Exhibit No.:	
Issue:	*Depreciation*
Witness:	*Paul W. Adam*
Sponsoring Party:	*MoPSC Staff*
Type of Exhibit:	*Direct Testimony*
Case No.:	*ER-2002-217*
Date Testimony Prepared:	*April 29, 2002*

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY SERVICES DIVISION

DIRECT TESTIMONY

OF

PAUL W. ADAM

CITIZENS ELECTRIC CORPORATION

CASE NO. ER-2002-217

Jefferson City, Missouri
April 2002

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Introduction

Q. Please state your name and business address.

A. Paul W. Adam, P.O. Box 360, Jefferson City, MO 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Public Service Commission (PSC or Commission) as an Engineer in the Engineering and Management Services Department.

Q. What are your duties as an engineer in the Engineering and Management Services Department?

A. I am responsible for depreciation calculations and studies of companies regulated by the Commission.

Q. Would you please state briefly your qualifications, educational background and experience?

A. I am a Registered Professional Engineer in Missouri and Colorado. In 1967, I earned a Bachelor of Science degree in Chemical Engineering from the University of Missouri–Columbia. I served in the U.S. Army after graduating and subsequently was employed in the oil industry from 1969 until 1991 as an engineer in various capacities, with the exception of a brief period from 1971 to 1974 when I completed a Masters Degree in Business Administration at the University of Missouri and also built single-family homes.

From 1991 to 1993 I managed a concrete products plant in Northwest Missouri. In 1994, I accepted my current position.

Q. Have you ever testified before the Commission?

A. Yes.

Two-Fold Purpose of this Testimony

Q. What is the purpose of your direct testimony in this case?

A. The purpose of my direct testimony is two-fold; first, to address the **"traditional" whole life depreciation rate technique** and to compare it to the **"full recovery" whole life depreciation rate technique**; and second, to address Staff's proposed depreciation rates for Citizens' Electric Corporation (Citizens) with an explanation and a justification for these rates.

Aspects of Depreciation for Citizens' Electric Corporation

Q. Can you explain the scope of the study you conducted for this rate case?

A. Yes. Citizens do not maintain mortality data as most or all other Missouri PSC regulated companies do. I will discuss the storage of data toward the end of this testimony. My depreciation study in this case is base on applying depreciation of similar plant that was analyzed in studies that were based on mortality data. There are two other studies, St Joseph Light & Power Company and Empire District Electric Company. The Commission ordered the rates that were determined using the **"full recovery" whole life technique** in both studies.

Understanding Depreciation

Q. Can you give some of the basics of depreciation engineering to help understand the whole life technique?

A. In broad terms, the objective of a depreciation engineer is to develop fair depreciation rates for the recovery of original capital cost of plant over the plant's used and useful life. This amount of capital recovery plus an adjustment for salvage is determined as an annual amount, frequently called the "annual accrual" or "accrual for depreciation," and is included in a determination of a regulated company's **revenue requirement** during a rate case. In this way, the company recovers, via customers' bills, the dollars the company originally paid for the plant plus or minus a salvage adjustment.

Q. How does the depreciation engineer actually do this work?

A. There are two major aspects to the engineer's work. First, the engineer will determine the used and useful life. The original cost of plant should be recovered from customers in annual increments over the used and useful life. The method used to determine the annual increments is to calculate a "depreciation rate" by dividing 100% by the used and useful life. Usually, the depreciation rate is the same for each year until a new calculation determines that the depreciation rate should be changed. The depreciation rates, one for each account, are multiplied times the company's plant balances for each account to determine the "annual accrual". The "annual accrual," determined during a rate case, is a part of the company's **revenue requirement**.

The number of years of used and useful life are determined as an average life for all plant in each account. The average life is called the "Average Service Life" (ASL). After determination of the ASL, the depreciation engineer's analytical work is divided into three areas. The engineer must determine which: 1) **depreciation technique**; 2) **depreciation procedure**; and 3) **depreciation method** that will be used. In other words, an engineer will determine a **technique, procedure** and **method** that (s)he will use in his/her study of company data that will determine a depreciation rate for each account. Each of the three areas has options the engineer must make. The **technique** can be: a) whole life, or b) remaining life; the **procedure** can be: a) broad group, b) vintage group, or c) equal life group; and the **method** can be: a) straight line, b) units of production, c) sum of the years digits, d) double declining balance, or e) other specific methods developed to accelerate the recovery of the original cost of plant.

The determination of ASL is generally a two-step project. First, plant mortality data is supplied by the company for each capital account. Utilizing this data, calculations are made to statistically determine an ASL that is representative of the mortality data submitted.

After determining the ASL from the plant mortality data the engineer moves to the second step of determining the ASL. This second step is called "**engineering judgment**." Engineering judgment is a critical aspect of the depreciation engineer's work because it requires a knowledge and experience of many types of plant, how specific plant operates, and how long the plant will be able to economically continue in service. It is also important to know the distribution of dollars across the various ages (vintages[1]) of plant in each account. With knowledge and experience the depreciation engineer can meet with company management, plant engineers and operations personnel to discuss plant operations and plant maintenance. Also, the depreciation engineer will take plant tours to physically see the plant and to ask additional questions of plant operations personnel about the operation and maintenance of various parts of the plant. The specific information that the depreciation engineer learns about the company's plant from this aspect of his/her work is used to

[1] Vintage - In this testimony, "vintage" describes the year of installation of plant, such as the 1951 vintage would be all plant placed in service in the year 1951.

determine if the ASL developed from the mortality data is reasonable or should be changed to better reflect the life or ASL of the plant currently in service.

Generally speaking, these two steps: 1) development of an **ASL** from mortality data, and 2) application of **engineering judgment** to adjust the ASL determined from mortality, are the two major aspects of the determination of an appropriate **ASL** for the plant-in-service. The **ASL** is then used to calculate a depreciation rate. The depreciation rate is equal to [100% ÷ ASL]. This depreciation rate is multiplied times the dollars of plant-in-service to recover the account's plant balance over the plant's life.

Either the depreciation engineer or an auditor will separately analyze the company's associated net salvage cost on an annual basis and this net salvage amount will be included as either: 1) an adjustment to the depreciation rate; or 2) an expense included with other expenses.

Q. You mentioned **"techniques," "procedures"** and **"methods"** as areas where the depreciation engineer will make a choice. Can you explain some of the processes that go into making each choice?

A. Yes. There are two basic choices with **technique**. The **technique** can be: a) whole life, or b) remaining life. A determination on the **whole life** basis results in an ASL that represents the life that would be expected, on the average, of a new unit of plant that is placed in service. This works very well when there will be additional new plant placed in an account year after year because the applied depreciation rate is designed to allow the recovery of the original cost of the plant over the plant's ASL. Consistently using the **whole life** technique will allow a company to collect the original cost of the plant from the company's customers over the "average service life" of the plant. The **whole life** technique offers a similar benefit to customers, in that the customers pay an "installment" each year for the original cost of the plant that is providing them service.

Remaining life technique is considerably different and its use is a mistake, in Staff's opinion, unless an annual or biannual adjustment is made. The **remaining life** technique moves beyond **whole life** and effectively says, "the plant currently in service is the <u>only</u> plant that will be considered in determination of a depreciation rate." There is a subtle yet complex problem when **remaining life** technique depreciation rates are ordered for a company to use on a going forward basis. The **remaining life** technique characteristically determines a depreciation rate that is larger than the **whole life** technique. **Remaining life** technique is designed to depreciate <u>only</u> the plant in service at the instant in time that the calculation is made. No additional new plant is considered to be added to the account that is ordered a **remaining life** depreciation rate. Looking at plant in service at an instant in time ignores all the years that the current plant in service has been in existence and the depreciation recovery already collected. Also, no provision is made in **remaining life** technique to assign a different depreciation rate for plant that will be installed in the next year and all future years. In the development of the **remaining life** technique's life, the plant that was placed in service this year will experience a **remaining life** equal to the [ASL]. The plant placed in service one year ago will experience a **remaining life** equal to [ASL minus 1]. The plant placed in service five years ago will experience a **remaining life** of [ASL minus 5], and so on. This would continue on for all vintages of plant currently in service to determine a **remaining life** for the account. When a **remaining life** is determined it is considered to apply to 100% of the plant-in-service. It would appear from this that the **remaining life** technique would yield a depreciation rate equal to about one-half the **whole life** depreciation rate. This is not true because the **remaining life** depreciation rate is weighted proportionally to the number of dollars of plant currently in service from each vintage. Since it is normal for newer plant to cost more and because less of the newer plant is likely to have already been retired, the relationship between any account's **whole life** and **remaining life** is specific to each account and specific to the date of the study. **Remaining life** technique depreciation rates are characteristically larger values, frequently much larger, than **whole life** depreciation rates determined from an evaluation of the same plant.

Ordering **remaining life** technique depreciation rates can be considered a mistake because the ordered **remaining life** technique's rates will be applied to all plant on a going forward basis. For example, if a **whole life** ASL is determined to be 70 years a depreciation rate of 1.43% (100% ÷ 70 years) would be the annual depreciation rate. Each year the 1.43% depreciation rate will be applied to the plant balance. If the plant has been in service for several years there will be an existing accrual balance. This existing accrual balance added to the depreciation dollars collected and booked from now until the date of retirement will equal the original cost of the plant. On the other hand, **remaining life** technique looks at the plant in service and calculates the **remaining life** of the plant-in-service. Obviously, this must be less than the ASL since all plant has been in service for some number of years. For example, a 50-year **remaining life** could be expected for plant that has a 70-year ASL. If a 50-year **remaining life** were ordered, then a 2% (100% ÷50 years) depreciation rate would be applied to the current plant balance to achieve full recovery. The **remaining life** depreciation rate equation does recognize that there has been a collection of depreciation dollars from customers for some number of years by including an adjustment for the current accrual balance. Therefore, the **remaining life** depreciation rate of 2% would collect the original cost dollars in total by the end of the plant's life **but** only of the plant currently in-service at the moment in time when the **remaining life** depreciation rate was determined. New plant added to the account would need a different rate because it will last 70 years. The new plant would need a 1.43% depreciation rate. The problem is obvious, a **remaining life** depreciation rate is acceptable for the plant-in-service at the moment in time that the **remaining life** depreciation rate is determined but the **remaining life** depreciation rate is not acceptable for plant added to the account immediately after the date the **remaining life** depreciation rate is determined.

The adjustment that is made to the **remaining life** depreciation rate for the current accrual balance is based on a difference between the actual accrual and a theoretical accrual. The **theoretical calculation** yields a value that tells the depreciation engineer how many dollars "should be" in the **actual accrual** as of the date of the calculation. If a 2% depreciation rate is used to determine a theoretical accrual value, that theoretical value will be greater than if a 1.43% depreciation rate is used to determine the theoretical accrual value. That is to say, the larger the depreciation rate that is used to calculate a theoretical accrual value, the larger the theoretical accrual value will be. Consequently, if the theoretical accrual value is determined to be larger (i.e., using 2% instead of 1.43%) then there is a greater likelihood the **remaining life** technique will determine that the actual reserve is too small.

Q. Are there examples of **remaining life** depreciation rates being applied to Missouri regulated plant?

A. **Remaining life** depreciation rates have been approved for the largest Missouri PSC-regulated telephone companies. All other Missouri PSC-regulated companies have **whole life** technique depreciation rates. The magnitude of over collection by **remaining life** technique depreciation rates can be seen by looking at figures that were available prior to price cap regulation being ordered for two of these companies and then applying an excess equal to that given in the preceding example. With telephone plant balances in 1995 of over $4.5 billion, a .57% excess in an ordered depreciation rate [2% minus 1.43%] would result in the companies collecting $22,500,000 more each year from customers than is needed to recover the original cost of plant over the life of the plant. In this example, the $22.5 million collected annually is included in the customers' rates that are the current "price cap" rates.

Staff consider the ordering of **remaining life** rates as a mistake and that the calculations of this technique are not appropriate for regulatory purposes. The over-recovery of depreciation dollars annually by certain companies supports Staff's position against the **remaining life** technique. Therefore, Staff support the use of the **whole life** technique as the technique that is fair to both the regulated companies and the regulated companies' customers.

Q. Can you explain "**Procedures**" and "**Methods**" now?

A. "**Procedures**" and "**Methods**" are less significant in the decision making process. **Procedures** are a grouping of plant. Normally, Staff's work is with the **broad group** procedure. Definitions of the different **procedures,** as given in the <u>Public Utility Depreciation Practices</u> text August 1996 by the National Association of Regulatory Utility Commissioners (NARUC) Finance and Technology Committee, are (pp. 62-63):

> <u>The Broad Group</u>. Under this procedure all units of plant within a particular depreciation category, usually a plant account or subaccount, are considered to be one group. The Broad Group is widely used and produces reasonably stable depreciation rates from year to year because of its averaging effects. It is a procedure that requires at least accounting records of annual additions and balances. Retirements by vintage are desirable.
>
> <u>The Vintage Group</u>. Under this procedure each vintage or placement year within the depreciation category is considered to be a separate group. This combines, into one group, all of the poles placed in a single calendar year, or vintage. Even within each vintage group there will be dispersion of retirement by age, due to the many causes of

> retirements mentioned above. This requires that each vintage group be analyzed separately to determine its average life; all vintages are composited to produce the average service life for the plant class. Then the depreciation rate may be based on this estimated average service life of the units making up the group.
>
> <u>The Equal Life Group (ELG)</u>. Under this procedure the plant units are grouped to their service lives, with the units from each vintage expected to experience the same service life being included in the same life group. This procedure permits accruing the full cost of the shorter-lived units to the depreciation reserve while they are in service. Thus the longer-lived units bear only their own costs. This is accomplished by dividing each vintage group (plant placed in a single year) into smaller groups, each of which is limited to units that are expected to have the same life. This distribution is based on life tables developed from the recorded experience, with respect to the mortality of utility plant. While it is not possible to identify the individual units of plant that will have a given life, it is possible to estimate statistically the number of units or dollars of plant in each equal life group, provided mortality data were accumulated. The prediction of future retirement patterns is also necessary in application of the vintage group procedure. However, ELG is much more sensitive to these predictions. ELG may be expected to produce greater fluctuations in depreciation expense from year to year than the broad group procedure.

The quality of the data available to Staff is a factor in the choice of which **procedure** to use. Staff's choice is between "Broad Group" or "Vintage Group." With the use of computers, the more detailed "Vintage Group" calculations can be done essentially as fast as "Broad Group" calculations. The detail of the data submitted can be the overriding factor in deciding which **procedure** to use. Staff's depreciation studies of mortality data are conducted using either "Broad Group" or "Vintage Group" **procedure** because we do not receive data with the needed detail to compute "Equal Life Group" **procedure**.

The "**method**" used in regulatory depreciation is consistently "straight line." Use of straight-line **method** designates that the same depreciation rate is to be used every year over the plant's life. This method also requires users to pay, through customer rates, a constant annual payment. Bookings of annual accrual vary from month to month due to changes in plant balance. Accelerated **methods** of depreciation have been applied to tax rates to stimulate the economy through more rapid depreciation of plant-in-service. Double Declining Balance and Sum Of The Year's Digits are just two **methods** that allow companies to have larger tax depreciation expenses sooner after plant is placed. By using accelerated depreciation **methods,** companies pay less in federal income tax and therefore retain more cash to use for corporate expansion, etc., during the early years of any plant's life. Use of accelerated depreciation methods does not relate to the "using up" of plant or the plant's used and useful life.

Q. What is the difference in tax depreciation and regulated depreciation to Missouri-regulated companies?

A. The Missouri PSC-regulated companies utilize accelerated tax depreciation **methods** to impact their cash available on a separate set of books that utilize tax depreciation **methods**. For example, a large and costly facility such as a nuclear power plant can be tax depreciated in 10 years even though the Nuclear Regulatory Commission typically licenses nuclear plants for 40 years. Tax depreciation determines the dollars of tax to be paid to the Internal Revenue Service. Tax depreciation can be considered a method to reduce the dollars of taxes paid. On the other hand, regulatory depreciation is used during rate cases to determine the **revenue requirement**. Regulatory depreciation increases or decreases a regulated company's revenue as the regulated depreciation rates and plant balances go up or down over time. Simply put, regulatory depreciation addresses the revenue level of regulated companies while tax depreciation addresses avoidance of taxes to be paid. But, both tax depreciation and regulatory depreciation are expected to recover only the original cost of plant, no more, no less. It is simply the timing of the depreciation period that is different.

When thinking of depreciation there should be a disconnect between regulatory depreciation and tax depreciation. To help understand, consider that regulatory depreciation is a tool to determine the revenue level of a company. It is a revenue tool. Conversely, tax depreciation is used to determine how many dollars must be paid out by the company to the Internal Revenue Service. It is a cost tool. To remember the disconnect between regulatory depreciation and tax depreciation, remember that regulatory depreciation is used to determine **revenue requirement** and that tax depreciation is used to determine cost. The Staff consistently uses the straight-line **method** in regulatory depreciation determinations to determine **revenue requirement**. Depreciation Staff have no involvement with regulated companies' tax depreciation determination.

Q. What **technique, procedure** and **method** do Staff support?

A. Staff support and utilize: 1) whole life technique; 2) broad group procedure or vintage group procedure; and 3) straight line method in the determination of regulatory depreciation rates.

Q. You have addressed the three major considerations of the depreciation engineer when making a depreciation study, **"technique," "procedure"** and **"method."** When you discussed "technique" you mentioned whole life and remaining life but you did not discuss **"traditional" whole life technique** or **"full recovery" whole life technique**. How do **"traditional" whole life technique** and **"full recovery" whole life technique** fit into the decisions a depreciation engineer must make?

A. Over time, depreciation **techniques** and the associated formulas have evolved. The "traditional" whole life **technique** is commonly known by the formula:

$$\text{Depreciation rate} = \frac{100\% - NS\%}{ASL}$$

[NS, net salvage = Gross salvage - Cost of Removal][2]

This formula was developed decades ago when net salvage (NS) was characteristically small and positive. When a positive net salvage (the sale of worn out plant exceeds the cost to remove the same plant) is put in the formula, it is subtracted from 100%. Normally these positive net salvage values were small, 1% to 5%, resulting in companies recovering 99% to 95% of the original cost of plant from customers. The 1% to 5% was collected by selling plant scrap after plant retirement. In the past few decades, the simplistic calculation to determine net salvage that has been used in the **"traditional" whole life technique** has calculated negative values. Large values of 50% to 100% of original cost are often calculated as the amount of negative net salvage (See Schedule 1 to this direct testimony). (I will discuss the simplistic calculation later). A 100% negative net salvage implies that the cost of removal less gross salvage (NS), at a future date when currently active plant is retired, will cost as much as the original cost of the plant. The result is that depreciation rates have skyrocketed. Currently, many depreciation rates determined by using the **"traditional" whole life technique** will result in companies collecting more from customers annually via the depreciation accrual, than the company is spending for current removal cost. Staff have grave concern about the use of the **"traditional" whole life technique**, which I will also discuss later.

In contrast, the **"full recovery" whole life technique** targets a depreciation rate and a net salvage expense that will return to the regulated companies the dollars the company has

[2] Square brackets, by convention, define the numeric value of the item bracketed.

spent for capital cost and is spending for net salvage. This "full recovery" amount is paid by customers to the companies in tariffed rates.

The **"full recovery" whole life technique** is supported by Staff for several reasons that will be discussed in this testimony.

Q. Addressing the first purpose of your testimony, what is the difference between the "traditional" whole life depreciation rate technique and the "full recovery" whole life depreciation rate technique?

A. In a broad sense, the **"traditional" whole life technique** recovers the original cost of plant-in-service over the average services life of the plant. Added to this recovery is an estimate of what may be the net salvage cost at some future date decades in the future. This future negative net salvage is collected from customers prior to dollars being spent by the company. The **"full recovery" whole life technique** also recovers the original cost of plant in service over the life of the plant. Added to this recovery is the known level of net salvage cost that the company is experiencing now. Staff currently separates these two determinations into: 1) recovery of original cost of plant-in-service; and 2) net salvage cost experienced now. Staff depreciation engineers present a depreciation rate designed to address item number 1, the recovery of original cost of plant-in-service. Staff auditors address item number 2, the net salvage cost experienced now, as an annual expense. Determination of item number 2 could be and has been included in Staff depreciation engineers' depreciation rate proposal but currently, item 2 is determined by auditors and included with other annual expenses that are also determined by the auditors.

<u>**Average Service Life**</u>

Q. In a previous answer you used the term "average service life" (ASL). Can you explain this term?

A. Generally speaking, it is the average of all of the lives experienced by the plant in each specific account; similar plant, similar lives. Since accounting guidelines regulate that similar plant be booked to a specific account, the determination of an "average service life" for plant-in-service is an extrapolation of the lives of plant already retired from the same account. The extrapolation is based on empirical data developed from accounts that have experienced complete retirement. That is, 100 per-cent of all plant from at least some vintages have retired.

Q. How do external events like floods and other natural events affect ASLs?

A. External events like floods are one justification for frequent reviews and updates to the **average service life** determination. Plant damaged and retired from service because of a flood or other natural hazard may be covered by insurance and this plant would <u>not</u> be included in the determination of an **average service life** because it would tend to shorten the **average service life.** This shortening of **average service life** would accelerate the recovery of the original cost of <u>all</u> plant in the account. Because insurance covered the cost of the replacement plant, the company would not need an adjustment to the average service life of all other plant. <u>Specifically, we are only interested in the life of plant, which the company needs to recover from customers</u>. On the other hand, if there is no insurance coverage, the flood or other natural disaster would shorten the **average service life** of the specific account. This shortened **average service life** would be reflected in the Company's depreciation rates and the Company would recover original cost of all plant at a higher annual rate because the

average service life would be shorter. This is an imperfect determination that attempts to reflect as clearly as possible what will actually occur with recurring natural events. If the database is large and the retirement history is old, the likelihood is greater that the **average service life** includes past natural disasters that are not covered by insurance. Large databases with old historical data are likely to include the cycles of natural events and therefore these natural events will be reflected in the ASL that the depreciation engineer determines.

Q. How do changes in new and different materials that are used to manufacture plant in a specific account, "the march onward of technology," get included in the **average service life** (ASL) calculation?

A. New technology applications are another justification for frequent reviews and updates to each account's **average service life** determination. Certainly there are changes in the materials used to manufacture plant that is booked to a specific account. The use of fiber cable to replace copper cable in the telephone industry or the use of plastic main and plastic services to replace steel main and steel services in gas distribution are examples. As might be expected, the change to a new, "better," material frequently has a learning curve period that causes **average service life** determinations to be shorter for the early transitional years of the learning curve. For example when fiber was introduced into the telephone industry, the early installations developed some micro fractures in the glass fibers during installation. Thus, early fiber plant experienced some shortening of **average service life** because of the "learning" that was necessary when the new technology moved from controlled or laboratory installation conditions to real world installation conditions. Changes have been made to the fiber cable and to the installation technique and over time the **average service lives** of the buried cable accounts are growing. This growth of **average service life** is expected as the buried cable account of various telephone companies moves from being predominately copper to predominately fiber.

Frequent review of retirement histories, every few years[3] allows the depreciation engineer to apply his/her **engineering judgment** to the **average service lives** that are calculated from the historical retirement (mortality) data. Actual plant events, such as changes due to technology and natural disasters, will be reflected in the mortality data. <u>The ultimate purpose is to determine an average service life (ASL) that best represents the number of years, over which the Company should recover the original cost of the plant that is in service now</u>. (Note: plant-in-service that is retired and paid for by insurance, highway departments, etc., are not included in the statistical universe.)

<u>"Traditional" Whole Life Technique</u>

Q. Starting with the whole life formula, would you explain how the determinations are made that are described as the **"traditional" whole life technique**?

A. The whole life formula is:

$$\text{Depreciation Rate} = \frac{100\%}{\text{Average Service Life}} - \frac{\text{Net Salvage \%}}{\text{Average Service Life}}$$

In the first part of the formula, [100% ÷ Average Service Life], the 100% represents the original cost of plant-in-service expressed as a per-cent. It can be thought of as the calculation of original cost of plant-in-service divided by original cost of plant-in-service. Obviously, this is 100%. Dividing the 100% by the **average service life** yields a depreciation

[3] 4 CSR 240-20.030 (electric) and 4 CSR 240-40.040 (gas) require some industries to provide updated depreciation studies to Staff every fifth year, at a minimum.

rate that, when multiplied times an account's "plant-in-service balance" determines an annual accrual amount that the company shall recover from the company's customers. If this amount is recovered every year for the number of years determined as the account's **average service life,** the Company will have recovered 100% of the original cost of plant-in-service by the end of the **average service life**. This same annual accrual amount is used in the determination of the **revenue requirement.**

The second part of the formula, **minus net salvage (-NS%),** expressed as a percent, divided by **average service life** is determined as follows. Net Salvage % is "Gross Salvage" of the plant retired, minus "Cost of Removal" of the plant retired, divided by the "Original Cost" of the plant retired. Data are available from each company that give the Gross Salvage (GS) dollars received each year for each account. Also, data are available from each company that give the Cost of Removal (COR), dollars spent each year, for each account. Finally, data are available from the Company that give the Original Cost (OC) <u>in original dollars</u> of the plant retired each year from each account. It is important to recognize that in any one year the amounts obtained from the Company for: 1) Gross Salvage; 2) Cost of Removal; and 3) Original Cost of plant retired, frequently do <u>not</u> represent the same plant. That is due to the timing of accounting and operating procedures. The Original Cost of the plant that is retired in a specific year frequently does not represent the same plant that the booked Gross Salvage and Cost of Removal represent. Likewise, the booked Gross Salvage in a specific year may not relate to the same plant that the booked Cost of Removal relates to. Because there is no actuarial file that ties the Original Cost of plant removed to that same plant's Gross Salvage and Cost of Removal, depreciation engineers normally work with multi-year averages. Using multi-year averages tends to relate the Original Plant retired to its associated Gross Salvage and Cost of Removal, although a correct association is not achieved.

Users of the **"traditional" whole life technique** accept the non-association of Original Cost of plant retired to Gross Salvage and Cost of Removal and calculate the <u>net salvage percent</u> (NS%) as though the three values are correctly associated. Assuming that the Original Cost of plant retired is associated to the Gross Salvage and Cost of Removal, a "traditional" whole life net salvage percent is calculated as follows:

– $[Gross Salvage] – $ [Cost of Removal]	(these two values are expressed in current dollars).
$[Original Cost of Plant in Retired]	(this value is expressed in dollars as of the date when the plant was installed, normally decades earlier)

This simplistic ratio is expressed as a percent, i.e. net salvage % (NS%). By using this simplistic ratio, the <u>**"traditional" whole life technique** user is proposing that the dollars of [Gross Salvage] minus the dollars of [Cost of Removal] at some date decades in the future will have precisely the same relationship to [Original Cost] of plant **currently in service** that today's [Gross Salvage] dollars minus [Cost of Removal] dollars has to the [Original Cost] of plant **placed in service decades ago**</u>. {i.e. the "traditional" technique supports the relationship of [(future Gross-Salvage minus future Cost-of-Removal) to (plant-cost-now)] will be exactly the same as [(current Gross-Salvage minus current cost-of-removal) to (plant-cost-decades-ago)]}. These relationships **must be believed** to accept that the **"traditional" whole life technique** is valid.

The <u>negative net salvage percent</u> (i.e. net salvage cost) calculated in the just-described manner is then divided by the same average service life (ASL) that was determined for the specific account. Therefore, the **"traditional" whole life techniques'** depreciation rate for net salvage is:

{- ([negative net salvage] % ÷ [average service life] YR) = - Depreciate rate %} for net salvage cost. The double negative results in the net-salvage-cost being added to the 100% recovery of the original-cost of the plant.

This "depreciation rate for net salvage" is multiplied times the current-plant-balance to determine the annual accrual that the company should recover from customers for <u>future</u> net salvage costs. This same amount is used in the determination of the **revenue requirement**.

By using this calculation to determine the depreciation rate for net salvage, the **"traditional" whole life technique** mixes dollars already spent by the company (the original cost of plant in service) with plant removal dollars that may or may not be spent <u>in the future</u> (estimated future net salvage). This characteristic of the **"traditional" whole life technique** is of particular concern to Staff and will be discussed further.

Q. Are you concerned with the part of the **"traditional" whole life technique** that addresses the recovery of the original cost of plant?

A. No. This determination is the same in the **"traditional" whole life technique** and the **"full recovery" whole life technique**.

Q. Are you concerned with the part of the **"traditional" whole life technique** that addresses net salvage?

A. Yes.

Q. What concerns do you have?

A. I have concern with the definition of the formula, and other professionals[4] have recognized these same concerns for years. Most importantly, it is my concern that the

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[4] Ref: Public Utility Depreciation Practices, August 1996, National Association of Regulatory Utility Commissioners (NARUC) Finance and Technology Committee. Ref: page 9 of this direct testimony.

"traditional" whole life technique, while offering a fair recovery of the original cost of plant-in-service, does not treat the net-salvage-costs that are experienced by the company fairly. But, the **"full recovery" whole life technique** assures that the Company, now and in the future, will have the needed funds for net-salvage-cost and that the customers will pay net-salvage-cost only when they occur.

Q. What are your concerns about the use of the "traditional" whole life technique as it relates to published definitions?

A. From the 2-12-85 Federal Energy Regulatory Commission's (FERC) accounting and reporting requirements, paragraph 20.001, the following definitions are given:

Depreciation	=	Loss in service value
	=	[Original cost] - [net salvage]
Original Cost	=	Cost of property to the person first devoting it to public service (emphasis added)
Net Salvage	=	Gross salvage value of property retired less the cost of removal (emphasis added)
Cost of Removal	=	Demolishing, dismantling, tearing down...including transportation (emphasis added)
Cost	=	The amount of money actually paid for property or services (emphasis added)

It is clear by the FERC definitions that net salvage CANNOT include future services such as the removing of plant, demolishing, dismantling, and transportation because money must actually be paid to be included in cost of removal.

This is Staff's position, that cost of removal is monies actually paid, not an expectation of monies that may or may not be spent decades in the future.

Q. Are there other definitions that are relevant to the use of the **"traditional" whole life technique** by companies?

A. Yes. In REA Bulletin 183-1 that addresses "Depreciation Rates and Procedures," it is stated: (III. Objectives of Depreciation Accounting) (Schedule 2 of this direct testimony) "A. Thus it may be said that the cost of capital investments in plant is recovered by means of proper depreciation accounting." The depreciation rates proposed by Staff in this case and other cases are specifically designed for the stated purpose of recovering the cost of a company's capital investments. In paragraph B of the same section of this REA Bulletin it is stated that: "the established rate of depreciation should recognize the useful life and recovery values. <u>Depreciation is not intend to provide funds for replacement, nor is it to be legitimately considered as a means to make a desirable showing on the revenue and expense statement</u>" (emphasis added). It is Staff's concern that ordering depreciation rates that are determined utilizing the **"traditional" whole life technique** for net salvage cost does what the REA definition says depreciation is <u>not</u> intended to do. Companies do not "store away" the excess net salvage monies that are collected from customers in current tariffs, with the understanding that the monies will be available and used for removal at the specified future date or if the monies are not used, that the previously collected monies will be refunded to customers. Staff believe that customers have the right to expect that monies paid for removal of retired plant should be available for such removal, transportation, etc. when the designated plant is retired. This is why Staff support the collection of current net-salvage-cost, <u>not</u> estimated future net-salvage-cost.

Q. Are there any examples of the payment of future net-salvage-cost where the customers' monies are "stored" for the removal of specified plant at a future date?

A. Yes. The two nuclear power plants regulated by the Missouri PSC each have a "stored" removal and remediation fund for the future removal, transportation, and etc. of the nuclear facility and remediation of its location. This "stored" removal fund, unlike the net salvage dollars collected using the **"traditional" whole life technique**, cannot be spent by management for any purpose other than the purpose of the nuclear plants' removal and sites' remediation after retirement. These monies are designated for the removal and remediation fund when customers pay their electric bills. These monies are effectively still the customers' monies since no final cost-of-removal for nuclear plant has been incurred by either company. Final cost-of-removal of nuclear plant will not be incurred by either company until "...money (is) actually paid for property or services" (FERC definition of cost) (emphasis added). In this case, "services" represents the removal of the nuclear plant and remediation of its site.

Although Staff are aware there is a likelihood that both of the nuclear plants regulated by the Missouri PSC will be relicensed before the initial 40-year license period granted by the Nuclear Regulatory Commission (NRC) has expired, customers are currently paying into each removal fund based upon the 40-year license period. That is to say, that the funds for removal of the nuclear plants and the remediation of the plants' sites are to be fully funded at the end of the initial 40-year license period.

Information gleaned by Staff several years ago from one of the Missouri PSC's regulated companies that operates a nuclear plant, was that Staff should stay aware of the NRC's potential relicensing of a Baltimore Gas & Electric (BG&E) nuclear plant, the Calvert Cliffs Nuclear Power Plant (CCNPP)[5], that is a "sister plant," so to speak, of both Missouri PSC regulated nuclear plants. The CCNPP has received a 20-year license extension from the NRC. The NRC has also given 20-year license extensions to three Duke Energy nuclear units

[5] Calvart Cliffs Nuclear Power Plant - Attached as Schedule 3 are internet articles that collectively point out that 30 of the 104 operating nuclear power plants in the United States "have applied or announced plans to apply for license renewal."

and one Entergy unit in Arkansas. License extensions have been filed or notice of intention to file for a license extension has been given to the NRC on 38 additional nuclear units. This group represents 44% of the nuclear plants under NRC regulation. (Schedule 4 to this direct testimony) All of these nuclear plants are older that the Missouri regulated nuclear plants. It is probable that both Callaway and Wolf Creek nuclear plants will ultimately have 60-year or longer lives. The 60-year period will be a **life span**[6] not an **average service life**. Even though the additional 20 years are not a direct addition to both facilities' **average service lives**, the customers will have fully paid to the companies, over the original 40-year license period, the monies for the specific purpose of removal, tear down, transportation, etc. of the Missouri regulated nuclear power plants. These monies are held in a "stored" fund by each company. A 20-year extension of each license should drastically reduce depreciation rates for each nuclear plant regardless of the depreciation technique used to determine depreciation rates. If nuclear plant accounts are fully accrued after 40 years, it is possible, although not probable, that depreciation rates for these accounts could be zero for the 20 years of extended life.

Staff's position is that future salvage events, that may or may not occur, should <u>not</u> be included in current depreciation rates, Staff do not propose that Callaway and/or Wolf Creek nuclear plants be estimated to have a 60-year life until a license extension by the NRC is known. As a result, Staff have not included the possible 20-year life extension in any depreciation rates proposed using the **"full recovery" whole life technique**.

[6] Life span – the period from first plant activity until all plant associated with the nuclear facility is retired on a given "single" date.

It should be noted that with the 20-year extension of the CCNPP, the possibility of Callaway and Wolf Creek getting a 20-year license extension from the NRC is based on an occurrence that has as great or greater probability of predicting the future than the simplistic relationships used to calculate net salvage percentage in the **"traditional" whole life technique**.

Staff recognize the uncertainty of predicting the future, yet the NRC requires the current collection of future, unknown removal cost of nuclear plants. The tear down, removal, transportation, etc. fund for nuclear plants is based on engineering studies conducted by engineers that specialize in estimating future removal cost of nuclear plants, NOT on a simplistic ratio of two past events.

Although Staff do not advise current collection of future, unknown "cost," the NRC's methodology is to isolate the future "Cost of Removal" dollars into a "stored" fund that can only be used for the final removal and remediation of the nuclear plant and its site. The determination of the size of the "stored" fund for the nuclear plant's removal and remediation should be made by engineers with special training and experience at estimating the future "cost" of removal, tearing down, transportation, etc. of nuclear plants.

Staff do not propose the NRC's pre collection of net salvage cost for other Missouri PSC-regulated plant. We do propose the **"full recovery" whole life technique** of determining depreciation rates and expenses associated with the removal of plant after retirement.

Q. If the money that the NRC requires to be "stored" for the final removal of each of the two Missouri PSC-regulated nuclear plants was available to each of the two electric companies to use as management wished, how much money would each company have?

A. As of October 2001, the "stored" fund for Wolf Creek is $61.6 million and the "stored" fund for Callaway is $168.3 million as of November 2001. The total for both plants is $229.9 million.

Q. Has the $229.9 million been collected from customers since the nuclear plant's start up in the 1984-1985 time frame?

A. Monies were collected from customers and the investments of the two funds have grown to the current levels. The customers have paid into each fund over the past 17 years for each plant. Customers will continue to pay at the current rate or at a recalculated rate for the remaining 23 years of each nuclear plant's 40-year license.

Q. If the **"traditional" whole life technique** was used by the NRC, would customers be certain that the $229.9 million, currently in "stored" funds for removal cost of both nuclear plants, is available to pay for the plant removal and remediation bills when each nuclear plant is retired?

A. No, customers would not be certain that the $229.9 million is available for the removal of the nuclear plants and the remediation of their sites.

Q. Then, if the NRC used the **"traditional" whole life technique** for nuclear plants, both companies may have spent the $229.9 million and then it would not be available when both nuclear plants are retired and the facilities need to be removed?

A. That is the concern that Staff have with the **"traditional" whole life technique**. This concern extends to the collections of estimated future net salvage costs when using the **"traditional" whole life technique** for accounts with large plant-in-service balances.

Q. Are there additional aspects of the net salvage calculation, as made by the **"traditional" whole life technique**, that Staff are concerned about?

A. Yes. I would like to address six areas of Staff's concerns with the **"traditional" whole life technique.**

1) Staff consider the net salvage calculation of the **"traditional" whole life technique** to be flawed in its ability to predict future events ant the future events' costs.

2) Staff believe that the "inflection point,"[7] as required by the net salvage calculation of the **"traditional" whole life technique**, is important to address if the **"traditional" whole life technique** is to be ordered and used in actual applications. Mr. Bill Stout[8] testified about the "inflection point" when he represented St. Louis County Water Company as their depreciation expert.

3) Staff and companies' depreciation consultants recognize that, after the "inflection point" date occurs, companies will collect less for net salvage cost than they are spending for net salvage cost. This is a requirement of the net salvage determination in the **"traditional" whole life technique**. Staff believes this inequity needs to be fully recognized by companies and Commissioners. Staff's **"full recovery" whole life technique** does not have an inflection point.

[7] "Inflection point" as used here describes the point in time that a reversal occurs. In this testimony the reversal is when a Company reverses from collecting more money than the company spends for net salvage to collecting less money than the company spends for net salvage.

[8] Mr. Bill Stout of Gannet Fleming represented St. Louis County Water as its depreciation consultant in Case No. WR-2000-844.

4) If companies are ordered to use **"traditional" whole life technique** depreciation rates, then during the years after the inflection point the company's cash flow will be inadequate and the companies may submit cases after the inflection point occurs to switch to the **"full recovery" whole life technique**. This switch could result in customers paying the companies twice for the removal cost of retired plant. Staff consider this a potential double collection of removal cost by the company and wrong.

5) Staff support regulatory consistency. This includes consistency with the definitions given earlier in this testimony. Also, Staff support consistent fairness to companies and to companies' customers over all time.

6) Staff believe that the determination of a **revenue requirement** for each company should be fair to the company and to the company's customers. The **"full recovery" whole life technique** provides fairness; the **"traditional" whole life technique** does not.

I will discuss each of these six aspects and the effect of the net salvage calculation as determined by the **"traditional" whole life technique**.

<u>The Traditional Whole Life Technique Flaw</u>

Q. Do Staff consider the **"traditional" whole life technique** as the preferred technique to use in the determination of depreciation rates that will be ordered by the Commission?

A. No, Staff see the **"traditional" whole life technique** as flawed in its determination of net salvage.

Q. How would you describe the net salvage flaw?

A. The net salvage determination within the **"traditional" whole life technique** does not assure the Commission, the Company or the customers that the pre-collection of removal cost is accurate or close to accurate.

Q. Do you have an example that will explain the inaccuracy of the **"traditional" whole life technique**?

A. Yes. Prior to 1978 St. Joseph Light & Power Company's account number 364; Poles, Towers, & Fixtures, was determined and ordered to have a negative 5% net salvage[9], as determined using the **"traditional" whole life technique**. This is to say that, utilizing the **"traditional" whole life technique,** the company would need 5% of the original cost of the plant in the poles, towers and fixtures account to "cover" the cost the company would incur to remove the <u>poles, towers & fixtures</u> that would be retired three decades later (a 30-year ASL was determined). The net salvage cost for the same account was calculated during St. Joseph Light & Power Company's rate Case No. ER-99-247, 21 years later, as actually being negative 53%. This is effectively saying that the **"traditional" whole life technique's** ability to calculate the correct future net salvage amount prior to 1978 failed by a 48% margin (53% - 5%).

The flaw is not accurately reflected here because the **"traditional" whole life technique** is calculated with a new group of plant each successive year but the 48% difference between the two computations does reflect the inability of the **"traditional" whole life technique** to accurately predict future net salvage cost.

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[9] Attached as Schedule 5 is a copy of a March 1, 1978 letter from Melvin T. Love to St. Joseph Light & Power Company giving net salvage rates.

Q. This example would indicate that companies are under collecting net salvage costs, and that the actual accrual balance should be determined as less than the theoretical calculation or "what the accrual balance should be." Is this occurring?

A. No. Companies have had depreciation rates adjusted in rate cases over the past 20 or so years several times. In most of those rate cases, the **"traditional" whole life technique** was used to develop the depreciation rates that were ordered.

Q. What was/is the result of ordered depreciation rates that were determined using the **"traditional" whole life techniques**?

A. The result is that depreciation rates were increased to a level such that companies have recovered, and are annually recovering, more monies for net salvage cost than these companies are spending for net salvage cost.

Q. Is recovering more money for net salvage cost than is being spent for net salvage cost reflected in the St. Joseph Light & Power Company example?

A. Yes, it is reflected in the negative 53% calculation. In Case No. ER-99-247, a calculation was made to determine the ratio of current net removal cost to the original cost of the same plant (i.e., net salvage %). This ratio was a negative 53%. Using negative 53% net salvage to determine a deprecation rate will calculate an annual accrual that is greater than the current annual net salvage cost experienced by the Company. In other words, [negative 53%/ASL] x [Plant Balance] will equal more dollars than the Company's current net salvage cost.

Q. What is the basis of the flaw in the **"traditional" whole life technique's** net salvage determination that causes the formula to calculate depreciation rates that allow companies to collect more than they are spending for net salvage cost?

A. The net salvage determination made in the **"traditional" whole life technique** is a simplistic ratio, expressed as a percent, of what has occurred in the past. It is a ratio of the recent net removal cost to the original cost of the same plant.

$$\frac{\$[\text{gross salvage}] - \$[\text{cost of removal}]}{\$[\text{original cost of the plant removed}]} \qquad \frac{\text{current dollars}}{\text{vintage dollars}}$$

The original cost of the plant removed is from several decades ago for major accounts. For St. Joseph Light & Power Company's poles, towers and fixtures, the original costs are dated 30 years ago, on average, in my example. This simplistic ratio of a relationship between today's removal cost and 30-year-old original cost does not predict or accurately estimate the level of removal cost that current plant-in-service will incur decades in the future. The failure to predict the future, as the St. Joseph Light & Power Company example shows, is the norm, not the exception.

Q. What is the affect on a company and the company's customers of an annual accrual that is greater than the annual net salvage cost incurred by a company?

A. The annual accrual determination is used to determine the company's **revenue requirement**. This establishes the number of dollars collected from the company's customers with the understanding that the net salvage dollars will be spent for the net cost of removing retired plant. But, what is occurring is that the current net cost-of-removing retired plant (net salvage cost) is less, often considerably less, than the dollars collected for net cost-of-removing retired plant (net salvage cost). Effectively, the customer pays more than is being spent and the Company collects excess cash to use in any manner management desires.

Q. Are there any other aspects that the **"traditional" whole life technique's** estimate of future net salvage does not consider?

A. Yes. Just as we have seen in the St. Joseph Light & Power Company example, the net salvage ratio has grown from a relatively insignificant amount of money, represented by the pre 1978 net salvage calculation of negative 5%, to a relatively large amount of money, represented by the 1999 net salvage calculation of negative 53%. The pre-1978 calculation of negative 5% did not include an engineering study of expected changes to net salvage cost in the future. Changes to inflation, environmental laws, regulatory requirements, etc. were not studied, yet all of these factors did effect removal costs over the period from pre-1978 to 1999. These factors and possibly others caused the calculation to change from negative 5% to negative 53%. The negative 53% represents a relatively large amount of money just as the negative 5% represents a relatively small amount of money. This change, from net salvage being a small amount of money in the 1978 era to a large amount of money in the 1999 era is recognized by operations personnel and entrepreneurs. When costs are small they are frequently ignored but when costs are large they get attention. The "attention" searches out ways to reduce these large costs. It is reasonable to expect that these large costs of removal will be addressed by advancements in technology and efficiency. It is likely that a ratio of negative 53% or greater will be reduced in the future as a result of operations personnel and entrepreneurs applying technology and efficiency to these high removal costs.

Q. How would a competent estimate of future removal cost (net salvage cost) be made?

A. To estimate the future, studies of "what technology is on the drawing board," would be made by a technology futurist. The technology futurist would analyze what new technology etc. may develop that will have an impact on future removal cost. Additionally, studies of other events such as inflation and environmentalism would be included. These estimates would still not accurately predict the future but would represent a logical and systematic approach to a determination of future cost.

Q. What is a reasonable solution to the inability to predict the future?

A. The reasonable solution is to use the **"full recovery" whole life technique** to determine depreciation expense and removal cost. This technique eliminates the inherent "wrongness" of a future net salvage value that is determined using the **"traditional" whole life technique**. The **"full-recovery" whole life technique** will allow future differences between actual accrual balances and the theoretical calculation (what the accrual balance should be) to be small and easily adjusted on a going forward basis.

The Inflection Point

Q. Can you explain how companies that have ordered depreciation rates that were determined by using the **"traditional" whole life technique** will currently collect more money from customers for removal cost than the company is spending and will, at some future year, reach an inflection point when the situation will reverse and the company will collect less money from customers for removal cost than the company will be spending?

A. It is simple mathematics. Consider that a company is spending $100 per year for removal cost and that the company is collecting $200 per year for removal cost now because the **"traditional" whole life technique** was used to determine net salvage's portion of the **revenue requirement**. This company's accrual balance is growing by $100 each year. Consider that this occurs for 10 years. At the end of the 10th year, this company will have $1,000 in the accrual balance yet it will have paid in full all of the removal cost the company had in each year. At the beginning of the 11th year, consider that actual removal cost increases to $300 per year. Yet, because **"traditional" whole life technique** depreciation rates are ordered, the company continues to collect from customers $200 per year until the 20th year. During years 11 through 20, this company will spend $100 per year more than it collects and will "use up" the $1,000 that was "built up" or "stored" in the accrual balance over years 1 thru 10. In this example, the inflection point is at the beginning of year 11, when the company flips from collecting more from customers than the company is spending for removal cost, to collecting less from customers than the company is spending for removal cost.

Theoretically, the collection of money from customers must ultimate equal the net salvage cost of the plant that it is collected to remove at retirement. Therefore, an over-collection under-collection balancing is required by the mathematics of the **"traditional" whole life technique**. Otherwise, one of two events would occur; 1) The company would, over time, collect more (over-collection) than the company spent and a repayment to customers would be necessary; or 2) The company would over time collect less (under-collection) than the company spends and future customers would have to pay the difference between actual net salvage cost and the under-collected amount. Either the over-collection under-collection balancing occurs or the **"traditional" whole life technique** of determining future net salvage fails to do what the supporters of the **"traditional" whole life technique** argue that it will do. The supporters would argue that the simplistic ratio of past events would estimate with reasonable accuracy the net salvage cost decades in the future. That the dollars collected and the dollars spent will be equal when the current plant-in-service is all retired. The St. Joseph Light & Power Company events show that a simplistic ratio of past events cannot predict the future accurately.

Q. When companies and companies' consultants propose the **"traditional" whole life technique** do they explain what will occur in the future when companies will collect less than actual net salvage costs?

A. In the past eight years, Staff have seen presentations of depreciation studies utilizing the **"traditional" whole life technique** by companies and/or company consultants. None of these presentations note when the inflection point will occur nor do the depreciation studies of companies or consultants discuss the period after the inflection point when a company's collections for net removal cost will be less than the company spends for net removal costs.

Q. Has the "inflection point" been discussed by any of the various depreciation consultants?

A. Yes. Staff attorney Keith Krueger cross-examined depreciation consultant Bill Stout (Ref: Footnote 8 to this direct testimony) in a recent St. Louis County Water Company rate case, Case No. WR-2000-844. The following exchange of questions and answers address the "inflection point":

> Q. Okay. Thank you.
>
> In fact, the current net salvage accrual exceeds the current net salvage cost by about $2 million per year as you stated in your rebuttal testimony also. Is that correct?
>
> A. Yes.
>
> Q. And wouldn't you expect the current net salvage accrual to continue to exceed the current net salvage cost?
>
> A. Not with respect to the plant presently in service, as I indicated in my rebuttal testimony.
>
> Q. Why would that be?

> A. As this plant ages and as retirements increase, that plant balance related to today's plant in service will decrease. As it does, the amount of the salvage accrual will decrease at a time when the net salvage costs, as we've defined it here, will be increasing, <u>there will be a cross-over point at which time the net salvage costs, that is, the net cost of removing plant, will exceed the amount of net salvage accrual for the plant presently in service</u>. (Emphasis added)

Mr. Stout refers to the "inflection point" as a "cross-over point" in line 4 of page 69 of the transcript of his testimony before the Commission. He proceeds in lines 5 and 6 to state that after the crossover point "...the net salvage costs...will exceed the amount of net salvage accrual (this is the amount collected from customers) for the plant presently in service." (i.e. actual company net salvage cost will exceed collections from customers). This, to Staff's knowledge, is the only time that a company or a company's consultant has discussed the "inflection point." The "inflection point" is an integral part of the net salvage determination when using the **"traditional" whole life technique**.

Q. Do Staff believe understanding this "inflection point" issue is important?

A. Yes. After the "inflection point" occurs, companies will be collecting less cash from customers for net removal cost than the company is spending for net removal cost. This is a net negative cash flow. If there is no requirement of a "stored" fund as there is with nuclear plants, then there will be no cash reserve to supply the needed dollars to pay bills for the removal of retired plant after the inflection point occurs. Staff's concern is that depreciation consultants may have not fully explained this future situation to the companies they represent. Companies' management should have a clear understanding of the "inflection point." Failure to consider this could have a negative impact on a company's cash flow during the time after the inflection point occurs when the company is spending more to remove plant than the company is collecting from customers for removal of plant.

Staff are concerned that companies and consultants are betting on perpetual growth out to infinity, thus the **"traditional" whole life technique** will perpetually determine a collection of more cash from customers than the company spends on net salvage cost.

Collection of Net Salvage Cost Is Less Than Actual Net Salvage Cost

Q. You have explained that an "inflection point" will occur when using the **"traditional" whole life technique** for net salvage determination. If a company is currently collecting more from customers for net removal cost than they are spending, an "inflection point" will occur. After the "inflection point" the company will collect less from customers than they are spending. Will you discuss the period after the inflection point when the company will collect less from customers for net removal cost than they are spending for net removal cost?

A. This situation, as stated by Mr. Stout when he testified before the Commission, is of grave concern to Staff. It is a condition that will not occur with the **"full recovery" whole life technique**.

Those companies that have and are collecting more for net removal cost than they are currently spending, because the **"traditional" whole life technique** was used to determine their depreciation rates, face a date when the situation will flip or reverse and the collection for net removal cost will be less than the company spends for net removal cost.

Companies that are currently collecting more for net removal cost than the company is spending for net removal cost are not putting the excess monies in a "storage" fund. It appears to Staff that these monies are being spent for undesignated purposes, infrastructure or any of many other management options. Staff's concern is that companies are not planning for this cash to be available to pay for the portion of cost-of-removal that exceeds the collection of cost-of-removal after the inflection point occurs. In the previous example, this would be the period when actual net removal costs are $300 annually but the company would be collecting only $200 annually for net removal cost. In this example the company will need $100 of cash to pay bills for removal cost in excess of the amount the company will collect from customers in rates. What could exacerbate the problem for any company is that prior to the inflection point, this same company was enjoying excess cash because actual net removal cost were fully covered in customer rates plus the customer rates included excess cash that was designated for net removal cost at some future date after the inflection point. This situation, if not fully understood and prepared for by current management will leave future management with a debacle of how to run the company with incoming funds that will not cover all expenses. If there is no "storage" of the excess removal dollars that are paid now and designated for future use, the management of the future will have to "take" funds from other sources, such as infrastructure maintenance, to have enough cash available to pay the bills for removal of retired plant. Staff prefer to have companies avoid a future date when the management, at that future time, will have to address how to pay the bills to remove plant from service. This will be when customers will be paying the company less in service rates than the bills the company is receiving for removal of plant.

Staff's **"full recovery" whole life technique** avoids the situation where the future management of any Missouri PSC-regulated company will be facing the dilemma of not having cash flow from customer rates that will be equal to or nearly equal to the bills received for the removal of retired plant.

<u>Double Collection of Net Salvage Cost</u>

Q. What could happen if a company continues to collect net salvage cost determined by the **"traditional" whole life technique**, spends the excess cash for other activities and reaches a date, after the "inflection point," when bills for removal cost exceed the collection of net removal cost dollars from customers?

A. Staff have considered this and we are concerned about this occurring. One alternative is that the customers will pay the company twice for net removal cost. The company would effectively be saying, "Sorry, the previous management spent the money our customers gave this company 10, 20 and 30 years ago that was designated for net removal cost and now that money is gone. If you don't give us the money again, we will go broke." This is not exactly what may be said but it is the pitfall of the **"traditional" whole life technique's** calculation of net salvage depreciation rates.

Q. Is there any other potential <u>double collection</u> situation that can occur when the **"traditional" whole life technique** is used that concerns Staff?

A. Yes. One that confronts Missouri ratepayers today. Recently, all Missouri plant of GTE (This company changed their name to Verizon after a merger with another telephone company) has been sold to another telephone company. GTE's depreciation rates were determined utilizing a "traditional" technique. During the past decade or two of GTE's operation in Missouri, it has annually collected more for plant removal than it spent. GTE's excess collection into the depreciation reserve can be speculated to have been in the tens of millions of dollars annually. The theoretical determination of accrual would be small when compared to the actual accrual. In other words, GTE has collected a large excess depreciation accrual that is designated for future removal cost.

There are two concerns to be addressed as a result of the sale of GTE's plant. First, the amount of depreciation accrual that should be collected from customers is the original cost of the plant. Original cost is, by definition, the "cost of property to the person first devoting it to public service." (Ref: FERC definition of "Original Cost," p. 22 of this direct testimony.) The GTE accruals for each account should be subtracted from the "original cost" of the plant sold. The difference is the amount the new owner is due to collect from customers via depreciation. Staff are concerned about this being ordered or not ordered as part of the sale of the plant. Staff do not believe Missouri consumers using the GTE plant, under any other name, should pay more than the "cost of property to the person (Company) first devoting it to public service." (Ref: FERC definition of "Original Cost," p. 22 of this direct testimony.)

Secondly, Staff believes that the new owner of the GTE plant determined the purchase price based on an analysis of future earnings. Logically, GTE should give the new owner the net salvage monies in the accrual. This would include the excess collection from customers due to using "traditional" depreciation. This excess is the difference between a theoretical calculation (i.e., what the accrual balance should be) and the actual accrual balance. The Missouri consumers have paid this excess to GTE over many years. Staff's concern is that GTE will simply keep all this money. If this is the case, GTE will reap a windfall profit on the sale of the Missouri plant due to the money GTE collected using **"traditional" depreciation techniques** to set depreciation rates. These "traditional" depreciation rates provided funds for the retirement of plant decades in the future.[10] In the last two paragraphs the author points

[10] Ref: Schedule 6 to this direct testimony, an article on Nuclear operators weigh decommissioning, relicensing options.

out that power companies currently purchasing nuclear power plants may reap a "tidy profit" [windfall profit] in a transition of ownership.) GTE will not be responsible for paying for any portion of the future removal cost when the plant is ultimately retired. Staff's concern is that the new owner will expect the same customers to pay them, the new owner, the full cost to remove retired plant. If this occurs, Missouri customers of GTE plant will be paying double for a portion of the removal cost of GTE plant that is sold.

Q. What technique can avoid this situation and how does it avoid the "double collection" situation?

A. The **"full recovery" whole life technique** will avoid the "double collection" situation. By always collecting a level of net removal cost from customers that is equal or nearly equal to the company's actual net removal cost, the company is protected from a false concept that a specific ROE (return on equity) will give them more cash flow from customers than is truly a reasonable amount of cash flow for the stated ROE. Also, the **"full recovery" whole life technique** will avoid customers being asked to pay cost of removal charges a second time. Customers will always be paying a cost of removal adequate for the company to pay the current cost-of-removal bills. This is reasonable and it augments management's responsibility to utilize funds for the purpose the customers were "told" they were designated for.

Inherent Risk of Booking Future Events and the Future Events' Net Salvage Costs

Q. To whom do non-accounting professionals turn, to verify the accuracy of **revenue requirement** determinations?

A. It is a conundrum, with no clear answer. During a rate case, a company will propose a need to increase **revenue requirement** while Staff may propose a different

revenue requirement, possibly a decrease. It would seem that the company and Staff should determine the same answer, as to what **revenue requirement** is correct, not two or more different **revenue requirements**.

In light of current failures of public corporations, Jack Coffee, an expert in securities litigation and accounting fraud at Columbia Law School has stated, in reference to audit firms (gatekeepers) and their Public clients, "the gatekeepers were too conflicted to be effective. There are more errors in judgment made when you're subject to conflicts of interest, particularly in the world of the accounting profession."[11]

Mr. Coffee is pointing out that public accountants employed by a public corporation may make errors in judgment due to the public accounting firm's source of revenue. Perhaps regulatory auditors counteract a company's public accountant and make errors in judgment of an opposite nature.

These possibilities point out the elasticity of audit presentations. The accounting regulations that allow booking of revenue not received and expenses not incurred cause non-accountants to struggle to determine the actual financial health of a corporation.

Because of company failures, there is a large group of ex-employees that have realized too late that the companies they once worked for were not reflecting actual dollars received but dollars the employer hoped or expected to receive. Likewise, this same group of ex-employees may have found that future expenses were once misstated and later reported correctly and that the resulting correction destroyed the financial health of the corporation and in turn cost them their jobs.

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[11] USA TODAY – Page 2B Thursday, January 17, 2002, article titled "Members of Congress forced SEC's Rule Change Proposal."

With this in mind, it is important that events that will not occur until the "distant future" should not be manipulated to imply corporate financial health today while exposing the same corporation to financial destitution when the "distant future" becomes the "current time."

It is not possible to predict the many forces that will impact a corporation's "distant future." To fabricate estimates of distant future events for the purpose of improving current financial health of a corporation exposes the corporation to the risk of a "pay-back" when the estimate of the future is found to be incorrect. These situations can lead to bankruptcy in the competitive environment. To prevent bankruptcy in the regulated environment, customers can be required to pay premiums to cover the incorrect estimates. Staff's **"full-recovery" whole life technique** of depreciation determination avoids the booking of future estimates that can result in customers paying premium tariffs at some future date.

Regulatory Consistency

Q. Is the use of the **"full recovery" whole life technique** consistent with regulatory practices?

A. Yes. The definitions given earlier that came from the FERC and the REA are consistent with the **"full recovery" whole life technique**. It is the **"traditional" whole life technique** that ignores the definition of "cost" as "the amount of money actually paid for property or services."

Q. Has the Missouri PSC previously addressed monies paid for net salvage cost?

A. The Missouri PSC has previously addressed monies paid for net salvage cost. The general tenor of the Commission's orders has been that monies must have been spent and/or plant must be in service to be included in customer rates. In a rare exception to this

Commission guideline, the Commission did order **"traditional" whole life depreciation** rates in the Missouri-American Water case, Case No. WR-2000-844, but strict guidelines were imposed. Those guidelines were that the excess collection must be held in a "storage" fund and only used for infrastructure replacement in excess of the current norm. This is effectively requiring customers to pay for plant before it is bought by the company or is in service.

Q. How should companies record transactions when plant is paid for before the plant is purchased by a company?

A. Characteristically, this is called "contributed plant" and is not included in rate base. Although the Case No. WR-2000-844 Order does not designate the infrastructure that is to be purchased with the prepaid dollars collected via the **"traditional" whole life technique** as "contributed plant," Staff will support this position in a future St. Louis County Water Company rate case. Depreciation Staff will be stating that the plant purchased with the future net salvage dollars should <u>not</u> be included in rate base. Ordering this position will prevent customers from paying for the same plant twice. If Staff's position is not ordered and the specified plant is included in rate base, customers will have to pay for the same plant a second time. The first time customers will pay for the specified plant through excess collections of the net salvage portion of the **"traditional" whole life technique**. Then, customers would pay for the same plant a second time. This would be when the company would recoup the specified plant through the recovery of original cost portion of either the **"traditional" whole life technique** equation, or the **"full recovery" whole life technique** equation. Also, if "contributed plant" was included in rate base, the customers would then be paying a return on equity (ROE) to the company for plant that the customers had purchased by their prepayments in water tariffs.

Q. Is this an example of the monies not being available at a future date for the removal of the retired plant that the monies were collected for?

A. Yes. Although the St. Louis County Water Company argued that they needed cash for infrastructure and the Commission addressed their argument, I believe this is not the position of the Company's depreciation consultant, Mr. Bill Stout.

Q. What would Mr. Stout's analysis of the use of the **"traditional" whole life technique** be for the St. Louis County Water Company?

A. I believe Mr. Stout would argue that the depreciation rates he determined using the **"traditional" whole life technique** have a net salvage portion that is to be used, decades in the future, for removal cost of plant that is currently providing service.

Q. If the amount that Mr. Stout determined as appropriate for removal of plant decades in the future is used for infrastructure replacement now, what monies will the St. Louis County Water Company use to pay for the removal of the plant that Mr. Stout's depreciation rates are designed to cover?

A. Staff believe this is an example of a situation where the company will return to the Commission decades later and Mr. Stout's **"traditional" whole life technique** will be proven to have a flaw. Decades in the future the monies that Mr. Stout determined as needed for removal cost will not be available because they were spent for infrastructure. If the inflection point has occurred, the cash available to pay bills for removal of plant will be less than the actual cost experienced for removal cost. Either dollars will have to be taken from some other part of the St. Louis County Water Company's budget to pay bills for removal of plant or the Company will ask the Missouri PSC to allow the Company to recover the dollars needed to pay for the removal of plant from the St. Louis County Water Company's customers. This would be a second collection of the removal cost from customers.

Q. Is it possible to see the Missouri-American Water case, Case No. WR2000844 as being consistent with other Missouri PSC regulatory decisions?

A. Yes. A detailed reading of the order makes it clear that the Commission considered this an order separate from their norm and that they were being flexible as they proposed to Staff. But the collection of monies to prepay for plant must be addressed in a future case to avoid theoretical reserve inequities.

Q. To recap regulatory consistency, the **"traditional" whole life technique** is <u>not</u> consistent with definitions and rulings (orders), whereas the **"full recovery" whole life technique** is consistent with definitions and rulings (orders). Is this correct?

A. Yes, you are correct.

<u>Fair Treatment of Missouri Companies and Their Customers</u>

Q. What is Staff's objective in proposing the **"full recovery" whole life technique**?

A. Staff is interested in fair treatment of the Missouri PSC regulated companies and their customers. It is Staff's position that: Consistent and continued application of the **"full recovery" whole life technique** provides this fairness. Further, Staff is confident that ordering depreciation rates determined by using the **"traditional" whole life technique** will appear beneficial to companies during years that the collection of cost-of-removal monies from customers <u>exceeds</u> the actual cost-of-removal but will present problems for future company managers and future Commissions that will have to wrestle with the years past the "inflection point," years when the monies collected from customers are less than the actual cost-of-removal. This is unfair to both companies and customers.

Q. What arguments have companies put forth that they consider support the **"traditional" whole life technique**?

A. The principal argument, as presented by company lawyers is that Missouri and one or two other states stand alone in using the **"full recovery" whole life technique** of depreciation. They suggest that all other states and published professionals use the **"traditional" whole life technique**.

Q. Are these lawyers correct?

A. No. There are states that embrace other techniques. Also, the brief presented to the Circuit Court of Cole County that argues that "virtually every other state and federal utility regulatory body" uses the **"traditional" whole life technique.** No substantiation and/or confirmation from each state's regulatory body or any federal utility regulatory body was presented as verification of this broad statement. (Joint initial brief of Laclede Gas Company and Union Electric Company In the Circuit Court of Cole County State of Missouri – page 2 paragraph (c) and page 17, 4th bullet point.) (Ref: Schedule 7 to this direct testimony)

The NARUC text Public Utility Depreciation Practices (1996) at the very beginning of Chapter II, Estimating Salvage and Cost of Removal states the following:

> Historically, most regulatory commissions have required that both gross salvage and cost of removal be reflected in depreciation rates. The theory behind this requirement is that, since most physical plant placed in service will have some residual value at the time of its retirement, the original cost recovered through depreciation should be reduced by that amount. Closely associated with this reasoning is the accounting principle, that revenues be matched with costs and the regulatory principle that utility customers who benefit from the consumption of plant pay for the cost of that plant, no more, no less.

> The application of the latter principle also requires that the estimated cost of removal of plant be recovered over its life.
>
> Some commissions have abandoned the above procedure and moved to current-period accounting for gross salvage and/or cost of removal. In some jurisdictions gross salvage and cost of removal are accounted for as income and expense, respectively, when they are realized. Other jurisdictions consider only gross salvage in depreciation rates, with the cost of removal being expensed in the year incurred.
>
> Determining a reasonably accurate estimate of the average or future net salvage is not an easy task; estimates can be the subject of considerable discussion and controversy between regulators and utility personnel. [emphasis added]

This text was written before Missouri's PSC Staff moved to the **"full recovery" whole life technique** for depreciation determination; therefore, the Missouri PSC Staff did not influence the author's comments.

Q. If the Missouri PSC's Staff do stand alone in using the **"full recovery" whole life technique** for depreciation determination, would that imply **"full recovery" whole life technique** should not be used?

A. I do not believe so. It is my opinion that, if the rest of the crowd is doing the wrong thing, following the crowd is a mistake. Common business sense is that Missouri wants regulated companies to be financially sound both today and in the future. The actions today of Staff, the Commission and the companies will impact regulated companies' financial soundness in the future. Utilization of the **"full recovery" whole life technique** for depreciation determination is the "right thing to do," for all the reasons that have been previously discussed.

Adjustment Period

Q. When a company over-collects net salvage cost for some period of years and then is ordered "full recovery" whole life technique depreciation rates, how is the excess recovery addressed?

A. This situation has occurred recently and Staff have proposed adjustments in some cases and deferred adjustments in other cases. What characteristically occurs is that Staff determine appropriate "full recovery" whole life depreciation rates, then using these deprecation rates Staff determine a theoretical reserve balance. These theoretical analyses have determined that several PSC regulated companies have actual accrual balances that greatly exceed the theoretical accrual balance. To reduce, over a number of years, the actual accrual balance to the amount determined as the theoretical accrual balance, Staff frequently propose reducing current customer depreciation rates to a level that will "eat up" the excess dollars in the actual accrual balance. This "eating up" of excess dollars in the actual accrual balance results in the current cash flow from customer bills being less than the company would be currently receiving if, during the preceding years, the company had <u>not</u> been collecting excess future removal dollars. Although the cash flow during the years of excess collection gave each company's management more funds to use during those years, subsequent managers will have to operate on reduced funds to adjust for the "pay back" of the over-collection. Once the "pay backs" are completed the companies can go forward using "full recovery" whole life technique to set annual depreciation accruals and the cash received from customers for plant removal will equal or nearly equal the current cost of plant removal.

Power Plant Example

Q. Using the **"traditional" whole life technique**, what would be a normal depreciation determination of a large power plant?

A. Considering what has occurred with the sale of power plants over the last few years, the **"traditional" whole life technique** would require the power company to pay off the debt of building the plant while also paying customers for the estimated future value of the power plant on the date the power plant is sold.

Q. This seems unreasonable. Can you give an example of what a **"traditional" whole life technique** analysis would entail?

A. Yes. Consider a fictional power company, ABC Power (ABC) as a Missouri PSC-regulated company.

To simplify an analysis and explanation we will develop an example of one plant, call it River Power Plant (RPP). Consider that RPP was built in 2000 and will be retired in 2050.

A. A "traditionalist" would first say that the original cost of the RPP should be recovered over its Average Service Life. The "traditionalist" would determine the Average Service Life as a result of a Life Span study.

Q. What is a Life Span study?

A. In a Life Span study all of the plant, such as all plant at the RPP location, is retired on a specific calendar date, regardless of how new or old any piece of plant at RPP may be.

Q. How does this effect the "traditionalist" determination of depreciation?

A. The "traditionalist" will pick a retirement date for the RPP plant. For example, a "traditionalist" may pick January 1, 2050, as the retirement date for RPP. This then determines the date that power production at RPP will cease for ABC.

Q. So, in the eyes of the "traditionalist," on January 1, 2050, ABC would stop generating electricity at RPP. What would most likely occur at that time?

A. Based on events of the last few years, the plant would be sold to an Independent Power Producer (IPP). The IPP would refurbish RPP and sell power on the competitive market. (Ref: Schedule 8 to this direct testimony).

Q. What is the experience of power companies that have sold plants like RPP over the past few years?

A. Recent sales of power plants would cause the "traditionalist" to conclude Labadie would be sold for much more than its original cost. Experience would suggest that the "traditionalist" might conclude that RPP would be sold for two times its original cost.

Q. Is there another conclusion that the "traditionalist" might reach?

A. Not if the **"traditional" whole life technique** is followed. If the "traditionalist" were directed to increase the cash or revenue flow into ABC, he/she might suggest that ABC would dismantle and greenfield the RPP location in the year 2050 but this would not represent recent years' experience with large coal based power plants like RPP. This would be a failure to follow the **"traditional" whole life technique's** rules simply for the purpose of generating an increased cash flow.

Q. Returning to the **"traditional" whole life technique** example, how would your RPP example determine a depreciation rate that would result in ABC paying off debt and paying customers at the same time?

A. If RPP's sale price is two times original cost, 200%, then the "traditional" whole life calculation would be:

$$DR = \frac{100\% - 200\%}{ASL}$$

OR

$$DR = \frac{< 100\% >}{ASL}$$

(to simplify, we will assume the ASL is 50 years or the same as the Life Span)

This negative depreciation rate would result in ABC paying the customer each year for the use of the RPP prior to its sale in 2050.

Q. Is it common today to see companies like ABC submitting depreciation studies utilizing the **"traditional" whole life technique** that conclude that the power companies should be paying their customers for the use of the power plant until it is sold?

A. No. Actually, the companies like ABC are submitting studies that suggest that the **"traditional" whole life technique** is ignored when evaluating power plants. The recent experience of large coal based power plants selling at premiums over original cost is ignored in the studies utilizing the **"traditional" whole life technique**.

Q. If the "traditionalist" presented depreciation studies that reflect recent occurrences with the sale of large power plants, how would the actual cash events occur?

A. Consider Labadie at its beginning. Assume that ABC borrowed $500 million to build the power plant. Also assume that the company was able to borrow and pay back the $500 million over 50 years or $10 million cash must be paid to the bank each of the 50 years. The customers would owe nothing during the plant's 50 year life because ABC will collect this $500 million when the plant sells. Assume, as a "traditionalist" should, that at the end of the 50th year RPP is sold for $1 billion. In other words, the net salvage is 200% of the original cost. Because there is a $500 million gain on the sale the **"traditional" whole life technique** "says" that ABC would also owe the customers $10 million each of the 50 years. In this way, the customers will have received the $500 million of net salvage **gain** by the 50th year.

Q. Would you recap the cash flow?

A. Yes. ABC would borrow $500 million to build RPP and pay cash of $10 million each year to the bank. Then ABC would pay to the customers $10 million each year to cover the net salvage gain that the "traditionalist" expects will occur when RPP is sold for a net **gain**. Actually the $10 million to the customers would be a reduction to tariffed rates. The net effect to ABC would effectively be a $20 million cash outlay each year. In the 50th year, 2050, one half of the $1 billion sale price or $500 million would represent ABC's recoupment of the original cost of $500 million. Thus in year 2050 ABC would receive $500 million cash from the sale of RPP that would "replace" the $500 million paid to the bank over 50 years. (i.e. the original cost) The other one half of the $1 billion sale price would be the recoupment of the $500 million paid to customers over the 50 years.

Q. The **"traditional" whole life technique** would not allow ABC to recoup their original cost of RPP in tariffs throughout the life of RPP. How could ABC exist financially?

A. This exposes a flaw of the **"traditional" whole life technique**. To avoid the pit fall of the flaw, the depreciation "traditionalist" predicts the future, in these instances, to be other than what is occurring. It is my observation that, when a net salvage ratio calculates a large net salvage cost, the "traditionalist" uses the ratio because it generates an immediate excess cash flow for the company. When the "traditionalist's" net salvage ratio results in a large net salvage **gain**, as in the RPP example, the "traditionalist" ignores the recent events and proposes an estimated future that will also generate an immediate excess cash flow for the company. I believe companies may not be financially sound when **"traditional" whole life technique** is utilized in RPP type cases.

Q. Is it your suggestion that if ABC presents a depreciation study on RPP that ABC will suggest a retirement date with an associated removal cost rather than a sale of the RPP plant to an IPP?

A. That is what I believe would happen.

Q. How can this situation be avoided?

A. Using the **"full recovery" whole life technique** ABC would recover the original cost of the RPP through tariffs throughout the 50 years. In this way ABC would have cash flow from tariffed rates to pay off a loan from the bank. Then in 2050 when the plant is sold for $1 billion the customers will be paid this amount in reduced tariffs over same future years. The customers would then get the full $1 billion because they have already paid ABC for the original-cost of RPP, if the sale is booked above the line. Again the customers net $500 million as in the **"traditional" whole life technique**, but the timing of the cash available to ABC to pay debt and later to pay customers is in a sequence allowing ABC the needed cash flow to avoid financial stress.

Q. Can you recap how the cash would flow when depreciation is determined by the **"traditional" whole life technique** versus depreciation determined by the **"full recovery" whole life technique**?

A. With the "traditional" technique when the plant is first purchased, money is borrowed for the purchase. Then the company will pay the loan off with cash from tariffed rates. But customer tariffed rates will be less than before the plant was purchased because of the future expectation of a large gain on the sale of the plant in 2050. The "traditional" technique uses current ratios to estimate what the "traditionalist" predicts will occur decades in the future. Since current ratios will determine that the plant can be sold for a net salvage **gain** decades in the future, the company will be required to "pay" customers over the useful life of the plant the amount that the **gain** exceeds the original cost of the plant. The "payment" to the customers will actually be reduced tariffs. At the same time customers pay nothing for the plant's original cost because the company will get that cash when the plant is sold. The **"traditional" whole life technique** requires the company to make cash outlays over the life of the plant with the expectation that when the plant is retired and sold decades later, the company will then collect the cash to cover all the payments paid out in cash to banks and customers over the life of the plant.

Conversely, the **"full recovery" whole life technique** will allow the company to collect from customers the original cost of the plant over the life of the plant. This may not exactly parallel debt payments but the company would see cash coming in as soon as the plant is active. At the end of the plant's life, retirement, the customers will have paid to the company the full cost of the plant. Then after retirement and when the sale price of the plant is **known**, the customers would be "paid" 100% of the **gain**, booked above the line, that the company collected from the sale. Again, the "paid" would be paid to the customers through reduced customer tariffs over some number of future years.

The "full recovery" technique allows the company to have positive cash flow during the useful life of the plant. The "traditional" technique requires the company to pull cash from other sources to pay bank debt and customers the estimated gain prior to the retirement and sale of the plant. A true application of the "traditional" technique does not allow the regulated company to have a reasonable cash flow because of the **estimation of the future** that is based on current sale prices of coal-based power plants. If the actual future is not as the "traditionalist" predicts, significant financial damage can be brought upon the company.

The "full recovery" technique allows full cash recovery of power plant's cost over the life of the power plant and if a sale of the power plant after retirement is a small gain or even negative, the cash paid to customers or paid by customers to the company is determined **when the amount is known** and the cash flow either to or from customers can be handled financially by the company.

Q. Can you recap the situation that the **"traditional" whole life technique** presents?

A. Yes. Lets observe three net salvage scenarios in a progressive manner. The third will be the same as my ABC/ RPP example.

Scenario #1, assume that net salvage (NS) is zero.

Then

$$DR = \frac{100\% - 0\%}{ASL} = \frac{100\%}{ASL}$$

In this scenario the Company will collect the cost of the plant from the customers over the life of the plant in depreciation accruals. (i.e. The Gross-Salvage equals the Cost-of-Removal when the plant is retired.)

Scenario #2, The plant sells for exactly its original-cost.

Then

$$DR = \frac{100\% - 100\%}{ASL} = \frac{0\%}{ASL}$$

In this scenario the Company will collect nothing from customers because ABC will collect the "original-cost of the plant" when the plant is sold. (i.e. the 100% NS)

Scenario #3. (our ABC/RPP example) The plant sells for twice the original cost.

Then

$$DR = \frac{100\% - 200\%}{ASL} = \frac{<100\%>}{ASL}$$

In this scenario the Company pays the customers each year for the gain that will be recognized when the plant is sold. In our example ABC pays customers $10 million each year. The company must also pay off any assumed debt over the life of the plant and will recapture this when the plant is sold. In our example, ABC also pays $10 million each year to pay off debt incurred to build RPP.

Financial Accounting Standards Board Statement No. 143

Q. A new Statement, Statement No. 143, has been released by the Financial Accounting Standards Board (FASB). Statement No. 143 addresses "Accounting" for Asset Retirement Obligations. Does this statement present an argument in favor of using the **"traditional" whole life technique** to determine depreciation rates?

A. It can be expected that the same companies and company consultants that have argued for use of the **"traditional" whole life technique** will argue that Statement No. 143 supports their position but it does not.

"The Statement addresses financial accounting and reporting for obligations associated with the retirement of tangible long-lived assets and the associated asset retirement costs."[12]

"This Statement requires that the fair value of a liability for an asset retirement obligation be recognized in the period in which it is incurred <u>if a reasonable estimate of fair value can be made</u>" [13]

Staff have proven with the St. Joseph Light & Power Company example and it is common knowledge that reasonable estimates of cost 20, 30 40 and more years in the future <u>cannot</u> be made.

Furthermore, the word obligation is prominent in Statement No. 143. Obligation is defined as: "the binding power of a promise, contract, sense of duty, etc. The state of being bound to do something, a debt."[14] This would suggest that if companies do not have contracts to remove plant they do not have a debt until the plant is removed and an invoice is received for the removal work. Some plant is retired in place and never removed. Some plant is retired and removal is conducted much later. Some plant is removed piece meal utilizing employees that are not busy on their normal jobs.

FASB's Statement No. 143 does not change the responsibility that today's Staff, Commission and regulated companies' management have to customers now and in the future.

Instant gratification by using risky depreciation techniques can lead to situations equal to the GTE multiple collections potential. Certainly, GTE was instantly gratified by receiving

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[12] FASB Summary of Statement No. 143 attached. Schedule 9.
[13] Id: emphasis added.
[14] Webster's New World Dictionary of American English, third edition, copyright 1988 by Simon & Schuster, Inc.

more dollars for removal of plant than the company was spending but that instant gratification will not support a strong and vibrant Missouri regulated company. Customers will potentially have to pay additional dollars to a new owner of the GTE plant, to have a strong and vibrant Missouri regulated company now and in the future.

Statement No. 143 can only be useful for short-lived plant such as cars where an estimate of future gross salvage and cost of removal can be made by looking a few years into the future. The summary of Statement No. 143 states, "...if a reasonable estimate of fair value can be made." This is exactly what the **"full-recovery" whole life technique** does. It looks at current removal cost and makes a <u>reasonable</u> estimate of fair value on a current annual basis. This avoids risk to customers and potential buyers of Missouri regulated companies while giving the currently regulated Missouri companies full-recovery of their removal cost. This is fair to all parties concerned, now and in the future.

<u>A Final True Example</u>

Q. Can you give an example of the circumstances that can occur when future commitments are made and recorded but no cash provisions are set up?

A. Yes. Over the past 30, 40, and 50 years the U.S. steel companies estimated that they could and would pay each of their retired workers a pension after their retirement dates. These future pensions were recorded and committed to by the steel companies but, while the workers were employed and the steel companies were profitable, no cash was actually set aside to be the source of the pension payments. Each steel company booked a future liability but did not set aside a cash fund to pay the retired steel workers.

Q. What is occurring with this situation today?

A. The steel industry is in economic distress. Many steel companies have filed bankruptcy petitions. As a group, the large steel companies are now asking the Federal Government for a $10 billion bailout for retirement pension commitments made by steel companies' management decades ago. In other words, the taxpayers of America are being asked to pay $10 billion that the management of the steel companies failed to provide.

Q. What do you believe caused this situation?

A. It is, in my opinion, a situation like the "traditionalist" technique used by some depreciation consultants. During the 1940s, 50s, etc., the actions of managers of the steel companies indicate that they thought the American steel industry would stay strong and highly profitable in the future. This has turned out to not be a true estimate of the future. If the steel industry had remained highly profitable, the steel companies could have paid pensions out of current profits. As an alternative, the management of the steel companies could have set up cash funds during their profitable years decades ago. These cash funds would be available today to pay pensions and the American taxpayer would not be asked to pay the pension amounts again. The pensions were effectively paid in steel prices decades ago but the money was used for <u>other</u> purposes and now steel companies' management wants to have American consumers (i.e., tax-payers) pay the retirement pension monies a second time. (Ref: Schedule 10 to this direct testimony)

Q. This sounds like the pitfall of the **"traditional" whole life technique**. Do you agree?

A. It is. Payments made to Missouri PSC regulated companies for **estimates** of **future** events that may or may not occur can result in a micro event decades in the future similar to the current steel industry situation. Failure to set aside the cash collected for future removal cost can result in rate payers being asked to pay a second time when it is realized that the regulated companies do not have the cash available to pay the estimated future removal cost when the future becomes the current.

Q. Is there a solution?

A. Yes. Cash that is projected for future purposes but collected today can be set-aside in secure funds to ensure that the cash is available for the designated purpose. Staff's preferred alternative is to use **"full recovery" whole life technique**. By using "full recovery" technique, cash is collected from customers through tariffed rates when costs are **known** and current.

Citizens' Records and Data

Q. Does Citizens maintain records consistent with Missouri PSC regulations, specifically 4 CSR 240-20?

A. Not to my understanding of the rule versus my understanding of the Company's records.

Q. What is your understanding of the rule versus the Citizens' records that causes you to believe the Company is not meeting the guidelines of the rule?

A. In 4 CSR 240 20.030.3(M) the Company is required to "keep mortality records of property and property retirements as will reflect the average life of property which has been retired and will aid in estimating probable service life by actuarial analysis of annual additions and aged retirements when implementing the provisions of Part 101 (Electric Uniform System of Accounts as Identified in the Code of Federal Regulations) Income Accounts 403.3 and paragraph 15, 404.403.B." The key part of this requirement is that data is to be kept that allows "actuarial analysis." Actuarial analysis requires placement and retirement dates or annual plant balances of specific plant. Normally, because of FASB accounting rules, the CSR rule is relaxed to permit first in first out (FIFO) accounting records for mass property accounts. FIFO slightly lengthens actuarial life, yet is acceptable when considering the cost of record keeping to have actuarial data available.

Citizens utilizes an average cost of all plant when booking retirements. Instead of keeping average cost for each vintage of plant (average cost for the year of placement), Citizens keeps an average cost of all plant, all vintages averaged. This value is used when a unit of plant is retired. Records of this type cannot be used to determine a reasonable **Average Service Life** that would yield an actuarial life determination. This type of data would tend to shorten life, possibly dramatically, in long-lived accounts.

Because of the difference between the rule and Citizens' records it is my position that Citizens' is not meeting the rule.

Q. Are there other regulations that Citizens is expected to conform to?

A. Yes. As a RUS (Rural Utility Service) borrower, Citizens' is expected to conform to REA (Rural Electric Association) Bulletin 183-1. [15]

Q. Are there specific parts of Bulletin 183-1 that apply to depreciation?

A. I do.

Q. What statements in Bulletin 183-1 do you believe apply?

A. In section I. General: it is stated, "Ranges of (depreciation) rates are prescribed for distribution plant and recommended for general plant. A method is furnished for borrowers to appraise their reserve ratio for distribution plant." The same section concludes

[15] The Rural Electric Association (REA) is the predecessor of the Rural Utility Service (RUS) yet some old bulletins retain the REA terminology. Consider them interchangeable as used in this testimony.

with: "...no deviations are to be made...except where other (depreciation) rates or procedures are required by a regulatory agency having jurisdiction over the borrower. Borrowers under Commission jurisdiction should inform REA (RUS) of depreciation rates prescribed by the Commission."

Q. Do you believe the RUS (REA) rules yield authority to the Missouri PSC for keeping depreciation data?

A. Yes.

Q. How does Citizens method of record keeping for retirements prevent reasonable determination of Average Service Lives?

A. Citizens records plant when it is placed in service, by adding the cost of that new plant to the total plant balance (account by account). When a retirement is made the "total plant balance" is divided by the number of units of plant to determine an average cost per unit of plant. This average cost per unit of plant is subtracted from the total plant balance when any unit of plant is retired.

Let me give an example. If there were ten units of plant in an account with one unit from each vintage with original cost as follows; 1980-$10, 1981-$12, 1982-$14, 1983-$16, 1984-$18, 1985-$20, 1986-$22, 1987-$24, 1988-$26, 1989-$28, the total plant balance would be $190. When a retirement was made, regardless of vintage, $19 ($190 / 10 units) would be subtracted from the total plant balance. This is conceptually retiring 1/10 of each vintage's plant when a specific vintage of plant is retired. The use of this type of record results in lives being determined that are shorter than actuarial lives. By using "average unit cost" each retirement is proportioned to each vintage when a unit is retired. If records were kept using "average unit cost" for retirement, no vintage would <u>ever</u> fully retire. There would always be some portion of each vintage on the books. This is effectively what Citizens has done. Citizens does not keep vintage records and there is no reasonable way to determine Company specific Average Service Lives from the Citizens' data.

Q. How would FIFO accounting handle retirement in your example?

A. FIFO accounting retires from the books the oldest vintage of plant whenever any vintage of plant is actually retired. In my example, the 1980 unit, being the oldest unit on the books, would be retired and removed from the books first. There would be a $10 retirement or subtraction from plant balance. This would totally eliminate the 1980 plant on the books. When another unit of plant is retired, regardless of actual vintage, the 1981 unit of plant would be removed from the books. A $12 retirement or subtraction would be made to plant balance and there would no longer be any 1981 plant in service per the books.

This process of always subtracting the oldest plant from the books at its vintage cost tends to lengthen ASL but actual or actuarial events tend to observe that the oldest plant normally retires before newer plant. FIFO is a reasonable way to handle mass property accounts when booking retirements that will ultimately be used to determine ASL. FIFO is also consistent with FASB accounting rules.

Q. In the absence of actuarial or FIFO data to develop mortality records, what is your alternative choice to determine ASL's for Citizens' plant?

A. My alternative is to use analogy to other Missouri PSC regulated plant.

Q. What companies do you consider as analogous?

A. The two electric companies that are the smallest regulated companies, other than Citizens, are St. Joseph Light & Power Company and Empire District Electric Company

(Empire). I consider these two companies' plant to be the best analogies for Citizens' plant life.

Q. Can you explain why these two companies may be better analogies than, say Kansas City Power & Light Company (KCP&L), or AmerenUE?

A. Although St. Joseph Light & Power Company and Empire are not as small as Citizens' both are considerably smaller than KCP&L or AmerenUE. The management philosophy regarding plant installation, type of plant installed, size of plant installed, and plant retirement for St. Joseph Light & Power and Empire are expected to be more similar to Citizens' Electric than the much larger companies.

Citizens neither owns or operates generation plant as St. Joseph Light & Power Company and Empire do but the analogy is made on an account by account basis considering only plant that Citizens, as a non-generator, would use.

Q. Would you include any other information in your decision making process?

A. Yes. Meetings are held with key employees and plant tours are made. By holding these meetings and making plant tours with operations personnel and plant engineers, it is possible to make engineering judgment decisions about the similarity of the analyzed company's plant to similar plant that belongs to other companies. Based on the similarity or dissimilarity of plant, Staff depreciation engineers can determine if the ASL of a specific company, such as Citizens' Electric, should be shorter than, about the same, or longer than an ASL determined from actuarial or FIFO data of another Missouri PSC-regulated company.

Q. Did you utilize analogy of similar plant, account by account with St. Joseph Light & Power Company's and Empire's plant?

A. Yes. That is the basis of my depreciation rate determinations in this case. Plus, engineering judgment based on information gathered from Citizens during meetings and plant tours with operations personnel is used.

Q. Are your proposed depreciation rates developed utilizing **"full recovery" whole life technique**?

A. Yes. Staff's proposed depreciation rates are developed to recover the original cost of plant over the Average Service Life of the plant. The associated cost of removal will be netted against any gross salvage and included with other operating expenses determined by Staff auditors.

Q. How did Staff determine Citizens' **revenue requirement** for recovery of capital plant cost and removal of capital plant cost?

A. Staff multiplied the depreciation rate for each account times the plant balance for each respective account, this yielded the annual accrual for depreciation. Added to the annual accrual for depreciation was the cost of removal that was determined by Staff auditors. The sum of these two values was used to determine the **revenue requirement**.

Q. Are there any exceptions to this method of determining **revenue requirement** for recovery of capital plant cost and removal of capital plant cost?

A. Yes, there are infrequent retirements of life span plant. Life Span plant are facilities that include many units of plant which are all retired at the same time regardless of the age of any specific unit. These are normally large retirement and removal projects such as the retirement and removal of a major building, power plant facilities, etc. If one of these retirements occurs, Staff depreciation engineers will work with Company engineers to determine the appropriate cost-of-removal associated with the Life Span plant's final retirement. Normally, Staff would propose an amortization of the removal cost associated with the final retirement. This amortization would be included in the Citizens' **revenue requirement** determination along with and in addition to the previously discussed **revenue requirement** determination.

Q. Are there any of these Life Span final retirements under way or planned by Citizens' Electric?

A. No.

Q. What does Staff's proposal include in this case?

A. Staff's proposal for depreciation rates includes **"full recovery" whole life technique** depreciation rates determined by analogy. These rates, presented in Schedule 11, are designed to recover Citizens' original cost of plant over the plant's ASLs. Additionally, Staff auditors will present a net salvage cost included with other annual expenses. Citizens' net salvage cost will be the net of: 1) current cost of removal minus, 2) current gross salvage. Staff auditors will address this as an expense item.

Q. What is your request of the Commission?

A. It is my request that the Commission Order the depreciation rates and ASL's given in Schedule 11 of this testimony.

Q. Does this conclude your direct testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In The Matter Of The Application Of Citizens' Electric Corporation For Approval Of Interim Rates, Subject To Refund, And For A Permanent Rate Increase.	))))	Case No. ER-2002-217

AFFIDAVIT OF PAUL W. ADAM

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

Paul W. Adam, being of lawful age, on his oath states: that he has participated in the preparation of the foregoing Direct Testimony in question and answer form, consisting of 107 pages to be presented in the above case; that the answers in the foregoing Direct Testimony were given by his; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.

Paul W. Adam

Subscribed and sworn to before me this 26th day of April 2002.

NET SALVAGE COST INFORMATION
LACLEDE GAS COMPANY GR-2002-629

ACCOUNT	STEEL MAINS	PLASTIC & COPPER MAINS	STEEL SERVICES	PLASTIC & COPPER SERVICES
Plant Balances 9/30/00 ($)	187,878,444	134,567,507	38,350,760	262,733,495
Traditional Net Salvage	(0.0052)	(0.0066)	(0.0244)	(0.0211)
Laclede Proposed Negative Net Salvage ($)	(976,968)	(888,146)	(935,759)	(5,543,677)
Laclede Actual 2000 Negative Net Salvage ($)	(153,599)	(7,115)	(665,041)	(3,005,223)
The Amount that Laclede would collect in excess of actual Negative Net Salvage ($)	823,368	881,031	270,718	2,538,454
Total for the 4 Laclede accounts ($)				**4,513,572**

Copied 11/13/01

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration

October 28, 1977

REVISION OF REA BULLETIN 183-1

Attached is revised REA Bulletin 183-1, Depreciation Rates and Procedures.

Depreciation rates and procedures prescribed in this bulletin are effective January 1, 1978. However, borrowers wishing to make the changes retroactive to January 1, 1977, may do so. Borrowers may continue to use those rates which REA has approved on the basis of special studies.

A recent review of current industry depreciation rates and practices indicates REA's prescribed rates for generation and transmission and the ranges of rates for distribution plant are generally in agreement with current industry data. The review did indicate an upward trend in certain prescribed rates which have been reflected in the new rates as follows:

1. The prescribed rate for steam production plant is changed from 2.82 percent to 3.10 percent.

2. The prescribed rate for transmission lines is changed from 2.60 percent to 2.75 percent. If communication equipment is not "significant" (see page 14) borrowers may now use a composite rate of 2.75 percent for all transmission plant.

3. The prescribed range of rates for Account 364, Poles, Towers and Fixtures is changed from a range of 3.0 to 3.5 percent to a range of 3.0 to 4.0 percent.

The revised bulletin requires that the accumulated provision for depreciation of distribution plant be analyzed on at least an annual basis. The only other major change in the bulletin is the clarification (page 14, B) of the handling of depreciation rates for nuclear production plant.

To eliminate some apparent confusion, the following points concerning this bulletin are emphasized.

1. REA will not object to the use of the "unit method" of depreciation for "General Plant," where the board of directors approve of this procedure as being necessary to meet their management needs.

2. The use of REA approved rates for general plant has not been necessary since the 1969 revision of Bulletin 183-1. We recommend that borrowers use the range of rates for general plant provided in the bulletin. However, a rate based upon the experience of the cooperative, representing the estimated service life and salvage is satisfactory.

Attachment

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration

October 28, 1977
Supersedes 11/3/69

REA BULLETIN 183-1

SUBJECT: Depreciation Rates and Procedures

I. General: This bulletin is issued to aid borrowers in their accounting for depreciation. Specific rates are prescribed for production and transmission plant. Ranges of rates are prescribed for distribution plant and recommended for general plant. A method is furnished for borrowers to appraise their reserve ratio for distribution plant. Borrowers may continue to use rates which have received specific REA approval since January 1, 1967. Otherwise, no deviations are to be made from these depreciation procedures and prescribed rates without specific approval of REA except where other rates or procedures are required by a regulatory agency having jurisdiction over the borrower. Borrowers under commission jurisdiction should inform REA of depreciation rates prescribed by the Commission.

II. Depreciation Defined: Depreciation is defined in the REA Uniform System of Accounts as "the loss in service value of depreciable plant not restored by current maintenance resulting from causes against which no insurance is carried, such as wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities."

III. Objectives of Depreciation Accounting:

A. The objective of depreciation accounting is to charge to expense the capital investment in certain fixed assets, less salvage at time of retirement, over their useful lives. Thus it may be said that the cost of capital investments in plant is recovered by means of proper depreciation accounting. The useful life of such assets is dependent upon such factors as use, misuse, maintenance and obsolescence. The charge to expense is accomplished by establishing depreciation rates as a percentage. This percentage is applied to the asset cost to yield a monthly or annual amount of depreciation expense.

B. Depreciation accounting provides for the systematic, periodic writedown or allocation of the cost of a limited-life asset or asset group. The established rate of depreciation should recognize useful life and recovery values. Depreciation is not intended to provide funds for replacement, nor is it to be legitimately considered as a means to make a desirable showing on the revenue and expense statement.

IV. Methods of Depreciation:

A. REA recommends the straight-line method of computing depreciation for use by its borrowers to provide uniform accounting and reporting practices. The REA Uniform System of Accounts defines straight-line depreciation as "a method for periodically computing the expense represented by loss in service value of depreciable plant, under which the objective is to prorate such loss in equal installments over the estimated or remaining estimated service life."

B. The REA Uniform System of Accounts, in conformity with the practice of electric and other utility industries, provides for the use of composite rates for each class of property including general plant. This is commonly referred to as "group method depreciation." Although the use of the unit method of computing depreciation is not consistent with general utility practices nor recognized in the Uniform System of Accounts Prescribed for Electric Borrowers of the Rural Electrification Administration (REA Bulletin 181-1), REA will not object to this method of computing depreciation for general plant where boards of directors approve this procedure as being necessary to meet their management needs.

C. The group method differs from the unit depreciation method in that a number of units of property are grouped for depreciation accounting purposes; depreciation is computed for the whole group. The units may be grouped by primary accounts or by functions, the essential requirement being that the property included in each group have some homogeneity. Under the group method, when retirement of a depreciable unit of plant occurs, the cost of the unit less net salvage is charged to the appropriate accumulated provision for depreciation account. No recognition is given to so-called gain or loss until all the units included in the particular group are abandoned.

V. Depreciation Guideline Curves - Distribution Plant: The ratio of the accumulated provision for depreciation to gross plant in service (reserve ratio), has been widely recognized as an important measure of the propriety of depreciation rates and practices. Guideline curves are supplied in Section V.C. for use as a screening tool to determine whether a borrower's reserve ratio is consistent with normal experience. Using the procedure outlined in V.C. below, the cooperative should, on an annual basis, prepare an analysis of the adequacy of its accumulated provision for depreciation of distribution plant. This analysis should be maintained in the cooperative files and be made available for review by REA field personnel.

A. Underlying Theory:

1. Electric distribution plant is an example of a "continuous class" of property, consisting of many individual units of property, each of which is replaced when it reaches the end of its useful life. For such a "continuous class" of property, and with proper depreciation accounting, the reserve ratio for a particular company will be determined by the following factors:

a. Its history of growth.

b. Its age.

c. Its experience with respect to retirements and replacements. This involves not only the average useful life of the plant, but also the dispersion in the average useful life of the individual plant items.

d. Its experience with net salvage.

e. Its rate of depreciation.

2. The depreciation guideline curves are a simplified application of this underlying theory. The factor of growth is taken into account by the horizontal scale at the bottom of the chart which is a ratio comparing the present plant with plant ten years ago. The factor of age is taken into account by the fact that the curve is recommended for use only by borrowers with an elapsed age since energization of at least 20 years. The factors of experience with replacements and salvage are taken into account by the provision of a range between maximum and minimum

which encompasses the range in average life and in patterns of replacement dispersion which is most commonly experienced by REA borrowers. These ranges were determined by reference to industry experience, both public and private, and through simulated plant-record analyses made of a number of REA borrowers. The applicability of the basic factors of growth, age, and history of retirements to REA distribution borrowers' reserve ratios has been confirmed by statistical analysis, and it has been determined that the experience of most distribution borrowers which have followed good depreciation accounting practices will place their reserve ratio within the "normal" area between the maximum curve and the minimum curve.

3. It will be noted that there is a considerable spread between the maximum and the minimum guideline curves. It is significant that conditions which may result in fairly high reserve ratios for certain borrowers at the present time should lead to lower reserve ratios as these borrowers become older. It is more likely, therefore, that in later years the maximum curve may be lowered.

B. Application of Depreciation Guideline Curves:

1. Depreciation guideline curves can be used very easily by the borrower. Following the detailed procedure for use of the guideline curves (Section V C), the reserve ratio and rate of growth of distribution plant in service are determined for the latest ten year period. Reference to the depreciation guideline curves will immediately indicate whether the borrower's reserve ratio lies between the maximum and minimum curves for plant growing at such a rate.

2. If a borrower is above the maximum, or below the minimum, this is an indication of an unusual condition which warrants a more detailed study. Such a study may indicate need for correction in accounting procedures or a change in depreciation rates or both. In some instances, detailed study may reveal exceptional conditions which justify the unusually high or low reserve ratio.

3. It is also important to consider the change in the reserve ratio during the last several years, and the future reserve ratio as predicted in a long range financial projection. If the reserve ratio is below the minimum curve, but increasing, and if the financial projection indicates that it will soon reach the minimum curve, no corrective action may be required, though subsequent progress should be watched to see that it corresponds to the estimates.

4. Similarly, if the reserve ratio falls between the maximum and minimum guide curves, but the financial projection indicates that the reserve ratio is expected to increase within a few years to a point well above the maximum curve, a special study of the depreciation practices should be made to determine whether there is a need for corrective action.

C. Procedure for Use of the Depreciation Guideline Curves:

1. The chart which follows, shows depreciation guideline curves with suggested levels of depreciation reserve ratios at various growth rates. The solid curves indicate the upper and lower limits of normal reserve ratios for distribution plant. The curve shown by dashes indicates the optimum level of reserve ratios which might be expected in the case of a typical distribution borrower.

2. To check the accumulated provision for depreciation of distribution plant against the depreciation guideline curves, four steps are necessary:

   a. Determine whether the elapsed age since energization is at least 20 years. If it is less than 20 years, the guideline curves are not applicable.

   b. Determine the current reserve ratio by dividing the accumulated provision for depreciation on distribution plant by the distribution plant in service. Typical figures might be $855,220 divided by $2,861,150, which gives a reserve ratio of 29.9%.

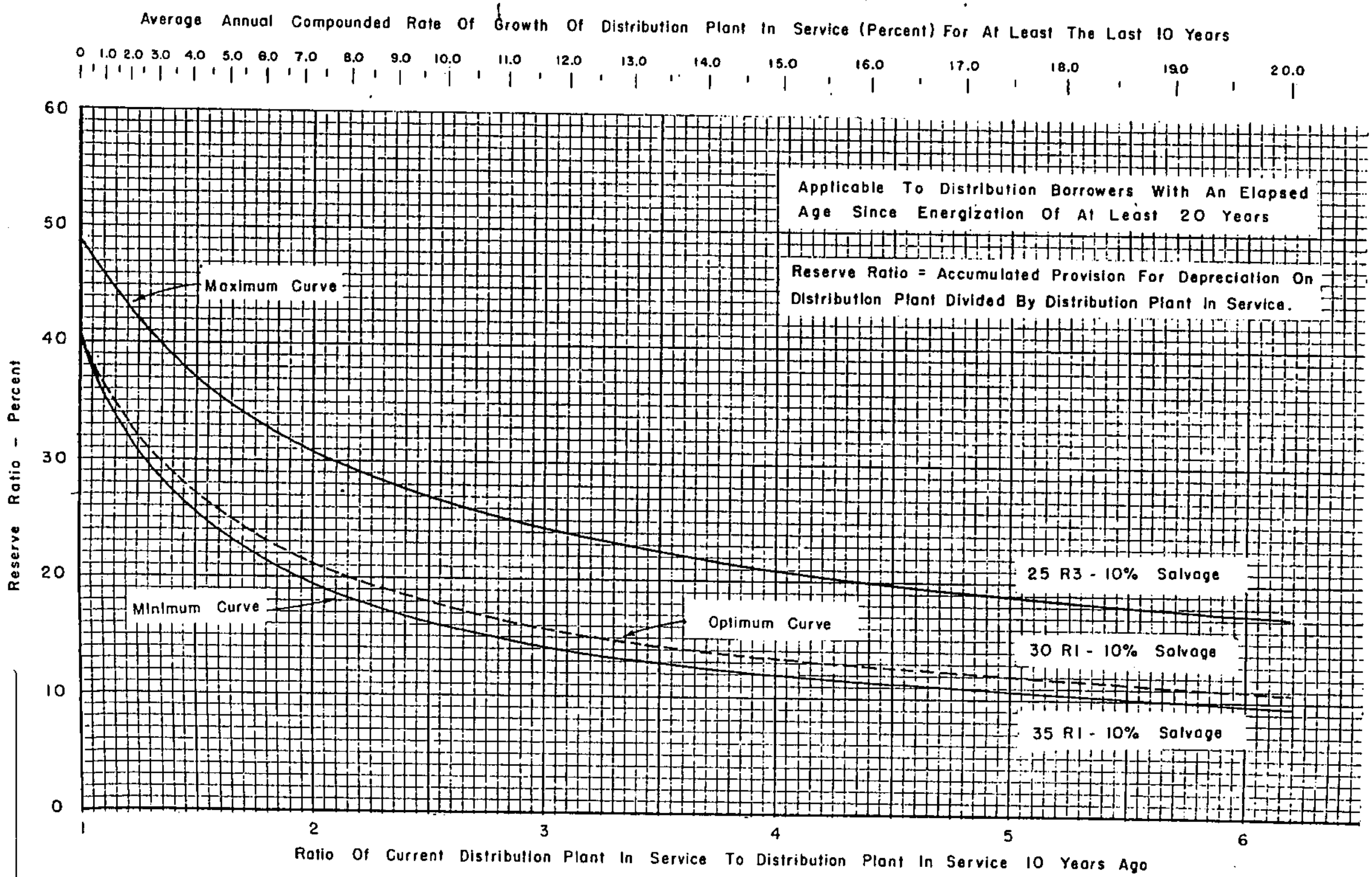
   c. Determine the ratio of current distribution plant in service to distribution plant in service ten years before. To do this, divide the current distribution plant in service by the distribution plant in service ten years earlier. Typical figures might be $2,861,150 divided by $1,540,350, which gives a ratio of 1.86.

d. Refer to the depreciation guideline curves. For a ratio of current distribution plant in service to distribution plant 10 years ago of 1.86, the maximum curve is about 32% and the minimum curve is about 21%. The example of 29.9%, in paragraph 2 above, lies within this range.

3. It may be desirable to use the depreciation guideline curve with a growth period of more than 10 years. In that case, it will be necessary to use compound interest tables to obtain the average annual compounded rate of growth of distribution plant in service for the particular number of years involved. Then the horizontal scale at the top of the chart will be used.

4. References: For general information on depreciation of a "continuous class" of property, see Report of the Committee on Depreciation, 1960, National Association of Railroad and Utilities Commissioners. For information on the "Iowa Curves" of plant mortality dispersion, which were used in the development of the REA depreciation guideline curve, see Statistical Analysis of Industrial Property Retirements by Robley Winfrey, Iowa Engineering Experiment Station, Bulletin No. 125, 1935, and Depreciation of Group Properties by Robley Winfrey, Iowa Engineering Station, Bulletin No. 155, 1942. For information on the simulated plant-record and other methods of life analysis, see Methods of Estimating Utility Plant Life, Publication 51-23, Published 1952, Edison Electric Institute. A more extensive bibliography can be obtained from REA on request.

DEPRECIATION GUIDELINE CURVES



VI. Prescribed Depreciation Rates for Distribution Plant: The table below (paragraph C) sets forth the range of depreciation rates for distribution plant. Within this range each borrower should select the rate, or rates, which in its judgment would be most suitable in measuring expiration of the service life of its depreciable plant on a straight-line basis. Such judgment is essential since depreciation rates cannot be determined precisely through application of exact formulas.

A. Calculation of Composite Depreciation Rates for Groups: The primary plant accounts required by the REA Uniform System of Accounts represent groupings of plant units which are suitable for depreciation accounting purposes. Although not all units in a given account have identical characteristics or similar service lives, it is possible to calculate a composite rate for each primary account and, in turn, by utilizing the rates for each primary account, to arrive at a composite rate for a functional group, such as distribution property. The rate for a primary account is computed by first determining a rate for each group of similar materials within an account; secondly, the cost of each group of similar materials is multiplied by the rate selected for that group; and finally, the products of these multiplications are totaled and divided by the balance in the primary account. This same procedure is followed in determining the composite rate for the functional group; that is, the balances in the respective primary accounts are multiplied by the individual rates selected for the various accounts and the products added to arrive at a total which, divided by the aggregate cost of the depreciable plant accounts involved, produces a composite rate for the functional group.

B. Selection of Appropriate Rates Within Range:

1. Review Composition of Each Account: Rates for individual accounts, within the ranges set forth in Section VI.C. below, are to be used in calculating composite rates for functional plant groups. In selecting the rates for individual accounts, plant accounts should be reviewed to determine the composition of each. (For example, in Account 364, Poles, Towers and Fixtures, the types and relative proportions of poles, crossarms, and anchor-guys should be ascertained.) Estimates should be made as to the expected life, removal costs and material

to be salvaged for the various types of material comprising the property in each account. These data will form a basis for judgment as to the rate of depreciation within the recommended range to be applied to each account in computing the composite rate for the functional group.

2. Consider External Factors: Differences in geographical location, climate, operating practices, maintenance policy, load conditions and similar factors may justify differences in depreciation rates since any of these variables may affect or limit the service life of distribution plant.

   a. Factors and conditions contributing to the use of the upper range of the rate for poles would be (1) growing conditions favorable for decay, fungi (and vegetation in general) such as in southeastern states with high average humidity and rainfall, or where irrigation and crop fertilization are widely practiced and (2) large numbers of substandard poles such as were produced in 1946 through 1948.

   b. Factors and conditions contributing to the use of the lower range of the rate for poles are growing conditions that are slow or poor; for example, in dry and unirrigated areas, in northern states and at higher altitudes.

3. Select Rate for Each Account Within the Range: It is recommended that borrowers whose systems are operated under normal conditions select a rate for each account which is near the middle of the range. For systems operating under extreme conditions, such as prevail in coastal or sleet areas, or in extremely arid localities, the rate should be selected from near the top or bottom of the range as appropriate. However, in no case should the low end nor the high end of the range be selected unless extraordinary conditions exist which lead to long or to exceptionally short service life.

   Illustrations of rate computations and accounting procedures to be followed by borrowers are included in the Appendix.

4. Review Prior Practices:

Consideration should be given to adjusting rates to compensate for the under or over accumulation of the provisions for depreciation resulting from inadequate accounting practices, procedures or improper rates. The guideline curves discussed in Section V above provide a basis for evaluating the need for changes in depreciation rates for distribution plant.

For instance, when it is determined that the accumulated provision for depreciation is excessive because high depreciation rates have been used, or incorrect accounting has been followed, corrective action should be taken. Accounting procedures should be checked and, if necessary, corrected. It may be necessary to reduce the depreciation rate. The reduction should be sufficient to bring the reserve ratio into line with the depreciation guideline curves on a gradual basis over a number of years.

C. Range of Rates - Distribution Plant:

Acct. No.	Account	Annual Depreciation Rate
361	Structures and Improvements	See Account 390
362	Station Equipment	2.7 - 3.2%*
364	Poles, Towers, and Fixtures	3.0 - 4.0%
365	Overhead Conductor and Devices	2.3 - 2.8%
366	Underground Conduit	1.8 - 2.3%
367	Underground Conductor and Devices	2.4 - 2.9%
368	Line Transformers	2.6 - 3.1%
369	Services	3.1 - 3.6%
370	Meters	2.9 - 3.4%
371	Installation on Consumers' Premises	3.9 - 4.4%
372	Leased Property on Consumers' Premises	3.6 - 4.1%
373	Street Lighting and Signal Systems	3.8 - 4.3%

* Power type borrowers should use 2.88% for distribution station equipment.

Requests for REA approval to use rates below or above the composite rate computed by using the ranges recommended must be supported by a clear statement of the factors and conditions which justify such rates.

VII. Recommended Depreciation Rates for General Plant: The table below sets forth the range of recommended depreciation rates for general plant.

General plant is subdivided into six functional groups for depreciation purposes. Separate decimal subaccounts of the accumulated provision for depreciation of general plant should be maintained for each group. The six groups and the ranges of rates are:

Functional Group	Annual Depreciation Rates
Structures and Improvements	2.0 - 3.0%
Office Furniture and Equipment	5.0 - 7.0%*
Transportation Equipment	14.0 - 17.0%
Power Operated Equipment	11.0 - 16.0%
Communications Equipment	5.0 - 8.0%
Other General Plant	3.6 - 6.0%

A. Account 390, Structures and Improvements:

A composite rate should be computed for this account by selecting a rate appropriate for each structure recorded in it. A new composite rate should be computed when a structure is added or deleted. A rate at or near the lower side of the range should generally be used when structures are new or of masonry construction or in areas normally having favorable climatic conditions. A rate at or near the upper side of the range should normally be used when structures are frame type construction, or remodeled or in areas subject to severe climatic conditions.

B. Account 391, Office Furniture and Equipment:

In the computation of a composite rate, office furniture and equipment may be divided into three groups: (a) furniture and miscellaneous office fixtures and equipment,

*Upper limit of range increased to 12.5% when data processing and automatic accounting machines are included.

(b) office machines such as addressographs, typewriters, calculators and adding machines, and (c) data processing equipment and automatic accounting machines. If data processing equipment and automatic accounting machines are included, the annual composite rate may be greater than 7.0% but it should not exceed 12.5%.

To the amount of each group mentioned above a rate within the following ranges should be applied:

	Estimated Service Life-Years	Range Depreciation Rate
Furniture and Miscellaneous Office Fixtures and Equipment	15 to 25	4.0 to 6.0%
Adding Machines, Typewriters, Addressographs and Calculators	9 to 15	6.0 to 10.0%
Data Processing Equipment and Automatic Accounting Machines	6 to 10	10.0 to 16.0%

C. Account 392, Transportation Equipment:

The computation of annual depreciation on a composite basis may be in accordance with the following schedule:

Type	Estimated Service Life-Years	Estimated Percent Salvage Value	Range Depreciation Rates
Automobiles	3 to 5	20 to 40	16.0 to 20.0%
Pickups, Light Trucks, including Auxiliary Equipment	4 to 6	10 to 30	15.0 to 17.5%
Heavy Trucks, including Auxiliary Equipment	5 to 10	Zero to 20	10.0 to 16.0%
Trailers	8 to 14	Zero	7.0 to 12.5%

D. Account 396, Power Operated Equipment:

Ordinarily, depreciation should be computed on this account using an appropriate composite rate. However, units of exceptionally high cost which are used only occasionally, should be depreciated on a time basis, subject to a minimum monthly charge. Estimated life and salvage should be used in arriving at the time rate.

E. Account 397, Communications Equipment:

A composite depreciation rate on the low side of the range should be selected if towers and base stations for two-way radio systems and miscellaneous equipment represent a larger portion of the account balance. If, on the other hand, mobile radio units represent a larger portion of the balance, a rate on the high side should be used. When the account contains a considerable investment in such items as telephone, carrier, or supervisory and load control equipment properly included in general plant, a rate on the low side of the range should be used.

F. Other General Plant:

This group includes Accounts 393, Stores Equipment; 394, Tools, Shop and Garage Equipment; 395, Laboratory Equipment and 398, Miscellaneous Equipment.

VIII. Prescribed Depreciation Rates for Production and Transmission Plant: The tables below set forth the depreciation rates for various types of production and transmission plant. These rates are to be used by borrowers and REA except where regulatory commissions prescribe other rates or unusual conditions justify special rates. A detailed depreciation study should be made for the special cases and submitted to REA for approval of appropriate rates. The rates shown below should be used unless the special rates as determined by the study are more than 0.1 percentage point greater or less than the recommended rates.

B. Rates for Production Plant:

Functional Group or Type of Facility	Annual Depreciation Rate
Steam Production	3.10%
Diesel Production:	
720 RPM and below	3.00%
Above 720 RPM	7.00%
Hydro Production	2.00%
Gas **Turbine** Production	3.00%

Nuclear Production

A proposed composite rate for nuclear production plant shall be submitted to REA for approval. For joint participation projects in which the borrower is a minor participant, the rate being used by the other participant(s), shall be used. Justification, including supporting studies and regulatory commission's order, for the proposed rate, shall be submitted to REA.

C. Rates for Transmission Plant:

Functional Group or Type of Facility	Annual Depreciation Rate
Transmission Lines	2.75%
Transmission Station Equipment	2.75%

When the amount of communication equipment recorded in Account 353, Station Equipment, is significant (7.5 percent or more of the account total), the depreciation on the communication equipment is computed using the same rate used for Account 397, Communication Equipment.

D. Depreciation Rates for Production and Certain Transmission Facilities to be Included in Loan Agreements:

1. To assure consistency in the use of depreciation rates by REA in its review and analyses of loan applications and by the borrower in its computation of depreciation expense, loan agreements, where production or certain

transmission facilities are involved, will include a provision that the borrower (a) shall adopt as its depreciation rates only those which have previously been approved for the borrower by the Administrator unless other depreciation rates are required by regulatory bodies having jurisdiction in the premises, and (b) shall not file with or submit for approval of regulatory bodies any proposed depreciation rates which have not previously been approved for the borrower by the Administrator.

2. Loan agreements will contain the above provisions for transmission facilities when:

   a. The borrower will own both generation and transmission facilities; or

   b. When more than 50 percent of the borrower's plant investment is in transmission facilities; or

   c. When REA determines in other cases that the depreciation rates should be specified in the loan agreement.

IX. Periodic Review:

Depreciation guideline curves should be used to evaluate the adequacy of current depreciation practices and rates for distribution plant. Under the group method of depreciation, it is especially necessary to re-examine depreciation accounting practices periodically. (Every year is recommended for general plant.) Incorrect accounting procedures found should be corrected immediately. Rates should be altered where necessary to give effect to justifiable changes in estimates of service life or net salvage. When frequent reviews are made only modest changes in depreciation rates are necessary to keep the reserve ratio in line with the guideline curves.

Joseph Vellom
Acting
Administrator

Attachment:
Appendix - Illustrations of Rate Computations and Accounting Procedures to be Followed by Borrowers

Index:
DEPRECIATION:
Rates and Procedures

APPENDIX

ILLUSTRATIONS OF RATE COMPUTATIONS AND ACCOUNTING PROCEDURES TO BE FOLLOWED BY BORROWERS

1. Calculating a composite rate for distribution plant:

a. Showing effect of change in rate for each primary account:

Account	Balance	Rate A	Depreciation Amount A	Rate B	Depreciation Amount B
362	$ 30,000	2.7%	$ 810	3.2%	$ 960
364	340,000	3.0	10,200	4.0	13,600
365	290,000	2.3	6,670	2.8	8,120
368	210,000	2.6	5,460	3.1	6,510
369	50,000	3.1	1,550	3.6	1,800
370	40,000	2.9	1,160	3.4	1,360
	$960,000		$25,850		$32,350

$25,850 ÷ $960,000 = 2.7%, composite rate A
$32,350 ÷ $960,000 = 3.3%, composite rate B

b. Showing effect of change in composition of functional plant group with reference to respective proportions of cost in the various primary accounts:

Account	Rate	Balance A	Depreciation Amount A	Balance B	Depreciation Amount B
362	2.7%	$ 30,000	$ 810	$ 20,000	$ 540
364	3.5	340,000	11,900	375,000	13,125
365	2.3	290,000	6,670	280,000	6,440
368	2.6	210,000	5,460	125,000	3,250
369	3.6	50,000	1,800	100,000	3,600
370	3.4	40,000	1,360	60,000	2,040
		$960,000	$28,000	$960,000	$28,995

$28,000 ÷ $960,000 = 2.9%, composite rate A
$28,995 ÷ $960,000 = 3.0%, composite rate B

2. Calculating a composite rate for transportation equipment:

Equipment	Estimated Life	Quantity	Total Cost	Estimated Salvage	Depreciable Cost	Annual Depreciation
A	10 yrs.	1	$18,000	$ - 0 -	$18,000	$ 1,800
B	5 yrs.	6	54,000	7,200	46,800	9,360
C	4 yrs.	2	8,000	2,000	6,000	1,500
			$80,000	$9,200	$70,800	$12,660

$12,660 ÷ $80,000 = 15.8% composite rate

3. Accounting procedure for trade-in of truck: (Note that under the group depreciation procedure the net book cost of any particular item of general plant is not ascertainable, as depreciation charges are not allocated to the individual items as is done under the unit depreciation method.)

   a. Given a situation in which a truck with original cost of $2,000 is traded for a $2,600 new truck, with $600 being allowed on the old truck:

   b. Accounting procedure:

Account 392
Transportation Equipment

17,000	2,000 (a)
(b) 2,600	

Account 108.7
Accumulated Provision for Depreciation of General Plant

(a) 2,000	9,000
	600 (b)

Account 131
Cash-General

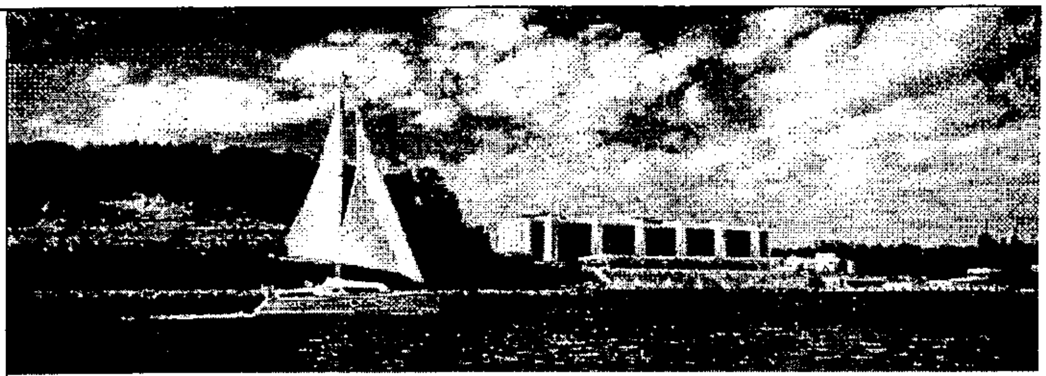
	17,000
	2,000 (b)

Constellation
Nuclear

Calvert Cliffs
Nuclear Power Plant

A Member of the
Constellation Energy Group

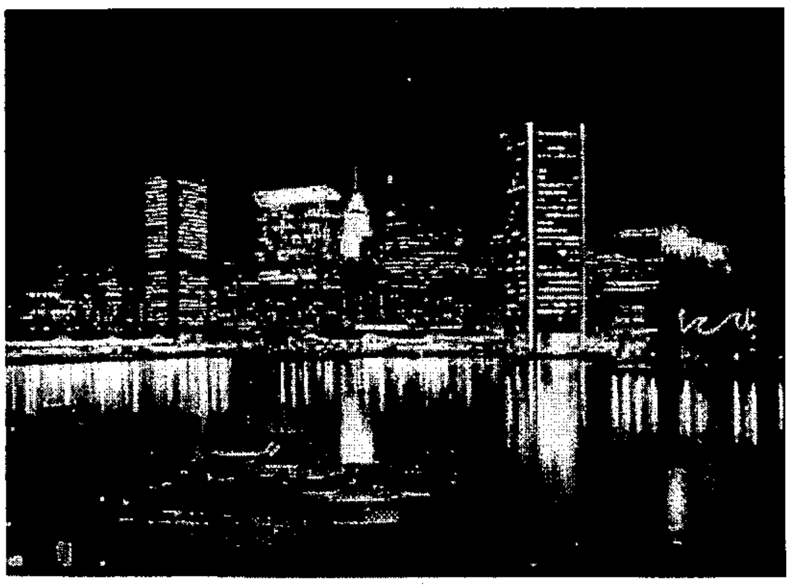
1650 Calvert Cliffs Pkwy.
Lusby, MD 20657



Calvert Cliffs Pioneers Nuclear Power Plant License Renewal

In Brief

In March 2000, Constellation Nuclear's Calvert Cliffs Nuclear Power Plant opened a new chapter in nuclear power history by becoming the first plant in the United States to earn 20-year extensions of its operating licenses from the U.S. Nuclear Regulatory Commission (NRC). License renewal extends the original 40-year operating lives of Calvert Cliffs' two nuclear reactors from 2014 to 2034 (Unit 1) and from 2016 to 2036 (Unit 2). Renewed operating licenses will allow Calvert Cliffs to continue generating the electricity needed for economic growth and help avoid the power shortages seen in other regions of the United States. As it has since it began operating in the mid-1970s, Calvert Cliffs will be required to meet rigorous government standards and will continue its comprehensive program of maintenance, testing, training and equipment replacement and upgrading to ensure high levels of safety.



Calvert Cliffs produces 20% of the electricity used in Maryland.

Visit us at our
Web site:
www.calvertcliffs.com

Safety and Value: A Strong Foundation for License Renewal

Calvert Cliffs has proven to be a safe, reliable source of clean, economical electricity. For more than 25 years, the plant's strong performance has made it a valuable asset to the company, its customers and its shareholders.

After a quarter-century of operations, Calvert Cliffs is still going strong—and safe. The plant has set site production records in each of the past four years, meeting the electricity needs of more than a million people, while maintaining a safety record that is among the best in the industry.

To ensure that the plant's benefits could continue, Calvert Cliffs engineers applied to the NRC in 1998 for a 20-year renewal of its operating licenses. The 2,500-page application drew on nearly 10 years of analyses, studies and preparations and included not only a safety evaluation but also an updated Environmental Impact Statement.

Over nearly two years, the NRC held scores of public meetings, including two specifically seeking and encouraging public participation in the renewal process. Strong support for the plant came from neighbors, community leaders and environmental experts.

In March 2000, the U.S. Nuclear Regulatory Commission approved 20-year extensions to the operating licenses for Calvert Cliffs' two reactors—from 2014 to 2034 Unit 1, and from 2016 to 2036 for Unit 2. The reactors must meet the same regulatory oversight and operating standards as currently exist.

License Renewal Focuses on Safety, Environmental Protection

The government's regulations for nuclear plant license renewal focuses on one basic question: Can the plant continue to operate safely in the renewal period?

In 1995, the NRC issued an efficient, specific regulation that made license renewal a safe, viable option. The agency recognized that plant operators inspect and maintain reactors with the goal of detecting and managing the effects of aging on the plant.

The NRC's license renewal regulations do not focus on equipment that is replaced on a fixed schedule or when it shows signs of wear. Similarly, equipment with moving parts is continually monitored for safety and performance over the operating life of the plant. Instead, the license renewal process requires the plant owner to demonstrate that it can effectively maintain the long-term safety of permanent structures and equipment that are important to safety—such as the massive concrete containment building that houses the reactor vessel.

The license renewal process also included a comprehensive review of Calvert Cliffs' relationship with the environment to demonstrate that the plant can continue to meet applicable standards.

License Renewal Ensures Calvert Cliffs' Benefits For the Future

The Constellation Nuclear employees who played a role in securing a renewed operating license did more than write a new chapter in nuclear power's development—they ensured that Calvert Cliffs will be able to continue to safely generate clean electricity as a valuable asset in Constellation Energy's diversified mix of power sources.

Constellation Energy Chairman Chris Poindexter (fourth from left) receives the renewed Calvert Cliffs operating licenses from NRC Chairman Richard Meserve.

Extending Calvert Cliffs' operating life means that:

?? The mid-Atlantic region will continue to enjoy a reliable, low-cost power source that helps avoid the electricity supply problems seen in other states.

?? Approximately 1,200 jobs will be preserved.

?? Local communities will continue to receive millions of dollars in taxes from Calvert Cliffs and its employees.

?? Calvert Cliffs employees can continue to support local charities, service and civic organizations, and schools by contributing hundreds of thousands of dollars and volunteering thousands of hours of service.

Calvert Cliffs' license renewal success earned Constellation Energy Group the 2001 Edison Award, the highest honor given by the Edison Electric Institute to an investor-owned energy company, for distinguished contributions to the industry and community.

The Calvert Cliffs success was the culmination of almost a decade of research, planning and hard work, and was at the beginning of what now is an exciting period of renewed interest in the nuclear power industry. License renewal played a key role in gaining wider public acceptance and favorable media coverage of nuclear power, and at this time more than 30 plants have applied or announced plans to apply for license renewal.

When U.S. Energy Secretary decided to make his first trip to a nuclear plant, in May 2001, he chose Calvert Cliffs because of its significance in achieving license renewal.

This renewed interest ensures nuclear energy will continue to play a strong role in America's energy portfolio for years to come.

Constellation Energy earned the EEI Edison Award for the successful relicensing of Calvert Cliffs.

Calvert Cliffs is owned and operated by Constellation Nuclear LLC, a wholly owned subsidiary Of Constellation Energy Group (NYSE:CEG). CEG is a holding company that has energy-Related businesses focused on power marketing, generation and portfolio management.

Power Reactors

The NRC regulates commercial nuclear power plants that generate electricity. There are several types of these power reactors. Select a type from the list below to view a description and diagram of each. For more information about operating reactors, see the location map, and list of licensees for each unit. See also our list of decommissioned reactors and list, status, and schedule for those being decommissioned.

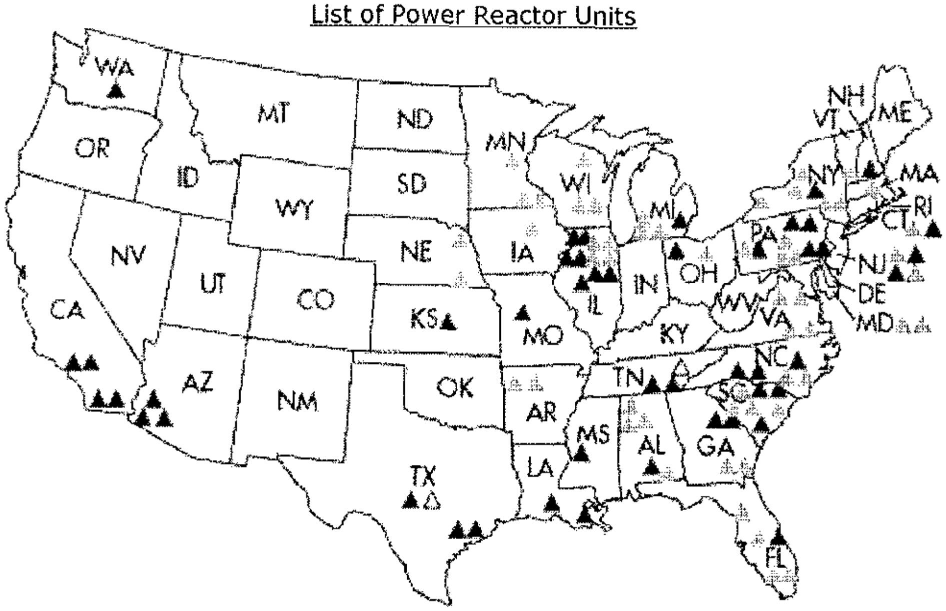
- Pressurized Water Reactors (PWRs)
- Boiling Water Reactors (BWRs)
- Gas Cooled Reactors

Of these, only the PWRs and BWRs are in commercial operation in the United States. There are currently 104 licensed, operating nuclear power plants in the United States (69 PWRs and 35 BWRs), which generate about 20% of our nation's electrical use. See our map showing the percentage of nuclear power generated in each state. For more information about these, see Operating Reactors.

Schedule 3-4

Map of Power Reactor Sites

List of Power Reactor Units



YEARS OF COMMERCIAL OPERATION	NUMBER OF REACTORS	AVERAGE CAPACITY (MDC)
△ 0-9	2	1134
▲ 10-19	47	1092
▲ 20-29	55	779
	104	

Note: There are no commercial reactors in Alaska or Hawaii. Calculated data as of 12/00.

Schedule 3-5

License Renewal: Most Plants Will Renew, Operate for 60 Years

The year 2000 marked the first time that the NRC approved the renewal of the 40-year operating license for a commercial nuclear power plant. In March, the licenses of the two-unit Calvert Cliffs nuclear power plant were extended for 20 years. Two months later, the NRC approved renewal of the operating licenses for Duke Energy's three-unit Oconee nuclear station. In June 2001, Unit 1 of Entergy's Arkansas Nuclear One Station received NRC's approval to extend its operating license.

By July 2001, companies had filed applications with the NRC to renew the licenses of 14 other units, and others had formally notified the NRC of their intention to seek license extensions for 24 nuclear units by 2004. To date, the owners of 44 nuclear units, approximately 40 percent of the nuclear fleet, have decided to pursue license renewal and more are expected to follow.

The surge of interest in license renewal is a product of restructuring and competition. A deregulated, competitive electric generating business creates a powerful business incentive to renew a nuclear plant's license. Under cost-of-service regulation, a power company's earnings are based on its rate base—its total investment in plant and capital equipment. Because a 40-year-old nuclear unit would be fully depreciated—and thus not part of the rate base—it would have limited earnings potential under cost-of-service regulation. In a deregulated, competitive business, however, a fully depreciated nuclear plant is a tremendous asset. It can sell power at marginal cost, which is very competitive. Such a plant would have significant earnings potential.

License renewal is also the least-cost source of new electricity supply, significantly less costly than construction of new power plants of any kind.

Building a new gas-fired combined-cycle plant is estimated to cost approximately $500-600 per kilowatt. For a coal-fired power plant with state-of-the-art emission control systems, the cost would be approximately $1,000-1,100 per kilowatt of capacity.

The license renewal process, expected to take between three and five years, costs between $10 million and $15 million to prepare the necessary regulatory filings and negotiate the NRC's license renewal process. This cost does not include any major capital expenditures necessary to upgrade the plant (steam generator replacement, for example) to ensure safe, reliable operation during the 20 years after the 40-year license term expires. Even with such capital expenditures, however, analysis shows that license renewal of an existing nuclear plant is easily the least costly source of new electricity supply. In addition, many nuclear plants should not require major capital expenditures because a typical nuclear unit routinely invests $15 million per year on average to replace various components and systems.

Decisions to Pursue License Renewal

Year of Filing/ Approval	*Plant*	*Company*
April 1998/ March 2000	Calvert Cliffs, Units 1 & 2	Constellation Energy
July 1998/ May 2000	Oconee, Units 1, 2 & 3	Duke Energy
February 2000/ June 2001	ANO, Unit 1	Entergy Nuclear
March 2000	Hatch, Units 1 & 2	Southern Nuclear
September 2000	Turkey Point, Units 3 & 4	Florida Power & Light
May 2001	Surry, Units 1 & 2 North Anna, Units 1 & 2	Dominion
June 2001	McGuire, Units 1 & 2 Catawba, Units 1 & 2	Duke Energy
July 2001	Peach Bottom, Units 2 & 3	Exelon
January 2002	Ft. Calhoun	Omaha Public Power District
June 2002	St. Lucie, Units 1 & 2	Florida Power & Light
June 2002	Robinson, Unit 2	Progress Energy
July 2002	Ginna	Rochester Gas & Electric
July 2002	Point Beach, Units 1 & 2	Wisconsin Electric Power Co.
August 2002	V.C. Summer	South Carolina Electric & Gas
March 2003 January-March	Dresden, Units 2 & 3 Quad Cities, Units 1 & 2	Exelon
June 2003	Farley, Units 1 & 2	Southern Nuclear
September 2003	ANO, Unit 2	Entergy Nuclear
December 2003	Browns Ferry, Units 2 & 3	TVA
January-March 2004	Brunswick, Units 1 & 2	Progress Energy
September 2004	Beaver Valley, Units 1 & 2	FirstEnergy
December 2004	Davis-Besse	FirstEnergy
2004	Pilgrim	Entergy Nuclear
April 2005	Cooper	Nebraska Public Power District

Missouri Public Service Commission

PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

Area Code 314
751-3234

P.O BOX 360
JEFFERSON CITY
MISSOURI 65101

March 1, 1978

Ron Vandiver
St. Joseph Light & Power Company
520 Francis Street
St. Joseph, Missouri

Dear Mr. Vandiver:

Enclosed is the information you requested concerning St. Joseph Light and Power Company's depreciation rates broken down as to average service life and percent net salvage.

Sincerely,

Melvin T. Love
Assistant Director of Utilities
Rate Administration

Enclosure

MTL:RS:db

Depreciation Rates
St. Joseph Light & Power Company

t. No.	Description	ASL	c/o Net Salv.	Depr. Rate
311	Structures & Improvements	45	(5)	2.3
312	Boiler Plant Equipment	30	(5)	3.5
314	Turbogenerator Units	33	.0	3.0
315	Accessory Electric Equipment	25	0	4.0
316	Miscellaneous Equipment	20	0	5.0
341	Structures	20	0	5.0
342	Fuel Holders & Acc.	20	0	5.0
344	Generators	20	0	5.0
345	Acc. Elec. Equip.	20	0	5.0
346	Misc. Equipment	20	0	5.0
352	Structures	40	0	2.5
353	Station Equipment	30	5	3.2
355	Poles & Fixtures	26	(5)	4.0
356	Overhead Cond. & Devices	33	0	3.0
361	Structures	25	0	4.0
362	Station Equipment	30	5	3.2
364	Poles, Towers, & Fixtures	30	(5)	3.5
365	Overhead Cond. & Devices	30	10	3.0
366	Underground Conduit	50	0	2.0
367	Underground Cond. & Devices	30	10	3.0
368	Line Transformers	26	5	3.7
369	Services	31	(10)	3.5
)	Meters	29	5	3.3
/1	Meter Installations	20	0	5.0
373	Street Lighting & Signal Equip.	20	0	5.0
390	Structures	40	0	2.5
391	Office Furniture & Equipment	25	0	4.0
391.1	Computer	6	10	15.0
392	Transportation Equip.	5	17	16.7
393	Stores Equip.	20	0	5.0
394	Tools, Shop & Garage Equipment	20	0	5.0
395	Laboratory Equipment	20	0	5.0
396	Power Operated Equipment	15	25	5.0
397	Communication Equipment	15	10	6.0
398	Misc. Equipment	20	0	5.0

1. The Decon process is well under way at the Maine Yankee nuclear station. In January, workers completed final demolition of the turbine building

Nuclear operators weigh decommissioning, relicensing options

With dozens of US nuclear plant operating licenses scheduled to expire by 2015, owners are studying whether it is economically better to renew the license or decommission the plant. Experience in both options is growing, adding further clarity to the industry's future

By James M Hylko, Contributing Editor

Over three dozen nuclear plant operating licenses—representing billions of dollars in capital investment and electricity for millions of people—are scheduled to expire by 2015. The recent relicensing of Calvert Cliffs, Oconee, and Arkansas Nuclear One stations has given a "shot in the arm" to proponents of renewing these licenses, and to the continued viability of the US nuclear industry. In fact, some 40 additional nuclear units have either filed renewal applications or advised the US Nuclear Regulatory Commission (NRC) of their intention to do so, and most analysts agree that the future of the US nuclear industry is brighter today than at any time since the 1979 Three Mile Island accident (POWER, January/February 2002, p C-54).

Still, owners facing licensing expiration need to conduct a rigorous study of each station's specifics, and determine whether it is best to pursue license renewal, or to decommission the reactors altogether. Successful experience has grown in this option, as well, bolstering the confidence of nuclear plant owners that they can cost-effectively decommission a plant when the time comes, and assuring local communities of the site's long-term safety.

The decommissioning process comprises shutdown, license termination, and clearing of the site for unrestricted use. Three primary options currently are available under NRC regulations: decontamination, safe storage, and entombing:

■ Decon. After cessation of powerplant operations, the equipment, structures, and portions of the plant containing radioactive

Schedule 6-1

2. Hotwell, condensers, and other steam-turbine components were removed last fall, in preparation for explosive softening of Maine Yankee's turbine pedestal. Framatome ANP, Lynchburg, Va, recently completed segmenting the reactor vessel internals

3. Oxy-lance cutting of individual components—such as these pump house water boxes—expedite site cleanup

contaminants are removed or decontaminated, before the site is released for unrestricted use. This is the option currently under way at the Maine Yankee station (Figs 1-3). Radioactive material inside pipes and heat exchangers or on floors and walls that were not decontaminated during normal plant operations because of inaccessibility or operational considerations, must be removed using chemical, physical, electrical, or ultrasonic processes. The radioactive material is then concentrated for disposal at a low-level radioactive waste (LLRW) disposal site. Concentration reduces the LLRW volume, thus reducing disposal costs. Once this task is completed—which may take five or more years—the NRC terminates the plant's license.

■ Safstor. Under the safe storage option, the plant simply is maintained in protective storage for up to 60 years so that removal, decontamination, and final decommissioning can be performed at a later date. Evaluations performed on decommissioning a 1100-MW reference nuclear plant suggest that a 50-yr Safstor deferment would provide optimum material and radiation-reduction benefits. A 30-yr deferment would still leave substantial volumes of waste material and levels of radioactivity. At the other extreme, a 100-yr deferment offers little additional LLRW volume or radioactivity reduction beyond the 50-yr quantities.

■ Entomb. The third option calls for the radioactive contaminants to be encased in a structurally long-lived material—such as concrete—and then maintained under surveillance indefinitely until the radioactivity decays to a level that permits termination of the plant's license.

A fourth consideration

The primary reason to defer decommissioning is to allow for radioactive decay, thus reducing radiation levels, worker risks, costs of dismantling radioactive components, and shipping large LLRW volumes. However, during this deferment, plant owners may need to develop new capacity to replace the shutdown reactor. This has led to a fourth decommissioning option: repowering, which adds a new fuel source to an existing steam cycle of a reconfigured nuclear plant.

Although repowering typically refers to the conversion of aging fossil-fueled stations to gas turbine/combined cycle, the coal-fired W H Zimmer station, owned by Cincinnati Gas & Electric Co, and the gas-fired Midland station, owned by CMS Energy, are "repowered" nuclear stations which never actually operated on uranium. Other experiences with repowering nuclear plants include Pathfinder in Sioux Falls, SD, and Fort St. Vrain in Platteville, Colo.

The 59-MW Pathfinder plant was built and operated by Northern States Power Co, Minneapolis, Minn. It operated as a nuclear unit in the 1960s, before its nuclear systems were placed in protective storage and its steam cycle converted to a fossil-fired plant. The plant's nuclear components ultimately were decommissioned between 1990 and 1992.

In 1973, the federal government began operating the 330-MW Fort St. Vrain station to demonstrate gas-cooled reactor technology. By 1979, ownership of the plant had transferred to Public Service Co of Colorado (PSCo). But PSCo struggled for years with operations, maintenance, and financial problems before it shut down the unique reactor in 1989. A decade later, the advance of gas-turbine technology, coupled with market incentives through industry deregulation, drove PSCo to repower the idle station, coupling three gas turbine/heat-recovery steam generator trains to the existing steam-turbine/generator. The repowering project was completed in 2001 (Fig 4), but decommissioning of the nuclear plant started back in 1992. During the subsequent three-plus years, 140,000 cu ft of radioactive waste—graphite blocks, plant systems, support structures, and 20 to 30 in. of irradiated concrete shaved from the inside of the reactor's walls—were removed and

Schedule 6-2

shipped to a disposal facility in Richland, Wash. The plant's spent fuel is being stored in a separate, dry-storage facility. By early 1996, decommissioning was completed—several months ahead of schedule and under the estimated $189-million budget.

Other experience

The NRC released PSCo from its operating license in mid-1997, thus Fort St. Vrain became the first large-scale US nuclear powerplant with significant commercial operating history to be fully decommissioned. But the nuclear industry also gained substantial decommissioning experience from the smaller-scale Shippingport reactor and the prematurely shut-down Shoreham plant, owned by Long Island Power Authority, Uniondale, NY.

The 60-MW Shippingport plant was the nation's first operating commercial nuclear powerplant. It began generating electricity in 1957 and was shut down in 1982, after producing 7.4-billion kWh of electricity. Decommissioning was completed in 1989. Because of its small size, the reactor did not have to be disassembled; it was disposed of in one piece. Still, Shippingport provided valuable information on how to plan for decommissioning, clarifying technical work scope, engineering calculations, and safety analyses. The Shippingport experience demonstrated the need for effective, advance planning, which is now part of NRC requirements and common industry practice.

For nearly two years, the 809-MW Shoreham plant went through intermittent low-power tests, never exceeding 5% power. Protests by local residents and opposition by New York's governor closed the plant. Although Shoreham operated only for the equivalent of two full-power days, it was enough to warrant site decommissioning. Fuel unloading started in 1989, with actual decommissioning beginning in early 1993. The project was completed in 21 months—six months ahead of schedule and under the $186-million budget. During the effort, workers removed and shipped 570,400 cu ft of LLRW to a Barnwell (SC) disposal facility, including shipping slightly irradiated fuel to be used at the Limerick nuclear plant, now owned by Exelon Corp, Chicago, Ill.

Since 1960, scores of other test or demonstration reactors have been retired in the US (table). These include more than 40 research reactors ranging in size from less than a watt to 2 MW, and four demonstration power reactors—including the 67-MW Big Rock Point unit, which began full decontamination in 1997 and is scheduled to be complete in 2004 (Fig 5).

In addition to the lessons learned from all of these decommissioning efforts, the nuclear industry has benefited from decontamination experience after the Three Mile Island Unit 2 accident. Technologies used at TMI—including strippable coatings and chemical foam, together with the use of robotics—have broadened today's range of decontamination options. Most operating plants now incorporate a decontamination regimen as part of their preventive maintenance and repair programs to reduce personnel radiation exposure.

Disposal cost

The fees to dispose of LLRW, which range from $100 to $1000/cu ft, could account for as much as 30% of the total decommissioning cost. Disposal fees at

Decommissioned US commercial reactors

Facility	Location	Reactor type	Capacity, MW	Period of operation Start	End	Current status	Decommissioning method
Big Rock Point	Michigan	BWR	67	1962	1997	Dismantling	Decon approach adopted. Scheduled for completion 2004
Connecticut Yankee-Haddam Neck	Connecticut	PWR	590	1968	1996	Dismantling	Decon approach adopted. Proposed to use site as a gas-fired powerplant
Dresden-1	Illinois	BWR	200	1960	1978	Care and maintenance	Safstor approach adopted
Fort St. Vrain	Colorado	HTGR	330	1979	1989	Decommissioning complete	Repowering
Humboldt Bay	California	BWR	63	1963	1976	Dismantling	Safstor approach adopted
Indian Point-1	New York	PWR	257	1963	1974	Care and maintenance	Safstor approach adopted
LaCrosse	Wisconsin	BWR	50	1969	1987	Care and maintenance	Safstor approach adopted
Maine Yankee	Maine	PWR	860	1972	1997	Dismantling	Decon approach adopted. Scheduled for completion 2002
Millstone-1	Connecticut	BWR	660	1971	1998	Care and maintenance	Safstor approach adopted
Pathfinder Test Reactor	South Dakota	BWR	59	1966	1967	Decommissioning complete	Converted to natural gas electric-generating plant
Peach Bottom 1	Pennsylvania	HTGR	40	1967	1974	Care and maintenance	Safstor approach adopted
Rancho Seco	California	PWR	913	1975	1989	Dismantling	Safstor approach adopted
San Onofre-1 (SONGS-1)	California	PWR	436	1968	1992	Dismantling	Decon approach adopted. Shutdown for economic reasons
Shippingport	Pennsylvania	PWR	60	1957	1982	Decommissioning complete	Decon approach adopted
Shoreham	New York	BWR	809	1989	1989	Decommissioning complete	Unrestricted use
Three Mile Island-2	Pennsylvania	PWR	792	1978	1979	Care and maintenance	Safstor approach adopted
Trojan	Oregon	PWR	1095	1976	1992	Dismantling	Decon approach adopted. Shutdown for economic reasons
Yankee Rowe	Massachusetts	PWR	167	1961	1991	Dismantling	Decon approach adopted. Shutdown for economic reasons
Zion-1	Illinois	PWR	1040	1973	1998	Permanently shutdown	Defueled 1998. Safstor option adopted
Zion-2	Illinois	PWR	1040	1974	1998	Permanently shutdown	Defueled 1998. Safstor option adopted

Source: World Nuclear Assn, 2001, American Nuclear Society, 2001

Schedule 6-3

4. **Repowering** is recognized as a decommissioning option, thanks to successful experience at Fort St. Vrain. All reactor systems were decommissioned in 1996, several months ahead of schedule and under the $189-million budget, and the last of three gas-fired combined-cycle units was installed and started up in 2001

5. **Big Rock Point** has adopted the Decon approach. Two other options for decommissioning are Safstor—maintaining the facility in protective storage for up to 60 years prior to initiating Decon—and Entomb—encasing the radioactive contaminants in a structurally long-lived material until the radioactivity decays to negligible levels (Photo: Consumers Energy, Charlevoix, Mich)

one site rose about three-fold between 1990 and 1995, mainly because of increasing surcharges and taxes imposed by the state of South Carolina at the Barnwell LLRW disposal facility. While the increase was driven primarily by political—rather than technical—factors, the increase may be indicative of what future fees will be for plants operating today.

Labor adds another substantial chunk to the cost of decommissioning. As utilities began preparing site-specific estimates, they increased their projected labor cost above the NRC estimate to account for training, radiation protection, and management oversight. However, sharp rises in labor expenses are not expected over the long term. In fact, labor cost may actually decrease as new decommissioning technologies—such as remote-controlled decontamination robots—are developed.

Although current NRC regulations do not require including spent-fuel storage costs in decommissioning funds, some utilities are including such costs in their estimates because no federal repository or interim storage facility is available. Therefore, conservative utilities are allowing for on-site storage, meaning continued operation of existing fuel pools, dry-cask storage methods, and ongoing site maintenance and security. This cost—likely to be passed on to customers until the federal government meets its legal obligation to store or dispose of spent fuel—will be in addition to the surcharge that consumers of nuclear-generated electricity already pay into the US Nuclear Waste Fund.

Site restoration cost varies greatly, depending on the specifics of each station. The non-nuclear areas of a nuclear plant include administrative and storage buildings, cooling towers, water intake systems, switchyards, transmission lines, and parts of the turbine building. Some of these items may not be demolished, but reused for a repowering project.

In sum

The NRC issues specific guidance on how to calculate the minimum amount of decommissioning funds that owners must accrue over the reactor's expected 40-yr service life. For many plants, the NRC-derived cost ranges from $400- to $500-million. However, the most reliable decommissioning estimates have been developed from plant-specific engineering studies and previous experience. Based on these, many utilities have revised their projections downward, to an average of $325-million (in 1998 dollars), thus decommissioning funds may actually yield a surplus for nuclear plant owners. Relicensing, which extends the accrual period from 40 to 60 years, could further boost that surplus, thus netting plant owners a tidy profit.

A big question remains about the tax treatment of decommissioning funds, particularly as the US electricity industry is restructured and nuclear plant acquisitions have taken place (Power, January/February 2001, p 66). The Nuclear Decommissioning Funds Clarification Act of 2001 (HR 1702) was introduced in May 2001 by Reps Jerry Weller (R-Ill) and Benjamin Cardin (D-Md). The act, if passed and signed into law, would update the tax code to reflect today's market structure, and allow the tax-free transfer of decommissioning trust funds from the regulated monopolies that currently own the nuclear plants to the market-based entities that will own and operate these units in a restructured industry. ■

Acknowledgments

Information for this article was obtained from the Nuclear Energy Institute, Washington, DC, World Nuclear Assn, London, England, and the American Nuclear Society, La Grange Park, Ill.

Schedule 6-4

IN THE CIRCUIT COURT OF COLE COUNTY
STATE OF MISOURI

State of Missouri ex rel. Laclede Gas Company and Union Electric Company d/b/a AmerenUE	)	
Relator,	)	
v.	)	Case No. 01CV325280
Public Service Commission of the State of Missouri,	)	Division No. I
Respondent.	)	

JOINT INITIAL BRIEF OF LACLEDE GAS COMPANY AND UNION ELECTRIC COMPANY

This joint initial brief is being submitted by Relators Laclede Gas Company ("Laclede") and Union Electric Company d/b/a AmerenUE ("AmerenUE") in this writ of review proceeding brought pursuant to §386.510 RSMo. (2000). The purpose of this proceeding is to examine the reasonableness and lawfulness of the Second Report and Order issued by the Missouri Public Service Commission ("Commission") on June 28, 2001 in Commission Case No. GR-99-315 (hereinafter the "Second Report and Order"). The Commission's Second Report and Order was issued in response to this Court's December 1, 2000 Order and Judgment, in which the Court found that the Commission had not provided adequate findings of fact in its First Report and Order in Case No. GR-99-315 (hereinafter the "First Report and Order") to support the Commission's decision to adopt a new method for determining the net salvage component of Laclede's depreciation rates. *See Order and Judgment*, Case No. 00CV323839, p. 2. In light of that determination, the Court had remanded the Commission's First Report and Order in Case No. GR-99-315, with directions that the Commission provide "findings of fact sufficient to support a resolution of the net salvage issue in Case No. GR-99-315 and to permit the Court to determine whether such resolution is based upon and supported by competent and substantial evidence on the whole record in that case and is otherwise reasonable and lawful." *Id.* at 3.

Relators would respectfully suggest that the Commission's Second Report and Order does nothing to cure the deficiencies of the first. Specifically, it does nothing to support the lawfulness and reasonableness of the Commission's initial decision to adopt a new and radically different method for determining the net salvage component of Relator's depreciation rates – a method that according to the undisputed evidence on the record before the Commission:

(a) defeats the primary goal of depreciation, which is to allocate the full cost of an asset over the useful life of the asset;

(b) contradicts Generally Accepted Accounting Principles ("GAAP");

(c) is completely contrary to the depreciation practices and standards followed by virtually every other state and federal utility regulatory body for determining net salvage as well as the treatment of net salvage recommended by the authoritative texts on depreciation theory; and

(d) has the end result of depriving the Company of millions of dollars in timely and appropriate capital recovery and its customers of an equitable allocation of the cost of the utility assets being used to serve them.

The role of the Court in reviewing this decision of the Commission is to determine whether it is lawful and reasonable. ***City of Oak Grove v. Public Service Commission,*** 769 S.W.2d. 139, 141 (Mo.App. W.D. 1989). The lawfulness of a Commission decision is departs so radically from its own long-standing policies in this area. Specifically, it was incumbent on the Commission to address and make specific findings on:

- whether the primary goal of proper depreciation accounting is, in fact, to allocate the full cost of an asset over the useful life of the asset as claimed by Laclede and AmerenUE and, if not, what the goal or goals of depreciation actually are;

- whether Staff's proposed method does or does not defeat the primary goal of depreciation as claimed by Laclede and AmerenUE by excluding from depreciation rates an allowance for future net salvage cost and, if it does, why it was nevertheless reasonable and appropriate for the Commission to adopt that method;

- whether Staff's proposed method contradicts Generally Accepted Accounting Principles as claimed by Laclede and AmerenUE and, if so, why it was nevertheless reasonable and appropriate for the Commission to adopt that method;

- whether Staff's proposed method is contrary to the depreciation practices and standards followed by virtually every other state and federal utility regulatory body for determining net salvage as claimed by Laclede and AmerenUE and, if so, why it was nevertheless appropriate to adopt that method;

- whether Staff's proposed method is inconsistent with the treatment of net salvage recommended by the authoritative texts on depreciation theory and, if it is, why it was nevertheless reasonable and appropriate for the Commission to adopt that method; and

- whether the end result of Staff's proposed method is to deprive Laclede of millions of dollars in timely and appropriate capital recovery and its customers of an equitable way of being charged for the utility assets used to serve them and, if it is, why it was nevertheless reasonable and appropriate to adopt that method.

home key topics California Energy Commission site index search

Electric Generation Divestiture in California

Electricity deregulation began in California in September 1996 with the passing of Assembly Bill 1890. Since then, the three large investor-owned utilities (Pacific Gas and Electric, San Diego Gas & Electric, and Southern California Edison) have divested a large amount of power plant generating capacity to address concerns about market power. The following table is a summary of the divestiture. More information on the divested power plants can be downloaded as a Microsoft Excel file.

DOWNLOAD EXCEL FILE (167 kilobytes)

Power Plant Divestiture in California

Power Plant	Purchaser	Nameplate Capacity (MW)	Book Value $million	Sale Price $million
Morro Bay, Moss Landing, Oakland	Duke Energy Corp.	2,881	390.2	501.0
Contra Costa, Pittsburg, Potrero	Mirant (formerly Southern Energy)	3,166	318.3	801.0
Geysers (Sonoma & Lake Counties)	Calpine Corp.	1,353	273.1	212.8
	PG&E Subtotal	***7,401***	***981.6***	***1,514.8***
Alamitos, Huntington Beach, Redondo Beach	AES Corp.	4,706	224.1	781.0
Cool Water, Etiwanda, Ellwood, Mandalay, Ormond Beach	Reliant (formerly Houston Industries)	4,019	288.3	277.0
El Segundo, Long Beach	NRG Energy and Destec	1,583	168.8	116.6
San Bernadino, Highgrove	Thermo Ecotek	300	(4.3)	9.5

Schedule 8-1

	SCE Subtotal	***10,607***	***676.9***	***1,184.1***
Encina, Kearny, and other Peakers	NRG Energy and Dynegy	1,347	94.8	365.0
South Bay	San Diego Unified Port District	833	64.4	110.0
	SDG&E Subtotal	***2,180***	***159.2***	***475.0***
	STATE TOTAL	**20,187**	**1,818**	**3,174**

With the exception of PG&E Geysers, all of these plants use fossil fuels -- natural gas and oil. The Geysers are geothermal plants located in Lake and Sonoma Counties. Nameplate capacities are from *Table 20 Existing Generating Units at U.S. Electric Utilities by State, Company, and Plant as of January 1, 1998,* published by Energy Information Administration of Department of Energy. Book values were estimated in the applications filed by the utilities and decisions by the California Public Utilities Commission (CPUC). Sale prices reflect winning bids. The amount that purchase prices are in excess of the book value, after adjusting for transaction costs, taxes, and environmental costs, will be credited to the Transition Cost Balancing Account.

PG&E filed Application a.96-11-020 to divest Morro Bay, Moss Landing, and Oakland plants in 1996; the CPUC approved the sale in 1997 in decision D.97-12-107; and the sale was completed in June 1998. PG&E filed application A.98-01-008 to divest Contra Costa, Pittsburg, Potrero, and Geysers plants in 1998; the CPUC approved the sale in 1999 in decision D.99-04-026; and the sale was completed in April and May of 1999. PG&E's Quarterly Reports (SEC Form 10-Q) show that the book values at the time of sales, $846 million, lower than what is listed here, $982 million. The lower figure in Form 10-Q may have included some adjustments. Hunters Point power plant was withdrawn from the auction due to the agreement reached between PG&E and the City and County of San Francisco on July 9, 1998. Hunters Point will be closed when alternate capacity has been developed, no other power plant may be built on the site. The City and County of San Francisco retains the right of first refusal in the sale of Hunters Point.

In November 1996, SCE filed application A.96-11-046 to divest 12 of its fossil-fueled power plants; the CPUC approved the sale in December 1997 in decision D.97-12-106; and the sales were completed in 1998. The transfer of ownership of the last plant happened on July 8, 1998. More information on the sales can be found in decisions D.98-03-077 and D.99-07-030.

In December 1997, SDG&E filed application A.97-12-039 to divest all of its fossil-fueled power plants, its 20 percent interest in SONGS nuclear power plant, and all of its long-term power purchase contracts. The CPUC approved the sale of the Encina power plant and a number of combustion turbines in February 1999 in decision D.99-02-073, and the sale was completed in May 1999. The CPUC approved the sale and donation of the South Bay power plant to the San Diego Unified Port District in March 1999 in decision D.99-03-015. The transfer was completed in April 1999.

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As of January 2000, the CPUC is considering the divestiture of the hydroelectric power plants of PG&E and SCE.

Page Updated: January 28, 2000

FINANCIAL ACCOUNTING STANDARDS BOARD

Summary of Statement No. 143
Accounting for Asset Retirement Obligations
(Issued 6/01)

Summary

This Statement addresses financial accounting and reporting for obligations associated with the retirement of tangible long-lived assets and the associated asset retirement costs. This Statement applies to all entities. It applies to legal obligations associated with the retirement of long-lived assets that result from the acquisition, construction, development and (or) the normal operation of a long-lived asset, except for certain obligations of lessees. As used in this Statement, a legal obligation is an obligation that a party is required to settle as a result of an existing or enacted law, statute, ordinance, or written or oral contract or by legal construction of a contract under the doctrine of promissory estoppel. This Statement amends FASB Statement No. 19, *Financial Accounting and Reporting by Oil and Gas Producing Companies.*

Reasons for Issuing This Statement

The Board decided to address the accounting and reporting for asset retirement obligations because:

- Users of financial statements indicated that the diverse accounting practices that have developed for obligations associated with the retirement of tangible long-lived assets make it difficult to compare the financial position and results of operations of companies that have similar obligations but account for them differently.
- Obligations that meet the definition of a liability were not being recognized when those liabilities were incurred or the recognized liability was not consistently measured or presented.

Differences between This Statement, Statement 19, and Existing Practice

This Statement requires that the fair value of a liability for an asset retirement obligation be recognized in the period in which it is incurred if a reasonable estimate of fair value can be made. The associated asset retirement costs are capitalized as part of the carrying amount of the long-lived asset. This Statement differs

Schedule 9-1

Business - Reuters

Steel Retirees Face Blow, Paper Says

Tue Mar 5, 3:46 AM ET

NEW YORK (Reuters) - President Bush (news - web sites) will not push for a $10 billion bailout for hundreds of thousands of steel retirees, the Wall Street Journal reported on Tuesday, citing industry and government officials.

The decision, which could be announced as early as Tuesday, is a particular blow for the retirees of steel companies that have collapsed or are in bankruptcy proceedings, the Journal said. About half of the domestic steel industry has sought to reorganize or liquidate since 1998, the Journal said.

The decision also derails, for now, a plan by at least four domestic steelmakers to merge with U.S. Steel Corp. , the Journal said.

U.S. Steel had said it would purchase Bethlehem Steel Corp. , National Steel Corp. , and other steelmakers currently under Chapter 11 bankruptcy protection if the federal government agreed to assume their retiree costs, the Journal said.

As an alternative to completely underwriting the retiree costs, administration officials say they are devising a plan that would rely on existing programs, such as Pension Benefit Guarantee Corp., the Journal said.

The White House also is considering refundable tax credits to help defray the cost of obtaining health insurance, the Journal said.

As the U.S. Steel consolidation proposal appears to be shelved, Robert Miller, the chief executive of Bethlehem Steel, told the Journal the board would consider a series of joint ventures that

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Schedule 10

SCHEDULE OF DEPRECIATION RATES

Act #	Account	Plant Type	12/31/00 Plant Balance ($)	STAFF PROPOSED (%)	CURRENTLY ORDERED (%)	Annual Staff Proposed ($)	Accruals Currently Ordered ($)
353	Station Eq	Transmission	7,015,987	2.76	2.97	193,641	208,375
355	Poles & Fixtures	Transmission	5,736,683	1.87	3.00	107,276	175,319
356	Overhead Conductors	Transmission	6,123,950	1.71	2.50	104,720	153,099
362	Station Eq	Distribution	9,186,373	2.88	2.88	264,584	264,584
364	Poles, Towers & Fixtures	Distribution	13,511,213	2.35	3.00	317,513	405,336
365	Overhead Conductors & Devices	Distribution	11,838,262	2.11	2.50	249,787	295,957
366	Underground Conduct	Distribution	386,251	2.48	2.00	9,579	7,725
367	Underground Conduct	Distribution	1,883,151	2.66	2.50	50,912	47,079
368	Line Transformers	Distribution	8,720,280	2.47	3.33	215,391	290,385
369	Services	Distribution	2,670,353	2.76	3.18	73,702	84,917
370	Meters	Distribution	2,081,068	3.01	3.00	62,640	62,432
371	Security Lights on Customer Premis	Distribution	746,556	3.95	5.88	29,489	43,897
373	Street Lighting & Signal Sys	Distribution	417,932	3.95	5.88	16,508	24,574
390	Structures & Imp	General	2,458,531	3.75	2.86	92,195	70,314
391.0	Office Furniture	General	152,671	5.97	4.75	9,114	7,252
391.1	Office Eq & Computers	General	315,142	13.00	12.86	40,968	40,527
392	Transportation Eq	General	1,641,760	8.92	11.25	146,445	184,698
393	Stores Eq	General	114,195	4.47	5.00	5,104	5,710
394	Tools, Shop & Garage Eq	General	503,995	3.52	4.00	17,741	20,160
395	Laboratory Eq	General	189,131	3.18	3.33	6,014	6,298
396	Power Operated Eq	General	1,713,734	6.11	7.92	104,709	135,728
396.1	Pwr Op Eq-Underground Trenchers	General	126,212	9.00	12.50	11,359	15,776
397	Communication Eq	General	267,945	6.76	5.97	18,113	15,996
398	Miscellaneous Eq	General	16,098	3.66	4.00	589	644
						2,148,093	2,566,782
					D=$418,689 decrease of 16.3%		

Schedule 11