Exhibit No:	
Issues:	Depreciation Rates
Witness:	Dr. Ronald E. White
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Aquila
Case No:	
Date to be Filed:	August 1, 2003

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. _____

DIRECT TESTIMONY

OF

DR. RONALD E. WHITE

ON BEHALF OF

AQUILA, INC.
d/b/a
AQUILA NETWORKS – MPS
and
AQUILA NETWORKS – L&P

Omaha, Nebraska
August, 2003

State of Florida)
) ss
County of Lee)

AFFIDAVIT OF RONALD E. WHITE

Ronald E. White, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony and schedules entitled "Direct Testimony of Ronald E. White"; that said testimony was prepared by him and/or under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

Subscribed and sworn to before me this 23rd day of July, 2003.

Notary Public

My Commission expires:

OFFICIAL NOTARY SEAL
MARGARET E LANGE
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. DD060866
MY COMMISSION EXP. OCT. 19,2005

Table of Contents

DIRECT TESTIMONY OF DR. RONALD E. WHITE

Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?

A. My name is Ronald E. White. My business address is 17595 S. Tamiami Trail, Suite 212, Fort Myers, Florida 33908.

Q. WHAT IS YOUR OCCUPATION?

A. I am an Executive Vice President and Senior Consultant of Foster Associates, Inc.

QUALIFICATIONS

Q. WOULD YOU BRIEFLY DESCRIBE YOUR EDUCATIONAL TRAINING AND PROFESSIONAL BACKGROUND?

A. I received a B.S. degree (1965) in Engineering Operations and an M.S. degree (1968) and Ph.D. (1977) in Engineering Valuation from Iowa State University. I have taught graduate and undergraduate courses in industrial engineering, engineering economics, and engineering valuation at Iowa State University and previously served on the faculty for Depreciation Programs for public utility Commissions, companies, and consultants, sponsored by Depreciation Programs, Inc., in cooperation with Western Michigan University. I also conduct courses in depreciation and public utility economics for clients of the firm.

I have prepared and presented a number of papers to professional organizations, committees, and conferences and have published several articles on matters relating to depreciation, valuation and economics. I am a past member of the Board of Directors of the Iowa State Regulatory Conference and an affiliate member of the joint American Gas Association (A.G.A.) – Edison Electric Institute (EEI) De-

preciation Accounting Committee, where I previously served as chairman of a standing committee on capital recovery and its effect on corporate economics. I am also a member of the American Economic Association, the Financial Management Association, the Midwest Finance Association, the Electric Cooperatives Accounting Association (ECAA), and a founding member of the Society of Depreciation Professionals.

Q. WHAT IS YOUR PROFESSIONAL EXPERIENCE?

A. I joined the firm of Foster Associates in 1979, as a specialist in depreciation, the economics of capital investment decisions, and cost of capital studies for rate-making applications. Before joining Foster Associates, I was employed by Northern States Power Company (1968-1979) in various assignments related to finance and treasury activities. As Manager of the Corporate Economics Department, I was responsible for book depreciation studies, studies involving staff assistance from the Corporate Economics Department in evaluating the economics of capital investment decisions, and the development and execution of innovative forms of project financing. As Assistant Treasurer at Northern States, I was responsible for bank relations, cash requirements planning, and short-term borrowings and investments.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE A REGULATORY BODY?

A. Yes. I have testified in numerous proceedings before administrative and judicial bodies in Alabama, Arizona, California, Colorado, Delaware, Hawaii, Idaho, Illinois, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Ore-

gon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, Wisconsin, and the District of Columbia. I have also testified before the Federal Energy Regulatory Commission, the Federal Power Commission, the Alberta Energy Board, the Ontario Energy Board, and the Securities and Exchange Commission. I have sponsored position statements before the Federal Communication Commission and numerous local franchising authorities in matters relating to the regulation of telephone and cable television. A more detailed description of my professional qualifications is included in attached Schedule REW–1.

PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. Foster Associates was engaged by Aquila Networks ("Aquila" or "Company") to conduct depreciation studies for its gas properties operated by Aquila Networks—MPS and Aquila Networks—SJLP. The engagement also included a 2003 Depreciation Rate Study of Aquila Corporate Assets shared with other business units, including MPS and SJLP. The purpose of my testimony is to sponsor the studies conducted by Foster Associates for MPS, SJLP and Corporate Assets operations.

DEVELOPMENT OF DEPRECIATION RATES

Q. WOULD YOU PLEASE EXPLAIN WHY DEPRECIATION STUDIES ARE NEEDED FOR ACCOUNTING AND RATEMAKING PURPOSES?

A. The goal of depreciation accounting is to charge to operations a reasonable estimate of the cost of the service potential of an asset (or group of assets) con-

sumed during an accounting interval. A number of depreciation systems have been developed to achieve this objective, most of which employ time as the apportionment base.

Implementation of a time-based (or age-life system) of depreciation accounting requires the estimation of several parameters or statistics related to a plant account. The average service life of a vintage, for example, is a statistic that will not be known with certainty until all units from the original placement have been retired from service. A vintage average service life, therefore, must be estimated initially and periodically revised as indications of the eventual average service life become more certain. Future net salvage rates and projection curves, which describe the expected distribution of retirements over time, are also estimated parameters of a depreciation system that are subject to future revisions.

Depreciation studies should be conducted periodically to assess the continuing reasonableness of parameters and accrual rates derived from prior estimates. The need for periodic depreciation studies is also a derivative of the ratemaking process which establishes prices for utility services based on costs. Absent regulation, deficient or excessive depreciation rates will produce no adverse consequence other than a systematic over or understatement of the accounting measurement of earnings. While a continuance of such practices may not comport with the goals of depreciation accounting, the achievement of capital recovery is not dependent upon either the amount or the timing of depreciation expense for an unregulated firm. In the case of a regulated utility, however, recovery of investor-supplied capital is dependent upon allowed revenues, which

are in turn dependent upon approved levels of depreciation expense. Periodic reviews of depreciation rates are, therefore, essential to the achievement of timely capital recovery for a regulated utility.

It is also important to recognize that revenue associated with depreciation is a significant source of internally generated funds used to finance plant replacements and new capacity additions. It can be shown that given the same financing requirements and the same dividend payout ratio, an increase in internal cash generation will accelerate per-share growth in earnings, dividends, and book value over the business life of a firm. Financial theory provides that the marginal cost of external financing will be reduced by these enhanced measurements of financial performance. This is not to suggest that internal cash generation should be substituted for the goals of depreciation accounting. However, the potential for realizing a reduction in the marginal cost of external financing provides an added incentive for conducting periodic depreciation studies and adopting proper depreciation rates.

Q. WHAT ARE THE PRINCIPAL ACTIVITIES INVOLVED IN CONDUCTING A DEPRECIATION STUDY?

A. The first step in conducting a depreciation study is the collection of plant accounting data needed to conduct a statistical analysis of past retirement experience. Data are also collected to permit an analysis of the relationship between retirements and realized gross salvage and removal expense. The data collection phase should include a verification of the accuracy of the plant accounting records and a reconciliation of the assembled data to the official plant

records of the company.

The next step in a depreciation study is the estimation of service life statistics from an analysis of past retirement experience. The term *life analysis* is used to describe the activities undertaken in this step to obtain a mathematical description of the forces of retirement acting upon a plant category. The mathematical expressions used to describe these forces are known as survival functions or survivor curves.

Life indications obtained from an analysis of past retirement experience are blended with expectations about the future to obtain an appropriate projection life curve. This step, called *life estimation*, is concerned with predicting the expected remaining life of property units still exposed to the forces of retirement. The amount of weight given to the analysis of historical data will depend upon the extent to which past retirement experience is considered descriptive of the future.

An estimate of the net salvage rate applicable to future retirements is usually obtained from an analysis of the gross salvage and removal expense realized in the past. An analysis of past experience (including an examination of trends over time) provides a baseline for estimating future salvage and cost of removal. Consideration, however, should be given to events that may cause deviations from the net salvage realized in the past. Among the factors which should be considered are the age of plant retirements; the portion of retirements that will be reused; changes in the method of removing plant; the type of plant to be retired in the future; inflation expectations; the shape of the projection life curve; and economic conditions that may warrant greater or lesser weight to be given to the net

salvage observed in the past.

A comprehensive depreciation study will also include an analysis of the adequacy of the recorded depreciation reserve. The purpose of such an analysis is to compare the current balance in the recorded reserve with the balance required to achieve the goals and objectives of depreciation accounting if the amount and timing of future retirements and net salvage are realized exactly as predicted. The difference between the required (or theoretical) reserve and the recorded reserve provides a measurement of the expected excess or shortfall that will remain in the depreciation reserve if corrective action is not taken to extinguish the reserve imbalance.

Although reserve records are typically maintained by various account classifications, the total reserve for a company is the most important measure of the status of the company's depreciation practices and procedures. Differences between the theoretical reserve and the recorded reserve will arise as a normal occurrence when service lives, dispersion patterns and salvage estimates are adjusted in the course of depreciation reviews. Differences will also arise due to plant accounting activity such as transfers and adjustments, which require an identification of reserves at a different level from that maintained in the accounting system. It is appropriate, therefore, and consistent with group depreciation theory, to periodically redistribute recorded reserves among primary accounts based on the most recent estimates of retirement dispersion and salvage. A redistribution of the recorded reserve will provide an initial reserve balance for each primary account consistent with the estimates of retirement dispersion selected to describe

mortality characteristics of the accounts and establish a baseline against which future comparisons can be made.

Finally, parameters estimated from service life and net salvage studies are integrated into an appropriate formulation of an accrual rate based upon a selected depreciation system. Three elements are needed to describe a depreciation system. These elements (*i.e.*, method, procedure and technique) can be visualized as three dimensions of a cube in which each face describes a variety of sub-elements that can be combined to form a system. A depreciation system is therefore formed by selecting a sub-element from each face such that the system contains one method, one procedure and one technique. The sub-elements commonly used in constructing a depreciation system are shown in Table 1.

METHODS	PROCEDURES	TECHNIQUES
Retirement	Total Company	Whole-Life
Compound-Interest	Broad Group	Remaining-Life
Sinking-Fund	Vintage Group	Probable-Life
Straight-Line	Equal-Life Group	
Declining Balance	Unit Summation	
Sum-of-Years'-Digits	Item	
Expensing		
Unit-of-Production		
Net Revenue		

TABLE 1. ELEMENTS OF A DEPRECIATION SYSTEM

2002 MPS DEPRECIATION RATE STUDY

Q. DID AQUILA PROVIDE FOSTER ASSOCIATES PLANT ACCOUNTING DATA FOR CONDUCTING THE 2002 MPS DEPRECIATION STUDY?

A. Yes, they did. The database used in the 2002 study was compiled from two sources. Detailed accounting transactions were extracted from these sources and assigned transaction codes which identify the nature of the accounting activ-

ity. Transaction codes for plant additions, for example, are used to distinguish normal additions from acquisitions, purchases, reimbursements and adjustments. Similar transaction codes are used to distinguish normal retirements from sales, reimbursements, abnormal retirements and adjustments. Transaction codes are also assigned to transfers, capital leases and other accounting activity which should be considered in a depreciation study.

The first data source was an electronic file historically provided to the Missouri Commission to conduct independent analyses. While the file included vintage years since inception through 1997, it did not provide a distinction between additions, transfers, and adjustments. The file, therefore, was recreated by the Company using a legacy system database to provide the appropriate distinctions. A translation program was then used by Foster Associates to create a database in a format compatible with the software used to conduct the depreciation study.

The second source of data was the current CPR system installed by Aquila in 1998. The database obtained from this system included activity year transactions over the period 1998-2001 and the age distribution of surviving plant at December 31, 2001. Age distributions at December 31, 2001 were used in conjunction with activity year transactions to reverse the transaction flow and generate an age distribution at December 31, 1997. The resulting age distributions were then compared to the age distributions generated by the Commission database. Differences were coded as vintage adjustments in 1997 to interconnect and provide continuity between the two databases. Care was taken in creating the Foster Associates database to ensure a proper mapping of the legacy system account

structure to the current CPR account structure. No attempt, however, was made to reconcile the Foster Associates database to the historical Commission database because of the treatment of adjusting transactions in the Commission database.

The accuracy and completeness of the assembled data base was verified by Foster Associates for activity years 1998 through 2001 by comparing the beginning plant balance, additions, retirements, transfers and adjustments, and the ending plant balance derived for each activity year to the official plant records of the Company. Age distributions of surviving plant at December 31, 2001 were reconciled to the CPR.

Q. DID FOSTER ASSOCIATES CONDUCT A STATISTICAL LIFE ANALYSIS FOR MPS GAS OPERATIONS?

A. Yes, we did. As discussed in Schedule REW–2, all plant accounts were analyzed using a technique in which first, second and third degree polynomials were fitted to a set of observed retirement ratios. The resulting function can be expressed as a survivorship function, which is numerically integrated to obtain an estimate of the average service life. The smoothed survivorship function is then fitted by a weighted least-squares procedure to the Iowa-curve family to obtain a mathematical description or classification of the dispersion characteristics of the data. Service life indications derived from the statistical analyses were blended with informed judgment and expectations about the future to obtain an appropriate projection life curve for each plant category.

Q. DID FOSTER ASSOCIATES CONDUCT A NET SALVAGE ANALYSIS FOR

MPS GAS OPERATIONS?

A. Yes, we did. A traditional, historical analysis using a five-year moving average of the ratio of realized salvage and removal expense to the associated retirements was used in the study to a) estimate a realized net salvage rate; b) detect the emergence of historical trends; and c) establish a basis for estimating a future net salvage rate. Cost of removal and salvage opinions obtained from MPS operating personnel were blended with judgment and historical net salvage indications in developing estimates of the future.

The average net salvage rate for an account was estimated using direct dollar weighting of historical retirements with the historical net salvage rate, and future retirements (*i.e.*, surviving plant) with the estimated future net salvage rate.

Q. DID FOSTER ASSOCIATES CONDUCT AN ANALYSIS OF THE RECORDED DEPRECIATION RESERVE FOR MPS GAS OPERATIONS?

A. Yes, we did. Statement C (page 16) of Exhibit REW–2 provides a comparison of the computed and recorded reserves for MPS on December 31, 2001. The recorded reserve was $26,053,965 or 31.1 percent of the depreciable plant investment. The corresponding computed reserve is $31,660,494 or 37.8 percent of the depreciable plant investment. A proportionate amount of the measured reserve imbalance of $5,606,529 will be amortized over the composite weighted-average remaining life of each rate category.

Q. IS FOSTER ASSOCIATES RECOMMENDING A REBALANCING OF DEPRECIATION RESERVES FOR MPS?

A. Yes, we are. A redistribution of recorded reserves is appropriate for MPS.

Although recorded reserves have been maintained by primary account (and locations within primary accounts), these reserves were largely ignored in the development of the presently prescribed whole-life accrual rates. Present gas rates were established by negotiations and compromise in Formal Case No. GR-88-171 and GR-88-194 pursuant to a Stipulation and Agreement dated September 1, 1988. Reserve ratios were not considered in the settled rates.

This failure to address prior reserve imbalances produces an added dimension of instability in accrual rates beyond the variability attributable to the parameters estimated in the current study. A redistribution of the recorded reserve is necessary, therefore, to develop an initial reserve balance for each primary account consistent with the age distributions and estimates of retirement dispersion developed in this study.

A redistribution of the recorded reserve was achieved for MPS by multiplying the calculated reserve for each primary account within a function by the ratio of the function total recorded reserve to the function total calculated reserve. The sum of the redistributed reserves within a function is, therefore, equal to the function total recorded depreciation reserve before the redistribution.

Q. WOULD YOU PLEASE DESCRIBE THE DEPRECIATION SYSTEM CURRENTLY APPROVED BY THE COMMISSION FOR MPS?

A. MPS is presently using a depreciation system composed of the straight-line method, vintage group procedure, whole-life technique. The formulation of an account depreciation accrual rate using the straight-line method, vintage group procedure, whole-life technique is given by:

$$Accrual\ Rate = \frac{1.0 - Average\ Net\ Salvage\ Rate}{Average\ Life}.$$

Q. IS FOSTER ASSOCIATES RECOMMENDING A CHANGE IN THE DEPRECIATION SYSTEM FOR MPS?

A. Yes, we are. It is the opinion of Foster Associates that the objectives of depreciation accounting can be more nearly achieved using the vintage group procedure combined with the remaining life technique. The formulation of an account accrual rate using the straight-line method, vintage group procedure, remaining-life technique is given by:

$$Accrual\ Rate = \frac{1.0 - Reserve\ Ratio - Future\ Net\ Salvage\ Rate}{Remaining\ Life}.$$

Q. WHAT IS THE RELATIONSHIP BETWEEN A WHOLE-LIFE RATE AND A REMAINING-LIFE RATE?

A. The principal distinction between a whole-life rate and a remaining-life rate is the treatment of depreciation reserve imbalances caused largely by imprecise estimates of service life statistics and net salvage rates. A reserve imbalance is measured as the difference between a theoretical or computed reserve and the corresponding recorded reserve for a rate category. A remaining-life rate is the sum of two components: a) a whole-life rate; and b) an amortization of any reserve imbalance over the composite weighted average remaining life of a rate category. In other words, a remaining-life accrual rate is equivalent to

$$Accrual\ Rate = \frac{1.0 - Average\ Net\ Savage\ Rate}{Average\ Life} + \frac{Computed\ Reserve - Recorded\ Reserve}{Remaining\ Life}$$

where both the computed reserve and the recorded reserve are expressed as ra-

tios to the plant in service.

Unlike the currently prescribed whole-life rates in which reserve imbalances are addressed by the presence of compensating deviations in the estimated average service life of each vintage, the remaining-life technique provides a systematic amortization of these imbalances over the composite weighted average remaining life of a rate category. A permanent excess or deficiency will be created in the depreciation reserve by a continued application of the whole-life technique if service life deviations are not exactly offsetting. The potential for a permanent reserve imbalance can be eliminated by an application of the remaining-life technique.

Q. WOULD YOU PLEASE SUMMARIZE THE DEPRECIATION RATES AND ACCRUALS FOSTER ASSOCIATES RECOMMENDED FOR MPS IN THE 2002 STUDY?

A. Table 2 provides a summary of the changes in annual rates and accruals for MPS resulting from adoption of the parameters and depreciation system recommended in the 2002 study.

	Accrual Rate			2002 Annualized Accrual		
Function	Present	Proposed	Difference	Present	Proposed	Difference
Transmission	1.71%	1.36%	-0.35%	$124,855	$99,584	($25,271)
Distribution	3.07%	3.61%	0.54%	2,280,006	2,681,404	401,398
General Plant	9.96%	5.66%	-4.30%	203,641	115,755	(87,886)
Total Utility	3.12%	3.46%	0.34%	$2,608,502	$2,896,743	$288,241

TABLE 2. 2002 MPS DEPRECIATION STUDY RATES AND ACCRUALS

Foster Associates recommended primary account depreciation rates equivalent to a composite rate of 3.46 percent. Depreciation expense is presently accrued at an equivalent composite rate of 3.12 percent. The recommended change in the

composite depreciation rate is, therefore, an increase of 0.34 percentage points. A continued application of rates currently prescribed would provide annualized depreciation expense of $2,608,502 compared to an annualized expense of $2,896,743 using the rates developed in the 2002 study. The proposed 2002 expense increase is $288,241. Of this increase, $167,427 represents amortization of a $5,606,529 reserve imbalance. The remaining portion of the increase is attributable to changes in service life and net salvage parameters.

2002 SJLP DEPRECIATION RATE STUDY

Q. DID AQUILA PROVIDE FOSTER ASSOCIATES PLANT ACCOUNTING DATA FOR CONDUCTING THE 2002 SJLP DEPRECIATION STUDY?

A. Yes, they did. The database used in the 2002 study was compiled from two sources. Detailed accounting transactions were extracted from these sources and assigned transaction codes which identify the nature of the accounting activity. Transaction codes for plant additions, for example, are used to distinguish normal additions from acquisitions, purchases, reimbursements and adjustments. Similar transaction codes are used to distinguish normal retirements from sales, reimbursements, abnormal retirements and adjustments. Transaction codes are also assigned to transfers, capital leases and other accounting activity which should be considered in a depreciation study.

The first data source was an electronic file used by SJLP in conducting its 1998 depreciation rate study. The legacy data base was updated by SJLP to include activity years 1998 through 2000. The earliest activity year in the updated file was 1980. An electronic worksheet was used by Foster Associates to create a

coded database in a format compatible with the software used to conduct the 2002 depreciation study.

The second source of data was the current CPR system installed by Aquila in 1998. The database obtained from this system included activity year transactions for calendar year 2001 and the age distribution of surviving plant at December 31, 2001. Plant transactions for 2001 were added to the legacy database to generate age distributions at December 31, 2001. The resulting age distributions were then compared to the age distributions extracted from the current CPR. Differences were coded as vintage adjustments in 2001 to interconnect and provide continuity between the two databases. Care was taken in creating the Foster Associates database to ensure a proper mapping of the legacy system account structure to the current CPR account structure.

The accuracy and completeness of the assembled data base was verified by Foster Associates for activity year 2001 by comparing additions, retirements, transfers and adjustments, and the ending plant balance derived for 2001 to the official plant records of the Company. The legacy database contains adjustments for depreciation study purposes which prevents reconciling the database to the official plant records for activity years prior to 2001.

Q. DID FOSTER ASSOCIATES CONDUCT A STATISTICAL LIFE ANALYSIS FOR SJLP GAS OPERATIONS?

A. Yes, we did. As discussed in Schedule REW–3, all plant accounts were analyzed using a technique in which first, second and third degree polynomials were fitted to a set of observed retirement ratios. The resulting function can be expressed as

a survivorship function, which is numerically integrated to obtain an estimate of the average service life. The smoothed survivorship function is then fitted by a weighted least-squares procedure to the Iowa-curve family to obtain a mathematical description or classification of the dispersion characteristics of the data. Service life indications derived from the statistical analyses were blended with informed judgment and expectations about the future to obtain an appropriate projection life curve for each plant category.

Q. DID FOSTER ASSOCIATES CONDUCT A NET SALVAGE ANALYSIS FOR SJLP GAS OPERATIONS?

A. Yes, we did. A traditional, historical analysis using a five-year moving average of the ratio of realized salvage and removal expense to the associated retirements was used in the study to a) estimate a realized net salvage rate; b) detect the emergence of historical trends; and c) establish a basis for estimating a future net salvage rate. Cost of removal and salvage opinions obtained from SJLP operating personnel were blended with judgment and historical net salvage indications in developing estimates of the future.

The average net salvage rate for an account was estimated using direct dollar weighting of historical retirements with the historical net salvage rate, and future retirements (*i.e.*, surviving plant) with the estimated future net salvage rate.

Q. DID FOSTER ASSOCIATES CONDUCT AN ANALYSIS OF THE RECORDED DEPRECIATION RESERVE FOR SJLP GAS OPERATIONS?

A. Yes, we did. Statement C (page 16) of Exhibit REW–3 provides a comparison of the computed and recorded reserves for SJLP on December 31, 2001. The re-

corded reserve was $3,483,626 or 45.6 percent of the depreciable plant investment. The corresponding computed reserve is $4,168,382 or 54.6 percent of the depreciable plant investment. A proportionate amount of the measured reserve imbalance of $684,756 will be amortized over the composite weighted-average remaining life of each rate category.

Q. IS FOSTER ASSOCIATES RECOMMENDING A REBALANCING OF DEPRECIATION RESERVES FOR SJLP?

A. Yes, we are. A redistribution of recorded reserves is appropriate for SJLP. Although recorded reserves have been maintained by primary account (and locations within primary accounts), these reserves were largely ignored in the development of the presently prescribed whole-life accrual rates. Present gas rates were established pursuant to a Stipulation Agreement in Formal Case No. ER-99-246 dated August 17, 1999. Parameters and reserve ratios were not specified in the settled rates. This failure to address prior reserve imbalances produces an added dimension of instability in accrual rates beyond the variability attributable to the parameters estimated in the current study. A redistribution of the recorded reserve is necessary, therefore, to develop an initial reserve balance for each primary account consistent with the age distributions and estimates of retirement dispersion developed in this study. Reserves were also realigned in the 2002 study to reflect implementation of the vintage group procedure.

A redistribution of the recorded reserve was achieved for SJLP by multiplying the calculated reserve for each primary account within a function by the ratio of the function total recorded reserve to the function total calculated reserve. The sum

of the redistributed reserves within a function is, therefore, equal to the function total recorded depreciation reserve before the redistribution.

Q. WOULD YOU PLEASE DESCRIBE THE DEPRECIATION SYSTEM CURRENTLY APPROVED BY THE COMMISSION FOR SJLP?

A. SJLP is presently using a depreciation system composed of the straight-line method, broad group procedure, whole-life technique. The level of asset grouping identified in the broad group procedure is the total plant in service from all vintages in an account. Each vintage is estimated to have the same average service life. The formulation of an account depreciation accrual rate using the straight-line method, broad group procedure, whole-life technique is given by:

$$Accrual\ Rate = \frac{1.0 - Average\ Net\ Salvage\ Rate}{Average\ Life}.$$

Q. IS FOSTER ASSOCIATES RECOMMENDING A CHANGE IN THE DEPRECIATION SYSTEM FOR SJLP?

A. Yes, we are. It is the opinion of Foster Associates that the objectives of depreciation accounting can be more nearly achieved using the vintage group procedure combined with the remaining life technique. Unlike the broad group procedure in which each vintage is estimated to have the same average service life, consideration is given to the realized life of each vintage when average service lives and remaining lives are derived using the vintage group procedure. The vintage group procedure distinguishes average service lives among vintages and composite life statistics are computed for each plant account. The formulation of an account accrual rate using the straight-line method, vintage group procedure, remaining-life technique is given by:

$$Accrual\ Rate = \frac{1.0 - Reserve\ Ratio - Future\ Net\ Salvage\ Rate}{Remaining\ Life}.$$

Q. WHAT IS THE RELATIONSHIP BETWEEN A WHOLE-LIFE RATE AND A REMAINING-LIFE RATE?

A. The principal distinction between a whole-life rate and a remaining-life rate is the treatment of depreciation reserve imbalances caused largely by imprecise estimates of service life statistics and net salvage rates. A reserve imbalance is measured as the difference between a theoretical or computed reserve and the corresponding recorded reserve for a rate category. A remaining-life rate is the sum of two components: a) a whole-life rate; and b) an amortization of any reserve imbalance over the composite weighted average remaining life of a rate category. In other words, a remaining-life accrual rate is equivalent to

$$Accrual Rate = \frac{1.0 - Average Net Savage Rate}{Average Life} + \frac{Computed Reserve - Recorded Reserve}{Remaining Life}$$

where both the computed reserve and the recorded reserve are expressed as ratios to the plant in service.

Unlike the currently prescribed whole-life rates in which reserve imbalances are addressed by the presence of compensating deviations in the estimated average service life of each vintage, the remaining-life technique provides a systematic amortization of these imbalances over the composite weighted average remaining life of a rate category. A permanent excess or deficiency will be created in the depreciation reserve by a continued application of the whole-life technique if service life deviations are not exactly offsetting. The potential for a permanent reserve imbalance can be eliminated by an application of the remaining-life

technique.

Q. WOULD YOU PLEASE SUMMARIZE THE DEPRECIATION RATES AND ACCRUALS FOSTER ASSOCIATES RECOMMENDED FOR SJLP IN THE 2002 STUDY?

A. Table 3 provides a summary of the changes in annual rates and accruals for SJLP resulting from adoption of the parameters and depreciation system recommended in the 2002 study.

Function	Accrual Rate			2002 Annualized Accrual		
	Present	Proposed	Difference	Present	Proposed	Difference
Distribution	2.24%	3.55%	1.31%	$167,092	$265,617	$98,525
General Plant	2.60%	3.49%	0.89%	4,125	5,544	1,419
Total Utility	2.24%	3.55%	1.31%	$171,217	$271,161	$99,944

TABLE 3. 2002 SJLP DEPRECIATION STUDY RATES AND ACCRUALS

Foster Associates recommended primary account depreciation rates equivalent to a composite rate of 3.55 percent. Depreciation expense is presently accrued at an equivalent composite rate of 2.24 percent. The recommended change in the composite depreciation rate is, therefore, an increase of 1.31 percentage points. A continued application of rates currently prescribed would provide annualized depreciation expense of $171,217 compared to an annualized expense of $271,161 using the rates developed in the 2002 study. The proposed 2002 expense increase is $99,944. Of this increase, $27,623 represents amortization of a $684,756 reserve imbalance. The remaining portion of the increase is attributable to changes in service life and net salvage parameters.

2003 AQUILA CORPORATE ASSETS DEPRECIATION STUDY

Q. DID AQUILA PROVIDE FOSTER ASSOCIATES PLANT ACCOUNTING DATA

FOR CONDUCTING THE 2003 CORPORATE ASSETS DEPRECIATION STUDY?

A. Yes, they did. The database used in the 2003 study was compiled from the current CPR system installed by Aquila in 1998. The database was provided to Foster Associates in an electronic format containing activity year transactions over the period 1999 through September 30, 2002. Forecasted plant additions and depreciation accruals were provided over the period October 1 through December 31, 2002.

Transaction codes are used to describe the nature of the detailed accounting activity extracted from the CPR. Transaction codes for plant additions, for example, are used to distinguish normal additions from acquisitions, purchases, reimbursements and adjustments. Similar transaction codes are used to distinguish normal retirements from sales, reimbursements, abnormal retirements and adjustments. Transaction codes are also assigned to transfers, capital leases and other accounting activity which should be considered in a depreciation study.

The database was initially constructed to provide a reverse calculation of the historical arrangement over the period 1998–2002 for each account. Age distributions of plant exposed to retirement at the beginning of each activity year were obtained by adding (or subtracting) transaction amounts to the coded age distribution of surviving plant at the end of 2002. Plant additions for each activity year and age distributions of surviving plant at the beginning of 1999 derived from these transactions were subsequently coded and added to the database. The age distribution of surviving plant at the end of 2002 was then removed from the

database. This conversion of the database from a reverse construction to a forward construction of the historical arrangement was made to facilitate maintaining the database for future depreciation studies. Future activity-year transactions (including plant additions) can now be appended to the database without removing or adjusting prior coded transactions.

The accuracy and completeness of the assembled data base was verified by Foster Associates for activity years 1999 through September 30, 2002 by comparing the beginning plant balance, additions, retirements, transfers and adjustments, and the ending plant balance derived for each activity year to the official plant records of the Company. Forecasted plant and reserve activity could not be reconciled to any official plant records of the Company.

Q. DID FOSTER ASSOCIATES CONDUCT A STATISTICAL LIFE ANALYSIS FOR CORPORATE ASSETS OPERATIONS?

A. Yes, we did. As discussed in Schedule REW–4, all plant accounts were analyzed using a technique in which first, second and third degree polynomials were fitted to a set of observed retirement ratios. The resulting function can be expressed in terms of a survivorship function, which is numerically integrated to obtain an estimate of the average service life. The smoothed survivorship function is then fitted by a weighted least-squares procedure to the Iowa-curve family to obtain a mathematical description or classification of the dispersion characteristics of the data. Service life indications derived from the statistical analyses were blended with informed judgment and expectations about the future to obtain an appropriate projection life curve for each plant category.

Without exception, service life indications were indeterminate from a statistical analysis of the available activity years. Much of the plant activity over the period 1999–2002 consisted of transfers, adjustments, and several large retirements associated with the formation of the Corporate Assets business unit. Service life indications were generally much shorter than either experience or the anticipated future use of the assets would suggest. Absent meaningful indications from the analysis of historical retirement activity, the service-life statistics recommended in this study were based largely on judgment and a consideration of the parameters approved for similar assets managed by other Aquila business units.

Q. DID FOSTER ASSOCIATES CONDUCT A NET SALVAGE ANALYSIS FOR CORPORATE ASSETS OPERATIONS?

A. Yes, we did. A traditional, historical analysis using a five-year moving average of the ratio of realized salvage and removal expense to the associated retirements was used in the study to a) estimate a realized net salvage rate; b) detect the emergence of historical trends; and c) establish a basis for estimating a future net salvage rate. Cost of removal and salvage opinions obtained from Aquila operating personnel were blended with judgment and historical net salvage indications in developing estimates of the future.

Account 390001 (Structures and Improvements) is the only account for which net salvage has been recorded. Salvage proceeds resulted from the sale of infrastructure improvements on developable land. Foster Associates was advised by Aquila that any future interim salvage from Corporate Assets will, most likely, be offset by removal expense. Accordingly, a future net salvage rate of zero percent

is recommended for all Corporate Asset accounts.

The average net salvage rate for Account 390001was estimated using direct dollar weighting of historical retirements with the historical net salvage rate, and future retirements (*i.e*., surviving plant) with the estimated future net salvage rate.

Q. DID FOSTER ASSOCIATES CONDUCT AN ANALYSIS OF THE RECORDED DEPRECIATION RESERVE FOR CORPORATE ASSETS OPERATIONS?

A. Yes, we did. Statement C (page 19) of Schedule REW–4 provides a comparison of the computed and recorded reserves forecasted for Corporate Assets – MPS on December 31, 2002. The recorded reserve is $2,051,206, or 3.9 percent of the depreciable plant investment. The corresponding computed reserve is $14,280,435 or 27.1 percent of the depreciable plant investment. A proportionate amount of the measured reserve imbalance of $12,229,229 will be amortized over the composite weighted-average remaining life of each rate category. Statement C (page 26) of Schedule REW–4 provides a comparison of the computed and recorded reserves forecasted for Corporate Assets – SJLP on December 31, 2002. The recorded reserve is $697,985, or 4.1 percent of the depreciable plant investment. The corresponding computed reserve is $4,718,586 or 27.6 percent of the depreciable plant investment. A proportionate amount of the measured reserve imbalance of $4,020,601 will be amortized over the composite weighted-average remaining life of each rate category.

Q. IS FOSTER ASSOCIATES RECOMMENDING A REBALANCING OF DEPRECIATION RESERVES FOR CORPORATE ASSETS?

A. Yes, we are. A redistribution of recorded reserves is appropriate for Corporate

Assets. Although recorded reserves have been maintained by primary account, these reserves were largely ignored in the development of the currently used whole-life accrual rates. Depreciation rates currently used for Corporate Assets allocated to Missouri were approved by the Missouri Public Service Commission pursuant to a Stipulation and Agreement in consolidated Case Nos. ER-2001-672 and EC-2002-265 (Agreement dated February 5, 2002). The rates adopted for Corporate Assets were established by negotiations and compromise without specifying the projection curve and reserve ratios contemplated in the settled rates.

The failure to address prior reserve imbalances produces an added dimension of instability in accrual rates beyond the variability attributable to the parameters estimated in the current study. A redistribution of the recorded reserve is necessary, therefore, to develop an initial reserve balance for each primary account consistent with the age distributions and estimates of retirement dispersion developed in this study. Reserves should also be realigned in this study to reflect implementation of the vintage group procedure.[1]

A redistribution of the recorded reserve was achieved for Corporate Assets by multiplying the calculated reserve for each primary account within the general function by the ratio of the function total recorded reserve to the function total calculated reserve. The sum of the redistributed reserves within the general function is, therefore, equal to the function total recorded depreciation reserve before

[1]Depreciation reserves allocated to Missouri are adjusted for differences in the accrual rates prescribed in Missouri and those currently used for all other jurisdictions and non-regulated business units. The reserve adjustment is the cumulative difference in accruals resulting from the application of unique depreciation rates in Missouri. Reserve adjustments are shown on Statement C of Schedule REW–4.

redistribution.

Q. WOULD YOU PLEASE DESCRIBE THE DEPRECIATION SYSTEM CURRENTLY APPROVED BY THE COMMISSION FOR CORPORATE ASSETS?

A. Aquila is presently using a depreciation system composed of the straight-line method, broad group procedure, whole-life technique. The level of asset grouping identified in the broad group procedure is the total plant in service from all vintages in an account. Each vintage is estimated to have the same average service life. The formulation of an account depreciation accrual rate using the straight-line method, broad group procedure, whole-life technique is given by:

$$Accrual\ Rate = \frac{1.0 - Average\ Net\ Salvage\ Rate}{Average\ Life}.$$

Q. IS FOSTER ASSOCIATES RECOMMENDING A CHANGE IN THE DEPRECIATION SYSTEM FOR CORPORATE ASSETS?

A. Yes, we are. It is the opinion of Foster Associates that the objectives of depreciation accounting can be more nearly achieved using the vintage group procedure combined with the remaining life technique. Unlike the broad group procedure in which each vintage is estimated to have the same average service life, consideration is given to the realized life of each vintage when average service lives and remaining lives are derived using the vintage group procedure. The vintage group procedure distinguishes average service lives among vintages and composite life statistics are computed for each plant account. The formulation of an account accrual rate using the straight-line method, vintage group procedure, remaining-life technique is given by:

$$Accrual\ Rate = \frac{1.0 - Reserve\ Ratio - Future\ Net\ Salvage\ Rate}{Remaining\ Life}.$$

Q. WHAT IS THE RELATIONSHIP BETWEEN A WHOLE-LIFE RATE AND A REMAINING-LIFE RATE?

A. The principal distinction between a whole-life rate and a remaining-life rate is the treatment of depreciation reserve imbalances caused largely by imprecise estimates of service life statistics and net salvage rates. A reserve imbalance is measured as the difference between a theoretical or computed reserve and the corresponding recorded reserve for a rate category. A remaining-life rate is the sum of two components: a) a whole-life rate; and b) an amortization of any reserve imbalance over the composite weighted average remaining life of a rate category. In other words, a remaining-life accrual rate is equivalent to

$$Accrual Rate = \frac{1.0 - Average\ Net\ Savage\ Rate}{Average\ Life} + \frac{Computed\ Reserve - Recorded\ Reserve}{Remaining\ Life}$$

where both the computed reserve and the recorded reserve are expressed as ratios to the plant in service.

Unlike the currently prescribed whole-life rates in which reserve imbalances are addressed by the presence of compensating deviations in the estimated average service life of each vintage, the remaining-life technique provides a systematic amortization of these imbalances over the composite weighted average remaining life of a rate category. A permanent excess or deficiency will be created in the depreciation reserve by a continued application of the whole-life technique if service life deviations are not exactly offsetting. The potential for a permanent reserve imbalance can be eliminated by an application of the remaining-life

technique.

Q. WOULD YOU PLEASE SUMMARIZE THE DEPRECIATION RATES AND ACCRUALS FOSTER ASSOCIATES RECOMMENDED FOR CORPORATE ASSETS IN THE 2003 STUDY?

A. Table 4 provides a summary of the changes in annual depreciation rates and accruals applicable to Corporate Assets devoted to MPS operations.

Function	Accrual Rate			2003 Annualized Accrual		
	Present	Proposed	Difference	Present	Proposed	Difference
General Plant	1.39%	11.86%	10.47%	$732,797	$6,256,676	$5,523,879

TABLE 4. 2003 CORPORATE ASSETS – MPS RATES AND ACCRUALS

The composite accrual rate recommended for MPS operations is 11.86 percent. The current equivalent rate is 1.39 percent. The recommended change in the composite rate is an increase of 10.47 percentage points.

A continued application of rates currently adopted for MPS would provide annualized depreciation expense of $732,797 compared to an annualized expense of $6,256,676 using the rates developed in this study. The proposed expense increase is $5,523,879. Of this increase, $1,985,795 represents amortization of a $12,229,229 reserve imbalance. The remaining portion of the increase is attributable to recommended changes in service life parameters.

Table 5 provides a summary of the changes in annual depreciation rates and accruals applicable to Corporate Assets devoted to SJLP operations.

Function	Accrual Rate			2003 Annualized Accrual		
	Present	Proposed	Difference	Present	Proposed	Difference
General Plant	1.41%	11.97%	10.56%	$241,203	$2,046,124	$1,804,921

TABLE 5. 2003 CORPORATE ASSETS – SJLP RATES AND ACCRUALS

The composite accrual rate recommended for SJLP operations is 11.97 percent.

The current equivalent rate is 1.41 percent. The recommended change in the composite rate is an increase of 10.56 percentage points.

A continued application of rates currently adopted for SJLP would provide annualized depreciation expense of $241,203 compared to an annualized expense of $2,046,124 using the rates developed in this study. The proposed expense increase is $1,804,921. Of this increase, $663,511 represents amortization of a $4,020,601 reserve imbalance. The remaining portion of the increase is attributable to recommended changes in service life parameters.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.