Exhibit No.: 99
Issues: Depreciation
Witness: Ronald E. White
Sponsoring Party: Aquila Networks-MPS
Case No.: ER- [redacted]

Before the Public Service Commission
of the State of Missouri

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Missouri Public
Service Commission

Direct Testimony

of

Ronald E. White

Exhibit No. 1099
Case No(s). ER-2004-0034
Date 3-1-04 Rptr NC

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI
DIRECT TESTIMONY OF DR. RONALD E. WHITE
ON BEHALF OF AQUILA, INC.
D/B/A AQUILA NETWORKS-MPS [redacted]
CASE NO. ER-[redacted]

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) Depreciation 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 ratemaking 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, Oregon, 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 contained 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 electric, industrial steam and common utility properties operated by Aquila Networks—MPS [redacted] engagement also included a 2003 Depreciation Rate Study of Aquila Corporate Assets shared with other business units, including MPS [redacted]. The purpose of my testimony is to sponsor the studies conducted by Foster Associates for MPS [redacted] 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) consumed 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 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 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 database 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 electric and common 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.

Plant classified in the Steam and Other Production functions were identified by location and treated as life-span categories in the 2002 study. The life-span method requires the selection of a coterminous retirement date for all plant additions to a specific facility. A composite depreciation rate was calculated for each facility using the technique of harmonic weighting of the expected life span of each vintage addition. The resulting accrual rate was adjusted for interim retirements anticipated prior to the terminal retirement date of the facility.

Q. Did Foster Associates conduct a net salvage analysis for MPS electric and common 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.

Consideration was also given in the 2002 MPS depreciation study to the cost of dismantling the Sibley Generating Station and the Jeffery Energy Center. The projected cost of dismantling these facilities was derived from an estimated cost of $50 per kW, denominated in 2001 dollars. This cost estimate is intended to serve as a placeholder pending authorization by the Commission to include removal expense in the accrual for depreciation and completion of a detailed dismantling cost study. While Foster Associates does not claim expertise in developing demolition cost estimates, $50 per kW is well within the range of estimates reported in industry surveys and in testimony presented by independent demolition experts. It is also consistent with costs incurred by Aquila in dismantling other generating facilities.

A distinction was also made in the 2002 MPS depreciation study between interim and final (or terminal) net salvage. Interim net salvage is associated with plant retirements and replacements prior to the terminal date at which all plant comprising an integrated facility (*e.g.*, a generating station) will be retired from service. Final net salvage is the net cost (*i.e.*, salvage less cost of removal) incurred in dismantling the entire facility. An interim net salvage rate of -10 percent applied to estimated interim retirements was added to the estimated dismantlement cost to obtain the total future net salvage associated with each generating station.

Q. Did Foster Associates conduct an analysis of the recorded depreciation reserve for MPS electric and common operations?

A. Yes, we did. Statement C (page 19) of Schedule REW–2 provides a comparison of the computed and recorded reserves for MPS on December 31, 2001. The recorded reserve was $464,379,209 or 43.0 percent of the depreciable plant investment. The corresponding computed reserve is $427,919,935 or 39.6 percent of the depreciable plant investment. A proportionate amount of the measured reserve imbalance of ($36,459,274) 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 electric and common rates were established by negotiations and compromise in Formal Case No. ER-2001-672 and EC-2002-265 pursuant to a Stipulation and Agreement dated February 5, 2002. Parameters were not specified and 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. 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 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, 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 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. 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 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.

Function	Accrual Rate			2002 Annualized Accrual		
	Present	Proposed	Difference	Present	Proposed	Difference
Steam Production	2.75%	4.28%	1.53%	$9,583,823	$14,910,910	$5,327,087
Other Production	3.46%	4.05%	0.59%	1,023,877	1,199,677	175,800
Transmission	1.99%	2.04%	0.05%	3,008,839	3,087,251	78,412
Distribution	2.79%	3.16%	0.37%	14,139,774	16,015,491	1,875,717
General Plant	5.06%	4.20%	-0.86%	1,274,665	1,059,085	-215,580
Common Plant	4.90%	3.06%	-1.84%	933,983	582,784	-351,199
Total Utility	2.78%	3.41%	0.63%	$29,964,961	$36,855,198	$6,890,237

TABLE 2. 2002 MPS DEPRECIATION STUDY RATES AND ACCRUALS

Foster Associates recommended primary account depreciation rates equivalent to a composite rate of 3.41 percent. Depreciation expense is presently accrued at an equivalent composite rate of 2.78 percent. The recommended change in the composite depreciation rate is, therefore, an increase of 0.63 percentage points.

A continued application of rates currently prescribed would provide annualized depreciation expense of $29,964,961 compared to an annualized expense of $36,855,198 using the rates developed in the 2002 study. The proposed 2002 expense increase is $6,890,237. Of this increase, ($1,928,876) represents amortization of a ($36,459,274) reserve imbalance. The remaining portion of the increase is attributable to changes in service life and net salvage parameters.

[redacted]

Q. [redacted]?

A. [redacted]

A.

[illegible] not exactly offsetting

[redacted]

2003 Aquila Corporate Assets Depreciation Rate 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 [redacted] 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 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,

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[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.

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.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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.

Foster Associates Inc.
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Ronald E. White, Ph.D.

Education

1961 - 1964 Valparaiso University
Major: Electrical Engineering

1965 Iowa State University
B.S., Engineering Operations

1968 Iowa State University
M.S., Engineering Valuation
Thesis: The Multivariate Normal Distribution and the Simulated Plant Record Method of Life Analysis

1977 Iowa State University
Ph.D., Engineering Valuation
Minor: Economics
Dissertation: A Comparative Analysis of Various Estimates of the Hazard Rate Associated With the Service Life of Industrial Property

Employment

1996 - Present Foster Associates, Inc.
Executive Vice President

1988 - 1996 Foster Associates, Inc.
Senior Vice President

1979 - 1988 Foster Associates, Inc.
Vice President

1978 - 1979 Northern States Power Company
Assistant Treasurer

1974 - 1978 Northern States Power Company
Manager, Corporate Economics

1972 - 1974 Northern States Power Company
Corporate Economist

1970 - 1972 Iowa State University
Graduate Student and Instructor

1968 - 1970 Northern States Power Company
Valuation Engineer

1965 - 1968 Iowa State University
Graduate Student and Teaching Assistant

Publications

A New Set of Generalized Survivor Tables, Journal of the Society of Depreciation Professionals, October, 1992.

The Theory and Practice of Depreciation Accounting Under Public Utility Regulation, Journal of the Society of Depreciation Professionals, December, 1989.

Standards for Depreciation Accounting Under Regulated Competition, paper presented at The Institute for Study of Regulation, Rate Symposium, February, 1985.

The Economics of Price-Level Depreciation, paper presented at the Iowa State University Regulatory Conference, May, 1981.

Depreciation and the Discount Rate for Capital Investment Decisions, paper presented at the National Communications Forum - National Electronics Conference, October 1979.

A Computerized Method for Generating a Life Table From the 'h-System' of Survival Functions, paper presented at the American Gas Association - Edison Electric Institute Depreciation Accounting Committee Meeting, December, 1975.

The Problem With AFDC is ..., paper presented at the Iowa State University Conference on Public Utility Valuation and the Rate Making Process, May, 1973.

The Simulated Plant-Record Method of Life Analysis, paper presented at the Missouri Public Service Commission Regulatory Information Systems Conference, May, 1971.

Simulated Plant-Record Survivor Analysis Program (User's Manual), special report published by Engineering Research Institute, Iowa State University, February, 1971.

A Test Procedure for the Simulated Plant-Record Method of Life Analysis, Journal of the American Statistical Association, September, 1970.

Modeling the Behavior of Property Records, paper presented at the Iowa State University Conference on Public Utility Valuation and the Rate Making Process, May, 1970.

A Technique for Simulating the Retirement Experience of Limited-Life Industrial Property, paper presented at the National Conference of Electric and Gas Utility Accountants, May, 1969.

How Dependable are Simulated Plant-Record Estimates?, paper presented at the Iowa State University Conference on Public Utility Valuation and the Rate Making Process, April, 1968.

Expert Opinion

Alabama Public Service Commission, Docket No. 18488, General Telephone Company of the Southeast; testimony concerning engineering economy study techniques.

Alabama Public Service Commission, Docket No. 20208, General Telephone Company of the South; testimony concerning the equal-life group procedure and remaining-life technique.

Alberta Energy and Utilities Board, Application No. 1250392, Aquila Networks Canada; rebuttal testimony supporting proposed depreciation rates.

Alberta Energy and Utilities Board, Case No. RE95081, Edmonton Power Inc.; rebuttal evidence concerning appropriate depreciation rates.

Alberta Energy and Utilities Board, 1999/2000 General Tariff Application, Edmonton Power Inc.; direct and rebuttal evidence concerning appropriate depreciation rates.

Arizona Corporation Commission, Docket No. T-01051B-97-0689, U S West Communications, Inc.; testimony concerning appropriate depreciation rates.

Arizona Corporation Commission, Docket No. G-1032A-02-0598, Citizens Communications Company; testimony supporting proposed depreciation rates.

Arizona State Board of Equalization, Docket No. 6302-07-2, Arizona Public Service Company; testimony concerning valuation and assessment of contributions in aid of construction.

California Public Utilities Commission, Case Nos. A.92-06-040, 92-06-042, GTE California Incorporated; rebuttal testimony supporting depreciation study techniques.

Public Utilities Commission of the State of Colorado, Application No. 36883-Reopened. U S WEST Communications; testimony concerning equal-life group procedure.

Delaware Public Service Commission, Docket No. 81-8, Diamond State Telephone Company; testimony concerning the amortization of inside wiring.

Delaware Public Service Commission, Docket No. 82-32, Diamond State Telephone Company; testimony concerning the equal-life group procedure and remaining-life technique.

Public Service Commission of the District of Columbia, Formal Case No. 842, District of Columbia Natural Gas; testimony concerning depreciation rates.

Public Service Commission of the District of Columbia, Formal Case No. 1016, Washington Gas Light Company - District of Columbia; testimony supporting proposed depreciation rates.

Federal Communications Commission, Prescription of Revised Depreciation Rates for AT&T Communications; statement concerning depreciation, regulation and competition.

Federal Communications Commission, Petition for Modification of FCC Depreciation Prescription Practices for AT&T; statement concerning alignment of depreciation expense used for financial reporting and regulatory purposes.

Federal Communications Commission, Docket No. 99-117, Bell Atlantic; affidavit concerning revenue requirement and capital recovery implications of omitted plant retirements.

Federal Energy Regulatory Commission, Docket No. ER95-267-000, New England Power Company; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. RP89-248, Mississippi River Transmission Corporation; rebuttal testimony concerning appropriateness of net salvage component in depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER91-565, New England Power Company; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER78-291, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Federal Energy Regulatory Commission, Docket Nos. RP80-97 and

RP81-54, Tennessee Gas Pipeline Company; testimony concerning offshore plant depreciation rates.

Federal Power Commission, Docket No. E-8252, Northern States Power Company; testimony concerning general financial requirements and measurements of financial performance.

Federal Power Commission, Docket No. E-9148, Northern States Power Company; testimony concerning general financial requirements and measurements of financial performance.

Federal Power Commission, Docket No. ER76-818, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Federal Power Commission, Docket No. RP74-80, Northern Natural Gas Company; testimony concerning depreciation expense.

Public Utilities Commission of the State of Hawaii, Docket No. 00-0309, The Gas Company; testimony supporting proposed depreciation rates.

Public Utilities Commission of the State of Hawaii, Docket No. 94-0298, GTE Hawaiian Telephone Company Incorporated; testimony concerning the need for shortened service lives and disclosure of asset impairment losses.

Idaho Public Utilities Commission, Case No. U-1002-59, General Telephone Company of the Northwest, Inc.; testimony concerning the remaining-life technique and the equal-life group procedure.

Illinois Commerce Commission, Docket No. 94-0481, Citizens Utilities Company of Illinois; rebuttal testimony concerning applications of the Simulated Plant-Record method of life analysis.

Iowa State Commerce Commission, Docket No. RPU 82-47, North Central Public Service Company; testimony on depreciation rates.

Iowa State Commerce Commission, Docket No. RPU 84-34, General Telephone Company of the Midwest; testimony concerning the remaining-life technique and the equal-life group procedure.

Iowa State Utilities Board, Docket No. DPU-86-2, Northwestern Bell Telephone Company; testimony concerning capital recovery in competition.

Iowa State Utilities Board, Docket No. RPU-84-7, Northwestern Bell Telephone Company; testimony concerning the deduction of a reserve deficiency from the rate base.

Iowa State Utilities Board, Docket No. DPU-88-6, U S WEST Communications; testimony concerning depreciation subject to refund.

Iowa State Utilities Board, Docket No. RPU-90-9, Central Telephone Company of Iowa; testimony concerning depreciation rates.

Iowa State Utilities Board, Docket No. RPU-93-9, U S WEST Communications; testimony concerning principles of depreciation accounting and abandonment of FASB 71.

Iowa State Utilities Board, Docket No. DPU-96-1, U S WEST Communications; testimony concerning principles of depreciation accounting and abandonment of FASB 71.

Kentucky Public Service Commission, Case No. 97-224, Jackson Purchase Electric Cooperative Corporation; rebuttal testimony supporting proposed depreciation rates.

Maryland Public Service Commission, Case No. 8485, Baltimore Gas and Electric Company; testimony supporting proposed depreciation rates.

Maryland Public Service Commission, Case No. 7689, Washington Gas Light Company; testimony concerning life analysis and net salvage.

Maryland Public Service Commission, Case No. 8960, Washington Gas Light Company; testimony supporting proposed depreciation rates.

Massachusetts Department of Public Utilities, Case No. DPU 91-52, Massachusetts Electric Company; testimony supporting proposed depreciation rates which include a net salvage component.

Michigan Public Service Commission, Case No. U-13393, Aquila Networks – MGU; testimony supporting proposed depreciation rates.

Michigan Public Service Commission, Case No. U-12395, Michigan Gas Utilities; testimony supporting proposed depreciation rates including amortization accounting and redistribution of recorded reserves.

Michigan Public Service Commission, Case No. U-6587, General Telephone Company of Michigan; testimony concerning use of a theoretical depreciation reserve with the remaining-life technique.

Michigan Public Service Commission, Case No. U-7134, General Telephone Company of Michigan; testimony concerning the equal-life group depreciation procedure.

Minnesota District Court. In Re: Northern States Power Company v. Ronald G. Blank, *et. al.* File No. 394126; testimony concerning depreciation and engineering economics.

Minnesota Public Service Commission, Docket No. E-611, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Minnesota Public Service Commission, Docket No. E-1086, Northern States Power Company; testimony concerning depreciation rates.

Minnesota Public Service Commission, Docket No. G-1015, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Public Service Commission of the State of Missouri, Case No. ER-2001-672, Missouri Public Service, a division of Utilicorp United Inc.; surrebuttal testimony regarding computation of income tax expense.

Public Service Commission of the State of Missouri, Case No. TO-82-3, Southwestern Bell Telephone Company; rebuttal testimony concerning the remaining-life technique and the equal-life group procedure.

Public Service Commission of the State of Missouri, Case No. GO-97-79, Laclede Gas Company; rebuttal testimony concerning adequacy of database for conducting depreciation studies.

Public Service Commission of the State of Missouri, Case No. GR-99-315, Laclede Gas Company; rebuttal testimony concerning treatment of net salvage in development of depreciation rates.

Public Service Commission of the State of Montana, Docket No. 88.2.5, Mountain State Telephone and Telegraph Company; rebuttal testimony concerning the equal-life group procedure and amortization of reserve imbalances.

Montana Public Service Commission, Docket No. D95.9.128, The Montana Power Company; testimony supporting proposed depreciation rates.

Public Service Commission of Nevada, Docket No. 92-7002, Central Telephone Company-Nevada; testimony supporting proposed depreciation rates.

Public Service Commission of Nevada, Docket No. 91-5054, Central Telephone Company-Nevada; testimony supporting proposed depreciation rates.

New Hampshire Public Utilities Commission, Docket No. DR95-169, Granite State Electric Company; testimony supporting proposed net salvage rates.

New Jersey Board of Public Utilities, Docket No. GR 87060552, New Jersey Natural Gas Company; testimony concerning depreciation rates.

New Jersey Board of Regulatory Commissioners, Docket No. GR93040114J, New Jersey Natural Gas Company; testimony concerning depreciation rates.

North Carolina Utilities Commission, Docket No. E-7, SUB 487, Duke Power Company; rebuttal testimony ong proposed depreciation rates.

North Carolina Utilities Commission, Docket No. P-19, SUB 207, General Telephone Company of the South; rebuttal testimony concerning the equal-life group depreciation procedure.

North Dakota Public Service Commission, Case No. 8860, Northern States Power Company; testimony concerning general financial requirements.

North Dakota Public Service Commission, Case No. 9634, Northern States Power Company; testimony concerning rate of return and general financial requirements.

North Dakota Public Service Commission, Case No. 9666, Northern States Power Company; testimony concerning rate of return and general financial requirements.

North Dakota Public Service Commission, Case No. 9741, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Ontario Energy Board, E.B.R.O. 385, Tecumseh Gas Storage Limited; testimony concerning depreciation rates.

Ontario Energy Board, E.B.R.O. 388, Union Gas Limited; testimony concerning depreciation rates.

Ontario Energy Board, E.B.R.O. 456, Union Gas Limited; testimony concerning depreciation rates.

Ontario Energy Board, E.B.R.O. 476-03, Union Gas Limited; testimony concerning depreciation rates.

Public Utilities Commission of Ohio, Case No. 81-383-TP-AIR, General

Telephone Company of Ohio; testimony in support of the remaining-life technique.

Public Utilities Commission of Ohio, Case No. 82-886-TP-AIR, General Telephone Company of Ohio; testimony concerning the remaining-life technique and the equal-life group procedure.

Public Utilities Commission of Ohio, Case No. 84-1026-TP-AIR, General Telephone Company of Ohio; testimony in support of the equal-life group procedure and the remaining-life technique.

Public Utilities Commission of Ohio, Case No. 81-1433, The Ohio Bell Telephone Company; testimony concerning the remaining-life technique and the equal-life group procedure.

Public Utilities Commission of Ohio, Case No. 83-300-TP-AIR, The Ohio Bell Telephone Company; testimony concerning straight-line age-life depreciation.

Public Utilities Commission of Ohio, Case No. 84-1435-TP-AIR, The Ohio Bell Telephone Company; testimony in support of test period depreciation expense.

Public Utilities Commission of Oregon, Docket No. UM 204, GTE of the Northwest; testimony concerning the theory and practice of depreciation accounting under public utility regulation.

Public Utilities Commission of Oregon, Docket No. UM 840, GTE Northwest Incorporated; rebuttal testimony concerning principles of capital recovery.

Pennsylvania Public Utility Commission, Docket No. R-80061235, The Bell Telephone Company of Pennsylvania; testimony concerning the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. R-811512, General Telephone Company of Pennsylvania; testimony concerning the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. R-811819, The Bell Telephone Company of Pennsylvania; testimony concerning the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. R-822109, General Telephone Company of Pennsylvania; testimony in support of the remaining-life technique.

Pennsylvania Public Utility Commission, Docket No. R-850229, General Telephone Company of Pennsylvania; testimony in support of the remaining-life technique and the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. C-860923, The Bell Telephone Company of Pennsylvania; testimony concerning capital recovery under competition.

Rhode Island Public Utilities Commission, Docket No. 2290, The Narragansett Electric Company; testimony supporting proposed net salvage rates and depreciation rates.

South Carolina Public Service Commission, Docket No. 91-216-E, Duke Power Company; testimony supporting proposed depreciation rates.

Public Utilities Commission of the State of South Dakota, Case No. F-3062, Northern States Power Company; testimony concerning general financial requirements and measurements of financial performance.

Public Utilities Commission of the State of South Dakota, Case No. F-3188, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Securities and Exchange Commission, File No. 3-5749, Northern States Power Company; testimony concerning the financial and ratemaking implications of an affiliation with Lake Superior District Power Company.

Tennessee Public Service Commission, Docket No. 89-11041, United Inter-Mountain Telephone Company; testimony concerning depreciation principles and capital recovery under competition.

State of Vermont Public Service Board, Docket No. 6596, Citizens Communications Company – Vermont Electric Division, testimony supporting recommended depreciation rates.

Commonwealth of Virginia State Corporation Commission, Case No. PUE-2002-00364, Washington Gas Light Company; testimony supporting proposed depreciation rates.

Public Service Commission of Wisconsin, Docket No. 2180-DT-3, General Telephone Company of Wisconsin; testimony concerning the equal-life group depreciation procedure.

Other Consulting Activities

Moran Towing Corporation. In Re: Barge TEXAS-97 CIV. 2272 (ADS) and Tug HEIDE MORAN – 97 CIV. 1947 (ADS), United States District Court, Southern District of New York.

John Reigle, et al. v. Baltimore Gas & Electric Co., et al., Case No. C-2001-73230-CN, Circuit Court for Anne Arundel County, Maryland.

BellSouth Telecommunications, Inc. v. Citizens Utilities Company d/b/a/ Louisiana Gas Service Company, CA No. 95-2207, United States District Court, Eastern District of Louisiana.

Affidavit on behalf of Continental Cablevision, Inc. and its operating cable television systems regarding basic broadcast tier and equipment and installation cost-of-service rate justification.

Office of Chief Counsel, Internal Revenue Service. In Re: Kansas City Southern Railway Co., et. al. Docket Nos. 971-72, 974-72, and 4788-73.

Office of Chief Counsel, Internal Revenue Service. In Re: Northern Pacific Railway Co., Docket No. 4489-69.

United States Department of Justice. In Re: Burlington Northern Inc. v. United States, Ct. Cl. No. 30-72.

Faculty

Depreciation Programs for public utility commissions, companies, and consultants, sponsored by Depreciation Programs, Inc., in cooperation with Western Michigan University. (1980 - 1999)

United States Telephone Association (USTA), Depreciation Training Seminar, November 1999.

Depreciation Advocacy Workshop, a three-day team-training workshop on preparation, presentation, and defense of contested depreciation issues, sponsored by Gilbert Associates, Inc., October, 1979.

Corporate Economics Course, Employee Education Program, Northern States Power Company. (1968 - 1979)

Perspectives of Top Financial Executives, Course No. 5-300, University of Minnesota, September, 1978.

Depreciation Programs for public utility commissions, companies, and consultants, jointly sponsored by Western Michigan University and Michigan Technological University, 1973.

Professional Associations

Advisory Committee to the Institute for Study of Regulation, sponsored by the American University and The University of Missouri-Columbia.

American Economic Association.

American Gas Association - Edison Electric Institute Depreciation Accounting Committee.

Board of Directors, Iowa State Regulatory Conference.

Edison Electric Institute, Energy Analysis Division, Economic Advisory Committee, 1976-1980.

Financial Management Association.

The Institute of Electrical and Electronics Engineers, Inc., Power Engineering Society, Engineering and Planning Economics Working Group.

Midwest Finance Association.

Society of Depreciation Professionals (Founding Member and Chairman, Policy Committee

Moderator

Depreciation Open Forum, Iowa State University Regulatory Conference, May 1991.

The Quantification of Risk and Uncertainty in Engineering Economic Studies, Iowa State University Regulatory Conference, May 1989.

Plant Replacement Decisions with Added Revenue from New Service Offerings, Iowa State University Regulatory Conference, May 1988.

Economic Depreciation, Iowa State University Regulatory Conference, May 1987.

Opposing Views on the Use of Customer Discount Rates in Revenue Requirement Comparisons, Iowa State University Regulatory Conference, May 1986.

Cost of Capital Consequences of Depreciation Policy, Iowa State University Regulatory Conference, May 1985.

Concepts of Economic Depreciation, Iowa State University Regulatory Conference, May 1984.

Ratemaking Treatment of Large Capacity Additions, Iowa State University Regulatory Conference, May 1983.

The Economics of Excess Capacity, Iowa State University Regulatory Conference, May 1982.

New Developments in Engineering Economics, Iowa State University Regulatory Conference, May 1980.

Training in Engineering Economy, Iowa State University Regulatory

Conference, May 1979.

The Real Time Problem of Capital Recovery, Missouri Public Service Commission, Regulatory Information Systems Conference, September 1974.

Speaker

Finding the "D" in RCNLD (Valuation Applications of Depreciation), *Society of Depreciation Professionals Annual Meeting, September 2001.*

Capital Asset and Depreciation Accounting, City of Edmonton Value Engineering Workshop, April 2001.

A Valuation View of Economic Depreciation, Society of Depreciation Professionals Annual Meeting, October 1999.

Capital Recovery in a Changing Regulatory Environment, Pennsylvania Electric Association Financial-Accounting Conference, May 1999.

Depreciation Theory and Practice, Southern Natural Gas Company Accounting and Regulatory Seminar, March 1999.

Depreciation Theory Applied to Special Franchise Property, New York Office of Real Property Services, March 1999.

Capital Recovery in a Changing Regulatory Environment, PowerPlan Consultants Annual Client Forum, November 1998.

Economic Depreciation, AGA Accounting Services Committee and EEI Property Accounting and Valuation Committee, May 1998.

Discontinuation of Application of FASB Statement No. 71, Southern Natural Gas Company Accounting Seminar, April 1998.

Forecasting in Depreciation, Society of Depreciation Professionals Annual Meeting, September 1997.

Economic Depreciation In Response to Competitive Market Pricing, 1997 TELUS Depreciation Conference, June 1997.

Valuation of Special Franchise Property, City of New York, Department of Finance Valuation Seminar, March 1997.

Depreciation Implications of FAS Exposure Draft 158-B, 1996 TLG Decommissioning Conference, October 1996.

Why Economic Depreciation?, American Gas Association Depreciation Accounting Committee Meeting, August 1995.

The Theory of Economic Depreciation, Society of Depreciation Professionals Annual Meeting, November 1994.

Vintage Depreciation Issues, G & T Accounting and Finance Association Conference, June 1994.

Pricing and Depreciation Strategies for Segmented Markets (Regulated and Competitive), Iowa State Regulatory Conference, May 1990.

Principles and Practices of Depreciation Accounting, Canadian Electrical Association and Nova Scotia Power Electric Utility Regulatory Seminar, December 1989.

Principles and Practices of Depreciation Accounting, Duke Power Accounting Seminar, September 1989.

The Theory and Practice of Depreciation Accounting Under Public Utility

Regulation, GTE Capital Recovery Managers Conference, February 1989.

Valuation Methods for Regulated Utilities, GTE Capital Recovery Managers Conference, January 1988.

Depreciation Principles and Practices for REA Borrowers, NRECA 1985 National Accounting and Finance Conference, September 1985.

Depreciation Principles and Practices for REA Borrowers, Kentucky Association of Electric Cooperatives, Inc., Summer Accountants Association Meeting, June 1985.

Considerations in Conducting a Depreciation Study, NRECA 1984 National Accounting and Finance Conference, October 1984.

Software for Conducting Depreciation Studies on a Personal Computer, United States Independent Telephone Association, September 1984.

Depreciation—An Assessment of Current Practices, NRECA 1983 National Accounting and Finance Conference, September 1983

Depreciation—An Assessment of Current Practices, REA National Field Conference, September 1983.

An Overview of Depreciation Systems, Iowa State Commerce Commission, October 1982.

Depreciation Practices for Gas Utilities, Regulatory Committee of the Canadian Gas Association, September 1981.

Practice, Theory, and Needed Research on Capital Investment Decisions in the Energy Supply Industry, workshop, sponsored by Michigan State University and the Electric Power Research Institute, November 1977.

Depreciation Concepts Under Regulation, Public Utilities Conference, sponsored by The University of Texas at Dallas, July 1976.

Electric Utility Economics, Mid-Continent Area Power Pool, May 1974.

Honors and Awards

The Society of Sigma Xi.

Professional Achievement Citation in Engineering, Iowa State University, 1993.

Schedule REW–2

2002 Depreciation Rate Study

Aquila Networks—MPS (Electric and Common)

Revised June 9, 2003

Prepared by
Foster Associates, Inc.

Contents

EXECUTIVE SUMMARY

INTRODUCTION

This report presents the findings and recommendations developed in a 2002 Depreciation Rate Study for utility plant owned by Aquila Networks – MPS (Electric and Common). Work on the study, conducted by Foster Associates, Inc., commenced in October 2001 and progressed through mid-September 2002, at which time the project was completed.

Foster Associates, Inc. is a public utility economic consulting firm headquartered in Bethesda, Maryland offering economic research and consulting services on issues and problems arising from governmental regulation of business. The areas of specialization supported by our Fort Myers office include property life forecasting, technological forecasting, depreciation estimation, and valuation of industrial property.

Foster Associates has undertaken numerous depreciation engagements for both public and privately owned corporations including detailed statistical life studies, analyses of required net salvage rates, and the selection of depreciation systems that will most nearly achieve the goals of depreciation accounting under the constraints of either government regulation or competitive market pricing. Foster Associates is widely recognized for industry leadership in the development of depreciation systems, life analysis techniques and computer software for conducting depreciation and valuation studies.

Depreciation rates currently used by MPS were approved by the Missouri Public Service Commission (Commission) pursuant to a Stipulation and Agreement in Formal Case No. ER-2001-672 and EC-2002-265 dated February 5, 2002.[1] With the exception of General Plant Account 391001 (Office Furniture and Equipment), average service lives used to derive the settled depreciation rates were included in an appendix attached to the Stipulation and Agreement.

In addition to specifying depreciation rates, the settlement Agreement provided that "UtiliCorp shall book for its MPS electric operations, now and in the future, current levels of net salvage costs as an expense, and not against accrued depreciation reserve." The agreement further provides that "... in the next general rate increase case or complaint case in which MPS's retail electric rates are under review, the Parties shall be free to contest how future net salvage costs should be booked." The parties further agreed that "On or before August 1, 2002, [Aquila

[1]Depreciation rates used by MPS prior to the 2002 Agreement were prescribed by the Commission in Case No. ER-97-394. Service life and net salvage statistics (e.g., projection life, projection curve, remaining life and future net salvage rates) used to derive the approved depreciation rates were not identified in either the Order or other documents related to the case. Parameters contained in a set of schedules captioned "Staff Recommended Depreciation Rates" did not produce either the Staff recommended rates or the prescribed rates transmitted to the Missouri Public Service Commission by correspondence dated May 1, 1998.

would] file with the Commission its next depreciation study for its MPS electric operations, provide to the Staff its work papers for that study, and supply the underlying data for that study to the Staff in Gannett Fleming format."

A 2002 Depreciation Rate Study for MPS electric and common was provided to the Commission Staff on September 30, 2002 in accordance with the settlement Agreement and subsequent approval for an extension of time. This report is identical to the filed study with the exception of the reported present rate for Common Utility Account 393000 (Stores Equipment), Account 394000 (Tools, Shop and Garage Equipment) and Account 395000 (Laboratory Equipment). Additionally, this report provides a correction to the computation of future net salvage rates for Steam Production plant. The whole-life and amortization components of the proposed remaining-life accrual rates are also provided in this report.

The principal findings and recommendations of the MPS Depreciation Rate Study are summarized in the Statements section of this report. Statement A provides a comparative summary of present and proposed annual depreciation rates for each rate category. Statement B provides a comparison of present and proposed annual depreciation accruals. Statement C provides a comparison of the computed, recorded and redistributed depreciation reserves for each rate category. Statement D provides a summary of the components used to obtain a weighted-average net salvage rate for each plant account. Statement E provides a computation of the estimated future net salvage rate for steam production facilities. Statement F provides a comparative summary of present and proposed parameters and statistics including projection life, projection curve, average service life, and average remaining life.

Scope of Study

The principal activities undertaken in the current study included:

- Collection of plant and net salvage data;
- Reconciliation of data to the official records of the Company;
- Discussions with MPS plant accounting personnel;
- On-site plant inspections;
- Estimation of projection lives and retirement dispersion patterns;
- Analysis of gross salvage and removal expense;
- Analysis and redistribution of recorded depreciation reserves; and
- Development of recommended accrual rates for each rate category.

Depreciation System

A depreciation rate is formed by combining the elements of a depreciation system. A depreciation system is composed of a method, a procedure and a technique. A depreciation method (*e.g.*, straight-line) describes the component of the system that determines the acceleration or deceleration of depreciation accruals in relation to either time or use. A depreciation procedure (*e.g.*, vintage group) identifies the level of grouping or sub-grouping of assets within a plant category. The level of grouping specifies the weighting used to obtain composite life statistics for an account. A depreciation technique (*e.g.*, remaining-life) describes the life statistic used in the system.

MPS is presently using a depreciation system composed of the straight-line method, broad group procedure, whole-life technique for all plant categories. Depreciation rates proposed in this study are derived from a system composed of the straight-line method, vintage group procedure, whole-life technique with amortization of reserve imbalances over the estimated remaining life of each rate category. This formulation of the accrual rate is equivalent to a straight-line method, vintage group procedure, remaining-life technique.

The matching and expense recognition principles of accounting provide that the cost of an asset (or group of assets) should be allocated to operations over an estimate of the economic life of the asset in proportion to the consumption of service potential. 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, the vintage group procedure distinguishes average service lives among vintages and provides cost apportionment over the estimated weighted-average remaining life or average life of a rate category.

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. It is highly unlikely, therefore, that compensating deviations (*i.e.*, over and underestimates of average service life) will be created among vintages to achieve cost allocation over the average service life of each vintage. The level of asset grouping identified in the vintage group procedure is the plant in service from each vintage. The average service life (or remaining life) is estimated for each vintage and composite life statistics are computed for each plant account. It is more likely, therefore, that compensating deviations will be created with a vintage group procedure than with a broad group procedure.

The dependency of both the broad group procedure and the vintage group procedure on compensating deviations in the estimate of service lives is attributable to the use of the whole-life technique. A permanent excess or deficiency will be created in the depreciation reserve by a continued application of the whole-life technique if these deviations are not exactly offsetting. The potential for a permanent reserve imbalance can be eliminated, however, by an application of the remaining-life technique.

The principal distinction between a whole-life rate and a remaining-life rate is the treatment of depreciation reserve imbalances. A reserve imbalance is the difference between a theoretical or computed reserve and the corresponding recorded reserve for a rate category. The remaining-life technique provides a systematic amortization of these differences over the composite weighted average remaining life of a rate category.

Although the emergence of economic factors such as bypass and incentive forms of regulation may ultimately encourage abandonment of the straight-line method, no attempt was made in the current study to address these concerns.

PROPOSED DEPRECIATION RATES

Table 1 provides a summary of the changes in annual rates and accruals resulting from adoption of the parameters and depreciation system recommended in this study.

Rates and Accruals

Function	Accrual Rate			2002 Annualized Accrual		
	Present	Proposed	Difference	Present	Proposed	Difference
Steam Production	2.75%	4.28%	1.53%	$9,583,823	$14,910,910	$5,327,087
Other Production	3.46%	4.05%	0.59%	1,023,877	1,199,677	175,800
Transmission	1.99%	2.04%	0.05%	3,008,839	3,087,251	78,412
Distribution	2.79%	3.16%	0.37%	14,139,774	16,015,491	1,875,717
General Plant	5.06%	4.20%	-0.86%	1,274,665	1,059,085	-215,580
Common Plant	4.90%	3.06%	-1.84%	933,983	582,784	-351,199
Total Utility	2.78%	3.41%	0.63%	$29,964,961	$36,855,198	$6,890,237

TABLE 1. PRESENT AND PROPOSED RATES AND ACCRUALS

Foster Associates is recommending primary account depreciation rates equivalent to a composite rate of 3.41 percent. Depreciation expense is presently accrued at an equivalent composite rate of 2.78 percent. The recommended change in the composite depreciation rate is, therefore, an increase of 0.63 percentage points.

A continued application of rates currently prescribed would provide annualized depreciation expense of $29,964,961 compared to an annualized expense of $36,855,198 using the rates developed in this study. The proposed expense increase is $6,890,237. Of this increase, ($1,928,876) represents amortization of a ($36,459,274) reserve imbalance. The remaining portion of the increase is attributable to recommended changes in service life and net salvage parameters.

Of the 57 primary accounts included in the 2002 study, Foster Associates is recommending rate reductions for 30 accounts and rate increases 27 accounts.

STUDY PROCEDURE

INTRODUCTION

The purpose of a depreciation study is to analyze the mortality characteristics, net salvage rates and adequacy of the depreciation accrual and recorded depreciation reserve for each rate category. This study provides the foundation and documentation for recommended changes in the depreciation accrual rates used by Aquila for its MPS (Electric and Common) operations. The proposed rates are subject to approval by the Missouri Public Service Commission.

SCOPE

The steps involved in conducting a depreciation study can be grouped into five major tasks:

- Data Collection;
- Life Analysis and Estimation;
- Net Salvage Analysis;
- Depreciation Reserve Analysis; and
- Development of Accrual Rates.

The scope of the 2002 study for MPS included a consideration of each of these tasks as described below.

DATA COLLECTION

The minimum database required to conduct a statistical life study consists of a history of vintage year additions and unaged activity year retirements, transfers and adjustments. These data must be appropriately adjusted for transfers, sales and other plant activity that would otherwise bias the measured service life of normal retirements. The age distribution of surviving plant for unaged data can be estimated by distributing the plant in service at the beginning of the study year to prior vintages in proportion to the theoretical amount surviving from a projection or survivor curve identified in the life study. The statistical methods of life analysis used to examine unaged plant data are known as *semi-actuarial techniques*.

A far more extensive database is required to apply the statistical methods of life analysis known as *actuarial techniques*. Plant data used in an actuarial life study most often include the age distribution of surviving plant at the beginning of the study year and the vintage year, activity year, and dollar amounts associated with normal retirements, reimbursed retirements, sales, abnormal retirements, transfers, corrections, and extraordinary adjustments over a series of prior activity years. An actuarial database may include the age distribution of surviving plant at the beginning of the earliest activity year, rather than at the beginning of the study year. Plant additions, however, must be included in a database containing an opening age distribution to derive aged survivors at the beginning of the study year. All activity year transactions with vintage year identification are coded and stored in a data file. The data are processed by a computer program and transaction summary reports are created in a format reconcilable to the Company's official plant records. The availability of such detailed information is dependent upon an accounting system that supports aged property records. The Continuing Property Record (CPR) system used by Aquila for MPS assets provides aged transactions for all plant accounts.

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 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.

LIFE ANALYSIS AND ESTIMATION

Life analysis and *life estimation* are terms used to describe a two-step procedure for estimating the mortality characteristics of a plant category. The first step (*i.e.*, life analysis) is largely mechanical and primarily concerned with history. Statistical techniques are used in this step to obtain a mathematical description of the forces of retirement acting upon a plant category and an estimate of service life known as the *projection life* of the account. The mathematical expressions used to describe these life characteristics are known as *survival functions* or *survivor curves*.

The second step (*i.e.*, life estimation) is concerned with predicting the expected remaining life of property units still exposed to the forces of retirement. It is a process of blending the results of the life analysis with informed judgment (including expectations about the future) to obtain an appropriate projection life and curve. The amount of weight given to the life analysis will depend upon the extent to which past retirement experience is considered descriptive of the future.

The analytical methods used in a life analysis are broadly classified as actuarial and semi-actuarial techniques. Actuarial techniques can be applied to plant accounting records that reveal the age of a plant asset at the time of its retirement from service. Stated differently, each property unit must be identifiable by date of installation and age at retirement. Semi-actuarial techniques can be used to derive service life and dispersion estimates when age identification of retirements is not maintained or readily available.

An actuarial life analysis program designed and developed by Foster Associates was used in this study. The first step in an actuarial analysis involves a systematic treatment of the available data for the purpose of constructing an observed life table. A complete life table contains the life history of a group of property units installed during the same accounting period and various probability relationships derived from the data. A life table is arranged by age-intervals (usually defined as one year) and shows the number of units (or dollars) entering and leaving each age-interval and probability relationships associated with this activity. A life table minimally shows the age of each survivor and the age of each retirement from a group of units installed in a given accounting year.

A life table can be constructed in any one of at least five alternative methods. The annual-rate or retirement-rate method was used in this study. The mechanics of the annual-rate method require the calculation of a series of ratios obtained by dividing the number of units (or dollars) surviving at the beginning of an age interval into the number of units (or dollars) retired during the same interval. This ratio (or set of ratios) is commonly referred to as retirement ratios. The cumulative proportion surviving is obtained by multiplying the retirement ratio for each age interval by the proportion of the original group surviving at the beginning of that age interval and subtracting this product from the proportion surviving at the beginning of the same interval. The annual-rate method is applied to multiple groups or vintages by combining the retirements and/or survivors of like ages for each vintage included in the analysis.

The second step in an actuarial analysis involves graduating or smoothing the observed life table and fitting the smoothed series to a family of survival functions. The functions used in this study are the Iowa-type curves which are mathematically described in terms of the Pearson frequency curve family. The observed life table was smoothed by a weighted least-squares procedure in which first, second and third degree polynomials were fitted to the 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.

The set of computer programs used in this analysis provides multiple rolling-band and shrinking-band analyses of an account. Observation bands are defined for a "retirement era" which restricts the analysis to the retirement activity of all vintages represented by survivors at the beginning of a selected era. In a rolling-band analysis, a year of retirement experience is added to each successive retirement band and the earliest year from the preceding band is dropped. A shrinking-band analysis begins with the total retirement experience available and the earliest year from the preceding band is dropped for each successive band. Rolling and shrinking band analyses are used to detect the emergence of trends in the behavior of the dispersion and average service life.

Options available in the actuarial life analysis program include the width and location of both placement and observation bands; the interval of years included in a selected rolling or shrinking band analysis; the estimator of the hazard rate (actuarial, conditional proportion retired, or maximum likelihood); the elements to include on the diagonal of a weight matrix (exposures, inverse of age, inverse of variance, or unweighted); and the age at which an observed life table is truncated. The program also provides tabular and graphics output as an aid in the analysis and optionally produces data output files used in the calculation of depreciation accruals.

While actuarial and semi-actuarial statistical methods are well suited to an analysis of plant categories containing a large number of homogeneous units (*e.g.*, poles and conductors), the concept of retirement dispersion is inappropriate for plant categories composed of major items of plant that will most likely be retired as a single unit. Plant retirements from an integrated system prior to the retirement of the entire facility are more properly viewed as interim retirements that will be replaced in order to maintain the integrity of the system. Additionally, plant facilities may be added to the existing system (*i.e.*, interim additions) in order to expand or enhance its productive capacity without extending the service life of the present system. A proper depreciation rate can be developed for an integrated system using a life-span method.

The life-span method requires the selection of a coterminous retirement date for all plant additions to a specific facility. A composite depreciation rate is calculated for the facility using the technique of harmonic weighting of the expected life span of each vintage addition. The resulting accrual rate must be adjusted for interim retirements to the extent that such retirements can be reasonably expected. Absent this adjustment, the depreciation accumulated over the life span of the facility will be deficient by an amount equal to a portion of the interim retirements. Properly implemented, the life-span method does not include plant additions or replacements of interim retirements until such activity is reported. All plant accounts classified in the Steam and Other Production functions were identified by location and treated as life-span categories in this study.

NET SALVAGE ANALYSIS

Depreciation rates designed to achieve the goals and objectives of depreciation accounting will include a parameter for future net salvage and a variable for average net salvage which reflects both realized and future net salvage rates.

An estimate of the net salvage rate applicable to future retirements is most often obtained from an analysis of gross salvage and removal expense realized in the past. An analysis of past experience (including an examination of trends over time) provides an appropriate basis for estimating future salvage and cost of removal. However, consideration should also be given to events that may cause deviations from net salvage realized in the past. Among the factors that should be considered are the age of plant retirements; the portion of retirements likely to 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.

Special consideration should also be given to the treatment of insurance proceeds and other forms of third-party reimbursements credited to the depreciation reserve. A properly conducted net salvage study will exclude such activity from the estimate of future parameters and include the activity in the computation of realized and average net salvage rates.

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 this 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 Company engineers were blended with judgment and historical net salvage indications in developing estimates of the future.

Consideration was also given in the 2002 MPS depreciation study to the cost of dismantling the Sibley Generating Station and the Jeffery Energy Center. The projected cost of dismantling these facilities was derived, as shown in Table 2, from an estimated cost of $50 per kW, denominated in 2001 dollars. This cost estimate is intended to serve as a placeholder pending completion of a detailed dismantling cost study. The Company is prepared to undertake a dismantling cost study upon receipt of authorization by the Commission to include removal expense in the accrual for depreciation.

Plant	Capacity (MW)	Cost per kW	2001 Cost	Inflation Rate	AYFR	Dismantlement Cost
Jeffrey	172.0	$50.00	$8,600,000	1.50%	2022	$11,756,697
Sibley	512.2	50.00	25,610,000	1.50%	2015	31,545,264

Table 2. Dismantlement Cost

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. The computation of the estimated average net salvage rate for each rate category is shown in Statement D. Future net salvage rates estimated for Jeffrey and Sibley are shown in Statement E.

DEPRECIATION RESERVE ANALYSIS

The purpose of a depreciation reserve analysis is to compare the current level of the recorded reserve with the level required to achieve the goals or objectives of depreciation accounting if the amount and timing of future retirements and net salvage are realized as predicted. The difference between the required depreciation 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 eliminate the reserve imbalance.

Unlike a recorded reserve which represents the net amount of depreciation expense charged to previous periods of operations, a theoretical reserve is a measure of the implied reserve requirement at the beginning of a study year if the timing of future retirements and net salvage is in exact conformance with a survivor curve chosen to predict the probable life of plant units still exposed to the forces of retirement. Stated differently, a theoretical depreciation reserve is the difference between the recorded cost of plant presently in service and the sum of the depreciation expense and net salvage that will be charged in the future if plant retirements are distributed over time according to a specified retirement frequency distribution.

The survivor curve used in the calculation of a theoretical depreciation reserve is intended to describe forces of retirement that will be operative in the future. However, retirements caused by forces such as accidents, physical deterioration and changing technology seldom, if ever, remain stable over time. It is unlikely, therefore, that a probability or retirement frequency distribution can be identified that will accurately describe the age of plant retirements over the complete life cycle of a vintage. It is for this reason that depreciation rates should be reviewed periodically and adjusted for observed or expected changes in the parameters chosen to describe the underlying forces of mortality.

Although reserve records are commonly 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. If statistical life studies have not been conducted or retirement dispersion has been ignored in setting depreciation rates, it is likely that some accounts will be over-depreciated and other accounts will be under-depreciated relative to a calculated theoretical reserve. Differences between the theoretical reserve and the recorded reserve also will arise as a normal occurrence when service lives, dispersion patterns and net salvage estimates are adjusted in the course of depreciation reviews. It is appropriate, therefore, and consistent with group depreciation theory to periodically redistribute or rebalance the total recorded reserve among the various primary accounts based upon the most recent estimates of retirement dispersion and net salvage rates.

A redistribution of recorded reserves is appropriate for MPS at this time. 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. The present rates were established by negotiations and compromise without specifying the projection curve and reserve ratios contemplated 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 should also be realigned in this study to reflect implementation of the vintage group procedure.

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.

Statement C provides a comparison of the computed and recorded reserves for MPS on December 31, 2001. The recorded reserve was $464,379,209, or 43.0 percent of the depreciable plant investment. The corresponding computed reserve is $427,919,935 or 39.6 percent of the depreciable plant investment. A proportionate amount of the measured reserve imbalance of ($36,459,274) will be amortized over the composite weighted-average remaining life of each rate category.

Development of Accrual Rates

The goal or objective of depreciation accounting is cost allocation over the economic life of an asset in proportion to the consumption of service potential. Ideally, the cost of an asset—which represents the cost of obtaining a bundle of service units—should be allocated to future periods of operation in proportion to the amount of service potential expended during an accounting interval. The service potential of an asset is the present value of future net revenue (*i.e.*, revenue less expenses exclusive of depreciation and other non-cash expenses) or cash inflows attributable to the use of that asset alone.

Cost allocation in proportion to the consumption of service potential is often approximated by the use of depreciation methods employing time rather than net revenue as the apportionment base. Examples of time-based methods include sinking-fund, straight-line, declining balance, and sum-of-the-years' digits. The advantage of using a time-based method is that it does not require an estimate of the remaining amount of service capacity an asset will provide or the amount of capacity actually consumed during an accounting interval. Using a time-based allocation method, however, does not change the goal of depreciation accounting. If it is predictable that the net revenue pattern of an asset will either decrease or increase over time, then an accelerated or decelerated time-based method should be used to approximate the rate at which service potential is actually consumed.

The time period over which the cost of an asset will be allocated to operations is determined by the combination of a procedure and a technique. A depreciation procedure describes the level of grouping or sub-grouping of assets within a plant category. The broad group, vintage group, equal-life group, and item or unit are a few of the more widely used procedures. A depreciation technique describes the life statistic used in a depreciation system. The whole- life and remaining-life (or expectancy) are the most common techniques.

Depreciation rates recommended in this study were developed using a system composed of the straight-line method, vintage group procedure, whole-life technique with amortization of reserve imbalances over the estimated remaining life of each rate category. This formulation of the accrual rate is equivalent to a straight-line method, vintage group procedure, remaining-life technique. It is the opinion of Foster Associates that this system will remain appropriate for MPS, provided depreciation studies are conducted periodically and parameters are routinely adjusted to reflect changing operating conditions.

STATEMENTS

INTRODUCTION

This section provides a comparative summary of depreciation rates, annual depreciation accruals, recorded and computed depreciation reserves, and present and proposed service life statistics recommended for MPS electric and common operations. The content of these statements is briefly described below.

- Statement A provides a comparative summary of present and proposed annual depreciation rates using the vintage group procedure, whole-life technique with amortization of reserve imbalances.
- Statement B provides a comparison of the present and proposed annualized 2002 depreciation accruals based upon the rates developed in Statement A.
- Statement C provides a comparison of the recorded, computed and redistributed reserves for each rate category at December 31, 2001.
- Statement D provides a summary of the components used to obtain a weighted average net salvage rate for each rate category.
- Statement E provides a computation of the estimated future net salvage rate for steam production facilities.
- Statement F provides a comparative summary of present and proposed parameters including projection life, projection curve, average service life, and average remaining life.

Present depreciation accruals shown on Statement B are the product of the plant investment (Column B) and the present depreciation rates (Column D) shown on Statement A. These are the effective rates used by the Company for the mix of investments recorded on December 31, 2001. Similarly, proposed depreciation accruals shown on Statement B are the product of the plant investment and the proposed depreciation rates (Column I) shown on Statement A. Proposed accrual rates shown on Statement A are given by:

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

where *Average Net Salvage*, *Computed Reserve* and *Recorded Reserve* are expressed in percent. This formulation of the accrual rate is equivalent to

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

AQUILA NETWORKS - MPS (ELECTRIC and COMMON)

Statement A

Comparison of Present and Proposed Accrual Rates
Present: BG Procedure / WL Technique
Proposed: VG Procedure / RL Technique

	Present			Proposed				
Account Description	Avg. Life	Net Salvage	Accrual Rate	Avg. Life	Avg. Net Salvage	W/L Rate	Amorti-zation	R/L Rate
A	B	C	D	E	F	G	H	I=G+H
STEAM PRODUCTION								
311000 Structures and Improvements			3.23%	27.86	-13.2%	4.06%	-0.20%	3.86%
312000 Boiler Plant Equipment			2.48%	26.27	-15.4%	4.39%	-0.19%	4.20%
314000 Turbogenerator Units			2.85%	22.96	-14.0%	4.97%	-0.12%	4.85%
315000 Accessory Electric Equipment			3.46%	26.37	-13.6%	4.31%	-0.18%	4.13%
316000 Misc. Power Plant Equipment			3.13%	28.35	-13.7%	4.01%	-0.21%	3.80%
Total Steam Production Plant			2.75%	25.73	-14.6%	4.45%	-0.17%	4.28%
OTHER PRODUCTION								
341000 Structures and Improvements	40.20		2.49%	23.25	-4.9%	4.51%	-1.17%	3.34%
342000 Fuel Holders and Accessories	32.70		3.06%	21.81	-4.9%	4.81%	-1.23%	3.58%
343000 Prime Movers	24.10		4.15%	19.46	-5.8%	5.44%	-0.66%	4.78%
343100 Wind Turbines	24.10		4.15%	23.45	-5.0%	4.48%	-0.26%	4.22%
344000 Generators	32.00		3.13%	23.43	-6.4%	4.54%	-1.15%	3.39%
345000 Accessory Electric Equipment	31.30		3.19%	21.58	-5.4%	4.88%	-1.18%	3.70%
346000 Misc. Power Plant Equipment	36.40		2.75%	13.66		7.32%	-0.19%	7.13%
Total Other Production Plant			3.46%	21.15	-5.7%	5.00%	-0.95%	4.05%
TRANSMISSION PLANT								
352000 Structures and Improvements	45.00		2.22%	60.36	-10.2%	1.83%	-0.23%	1.60%
353000 Station Equipment	50.00		2.00%	60.17	-4.8%	1.74%	-0.11%	1.63%
354000 Towers and Fixtures	55.00		1.82%	53.92		1.85%	-0.50%	1.35%
355000 Poles and Fixtures	48.00		2.08%	55.05	-60.1%	2.91%	-0.20%	2.71%
356000 Overhead Conductors and Devices	54.00		1.85%	59.92	-40.2%	2.34%	-0.22%	2.12%
358000 Underground Conductors and Devices	32.00		3.13%	60.27	-20.0%	1.99%	-0.30%	1.69%
Total Transmission Plant			1.99%	58.41	-28.8%	2.21%	-0.17%	2.04%
DISTRIBUTION PLANT								
361000 Structures and Improvements	43.00		2.33%	60.04	-9.7%	1.83%	-0.01%	1.82%
362000 Station Equipment	44.00		2.27%	54.62	-3.4%	1.89%		1.89%
364000 Poles, Towers and Fixtures	40.00		2.50%	43.16	-75.3%	4.06%	-0.03%	4.03%
365000 Overhead Conductors and Devices	50.00		2.00%	54.82	-30.0%	2.37%	-0.01%	2.36%
366000 Underground Conduit	55.00		1.82%	54.91	-10.0%	2.00%		2.00%
367000 Underground Conductors and Devices	37.00		2.70%	44.91	-20.1%	2.67%	-0.01%	2.66%
368000 Line Transformers	29.00		3.45%	30.02	-14.9%	3.83%	-0.03%	3.80%
369001 Overhead Services	48.00		2.08%	55.07	-154.7%	4.63%	-0.05%	4.58%
369002 Underground Services	28.00		3.57%	35.05	-15.0%	3.28%	-0.02%	3.26%
370001 Meters	40.00		2.50%	50.18	-5.1%	2.09%	-0.01%	2.08%
370002 Load Research Meters	10.00		10.00%	12.16		8.22%	-0.27%	7.95%
371000 Installations on Customers' Premises	20.00		5.00%	24.97	-30.4%	5.22%	-0.03%	5.19%
373000 Street Lighting and Signal Systems	27.00		3.70%	30.36	-9.5%	3.61%	-0.02%	3.59%
Total Distribution Plant			2.79%	40.73	-29.7%	3.18%	-0.02%	3.16%
GENERAL PLANT								
390001 Structures and Improvements	45.00		2.22%	40.26	-22.7%	3.05%	-0.31%	2.74%
391001 Office Furniture and Equipment			3.60%	18.17	-0.1%	5.51%	-0.75%	4.76%
391200 Computer Hardware	10.00		10.00%	5.99	-0.1%	16.71%	-3.61%	13.10%
391300 Computer Software	10.00		10.00%	6.02		16.61%	-8.28%	8.33%
392000 Transportation Equipment			10.06%	13.46	10.0%	6.69%	-1.31%	5.38%
393000 Stores Equipment	18.00		5.56%	26.25		3.81%	-0.72%	3.09%
394000 Tools, Shop and Garage Equipment	16.00		6.25%	23.37	-1.0%	4.32%	-0.53%	3.79%
395000 Laboratory Equipment	25.00		4.00%	27.98	0.7%	3.55%	-0.61%	2.94%
396000 Power Operated Equipment			6.67%	14.65	0.1%	6.82%	-1.40%	5.42%
397000 Communication Equipment	16.00		6.25%	26.50	-0.2%	3.78%	-0.70%	3.08%
398000 Miscellaneous Equipment	20.00		5.00%	22.41	3.4%	4.31%	-1.08%	3.23%
Total General Plant			5.06%	20.99	-7.8%	5.14%	-0.94%	4.20%
TOTAL ELECTRIC UTILITY			2.74%	34.71	-23.5%	3.56%	-0.14%	3.42%

AQUILA NETWORKS - MPS (ELECTRIC and COMMON)

Comparison of Present and Proposed Accrual Rates
Present: BG Procedure / WL Technique
Proposed: VG Procedure / RL Technique

	Present			Proposed				
Account Description	Avg. Life	Net Salvage	Accrual Rate	Avg. Life	Avg. Net Salvage	W/L Rate	Amorti-zation	R/L Rate
A	B	C	D	E	F	G	H	I=G+H
COMMON UTILITY								
390001 Structures and Improvements	45.00		2.22%	39.73	-12.9%	2.84%	-0.40%	2.44%
391001 *Office Furniture and Equipment*	13.00		7.69%	19.72	5.1%	4.81%	-0.93%	3.88%
391200 Computer Hardware	9.00			10.04	6.7%	9.29%	-1.64%	7.65%
392000 Transportation Equipment			6.45%	11.23	9.3%	8.08%	-4.95%	3.13%
393000 Stores Equipment	18.00		5.56%	15.91		6.29%	-1.96%	4.33%
394000 Tools, Shop and Garage Equipment			6.25%	15.77		6.34%	-3.15%	3.19%
395000 *Laboratory Equipment*	25.00		4.00%	15.20		6.58%	-2.18%	4.40%
396000 Power Operated Equipment			6.67%	13.11	5.2%	7.23%	-2.64%	4.59%
397000 Communication Equipment	20.00		5.00%	26.31		3.80%	-0.97%	2.83%
398000 Miscellaneous Equipment	18.00		5.56%	24.79		4.03%	-1.02%	3.01%
Total Common Utility			4.90%	17.58	4.1%	5.46%	-2.40%	3.06%
TOTAL ELECTRIC AND COMMON PLANT			2.78%	34.02	-22.2%	3.59%	-0.18%	3.41%
STEAM PRODUCTION								
Jeffery								
311000 *Structures and Improvements*	31.00		3.23%	38.39	-12.4%	2.93%	-0.59%	2.34%
312000 Boiler Plant Equipment	38.80		2.58%	37.25	-12.1%	3.01%	-0.57%	2.44%
314000 Turbogenerator Units	27.00		3.70%	31.75	-11.6%	3.51%	-0.45%	3.06%
315000 Accessory Electric Equipment	28.90		3.46%	44.07	-13.3%	2.57%	-0.66%	1.91%
316000 Misc. Power Plant Equipment	32.00		3.13%	28.17	-14.5%	4.06%	-0.28%	3.78%
Total Jeffery			2.94%	36.53	-12.1%	3.07%	-0.56%	2.51%
Sibley								
311000 Structures and Improvements	31.00		3.23%	24.68	-13.5%	4.60%	-0.02%	4.58%
312000 Boiler Plant Equipment	41.20		2.43%	23.36	-16.9%	5.00%	-0.02%	4.98%
314000 Turbogenerator Units	38.50		2.60%	21.28	-14.7%	5.39%	-0.02%	5.37%
315000 Accessory Electric Equipment	28.90		3.46%	23.29	-13.6%	4.88%	-0.02%	4.86%
316000 Misc. Power Plant Equipment	32.00		3.13%	28.72	-11.6%	3.89%	-0.03%	3.86%
Total Sibley			2.67%	23.04	-15.6%	5.02%	-0.02%	5.00%

AQUILA NETWORKS - MPS (ELECTRIC and COMMON) Statement B

Comparison of Present and Proposed Accruals

Present: BG Procedure / WL Technique

Proposed: VG Procedure / RL Technique

Account Description	12/31/01 Plant Investment	2002 Annualized Accrual Present	Proposed Whole-Life	Proposed Amortization	Proposed Total	Difference
A	B	C	D	E	F=D+E	G=F-C
STEAM PRODUCTION						
311000 Structures and Improvements	$56,771,294	$1,833,713	$2,307,069	($115,256)	$2,191,813	$358,100
312000 Boiler Plant Equipment	191,046,861	4,729,960	8,391,230	(359,121)	8,032,109	3,302,149
314000 Turbogenerator Units	74,708,709	2,128,386	3,708,976	(87,635)	3,621,341	1,492,955
315000 Accessory Electric Equipment	23,897,737	826,862	1,029,448	(42,669)	986,779	159,917
316000 Misc. Power Plant Equipment	2,073,533	64,902	83,148	(4,280)	78,868	13,966
Total Steam Production Plant	$348,498,134	$9,583,823	$15,519,871	($608,961)	$14,910,910	$5,327,087
OTHER PRODUCTION						
341000 Structures and Improvements	$2,133,946	$53,135	$96,241	($24,967)	$71,274	$18,139
342000 Fuel Holders and Accessories	1,286,981	39,382	61,904	(15,830)	46,074	6,692
343000 Prime Movers	10,957,158	454,722	596,069	(72,317)	523,752	69,030
343100 Wind Turbines	179,373	7,444	8,036	(466)	7,570	126
344000 Generators	11,133,659	348,484	505,468	(128,037)	377,431	28,947
345000 Accessory Electric Equipment	3,049,611	97,283	148,821	(35,985)	112,836	15,553
346000 Misc. Power Plant Equipment	851,895	23,427	62,359	(1,619)	60,740	37,313
Total Other Production Plant	$29,592,622	$1,023,877	$1,478,898	($279,221)	$1,199,677	$175,800
TRANSMISSION PLANT						
352000 Structures and Improvements	$2,641,211	$58,635	$48,334	($6,075)	$42,259	($16,376)
353000 Station Equipment	70,387,348	1,407,747	1,224,740	(77,426)	1,147,314	(260,433)
354000 Towers and Fixtures	332,143	6,045	6,145	(1,661)	4,484	(1,561)
355000 Poles and Fixtures	40,942,159	851,597	1,191,417	(81,885)	1,109,532	257,935
356000 Overhead Conductors and Devices	36,918,960	683,001	863,904	(81,222)	782,682	99,681
358000 Underground Conductors and Devices	57,959	1,814	1,153	(173)	980	(834)
Total Transmission Plant	$151,279,780	$3,008,839	$3,335,693	($248,442)	$3,087,251	$78,412
DISTRIBUTION PLANT						
361000 Structures and Improvements	$3,354,806	$78,167	$61,393	($336)	$61,057	($17,110)
362000 Station Equipment	56,207,405	1,275,908	1,062,320		1,062,320	(213,588)
364000 Poles, Towers and Fixtures	96,704,253	2,417,606	3,926,193	(29,012)	3,897,181	1,479,575
365000 Overhead Conductors and Devices	59,931,318	1,198,626	1,420,372	(5,993)	1,414,379	215,753
366000 *Underground Conduit*	22,660,951	412,429	453,219		453,219	40,790
367000 Underground Conductors and Devices	66,527,910	1,796,254	1,776,295	(6,653)	1,769,642	(26,612)
368000 *Line Transformers*	99,095,931	3,418,810	3,795,374	(29,729)	3,765,645	346,835
369001 Overhead Services	11,774,224	244,904	545,147	(5,888)	539,259	294,355
369002 *Underground Services*	38,748,882	1,311,934	1,205,363	(7,350)	1,198,013	(113,921)
370001 Meters	21,420,615	535,515	447,691	(2,142)	445,549	(89,966)
370002 *Load Research Meters*	2,045,596	204,560	168,148	(5,523)	162,625	(41,935)
371000 Installations on Customers' Premises	11,384,984	569,249	594,296	(3,415)	590,881	21,632
373000 Street Lighting and Signal Systems	18,265,202	675,812	659,374	(3,653)	655,721	(20,091)
Total Distribution Plant	$506,122,057	$14,139,774	$16,115,185	($99,694)	$16,015,491	$1,875,717
GENERAL PLANT						
390001 Structures and Improvements	$8,627,571	$191,532	$263,141	($26,746)	$236,395	$44,863
391001 *Office Furniture and Equipment*	843,885	30,380	46,498	(6,329)	40,169	9,789
391200 Computer Hardware	1,981,733	198,173	331,148	(71,541)	259,607	61,434
391300 *Computer Software*	247,261	24,726	41,070	(20,473)	20,597	(4,129)
392000 Transportation Equipment	468,243	46,904	31,192	(6,108)	25,084	(21,820)
393000 Stores Equipment	98,332	5,467	3,746	(708)	3,038	(2,429)
394000 Tools, Shop and Garage Equipment	2,467,415	154,213	106,592	(13,077)	93,515	(60,698)
395000 Laboratory Equipment	1,805,261	72,210	64,087	(11,012)	53,075	(19,135)
396000 Power Operated Equipment	2,583,837	172,342	176,218	(36,174)	140,044	(32,298)
397000 Communication Equipment	5,962,555	372,660	225,385	(41,738)	183,647	(189,013)
398000 Miscellaneous Equipment	121,170	6,058	5,222	(1,308)	3,914	(2,144)
Total General Plant	$25,205,262	$1,274,665	$1,294,299	($235,214)	$1,059,085	($215,580)
TOTAL ELECTRIC UTILITY	$1,060,697,855	$29,030,978	$37,743,946	($1,471,532)	$36,272,414	$7,241,436

AQUILA NETWORKS - MPS (ELECTRIC and COMMON)

Statement B

Comparison of Present and Proposed Accruals
Present: BG Procedure / WL Technique
Proposed: VG Procedure / RL Technique

Account Description	12/31/01 Plant Investment	2002 Annualized Accrual Present	Proposed Whole-Life	Amortization	Total	Difference
A	B	C	D	E	F=D+E	G=F-C
COMMON UTILITY						
390001 Structures and Improvements	$6,228,235	$138,267	$176,882	($24,913)	$151,969	$13,702
391001 Office Furniture and Equipment	1,241,962	95,507	59,738	(11,550)	48,188	(47,319)
391200 Computer Hardware	150,782		14,008	(2,473)	11,535	11,535
392000 Transportation Equipment	7,043,398	454,299	569,107	(348,649)	220,458	(233,841)
393000 Stores Equipment	14,724	819	926	(288)	638	(181)
394000 Tools, Shop and Garage Equipment	141,872	8,867	8,995	(4,469)	4,526	(4,341)
395000 Laboratory Equipment	17,867	715	1,176	(390)	786	71
396000 Power Operated Equipment	1,408,853	93,971	101,860	(37,194)	64,666	(29,305)
397000 Communication Equipment	2,755,152	137,758	104,696	(26,725)	77,971	(59,787)
398000 Miscellaneous Equipment	87,991	3,780	2,740	(693)	2,047	(1,733)
Total Common Utility	$19,070,836	$933,983	$1,040,128	($457,344)	$582,784	($351,199)
TOTAL ELECTRIC AND COMMON PLANT	$1,079,768,690	$29,964,961	$38,784,074	($1,928,876)	$36,855,198	$6,890,237
STEAM PRODUCTION						
Jeffery						
311000 Structures and Improvements	$18,228,211	$588,771	$534,087	($107,547)	$426,540	($162,231)
312000 Boiler Plant Equipment	58,347,427	1,505,364	1,756,258	(332,581)	1,423,677	(81,687)
314000 Turbogenerator Units	16,905,473	625,502	593,382	(76,075)	517,307	(108,195)
315000 Accessory Electric Equipment	5,920,401	204,846	152,154	(39,074)	113,080	(91,766)
316000 Misc. Power Plant Equipment	1,462,927	45,790	59,395	(4,096)	55,299	9,509
Total Jeffery	$100,864,440	$2,970,273	$3,095,276	($559,373)	$2,535,903	($434,370)
Sibley						
311000 Structures and Improvements	$38,543,083	$1,244,942	$1,772,982	($7,709)	$1,765,273	$520,331
312000 Boiler Plant Equipment	132,699,434	3,224,596	6,634,972	(26,540)	6,608,432	3,383,836
314000 Turbogenerator Units	57,803,236	1,502,884	3,115,594	(11,560)	3,104,034	1,601,150
315000 Accessory Electric Equipment	17,977,336	622,016	877,294	(3,595)	873,699	251,683
316000 Misc. Power Plant Equipment	610,605	19,112	23,753	(184)	23,569	4,457
Total Sibley	$247,633,694	$6,613,550	$12,424,595	($49,588)	$12,375,007	$5,761,457

AQUILA NETWORKS - MPS (ELECTRIC and COMMON)

Statement C

Depreciation Reserve Summary
Vintage Group Procedure
December 31, 2001

Account Description	Plant Investment	Recorded Reserve Amount	Recorded Reserve Ratio	Computed Reserve Amount	Computed Reserve Ratio	Redistributed Reserve Amount	Redistributed Reserve Ratio
A	B	C	D=C/B	E	F=E/B	G	H=G/B
STEAM PRODUCTION							
311000 *Structures and Improvements*	$56,771,294	$35,001,923	61.65%	$29,875,420	52.62%	$32,105,373	56.55%
312000 Boiler Plant Equipment	191,046,861	105,193,764	55.06%	98,838,542	51.74%	105,789,131	55.37%
314000 Turbogenerator Units	74,708,709	35,347,618	47.31%	34,160,676	45.73%	35,835,598	47.97%
315000 *Accessory Electric Equipment*	23,897,737	12,278,699	51.38%	13,153,028	55.04%	13,983,311	58.51%
316000 Misc. Power Plant Equipment	2,073,533	753,911	36.36%	774,025	37.33%	862,502	41.60%
Total Steam Production Plant	$348,498,134	$188,575,916	54.11%	$176,801,692	50.73%	$188,575,916	54.11%
OTHER PRODUCTION							
341000 Structures and Improvements	$2,133,946	$952,953	44.66%	$720,383	33.76%	$1,113,635	52.19%
342000 Fuel Holders and Accessories	1,286,981	985,824	76.60%	430,255	33.43%	665,129	51.68%
343000 Prime Movers	10,957,158	2,990,982	27.30%	2,086,714	19.04%	3,225,839	29.44%
343100 Wind Turbines	179,373	20,756	11.57%	17,910	9.99%	27,688	15.44%
344000 Generators	11,133,659	5,939,906	53.35%	3,706,914	33.29%	5,730,498	51.47%
345000 Accessory Electric Equipment	3,049,611	1,492,284	48.93%	985,751	32.32%	1,523,867	49.97%
346000 Misc. Power Plant Equipment	851,895	(36,277)	-4.26%	38,666	4.54%	59,773	7.02%
Total Other Production Plant	$29,592,622	$12,346,428	41.72%	$7,986,593	26.99%	$12,346,428	41.72%
TRANSMISSION PLANT							
352000 Structures and Improvements	$2,641,211	$1,060,357	40.15%	$934,543	35.38%	$1,181,646	44.74%
353000 *Station Equipment*	70,387,348	23,303,271	33.11%	14,570,310	20.70%	18,422,848	26.17%
354000 Towers and Fixtures	332,143	265,873	80.05%	168,597	50.76%	213,176	64.18%
355000 Poles and Fixtures	40,942,159	13,674,165	33.40%	13,390,228	32.71%	16,930,741	41.35%
356000 Overhead Conductors and Devices	36,918,960	15,581,196	42.20%	13,557,318	36.72%	17,142,011	46.43%
358000 Underground Conductors and Devices	57,959	37,602	64.88%	25,341	43.72%	32,042	55.28%
Total Transmission Plant	$151,279,780	$53,922,464	35.64%	$42,646,337	28.19%	$53,922,464	35.64%
DISTRIBUTION PLANT							
361000 Structures and Improvements	$3,354,806	$955,391	28.48%	$841,241	25.08%	$854,957	25.48%
362000 Station Equipment	56,207,405	16,606,811	29.55%	8,943,543	15.91%	9,089,369	16.17%
364000 Poles, Towers and Fixtures	96,704,253	45,902,961	47.47%	57,094,608	59.04%	58,025,547	60.00%
365000 Overhead Conductors and Devices	59,931,318	23,158,544	38.64%	19,470,572	32.49%	19,788,044	33.02%
366000 *Underground Conduit*	22,660,951	4,350,642	19.20%	4,094,736	18.07%	4,161,502	18.36%
367000 Underground Conductors and Devices	66,527,910	18,350,441	27.58%	17,457,747	26.24%	17,742,399	26.67%
368000 Line Transformers	99,095,931	31,934,540	32.23%	37,344,840	37.69%	37,953,755	38.30%