Exhibit No.:	
Issue:	Laclede Gas Company's Depreciation Rates
Witness:	Dr. Ronald E. White
Type of Exhibit:	Rebuttal Testimony
Sponsoring Party:	Laclede Gas Company
Case No.:	GR-99-315

LACLEDE GAS COMPANY

GR-99-315

REBUTTAL TESTIMONY

OF

DR. RONALD E. WHITE

Table of Contents

BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION
REBUTTAL TESTIMONY OF
DR. RONALD E. WHITE
IN CASE NO. GR-99-315

Q. PLEASE STATE YOUR NAME AND ADDRESS?

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

Q. WHAT IS YOUR OCCUPATION?

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

I. QUALIFICATIONS

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

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

I have prepared and presented a number of papers to professional organizations, committees, and conferences and have published several articles on matters relating to depreciation and economics.

I am a past member of the Board of Directors of the Iowa State Regulatory Conference and an affiliate member of the joint American Gas Association (A.G.A.) – Edison Electric Institute (EEI) Depreciation Accounting Committee, where I

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

Q. WHAT IS YOUR PROFESSIONAL EXPERIENCE?

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

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE A REGULATORY BODY?

A. Yes. I have testified in numerous proceedings before administrative and judicial bodies in Alabama, California, Colorado, Delaware, Hawaii, Idaho, Illinois, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Wisconsin, the District of Columbia, the Federal Energy Regulatory Commission, the Federal Power Commission, the Alberta Energy Board, the Ontario Energy Board, and the Securities and Exchange Commission. I have also sponsored position statements before the Federal Communication Commission and numerous local franchising authorities in matters relating to the regulation of telephone and cable television.

II. PURPOSE OF TESTIMONY

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

A. I have been asked by Laclede Gas Company to respond to portions of the pre-filed direct testimony of Paul W. Adam which explains the adjustment to depreciation rates recommended by Staff " ... to include a net salvage portion of the depreciation rate that, when multiplied by plant balance, gives an annual accrual consistent with the current interim net salvage amounts recognized by the Company." (DT page 14, lines 17-19). According to Mr. Adam, "The customer should be paying only the current negative net salvage of interim retirements because, as salvage events change, adjustments will be ordered by the Commission in future rate cases." (DT page 8, lines 9-11).

Q. WOULD YOU PLEASE OUTLINE THE ORGANIZATION OF YOUR TESTIMONY?

A. In the course of my presentation, I will discuss: 1) my understanding of Mr. Adam's testimony; 2) the theory of net salvage accounting; and 3) Staff's formulation of depreciation rates adjusted for net salvage.

III. OVERVIEW OF MR. ADAM'S TESTIMONY

Q. WHAT IS YOUR UNDERSTANDING OF STAFF'S INTERPRETATION OF THE DEPRECIATION RATES CURRENTLY PRESCRIBED FOR LACLEDE?

A. In Case No. GR-98-324 Staff introduced a novel formulation of a whole-life depreciation rate that provided an allowance for net salvage equal to the average *realized* net salvage observed over a recent band of years. Although depreciation rates adopted in GR-98-324 were approved under a Stipulation and Agreement without reference to any theory or formulas used, Mr. Adam now claims that "Rates were changed in case GR-98-324 to give the Company the current dollars being spent for net salvage, not more." (DT page 8, lines 7-8).

Mr. Adam's prepared testimony in the current proceeding purports to explain " ... the reasons for the changes that were made to the depreciation rates in Case GR-98-374." (DT page 3, lines 4-5). According to Mr. Adam, "These depreciation rates should be continued for the current case, No. GR-99-315, with one exception, Gas Holders, because there are no changes to the accounts that would justify new depreciation rates." (DT page 3, lines 5-7). Despite its clear language to the contrary, Mr. Adam apparently views the Stipulation and Agreement as evidence supporting his recommended treatment of net salvage.

IV. THE THEORY OF NET SALVAGE ACCOUNTING

Q. WOULD YOU PLEASE EXPLAIN BRIEFLY THE THEORY OF NET SALVAGE ACCOUNTING?

A. Depreciation is a measurement of the service capacity of an asset that is consumed during an accounting interval. The cost of obtaining a bundle of service units (*i.e.*, a future net revenue stream) is represented by an initial capital expenditure which creates a revenue requirement for return and depreciation, and a future expenditure which creates a revenue requirement for cost of removal and salvage. The matching principle of accounting provides that both the initial and future expenditures should be allocated to the accounting periods in which the service capacity of an asset is consumed. The standard or criterion that should be used to determine a proper net salvage rate is, therefore, cost allocation over economic life in proportion to the consumption of service potential.

The inclusion of net salvage in the development of depreciation rates is widely recognized as a standard accounting practice. The American Institute of Certified Public Accountants (AICPA), for example, defines depreciation accounting as:

> *" ... a system of accounting that 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."*

Regulation also recognizes the importance of net salvage in setting depreciation rates. The FERC Uniform System of Accounts, for example, describes depreciation as the

> *" ... loss in service value", where service value is defined as the difference between original cost and net salvage value of gas plant.*

The economic principle underlying this accounting treatment is that in addition to return *of*, return *on*, and income taxes, a revenue requirement for removal expense (or a reduction in the revenue requirement attributable to gross salvage) is created when an asset is placed in service. It is appropriate, therefore, to include a net salvage rate component in current depreciation rates to more nearly achieve the goals and objectives of depreciation accounting.

Q. IS THE TREATMENT OF NET SALVAGE ADVOCATED BY MR. ADAM IN THIS PROCEEDING CONSISTENT WITH THESE PRINCIPLES?

A. No, it is not. Mr. Adam has modified a conventional and widely accepted formula for depreciation rates to produce a net salvage allowance that is inconsistent with the goals and objectives of depreciation accounting. Achievement of cost allocation over economic life in proportion to the consumption of service potential requires a recognition of both realized and future net salvage in the depreciation rate formula. The treatment advocated by Mr. Adam is equivalent to amortizing historical or realized net salvage over a time period equal to the band of years included in the observed data.

To his credit, however, Mr. Adam does not claim that his formula has any theoretical foundation other than a desire to shift the timing of depreciation expense. While those of us concerned with advancements in cost allocation and accounting theory should always be receptive to innovative ideas and creative thinking, it would be a mistake, in my opinion, to institute a change in the principles of depreciation accounting based solely on a desire to reduce depreciation expense in a general rate proceeding.

V. THE FORMULATION OF DEPRECIATION RATES ADJUSTED FOR NET SALVAGE

Q. WOULD YOU PLEASE DEFINE THE TERMINOLOGY AND SYMBOLS USED IN THE FORMULATION OF DEPRECIATION RATES ADJUSTED FOR NET SALVAGE?

A. The relevant symbols and terminology for net salvage are defined as follows:

> *Gross Salvage. Gross salvage is the amount received for property retired, less any expenses incurred in connection with the sale or in preparing the property for sale.*
>
> *Cost of Removal. Cost of removal is the expense incurred to demolish, dismantle or otherwise remove plant from service.*
>
> *Net Salvage (NS). Net salvage is the difference between gross salvage and cost of removal. The quantity may be positive or negative, depending upon the relative magnitude of each component.*
>
> *Realized Net Salvage Rate (S_r). Expressed in percent, realized net salvage is the ratio of actual salvage proceeds (net of incurred removal expense) divided by the retirements giving rise to the net salvage.*
>
> *Average Net Salvage Rate (S_a). Expressed in percent, average net salvage is the sum of realized and future net salvage divided by the plant initially installed prior to any retirements. Stated differently, it is the total estimated salvage less the cost of removal for a vintage (or group of vintages) expressed as a percent of the original vintage addition. The term vintage is used to describe the plant added to an account during a specified calendar or fiscal year.*
>
> *Future Net Salvage Rate (S_f). Expressed in percent, future net salvage is the sum of future net salvage at a specified observation age divided by the surviving plant investment at that age. Thus, future net salvage is related to the surviving plant of a vintage (or group of vintages) whereas average net salvage is the sum of realized and future net salvage related to the original vintage addition.*

Q. WHAT IS THE FORMULATION OF THE DEPRECIATION RATES REQUESTED BY LACLEDE GAS COMPANY IN THIS PROCEEDING?

A. Depreciation rates requested by Laclede are derived from a depreciation system composed of the straight-line method, broad-group procedure, whole-life technique.[1] The straight-line method implies that a constant accrual rate is applied to the surviving plant of each vintage within a plant account. The broad-group procedure implies that each vintage is estimated to have the same average service life. The whole-life technique implies that the life statistic used in the calculation of a depreciation rate is the estimated average service life of each vintage. The formulation of the accrual rate under this system is given by

$$Accrual\,Rate = \frac{1-S_a}{ASL}$$

where S_a is the average net salvage rate and ASL is the average service life of a rate category. The accrual rate is applied to a gross plant balance (B_t) to obtain the annual depreciation accrual or expense for a plant account or rate category.

Q. WHAT IS THE FORMULATION OF THE DEPRECIATION RATE RECOMMENDED BY STAFF IN THIS PROCEEDING?

A. According to Mr. Adam, " ... the net salvage component of the Depreciation Rate equation should recover the current actual net salvage amounts, not an average over the total life of the current plant." (DT page 7, lines 17-19). In other words, Mr. Adam claims that the average net salvage rate (S_a) in the above formula should be adjusted or replaced to produce an allowance for net salvage equal to the average *realized* net salvage observed over a recent band of years.[2]

The adjustment advocated by Mr. Adam proceeds from a trivial observation that " ... the net salvage data is at a retirement rate, in many accounts, far different than the average service life computed from the historical data files." (DT page 6, lines

[1]This system is described by Mr. Kottemann as "straight-line, average life, amortization (SL-AL-AM)". (DT, page 4, lines 13-14). The distinction is only one of terminology. The formulation of the accrual rate is identical.

[2]Mr. Adam suggests using a band of ten years. (DT Schedule 3-2).

20-21). Presumably, this can be demonstrated by comparing the ratio of a plant balance divided by the average annual retirements over a recent band of years to the average service life derived from a statistical life study. Using Account 353.00 (Lines - Underground Storage) as an example, Mr. Adam claims that the ratio of the plant balance to average retirements over the past ten years indicates a service life of 666 years, whereas the statistical life study suggests an average service life of 75 years.

Q. DOES THE RATIO OF EXPOSURES DIVIDED BY RETIREMENTS PROVIDE A MEANINGFUL MEASUREMENT OF SERVICE LIFE?

A. No, it does not. Any suggestion that the ratio of exposures divided by retirements provides a meaningful measurement of service life is counter-intuitive to even simple logic. Consider a plant category in which very few retirements have been recorded within a recent band of years. Mr. Adam's calculation would indicate that the service life of the category may well approach infinity. A statistical life study, on the other hand, recognizes the probability of retirement in each defined age-interval and produces an indication of the average service life of property units still exposed to the forces of retirement. If the ratio relied upon by Mr. Adam provided a meaningful indication of service life, statistical life studies could be abandoned in setting depreciation rates.[3]

Q. WHAT IS THE DERIVATION OF THE NET SALVAGE ADJUSTMENT RECOMMENDED BY MR. ADAM?

A. Using the symbol *ASL'* to denote the ratio of a plant balance to average annual retirements, the net salvage adjustment recommended by Mr. Adam can be derived by separating the whole-life accrual rate into an investment portion and a net salvage portion. Thus,

$$Accrual\ Rate = \frac{1}{ASL} - \frac{Sa}{ASL'}.$$

[3]It should be noted that in one rare instance the ratio of a plant balance to retirements provides a measurement of service life. This condition (called "stability") is achieved when the age distribution of a plant category is identical to the proportion surviving from a theoretical survival function.

Multiplying and dividing the net salvage term by ASL and rearranging the resulting equation yields

$$Accrual\ Rate = \frac{1 - Sa(ASL/ASL')}{ASL}.$$

If the average net salvage rate (S_a) is replaced by the realized net salvage rate (S_r), the resulting equation becomes the formulation of the adjusted accrual rate recommended by Mr. Adam. Stated in its entirety, the accrual rate advocated by Mr. Adam can be written as

$$Accrual\ Rate = \frac{1 - Sr(ASL/ASL')}{ASL}.$$

Q. HOW DOES THE FORMULA PROPOSED BY MR. ADAM REDUCE TO AN ALLOWANCE FOR NET SALVAGE EQUAL TO " ... THE CURRENT INTERIM NET SALVAGE AMOUNTS RECOGNIZED BY THE COMPANY"?

A. Letting R_i denote retirements during year i and n denote the number of years in the band of observed retirements, it follows from Mr. Adam's definition of ASL' that

$$ASL' = \frac{nB_1}{\sum_{i=1}^{n} R_i}.$$

Stated in words, Mr. Adam claims that the "implied retirement life" (ASL') is equal to a plant balance divided by the average annual retirements over a recent band of years.

The estimator of the *realized* net salvage rate (S_r) employed by both Laclede and Staff is the sum of realized net salvage over a recent band of years divided by the sum of retirements over the same period. An equivalent mathematical expression for this estimator is given by

$$S_r = \frac{\sum_{i=1}^{n} NS_i}{\sum_{i=1}^{n} R_i}$$

Substituting the derived expressions for the "implied retirement life" (ASL') and

the realized net salvage rate (S_r) into the equation recommended by Mr. Adam for the accrual rate yields

$$Accrual\,Rate = \frac{1-ASL\sum_{i=1}^{n} NS_i/nB_t}{ASL}$$

$$= \frac{1}{ASL} - \frac{\sum_{i=1}^{n} NS_i/n}{B_t}.$$

Recalling that annual depreciation expense is the product of the plant investment (B_t) and the accrual rate, it follows from the above expression for the accrual rate that annual depreciation expense recommended by Mr. Adam is given by

$$Depreciation\,Expense = \frac{B_t}{ASL} - \sum_{i=1}^{n} NS_i/n.$$

It should be clear from this expression that the allowance for net salvage that Mr. Adam is proposing is the annual average *realized* net salvage over the past n years.

Q. COULD YOU ILLUSTRATE HOW MR. ADAM'S FORMULA WOULD BE APPLIED TO A PLANT ACCOUNT MAINTAINED BY LACLEDE?

A. Mr. Adam provides an example in his attached Schedule 3-3 for Account 353.00 (Lines - Underground Storage). The plant balance (B_t) for this account was $2,352,223 at September 30, 1998. Cumulative net salvage was -$6,515.84 over the ten-year period 1987-1996, and the estimated average service life (ASL) of the plant category is 75 years. Substituting these values into Mr. Adam's formula yields

$$\begin{aligned} Depreciation\,Expense &= \frac{B_t}{ASL} - \sum_{i=1}^{n} NS_i/n \\ &= \frac{\$2,352,233}{75} - \frac{(\$6,515.84)}{10} \\ &= \$31,363 + \$652 \\ &= \$32,015. \end{aligned}$$

Q. HOW DOES MR. ADAM COMPUTE DEPRECIATION EXPENSE OF $31,284 FOR THE SAME ACCOUNT ON SCHEDULE 3-3?

A. Mr. Adam has taken considerable liberty in rounding his depreciation rate for the

"recovery of plant" and the rate he would allow for the "recovery of interum *(sic)* net salvage". Notwithstanding that 1/75 is not .0013 as claimed by Mr. Adam, he nevertheless adds 0.013 and 0.000277 to obtain a composite depreciation rate of 0.0133. The implied rate without rounding is 0.01361+. I am at a loss, however, to understand why depreciation expense for the same account is shown as $35,283 on Schedule 1-1 when, according to Mr. Adam, Schedule 1 was computed using the same technique. (DT page 14, lines 20-21).

Q. WHAT IS THE DEPRECIATION EXPENSE FOR ACCOUNT 353.00 UNDER THE CONVENTIONAL FORMULA USED BY LACLEDE?

A. The depreciation expense formula under accrual accounting for net salvage used by Laclede is given by

$$\begin{aligned} \textit{Depreciation Expense} &= \frac{B_t(1-Sa)}{ASL} \\ &= \frac{B_t}{ASL} - \frac{B_t Sa}{ASL} \end{aligned}$$

where the estimated average net salvage rate (S_a) for Account 353.00 is -18.46 percent. Substituting the previously identified values into the above formula yields

$$\begin{aligned} \textit{Depreciation Expense} &= \frac{B_t}{ASL} - \frac{B_t Sa}{ASL} \\ &= \frac{\$2{,}352{,}233}{75} - \frac{(\$2{,}352{,}233)(-.1846}{75} \\ &= \$31{,}363 + \$5{,}788 \\ &= \$37{,}151. \end{aligned}$$

Unlike the formula designed by Mr. Adam, accrual accounting provides an allocation of average net salvage (*i.e.*, the sum of realized and future net salvage) over the average service life of a rate category. Mr. Adam's formula provides current period recognition of average salvage and removal expense realized in the past. This can be observed by noting that Mr. Adam would recognize a net salvage allowance of $652, whereas accrual accounting would require $5,788.

Q. WHAT IS THE PRACTICAL DIFFERENCE BETWEEN THE FORMULA RECOMMENDED BY MR. ADAM AND THE CONVENTIONAL FORMULA

USED BY LACLEDE?

A. The practical difference between these two accrual formulas can be observed by considering a plant category in which no plant has been retired from service to date, but it is known with certainty that removal expense will be incurred when the plant is retired at some future date. The formula proposed by Mr. Adam would charge no removal expense to operations until retirements are posted and removal expense has been realized. This treatment will significantly understate the cost of providing utility service to current ratepayers. In contrast, the conventional accrual formula will allocate future removal expense to operations over the accounting periods in which the service capacity of the assets is consumed. Thus, both current and future ratepayers are charged a reasonable share of the cost of the service provided to them.

Q. WHAT ARE THE IMPLICATIONS OF USING A REALIZED NET SALVAGE RATE IN THE CONVENTIONAL DEPRECIATION RATE FORMULA?

A. The substitution of a realized net salvage rate for an average net salvage rate in the conventional whole-life depreciation rate formula is equivalent to an assumption that the future net salvage rate will be equal to the realized net salvage rate. The formula used by Laclede, therefore, provides an allocation of both realized and unrealized net salvage to the accounting periods in which the service potential is consumed.

Q. ACCORDING TO MR. ADAM, "THE CUSTOMER SHOULD BE PAYING ONLY THE CURRENT NEGATIVE NET SALVAGE OF INTERIM RETIREMENTS BECAUSE, AS SALVAGE EVENTS CHANGE, ADJUSTMENTS WILL BE ORDERED BY THE COMMISSION IN FUTURE RATE CASES." DO YOU AGREE WITH THIS CONTENTION?

A. No, I do not. Accrual accounting for net salvage is not predicated on how much a customer should be paying or how often depreciation rates are reviewed or adjusted by regulation. The goal or objective of depreciation accounting is cost allocation over economic life in proportion to the consumption of service potential. If some other standard—such as the burden on customers or the frequency of rate cases—is

considered more important in setting depreciation rates, then cost allocation theory must be abandoned as the foundation for depreciation accounting.

VI. SUMMARY

Q. WOULD YOU PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY?

A. The treatment of net salvage advocated by Staff reduces to a recommendation to the Commission to abandon accrual accounting for net salvage and to institute a policy of allowing no more than the annual average of the net salvage realized over a recent band of years as the currently recoverable revenue requirement for salvage and cost of removal. This, in my experience, is without precedence both in theory and in practice. The proposal violates generally accepted accounting principles and would shift the expense recognition and recovery of net salvage to accounting periods beyond which the service capacity of the related assets had been consumed. I firmly believe, however, that responsible regulation would not knowingly abandon a universally accepted accounting practice and sanction a new depreciation formula designed with no other objective than to shift current costs to future accounting periods.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Laclede Gas Company's General Rate Case	))	Case No. GR-99-315

AFFIDAVIT

STATE OF FLORIDA)
) SS:
COUNTY OF LEE)

Ronald E. White, of lawful age, being first duly sworn, deposes and states:

1. My name is Ronald E. White. My business address is 17595 S. Tamiami Trail, Suite 212, Fort Myers, Florida 33908; and I am Executive Vice President of Foster Associates, Inc.
2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony, consisting of pages 1 to 13.
3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded and the information contained in the attached schedule are true and correct to the best of my knowledge and belief.

Ronald E. White

Subscribed and sworn to before me on this 4th day of August, 1999.

NOTARY PUBLIC in and for
the State of Florida

OFFICIAL NOTARY SEAL
MARGARET E LANGE
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. CC683204
MY COMMISSION EXP. OCT. 19,2001