**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

IN THE MATTER OF THE APPLICATION	)	**Docket No.**
OF ATMOS ENERGY CORPORATION	)	
FOR REVIEW AND ADJUSTMENT OF ITS	)	
NATURAL GAS RATES	)	**08-ATMG-280-RTS**

DIRECT TESTIMONY OF

DONALD S. ROFF

FOR ATMOS ENERGY CORPORATION

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, ADDRESS AND BUSINESS AFFILIATION.

A. My name is Donald S. Roff and my address is 2832 Gainesborough Drive, Dallas, Texas 75287. I am President of Depreciation Specialty Resources.

Q. WHAT ARE YOUR QUALIFICATIONS AND EXPERIENCE?

A. My qualifications and experience are described on Exhibit DSR-1.

Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION?

A. Yes. A listing of my regulatory appearances is contained on Exhibit DSR-2.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have conducted a depreciation study of the depreciable natural gas distribution properties in Kansas (referred to hereinafter as the "Kansas System") of Atmos Energy Corporation ("Atmos" or "the Company") as of September 30, 2006, and I have made recommendations for revised depreciation rates for inclusion in the Company's revenue requirement. I have also conducted a depreciation study of the plant assets of the Company's Shared Services Unit (SSU)[1] as of September

[1] The Company's Shared Services Unit provides common services, such as accounting, legal, risk management, treasury, procurement, information technology, etc., to all of the Company's utility divisions.

30, 2006, and I have made a recommendation for revised depreciation rates therefore, which rates are utilized by Company witness James C. Cagle for purposes of allocation of common costs to the Company's Kansas System. The purpose of my testimony is to present the results of the depreciation studies, describe the depreciation study process and recommend appropriate depreciation rates for use by the Company reflecting depreciation accounting principles and regulatory rules. I will show that my studies produce fair and reasonable levels of depreciation expense utilizing sound accounting practices and principles.

Q. DO YOU SPONSOR ANY ADDITIONAL EXHIBITS?

A. Yes. I am sponsoring Exhibit DSR-3 which is the depreciation study prepared for the Company's Kansas System as of September 30, 2006 (hereinafter referred to as the "Kansas Depreciation Study"). I am also sponsoring Exhibit DSR-4 which is the depreciation study prepared for the Company's SSU plant as of September 30, 2006 (hereinafter referred to as the "SSU Depreciation Study"). Both the Kansas Depreciation Study and SSU Depreciation Study include a discussion of depreciation accounting principles, describe the methodology employed for the study, summarize the results of the study and make recommendations relating to depreciation rates and depreciation accounting.

Q. WHY DID YOU PERFORM TWO SEPARATE STUDIES?

A. Separate studies have been performed for the Kansas System and the Company's SSU plant in order to recognize and accurately capture the fact that the assets which are the subject of each study have different characteristics. The assets which are the subject of the Kansas Depreciation Study primarily consist of pipe, regulators, meters, facilities, etc. which are typically considered natural gas distribution operations assets that are used to provide natural gas service to end-use customers. The assets which are the subject of the SSU Depreciation Study consist primarily of hardware and software systems which are used by shared services to provide support services to the Company's utility divisions, such as customer support and billing systems, accounting systems, and other such systems

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All of this is more particularly explained in the direct testimony of Company witnesses James C. Cagle and Daniel M. Meziere.

which are not replicated at the division level. The preparation of separate studies is also consistent with the manner in which depreciation rates have been established for the Company's utility division plant and SSU plant assets in other rate proceedings.

Q. WERE THE EXHIBITS YOU ARE SPONSORING PREPARED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes. Both the Kansas Depreciation Study and the SSU Depreciation Study were prepared by me or by persons under my direct supervision.

II. DEPRECIATION STUDY PROCESS

Q. WHAT IS DEPRECIATION?

A. The most widely recognized accounting definition of depreciation is that of the American Institute of Certified Public Accountants, which states:

> *Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation.*[2]

Q. WHAT IS THE SIGNIFICANCE OF THIS DEFINITION?

A. This definition of depreciation accounting forms the accounting framework under which both the Kansas Depreciation Study and SSU Depreciation Study were conducted. Several aspects of this definition are particularly significant, as follows:

- Salvage (net salvage) is to be recognized
- Allocation of costs is over the useful life of the assets
- Grouping of assets is permissible
- Depreciation accounting is a process of cost allocation, not a valuation process
- Cost allocation must be both systematic and rational

Q. WHAT IS MEANT BY THE TERMINOLOGY "SYSTEMATIC AND RATIONAL"?

[2] Accounting Research Bulletin No. 43, Chapter 9, Paragraph 5 (June 1953).

A. "Systematic" implies the use of a formula. The formula used for calculating the recommended depreciation rates for the Kansas System is shown on Page 12 of the Kansas Depreciation Study. This same formula was used for calculating the recommended depreciation rates for the Company's SSU plant and is shown on Page 11 of the SSU Depreciation Study. "Rational" means that the pattern of depreciation (or, in this case, the depreciation rate itself) must match either the pattern of revenues produced by the asset or match the consumption of the asset. Because revenues for the Company's utility operations in Kansas are determined through regulation and are expected to be so determined in the future, asset consumption must be directly measured and reflected in depreciation rates. The measurement of asset consumption is accomplished by conducting a depreciation study which, as is more fully explained herein below, formulates depreciation rates based upon the mortality characteristics of an asset or group of assets.

Q. ARE THERE OTHER DEFINTIONS OF DEPRECIATION?

A. Yes. The Federal Energy Regulatory Commission (FERC) Uniform System of Accounts (USOA)[3] provides a series of definitions related to depreciation and which are shown on Page 5 of the Kansas Depreciation Study as well as on Page 5 of the SSU Depreciation Study. The depreciation definitions make reference to asset consumption and therefore relate very well to the accounting framework for depreciation. These definitions also form the regulatory framework under which both depreciation Studies were conducted. Under the both Kansas Depreciation Study and the SSU Depreciation Study, I recommend remaining life rates that provide for full recovery of net investment adjusted for net salvage over the future useful life of each asset category, consistent with the Company's past practices.

Q. HOW ARE DEPRECIATION RATES FORMULATED?

A. Appropriate depreciation rates are formulated through a study of the mortality characteristics of an asset or group of assets including average service life, retirement dispersion defined by Iowa-type curves and net salvage factors.

Q. WHAT IS AVERAGE SERVICE LIFE?

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[3] *See* 18 CFR Part 201 for the USOA applicable to natural gas utilities.

A. The average service life of a depreciable asset is the number of years the asset is expected to provide service. For a group of depreciable assets, it is the estimated service life of the group.

Q. WHAT IS RETIREMENT DISPERSION?

A. Retirement dispersion is the scattering of retirements by age for the individual depreciable assets within a group around the average service life for the entire group of depreciable assets. Standard dispersion patterns are useful and necessary because they make calculations of the remaining life of existing property possible and allow life characteristics to be compared. Iowa-type curves provide a set of standard definitions for retirement dispersion.

Q. PLEASE DESCRIBE THE IOWA-TYPE CURVES.

A. The Iowa-type curves were devised empirically over 60 years ago by the Engineering Research Institute (ERI) at what is now Iowa State University (hence, the namesake). The ERI collected retirement information on many types of industrial and utility property and devised empirical curves that matched the range of retirement patterns found. A total of 18 curves were defined varying from wide to narrow dispersion patterns. There were six left-skewed curves, which are known as the "L series", seven symmetrical curves, which are known as the "S series" and five right-skewed curves, which are known as the "R series". A number identifies the range of dispersion – a low number indicating a wide dispersion pattern and a high number indicating a narrow dispersion pattern. The combination of one letter and one number defines a unique dispersion pattern.

In addition, there is also an "SQ" pattern that has no dispersion and is the equivalent of an amortization period, that is, all assets survive for their entire average life. This pattern has been used for certain general plant accounts.

Q. IN ADDITION TO AVERAGE SERVICE LIFE AND RETIREMENT DISPERSION, YOU MENTIONED PREVIOUSLY THAT NET SALVAGE FACTORS ARE ANOTHER CATEGORY OF MORTALITY CHARACTERISTICS THAT ARE EXAMINED IN DETERMINING APPROPRIATE DEPRECIATION RATES. WHAT IS NET SALVAGE?

A. Net salvage is the difference between gross salvage and cost of removal. If cost of removal exceeds gross salvage, negative net salvage occurs.

Q. IS THERE ANY AUTHORITATIVE REGULATORY SOURCE THAT ADDRESSES THE TOPIC OF NET SALVAGE?

A. Yes. The following quotation directly addresses this topic:

> *Under presently accepted concepts, the amount of depreciation to be accrued over the life of an asset is its original cost less net salvage. Net salvage is the difference between the gross salvage that will be realized when the asset is disposed of and the cost of retiring it. Positive net salvage occurs when gross salvage exceeds cost of retirement, and negative net salvage occurs when cost of retirement exceeds gross salvage. Net salvage is expressed as a percentage of plant retired by dividing the dollars of net salvage by the dollars of original cost of plant retired. The goal of accounting for net salvage is to allocate the net cost of an asset to accounting periods, making due allowance for the net salvage, positive or negative, that will be obtained when the asset is retired. This concept carries with it the premise that property ownership includes the responsibility for the property's ultimate abandonment or removal. Hence, if current users benefit from its use, they should pay their pro rata share of the costs involved in the abandonment or removal of the property and also receive their pro rata share of the benefits of the proceeds realized.*
>
> *This treatment of net salvage is in harmony with generally accepted accounting practices and tends to remove from the income statement any fluctuations caused by erratic, although necessary, abandonment and removal operations. It also has the advantage that current consumers pay or receive a fair share of costs associated with the property devoted to their service, even though the cost may be estimated.*[4]

Q. WHY IS THIS QUOTATION IMPORTANT?

A. This quotation is important because it addresses several key accounting and ratemaking issues concerning the treatment of net salvage as a component of depreciation. First and foremost, net salvage is an appropriate component of depreciation. Second, inclusion of net salvage in depreciation results in a fair and equitable allocation of cost. Third, from a ratemaking perspective, inclusion of net salvage in depreciation expense fulfills the regulatory precept of having customers pay their fair share of costs of the life of the property used to provide

[4] *Public Utility Depreciation Practices,* NARUC, Aug. 1996 Edition, page 18.

service to them. As a result, such treatment is beneficial for both accounting and ratemaking purposes.

Q. DOES THE USOA CONTEMPLATE THE INCLUSION OF NET SALVAGE AS A COMPONENT OF DEPRECIATION?

A. Yes. The USOA instructions clearly intend net salvage to be a component of depreciation as it must be charged to Account 108, Accumulated Provision for Depreciation.[5]

Q. THUS FAR YOU HAVE DESCRIBED THE MORTALITY CHARACTERISTICS WHICH ARE EVALUATED IN CONNECTION WITH PERFORMING A DEPRECIATION STUDY. CAN YOU DESCRIBE THE DEPRECIATON STUDY PROCESS ITSELF?

A. Certainly. A depreciation study consists of four distinct yet interrelated phases – data collection, analysis, evaluation and calculation. Each of these phases occurred in connection with preparing both the Kansas Depreciation Study and the SSU Depreciation Study. Data collection refers to the gathering of historical investment activity data that was provided by the Company. After the data was assembled, I or persons under my direction performed two separate analyses[6] - one analysis for the determination of life and another one for the determination of the net salvage percentage for the different asset groups being studied (each analysis is more fully discussed later herein).

Once the analysis phase was completed, the evaluation phase was then conducted which entailed the development of an understanding of asset history and its applicability to the surviving asset base into the future. This phase also gave consideration to the changing asset base and the Company's plans and expectations. I conducted the evaluation phase with the assistance and input from Company personnel.

The last phase of each depreciation study was the calculation phase and was performed by me or Atmos employees under my direct supervision. This phase

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[5] 18 CFR Part 201, Gas Plant Instruction 10.F provides "the book cost less net salvage of depreciable gas plant retired shall be charged in its entirety to account 108, Accumulated Provision for Depreciation of Gas Plant in Service".

[6] Analysis refers to the statistical processing of the data gathered in the first phase of the study process.

utilized the information and results determined in the first three phases of the depreciation study process in the computation of recommended depreciation rates.

Q. DURING THE ANALYSIS PHASE, YOU INDICATED THAT TWO ANALYSES, LIFE ANALYSIS AND NET SALVAGE, WERE PERFORMED. WHAT DID THE LIFE ANALYSIS ENTAIL?

A. For some categories of transmission, distribution and general plant, the age of both surviving and retired property is known and an actuarial analysis was utilized for these property groups. The actuarial[7] analysis process is more particularly described on pp. 8-9 of the Kansas Depreciation Study and on pp. 8-10 of the SSU Depreciation Study. For those asset categories for which the age of retirements is not known, a simulation[8] analysis was utilized. The simulated analysis technique is more particularly described on pp. 9-10 of the Kansas Depreciation Study.

Q. AFTER THE LIFE ANALYSIS WAS PERFORMED, WHAT ACTIONS WERE UNDERTAKEN IN CONNECTION THEREWITH DURING THE EVALUATION PHASE?

A. Summaries of the individual asset category life analysis indications were prepared and discussed with Company personnel. Anomalies and trends were identified and input from the Company's engineering and operations personnel was requested and obtained where necessary. The types of assets surviving and retiring were also discussed. A single average service life and Iowa-type curve was then selected for each asset category best reflecting the combination of the historical results and the additional information obtained from and during discussions with the Company's engineering, operations and accounting personnel.

Q. HOW WERE NET SALVAGE PERCENTAGES DETERMINED?

A. As I stated previously, determination of net salvage percentages is performed as part of the second phase of the preparation of a depreciation study. This entails the determination of both salvage and cost of removal. In connection with this,

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[7] Technically referred to as the Actuarial Method of Life Analysis.
[8] Technically referred to as the Simulated Plant Record Method.

annual salvage amounts, cost of removal and retirements were provided by the Company by account for the period of 1992 through 2006 for the Kansas Depreciation Study and for the period of 1993 through 2006 for the SSU Depreciation Study.

Q. AFTER PERFORMING THE NET SALVAGE ANALYSIS, WHAT ACTIONS WERE UNDERTAKEN IN CONNECTION THEREWITH DURING THE EVALUATION PHASE?

A. As with the life analysis, discussions were held with applicable Company personnel to the extent necessary to examine salvage cost, cost of removal, cost of retirements and the Company's present and future plans associated with retirement and removal of depreciable assets.

Q. WHAT ACTIONS WERE PERFORMED AS PART OF THE FINAL PHASE OF THE PREPARATION OF THE DEPRECIATION STUDIES?

A. In the calculation phase, annual salvage, cost of removal and net salvage percentages were then calculated for purposes of each study by dividing the annual salvage, cost of removal and net salvage amounts by the retirement amounts applicable to the asset groups of each depreciation category.

Q. WHAT OCCURRED AFTER THE PERFORMANCE OF EACH PHASE OF BOTH DEPRECIATION STUDIES YOU HAVE DISCUSSED?

A. Both studies were formalized into written reports and presented to the Company. The formalized written reports are the Kansas Depreciation Study and the SSU Depreciation Study attached to my testimony as <u>Exhibit DSR-3</u> and <u>Exhibit DSR-4</u>, respectively.

Q. IS THE PROCESS YOU HAVE DESCRIBED IN YOUR TESTIMONY FOR PERFORMANCE AND PREPARATION OF THE DEPRECIATION STUDIES RECOGNIZED FOR BOTH REGULATORY RATEMAKING AND ACCOUNTING PURPOSES AS THE ACCEPTED PROCESS FOR DETERMINING REASONABLE DEPRECIATION RATES FOR THE ASSETS SUBJECT OF THE STUDIES?

A. Yes.

III. THE KANSAS DEPRECIATION STUDY RESULTS

Q. DID YOU PERFORM AND PREPARE THE KANSAS DEPRECIATION STUDY IN ACCORDANCE WITH THE PROCESS THAT YOU HAVE DESCRIBED IN YOUR TESTIMONY?

A. Yes.

Q. IS THIS THE STUDY UPON WHICH THE COMPANY RELIES IN THIS CASE TO ESTABLISH DEPRECIATION RATES FOR ITS KANSAS SYSTEM?

A. Yes. In this docket, Atmos is relying on the Kansas Depreciation Study that I prepared for its Kansas System. As stated previously, the Kansas System consists of the Company's net plant in service in Kansas used to provide natural gas service to its customers, which includes physical plant, property and equipment. For purposes of the Kansas Depreciation Study, the net plant comprising the Kansas System is categorized according to function – transmission, distribution and general plant.

Q. WHAT WERE YOUR FINDINGS AND RECOMMENDATIONS?

A. I found that changes were needed to the mortality characteristics for every asset category resulting in revised depreciation rates. A summary comparison of the existing depreciation rates and those recommended in the Kansas Depreciation Study by asset functional category is as follows:

Function	Existing	Recommended
	%	%
Storage	2.68	3.99
Transmission	1.52	2.23
Distribution	3.42	4.14
General	9.33	9.46
Total Depreciable Plant	3.54	4.26

Q. HAVE YOU QUANTIFIED THE IMPACT ON ANNUAL DEPRECIATION EXPENSE DUE TO YOUR RECOMMENDED CHANGES?

A. Yes. The above summary was taken from Schedule 1 of Exhibit DSR-3. Using September 30, 2006, depreciable balances, the effect of the recommended depreciation rates on annual depreciation expense is an increase of approximately $1,462,100.

Q. **WHAT ARE THE PRIMARY FORCES THAT ARE DRIVING THE RECOMMENDED CHANGE IN ANNUAL DEPRECIATION EXPENSE?**

A. The change in annual depreciation expense is affected by three separate factors – changes in average service life, changes in net salvage and the effect of reserve position. Based upon the magnitude and direction of the change in depreciation rates and annual depreciation expense, average service lives have decreased thereby producing higher annual depreciation expense. This increase, however, is augmented by more negative net salvage. Also, the annual depreciation expense is increased due to the reserve position.

Q. PLEASE DESCRIBE THE RESULTS REFLECTED IN THE TABLE ABOVE FOR STORAGE PLANT.

A. The Storage Plant assets were recently moved into the regulated environment. The functional depreciation rate increases from 2.68% to 3.99%. The main driver for the increase is recognition of negative net salvage. The net dollar impact of the change in the depreciation rate is an increase in annual depreciation expense of $75,978.

Q. PLEASE DESCRIBE THE RESULTS REFLECTED IN THE TABLE ABOVE REGARDING TRANSMISSION PLANT.

A. For the Transmission Plant functional group, the depreciation rate increases from 1.52% to 2.23%. Asset lives have decreased, resulting in increased annual depreciation expense. This increase was somewhat augmented by more negative net salvage. The net dollar impact of the change in the depreciation rate is an increase in annual depreciation expense of $28,717.

Q. PLEASE DESCRIBE THE RESULTS REFLECTED IN THE TABLE ABOVE REGARDING DISTRIBUTION PLANT.

A. For the Distribution Plant functional group, the depreciation rate increases from 3.42% to 4.14%, partially as a result of decreased lives. The impact on annual depreciation expense is an increase of approximately $1,349,500. This increase was enhanced by more negative net salvage for certain asset categories, in particular, Account 381, Meters and Account 382, Meter Installations.

Q. PLEASE DESCRIBE THE RESULTS REFLECTED IN THE TABLE ABOVE REGARDING GENERAL PLANT.

A. The composite depreciation rate for the General Plant functional group has increased slightly from 9.33% to 9.46. Average service life changes are in both directions. Net salvage is less positive. The impact of the change in the depreciation rate is an increase in annual depreciation expense by approximately $7,900.

Q. PLEASE DESCRIBE THE RESULTS REFLECTED IN THE TABLE ABOVE FOR THE TOTAL COMPANY.

A. At the Total Company depreciable level, the composite depreciation rate increases from 3.54% to 4.26%, or $1,462,099 more in depreciation expense on an annual basis.

Q. DO YOU HAVE ANY RECOMMENDATIONS AS A RESULT OF THE KANSAS DEPRECIATION STUDY?

A. Yes. I recommend that the Commission approve and the Company adopt the depreciation rates shown on Schedule 1 of the Kansas Depreciation Study.

Q. UPON WHAT TO YOU BASE THIS RECOMMENDATION?

A. I base this recommendation on the fact that I have conducted a comprehensive depreciation study, giving appropriate recognition to historical experience, recent trends and Company expectations. The Kansas Depreciation Study results in a fair and reasonable level of depreciation expense which, when incorporated into a revenue stream, will provide the Company with adequate capital recovery until such time as a new depreciation study indicates a need for change.

IV. THE SSU DEPRECIATION STUDY RESULTS

Q. DID YOU PERFORM AND PREPARE THE SSU DEPRECIATION STUDY IN ACCORDANCE WITH THE PROCESS THAT YOU HAVE DESCRIBED IN YOUR TESTIMONY?

A. Yes.

Q. IS THIS THE STUDY UPON WHICH THE COMPANY RELIES IN THIS CASE TO ESTABLISH DEPRECIATION RATES FOR SSU PLANT?

A. Yes. In this docket, Atmos is relying on the SSU Depreciation Study that I prepared for its SSU plant as part of allocated common costs more particularly described in the direct testimony of Company witnesses James C. Cagle and Daniel M. Meziere.[9] As stated previously, the SSU general plant consists primarily of software and hardware systems which are used in connection with the provision of common services to the Company's utility divisions. For purposes of the SSU Depreciation Study, the net plant comprising the SSU general plant is categorized according to function.

Q. WHAT WERE YOUR FINDINGS AND RECOMMENDATIONS?

A. I found that changes were needed to the mortality characteristics for every asset category resulting in revised depreciation rates. A summary comparison of the existing depreciation rates and those recommended in the SSU Depreciation Study by asset functional category is as follows:

Function	Existing	Recommended
	%	%
General	9.09	10.32

Q. HAVE THE SSU DEPRECIATION RATES THAT RESULT FROM YOUR SSU DEPRECIATION STUDY BEEN ADOPTED BY OTHER STATE REGULATORY COMMISSION'S FOR ATMOS' USE?

[9] As more particularly described in the direct testimony of Mr. Cagle, a portion of depreciation expense on SSU general plant, calculated at the depreciation rates proposed in the SSU Depreciation Study, is allocated to the Kansas Service Area as part of O&M expense included in the Company's revenue requirement in this rate filing. The SSU Depreciation Study does not address the Company's allocations of plant and expense, only depreciation rates for SSU general plant.

A. Yes. The Company recently settled a general rate case in Kentucky which, as part of the settlement, adopted these rates. These depreciation rates have also been included in a general rate case the Company filed in Tennessee earlier this year, but, as of the date of this direct testimony, that case is still pending. Based upon a similar study which I performed in 2002, Atmos has had SSU depreciation rates approved in several other jurisdictions, including Louisiana, Texas and Virginia.

Q. WOULD YOU SUMMARIZE THE RESULTS OF THE SSU DEPRECIATION STUDY?

A. Yes. In general, average service lives have increased. Net salvage remained the same for each asset category. There are three asset categories containing the largest changes in annual depreciation expense: Account 399.01, Server Hardware; Account 399.08, Application Software and Account 399.24, General Start-up Costs. For Account 399.01, the decrease in annual depreciation expense of $1,069,241 is due to an increase in average service life from 5 years to 10 years. For Account 399.08, the increase in annual depreciation expense of $3,217,244 is due to reserve position. For Account 399.24, the increase in annual depreciation expense of $1,751,828 is due to reserve position.

Q. WHEN YOU USE THE TERM "RESERVE POSITION", WHAT DO YOU MEAN?

A. The term "reserve position" refers to the difference between a theoretical reserve and the existing book reserve. If the theoretical reserve is greater than the book reserve, past depreciation has been inadequate compared to the depreciation parameters developed in the Kansas and the SSU study, and an upward adjustment to the depreciation rate is required. If the opposite is true, a downward adjustment to the depreciation rate is required.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE DEPRECIATION RATES THAT SHOULD BE ESTABLISHED FOR SSU IN THIS CASE.

A. I recommend that the Commission adopt the depreciation rates shown on Schedule 1 of <u>Exhibit DSR-4</u>. I base this recommendation on the fact that I have conducted a comprehensive depreciation study, giving appropriate recognition to historical experience, recent trends and Company expectations. My study results in a fair and reasonable level of depreciation expense which, when incorporated into a revenue stream, will provide the Company with adequate capital recovery until such time as a new depreciation study indicates a need for change.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes.

VERIFICATION

STATE OF TEXAS)
) ss.
COUNTY OF DALLAS)

Donald S. Roff, being duly sworn upon his oath, deposes and states that he is President of Depreciation Specialty Resources; that he has read and is familiar with the foregoing Direct Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information, and belief.

Donald S. Roff
DONALD S. ROFF

Subscribed and sworn to before me this 10TH day of September 2007.

Ethel Z. Taylor
NOTARY PUBLIC

My appointment Expires:
August 13, 2010

ETHEL Z TAYLOR
My Commission Expires
August 13, 2010

Academic Background

Donald S. Roff graduated from Rensselaer Polytechnic Institute with a Bachelor of Science degree in Management Engineering in 1972.

Mr. Roff has also received specialized training in the area of depreciation from Western Michigan University's Institute of Technological Studies. This training involved three forty-hour seminars on depreciation entitled "Fundamentals of Depreciation", "Fundamentals of Service Life Forecasting" and "Making a Depreciation Study" and included such topics as accounting for depreciation, estimating service life, and estimating salvage and cost of removal.

Employment and Professional Experience

Following graduation, Mr. Roff was employed for eleven and one-half years by Gilbert Associates, Inc., as an engineer in the Management Consulting Division. In this capacity, he held positions of increasing responsibility related to the conduct and preparation of various capital recovery and valuation assignments.

In 1984, Mr. Roff was employed by Ernst & Whinney and was involved in several depreciation rate studies and utility consulting assignments.

In 1985, Mr. Roff joined Deloitte Haskins & Sells (DH&S), which, in 1989, merged with Touche Ross & Co. to form Deloitte & Touche. In 1995, Mr. Roff was appointed as a Director with Deloitte & Touche.

In November, 2005, Mr. Roff formed Depreciation Specialty Resources to serve the utility industry.

During his tenure with Gilbert Associates, Inc., Ernst & Whinney, DH&S and Deloitte & Touche, Mr. Roff has participated in or directed depreciation studies for electric, gas, water and steam heat utilities, pipelines, railroad and telecommunication companies in over 30 states, several Canadian provinces and Puerto Rico. This work requires an in-depth knowledge of depreciation accounting and regulatory principles, mortality analysis techniques and financial practices. At these firms, Mr. Roff has had varying degrees of responsibility for valuation studies, development of depreciation accrual rates, consultation on the unitization of property records, and other studies concerned with the inspection and appraisals of utility property, preparation of rate case testimony and support exhibits, data responses and rebuttal testimony, in addition to appearing as an expert witness.

Industry and Technical Affiliations

Mr. Roff is a registered Professional Engineer in Pennsylvania (by examination).

Mr. Roff is a member of the Society of Depreciation Professionals and a Certified Depreciation Professional, and a Technical Associate of the American Gas Association (A.G.A.) Depreciation Committee. He currently serves as the lead instructor for the A.G.A.'s Principles of Depreciation Course.

DONALD S. ROFF

TESTIMONY EXPERIENCE

CASE NO.	DATE	COMPANY	JURISDICTION	SUBJECT
Docket No. 93-3005	July 1993	Southwest Gas Corporation	Nevada	Gas Depreciation Rates
Docket No. 93-3025	July 1993	Southwest Gas Corporation	Nevada	Gas Depreciation Rates
Docket No. 12820	June 1994	Central Power and Light Company	Texas	Electric Depreciation Rates
Case No. U-10380	Dec 1994	Consumers Power Company	Michigan	Gas Depreciation Rates and Accounting
Cause No. 39938	April 1995	Indianapolis Power & Light Company	Indiana	Electric Depreciation Rates
Case No. U-10754	July 1995	Consumers Power Company	Michigan	Electric Depreciation Rates and Accounting
Docket No. 13369	Aug 1995	West Texas Utilities Company	Texas	Electric Depreciation Rates
Docket No. 95-02116	Sept 1995	Chattanooga Gas Company	Tennessee	Gas Depreciation Rates
Docket No. 95-715-G	Oct 1995	Piedmont Natural Gas Company	South Carolina	Gas Depreciation Rates
Docket No. 14965	Dec 1995	Central Power and Light Company	Texas	Electric Depreciation Rates
Cause No. 40395 (I)	Feb 1996	Wabash Valley Power Association, Inc.	Indiana	Electric Depreciation Rates
GUD NO. 8664	Oct 1996	Lone Star Pipeline Company	Texas	Gas Depreciation Rates
Docket No. 96-360-U	Nov 1996	Entergy Arkansas Inc.	Arkansas	Electric Depreciation Rates
Docket No. 16705	Nov 1996	Entergy Gulf States Inc.	Texas	Electric Depreciation Rates/Competitive Issues
Docket No. ER-97-394	Mar 1997	Missouri Public Service	Missouri	Electric Depreciation Rates/Competitive Issues
Docket No. U-22092	Mar 1997	Entergy Gulf States Inc.	Louisiana	Electric Depreciation Rates/Competitive Issues
Docket No. 97-00982	May 1997	Chattanooga Gas Company	Tennessee	Gas Depreciation Rates
Cause No. 40395 (II)	June 1997	Wabash Valley Power Association, Inc.	Indiana	Electric Depreciation Rates
Case No. U-11509	Sept 1997	Consumers Energy Company	Michigan	Gas Depreciation Rates and Accounting
Docket No. ER98-11	Sept 1997	Long Island Lighting Company	FERC	Electric Depreciation Rates
Docket No. 8390-U	Dec 1997	Atlanta Gas Light Company	Georgia	Gas Depreciation Rates and Accounting
Cause No. 41118	Mar 1998	Wabash Valley Power Association, Inc.	Indiana	Electric Depreciation Rates
Case No. U-11722	Oct 1998	Detroit Edison Company	Michigan	Electric Depreciation Rates
Docket No. 98-2035-03	Nov 1998	PacifiCorp	Utah	Electric Depreciation Rates
Docket No. 99-4006	April 1999	Nevada Power Company	Nevada	Electric Depreciation Rates
GUD Docket No. 9030	March 2000	Atmos Energy Corporation	Texas	Gas Depreciation Rates and Accounting
GUD Docket No. 9145	April 2000	TXU Gas Distribution	Texas	Gas Depreciation Rates
City of Tyler	Dec 2000	Reliant Energy Entex	Texas	Gas Depreciation Rates and Accounting
Docket No. U-24993	March 2001	Entergy Gulf States Inc.	Louisiana	Electric Depreciation Rates and Accounting
Docket Nos. GR01050328/GR01050297	May 2001	Public Service Electric & Gas	New Jersey	Gas Depreciation Rates and Accounting
Case No. U-12999	July 2001	Consumers Energy Company	Michigan	Gas Depreciation Rates and Accounting
Docket No. 01-10002	Oct 2001	Nevada Power Company	Nevada	Electric Depreciation Rates
Docket No. 14618-U	Nov 2001	Savannah Electric and Power Company	Georgia	Electric Depreciation Rates
Docket No. 01-11031	Dec 2001	Sierra Pacific Power Company	Nevada	Electric Depreciation Rates
Docket No. 010949-EL	Jan 2002	Gulf Power Company	Florida	Electric Depreciation Rates
Docket No. 14311-U	Jan 2002	Atlanta Gas Light Company	Georgia	Gas Depreciation Rates and Accounting
Docket No. UD-00-2	March 2002	Entergy New Orleans, Inc.	New Orleans	Electric Depreciation Accounting
Cause No. PUD200200166	May 2002	Reliant Energy Entex	Oklahoma	Gas Depreciation Rates and Accounting
Docket No. 01-243-U	June 2002	Reliant Energy Entex	Arkansas	Gas Depreciation Rates and Accounting
Docket No. 02-035-12	Oct 2002	PacifiCorp	Utah	Electric Depreciation Rates
Docket No. 20000-ER-2-192	Oct 2002	PacifiCorp	Wyoming	Electric Depreciation Rates
Docket No. UE-021271	Oct 2002	PacifiCorp	Washington	Electric Depreciation Rates
Docket No. UM-1064	Oct 2002	PacifiCorp	Oregon	Electric Depreciation Rates
Docket No. PAC-E-02-5	Oct 2002	PacifiCorp	Idaho	Electric Depreciation Rates
Docket No. 02-0391	Oct 2002	Hawaiian Electric Company, Inc.	Hawaii	Electric Depreciation Rates and Accounting
Docket No. 03-ATMG-1036-RTS	June 2003	Atmos Energy Corporation	Kansas	Gas Depreciation Rates and Accounting
Docket No. 02-0391	Aug 2003	Hawaiian Electric Company, Inc.	Hawaii	Electric Depreciation Rates and Accounting
Cause No. 42458	Sept 2003	Wabash Valley Power Association, Inc.	Indiana	Electric Depreciation Rates and Accounting
Docket No. 03-ATMG-1036-RTS	Nov 2003	Atmos Energy Corporation	Kansas	Gas Depreciation Rates and Accounting
Case No. 12999	Dec 2003	Consumers Energy Company	Michigan	Gas Depreciation Rates and Accounting
Case No. 12999	Feb 2004	Consumers Energy Company	Michigan	Gas Depreciation Rates and Accounting
Docket No. ER-2004-0570	Apr 2004	The Empire District Electric Company	Missouri	Electric Depreciation Rates and Accounting
Docket No. 04-100-U	Apr 2004	The Empire District Electric Company	Arkansas	Electric Depreciation Rates and Accounting
Docket No. PUE 2003-00597	Aug 2004	Atmos Energy Corporation	Virginia	Gas Depreciation Rates and Accounting
Docket No. 18638-U	Oct 2004	Atlanta Gas Light Company	Georgia	Gas Depreciation Rates and Accounting
Docket No. ER-2004-0570	Nov 2004	The Empire District Electric Company	Missouri	Electric Depreciation Rates and Accounting
Docket No. ER-2004-0570	Nov 2004	The Empire District Electric Company	Missouri	Electric Depreciation Rates and Accounting
Cause No. 200400610	Jan 2005	Oklahoma Natural Gas Company	Oklahoma	Gas Depreciation Rates and Accounting
Docket No. 18638-U	March 2005	Atlanta Gas Light Company	Georgia	Gas Depreciation Rates and Accounting
Docket No. 20298	May 2005	Atmos Energy Corporation	Georgia	Gas Depreciation Rates and Accounting
Cause No. 200400610	June 2005	Oklahoma Natural Gas Company	Oklahoma	Gas Depreciation Rates and Accounting
Docket No. 20298	Oct 2005	Atmos Energy Corporation	Georgia	Gas Depreciation Rates and Accounting
Case No. GR-2006-0387	Apr 2006	Atmos Energy Corporation	Missouri	Gas Depreciation Rates and Accounting
Docket No. 05-00258	July 2006	Atmos Energy Corporation	Tennessee	Gas Depreciation Rates and Accounting
Docket No. 06S-234EG	Sept 2006	Public Service Company of Colorado	Colorado	Electric Depreciation Rates and Accounting
Docket No. GUD No. 9676	Oct 2006	Atmos Energy Corporation	Texas	Gas Depreciation Rates and Accounting
Case No. 2006-00464	Jan 2007	Atmos Energy Corporation	Kentucky	Gas Depreciation Rates and Accounting
Docket No. 07-	May 2007	Atmos Energy Corporation	Tennessee	Gas Depreciation Rates and Accounting

Depreciation Specialty Resources

Atmos Energy Corporation

Book Depreciation Study of Atmos Energy Corporation Kansas Properties As of September 30, 2006

2832 Gainesborough Drive, Dallas, TX 75287-3483   469-964-9090

Atmos Energy Corporation

Book Depreciation Study of
Atmos Energy Corporation
Kansas Properties
As of September 30, 2006

August 2007

Atmos Energy Corporation
Three Lincoln Center
5430 LBJ Freeway
Dallas, TX 75240

Attention: Mr. Thomas Petersen

In accordance with your request and with the cooperation and participation of your staff, a book depreciation study of Atmos Energy Corporation's Kansas properties ("Atmos" or "the Company") has been conducted. The study covered all depreciable and amortizable property and recognized addition and retirement experience through September 30, 2006. The purpose of the study was to determine if the existing depreciation rates remain appropriate for the property and, if not, to recommend changes. Changes were found to be needed and are recommended. The changes in aggregate cause a decrease in depreciation rates used to calculate the annual depreciation expense.

A comparison of the effect of the existing rates and the recommended rates is shown below, based on depreciable plant balances as of September 30, 2006:

Function	Composite Depreciation Rate	
	Existing %	Recommended %
Storage	2.68	3.99
Transmission	1.52	2.23
Distribution	3.42	4.14
General	9.33	9.46
Total	3.54	4.26

The summary above is taken from Schedule 1, which shows the annual depreciation amounts calculated from the existing rates and the recommended account rates and the differences. Based upon the September 30, 2006 depreciable balances, the recommended depreciation rates will result in an annual decrease in depreciation provisions of $1,462,099 or 20.3%. The study results are being driven by an increase in depreciation rates for every functional asset category.

Schedule 2 shows the mortality characteristics used to calculate the recommended depreciation rates. The recommended depreciation rates are straight-line over life measured by time using the equal life group (ELG) procedure and the remaining life technique, consistent with the approved methodology used by Atmos in other jurisdictions.

The following sections of this report describe the methods of analysis used and the bases for the conclusions reached. The remainder of the report will present the results and recommendations for both immediate and future actions by the Company.

We appreciate this opportunity to serve Atmos Energy Corporation and would be pleased to meet with you to discuss further the matters presented in this report, if you desire.

Yours truly,

Donald S. Roff

President
Depreciation Specialty Resources

PURPOSE OF DEPRECIATION

Book depreciation accounting is the process of recognizing in financial statements the consumption of physical assets in the process of providing a service or a product. Generally accepted accounting principles require the recording of depreciation to be systematic and rational. To be systematic and rational, depreciation should, to the extent possible, match either the consumption of the facilities or the revenues generated by the facilities. Accounting theory requires the matching of expenses with either consumption or revenues to ensure that financial statements reflect the results of operations and changes in financial position as accurately as possible. The matching principle is often referred to as the "cause and effect" principle; thus, both the cause and the effect are required to be recognized for financial accounting purposes. This study was conducted in a manner consistent with the matching principle of accounting.

Because utility revenues are determined through regulation, and this study assumes that such regulation will continue, asset consumption is not automatically in revenues. Therefore, the consumption of utility assets must be measured directly by conducting a book depreciation study to accurately determine the mortality characteristics of the assets.

Matching is also an essential element of basic regulatory philosophy, and it has become known as "intergenerational customer equity". Intergenerational customer equity means the costs are borne by the generation of customers that caused them to be incurred, not by some earlier or later generation. This matching is required to ensure that the charges to customers reflect the actual costs of providing service.

DEPRECIATION DEFINTIONS

The Uniform System of Accounts ("USOA") prescribed for gas utilities by the Federal Energy Regulatory Commission ("FERC") followed by Atmos states that:

> "Depreciation", as applied to depreciable gas plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities, and in the case of natural gas companies, the exhaustion of natural resources.
>
> "Service value" means the difference between original cost and net salvage value of gas plant.
>
> "Net salvage value" means the salvage value of property retired less the cost of removal.
>
> "Salvage value" means the amount received for the property retired, less any expenses incurred in connection with the sale or in preparing the property for sale or, if retained, the amount at which the material is chargeable to materials and supplies, or other appropriate account.
>
> "Cost of removal" means the cost of demolishing, dismantling, tearing down or otherwise removing gas plant, including the cost of transportation and handling incidental thereto.

As is clear from the wording of the salvage value and the cost of removal definitions, it is the salvage that will actually be received and the cost of removal that will actually be incurred, both measured at the price level at the time of receipt or incurrence that is required to be recognized in the depreciation rates of Atmos.

These definitions are consistent with the purpose of depreciation, and the study reported here was conducted in a manner consistent with both.

ACCOMPLISHMENT OF ACCOUNTING AND REGULATORY PRINCIPLES

Utility depreciation accounting is a group concept. Inherent in this concept is the assumption that all property is fully depreciated at the time of retirement, regardless of age, and there is no attempt to record the depreciation applicable to individual components of the groups. The depreciation rates are based on the recognition that each depreciable property group has an average service life. However, very little of the property group is "average". The group carries with it recognition that most property will be retired at an age less than or greater than the average service life. This study recognized the existence of this variation through the identification of Iowa-type retirement dispersions.

The study required to determine the applicable mortality characteristics is independent from the calculation of depreciation rates. The resulting mortality characteristics can be used to calculate either Average Life Group ("ALG") or Equal Life Group ("ELG") rates, both with either the whole life technique or the remaining life technique. Any set of mortality characteristics that is suitable for calculating ALG rates is just as suitable for calculating ELG rates. Conversely, any set that is not suitable for ELG is not suitable for ALG. ALG and ELG are straight-line over life measured by time, with ALG utilizing average life and ELG utilizing actual life. For ALG, all property in the group is assumed to have a life equal to the average life. ELG recognizes that, in reality, only a small portion of the group retires at an age equal to the average service life. For the average to exist, about half the investment in an asset group will be retired at ages less than average life, a small amount at average life, and the rest at ages greater than average life. It is the use of this dispersion in the rate calculation that causes ELG rates to better match cost recovery with the use and benefit of the property. Thus, the ELG procedure best accomplishes the purpose of book depreciation accounting by ensuring the recording of depreciation provision match the actual consumption of physical assets. Since ELG matches the recording of consumption with actual consumption, customers will pay the actual cost incurred to serve them. The ELG procedure is recommended, consistent with the approved methodology used by Atmos in other jurisdictions. A detailed discussion of the ELG procedure is included in the Appendix A to this report.

THE BOOK DEPRECIATION STUDY

Implementation of a policy toward book depreciation that recognizes the purpose of depreciation accounting requires the determination of the mortality characteristics that are applicable to the surviving property. One purpose of the depreciation study reported here was to accurately measure those mortality characteristics and to use those characteristics to determine appropriate rates for the accrual of depreciation expenses.

The major effort of the study was the determination of the appropriate mortality characteristics. The remainder of this report describes how those characteristics were determined, describes how the mortality characteristics were used to calculate the recommended depreciation rates, and presents the results of the rate calculations.

The typical study consists of the following steps:

> Step One is a Life Analysis consisting of the determination of historical experience and an evaluation of the applicability of that experience to surviving property.

Step Two is a Salvage and Cost of Removal Analysis consisting of a study of salvage and cost of removal experience and an evaluation of the applicability of that experience to surviving property.

Step Three consists of the determination of average service lives, retirement dispersion patterns identified by Iowa-type curves and the net salvage factors applicable to the surviving property.

Step Four is the determination of the depreciation rate applicable to each depreciable property group recognizing the results of the work in Steps One through Three, and a comparison with the existing depreciation rates.

LIFE ANALYSIS

The Life Analysis for the property concerns the determination of average service lives ("ASL") and Iowa-type dispersion patterns. An evaluation of investment experience suitably tempered by informed judgment as to the future applicability to surviving property formed the basis for the determination of average service lives and retirement dispersions.

An analysis of historical retirement activity, suitably tempered by informed judgment as to the future applicability of such activity to surviving plant, formed the basis for the determination of average service lives and retirement dispersion patterns for all property groups. For some accounts, retirement experience from transaction years 1954 through 2006 was analyzed using the Actuarial Method of Life Analysis. This method could be used because aged data are available for certain asset categories.

The actuarial method determines actual survivor curves (observed life tables) for selected periods of actual retirement experience. In order to recognize trends in life characteristics and to ensure that the valuable information in the curves is available to the analyst, observed life tables were calculated and plotted by computer, using several different periods of retirement experience. The average service lives and retirement dispersion patterns indicated by the actual survivor curves were identified by visually fitting Iowa-type dispersion curves to the actual curves. Retirement dispersion refers to the pattern of retirements as a function of age over the life of each property group. For each asset category, an Iowa-type curve combined with an estimated average service life was selected. This selection was based upon an analysis of historical investment activity, associated mortality trends and the types of assets surviving and retiring. The workpapers prepared as an integral part of the depreciation study contain the rationale for each selection.

Trends in historical mortality experience are helpful in understanding history. In order to determine trends, the periods (year bands) of retirement experience analyzed were the past five years, the past ten years, the past fifteen years, the past twenty years and the full band of band of retirement experience. The observed life tables and the Iowa curves fitted to each of these year bands were plotted. This visual approach ensures that the data contained in the observed life tables are available to the analyst and that the analyst does not allow the computer calculations to be the sole determinant of study results.

Where the age of retirement was not known, the Simulated Plant Record ("SPR") Method of life analysis was utilized. The SPR method determines retirement dispersion and average service life combinations for various bands of years which best match the actual retirements and balances for each asset category. The simulated balances procedure consists of applying survivor ratios (portion surviving at each age) from Iowa-type dispersion patterns in order to calculate annual balances, and then comparing the calculated balances with the actual balances for several periods, followed by statistical comparisons of differences in balances. The simulated retirements procedure is similar, except that the retirement frequency rates of the Iowa patterns are utilized to calculate annual retirements, and the comparisons are to actual retirements rather than to balances. Tabulations of the best ranking curves were made and this became the starting point for the evaluation phase of my review. In most cases, retirement history for a forty-year period was available.

For accounts having little experience or having retirement experience that is not an adequate measure of the expected mortality characteristics of surviving property, evaluation of the significance of history played a major role in selecting the mortality characteristics shown on Schedule 2.

SALVAGE AND COST OF REMOVAL ANALYSIS

Salvage and cost of removal experience was analyzed using experience from the period 1992 – 2006. Rolling and shrinking bands were analyzed to help expose trends. An evaluation of salvage and cost of removal experience suitably tempered by informed judgment as to the future applicability to surviving property formed the basis for the determination of salvage and cost of removal factors.

The analysis consisted of calculating salvage and cost of removal factors by relating the recorded salvage and cost of removal for each property group to the retirements that caused the salvage and cost of removal to occur.

EVALUATION OF ACTUAL EXPERIENCE

The typical evaluation consists of Life Analysis and Salvage and Cost of Removal Analysis, which involve the measurement of what has occurred in the past. History is sometimes a misleading indicator of the future. There are many kinds of events that can cause history to be misleading, among them significant changes contemplated in the underlying accounting procedures and/or changes in other management practices, such as maintenance procedures. It is the evaluation phase of a depreciation study that identifies if history is a good indicator of the future. Blind acceptance of history often results in selecting mortality characteristics to use for calculating depreciation rates that will provide recovery over a time period longer than productive life.

For each property group, the typical analysis processes involve only historical investment experience. Since depreciation rates will be applied to surviving property, the historical mortality experience indicated by a Life Analysis and the Salvage and Cost of Removal Analysis is evaluated to ensure that the mortality characteristics used to calculate the depreciation rates are applicable to the surviving property. The evaluation is required to ensure the validity of the depreciation rates.

The normal evaluation process requires knowledge of the type of property surviving; the type of property retired; the reasons for changing life, dispersion, salvage and cost of removal; and the effect of present and future Atmos plans on the property mortality characteristics.

CALCULATION OF DEPRECIATION RATES

A straight-line remaining life rate for each depreciable property group was calculated using the following formula:

$$\text{Rate} = \frac{\text{Plant Balance} - \text{Future Net Salvage} - \text{Book Reserve}}{\text{Average Remaining Life}}$$

Formula numerator elements in percent of depreciable plant balance and the denominator in years produce a rate in percent. This formula illustrates that a remaining life rate recognizes the book reserve position. The depreciable balances and book reserves were taken from accounting records, and the net salvage factors were determined by the study.

The remaining lives for each property group are a function of the age distribution of surviving plant and the selected average service life and retirement dispersion.

RESULTS

A comparison of the existing depreciation rates to the proposed study depreciation rates can be found on Schedule 1 in this report. A listing, by account, of the existing and the proposed mortality characteristics can be found on Schedule 2 in this report.

Storage Plant

The depreciation for this functional category increased from 2.68% to 3.99%. The primary driver was negative net salvage. The increase in annual depreciation expense is $75,978.

Transmission Plant

The depreciation rate for this functional category decreased from 1.52% to 2.23%. Longer lives were offset by negative net salvage. The major investment in this functional category is Account 367, Mains. An average service life of 50 years was selected with an S2 Iowa curve. Net salvage is estimated to be negative 15%. The increase in annual depreciation expense is $28,717.

Distribution Plant

For this asset grouping, an increase in the depreciation rate is indicated from 3.42% to 4.14%. Longer lives were offset by negative net salvage. Two accounts comprise the majority of the change in annual depreciation expense, Account 381, Meters and Account 382, Meter Installations. An average service life of 20 years with an R0.5 dispersion, was selected for each account. The net salvage allowance is negative 20%. The increase in annual depreciation is $1,349,516.

General Plant

There is an increase in depreciation rate indicated for this asset category from 9.33% to 9.46%. Average service life changes are in both directions. The single largest change in annual depreciation expense is for Account 399, Other Tangible Property. The recommended average service life is 8 years with an S5 curve. Net salvage is estimated to be 0%. The annual depreciation expense increase is $7,888, and is primarily due to slightly shorter average service lives.

RESERVE COMPARISON

Because remaining life rates are recommended (consistent with the existing rates), a comparison of the accumulated provision for depreciation with the calculated theoretical reserve at September 30, 2006, is not meaningful, and no comparison is presented. This is because the only way a reserve difference can exist is through the use of whole life rates.

RECOMMENDATIONS

Our recommendations for your future action in regard to book depreciation are as follows:

1. The depreciation rates shown in Column 6 of Schedule 1 are applicable to existing property and are recommended for implementation at such time as their effect can be incorporated into service rates.

2. Because of variation of life and net salvage experience with time, a depreciation study should be made during 2011 based upon retirement experience through

September 30, 2010. Exact timing of the study should be coordinated with a retail rate case to ensure timely implementation of revised depreciation rates.

3. We recommend that Atmos consider the utilization of a vintage amortization accounting process. This approach has been implemented by numerous utilities all over the country. This approach solves the universal problem of unreported retirements, is intended to simplify the property accounting effort, and provides a better matching of the accounting effort with the magnitude of the asset base.

4. For new asset categories that arise in the future for which no depreciation rate is currently approved, or for asset categories that are presently fully depreciated and may have new assets added in the future, we recommend that the functional composite depreciation rates be used until future depreciation studies are conducted. The functional composite depreciation rates are as follows:

Storage Plant	3.99%
Transmission Plant	2.23%
Distribution Plant	4.14%
General Plant	9.46%

ATMOS ENERGY CORPORATION - KANSAS (Divs. 79-81, & 86)
Book Depreciation Study as of September 30, 2006
Comparison of Depreciation Rates and Annual Amounts

SCHEDULE 1

[1] Account	[2] Description	[3] 9/30/2006 Balance $	[4] Existing Rates %	[5] Annual Amount $	[6] Study Rate %	[7] Annual Amount $	[8] Increase/ (Decrease) $
	STORAGE PLANT						
350.20	Rights-of-Way	568,935	0.00	0	3.12	17,751	17,751
351.00	Structures and Improvements	102,923	3.00	3,088	2.35	2,419	(669)
352.00	Wells	1,130,321	3.00	33,910	4.78	54,029	20,120
352.02	Reservoirs	36,515	3.00	1,095	3.32	1,212	117
353.00	Pipelines	1,090,230	3.00	32,707	2.69	29,327	(3,380)
354.00	Compressor Station Equipment	2,273,547	3.00	68,206	4.38	99,581	31,375
355.00	M&R Equipment	203,329	3.00	6,100	5.16	10,492	4,392
356.00	Purification Equipment	288,382	2.50	7,210	4.61	13,294	6,085
357.00	Other Equipment	125,321	3.00	3,760	3.15	3,948	188
	Total Storage Plant	5,819,503	2.68	156,075	3.99	232,053	75,978
	TRANSMISSION PLANT						
365.20	Rights-of-Way	7,169	0.00	0	2.00	143	143
366.00	Structures and Improvements	33,191	0.02	7	1.86	617	611
367.00	Mains	3,525,247	1.60	56,404	2.16	76,145	19,741
368.00	Compressor Station Equipment	31,496	1.49	469	5.47	1,723	1,254
369.00	M&R Station Equipment	395,928	0.92	3,643	2.68	10,611	6,968
	Total Transmission Plant	3,993,031	1.52	60,522	2.23	89,240	28,717
	DISTRIBUTION PLANT						
374.02	Rights-of-Way	289,231	0.00	0	2.98	8,619	8,619
375.00	Structures and Improvements	109,190	3.70	4,040	3.82	4,171	131
376.00	Mains	101,068,393	2.68	2,708,633	2.72	2,749,060	40,427
378.00	M&R Station Equipment	2,632,312	3.12	82,128	5.31	139,776	57,648
379.00	City Gate Equipment						
	Division 81 - UCG	1,906,135	3.08	58,709	3.11	59,281	572
	Division 86 - Southwest	1,494	3.25	49	3.11	46	(2)
	Total Account 379.00	1,907,629	3.08	58,758	3.11	59,327	570
380.00	Services	47,517,586	4.23	2,009,994	4.36	2,071,767	61,773
381.00	Meters	12,346,071	3.25	401,247	7.09	875,336	474,089
382.00	Meter Installations	18,518,817	5.67	1,050,017	9.41	1,742,621	692,604
383.00	House Regulators	2,106,434	2.74	57,716	3.45	72,672	14,956
384.00	House Regulator Installations	209,462	2.74	5,739	1.70	3,561	(2,178)
385.00	Industrial M&R Station Equipment	623,163	5.16	32,155	5.15	32,093	(62)
387.00	Other Equipment	13,769	11.01	1,516	17.84	2,456	940
	Total Distribution Plant	187,342,060	3.42	6,411,944	4.14	7,761,460	1,349,516
	GENERAL PLANT						
390.00	Structures and Improvements	825,019	2.84	23,431	4.17	34,403	10,973
391.00	Office Furniture and Equipment	463,740	6.87	31,859	12.49	57,921	26,062
392.00	Transportation Equipment	258,484	7.62	19,696	24.37	62,993	43,296
393.00	Stores Equipment	5,160	4.46	230	10.33	533	303
394.00	Tools, Shop and Garage Equipment	1,121,979	6.16	69,114	8.16	91,554	22,440
395.00	Laboratory Equipment	12,748	0.37	47	5.20	663	616
396.00	Power Operated Equipment	507,301	7.97	40,432	16.99	86,190	45,759
397.00	Communication Equipment	348,040	8.50	29,583	11.86	41,278	11,694
398.00	Miscellaneous Equipment	1,044,617	7.61	79,495	8.47	88,479	8,984
399.00	Other Tangible Property	1,346,374	19.27	259,446	7.22	97,208	(162,238)
	Total General Plant	5,933,462	9.33	553,334	9.46	561,222	7,888
	Total Depreciable Plant	203,088,056	3.54	7,181,875	4.26	8,643,974	1,462,099
	Intangible Plant	41,078					
	Land and Land Rights	716,542					
	Fully Depreciated Plant	218,076					
	Leaseholds (see note)	180,995					
	Total Gas Plant	204,244,747					

Note: The leaseholds in Account 352.10 were retired in February 2007, due to the sale of two storage fields.

ATMOS ENERGY CORPORATION - KANSAS (Divs. 79-81, & 86) **SCHEDULE 2**
Book Depreciation Study as of September 30, 2006
Comparison of Depreciation Rates and Annual Amounts

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
			EXISTING				RECOMMENDED			
Account	Description	ASL yrs.	Iowa Curve	Net Salvage %	ASL yrs.	Iowa Curve	Gross Salvage %	Cost of Removal %	Net Salvage %	COR Rate %
	STORAGE PLANT									
350.20	Rights-of-Way	-	-	-	50	R5	0	0	0	0.00
351.00	Structures and Improvements	-	-	-	40	R4	0	0	0	0.00
352.00	Wells	-	-	-	50	S4	0	100	(100)	2.00
352.02	Reservoirs	-	-	-	60	R3	0	0	0	0.00
353.00	Pipelines	-	-	-	50	S2	0	25	(25)	0.50
354.00	Compressor Station Equipment	-	-	-	25	S2	0	5	(5)	0.20
355.00	M&R Equipment	-	-	-	25	S2	0	5	(5)	0.20
356.00	Purification Equipment	-	-	-	30	R4	0	0	0	0.00
357.00	Other Equipment	-	-	-	35	R5	0	0	0	0.00
	TRANSMISSION PLANT									
365.20	Rights-of-Way	-	-	-	60	R5	0	0	0	0.00
366.00	Structures and Improvements	45	R5	0	40	R2.5	0	10	(10)	0.25
367.00	Mains	50	S2	(25)	50	S2	0	15	(15)	0.30
368.00	Compressor Station Equipment	40	R0.5	0	20	SQ	5	15	(10)	0.75
369.00	M&R Station Equipment	30	R0.5	0	30	R0.5	5	25	(20)	0.83
	DISTRIBUTION PLANT									
374.02	Rights-of-Way	-	-	-	50	R5	0	0	0	0.00
375.00	Structures and Improvements	35	L2	(5)	35	L2	0	5	(5)	0.14
376.00	Mains	50	S2	(25)	50	S2	0	25	(25)	0.50
378.00	M&R Station Equipment	30	R0.5	0	25	S2	0	5	(5)	0.20
379.00	City Gate Equipment									
	Division 81 - UCG	30	R0.5	0	30	R1	0	0	0	0.00
	Division 66 - Southwest	-	-	-	30	R1	0	0	0	0.00
380.00	Services	40	L1	(30)	40	S1	0	45	(45)	1.13
381.00	Meters	-	-	-	20	R0.5	0	20	(20)	1.00
382.00	Meter Installations	25	R0.5	0	20	R0.5	0	20	(20)	1.00
383.00	House Regulators	30	R0.5	0	30	R0.5	0	5	(5)	0.17
384.00	House Regulator Installations	-	-	-	30	S5	0	0	0	0.00
385.00	Industrial M&R Station Equipment	30	R0.5	0	25	R0.5	0	0	0	0.00
387.00	Other Equipment	20	L1	0	20	L3	5	10	(5)	0.50
	GENERAL PLANT									
390.00	Structures and Improvements	35	R3	0	30	R2	0	0	0	0.00
391.00	Office Furniture and Equipment	20	L2	0	15	R5	0	0	0	0.00
392.00	Transportation Equipment	6	L3	10	6	L3	5	0	5	0.00
393.00	Stores Equipment	20	L0	0	28	R0.5	0	0	0	0.00
394.00	Tools, Shop and Garage Equipment	20	L1	0	15	L5	0	0	0	0.00
395.00	Laboratory Equipment	35	S0.5	0	20	S6	0	0	0	0.00
396.00	Power Operated Equipment	12	S6	5	10	L4	0	0	0	0.00
397.00	Communication Equipment	15	S6	0	12	S6	0	0	0	0.00
398.00	Miscellaneous Equipment	20	R1	0	15	R1	0	0	0	0.00
399.00	Other Tangible Property	8	S5	0	8	S5	0	0	0	0.00

CALCULATION OF EQUAL LIFE GROUP DEPRECIATION RATES

It is the group concept of depreciation that leads to the existence of the ELG procedure for calculating depreciation rates. This concept has been an integral part of utility depreciation accounting practices for many years. Under the group concept, there is no attempt to keep track of the depreciation applicable to individual items of property. This is not surprising, in view of the millions of items making up a utility system. Any item retired is assumed to be fully depreciated, no matter when the retirements occur. The group of property would have some average life. "Average" is the result of an arithmetic calculation, and there is no assurance that any of the property in the group is "average."

The term "average service life" used in the context of book depreciation is well known, and its use in the measurement of the mortality characteristics of property carries with it the concept of retirement dispersion. If every item was average, thereby having exactly the same life, there would be no dispersion. The concept of retirement dispersion recognizes that some items in a group live to an age less than average service life, and other items live longer than the average. Retirement dispersion is often identified by standard patterns.

The Iowa type dispersion patterns that are widely used by electric and gas utilities were devised empirically about 60 years ago to provide a set of standard definitions of retirement dispersion patterns. Figure 1 shows the dispersion patterns for three of these curves. The L series indicates the mode is to the Left of average service life, the R series to the Right, and the S series at average service life, and therefore, Symmetrical. There is also an O series which has the mode at the Origin, thereby identifying a retirement pattern that has the maximum percentage of original installations retired during the year of placement.

The subscripts on Figure 1 indicate the range of dispersion, with the high number (4) indicating a narrow dispersion, and the low number (1) indicating a wide dispersion pattern. For example, the R1 curve shown on the Figure indicates retirements start immediately and some of the property will last twice as long as the average service life. The dispersion patterns translate to survivor curves, which are the most widely recognized form of the Iowa curves. Other families of patterns exist, but are not as widely used as the Iowa type.

The methods of calculating depreciation rates are categorized as straight-line and non-straight-line. Non-straight-line methods can be accelerated or deferred. There are three basic procedures for calculating straight-line book depreciation rates:

Units-of-Production
Average Life Group (ALG)
Equal Life Group (ELG)

Each of these procedures can be calculated using either the whole life or the remaining life technique.

Productive life may be identified by (a) a life span or (b) a pattern of production or usage. Units-of-Production is straight-line over production or usage, while the others are straight-line over life measured by time. ALG is straight-line over the average life of the group, while ELG is straight-line over the actual life of the group.

The formulas for the whole life and remaining life techniques are shown on Table 1. For the ELG calculation procedure, Formulas 1 and 3 are applied to the individual equal life components of the property group. For the ALG calculation, the formulas are applied to the property group itself. Formula 2 is applied to the property group for either ELG or ALG. Use of the units (percent and years) in the formulas results in rates as a percent of the depreciable plant balance.

The depreciable plant balance is the surviving balance at the time the rate is calculated, and is expressed as a percentage (always 100) of itself. Salvage and reserves are expressed as a percent of the depreciable plant balance. For example, a property group having a 35 year average service life and negative 5% salvage would have an ALG whole life rate of (100 + 5)/35, or 3.00%.

The first term in Formula 2 is identical to Formula 1 for the whole life rate. The second term of Formula 2 illustrates that the difference between a remaining life rate and whole life rate is the allocation of the difference between the book and calculated theoretical reserves over the remaining life by a remaining life rate.

The widely used ALG procedure of depreciation rate calculation does not recognize the existence of retirement dispersion in the calculation. The difference between the ALG and ELG procedure is the recognition of retirement dispersion in the ELG rate calculation. ELG is a rate calculation procedure: nothing more. The data required to make the ELG calculation are average service life, retirement dispersion, net salvage and the age distribution of the property. The depreciation study required to determine the applicable mortality characteristics is independent from the calculation of the depreciation rates. The resulting mortality characteristics can be used to calculate either ALG or ELG rates, both with either the whole life technique or the remaining life technique. Any set of mortality characteristics that is suitable for calculating ALG rates is just as suitable for calculating ELG rates. Conversely, any set that is not suitable for ELG is not suitable for ALG either. The ELG procedure calculates the depreciation rates based on the expected life of each equal life component of the property rather than the average of all components. As discussed earlier, "average" is the result of a calculation and there may not be any "average" property. When curves are used to define retirement dispersion, the average service life and the retirement dispersion pattern define the equal life groups and the expected life applicable to each group.

When retirement dispersion does not exist, the ELG rate is identical to the ALG rate. When dispersion exists, the ELG rate for recently installed property is higher than the ALG rate and for old property is lower.

A Simple Illustration of ELG

This illustration provides a framework for visualizing the ELG methodology. Table 2 assumes 20% of the $5,000 investment is retired at the end of each year following placement. The retirement frequencies are shown on Line 7. As shown in Columns 2 through 6, this means $1,000 of investment is retired each year, with the retirement at Age 1 being recovered in its entirety during Year One; at Age 2 in Years One and Two, etc. The depreciation rate applicable to each equal life group is shown on Line 8. The annual provision in dollars for Year One shown in Column 7 is made up of the Age 1 annual amounts shown on Line 1, Columns 2 through 6. As shown on the Table, the annual provision for Age 2 is equal to the annual provision for Age 1 less the amount collected during Year One applicable to the group retired during Year One. Thus, the annual provisions can be thought of as a matrix, with the provision for any given year being produced by a portion of the matrix.

The depreciation rates shown in Column 9 are determined by dividing the annual provisions in Column 7 by the survivors in Column 8. The rate formula shown on Table 2 can also be used to calculate the rates and is used on the Table to illustrate the working of the matrix by calculating the depreciation rates for Year One and Year Three. For Year One, the numerator and denominator both consist of five terms. Each year, the left-hand term of both numerator and denominator drop off. It should be noted that the reverse summation of retirement ratios (starting with Column 6 and moving left on Line 7) is equal to the survivor ratio at the beginning of the period shown in Column 10.

The formula can illustrate how the matrix can be thought of in terms of a depreciation rate. If the multiplier of 100 is incorporated in each element of the numerator of the formula, such as (100 x 0.2)/2, it can be seen that 100/2 is a rate and the retirement frequency (0.2) is a weighting factor. This particular rate (50%) is the one shown for Age 2 property on Line 8, Column 3.

It can be seen that the only data required for the ELG rate calculation are the retirement frequencies for each year. These frequencies are defined by the average service life and the shape of the dispersion pattern.

<u>A Real Illustration of ELG</u>

The depreciation analyst deals with much larger groups of property than appearing on Table 2. Table 3 contains an ELG rate calculation for an actual depreciable property group. The retirement frequencies shown in Column 4 are defined by the 38 year average service life and the L5 Iowa type dispersion pattern. The ALG rate without salvage for this property is 2.632% (100%/38 years), while the ELG rate varies from 2.704% at age 0.5 years to 1.471% at the age just prior to the last retirement, 67.5 years.

The rate listed in Column 5 at each age is the weighted summation of individual rates applicable to that portion of the surviving property that the retirement frequencies in Column 4 indicate will be retired in each following year. The combination of average service life and dispersion pattern means that the first retirement will be from the age 18.5 property during the following year at an age of 19 years; therefore, it will require a rate of 5.263% (1005/19 years). (This example does not have any surviving balance at age 18.5). The last retirement will be from age 67.5 year property; consequently, it will require a rate of 1.471% (100%/68 years). The vintage composite rate shown in Column 5 at age 0.5 years is the weighted summation of rates varying from 5.263% to 1.471%.

Since this example is for a narrow dispersion pattern, the first retirement occurs at age 19 years and the vintage composite rate remains 2.704% at age 19.5 years, because the first retirement drops the 5.263% rate from the summation.

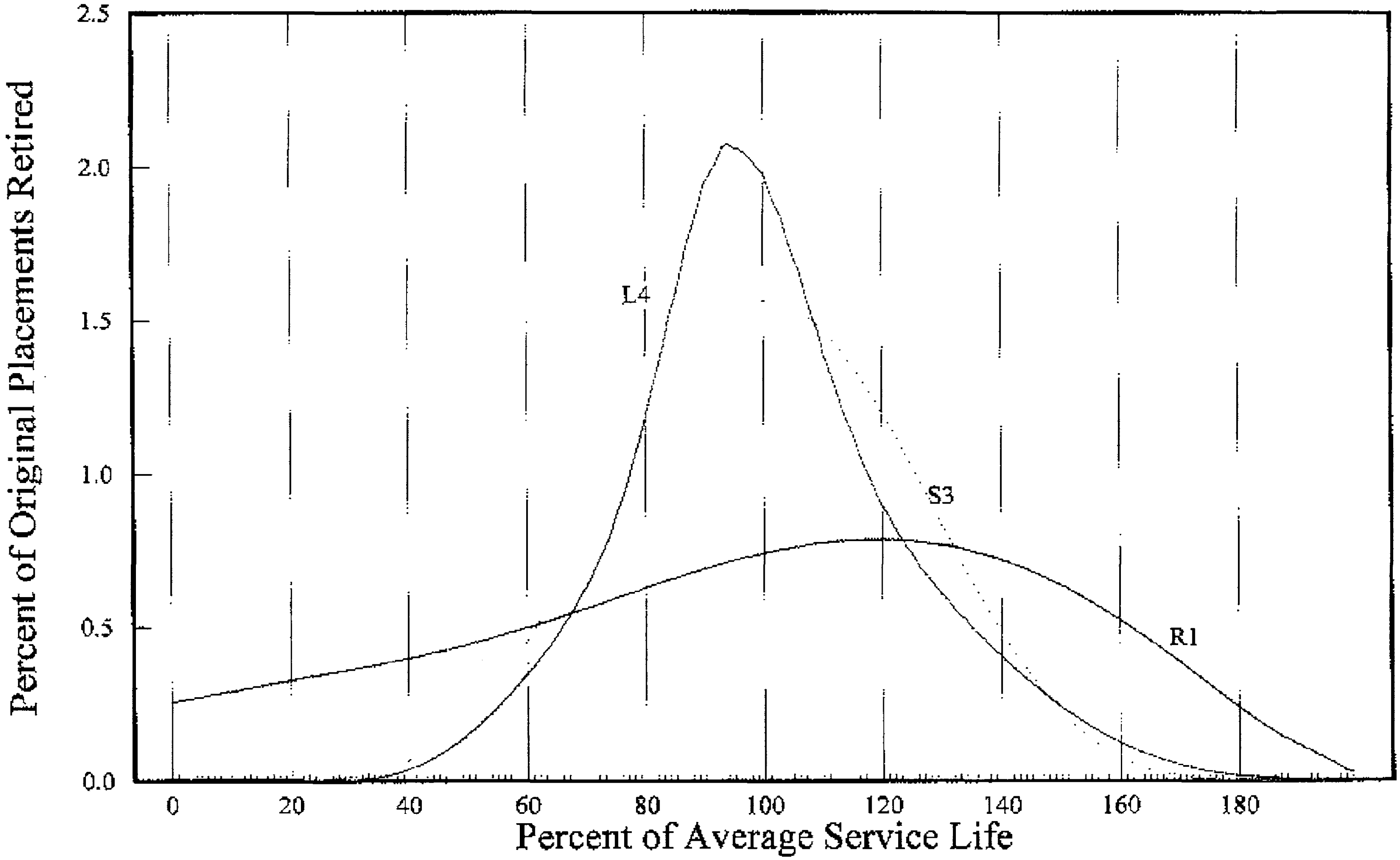
A wider dispersion would result in a wider range of vintage composite rates than defined by the L5 curve (i.e., 2.704% to 1.471%).

All that is necessary for calculating the depreciation rates applicable to each age of property are the retirement frequencies. These frequencies are defined by the average service life and the retirement dispersion pattern. The determination of average service life requires the determination of the dispersion, as without dispersion there would be no "average".

Depending on the dispersion pattern, the number of retirement frequencies making up the complete curve can be up to about 4.4 times the number of years of average service life. Thus, for an account whose number of retirement frequencies is three times average service life and whose average service life is 30 years, the rate applicable to the Age 1 property will be made up of the weighted summation of 89 components, etc. Thus, the rate calculation process is complex, but certainly not complicated. It is this complexity that makes the rate calculations much more practical using a computer.

RETIREMENT DISPERSION DEFINED

BY IOWA TYPE CURVES



DEPRECIATION RATE CALCULATION PROCEDURES

TABLE 1

Whole Life

$$\text{Rate } (\%) = \frac{PB - S}{ASL} \qquad \text{Formula 1}$$

Remaining Life

$$\text{Rate } (\%) = \frac{PB - FS}{ASL} - \frac{BR - CT}{ARL} \qquad \text{Formula 2}$$

$$\text{Rate } (\%) = \frac{PB - FS - BR}{ARL} \qquad \text{Formula 3}$$

Where

PB	is Depreciable Balance, %
AS	is Average Net Salvage, %
FS	is Future Net Salvage, %
ASL	is Average Service Life, years
BR	is Depreciation Reserve, %
CTR	is Calculated Theoretical Reserve, %
ARL	is Average Remaining Life, years

Line	(1) Age Years	(2) Group 1 $	(3) Group 2 $	(4) Group 3 $	(5) Group 4 $	(6) Group 5 $	(7) Annual Provision $	(8) Beginning Survivors $	(9) Rate %	(10) Survivor Factor
1	1	1,000.00	500.00	333.33	250.00	200.00	2,283.33	5,000.00	45.67	1.00
2	2		500.00	333.33	250.00	200.00	1,283.33	4,000.00	32.08	0.80
3	3			333.33	250.00	200.00	783.33	3,000.00	26.11	0.60
4	4				250.00	200.00	450.00	2,000.00	22.50	0.40
5	5					200.00	200.00	1,000.00	20.00	0.20
6	Retirements	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00				
7	Frequency	0.20	0.20	0.20	0.20	0.20				
8	Rate	100%	50%	33.33%	25%	20%				

$$\text{Rate, \%} = \frac{\dfrac{\text{Retirements Frequencies}}{\text{Age at Retirement}}}{\text{Reverse of Retirement Frequencies}} \times 100$$

$$\text{Year One Rate} = \frac{\dfrac{0.2}{1} + \dfrac{0.2}{2} + \dfrac{0.2}{3} + \dfrac{0.2}{4} + \dfrac{0.2}{5}}{0.2 + 0.2 + 0.2 + 0.2 + 0.2} \times 100 = 45.67\%$$

$$\text{Year Three Rate} = \frac{\dfrac{0.2}{3} + \dfrac{0.2}{4} + \dfrac{0.2}{5}}{0.2 + 0.2 + 0.2} \times 100 = 26.11\%$$

DETERMINATION OF DEPRECIATION RATES BY ELG PROCEDURES

[1] Age Years	[2] Year	[3] Vintage Balance $	[4] Retirement Frequency ASL 38 Curve L5	[5] Rate	[6] Amount $
0.5	1993	4,244,285	0.0000	0.02704	114,758.36
1.5	1992	800,784	0.0000	0.02704	21,651.86
2.5	1991	60,016	0.0000	0.02704	1,622.73
3.5	1990	43,455,063	0.0000	0.02704	1,174,952.00
4.5	1989	81,456	0.0000	0.02704	2,202.43
5.5	1988	172,463	0.0000	0.02704	4,663.11
6.5	1987	2,098,991	0.0000	0.02704	56,753.20
7.5	1986	2,685,949	0.0000	0.02704	72,623.55
9.5	1984	1,642,443	0.0000	0.02704	44,408.90
10.5	1983	222,602	0.0000	0.02704	6,018.78
11.5	1982	85,661	0.0000	0.02704	2,316.13
12.5	1981	4,985	0.0000	0.02704	134.79
13.5	1980	72,942	0.0000	0.02704	1,972.23
14.5	1979	219,163	0.0000	0.02704	5,925.80
15.5	1978	120,665	0.0000	0.02704	3,262.58
16.5	1977	37,042	0.0000	0.02704	1,001.55
17.5	1976	339,236	0.0000	0.02704	9,172.21
19.5	1974	336,723	0.0001	0.02703	9,101.41
20.5	1973	10,375,359	0.0004	0.02702	280,292.86
21.5	1972	4,481,906	0.0009	0.02699	120,983.25
22.5	1971	5,923,340	0.0018	0.02695	159,618.98
23.5	1970	78,848	0.0030	0.02689	2,119.97
24.5	1969	305,178	0.0047	0.02681	8,180.42
25.5	1968	10,312,586	0.0069	0.02670	275,375.94
26.5	1967	2,754,067	0.0094	0.02658	73,203.24
27.5	1966	9,558,786	0.0123	0.02644	252,715.77
29.5	1964	5,556,083	0.0194	0.02610	144,995.54
30.5	1963	23,383	0.0242	0.02589	605.42
31.5	1962	3,313,584	0.0305	0.02566	85,012.50
32.5	1961	32,271	0.0388	0.02538	819.15
33.5	1960	151,658	0.0482	0.02507	3,802.24
34.5	1959	171,483	0.0583	0.02472	4,238.70
35.5	1958	167,116	0.0674	0.02433	4,066.35
36.5	1957	70,420	0.0740	0.02390	1,683.22
37.5	1956	1,792,312	0.0768	0.02345	42,036.33
39.5	1954	2,270,555	0.0701	0.02252	51,131.79
40.5	1953	187	0.0622	0.02206	4.13
41.5	1952	20,185	0.0531	0.02161	436.14
42.5	1951	12,860	0.0442	0.02118	272.40
43.5	1950	706	0.0362	0.02078	14.67
44.5	1949	2,652	0.0296	0.02041	54.13
45.5	1948	6,422	0.0245	0.02006	128.81
46.5	1947	19,573	0.0205	0.01972	386.07
47.5	1946	323,058	0.0173	0.01940	6,268.69
49.5	1944	2,285,041	0.0123	0.01879	42,943.47
50.5	1943	15,614	0.0103	0.01850	288.86
51.5	1942	620,752	0.0085	0.01821	11,306.36
53.5	1940	684,610	0.0055	0.01766	12,090.26
54.5	1939	47,173	0.0043	0.01740	820.76
55.5	1938	22,725	0.0033	0.01714	389.52
56.5	1937	560	0.0025	0.01689	9.46
57.5	1936	722	0.0019	0.01664	12.02
59.5	1934	3,065	0.0005	0.01573	48.21
61.5	1932	944,400	0.0005	0.01573	14,853.98
67.5	1926	2	0.0000	0.01471	0.03
Totals		119,029,691			3,133,730.27
			SALVAGE (%) =		-5.0
			AFTER SALVAGE =		3,290,417
			ANNUAL DEPRECIATION RATE =		2.76

Depreciation Specialty Resources

Atmos Energy Corporation

Book Depreciation Study of Atmos Energy Corporation Shared Services Unit As of September 30, 2006

2832 Gainesborough Drive, Dallas, TX 75287-3483 469-964-9090

Atmos Energy Corporation

Book Depreciation Study of
Atmos Energy Corporation
Shared Services Properties
As of September 30, 2006

December 2006

Atmos Energy Corporation
Three Lincoln Center
5430 LBJ Freeway
Dallas, TX 75240

Attention: Mr. Thomas Petersen

In accordance with your request and with the cooperation and participation of your staff, a book depreciation study of Atmos Energy Corporation's Shared Services ("SSU") properties ("Atmos" or "the Company") has been conducted. The study covered all depreciable and amortizable property and recognized addition and retirement experience through September 30, 2006. The purpose of the study was to determine if the existing depreciation rates remain appropriate for the property and, if not, to recommend changes. Changes were found to be needed and are recommended. The changes in aggregate cause an increase in depreciation rates used to calculate the annual depreciation expense.

A comparison of the effect of the existing rates and the recommended rates is shown below, based on depreciable plant balances as of September 30, 2006:

Function	Composite Depreciation Rate	
	Existing %	Recommended %
General	9.09	10.32

The summary above is taken from Schedule 1, which shows the annual depreciation amounts calculated from the existing rates and the recommended account rates and the differences. Based upon the September 30, 2006 depreciable balances, the recommended depreciation rates will result in an annual increase in depreciation provisions of $2,662,501 or 13.5%.

Schedule 2 shows the mortality characteristics used to calculate the recommended depreciation rates. The recommended depreciation rates are straight-line over life measured by time using the equal life group (ELG) procedure and the remaining life technique, consistent with the existing, approved rates.

The following sections of this report describe the methods of analysis used and the bases for the conclusions reached. The remainder of the report will present the results and recommendations for both immediate and future actions by the Company.

We appreciate this opportunity to serve Atmos Energy Corporation and would be pleased to meet with you to discuss further the matters presented in this report, if you desire.

Yours truly,

Donald S. Roff

President

Depreciation Specialty Resources

PURPOSE OF DEPRECIATION

Book depreciation accounting is the process of recognizing in financial statements the consumption of physical assets in the process of providing a service or a product. Generally accepted accounting principles require the recording of depreciation to be systematic and rational. To be systematic and rational, depreciation should, to the extent possible, match either the consumption of the facilities or the revenues generated by the facilities. Accounting theory requires the matching of expenses with either consumption or revenues to ensure that financial statements reflect the results of operations and changes in financial position as accurately as possible. The matching principle is often referred to as the "cause and effect" principle; thus, both the cause and the effect are required to be recognized for financial accounting purposes. This study was conducted in a manner consistent with the matching principle of accounting.

Because utility revenues are determined through regulation, and this study assumes that such regulation will continue, asset consumption is not automatically in revenues. Therefore, the consumption of utility assets must be measured directly by conducting a book depreciation study to accurately determine the mortality characteristics of the assets.

Matching is also an essential element of basic regulatory philosophy, and it has become known as "intergenerational customer equity". Intergenerational customer equity means the costs are borne by the generation of customers that caused them to be incurred, not by some earlier or later generation. This matching is required to ensure that the charges to customers reflect the actual costs of providing service.

DEPRECIATION DEFINTIONS

The Uniform System of Accounts ("USOA") prescribed for gas utilities by the Federal Energy Regulatory Commission ("FERC") followed by Atmos states that:

> "Depreciation", as applied to depreciable gas plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities, and in the case of natural gas companies, the exhaustion of natural resources.
>
> "Service value" means the difference between original cost and net salvage value of gas plant.
>
> "Net salvage value" means the salvage value of property retired less the cost of removal.
>
> "Salvage value" means the amount received for the property retired, less any expenses incurred in connection with the sale or in preparing the property for sale or, if retained, the amount at which the material is chargeable to materials and supplies, or other appropriate account.
>
> "Cost of removal" means the cost of demolishing, dismantling, tearing down or otherwise removing gas plant, including the cost of transportation and handling incidental thereto.

As is clear from the wording of the salvage value and the cost of removal definitions, it is the salvage that will actually be received and the cost of removal that will actually be incurred, both measured at the price level at the time of receipt or incurrence that is required to be recognized in the depreciation rates of Atmos.

These definitions are consistent with the purpose of depreciation, and the study reported here was conducted in a manner consistent with both.

ACCOMPLISHMENT OF ACCOUNTING AND REGULATORY PRINCIPLES

Utility depreciation accounting is a group concept. Inherent in this concept is the assumption that all property is fully depreciated at the time of retirement, regardless of age, and there is no attempt to record the depreciation applicable to individual components of the groups. The depreciation rates are based on the recognition that each depreciable property group has an average service life. However, very little of the property group is "average". The group carries with it recognition that most property will be retired at an age less than or greater than the average service life. This study recognized the existence of this variation through the identification of Iowa-type retirement dispersions.

The study required to determine the applicable mortality characteristics is independent from the calculation of depreciation rates. The resulting mortality characteristics can be used to calculate either Average Life Group ("ALG") or Equal Life Group ("ELG") rates, both with either the whole life technique or the remaining life technique. Any set of mortality characteristics that is suitable for calculating ALG rates is just as suitable for calculating ELG rates. Conversely, any set that is not suitable for ELG is not suitable for ALG. ALG and ELG are straight-line over life measured by time, with ALG utilizing average life and ELG utilizing actual life. For ALG, all property in the group is assumed to have a life equal to the average life. ELG recognizes that, in reality, only a small portion of the group retires at an age equal to the average service life. For the average to exist, about half the investment in an asset group will be retired at ages less than average life, a small amount at average life, and the rest at ages greater than average life. It is the use of this dispersion in the rate calculation that causes ELG rates to better match cost recovery with the use and benefit of the property. Thus, the ELG procedure best accomplishes the purpose of book depreciation accounting by ensuring the recording of depreciation provision match the actual consumption of physical assets. Since ELG matches the recording of consumption with actual consumption, customers will pay the actual cost incurred to serve them. The ELG procedure is recommended, consistent with the existing, approved rates. A detailed discussion of the ELG procedure is included in the Appendix A to this report.

THE BOOK DEPRECIATION STUDY

Implementation of a policy toward book depreciation that recognizes the purpose of depreciation accounting requires the determination of the mortality characteristics that are applicable to the surviving property. One purpose of the depreciation study reported here was to accurately measure those mortality characteristics and to use those characteristics to determine appropriate rates for the accrual of depreciation expenses.

The major effort of the study was the determination of the appropriate mortality characteristics. The remainder of this report describes how those characteristics were determined, describes how the mortality characteristics were used to calculate the recommended depreciation rates, and presents the results of the rate calculations.

The typical study consists of the following steps:

> Step One is a Life Analysis consisting of the determination of historical experience and an evaluation of the applicability of that experience to surviving property.
>
> Step Two is a Salvage and Cost of Removal Analysis consisting of a study of salvage and cost of removal experience and an evaluation of the applicability of that experience to surviving property.
>
> Step Three consists of the determination of average service lives, retirement dispersion patterns identified by Iowa-type curves and the net salvage factors applicable to the surviving property.
>
> Step Four is the determination of the depreciation rate applicable to each depreciable property group recognizing the results of the work in Steps One through Three, and a comparison with the existing depreciation rates.

LIFE ANALYSIS

The Life Analysis for the property concerns the determination of average service lives ("ASL") and Iowa-type dispersion patterns. An evaluation of investment experience suitably tempered by informed judgment as to the future applicability to surviving property formed the basis for the determination of average service lives and retirement dispersions.

An analysis of historical retirement activity, suitably tempered by informed judgment as to the future applicability of such activity to surviving plant, formed the basis for the determination of average service lives and retirement dispersion patterns for all property groups. Retirement experience from transaction years 1987 through 2006 were analyzed using the Actuarial Method of Life Analysis. This method could be used because aged data are available for certain asset categories.

The actuarial method determines actual survivor curves (observed life tables) for selected periods of actual retirement experience. In order to recognize trends in life characteristics and to ensure that the valuable information in the curves is available to the analyst, observed life tables were calculated and plotted by computer, using several different periods of retirement experience. The average service lives and retirement dispersion patterns indicated by the actual survivor curves were identified by visually fitting Iowa-type dispersion curves to the actual curves. Retirement dispersion refers to the pattern of retirements as a function of age over the life of each property group. For each asset category, an Iowa-type curve combined with an estimated average service life was selected. This selection was based upon an analysis of historical investment activity, associated mortality trends and the types of assets surviving and retiring. The workpapers prepared as an integral part of the depreciation study contain the rationale for each selection.

Trends in historical mortality experience are helpful in understanding history. In order to determine trends, the periods (year bands) of retirement experience analyzed were the past five years, the past ten years, the past fifteen years, the past twenty years and the full band of band of retirement experience. The observed life tables and the Iowa curves fitted to each of these year bands were plotted. This visual approach ensures that the data contained in the observed life tables are available to the analyst and that the analyst does not allow the computer calculations to be the sole determinant of study results.

For accounts having little experience or having retirement experience that is not an adequate measure of the expected mortality characteristics of surviving property, evaluation of the significance of history played a major role in selecting the mortality characteristics shown on Schedule 2.

SALVAGE AND COST OF REMOVAL ANALYSIS

Salvage and cost of removal experience was analyzed using experience from the period 1993 -- 2006. Rolling and shrinking bands were analyzed to help expose trends. An evaluation of salvage and cost of removal experience suitably tempered by informed judgment as to the future applicability to surviving property formed the basis for the determination of salvage and cost of removal factors.

The analysis consisted of calculating salvage and cost of removal factors by relating the recorded salvage and cost of removal for each property group to the retirements that caused the salvage and cost of removal to occur.

EVALUATION OF ACTUAL EXPERIENCE

The typical evaluation consists of Life Analysis and Salvage and Cost of Removal Analysis, which involve the measurement of what has occurred in the past. History is sometimes a misleading indicator of the future. There are many kinds of events that can cause history to be misleading, among them significant changes contemplated in the underlying accounting procedures and/or changes in other management practices, such as maintenance procedures. It is the evaluation phase of a depreciation study that identifies if history is a good indicator of the future. Blind acceptance of history often results in selecting mortality characteristics to use for calculating depreciation rates that will provide recovery over a time period longer than productive life.

For each property group, the typical analysis processes involve only historical investment experience. Since depreciation rates will be applied to surviving property, the historical mortality experience indicated by a Life Analysis and the Salvage and Cost of Removal Analysis is evaluated to ensure that the mortality characteristics used to calculate the depreciation rates are applicable to the surviving property. The evaluation is required to ensure the validity of the depreciation rates.

The normal evaluation process requires knowledge of the type of property surviving; the type of property retired; the reasons for changing life, dispersion, salvage and cost of removal; and the effect of present and future Atmos plans on the property mortality characteristics.

CALCULATION OF DEPRECIATION RATES

A straight-line remaining life rate for each depreciable property group was calculated using the following formula:

$$\text{Rate} = \frac{\text{Plant Balance} - \text{Future Net Salvage} - \text{Book Reserve}}{\text{Average Remaining Life}}$$

Formula numerator elements in percent of depreciable plant balance and the denominator in years produce a rate in percent. This formula illustrates that a remaining life rate recognizes the book reserve position. The depreciable balances and book reserves were taken from accounting records, and the net salvage factors were determined by the study.

The remaining lives for each property group are a function of the age distribution of surviving plant and the selected average service life and retirement dispersion.

RESULTS

A comparison of the existing depreciation rates to the proposed study depreciation rates can be found on Schedule 1 in this report. A listing, by account, of the existing and the proposed mortality characteristics can be found on Schedule 2 in this report.

General Plant

There is an increase in the depreciation rate indicated for this asset category from 9.09% to 10.32%. Average service life changes are an increase for all accounts except two. The single largest change in annual depreciation expense is for Account 399.08, Application Software. The recommended average service life is 10 years with an S3 curve. Net salvage is estimated to be 0%. The annual depreciation expense increase is $3,217,244, and is primarily due to reserve position. There are two other significant changes in depreciation expense occurring for Account 399.01, Server Software and Account 399.24, General Start-up Costs. There is a decrease in annual depreciation expense for Account 399.01 of $1,069,241, due to a longer average service life. There is an increase in annual depreciation expense for Account 399.24 of $1,751,828, due to reserve position.

RESERVE COMPARISON

Because remaining life rates are recommended (consistent with the existing rates), a comparison of the accumulated provision for depreciation with the calculated theoretical reserve at September 30, 2006, is not meaningful, and no comparison is presented. This is because the only way a reserve difference can exist is through the use of whole life rates.

RECOMMENDATIONS

Our recommendations for your future action in regard to book depreciation are as follows:

1. The depreciation rates shown in Column 6 of Schedule 1 are applicable to existing property and are recommended for implementation at such time as their effect can be incorporated into service rates.

2. Because of variation of life and net salvage experience with time, a depreciation study should be made during 2011 based upon retirement experience through September 30, 2010. Exact timing of the study should be coordinated with a retail rate case to ensure timely implementation of revised depreciation rates.

3. We recommend that Atmos consider the utilization of a vintage amortization accounting process. This approach has been implemented by numerous utilities all over the country. This approach solves the universal problem of unreported retirements, is intended to simplify the property accounting effort, and provides a better matching of the accounting effort with the magnitude of the asset base.

4. For new asset categories that arise in the future for which no depreciation rate is currently approved, or for asset categories that are presently fully depreciated and may have new assets added in the future, we recommend that the functional composite depreciation rates be used until future depreciation studies are conducted. The functional composite depreciation rate is as follows:

General Plant	10.32%

ATMOS ENERGY CORPORATION - SHARED SERVICES **SCHEDULE 1**

Book Depreciation Study as of September 30, 2006

Comparison of Depreciation Rates and Annual Amounts

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Account Number	Description	9/30/2006 Balance $	Existing Rates %	Annual Amount $	Study Rates %	Annual Amount $	Increase or (Decrease) $
	GENERAL PLANT						
390.09	Improvements to Leased Premises	9,949,143	7.43	739,221	9.10	905,372	166,151
391.00	Office Furniture and Equipment	9,074,352	4.89	443,736	2.13	193,284	(250,452)
397.00	Communication Equipment	25,311,861	7.12	1,802,205	8.45	2,138,852	336,648
398.00	Miscellaneous Equipment	633,466	5.36	33,954	8.15	51,627	17,674
399.00	Other Tangible Property	224,866	15.75	35,416	4.66	10,479	(24,938)
399.01	Servers Hardware	14,567,322	14.29	2,081,670	6.95	1,012,429	(1,069,241)
399.02	Servers Software	8,647,580	14.29	1,235,739	4.00	345,903	(889,836)
399.03	Network Hardware	2,377,029	14.29	339,677	9.30	221,064	(118,614)
399.06	PC Hardware	6,691,156	16.83	1,126,122	14.86	994,306	(131,816)
399.07	PC Software	3,928,199	17.73	696,470	9.02	354,324	(342,146)
399.08	Application Software	111,323,312	8.22	9,150,776	11.11	12,368,020	3,217,244
399.24	General Startup Cost	23,172,326	8.33	1,930,255	15.89	3,682,083	1,751,828
	Total Depreciable General Plant	215,900,612	9.09	19,615,241	10.32	22,277,742	2,662,501
	Fully Depreciated	5,331,910					
	Late Retirements	4,363,383					
	Total Shared Services Facilities	225,595,905					

ATMOS ENERGY CORPORATION - SHARED SERVICES

SCHEDULE 2

Book Depreciation Study as of September 30, 2006

Comparison of Mortality Characteristics

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
		EXISTING PARAMETERS			STUDY PARAMETERS				
Account Number	Description	ASL	Iowa Curve	Net Salvage	ASL	Iowa Curve	Gross Salvage	Cost of Removal	Net Salvage
		yrs.		%	yrs.		%	%	%
	GENERAL PLANT								
390.09	Improvements to Leased Premises	10.0	SQ	0	12.0	S4	0	0	0
391.00	Office Furniture and Equipment (Gnl)	20.0	L1	5	25.0	R4	0	0	0
397.00	Communication Equipment	10.0	L3	0	12.0	S5	0	0	0
398.00	Miscellaneous Equipment	15.0	R2	0	15.0	S3	5	0	5
399.00	Other Tangible Property	5.0	SQ	0	7.0	R5	0	0	0
399.01	Servers Hardware	7.0	SQ	0	10.0	SQ	0	0	0
399.02	Servers Software	7.0	SQ	0	10.0	SQ	0	0	0
399.03	Network Hardware	7.0	SQ	0	10.0	SQ	0	0	0
399.06	PC Hardware	5.0	R4	0	7.0	S1	0	0	0
399.07	PC Software	5.0	R4	0	8.5	R5	0	0	0
399.08	Application Software	10.0	R4	0	10.0	S3	0	0	0
399.24	General Startup Cost	12.0	SQ	0	10.0	SQ	0	0	0

CALCULATION OF EQUAL LIFE GROUP DEPRECIATION RATES

It is the group concept of depreciation that leads to the existence of the ELG procedure for calculating depreciation rates. This concept has been an integral part of utility depreciation accounting practices for many years. Under the group concept, there is no attempt to keep track of the depreciation applicable to individual items of property. This is not surprising, in view of the millions of items making up a utility system. Any item retired is assumed to be fully depreciated, no matter when the retirements occur. The group of property would have some average life. "Average" is the result of an arithmetic calculation, and there is no assurance that any of the property in the group is "average."

The term "average service life" used in the context of book depreciation is well known, and its use in the measurement of the mortality characteristics of property carries with it the concept of retirement dispersion. If every item was average, thereby having exactly the same life, there would be no dispersion. The concept of retirement dispersion recognizes that some items in a group live to an age less than average service life, and other items live longer than the average. Retirement dispersion is often identified by standard patterns.

The Iowa type dispersion patterns that are widely used by electric and gas utilities were devised empirically about 60 years ago to provide a set of standard definitions of retirement dispersion patterns. Figure 1 shows the dispersion patterns for three of these curves. The L series indicates the mode is to the Left of average service life, the R series to the Right, and the S series at average service life, and therefore, Symmetrical. There is also an O series which has the mode at the Origin, thereby identifying a retirement pattern that has the maximum percentage of original installations retired during the year of placement.

The subscripts on Figure 1 indicate the range of dispersion, with the high number (4) indicating a narrow dispersion, and the low number (1) indicating a wide dispersion pattern. For example, the R1 curve shown on the Figure indicates retirements start immediately and some of the property will last twice as long as the average service life. The dispersion patterns translate to survivor curves, which are the most widely recognized form of the Iowa curves. Other families of patterns exist, but are not as widely used as the Iowa type.

The methods of calculating depreciation rates are categorized as straight-line and non-straight-line. Non-straight-line methods can be accelerated or deferred. There are three basic procedures for calculating straight-line book depreciation rates:

Units-of-Production
Average Life Group (ALG)
Equal Life Group (ELG)

Each of these procedures can be calculated using either the whole life or the remaining life technique.

Productive life may be identified by (a) a life span or (b) a pattern of production or usage. Units-of-Production is straight-line over production or usage, while the others are straight-line over life measured by time. ALG is straight-line over the average life of the group, while ELG is straight-line over the actual life of the group.

The formulas for the whole life and remaining life techniques are shown on Table 1. For the ELG calculation procedure, Formulas 1 and 3 are applied to the individual equal life components of the property group. For the ALG calculation, the formulas are applied to the property group itself. Formula 2 is applied to the property group for either ELG or ALG. Use of the units (percent and years) in the formulas results in rates as a percent of the depreciable plant balance.

The depreciable plant balance is the surviving balance at the time the rate is calculated, and is expressed as a percentage (always 100) of itself. Salvage and reserves are expressed as a percent of the depreciable plant balance. For example, a property group having a 35 year average service life and negative 5% salvage would have an ALG whole life rate of (100 + 5)/35, or 3.00%.

The first term in Formula 2 is identical to Formula 1 for the whole life rate. The second term of Formula 2 illustrates that the difference between a remaining life rate and whole life rate is the allocation of the difference between the book and calculated theoretical reserves over the remaining life by a remaining life rate.

The widely used ALG procedure of depreciation rate calculation does not recognize the existence of retirement dispersion in the calculation. The difference between the ALG and ELG procedure is the recognition of retirement dispersion in the ELG rate calculation. ELG is a rate calculation procedure: nothing more. The data required to make the ELG calculation are average service life, retirement dispersion, net salvage and the age distribution of the property. The depreciation study required to determine the applicable mortality characteristics is independent from the calculation of the depreciation rates. The resulting mortality characteristics can be used to calculate either ALG or ELG rates, both with either the whole life technique or the remaining life technique. Any set of mortality characteristics that is suitable for calculating ALG rates is just as suitable for calculating ELG rates. Conversely, any set that is not suitable for ELG is not suitable for ALG either. The ELG procedure calculates the depreciation rates based on the expected life of each equal life component of the property rather than the average of all components. As discussed earlier, "average" is the result of a calculation and there may not be any "average" property. When curves are used to define retirement dispersion, the average service life and the retirement dispersion pattern define the equal life groups and the expected life applicable to each group.

When retirement dispersion does not exist, the ELG rate is identical to the ALG rate. When dispersion exists, the ELG rate for recently installed property is higher than the ALG rate and for old property is lower.

A Simple Illustration of ELG

This illustration provides a framework for visualizing the ELG methodology. Table 2 assumes 20% of the $5,000 investment is retired at the end of each year following placement. The retirement frequencies are shown on Line 7. As shown in Columns 2 through 6, this means $1,000 of investment is retired each year, with the retirement at Age 1 being recovered in its entirety during Year One; at Age 2 in Years One and Two, etc. The depreciation rate applicable to each equal life group is shown on Line 8. The annual provision in dollars for Year One shown in Column 7 is made up of the Age 1 annual amounts shown on Line 1, Columns 2 through 6. As shown on the Table, the annual provision for Age 2 is equal to the annual provision for Age 1 less the amount collected during Year One applicable to the group retired during Year One. Thus, the annual provisions can be thought of as a matrix, with the provision for any given year being produced by a portion of the matrix.

The depreciation rates shown in Column 9 are determined by dividing the annual provisions in Column 7 by the survivors in Column 8. The rate formula shown on Table 2 can also be used to calculate the rates and is used on the Table to illustrate the working of the matrix by calculating the depreciation rates for Year One and Year Three. For Year One, the numerator and denominator both consist of five terms. Each year, the left-hand term of both numerator and denominator drop off. It should be noted that the reverse summation of retirement ratios (starting with Column 6 and moving left on Line 7) is equal to the survivor ratio at the beginning of the period shown in Column 10.

The formula can illustrate how the matrix can be thought of in terms of a depreciation rate. If the multiplier of 100 is incorporated in each element of the numerator of the formula, such as (100 x 0.2)/2, it can be seen that 100/2 is a rate and the retirement frequency (0.2) is a weighting factor. This particular rate (50%) is the one shown for Age 2 property on Line 8, Column 3.

It can be seen that the only data required for the ELG rate calculation are the retirement frequencies for each year. These frequencies are defined by the average service life and the shape of the dispersion pattern.

A Real Illustration of ELG

The depreciation analyst deals with much larger groups of property than appearing on Table 2. Table 3 contains an ELG rate calculation for an actual depreciable property group. The retirement frequencies shown in Column 4 are defined by the 38 year average service life and the L5 Iowa type dispersion pattern. The ALG rate without salvage for this property is 2.632% (100%/38 years), while the ELG rate varies from 2.704% at age 0.5 years to 1.471% at the age just prior to the last retirement, 67.5 years.

The rate listed in Column 5 at each age is the weighted summation of individual rates applicable to that portion of the surviving property that the retirement frequencies in Column 4 indicate will be retired in each following year. The combination of average service life and dispersion pattern means that the first retirement will be from the age 18.5 property during the following year at an age of 19 years; therefore, it will require a rate of 5.263% (1005/19 years). (This example does not have any surviving balance at age 18.5). The last retirement will be from age 67.5 year property; consequently, it will require a rate of 1.471% (100%/68 years). The vintage composite rate shown in Column 5 at age 0.5 years is the weighted summation of rates varying from 5.263% to 1.471%.

Since this example is for a narrow dispersion pattern, the first retirement occurs at age 19 years and the vintage composite rate remains 2.704% at age 19.5 years, because the first retirement drops the 5.263% rate from the summation.

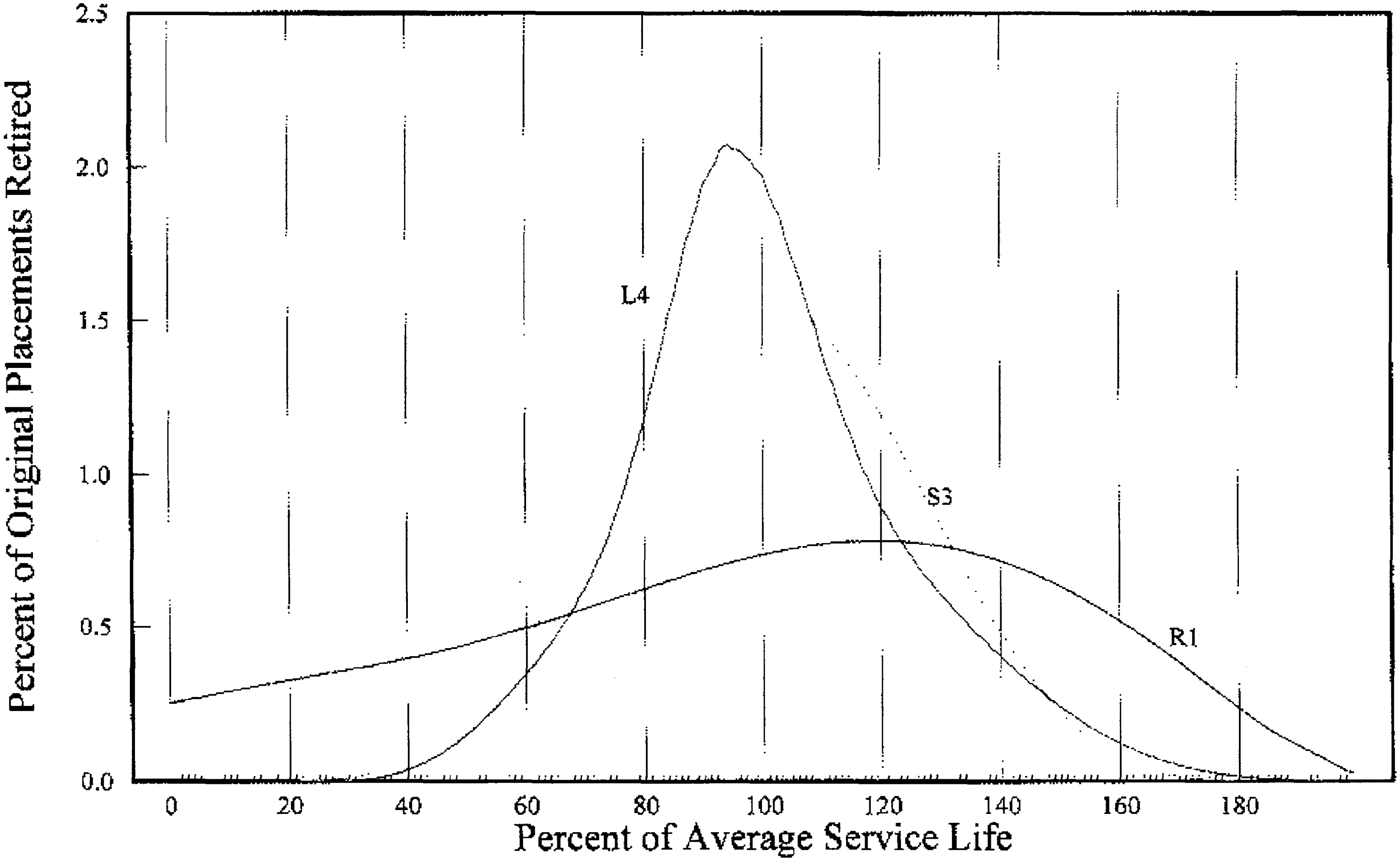
A wider dispersion would result in a wider range of vintage composite rates than defined by the L5 curve (i.e., 2.704% to 1.471%).

All that is necessary for calculating the depreciation rates applicable to each age of property are the retirement frequencies. These frequencies are defined by the average service life and the retirement dispersion pattern. The determination of average service life requires the determination of the dispersion, as without dispersion there would be no "average".

Depending on the dispersion pattern, the number of retirement frequencies making up the complete curve can be up to about 4.4 times the number of years of average service life. Thus, for an account whose number of retirement frequencies is three times average service life and whose average service life is 30 years, the rate applicable to the Age 1 property will be made up of the weighted summation of 89 components, etc. Thus, the rate calculation process is complex, but certainly not complicated. It is this complexity that makes the rate calculations much more practical using a computer.

RETIREMENT DISPERSION DEFINED

BY IOWA TYPE CURVES



DEPRECIATION RATE CALCULATION PROCEDURES

TABLE 1

Whole Life

$$\text{Rate (\%)} = \frac{PB - S}{ASL} \qquad \text{Formula 1}$$

Remaining Life

$$\text{Rate (\%)} = \frac{PB - FS}{ASL} - \frac{BR - CT}{ARL} \qquad \text{Formula 2}$$

$$\text{Rate (\%)} = \frac{PB - FS - BR}{ARL} \qquad \text{Formula 3}$$

Where

PB	is Depreciable Balance, %
AS	is Average Net Salvage, %
FS	is Future Net Salvage, %
ASL	is Average Service Life, years
BR	is Depreciation Reserve, %
CTR	is Calculated Theoretical Reserve, %
ARL	is Average Remaining Life, years

Line	(1) Age Years	(2) Group 1 $	(3) Group 2 $	(4) Group 3 $	(5) Group 4 $	(6) Group 5 $	(7) Annual Provision $	(8) Beginning Survivors $	(9) Rate %	(10) Survivor Factor
1	1	1,000.00	500.00	333.33	250.00	200.00	2,283.33	5,000.00	45.67	1.00
2	2		500.00	333.33	250.00	200.00	1,283.33	4,000.00	32.08	0.80
3	3			333.33	250.00	200.00	783.33	3,000.00	26.11	0.60
4	4				250.00	200.00	450.00	2,000.00	22.50	0.40
5	5					200.00	200.00	1,000.00	20.00	0.20
6	Retirements	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00				
7	Frequency	0.20	0.20	0.20	0.20	0.20				
8	Rate	100%	50%	33.33%	25%	20%				

$$\text{Rate, \%} = \frac{\dfrac{\text{Retirements Frequencies}}{\text{Age at Retirement}}}{\text{Reverse of Retirement Frequencies}} \times 100$$

$$\text{Year One Rate} = \frac{\dfrac{0.2}{1} + \dfrac{0.2}{2} + \dfrac{0.2}{3} + \dfrac{0.2}{4} + \dfrac{0.2}{5}}{0.2 + 0.2 + 0.2 + 0.2 + 0.2} \times 100 = 45.67\%$$

$$\text{Year Three Rate} = \frac{\dfrac{0.2}{3} + \dfrac{0.2}{4} + \dfrac{0.2}{5}}{0.2 + 0.2 + 0.2} \times 100 = 26.11\%$$

DETERMINATION OF DEPRECIATION RATES BY ELG PROCEDURES

[1] Age Years	[2] Year	[3] Vintage Balance $	[4] Retirement Frequency ASL 38 Curve L5	[5] Rate	[6] Amount $
0.5	1993	4,244,285	0.0000	0.02704	114,758.36
1.5	1992	800,764	0.0000	0.02704	21,651.86
2.5	1991	60,016	0.0000	0.02704	1,622.73
3.5	1990	43,455,063	0.0000	0.02704	1,174,952.00
4.5	1989	81,456	0.0000	0.02704	2,202.43
5.5	1988	172,463	0.0000	0.02704	4,663.11
6.5	1987	2,098,991	0.0000	0.02704	56,753.20
7.5	1986	2,685,849	0.0000	0.02704	72,623.55
9.5	1984	1,642,443	0.0000	0.02704	44,408.80
10.5	1983	222,602	0.0000	0.02704	6,018.78
11.5	1982	85,661	0.0000	0.02704	2,316.13
12.5	1981	4,985	0.0000	0.02704	134.79
13.5	1980	72,942	0.0000	0.02704	1,972.23
14.5	1979	219,163	0.0000	0.02704	5,925.80
15.5	1978	120,665	0.0000	0.02704	3,262.58
16.5	1977	37,042	0.0000	0.02704	1,001.55
17.5	1976	339,236	0.0000	0.02704	9,172.21
19.5	1974	336,723	0.0001	0.02703	9,101.41
20.5	1973	10,375,359	0.0004	0.02702	280,292.86
21.5	1972	4,481,906	0.0009	0.02699	120,963.25
22.5	1971	5,923,340	0.0018	0.02695	159,618.98
23.5	1970	78,848	0.0030	0.02689	2,119.97
24.5	1969	305,178	0.0047	0.02681	8,180.42
25.5	1968	10,312,586	0.0069	0.02670	275,375.94
26.5	1967	2,754,067	0.0094	0.02658	73,203.24
27.5	1966	9,558,786	0.0123	0.02644	252,715.77
29.5	1964	5,556,083	0.0194	0.02610	144,995.54
30.5	1963	23,383	0.0242	0.02589	605.42
31.5	1962	3,313,564	0.0305	0.02566	85,012.50
32.5	1961	32,271	0.0386	0.02538	819.15
33.5	1960	151,658	0.0482	0.02507	3,802.24
34.5	1959	171,463	0.0583	0.02472	4,238.70
35.5	1958	167,116	0.0674	0.02433	4,065.35
36.5	1957	70,420	0.0740	0.02390	1,683.22
37.5	1956	1,792,312	0.0768	0.02345	42,036.33
39.5	1954	2,270,555	0.0701	0.02252	51,131.79
40.5	1953	187	0.0622	0.02206	4.13
41.5	1952	20,185	0.0531	0.02161	436.14
42.5	1951	12,860	0.0442	0.02118	272.40
43.5	1950	706	0.0362	0.02078	14.67
44.5	1949	2,652	0.0296	0.02041	54.13
45.5	1948	6,422	0.0245	0.02006	128.81
46.5	1947	19,573	0.0205	0.01972	386.07
47.5	1946	323,058	0.0173	0.01940	6,268.69
49.5	1944	2,285,041	0.0123	0.01879	42,943.47
50.5	1943	15,614	0.0103	0.01850	288.86
51.5	1942	620,752	0.0085	0.01821	11,306.36
53.5	1940	684,610	0.0055	0.01766	12,090.28
54.5	1939	47,173	0.0043	0.01740	820.76
55.5	1938	22,725	0.0033	0.01714	389.52
56.5	1937	560	0.0025	0.01689	9.46
57.5	1936	722	0.0019	0.01664	12.02
59.5	1934	3,065	0.0005	0.01573	48.21
61.5	1932	944,400	0.0005	0.01573	14,853.98
67.5	1926	2	0.0000	0.01471	0.03
Totals		119,029,691			3,133,730.27
			SALVAGE (%) =		-5.0
			AFTER SALVAGE =		3,290,417
			ANNUAL DEPRECIATION RATE =		2.76