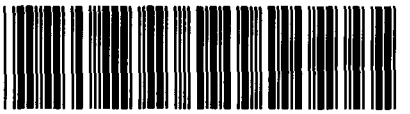

Control Number: 49421

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SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

APPLICATION OF CENTERPOINT	**§**	**BERFORE THE STATE OFFICE**
ENERGY HOUSTON ELECTRIC, LLC	**§**	**OF**
FOR AUTHORITY TO CHANGE RATES	**§**	**ADMINISTRATIVE HEARINGS**

COMMISSION STAFF'S RESPONSE TO
TEXAS COAST UTILITIES COALITION'S (TCUC)
FIRST REQUEST FOR INFORMATION
QUESTION NO. TCUC 1-1 THROUGH 1-10

The Staff of the Public Utility Commission of Texas (Staff) stipulates that the following response(s) to request(s) for information/production/disclosure may be treated by all parties as if the answers were filed under oath.

641

Dated: June 21, 2019

Respectfully submitted,

PUBLIC UTILITY COMMISSION OF TEXAS
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SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

CERTIFICATE OF SERVICE

I certify that a copy of this document will be served on all parties of record June 21, 2019, in accordance with 16 TAC § 22.74.

Rustin Tawater

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

COMMISSION STAFF'S RESPONSE TO CENTERPOINT TEXAS COAST UTILITIES COALITION'S (TCUC) FIRST REQUEST FOR INFORMATION QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-1 Please identify all testimony previously submitted by Mr. Reginald J. Tuvilla that addresses depreciation.

RESPONSE:

Docket No. 48401
SOAH 473-18-3981
APPLICATION OF TEXAS-NEW MEXICO POWER COMPANY FOR AUTHORITY TO CHANGE RATES

Docket No. 48371
SOAH 473-18-3733
ENTERGY TEXAS, INC.'S STATEMENT OF INTENT AND APPLICATION FOR AUTHORITY TO CHANGE RATES

Docket No. 47461
SOAH 473-17-5481
APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE WIND CATHER ENERGY CONNECTION PROJECT

Docket No. 46831
SOAH 473-17-2686
APPLICATION OF EL PASO ELECTRIC COMPANY TO CHANGE RATES

Docket No. 46449
SOAH 473-17-1764
APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR AUTHORITY TO CHANGE RATES

Docket No. 45414
SOAH 473-16-4051
REVIEW OF THE RATES OF SHARYLAND UTILITIES, L.P., ESTABLISHMENT OF RATES FOR SHARYLAND DISTRIBUTION & TRANSMISSION SERVICES, L.L.C., AND REQUEST FOR GRANT OF A CERTIFICATE OF CONVENIENCE AND NECESSITY AND TRANSFER OF CERTIFCATE RIGHTS

Docket No. 44941
SOAH 473-15-5257
APPLICATION OF EL PASO ELECTIC COMPANY TO CHANGE RATES

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

COMMISSION STAFF'S RESPONSE TO CENTERPOINT TEXAS COAST UTILITIES COALITION'S (TCUC) FIRST REQUEST FOR INFORMATION QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-2 Please provide the Excel-based models, original formulas intact, to the extent not already provided, as referred to on page 2, line 21 of Mr. Tuvilla's direct testimony.

RESPONSE: All Excel-based models with original formulas intact are provided in the Direct Testimony of Reginald J. Tuvilla.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

COMMISSION STAFF'S RESPONSE TO CENTERPOINT TEXAS COAST UTILITIES COALITION'S (TCUC) FIRST REQUEST FOR INFORMATION QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-3 Please provide a detailed description of the simulated plant-record (SPR) and actuarial analyses Mr. Tuvilla undertook in assessing CEHE's proposed depreciation rates.

RESPONSE: Please see RJT-3 for an overview of depreciation concepts. Additionally, Mr. Tuvilla relied on the information in the National Association of Regulatory Utility Commissioners (NARUC) manual, *Public Utility Depreciation Practices* (1968 and 1996).

With regard to the SPR analysis, Mr. Tuvilla performed his own SPR analysis using the models provided in his direct testimony based on the data provided in the workpapers of CEHE witness Mr. Dane Watson.

With regard to the actuarial analysis, Mr. Tuvilla performed his own actuarial analysis using the models provided in his direct testimony based on the data provided in the workpapers of Mr. Watson.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT TEXAS COAST UTILITIES COALITION'S (TCUC) FIRST REQUEST FOR INFORMATION QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-4 Please describe all differences, if any, in the SPR and actuarial analyses that Mr. Tuvilla conducted and the SPR and actuarial analyses forming the basis CEHE's proposed life characteristics of CEHE's plant assets.

RESPONSE: Mr. Tuvilla used the same depreciation system as Mr. Watson and TCUC witness Mr. David Garrett to develop his recommendation on CEHE's depreciation rates.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT
TEXAS COAST UTILITIES COALITION'S (TCUC)
FIRST REQUEST FOR INFORMATION
QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-5 Referring to page 7, lines 8-12, and page 8, lines 18-21 of Mr. Tuvilla's direct testimony, please explain the circumstances under which it would have been appropriate to recommend an adjustment to Mr. Watson's proposed life parameters for the transmission, distribution, and general plant accounts.

RESPONSE: If the Iowa Curve proposed by the company was inconsistent with the results of Mr. Tuvilla's SPR or actuarial analyses, Mr. Tuvilla would have recommended an adjustment to Mr. Watson's proposed life parameters.

With regard to the actuarial analysis, Mr. Tuvilla would have recommended an adjustment if a visual inspection of the observed life table was inconsistent with his own analysis.

With regard to the SPR analysis, Mr. Tuvilla would have recommended an adjustment if the Conformance Index and Retirement Experience Index showed that the proposed Iowa Curve was not consistent with his analysis.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT
TEXAS COAST UTILITIES COALITION'S (TCUC)
FIRST REQUEST FOR INFORMATION
QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-6 Please describe the weight Mr. Tuvilla gives to "information gathered from field personnel, engineers and managers," as referred to on page 3, lines 5-6 of Mr. Tuvilla's direct testimony, as a general matter in developing depreciation rates.

RESPONSE: Mr. Tuvilla believes that information gathered from field personnel, engineers, and managers should be included in a comprehensive depreciation study.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT TEXAS COAST UTILITIES COALITION'S (TCUC) FIRST REQUEST FOR INFORMATION QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-7 In assessing CEHE's proposed depreciation rates, please explain whether Mr. Tuvilla gave any weight to the "information gathered from field personnel, engineers and managers" that CEHE witness Mr. Watson relied on in developing CEHE's proposed depreciation rates.

RESPONSE: Mr. Tuvilla considered and gave weight to the "information gathered from field personnel, engineers and managers" that CEHE witness Mr. Watson relied on in developing CEHE's proposed depreciation rates.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT
TEXAS COAST UTILITIES COALITION'S (TCUC)
FIRST REQUEST FOR INFORMATION
QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-8 Please confirm that Staff did not obtain "information gathered from field personnel, engineers and managers" independently from information provided by CEHE.

RESPONSE: Confirm. Regarding Docket No. 49421 – CEHE's Depreciation Study, Staff did not obtain "information gathered from field personnel, engineers and managers" independently from the information provided by CEHE.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT
TEXAS COAST UTILITIES COALITION'S (TCUC)
FIRST REQUEST FOR INFORMATION
QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-9 Please describe the extent to which Mr. Tuvilla evaluated TCUC witness Mr. David Garrett's recommendations and testimony.

RESPONSE: Mr. Tuvilla considered and gave weight to TCUC witness Mr. David Garrett's recommendation and testimony while preparing his own testimony.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

SOAH DOCKET NO. 473-19-3864
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COMMISSION STAFF'S RESPONSE TO CENTERPOINT
TEXAS COAST UTILITIES COALITION'S (TCUC)
FIRST REQUEST FOR INFORMATION
QUESTION NO. TCUC-STAFF 1-1 THROUGH 1-10

TCUC-STAFF 1-10 Please provide all workpapers or other documentation showing all of Mr. Tuvilla's revisions, analyses or comments regarding Mr. Garrett's schedules and/or recommendations.

RESPONSE: Please see attachment 1 and attachment 2 included with this response.

Prepared by: Reginald Tuvilla
Sponsored by: Rustin Tawater

ATTACHMENT 1

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES	§ § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

DIRECT TESTIMONY AND EXHIBITS

OF

DAVID J. GARRETT

ON BEHALF OF

TEXAS COAST UTILITIES COALITION

David J. Garrett
Resolve Utility Consulting PLLC
101 Park Avenue, Suite 1125
Oklahoma City, OK 73102

JUNE 6, 2019

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES	**§ § §**	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

DIRECT TESTIMONY AND EXHIBITS OF DAVID J. GARRETT

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DIRECT TESTIMONY AND EXHIBITS OF DAVID J. GARRETT

EXHIBITS

WORKPAPERS

Provided on CD

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES	**§ § §**	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

DIRECT TESTIMONY AND EXHIBITS OF DAVID J. GARRETT

I. INTRODUCTION

Q. STATE YOUR NAME AND OCCUPATION.

A. My name is David J. Garrett. I am a consultant specializing in public utility regulation. I am the managing member of Resolve Utility Consulting, PLLC. I focus my practice on the primary capital recovery mechanisms for public utility companies: cost of capital and depreciation.

Q. SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a B.B.A. with a major in Finance, an M.B.A., and a Juris Doctor from the University of Oklahoma. I worked in private legal practice for several years before accepting a position as assistant general counsel at the Oklahoma Corporation Commission in 2011. At the Oklahoma Commission, I worked in the Office of General Counsel in regulatory proceedings. In 2012, I began working for the Public Utility Division as a regulatory analyst providing testimony in regulatory proceedings. After leaving the Oklahoma Commission, I formed Resolve Utility Consulting, PLLC, where I have represented various consumer groups, state agencies, and municipalities in utility regulatory proceedings, primarily in the areas of cost of capital and depreciation. I am a Certified Depreciation Professional with the Society of Depreciation Professionals. I am also a Certified Rate of Return Analyst with the Society of Utility and Regulatory Financial Analysts. A more complete description of my qualifications and regulatory experience is included in my curriculum vitae.[1]

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[1] Exhibit DJG-1.

Q. WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of the Texas Cost Utilities Coalition ("TCUC").

Q. DESCRIBE THE PURPOSE AND SCOPE OF YOUR TESTIMONY IN THIS PROCEEDING.

A. I am addressing the direct testimony and depreciation study of Dane A. Watson filed on behalf of CenterPoint Energy Houston Electric, LLC ("CenterPoint Houston" or the "Company"). My testimony proposes several adjustments to the Company's proposed depreciation rates.

II. EXECUTIVE SUMMARY

Q. SUMMARIZE THE KEY POINTS OF YOUR TESTIMONY.

A. In the context of utility ratemaking, "depreciation" refers to a cost allocation system designed to measure the rate by which a utility may recover its capital investments in a systematic and rational manner. I employed a well-established depreciation system and used actuarial and simulated plant record analyses to statistically analyze the Company's depreciable assets in order to develop reasonable depreciation rates in this case. The table below compares TCUC's and the Company's proposed depreciation accrual by plant function.[2]

Figure 1:
Summary Depreciation Accrual Comparison

Plant Function	Plant Balance 12/31/2017	Company Proposal	TCUC Proposal	TCUC Adjustment
Transmission	2,677,169,356	61,070,701	57,970,935	(3,099,766)
Distribution	6,819,502,483	213,587,251	183,151,605	(30,435,646)
General	884,241,963	51,104,951	50,063,481	(1,041,470)
Total	$ 10,380,913,802	$ 325,286,250	$ 290,709,368	**$ (34,576,882)**

[2] Exhibit DJG-2

TCUC's total adjustment would reduce the Company's proposed annual depreciation accrual by $34.6 million.[3]

Q. PLEASE SUMMARIZE THE DEPRECIATION PARAMETERS YOU RECOMMEND TO THE ADJUSTED ACCOUNTS.

A. My proposed adjustments to the Company's depreciation accrual illustrated above are based on service life adjustments to nine of the Company's accounts. The table below contrasts Mr. Watson's position with my position for these accounts.

Figure 2:
Summary Depreciation Accrual Comparison

Account No.	Description	Company's Position Iowa Curve Type	AL	Depr Rate	Annual Accrual	TCUC's Position Iowa Curve Type	AL	Depr Rate	Annual Accrual
	TRANSMISSION PLANT								
E35301	STATION EQUIPMENT	R0.5 -	53	2.05%	19,578,539	R0.5 -	56	1.93%	18,434,817
E35401	TOWERS & FIXTURES	R2.5 -	59	2.15%	14,051,620	R2 -	66	1.85%	12,071,203
	DISTRIBUTION PLANT								
E36201	STATION EQUIPMENT	R1	48	2.14%	24,485,519	R0.5 -	55	1.76%	20,165,356
E36401	POLES,TOWERS,FIXTURE	R0.5 -	35	3.84%	30,462,214	R0.5 -	45	2.84%	22,568,969
E36501	O/H CONDUCT DEVICES	R0.5 -	38	3.24%	31,217,383	R0.5 -	40	3.05%	29,339,028
E36601	UNDERGROUND CONDUIT	R2.5 -	62	1.96%	36,836,530	S1 -	65	1.83%	10,145,092
E36701	U/G CONDUCT/DEVICES	R0.5 -	38	3.34%	33,369,161	L0 -	42	2.87%	28,714,072
E36801	LINE TRANSFORMERS	R1 -	28	3.71%	48,878,877	L0 -	32	2.87%	37,875,814
	GENERAL PLANT								
E39001	STRUCT. & IMPROVEMTS	R4 -	50	2.05%	4,383,342	R2 -	58	1.56%	3,335,954

As shown in the table, I am recommending longer service lives for each of the nine accounts listed in the table, which results in lower annual depreciation accruals for each account. In my opinion, the Company has not met its burden to make a convincing showing that its proposed depreciation rate for these nine accounts is not excessive.

[3] *See* Exhibits DJG-2 and DJG-3.

Q. DESCRIBE WHY IT IS IMPORTANT NOT TO OVERESTIMATE DEPRECIATION RATES.

A. The issue of depreciation is essentially one of timing. Under the rate-base, rate-of-return model, a utility is allowed to recover the original cost of its prudent investments used and useful to provide service. Depreciation systems are designed to allocate those costs in a systematic and rational manner – specifically, over the service life of the utility's assets. If depreciation rates are overestimated (i.e., service lives are underestimated), it encourages economic inefficiency. Unlike competitive firms, regulated utility companies are not always incentivized by natural market forces to make the most economically efficient decisions. If a utility is allowed to recover the cost of an asset before the end of its useful life, this could incentivize the utility to unnecessarily replace the asset in order to increase rate base and ultimately increase earnings; this results in economic waste. Thus, from a public policy perspective, it is preferable for regulators to ensure that assets are not depreciated before the end of their true useful lives.

While underestimating the useful lives of depreciable assets could financially harm current ratepayers and encourage economic waste, unintentionally overestimating depreciable lives (i.e., underestimating depreciation rates) does not harm the Company. This is because if an asset's life is overestimated, there are a variety of measures that regulators can use to ensure the utility is not financially harmed and recovers the full cost of its plant investment. One such measure would be the use of a regulatory asset account. In that case, the Company's original cost investment in these assets would remain in the Company's rate base until they are recovered. Thus, the process of depreciation strives for a perfect match between actual and estimated useful life. When these estimates are not exact, however, it is better from a public policy perspective that useful lives are not underestimated.

III. REGULATORY STANDARDS

Q. DISCUSS THE STANDARD BY WHICH REGULATED UTILITIES ARE ALLOWED TO RECOVER DEPRECIATION EXPENSE.

A. In *Lindheimer v. Illinois Bell Telephone Co.*, the U.S. Supreme Court stated that "depreciation is the loss, not restored by current maintenance, which is due to all the

factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy, and obsolescence."[4] The *Lindheimer* Court also recognized that the original cost of plant assets, rather than present value or some other measure, is the proper basis for calculating depreciation expense.[5] Moreover, the *Lindheimer* Court found:

> [T]he company has the burden of making a convincing showing that the amounts it has charged to operating expenses for depreciation have not been excessive. That burden is not sustained by proof that its general accounting system has been correct. The calculations are mathematical, but the predictions underlying them are essentially matters of opinion.[6]

Thus, the Company bears the burden of making a convincing showing that its proposed depreciation rates are not excessive.

Q. IN THIS CASE, HAS THE COMPANY MADE A CONVINCING SHOWING THAT ITS PROPOSED DEPRECIATION RATES ARE NOT EXCESSIVE?

A. For some accounts, the Company has demonstrated that its proposed rates are reasonable; however, for several accounts the Company has not made a convincing showing that all of its proposed rates are not excessive in my opinion. That is, some of the Company's proposed depreciation rates are excessive and should be adjusted to a more reasonable level, pursuant to the recommendations made in this testimony and as further discussed below.

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4 *Lindheimer v. Illinois Bell Tel. Co.*, 292 U.S. 151, 167 (1934).

5 *Id.* (Referring to the straight-line method, the *Lindheimer* Court stated that "[a]ccording to the principle of this accounting practice, the loss is computed upon the actual cost of the property as entered upon the books, less the expected salvage, and the amount charged each year is one year's pro rata share of the total amount."). The original cost standard was reaffirmed by the Court in *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 606 (1944). The *Hope* Court stated: "Moreover, this Court recognized in [*Lindheimer*], supra, the propriety of basing annual depreciation on cost. By such a procedure the utility is made whole and the integrity of its investment maintained. No more is required."

6 *Id.* at 169.

Q. SHOULD DEPRECIATION REPRESENT AN ALLOCATED COST OF CAPITAL TO OPERATIONS, RATHER THAN A MECHANISM TO DETERMINE LOSS OF VALUE?

A. Yes. While the *Lindheimer* case and other early literature recognizes depreciation as a necessary expense, the language indicates depreciation is primarily a mechanism to determine loss of value.[7] Adoption of this "value concept" would require annual appraisals of extensive utility plant assets and is thus not practical in this context. Rather, the "cost allocation concept" recognizes that depreciation is a cost of providing service, and that in addition to receiving a "return on" invested capital through the allowed rate of return, a utility should also receive a "return of" its invested capital in the form of recovered depreciation expense. The cost allocation concept also satisfies several fundamental accounting principles, including verifiability, neutrality, and the matching principle.[8] The definition of "depreciation accounting" published by the American Institute of Certified Public Accountants ("AICPA") properly reflects the cost allocation concept:

> Depreciation accounting is a system of accounting that aims to distribute cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation.[9]

Thus, the concept of depreciation as "the allocation of cost has proven to be the most useful and most widely used concept."[10]

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[7] *See* Frank K. Wolf & W. Chester Fitch, *Depreciation Systems* 71 (Iowa State University Press 1994).

[8] National Association of Regulatory Utility Commissioners, *Public Utility Depreciation Practices* 12 (NARUC 1996).

[9] American Institute of Accountants, *Accounting Terminology Bulletins Number 1: Review and Résumé* 25 (American Institute of Accountants 1953).

[10] Wolf *supra* n. 7, at 73.

IV. ANALYTIC METHODS

Q. DISCUSS THE DEFINITION AND PURPOSE OF A DEPRECIATION SYSTEM, AS WELL AS THE DEPRECIATION SYSTEM YOU EMPLOYED FOR THIS PROJECT.

A. The regulatory standards set forth above do not mandate a specific procedure for conducting depreciation analyses. These standards, however, direct that analysts use a system for estimating depreciation rates that will result in the "systematic and rational" allocation of capital recovery for the utility. Over the years, analysts have developed "depreciation systems" designed to analyze grouped property in accordance with this standard. A depreciation system may be defined by several primary parameters: 1) a method of allocation; 2) a procedure for applying the method of allocation; 3) a technique of applying the depreciation rate; and 4) a model for analyzing the characteristics of vintage property groups.[11] In this case, I used the straight-line method, the average life procedure, the remaining life technique, and the broad group model. This system would be denoted as an "SL-AL-RL-BG" system. This depreciation system conforms to the regulatory standards set forth above and is commonly used by depreciation analysts in regulatory proceedings. I provide a more detailed discussion of depreciation system parameters, theories, and equations in Appendix A.

Q. DID MR. WATSON USE A SIMILAR DEPRECIATION SYSTEM IN HIS ANALYSIS?

A. Yes. Essentially, Mr. Watson and I used the same depreciation system to develop our proposed depreciation rates. Thus, the discrepancy in our recommendations is not driven by the use of different depreciation systems.

Q. DESCRIBE THE PROCESS YOU USED TO ANALYZE THE COMPANY'S DEPRECIABLE PROPERTY.

A. The study of retirement patterns of industrial property is derived from the actuarial process used to study human mortality. Just as actuarial analysts study historical human mortality data to estimate how long people will survive, depreciation analysts study

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[11] *See* Wolf *supra* n. 7, at 70, 140.

historical plant retirement data to estimate how long property will survive. The most common actuarial method used by depreciation analysts is called the "retirement rate method." In the retirement rate method, original property data, including additions, retirements, transfers, and other transactions, are organized by vintage and transaction year.[12] The retirement rate method is ultimately used to develop an "observed life table," ("OLT") which shows the percentage of property surviving at each age interval. This pattern of property retirement is described as a "survivor curve." The survivor curve derived from the observed life table, however, must be fitted and smoothed with a complete curve in order to determine the ultimate average life of the group.[13] The most widely used survivor curves for this curve-fitting process were developed at Iowa State University in the early 1900s and are commonly known as the "Iowa curves."[14] A more detailed explanation of how the Iowa curves are used in the actuarial analysis of depreciable property is set forth in Appendix C.

Actuarial analysis, however, requires "aged" data. Aged data refers to a collection of property data for which the dates of placements, retirements, transfers, and other actions are known. In keeping aged data, when a utility retires an asset, it would not only record the year it was retired, but it would also track the year the asset was placed into service, or the "vintage" year. The Company, however, did not have aged data available for any of its transmission and distribution accounts. When aged data is not available, and the year-end balances of each account are known, analysts must "simulate" an actuarial analysis by estimating the proportion that each vintage group contributed to year-end balances. For this reason, simulated data is not as reliable as aged data. In order to analyze accounts that do not contain aged data, analysts use the "simulated plant record"

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[12] The "vintage" year refers to the year that a group of property was placed in service (aka "placement" year). The "transaction" year refers to the accounting year in which a property transaction occurred, such as an addition, retirement, or transfer (aka "experience" year).

[13] See Appendix C for a more detailed discussion of the actuarial analysis used to determine the average lives of grouped industrial property.

[14] *See* Appendix B for a more detailed discussion of the Iowa curves.

("SPR") method.[15] Thus, Mr. Watson and I both used the SPR method to analyze the Company's accounts for which aged data was unavailable.

V. SERVICE LIFE ANALYSIS

Q. DESCRIBE THE PROCESS YOU USED TO ESTIMATE SERVICE LIVES FOR THE COMPANY'S DEPRECIABLE ACCOUNTS.

A. To develop service life estimates for the Company's accounts, I obtained and analyzed the Company's actuarial and simulated plant data. Specifically, simulated plant analysis was used to analyze the Company's transmission and distribution assets, while actuarial analysis was used to analyze the Company's general plant assets. I will discuss each process separately below.

A. ACTUARIAL ANALYSIS

Q. PLEASE DESCRIBE THE ACTUARIAL ANALYSIS PROCESS.

A. I used the Company's historical property data and created an observed life table ("OLT") for each account. The data points on the OLT can be plotted to form a curve (the "OLT curve"). The OLT curve is not a theoretical curve, rather, it is actual observed data from the Company's records that indicate the rate of retirement for each property group. An OLT curve by itself, however, is rarely a smooth curve, and is often not a "complete" curve (i.e., it does not end at zero percent surviving). To calculate average life (the area under a curve), a complete survivor curve is required. The Iowa curves are empirically-derived curves based on the extensive studies of the actual mortality patterns of many different types of industrial property. The curve-fitting process involves selecting the best Iowa curve to fit the OLT curve. This can be accomplished through a combination of visual and mathematical curve-fitting techniques, as well as professional judgment. The first step of my approach to curve-fitting involves visually inspecting the OLT curve for any irregularities. For example, if the "tail" end of the curve is erratic and shows a sharp decline over a short period of time, it may indicate that this portion of the data is less reliable, as further discussed below. After visually inspecting the OLT curve, I use a

[15] The SPR Method is further discussed in Appendix D.

mathematical curve-fitting technique which essentially involves measuring the distance between the OLT curve and the selected Iowa curve in order to get an objective assessment of how well the curve fits. After selecting an Iowa curve, I observe the OLT curve along with the Iowa curve on the same graph to determine how well the curve fits. I may repeat this process several times for any given account to ensure that the most reasonable Iowa curve is selected.

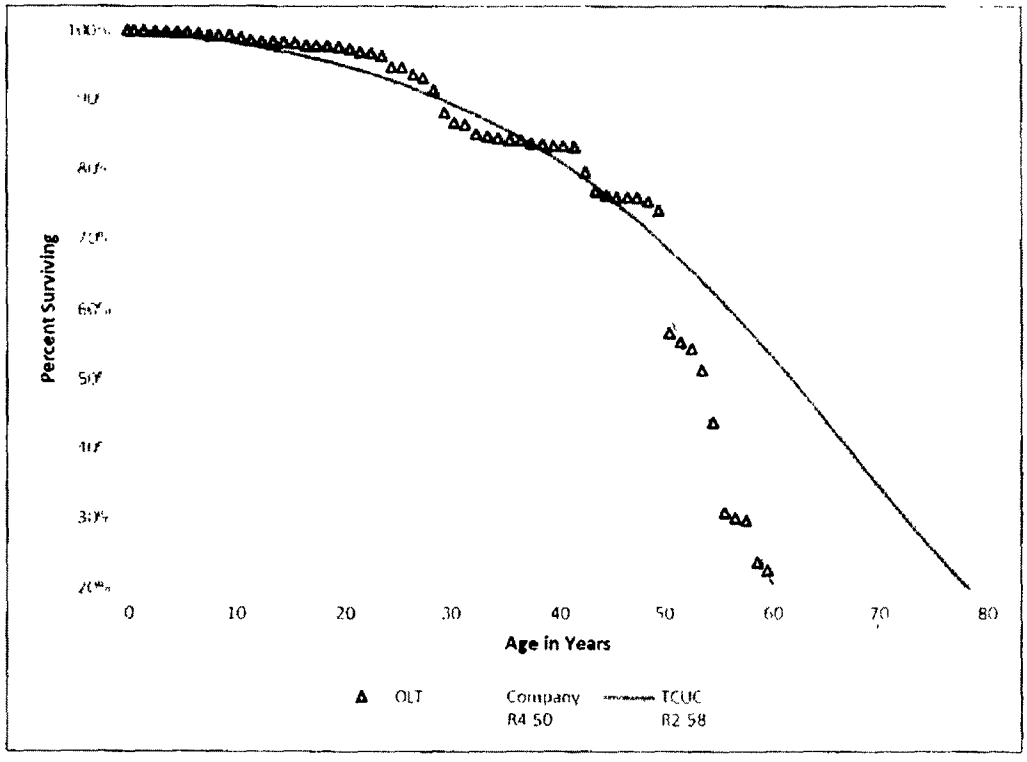
Q. ARE YOU RECOMMENDING ADJUSTMENTS TO ANY OF THE COMPANY'S GENERAL PLANT ACCOUNTS BASED ON YOUR ACTUARIAL ANALYSIS?

A. Yes. I am recommending a service life adjustment to Account 390, which is further discussed below. In addition, it is important to understand that actuarial analysis based on sufficient historical data will produce more reliable results than simulated plant analysis. This is important because, as discussed further below, the simulated plant analysis for many of the Company's transmission and distribution accounts produced service life estimates remarkably shorter than those observed among other utilities that use aged data and actuarial analysis. All else held constant, shorter service life estimates result in higher depreciation rates and expense for customers. In the discussion below regarding my simulated plant analysis, I provide examples of actuarial analysis conducted for the same accounts for other utilities to show the contrasting estimates in service lives. It is important for the Commission to balance the following two factors: 1) consideration of the service lives indicated by the Company's own historical data; and 2) recognition that because the Company's historical data for its transmission and distribution accounts is not "aged" (i.e., actuarial analysis cannot be performed on it), it will produce less reliable results than the service life estimates for other utilities that were based on aged data. Therefore, it is important for the Commission to give some weight and consideration to the service life estimates for other utilities that are based on actuarial analysis of aged data when determining the most reasonable service life estimates for the Company's accounts.

Q. DESCRIBE YOUR SERVICE LIFE ESTIMATE FOR ACCOUNT 390 AND COMPARE IT WITH THE COMPANY'S ESTIMATE.

A. The observed survivor curve for Account 390 is relatively well-suited for conventional Iowa curve-fitting techniques. This is because the observed survivor curve derived from the Company's data for this account follows a relatively smooth pattern and is in the shape of a typical Iowa type curve. The OLT curve for this account is not an estimate; rather, it represents actual data and retirement experience. The OLT curve is represented by the black triangles in the graphs below. Mr. Watson selected the Iowa R4-50 curve to represent the mortality characteristics of this account, and I selected the Iowa R2-58 curve. Both Iowa curves are displayed in the following graph, along with the OLT curve.

Figure 3:
Account 390 – Structures and Improvements



The primary objective of Iowa-curve fitting is to find an Iowa curve that provides a close match to the pattern observed in the OLT curve. As shown in this graph, the R4-50 curve

selected by Mr. Watson does not appear to provide a good fit to the OLT curve in the middle portion of the curve, but it does provide a good fit to several data points at the end of the OLT curve. In contrast, the R2-58 curve I selected provides a good fit to the OLT curve in the upper and middle potions of the curve, but it does not track closely with the few data points at the end of the OLT curve.

Q. SHOULD ALL PORTIONS OF THE OLT CURVE BE GIVEN THE SAME LEVEL OF WEIGHT OR CONSIDERATION FROM A VISUAL, STATISTICAL, OR MATHEMATICAL STANDPOINT?

A. No, not necessarily. In many instances, such as that observed in Account 390, the tail-end of the OLT curve will have less analytical value than other portions of the curve and therefore will be less reliable from a statistical standpoint. This has been confirmed by analysts' observations. Specifically, Wolf & Fitch's "Depreciation Systems," an authoritative treatise in the industry, states: "Points at the end of the curve are often based on fewer exposures and may be given less weight than points based on larger samples. The weight placed on those points will depend on the size of the exposures."[16] This statement reflects exactly what we are observing in Account 390 in this case.

Q. PLEASE DEMONSTRATE WHY THE TAIL END OF THE OLT CURVE FOR ACCOUNT 390 IS NOT STATISTICALLY RELEVANT.

A. First, we can observe from a visual perspective that an irregularity occurs in the OLT curve around age-interval 50. Before age 50, the OLT curve declines in a relatively smooth pattern, and the data points are close together (i.e., there are no sharp declines in the OLT curve). However, at age-interval 50, we can see a sharp decline in the OLT curve. This is highlighted in the graph below.

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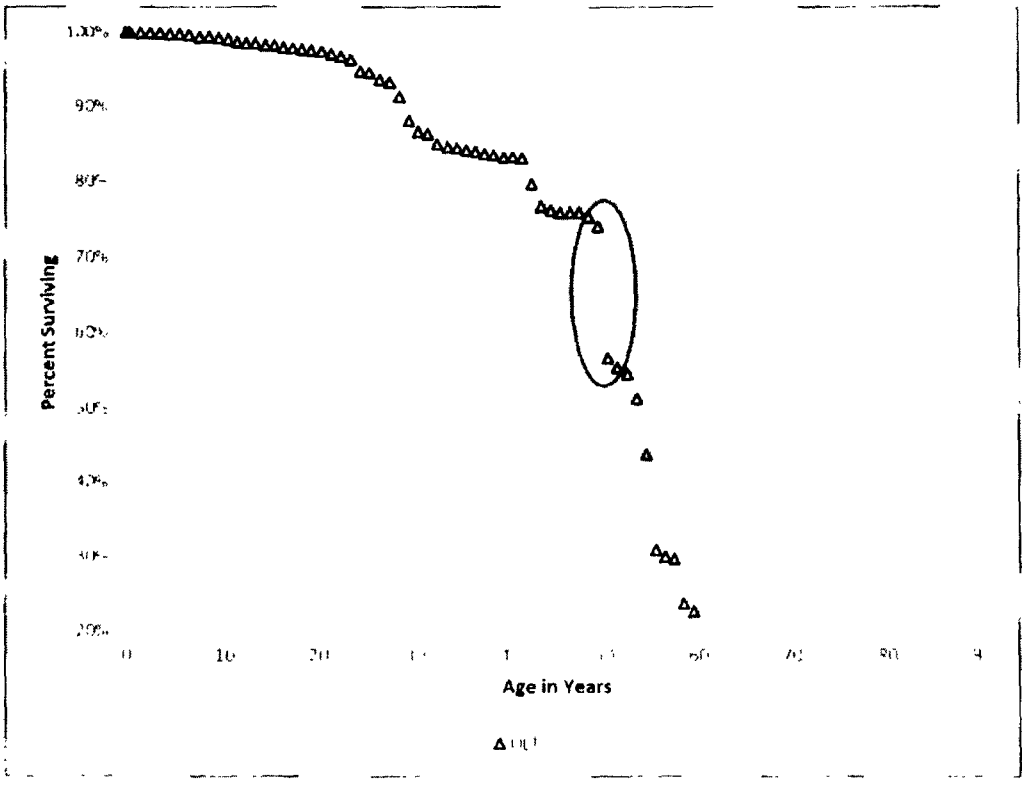
[16] Wolf *supra* n. 7, at 46.

Figure 4:
Account 390 – Observed Survivor Curve



We can look to the actual observed life table for this account to observe what is causing the sharp decline in the OLT curve for this account. The chart below shows portions of the observed life table for this account.

Figure 5:
Account 390 – Portion of Observed Life Table

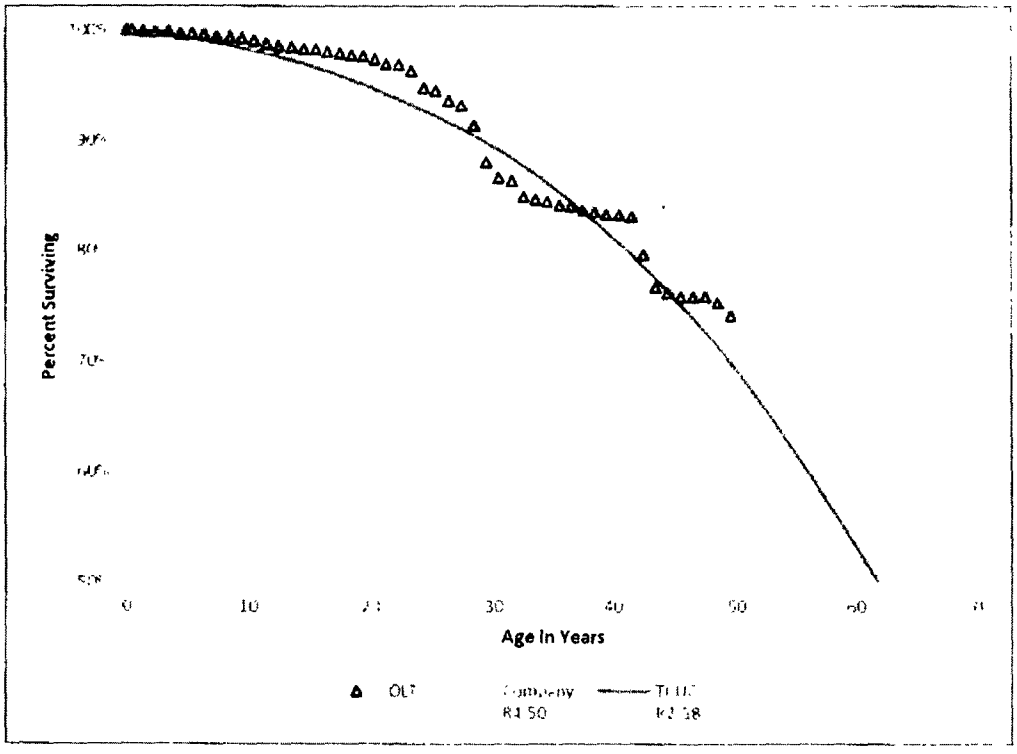
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)
0.0	291,550,513	100.00%
0.5	292,448,293	100.00%
1.5	290,278,714	99.93%
2.5	245,904,218	99.90%
3.5	237,264,196	99.84%
4.5	234,186,360	99.73%
46.5	27,628,945	75.84%
47.5	6,460,346	75.83%
48.5	4,981,085	75.27%
49.5	**4,881,547**	**74.09%**
50.5	**3,656,547**	**56.67%**
51.5	3,121,876	55.40%

The pertinent portions of the observed life table for this account shows the dollars exposed to retirement (or "exposures") at the beginning of each age interval. The beginning amount of dollars exposed to retirement in this account (at age interval zero) is $291.6 million. This number is significant because we will base the statistical relevance of further data points on the OLT curve on the amount of exposures at that age interval relative to the beginning exposures. The data show that in age intervals 0 – 4.5 years, there is a steady decline in the percentage surviving in the far-right column (100% to 99.73%). Then, the data show that for age interval 49.5 years there is a substantial drop in the percent surviving from 74.09% to 56.67%. At this age interval, the amount of exposures is far less ($3.6 million) than the amount of beginning exposures ($291.6 million). This is where the OLT curve starts to "fall apart" visually, and from a statistical standpoint, it is no longer relevant.

Q. ILLUSTRATE AND DESCRIBE THE IOWA CURVE ANALYSIS FOR THIS ACCOUNT WHEN CONDUCTED ON THE RELEVANT PORTIONS OF THE OLT CURVE.

A. The graph below shows the OLT curve for Account 390, including only the statistically relevant portions of the curve. The graph also shows the two proposed Iowa curves for this account.

Figure 6:
Account 390 – Relevant OLT curve with Iowa curves



As shown in the graph, the R2-58 curve I selected provides a much better fit to the observed data. As a result, the remaining life I estimated for this account is more reasonable than Mr. Watson's estimate.[17] Specifically, the R4-50 curve selected by Mr. Watson is too short to provide an accurate projection of remaining life, and thus results in an unreasonably higher depreciation rate proposal for this account.

[17] *See* Exhibit DJG-7.

Q. DOES THE R2-58 CURVE YOU SELECTED PROVIDE A BETTER MATHEMATICAL FIT TO THE STATISTICALLY RELEVANT OBSERVED DATA THAN MR. WATSON'S CURVE?

A. Yes. While it is visually clear that my curve provides a better fit to the observed data, this conclusion can also be verified mathematically. Mathematical curve fitting essentially involves measuring the distance between the OLT curve and the selected Iowa curve. The best mathematically fitted curve is the one that minimizes the distance between the OLT curve and the Iowa curve, thus providing the closest fit. The "distance" between the curves is calculated using the "sum-of-squared differences" ("SSD") technique.[18] Specifically, the SSD for the Company's curve is 0.1442, while the SSD for the R2-58 curve I selected is only 0.0784 when excluding the tail-end of the OLT curve as discussed and illustrated above. Thus, the Iowa curve I selected for this account provides a better fit to the OLT and results in a more reasonable depreciation rate.[19]

B. SIMULATED PLANT RECORD ANALYSIS

Q. DESCRIBE THE SIMULATED PLANT RECORD METHOD OF ANALYSIS.

A. As discussed above, when aged data is not available, we must "simulate" the actuarial data required for remaining life analysis. For the Company's transmission and distribution accounts, both Mr. Watson and I conducted an analysis using the simulated plant record ("SPR") model, because the Company does not keep aged data for these accounts. The SPR method involves analyzing the Company's unaged data by choosing an Iowa curve that best simulates that actual year-end account balances in the account.[20]

Q. DESCRIBE THE METRICS USED TO ASSESS THE FIT OF A SELECTED IOWA CURVE IN THE SPR MODEL.

A. There are two primary metrics used to measure the fit of the Iowa curve selected to describe an SPR account. The first is the "conformance index" ("CI"). The CI is the average observed plant balance for the tested years, divided by the square root of the

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[18] A more detailed discussion of the SSD technique and mathematical curve fitting is provided in Appendix C.

[19] *See* Exhibit DJG-6.

[20] A detailed discussion of the SPR method is included in Appendix D.

average sum of squared differences between the simulated and actual balances plant balances.[21] A higher CI indicates a better fit. Alex Bauhan, who developed the CI, also proposed a scale for measuring the value of the CI, as follows.

Figure 7:
Conformance Index Scale

CI	Value
> 75	Excellent
50 – 75	Good
25 – 50	Fair
< 25	Poor

The second metric used to assess the accuracy of an Iowa curve chosen for SPR analysis is called the "retirement experience index" ("REI") which was also proposed by Bauhan. The REI measures the length of retirement experience in an account. A greater retirement experience indicates more reliability in the analytical results for an account. Bauhan proposed a similar scale for the REI, as follows.

Figure 8:
Retirement Experience Index Scale

REI	Value
> 75%	Excellent
50% – 75%	Good
33% – 50%	Fair
17% – 33%	Poor
0% – 17%	Valueless

According to Bauhan, "[i]n order for a life determination to be considered entirely satisfactory, it should be required that both the retirements experience index and the conformance index be "Good" or better."[22] However, for some of the Company's

[21] Bauhan, A. E., "Life Analysis of Utility Plant for Depreciation Accounting Purposes by the Simulated Plant Record Method," 1947, Appendix of the EEI, 1952.

[22] *Id.* (emphasis added).

accounts there is no Iowa curve available that produces a result of at least "Good" under both scales. This further highlights the relative unreliability of the Company's unaged historical data for these accounts, and why it can be helpful to also consider the service life estimates approved for other utilities that were based on actuarial analyses of superior, aged data.

Q. PLEASE SUMMARIZE THE GENERAL DIFFERENCES BETWEEN YOUR SERVICE LIFE ESTIMATES AND THE COMPANY'S SERVICE LIFE ESTIMATES FOR THESE ACCOUNTS.

A. In this case I am proposing service life adjustments to eight of the Company's transmission and distribution accounts. In my opinion, Mr. Watson's proposed service lives for these accounts are too short and thus result in excessive depreciation accruals and expense amounts. My opinions are based in part on the Company's historical data, but because the Company's data is relatively unreliable, I also considered the approved service lives for the transmission and distribution assets for electric utilities that keep aged data for these accounts. As discussed below. the service lives estimated by Mr. Watson for some accounts are notably shorter than those approved for these other utilities. Mr. Watson's underestimation of these service lives results in unreasonably high depreciation rates and expense for the Company's customers. For the eight accounts discussed in this section, the Company has failed to meet its burden to show that its proposed depreciation rates for these accounts is not excessive.

Q. DO YOU HAVE ANY OTHER GENERAL CRITICISMS OF MR. WATSON'S SERVICE LIFE ESTIMATES?

A. Yes. In discussing his service life estimates for many of the Company's accounts, Mr. Watson has apparently relied heavily upon the expectations of Company personnel with regard to how long the assets will be in service. The Company is the applicant in this case, and it has hired an independent expert in Mr. Watson to develop service life estimates based on specialized, statistical analysis of the Company's historical retirement data. The results of Mr. Watson's analysis will directly and significantly affect the Company's cash flow. To the extent the Company employees have simply told the Company's depreciation expert how long they think the Company's assets will survive, I

think that is problematic and calls into question the objectivity and accuracy of the Company's proposed depreciation rates. For these reasons, I believe it is more reasonable to focus on the statistical data indicating the remaining lives for these accounts. Further, since the Company's unaged data are relatively unreliable, it is also instructive and more reasonable to compare the Company's proposed service lives to those that were approved for utilities with more reliable data for the same accounts.

Q. PLEASE SUMMARIZE THE APPROVED SERVICE LIVES OF OTHER UTILITIES YOU CONSIDERED WHEN DEVELOPING YOUR RECOMMENDATIONS IN THIS CASE.

A. As discussed above, when the plant data provided by a utility is generally unreliable, it can be instructive to consider the approved service lives of other utilities for the same accounts to develop an objective basis for estimating the service life of an asset or group of assets. In addition to relying upon my general experience in depreciation analysis, I also considered the specific approved service lives for three companies SWEPCO, Oklahoma Gas and Electric Company ("OG&E"), and Public Service Company of Oklahoma ("PSO"). I chose these companies in part because I conducted depreciation analysis and filed testimony in their most recent rate cases. The following table presents the eight accounts I propose adjustments to that were analyzed under the SPR method.[23]

[23] *See also* Exhibit DJG-8.

Figure 9:
Peer Group Comparison

Acct	Description	CEHE	Peer Group SWEPCO	Peer Group OG&E	Peer Group PSO	Peer Avg	Peer Avg less CEHE	TCUC
	TRANSMISSION PLANT							
353	STATION EQUIPMENT	53	60	63	60	61	8	56
354	TOWERS & FIXTURES	59	60	75	75	70	11	66
	DISTRIBUTION PLANT							
362	STATION EQUIPMENT	48	55	68	75	66	18	55
364	POLES,TOWERS,FIXTURE	35	55	55	53	54	19	45
365	O/H CONDUCT DEVICES	38	44	54	46	48	10	40
366	UNDERGROUND CONDUIT	62	70	65	78	71	9	65
367	U/G CONDUCT/DEVICES	38	45	64	65	58	20	42
368	LINE TRANSFORMERS	28	50	44	36	43	15	32
	Average	**45**	**55**	**61**	**61**	**59**	**14**	**50**

Figure 9 compares CenterPoint Houston's proposed service life for each account, the approved service lives for the three peer companies, and my service life recommendations on behalf of TCUC. Figure 9 also shows the average approved service lives of the peer group as well as the difference between those averages and CenterPoint Houston's proposed service lives. It is pertinent to note that each one of the Company's proposed service lives for these accounts is notably shorter than the average service lives of the peer group (in the third column from the right). The Company's proposed service lives for these accounts ranges from 8-20 years shorter than the average of the peer group (see the second column from the right). My recommended service lives are shown in the far-right column. I think it is also worth noting that while all of my proposed lives are longer than the Company's proposed lives for these accounts, none of my proposals exceed the average approved life of the peer group. This fact further highlights the overall reasonableness of my recommendation in this case.

1. Account 353 – Station Equipment

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 353.

A. Mr. Watson selected the R0.5-53 Iowa curve for this account, which means he estimates that the Company's transmission station equipment will have an average service life of 53 years. In making his recommendation, Mr. Watson relied on the opinions of Company personnel; he also relied on the SPR results, which he referred to as "sound."[24]

Q. DO YOU AGREE WITH MR. WATSON'S RECOMMENDATION FOR THIS ACCOUNT?

A. No. An average life estimate of only 53 years is remarkably short for this account, especially considering the approved service lives for other utilities for this account, which are as high as 73 years.

Q. ARE THE SPR RESULTS FOR THIS ACCOUNT SATISFACTORY OR "SOUND" AS MR. WATSON DESCRIBED THEM?

A. No. The highest CI score in the overall band for this account was only 26, which is barely above "poor" according to the standard scale. According to Bauhan, who created the SPR method of analysis, both the CI and REI score need to be above 50 to be considered "satisfactory."[25]

Q. PLEASE DISCUSS AND ILLUSTRATE THE ACTUARIAL ANALYSIS USED TO ANALYZE THE SERVICE LIFE FOR THIS ACCOUNT FOR A UTILITY THAT MAINTAINS AGED DATA.

A. Since the Company's SPR analysis is not satisfactory for this account, it is useful to consider the service life estimates approved for other utilities for this account. In the SWEPCO case, I conducted analysis on SWEPCO's aged, actuarial data. Based on a visual and mathematical Iowa curve fitting, that data indicated that the average service life for SWEPCO's Account 353 was 73 years. I presented my findings in testimony, and the Commission agreed with my position, finding that "[i]t is reasonable to apply an

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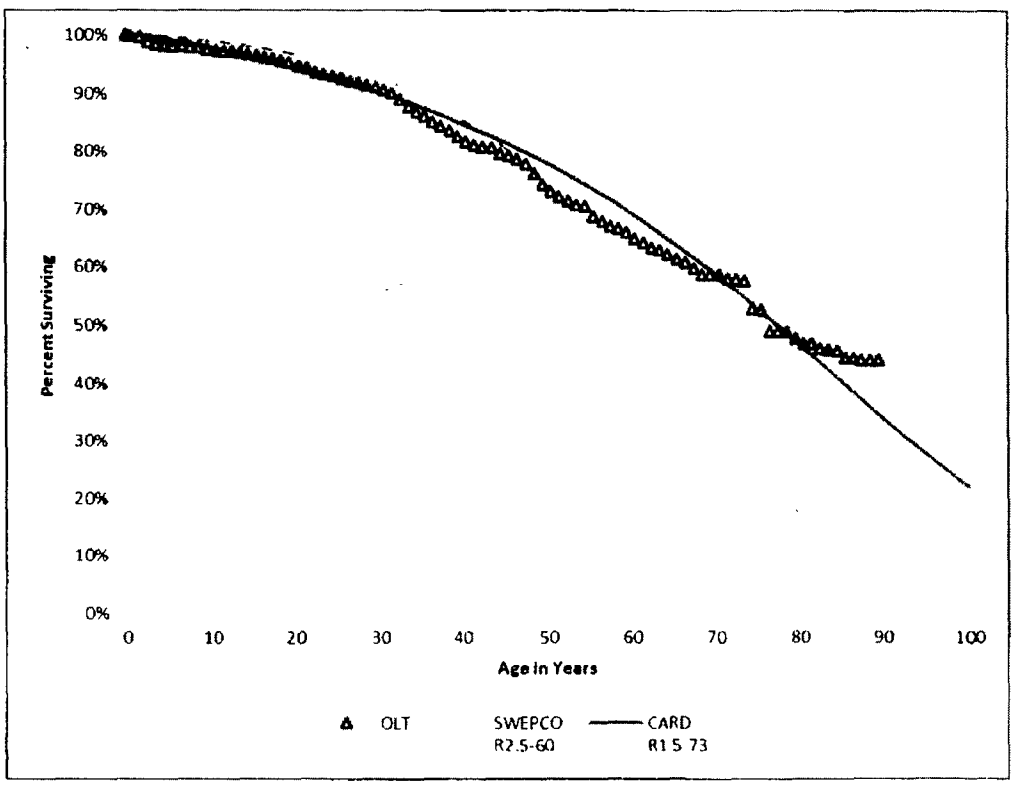
[24] Exhibit DAW-1, p. 27.

[25] Bauhan, A. E., "Life Analysis of Utility Plant for Depreciation Accounting Purposes by the Simulated Plant Record Method," 1947, Appendix of the EEI, 1952.

R1.5-73 Iowa-curve-life combination for FERC Account 353-*Transmission Station Equipment*."[26] The graph below shows the observed survivor curve that was derived from the historical aged data for SWEPCO's Account 353, along with the two competing Iowa curves.[27]

Figure 10:
SWEPCO Account 353 Service Life Estimate Based on Aged Data



In contrast, it is not possible to develop the same kind of reliable historical retirement pattern for the Company's Account 353 (i.e., the OLT curve in the graph above) because the Company does not maintain aged data for this account. Regardless, a service life estimate of only 53 years for this account is unreasonably short in my opinion.

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[26] *Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Order on Rehearing, Finding of Fact 183 (March 19, 2018).

[27] Direct Testimony and Exhibits of David J. Garrett, p. 18, Fig 3, *Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449 (April 25, 2017).

Q. ARE YOU AWARE OF OTHER APPROVED SERVICE LIVES FOR ACCOUNT 353 THAT ARE CLOSER TO THE COMPANY'S ESTIMATE?

A. Yes. The approved service life for OG&E's Account 353 is 56 years.[28] As with the SWEPCO case discussed above, OG&E's service life estimate was based on the study of more reliable actuarial data.

Q. WHAT IS YOUR RECOMMENDATION FOR THIS ACCOUNT?

A. I recommend the R0.5-56 curve for this account. This estimate considers the Company's own simulated historical data (though the data is lacking), as well as the service life indications typically observed for this account in the industry, which are generally higher than the 53-year service life proposed by Mr. Watson. The R0.5-56 curve would accept the curve shape recommended by Mr. Watson but would extend the average life closer to a reasonable level.

2. Account 354 – Towers and Fixtures

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 354.

A. Mr. Watson selected the R2.5-59 curve for this account. According to the SPR analysis, this curve results in a CI score of 73 and an REI score of 98.[29] Mr. Watson based his opinion on his SPR analysis as well as the opinions of Company personnel, stating that Company "engineers believe the towers should last up to 60 years under normal conditions."[30]

Q. DO YOU AGREE WITH MR. WATSON'S ESTIMATE?

A. No. The SPR analysis for this account has several Iowa curve options that could produce satisfactory results. I think it is also instructive to consider the fact that a 59-year average life is substantially shorter than the service life approved for this account for other utilities.

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[28] *See* Final Order No. 662059, p. 8, *Application of Oklahoma Gas and Electric Company*, Docket No. PUD 201500273, Before the Corporation Commission of Oklahoma (March 20, 2017).

[29] Exhibit DJG-10.

[30] Exhibit DAW-1, p. 29.

Q. ARE YOU AWARE OF AN APPROVED SERVICE LIFE FOR ACCOUNT 354 IN EXCESS OF 70 YEARS?

A. Yes. The currently approved service life for PSO's Account 354 is 75 years. This service life was recommended by PSO's witness based on the company's actuarial data.[31] No party opposed the PSO's recommendation for this account and it was adopted by the Oklahoma commission.[32]

Q. DOES CENTERPOINT HOUSTON'S OWN SPR ANALYSIS ALSO SUPPORT A LONGER SERVICE LIFE?

A. Yes. Unlike with Account 353 discussed above, there are several Iowa curve-life combinations for Account 354 that would produce "satisfactory" SPR results under the CI and REI scales. The Iowa curve selected by Mr. Watson (R2.5-59) has a CI score of 73 ("good") and an REI score of 98 ("excellent"). However, the Iowa R2-66 curve has an even higher CI score of 75 and still has an "excellent" REI score of 86.[33]

Q. WHAT IS YOUR RECOMMENDATION FOR THIS ACCOUNT?

A. I recommend the Iowa R2-66 curve be applied to this account. Approved service lives for Account 354 can range as high as 75 years. In addition, CenterPoint Houston's own SPR data, which is at least "satisfactory" for this account, also supports an increased average life of 66 years.

3. Account 362 – Station Equipment

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 362.

A. Mr. Watson selected the R1-48 curve for this account.

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[31] *See* Final Order No. 672864, pp. 5-6, *Application of Public Service Company of Oklahoma*, Docket No. PUD 201700151, Before the Corporation Commission of Oklahoma (January 31, 2018); *see also* Direct Testimony of John J. Spanos, Exhibit JSS-2, p. VII-71, *Application of Public Service Company of Oklahoma*, Docket No. PUD 201700151, Before the Corporation Commission of Oklahoma (June 2017).

[32] *See* Final Order No. 672864, pp. 5-6, *Application of Public Service Company of Oklahoma*, Docket No. PUD 201700151, Before the Corporation Commission of Oklahoma (January 31, 2018).

[33] Exhibit DJG-10.

Q. DO YOU AGREE WITH MR. WATSON'S ESTIMATE?

A. No. As with the two accounts discussed above, Mr. Watson's recommended service life is markedly shorter than what is observed among other utilities for this account, which is typically closer to 60 years. Mr. Watson's low service life proposal would result in an unreasonably high depreciation rate.

Q. WAS A HIGHER SERVICE LIFE FOR ACCOUNT 362 APPROVED IN THE SWEPCO CASE?

A. Yes. In SWEPCO's rate case, the Commission found that "[i]t is reasonable to apply an S0.5-55 Iowa-curve-life combination for FERC Account 362-*Distribution Substation Equipment*."[34]

Q. ARE YOU AWARE OF EVEN LONGER APPROVED SERVICE LIVES FOR ACCOUNT 362?

A. Yes. PSO's currently approved service life for account 362 is 60 years.[35] As with SWEPCO, PSO's service life estimate was based on aged, actuarial data.

Q. WHAT IS YOUR RECOMMENDATION FOR THIS ACCOUNT?

A. I recommend applying the R0.5-55 curve for this account. This recommendation considers the Company's SPR data, but since the SPR data is relatively unreliable, it also considers the fact that service lives approved for utilities with actuarial data for this account typically exceed the 48-year service life proposed by Mr. Watson. The R0.5-55 curve I recommend has a "good" CI score of 55 and an "excellent" REI score of 89.[36] A 55-year average life is also reflective of the average life approved for SWEPCO for this account.

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[34] *See Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Order on Rehearing, Finding of Fact 186 (March 19, 2018).

[35] *See* Final Order No. 672864, pp. 5-6, *Application of Public Service Company of Oklahoma*, Docket No. PUD 201700151, Before the Corporation Commission of Oklahoma (January 31, 2018).

[36] Exhibit DJG-10.

4. Account 364 – Poles, Towers, and Fixtures

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 364.

A. Mr. Watson selected the R0.5-35 curve for this account, which means he is proposing an average service life of only 35 years. He bases his estimate on "discussions with Company engineers" and a "solid" SPR analysis.[37]

Q. DO YOU AGREE WITH MR. WATSON'S POSITION?

A. No. It is curious to me that Mr. Watson would describe the SPR analysis for this account as "solid." The R0.5-35 curve Mr. Watson selected has a CI score of only 16, which under the applicable SPR method criteria would be a "poor" fit.[38] A poor CI score renders the entire SPR analysis as unsatisfactory according to Bauhan.[39] When the SPR analysis is not reliable, it is instructive to consider the approved service lives for other utilities which were based on more reliable actuarial analysis.

Q. DID THE COMMISSION APPROVE A SUBSTANTIALLY HIGHER SERVICE LIFE THAN 35 YEARS FOR SWEPCO FOR ACCOUNT 364?

A. Yes. In the SWEPCO case, the Commission found that "[i]t is reasonable to apply an R0.5-55 Iowa-curve-life combination for FERC Account 364-*Distribution Poles*."[40] The mathematical Iowa curve analysis of SWEPCO's actuarial data for Account 364 indicated that the average service life could have been even higher – at 63 years. It is also worth noting that the analysis in the SWEPCO case was conducted on an observed survivor curve that was relatively smooth and had very sufficient retirement history. This analysis is illustrated in the graph below.

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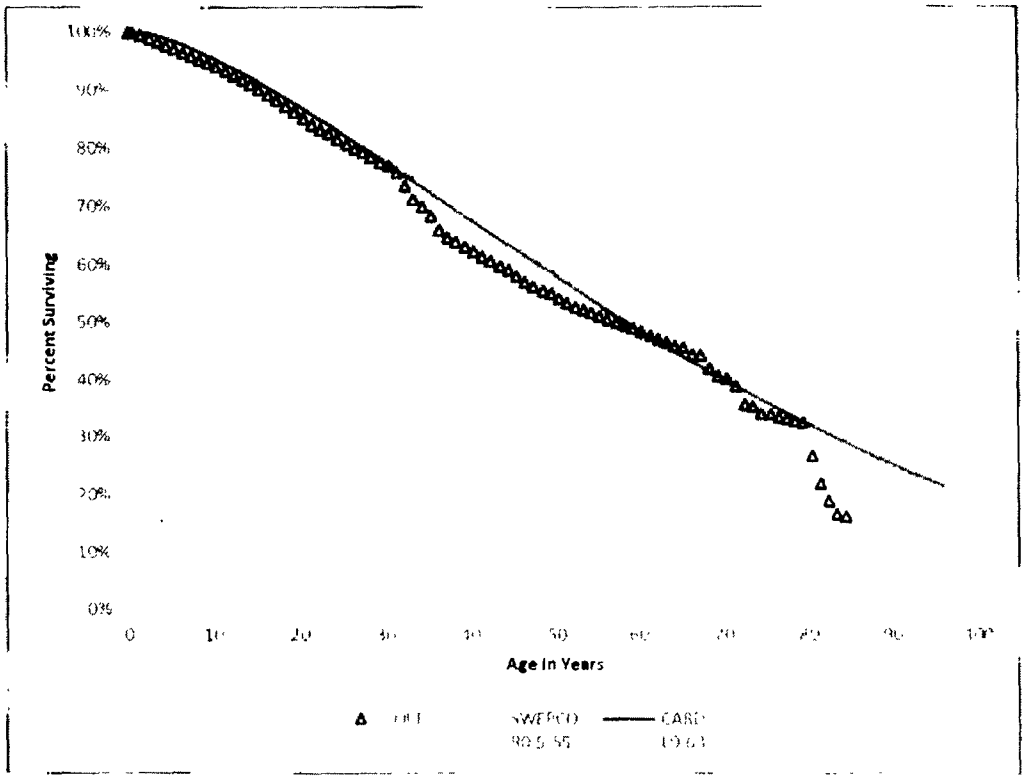
[37] Exhibit DAW-1, p. 43

[38] Bauhan, A. E., "Life Analysis of Utility Plant for Depreciation Accounting Purposes by the Simulated Plant Record Method," 1947, Appendix of the EEI, 1952; *see also* Exhibit DJG-10.

[39] *Id.*

[40] *See Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Order on Rehearing, Finding of Fact 187 (March 19, 2018).

Figure 11:
SWEPCO Account 364 Service Life Estimates Based on Aged Data



Although the Commission did not accept my recommended service life for this account made on behalf of CARD in the SWEPCO case, I acknowledged that SWEPCO's proposal of a 55-year service life was "within the range of reasonableness."[41] In contrast, I do not believe that Mr. Watson's 35-year estimate in this case, which is based on a "poor" and "unsatisfactory" SPR analysis, is within the range of reasonableness for this account.

[41] Direct Testimony and Exhibits of David J. Garrett, p. 23, Fig 6, *Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449 (April 25, 2017).

Q. ARE YOU AWARE OF ANOTHER UTILITY WITH AN APPROVED SERVICE LIFE OF 55 YEARS FOR ACCOUNT 364?

A. Yes. The approved service life for OG&E's Account 364 is also 55 years – the same as SWEPCO.[42] As with the SWEPCO case discussed above, OG&E's service life estimate was based on the study of more reliable actuarial data.

Q. WHAT IS YOUR SERVICE LIFE RECOMMENDATION FOR ACCOUNT 364?

A. The 35-year service life recommend by Mr. Watson for this account is remarkably short. Not only was it based on a poor and unsatisfactory SPR analysis, but it is also 20 years shorter than the approved service lives of the utilities discussed above, including SWEPCO. I recommend applying the R0.5-45 curve for this account. An R0.5-45 curve accepts the curve shape proposed by Mr. Watson but also partially extends the service life – making it closer to the service lives typically approved for this account. It would not be unreasonable for the Commission to adopt a service life of 55 years for this account, however, I am conservatively recommending a service life of only 45 years.

5. Account 365 – Overhead Conductor and Devices

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 365.

A. Mr. Watson selected the R0.5-38 curve for this account, which means he is proposing an average service life of 38 years. Mr. Watson's recommendation is based on estimates of Company personnel as well as the R0.5-38 curve being the "top ranked choice by CI."[43]

Q. DO YOU AGREE WITH MR. WATSON'S ESTIMATE?

A. No. The fact that a particular curve is the "top ranked" in terms of either the CI or REI scale is immaterial if the result is not reliable. In this case, the Iowa curve selected by Mr. Watson results in a "poor" CI score of only 21, which means that the SPR analysis for this account is unsatisfactory and unreliable. In addition, a service life of only 38

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[42] *See* Final Order No. 662059, p. 8, *Application of Oklahoma Gas and Electric Company*, Docket No. PUD 201500273, Before the Corporation Commission of Oklahoma (March 20, 2017).

[43] Exhibit DAW-1, p. 44.

years is notably shorter than the service lives approved for utilities with reliable actuarial data, including SWEPCO, PSO and OG&E.

Q. DESCRIBE THE APPROVED SERVICE LIVES FOR OTHER UTILITIES FOR ACCOUNT 365.

A. The approved service lives for Account 365 for SWEPCO, PSO, and OG&E are 44 years, 46 years, and 54 years, respectively.[44] The approved service lives for these utilities were all based on reliable actuarial data.

Q. WHAT IS YOUR SERVICE LIFE RECOMMENDATION FOR ACCOUNT 365?

A. The 38-year service life recommend by Mr. Watson for this account is based on a poor and unreliable SPR analysis. The more reliable and objective analysis considered for other utilities has resulted in approved service lives of up to 54 years for this account, which is substantially longer than Mr. Watson's proposed service life. In the interest of reasonableness, I propose that the R0.5-40 Iowa curve be applied to this account. This recommendation gives some consideration to the arguments proposed by Mr. Watson while moving the average life closer to those observed in the industry for utilities with more reliable plant data.

6. Account 366 – Underground Conduit

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 366.

A. Mr. Watson selected the R2.5-62 curve for this account, which means he is proposing an average service life of 62 years.[45]

Q. DO YOU AGREE WITH MR. WATSON'S ESTIMATE?

A. No. As with the other accounts discussed above, Mr. Watson's recommended service life is significantly shorter than what is observed among other utilities for this account. In fact, the Commission recently ordered a 70-year average service life for SWEPCO's underground conduit account. In the SWEPCO case, the company's witness

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[44] Exhibit DJG-8.

[45] Exhibit DAW-1, p. 46.

recommended a 70-year average service life for this account and no party to the case disagreed with that estimate.[46] In PSO's rate case, the Oklahoma commission found that a 78-year average life was reasonable for this account.[47] Moreover, the estimates made for this account in the recent SWEPCO and PSO cases were based on adequate, aged historical plant data suitable for actuarial analysis and conventional Iowa curve-fitting techniques.

Q. PLEASE ILLUSTRATE THE RETIREMENT RATE YOU HAVE OBSERVED IN THIS ACCOUNT WHEN DERIVED FROM MORE RELIABLE AGED DATA.

A. In the PSO case discussed above, the company's witness recommended a 65-year average life for Account 366 and I recommended a 78-year average life on behalf of the OIEC as estimated through visual and mathematical Iowa curve-fitting techniques. The graph below shows the OLT curve (i.e., the curve derived from the utility's historical data in black triangles), along with the two Iowa curves proposed in the PSO case. As shown in the graph, the R1.5-78 curve tracks very well with the historical retirement pattern in this account.

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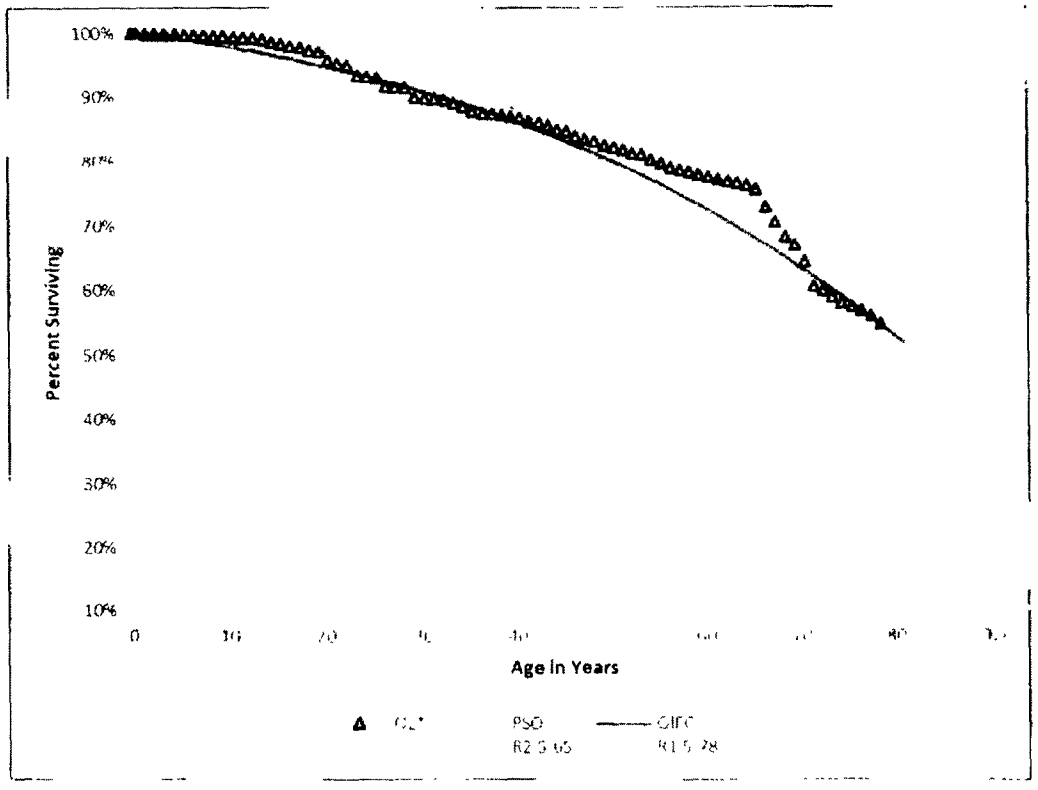
[46] *See Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Direct Testimony and Exhibits of David A. Davis, Exhibit DAD-2 (Dec. 16, 2016).

[47] *See* Final Order No. 672864 in Cause No. PUD 201700151 before the Corporation Commission of Oklahoma (Jan. 31, 2018), adopting Report and Recommendation of the Administrative Law Judge, p. 28 of 239, ¶ 109 (adopting depreciation rates proposed by the Oklahoma Attorney General); *see also* Responsive Testimony of William W. Dunkel, filed September 21, 2017 in Cause No. PUD 201700151 on behalf of the Oklahoma Attorney General.

Figure 12:
PSO Account 366 Service Life Estimates Based on Aged Data



When a utility keeps adequate aged data, depreciation analysts can use the actuarial retirement rate method to develop observed survivor curves like the OLT curve shown above. These curves make average life estimates more accurate and reliable. The Oklahoma commission ultimately ordered a 78-year average service life for Account 366.

Q. WHAT IS YOUR RECOMMENDATION FOR THIS ACCOUNT?

A. I recommend applying the S1-65 curve for this account. Unlike some of the accounts discussed above, the SPR analysis for this account has several Iowa curves that produce satisfactory results (though still less reliable than actuarial data). The S1-65 curve I selected scores as "excellent" in both the CI and REI scales.[48] Moreover, an average life

[48] Exhibit DJG-10.

of 65 years is more reflective of the approved service lives observed for some other utilities with more reliable data, including SWEPCO. Although it would not be unreasonable for the Commission to approve a longer service life, approving the S1-65 curve for this account would also result in a fair and reasonable depreciation rate.

7. Account 367 – Underground Conductor and Devices

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 367.

A. Mr. Watson selected the R0.5-38 curve for this account. According to Mr. Watson, it was the "top ranked" curve according to the SPR analysis. Mr. Watson also stated that "Company personnel indicated a 38 year life" is reasonable.[49]

Q. DO YOU AGREE WITH MR. WATSON'S ESTIMATE?

A. No. Although Mr. Watson's R0.5-38 curve may have been the "top ranked" curve in the SPR analysis, it nonetheless scored a "poor" CI score of only 23 in the overall test band. This means that the SPR analysis is unsatisfactory and unreliable for this account. In addition, the approved service lives for this account among other utilities with more reliable data are substantially longer – some more than 25 years.

Q. DESCRIBE THE APPROVED SERVICE LIVES FOR THIS ACCOUNT FOR SOME OTHER UTILITIES.

A. The approved service lives for Account 367 for SWEPCO, PSO, and OG&E are 45 years, 65 years, and 55 years, respectively.[50] The approved service lives for these utilities were all based on reliable, actuarial data, and are all notably longer than the 38-year service life proposed by Mr. Watson for this account.

Q. WHAT IS YOUR RECOMMENDATION FOR THIS ACCOUNT?

A. I recommend applying the L0-42 curve for this account. Since the SPR analysis produces unreliable results, it is instructive to consider the approved service lives for this account from other utilities when determining a reasonable estimate for the Company's account. I

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[49] Exhibit DAW-1, p. 48.

[50] *See* Exhibit DJG-8.

recommend the L0-42 curve for this account. The L0-42 curve is derived from the Company's SPR analysis, but more importantly, a 42-year average life moves the Company's proposed closer to the range of reasonableness for this account.

8. Account 368 – Line Transformers

Q. DESCRIBE MR. WATSON'S SERVICE LIFE ESTIMATE FOR ACCOUNT 369.

A. Mr. Watson selected the R1-28 curve for this account. Mr. Watson notes that the R1-28 curve is the "top ranked" curve in the SPR analysis.[51]

Q. DO YOU AGREE WITH MR. WATSON'S ESTIMATE?

A. No. In my experience, the average service life for this account typically utilized by utilities is about 43, years is a substantial 15 years longer than Mr. Watson's proposal. Addition, even though the R1-28 curve may be the top ranked curve according to the SPR analysis, it nonetheless has a CI score of only 51, which is just slightly above a "fair" score.[52]

Q. DESCRIBE THE APPROVED SERVICE LIVES FOR THIS ACCOUNT FOR SOME OTHER UTILITIES.

A. The approved service lives for Account 368 for SWEPCO, PSO, and OG&E are 50 years, 36 years, and 44 years, respectively.[53] The approved service lives for these utilities were all based on reliable, actuarial data, and are all notably longer than the 28-year service life proposed by Mr. Watson for this account. In the litigated SWEPCO case, the Commission found that "[i]t is reasonable to apply an L0.5-55 Iowa-curve-life combination for FERC Account 368-*Distribution Line Transformers*."[54]

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[51] Exhibit DAW-1, p. 50.

[52] *See* Exhibit DJG-10.

[53] *See* Exhibit DJG-8.

[54] *See Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Order on Rehearing, Finding of Fact 189 (March 19, 2018).

Q. WHAT IS YOUR RECOMMENDATION FOR THIS ACCOUNT?

A. I recommend applying the L0-32 curve for this account. The L0-32 has a CI score of 40 and an REI score of 100. Although a 32-year service life estimate is substantially shorter than the approved service lives for this account for other utilities, it is nonetheless more reasonable than the Company's proposal. It does not make sense that CenterPoint Houston's line transformers should be expected to survive nearly half as long as SWEPCO's line transformers. The evidence presented by SWEPCO in its rate case included reliable, detailed actuarial analysis. SWEPCO's witness recommended a 50-year average life based on that analysis.[55] I testified in that case and did not dispute SWEPCO's recommendation, as I found it to be reasonable. The Commission also agreed with SWEPCO's proposal. In contrast, an average life proposal of only 28 years is far too short for this account.

VIII. CONCLUSION AND RECOMMENDATION

Q. SUMMARIZE THE KEY POINTS OF YOUR TESTIMONY.

A. In my opinion, adjustments should be made to the Company's proposed depreciation rates for several accounts due to the Company's failure to make a convincing showing that the proposed depreciation rates for these accounts is not excessive. Specifically, I recommend service life adjustments to nine accounts. It is clear that the Company's proposed service lives for these accounts are unreasonably short, which would result in unreasonably high depreciation rates for customers. The historical data provided by the Company to support these service life proposals are less reliable than the aged historical data maintained by the other utilities discussed in this testimony. My recommended service lives represent a balance between the shorter service lives indicated by the Company's unaged historical data and the longer service lives utilized by utilities that maintain superior, aged historical data.

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[55] *See Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Direct Testimony and Exhibits of David A. Davis, Exhibit DAD-2 (Dec. 16, 2016).

Q. WHAT IS TCUC'S RECOMMENDATION TO THE COMMISSION REGARDING THE COMPANY'S DEPRECIATION RATES?

A. TCUC recommends that the Commission adopt the proposed depreciation rates presented in Exhibit DJG-3 for the nine accounts listed therein. Adopting these adjustments would result in an reduction of $34.6 million to the Company's proposed annual depreciation accrual.[56]

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. I reserve the right to supplement this testimony as needed with any additional information that has been requested from the Company but not yet provided. To the extent I did not address an opinion expressed by the Company, it does not constitute an agreement with such opinion.

[56] *See* Exhibit DJG-2.

ATTACHMENT 2

Archived: Wednesday, June 19, 2019 10:20:11 AM
From: Tuvilla, Reginald
Sent: Friday, June 14, 2019 7:34:26 AM
To: Tawater, Rustin
Subject: Cross-Prep
Importance: Normal

Page 7, Line 19 – Garret states that he and Watson are using the same depreciations system.

SPR Analysis (Simulated-Plant Records):
Page 18, Line 23 - Garret is accusing of CEHE Operations Personnel of being unreliable.
Garret compares SPR analyses results as well as compares the proposed rates to SWEPCO, OG&E, and PSO depreciation rates.
353 Station Equipment – 53 vs 56
354 Poles, Towers and Fixtures – 59 vs 66
362 OH Conductors Devices – 48 vs 55
364 Poles, Towers, Fixtures – 35 vs 45
365 UG Conduit Devices – 38 vs 40
366 Underground Conduit – 62 vs 65
367 UG Conduit Devices – 38 vs 42
368 Line Transformers – 28 vs 32

Actuarial Analysis (Aged Data Analysis):
390 Structures and Improvements – R5-40 vs R2-58 – Garret removes everything after age-interval 50 because he believes that's when an irregularity occurs.

Reginald Tuvilla
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