000	Transportation Eq.	1,327,961	12	11.23	S5	11.11	8.33	3.13	147,536	110,619	41,565	7,043,398	6,093,508	5,180,162	913,346
393.000	Stores Eq.	(91,571)	27	15.91	L1	5.56	3.70	4.33	0	0	0	14,724	4,337	6,247	(1,910)
394.000	Tools, Shop and Garage Eq.	137,159	27	15.77	L0	3.70	3.19	0	0	5,075	4,375	141,872	115,570	28,430	87,140
395.000	Laboratory Eq.	18,139	29	15.20	R2.5	3.45	4.40	0	0	626	498	17,867	6,203	3,742	2,461
396.000	Power Operated Eq.	145,847	16	13.11	R6	6.67	6.25	4.59	9,728	9,115	6,694	1,408,853	1,104,358	826,014	278,344
397.000	Communications Eq.	1,616,019	29	26.31	S2	5.00	3.45	2.83	80,801	55,753	45,733	2,755,152	1,247,278	1,044,721	202,557
398.000	Miscellaneous Eq.	(42,807)	23	24.79	L4	5.56	4.35	3.01	(2,380)	(1,862)	(1,288)	67,991	55,945	39,656	16,289
	MPS Electric Common General Plant:	10,647,060							450,932	419,455	317,314	19,070,836	10,668,583	9,189,444	1,479,139
	MPS Electric and Common Utility Plant:	1,163,311,007							32,019,086	27,567,669	39,724,866	1,079,768,692	464,379,213	296,008,856	168,370,357



**Aquila, Inc. dba Aquila Networks-MPS (Depreciation Rates ER-2004-0034)**

ACCOUNT NUMBER	ACCOUNT	Adjusted Jurisdictional Plant Balance (\$) 09/30/03	Average Service Life (Years) Staff Proposed	Average Service Life (Years) Company Proposed	lowa Curve Staff Proposed	Depreciation Rates (%) Ordered	Depreciation Rates (%) Staff Proposed	Depreciation Rates (%) Company Proposed	Annual Accrual (Ordered Depreciation Rates) (\$) 9/30/03	Annual Accrual (Staff Proposed Depreciation Rates) (\$) 9/30/03	Annual Accrual (Company Proposed Depreciation Rates) (\$) 9/30/03	Plant Balance (\$) 12/31/01	Accrued Reserve (\$) 12/31/01	Theoretical Reserve (\$) 12/31/01	(Accrued - Theoretical Reserve) Difference (\$) 12/31/01
	<b>MPS ELECTRIC CORPORATE PLANT</b>											12/31/02	MO %12/31/2002	MO %12/31/2002	MO %12/31/2002
	<b>GENERAL PLANT</b>														
390.001	Structures and Improvements	11,879,817	45	44.97	R1.5	2.22	2.22	2.44	263,732	263,732	289,868	16,586,756	1,126,697	1,356,030	(229,333)
391.001	Office Furniture and Eq.	2,848,821	22	19.95	L4	7.69	4.55	5.78	219,074	129,621	164,662	3,283,822	289,291	536,306	(247,015)
391.003	Computers-Hardware	3,298,270	7	4.95	S2		14.29	33.16	0	471,323	1,093,706	3,847,681	(465,078)	1,097,260	(1,562,338)
391.004	Computers-Software	18,492,597	7	9.85	S2		14.29	13.74	0	2,642,592	2,540,883	21,104,602	2,608,430	7,991,550	(5,383,120)
391.005	Computer Systems Development	5,223,306	7	9.37	S2		14.29	19.87	0	746,410	1,037,871	5,636,230	1,249,231	3,655,660	(2,406,429)
392.004	Transportation Eq.	5,183	12	11.27	S5	11.11	8.33	48.33	576	432	2,505	5,688	(2,813)	2,247	(5,060)
393.000	Stores Eq.	0	27		L1		3.70		0	0	0	0	0	0	0
394.000	Tools, Shop and Garage Eq.	68,753	27	20.39	L0		3.70	7.70	0	2,544	5,294	83,065	66,090	17,080	49,010
395.000	Laboratory Eq.	14,764	29	15.11	R2.5		3.45	15.25	0	509	2,252	16,201	1,867	4,800	(2,933)
396.000	Power Operated Eq.	0	16		R6		6.25		0	0	0	0	0	0	0
397.000	Communication Eq.	2,507,367	29	9.97	S2	5.00	3.45	16.01	125,368	86,504	401,429	2,065,696	220,960	314,718	(93,758)
398.000	Miscellaneous Eq.	113,111	23	10.07	L4	5.56	4.35	16.58	6,289	4,920	18,754	146,187	74,307	29,899	44,408
	MPS Electric Corporate General Plant:	44,451,989							615,039	4,348,587	5,557,224	52,775,928	5,168,982	15,005,550	(9,836,568)
	Total MPS Electric Utility Plant:	1,207,762,996							32,634,125	31,916,256	45,282,090	1,132,544,620	469,548,195	311,014,406	158,533,789









