DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

IN THE MATTER OF the Application by NorthWestern Energy for Authority to Increase Retail Electric Utility Service Rates and for Approval of Electric Service Schedules and Rules and Allocated Cost of Service and Rate Design	REGULATORY DIVISION DOCKET NO. D2018.2.12

DIRECT TESTIMONY OF

DAVID J. GARRETT

ON BEHALF OF

THE MONTANA CONSUMER COUNSEL

FEBRUARY 12, 2019

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

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. degree with a major in Finance, an M.B.A. degree, and a Juris Doctor degree 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, where 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. In 2016 I formed Resolve Utility Consulting, PLLC, where I have represented various consumer groups and state agencies 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]

[1] Exhibit DJG-1.

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

A. I am testifying on behalf of the Montana Consumer Counsel ("MCC") regarding the depreciation study and proposed depreciation expense of NorthWestern Energy ("NorthWestern" or the "Company"). I am responding to the Direct Testimony of Dr. Ronald E. White who sponsored the Company's depreciation study.

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 analysis to statistically analyze the Company's depreciable assets to develop reasonable depreciation rates in this case. I applied my estimates of average service life and salvage to the Company's plant and reserve balances as of December 31, 2017. The table below compares the resulting depreciation accrual impact to the depreciation accrual proposed by the Company.[2]

[2] *See also* Exhibit DJG-2.

Figure 1:
Depreciation Accrual Comparison by Plant Function

Plant Function	Plant Balance 12/31/2017	NWE Accrual	MCC Accrual	MCC Adjustment
Steam Production	$ 91,523,075	$ 2,889,378	$ 2,890,616	$ 1,238
Hydraulic Production	517,958,201	9,280,327	9,277,523	(2,804)
Other Production	263,140,036	10,680,253	10,715,884	35,631
Transmission	782,164,759	20,092,856	15,863,714	(4,229,142)
Distribution	1,385,048,678	44,283,866	40,445,703	(3,838,163)
General	57,351,329	2,735,119	2,674,075	(61,044)
Total	$ 3,097,186,078	$ 89,961,799	$ 81,867,516	**$ (8,094,283)**

The original cost and accrual amounts correspond to plant balances as of the depreciation study date. MCC's adjustment to the Company's proposed depreciation expense is addressed in the direct testimony and exhibits of MCC witness Mr. Ralph Smith.

Q. SUMMARIZE THE PRIMARY FACTORS DRIVING MCC'S ADJUSTMENT.

A. I am proposing adjustments to several transmission and distribution accounts. These adjustments include proposing longer average service life estimates and higher (i.e., less negative) net salvage estimates for several accounts. The following table compares my proposed depreciation parameters (i.e., service life and net salvage) with those proposed by Dr. White for the accounts at issue.

Figure 2:
Depreciation Accrual Comparison by Plant Function

Account No.	Description	NWE Proposal Net Salvage	NWE Proposal Iowa Curve Type	NWE Proposal Iowa Curve AL	NWE Proposal Depr Rate	NWE Proposal Annual Accrual	MCC Proposal Net Salvage	MCC Proposal Iowa Curve Type	MCC Proposal Iowa Curve AL	MCC Proposal Depr Rate	MCC Proposal Annual Accrual
	TRANSMISSION PLANT										
353.00	Station Equipment	-10.0%	R1	55	1.96%	4,887,660	-10.0%	R0.5	68	1.44%	3,589,182
355.00	Poles and Fixtures	-110.0%	S4	55	3.77%	10,346,806	-90.0%	R2.5	64	2.58%	7,084,042
	DISTRIBUTION PLANT										
362.00	Station Equipment	-10.0%	L1.5	55	1.97%	4,045,737	-10.0%	L1.5	61	1.66%	3,394,209
364.00	Poles, Towers and Fixtures	-125.0%	R3	45	4.97%	13,850,248	-125.0%	L3	49	4.49%	12,510,393
365.00	OH Conductors and Devices	-100.0%	R4	50	3.87%	4,605,301	-90.0%	R4	50	3.84%	4,564,035
368.00	Line Transformers	-5.0%	R4	45	2.28%	4,802,683	-5.0%	R4	51	1.82%	3,839,491
369.20	Underground Services	-30.0%	S4	40	3.15%	2,851,334	-30.0%	R4	51	2.19%	1,986,364

For each of these accounts, I propose a longer average service life and/or higher net salvage rate than Dr. White, which results in adjustments reducing the Company's proposed depreciation rates. These adjustments will be discussed in more detail later in my testimony.[3]

Q. DID YOU ALSO CALCULATE YOUR PROPOSED DEPRECIATION RATES USING ADJUSTED RESERVE BALANCES?

A. Yes. As discussed in the testimony of MCC witness Ralph Smith, there is an issue as to whether NWE has been using depreciation rates that were authorized by the Commission. To the extent NWE implemented unauthorized or incorrect rates in prior years, the Company would have also recorded an incorrect accumulated depreciation balance. Exhibit DJG-6 shows my proposed depreciation rate calculations under the adjusted accumulated depreciation balance discussed in the testimony of MCC witness Ralph Smith.

[3] *See* Exhibit DJG-3.

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

A. Under the rate base rate of return model, the utility is allowed to recover the original cost of its prudent investments required to provide service. Depreciation systems are designed to allocate those costs in a systematic and rational manner – specifically, over the service lives of the utility's assets. If depreciation rates are overestimated (i.e., service lives are underestimated), economic inefficiency is encouraged. 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, which 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 economic useful lives.

III. LEGAL 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

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

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 Commission must ultimately determine if the Company has met its burden of proof by making a convincing showing that its proposed depreciation rates are not excessive.

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

A. Yes. While the *Lindheimer* case and other early literature recognized depreciation as a necessary expense, the language indicated that depreciation was primarily a mechanism to determine loss of value.[7] Adoption of this "value concept" would require annual appraisals of extensive utility plant 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

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[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.

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

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]

IV. ANALYTIC METHODS

Q. DISCUSS YOUR APPROACH TO ANALYZING THE COMPANY'S DEPRECIABLE PROPERTY IN THIS CASE.

A. I obtained and reviewed all the data that was used to conduct the Company's depreciation study. The depreciation rates proposed by Dr. White were developed based on depreciable property recorded as of December 31, 2017. I used the same plant balances to develop my proposed depreciation rates. MCC witness Ralph Smith applied those rates to the Company's updated plant balances to arrive at MCC's final adjustment to the Company's proposed depreciation rates.[11]

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[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.

[11] *See* Exhibit DJG-4 for a detailed comparison between rates and accrual amounts as of the study date.

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

A. The legal standards set forth above do not mandate a specific procedure for conducting depreciation analysis. 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.[12] In this case, I used the straight line method, the average life procedure, the remaining life technique, and the broad group model to analyze the Company's actuarial data; this system would be denoted as an "SL-AL-RL-BG" system. This depreciation system conforms to the legal 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. DESCRIBE HOW THE BOOK RESERVE IS INCORPORATED INTO THE REMAINING LIFE DEPRECIATION RATE CALCULATION.

A. Under the remaining life technique, the book depreciation reserve is subtracted from the gross plant balance of each account and allocated over the remaining life of plant, as estimated through Iowa curve analysis. This feature of the remaining life technique is

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

important because it highlights the purpose for which the remaining life technique was created. Over time, imbalances between the book reserve and the "theoretical reserve" can develop. Essentially, the theoretical reserve is the balance the book reserve "should be" if the current depreciation parameters (i.e., life and net salvage estimates) had been applied to the account from the beginning. If the "whole life" technique is used instead of the remaining life technique, then a manual rebalancing of the depreciation reserve should be conducted, which adds complexities to a regulatory proceeding. For this reason, the majority of depreciation analysts and regulatory jurisdictions rely on the remaining life technique in depreciation rate development. Under the remaining life technique, there is no need to make a separate adjustment to rebalance or reallocate the theoretical reserve to bring it closer to the book reserve.

The authoritative texts are clear that, when using the remaining life technique, no separate reallocation of the theoretical reserve (or "Calculated Accumulated Depreciation" or "CAD") is required or even necessary. According to Wolf:

> Users of remaining life depreciation often do not explicitly calculate the CAD. As previously discussed, calculation of the CAD is implicit in the use of the remaining life method of adjustment, because the variation between the CAD and the accumulated provision for depreciation is automatically amortized over the remaining life.[13]

The NARUC manual also agrees that no separate reallocation of the theoretical reserve is required when using the remaining life technique:

[13] Wolf *supra* n. 7, at 178 (emphasis added).

> The desirability of using the remaining life technique is that any necessary adjustments of depreciation reserves, because of changes to the estimates of life on net salvage, are accrued automatically over the remaining life of the property.[14]

Thus, the primary purpose of the remaining life technique is the fact that a separate adjustment to the theoretical reserve is not required.

Q. DESPITE THE AUTOMATIC REBALANCING FEATURE INHERENT IN THE REMAINING LIFE TECHNIQUE, DID DR. WHITE PROPOSE A MANUAL REBALANCING OF THE DEPRECIATION RESERVE?

A. Yes. According to Dr. White, it is appropriate to "periodically redistribute or rebalance recorded reserves among primary accounts based on the most recent estimates of retirement dispersion and net salvage rates."[15] In my opinion, Dr. White's approach with regard to manual reserve rebalancing is not in conformance with authoritative depreciation texts or the approach utilized by the majority of depreciation analysts.

V. SERVICE LIFE ANALYSIS

Q. DESCRIBE THE ACTUARIAL 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 predict how long a group of people will live, depreciation analysts study historical plant data to estimate the average lives of property groups. The most common actuarial method used by depreciation analysts is called the "retirement rate method." In the

[14] NARUC *supra* n. 8, at 65 (emphasis added).

[15] Direct Testimony of Dr. Ronald E. White, p. 5, lines 20-23.

retirement rate method, original property data, including additions, retirements, transfers, and other transactions, are organized by vintage and transaction year.[16] 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.[17] 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."[18] A more detailed explanation of how the Iowa curves are used in the actuarial analysis of depreciable property is set forth in Appendix C.

I used the aged property data provided by the Company to create 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). In order 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

[16] 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).

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

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

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 inspecting the OLT curve, I use a mathematical curve-fitting technique which essentially involves measuring the distance between the OLT curve and the selected Iowa curve to get an objective, mathematical 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. DO YOU ALWAYS SELECT THE MATHEMATICALLY BEST-FITTING CURVE?

A. Not necessarily. Mathematical fitting is an important part of the curve-fitting process because it promotes objective, unbiased results. While mathematical curve fitting is important, it may not always yield the optimum result. For example, if there is insufficient historical data in a particular account and OLT curve derived from that data is relatively short and flat, the mathematically "best" curve may be one with a very long average life. However, when there are sufficient data available, mathematical curve fitting can be used as part of an objective service life analysis.

Q. SHOULD EVERY PORTION OF THE OLT CURVE BE GIVEN EQUAL WEIGHT?

A. Not necessarily. Many analysts have observed that the points comprising the "tail end" of the OLT curve may often have less analytical value than other portions of the curve. In fact, "[p]oints 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."[19] In accordance with this standard, an analyst may decide to truncate the tail end of the OLT curve at a certain percent of initial exposures, such as one percent. Using this approach puts a greater emphasis on the most valuable portions of the curve. For my analysis in this case, I not only considered the entirety of the OLT curve, but also conducted further analyses that involved fitting Iowa curves to the most significant part of the OLT curve for certain accounts. In other words, to verify the accuracy of my curve selection, I narrowed the focus of my additional calculation to consider the top 99% of the "exposures" (i.e., dollars exposed to retirement) and to eliminate the tail end of the curve representing the bottom 1% of exposures for some accounts, if necessary. I will illustrate an example of this approach in the discussion below.

Q. GENERALLY, DESCRIBE THE DIFFERENCES BETWEEN THE COMPANY'S SERVICE LIFE PROPOSALS AND YOUR SERVICE LIFE PROPOSALS.

A. For each of these accounts discussed below, the Company's proposed service life, as estimated through Iowa curves, is too short to accurately describe the mortality characteristics of the account in my opinion. For most of the accounts in which I propose a longer service life, such proposal is based on the objective approach of choosing an Iowa

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

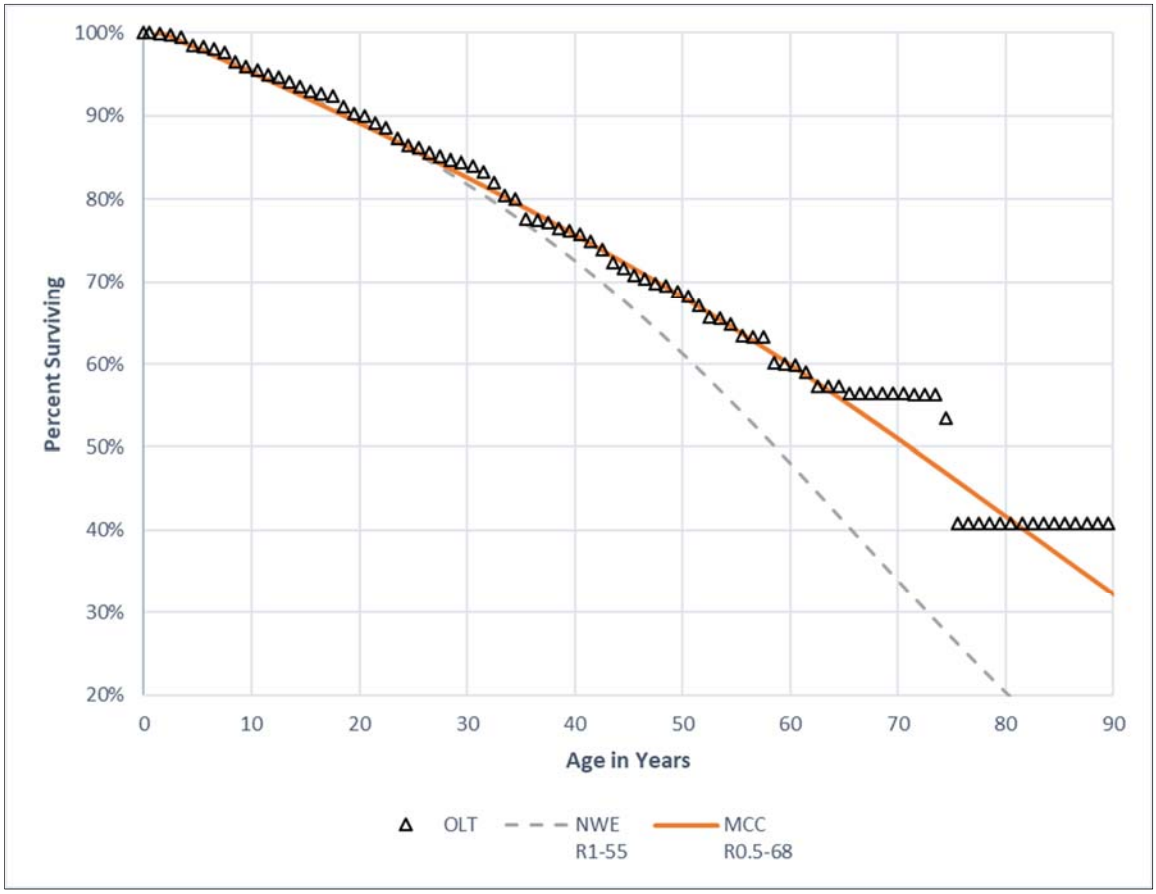
curve that provides a better mathematical and/or visual fit to the observed historical retirement pattern derived from the Company's plant data.

A. Account 353 – Station Equipment

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

A. The observed survivor curve ("OLT curve") derived from the Company's data for this account is relatively smooth and well-suited for Iowa curve fitting. This is because the OLT curve is relatively smooth and follows the typical pattern of a survivor curve for industrial property. The OLT curve for this account is shown in the graph below. The graph also shows the Iowa curves that Dr. White and I selected to estimate the average life for this account. The average life is determined by calculating the area under the Iowa curves. Thus, a longer curve will produce a longer average life. For this account, Dr. White selected the R1-55 Iowa curve and I selected the R0.5-68 curve. Both of these curves are in the "R" family of curves, which means the greatest rate of retirement in these Iowa curves occurs after (or to the right of) the average life. The average lives of these curves are indicated by the numbers after the dashes (55 and 68 in this case).

Figure 3:
Account 353 – Station Equipment



As shown in the graph, the OLT curve declines from age zero to 60 in a near-linear pattern. For this account, the numbers occurring after age 60 are less relevant from a statistical standpoint. Not coincidentally, the pattern of the OLT curve also becomes more erratic after this age interval. Visually, we can see that the R1-55 curve selected by Dr. White does not provide a particularly good fit to the OLT curve, particularly after age 30. Specifically, the R1-55 curve begins to decline too sharply relative to the OLT curve. As a result, the R1-55 curve is too short, and understates the average life in this account. In contrast, the R0.5-68 curve I selected provides a good / close fit to the observed data through all statistically relevant portions of the OLT curve. In my opinion, the R0.5-68

curve therefore provides a more accurate basis upon which to estimate the average life and depreciation rate for this account.

Q. DOES THE IOWA CURVE YOU SELECTED PROVIDE A BETTER MATHEMATICAL FIT TO THE OLT CURVE FOR THIS ACCOUNT?

A. Yes. While visual curve fitting techniques helped us to identify the most statistically relevant portions of the OLT curve for this account, mathematical curve fitting techniques can help us determine which of the two Iowa curves provides the better fit. 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. In this account, it is clear from a mere visual inspection that the R0.5-68 curve provides the closer fit to the historical data; however, we can also confirm this fact mathematically. For this account, the total SSD, or "distance" between the Company's curve and the OLT curve is 2.4985, and the total SSD between the R0.5-68 curve and the OLT curve is only 0.1788.[20] Thus, the R0.5-68 curve is a better mathematical fit and provides a more reasonable service life estimate and depreciation rate for this account.

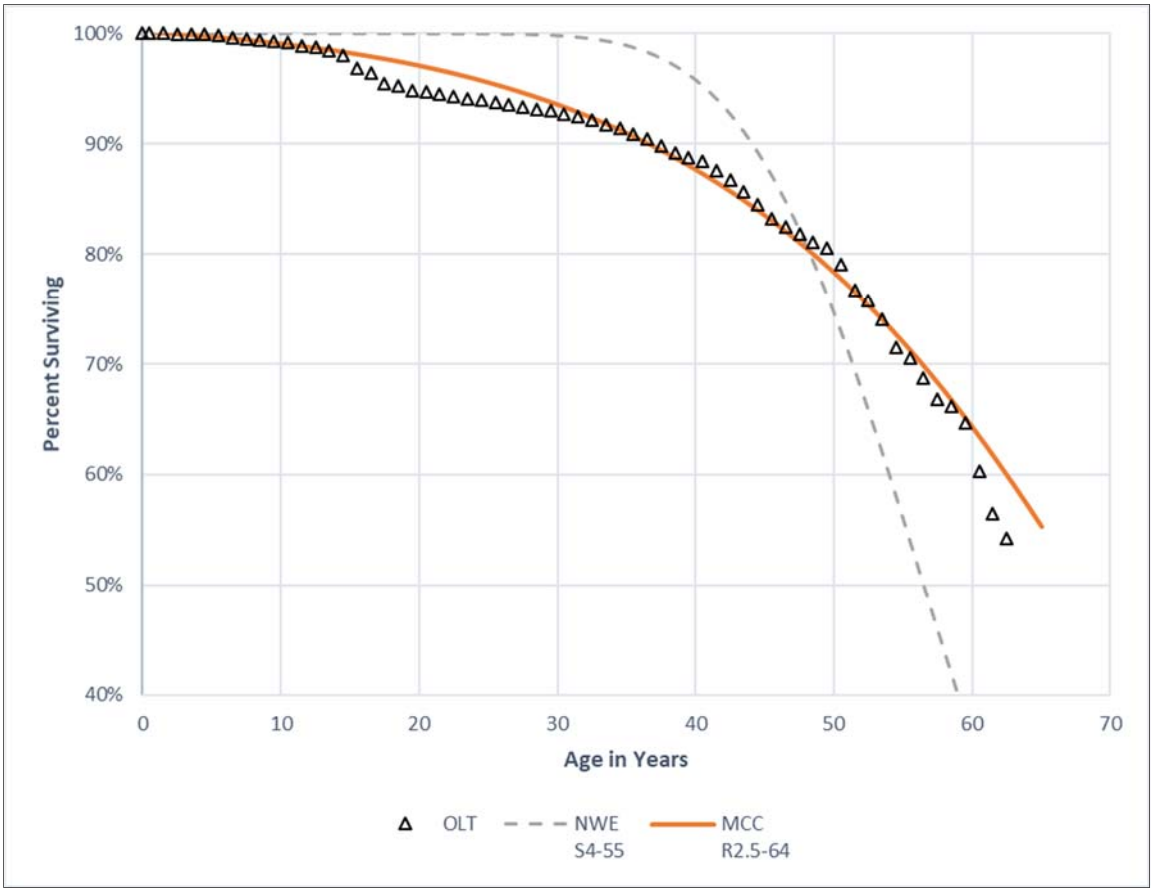
[20] Exhibit DJG-7.

B. Account 355 – Poles and Fixtures

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

A. The OLT curve for this account is well-suited for conventional Iowa curve-fitting techniques. For this account, Dr. White selected the S4-55 curve and I selected the R2.5-64 curve. The graph below shows both Iowa curves juxtaposed with the OLT curve.

Figure 4:
Account 355 – Poles and Fixtures



As with the account discussed above, the Iowa curve chosen by Dr. White for this account provides a curiously bad fit to the OLT curve. To accept the S4-55 curve as suggested by Dr. White for this account, one would essentially have to disregard the Iowa curve-fitting

process entirely and base this estimate on some other (and likely less objective) measure. Both the curve shape and average life of the S4-55 curve do not provide an accurate description of the retirement rate that has occurred in this account thus far, and therefore, the S4-55 curve does not provide an accurate estimate of the future retirement rate and average remaining life for the assets in this account. What is more curious about Dr. White's selected Iowa curve for this account is that he apparently ignored his own analysis. In Dr. White's workpapers, he displayed a graph of the historical retirement for Account 355 along with three Iowa curves: the L1-86, the S1.5-68, and the R3-60.[21] Yet, Dr. White did not select any of these curves shapes or average lives. Instead, he selected an average life much shorter than the average life of these three curves. By selecting a shorter average life than is otherwise indicated by the historical data, Dr. White's depreciation rate for this account is arguably overestimated. Interestingly, the average life of 64 years that I chose for this account is more reflective of the analysis that Dr. White presented in his workpapers, as opposed to the Iowa curve he actually chose for this account.

Q. DOES THE IOWA CURVE YOU SELECTED PROVIDE A BETTER MATHEMATICAL FIT TO THE OLT CURVE FOR THIS ACCOUNT?

A. Yes. While it is visually clear in the graph above that the Iowa curve I selected for this account provides a much closer fit to the historical retirement pattern, we can also confirm this fact mathematically. Specifically, the SSD for the Company's curve is 0.9210 and the SSD for the R2.5-64 curve I selected is only 0.0152, which means it provides the closer fit

[21] *See* 2018 Depreciation Rate Study Volume I Work Papers, Schedule E, survivorship functions for Account 355.

to the Company's historical retirement data for this account.[22] Thus, the average life and depreciation rate derived from the Iowa curve I selected will result in a more reasonable and accurate depreciation rate estimate in my opinion.

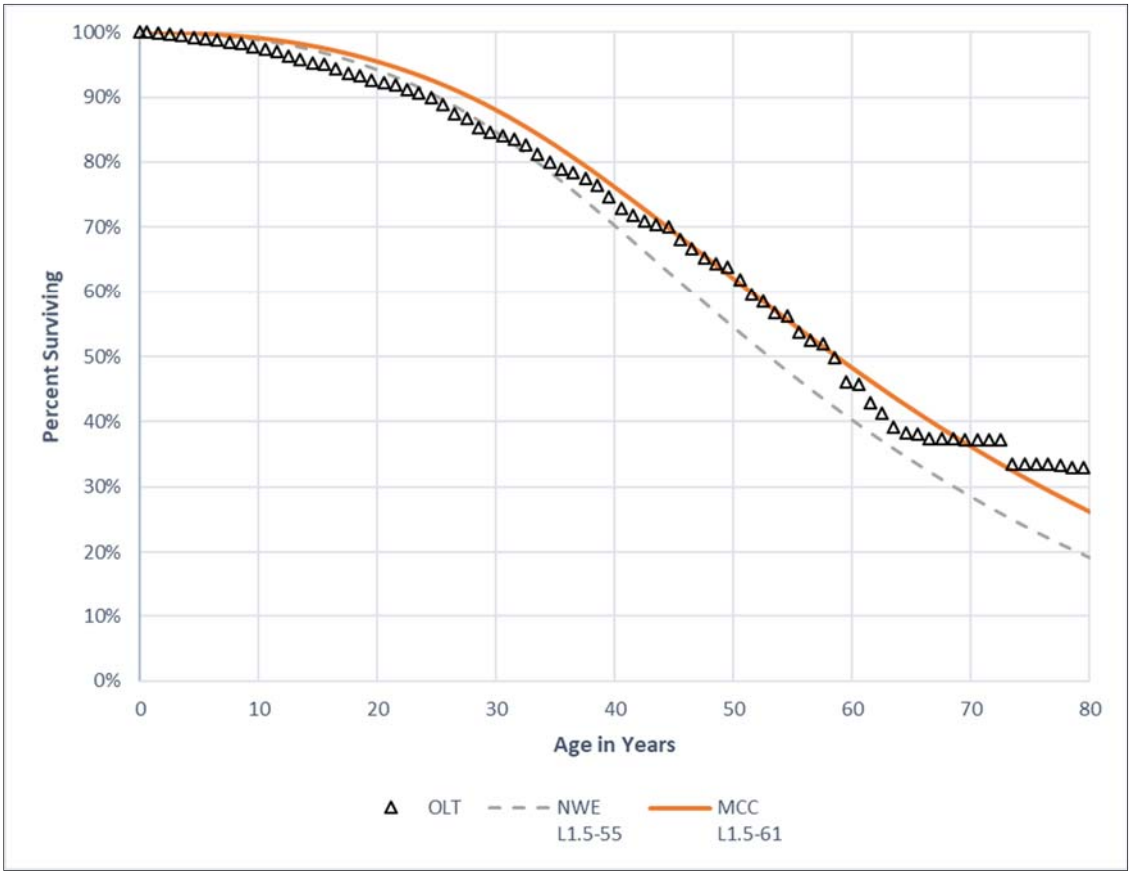
C. Account 362 – Distribution Station Equipment

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

A. As with the accounts discussed above, the OLT curve for Account 362 is well suited for Iowa curve fitting. For this account, Dr. White selected the L1.5-55 curve and I selected the L1.5-61 curve. Thus, we chose the same curve shape, but different average lives. These Iowa curves are presented in the following graph with the OLT curve.

[22] Exhibit DJG-8.

Figure 5:
Account 362 – Distribution Station Equipment



Unlike with the accounts discussed above, the Iowa curve selected by Dr. White for this account is not completely divergent from the OLT curve. In fact, it could be said that both Iowa curves selected for this account are in the "range of reasonableness." However, I still believe it is necessary for the Commission to select the better of the two Iowa curves based on the evidence presented. The Company bears the burden to make a convincing showing for all accounts that its proposed depreciation rates are not excessive. In this case, an objective mathematical calculation will show that the Iowa curve I selected for this account provides a closer fit to the historical retirement pattern derived from the Company's data for this account. This means that the Iowa curve selected by Dr. White results in a shorter

service life estimate and higher depreciation rate than is otherwise indicated by the historical data. Given the mathematical results discussed below, I do not believe the Company met its burden to make a "convincing showing" that its proposed depreciation rate for this account (like the other accounts discussed herein) is not excessive.[23]

Q. DOES THE IOWA CURVE YOU SELECTED FOR THIS ACCOUNT RESULT IN A BETTER MATHEMATICAL FIT TO THE OLT CURVE THAN THE IOWA CURVE SELECTED BY THE COMPANY?

A. Yes. The SSD for the Company's curve is 0.3928 while the SSD for the L1.5-61 curve I selected is only 0.0466. Thus, the L1.5-61 curve results in the closer fit to the observed retirement pattern in this account.[24]

D. Account 364 – Poles, Towers and Fixtures

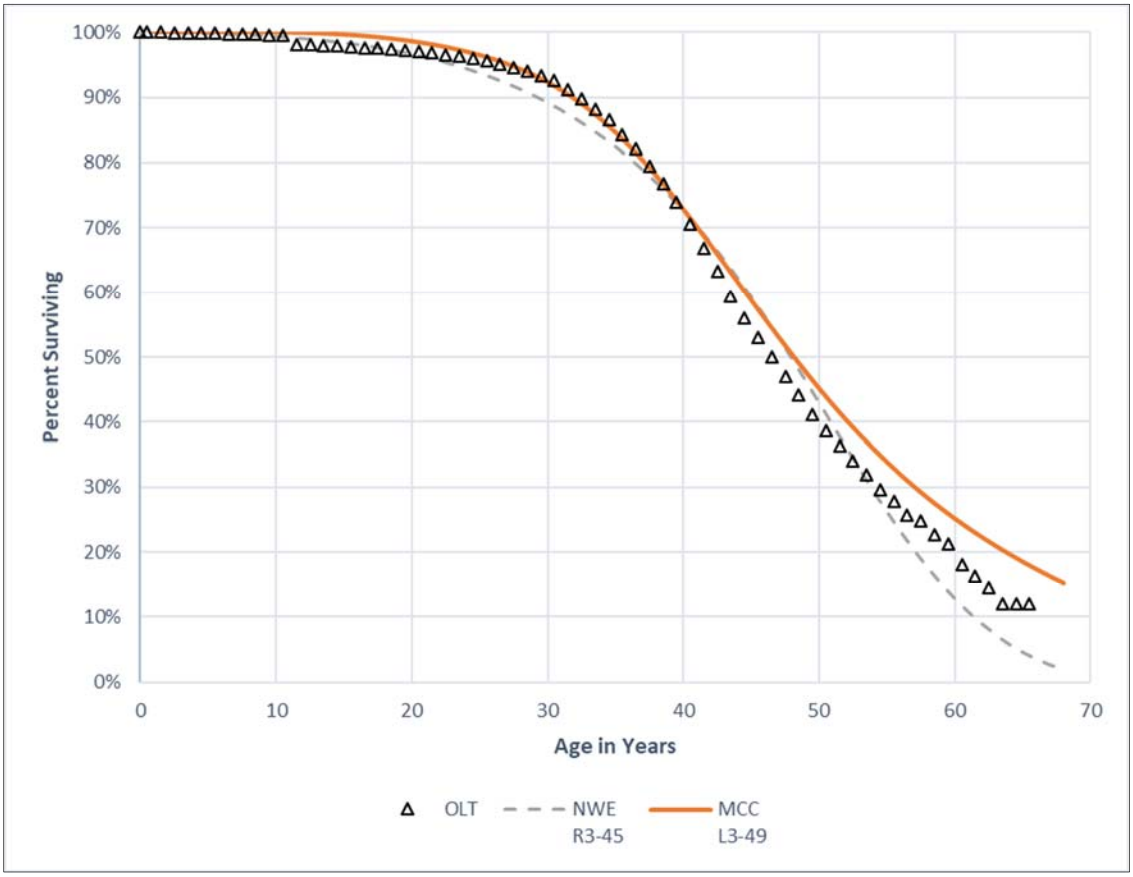
Q. DESCRIBE YOUR SERVICE LIFE ESTIMATE FOR THIS ACCOUNT AND COMPARE IT WITH THE COMPANY'S ESTIMATE.

A. The OLT curve derived from the Company's data for this account is very well-suited for Iowa curve fitting. The two primary purposes of Iowa curve fitting are to get a smooth and complete survivor curve to calculate average life. If we use the complete data band for this account, the OLT curve derived from that data is already relatively smooth and mostly complete, as shown in the graph below. For this account, Dr. White selected the R3-45 curve and I selected the L3-49 curve.

[23] *See Lindheimer v. Illinois Bell Tel. Co.*, 292 U.S. 151, 169 (1934).

[24] Exhibit DJG-9.

Figure 6:
Account 364 – Poles, Towers and Fixtures



Both Iowa curves provide close fits to the OLT curves, and thus it is difficult to tell which curve provides a better fit through mere visual inspection. Mathematical curve fitting techniques are especially useful in situations like this.

Q. DOES THE IOWA CURVE YOU SELECTED PROVIDE A BETTER MATHEMATICAL FIT TO THE OBSERVED DATA THAN THE COMPANY'S CURVE?

A. Yes. Regardless of whether we consider the entire OLT curve, or the portion of the OLT curve that excludes the "tail-end" 1% of the OLT curve based on beginning exposures, the Iowa curve I selected provides a better fit to the observed data. Specifically, the total SSD

for the Company's curve is 0.1362 and the SSD for the L3-49 curve I selected is only 0.0384.[25]

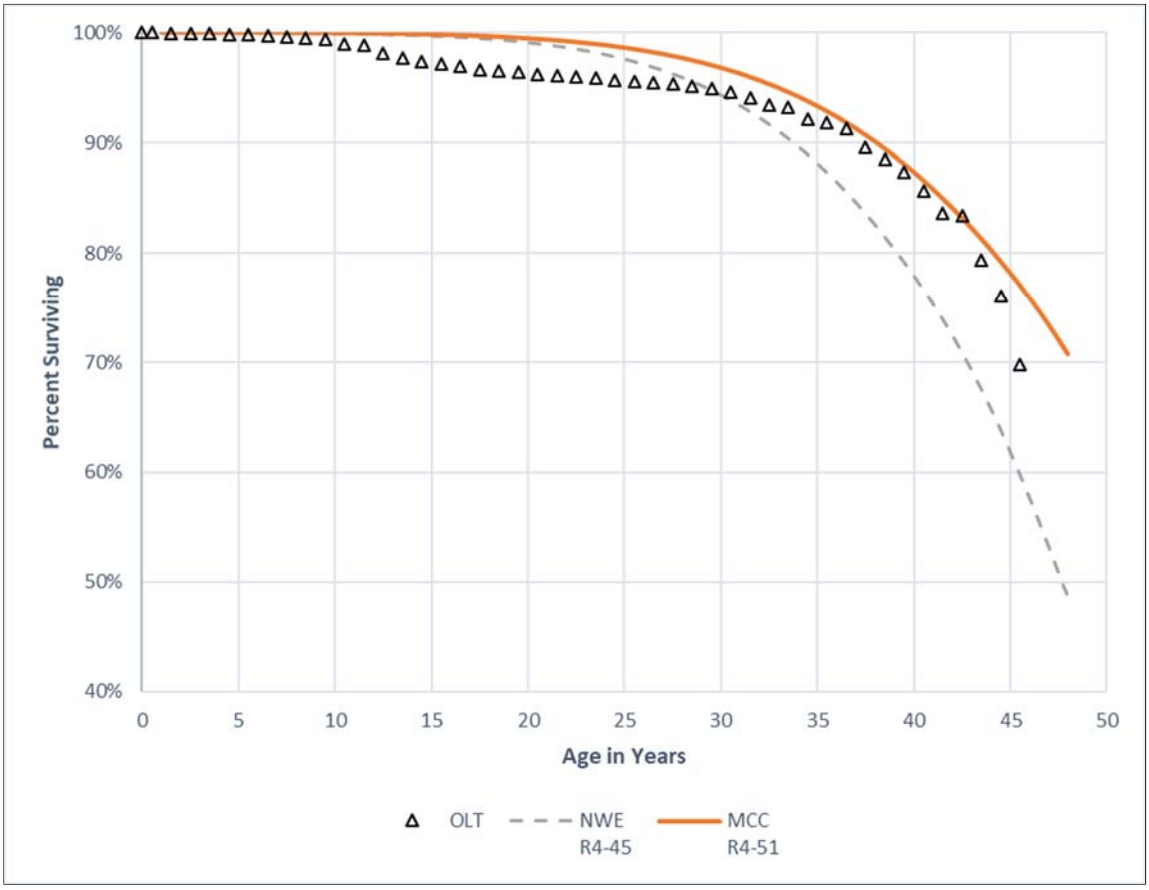
E. Account 368 – Line Transformers

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

A. For this account, Dr. White selected the R4-45 curve and I selected the R4-51 curve. Both Iowa curves are displayed with the OLT curve in the following graph.

[25] Exhibit DJG-10.

Figure 7:
Account 368 – Line Transformers



Sometimes, data points toward the end of OLT curves can become statistically irrelevant based on the amount of dollars they correspond with. However, an examination of the observed life table for this account reveals that even the final data point on this OLT curve still corresponds with $52.9 million dollars exposed to retirement. It is unclear why the Iowa curve selected by Dr. White for this account apparently disregards a substantial, statistically relevant portion of this OLT curve. As a result, the Iowa curve selected by Dr. White does not provide a particularly good fit to the observed data in this account.

Q. DOES THE IOWA CURVE YOU SELECTED PROVIDE A BETTER MATHEMATICAL FIT TO THE OBSERVED DATA THAN THE COMPANY'S CURVE?

A. Yes. Regardless of whether we consider the entire OLT curve, or the portion of the OLT curve that excludes the "tail-end" 1% of the OLT curve based on beginning exposures, the Iowa curve I selected provides a better fit to the observed data under both scenarios. Specifically, the total SSD for the Company's curve is 0.2252 and the SSD for the R4-51 curve I selected is only 0.0152.[26] The fact that the R4-51 provides a better mathematical fit to the historical observed data suggests that it also provides a more reasonable estimate of the average remaining life of the assets in this account and ultimately a more reasonable depreciation rate.

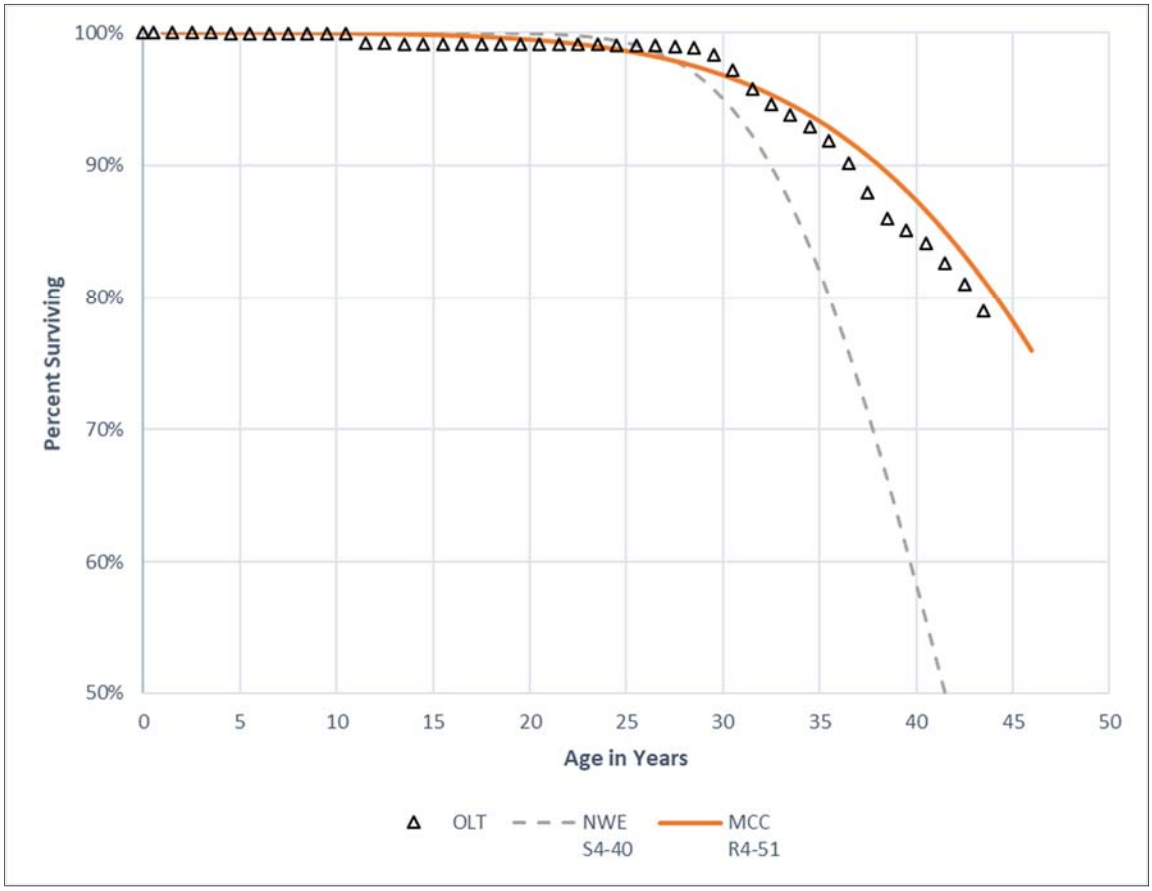
F. Account 369.2 – Underground Services

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

A. For this account, Dr. White selected the S4-40 curve and I selected the R4-51 curve. Both Iowa curves are displayed with the OLT curve in the following graph.

[26] Exhibit DJG-11.

Figure 8:
Account 369.2 – Underground Services



As with the previous account, the Company's Iowa curve curiously ignores relevant data points on the OLT curve.

Q. DOES THE IOWA CURVE YOU SELECTED PROVIDE A BETTER MATHEMATICAL FIT TO THE OBSERVED DATA THAN THE COMPANY'S CURVE?

A. Yes. Although it is clear from a visual inspection of the curves that the Iowa curve I selected provides a closer fit to the observed data for this account, we can confirm the results mathematically. Specifically, the total SSD for the Company's curve is 1.1101 and

the SSD for the R4-51 curve I selected is only 0.0026.[27] The fact that the R4-51 provides a better mathematical fit to the historical observed data suggests that it also provides a more reasonable estimate of the average remaining life of the assets in this account and ultimately a more reasonable depreciation rate.

VI. NET SALVAGE ANALYSIS

Q. DESCRIBE THE CONCEPT OF NET SALVAGE.

A. If an asset has any value left when it is retired from service, a utility might decide to sell the asset. The proceeds from this transaction are called "gross salvage." The corresponding expense associated with the removal of the asset from service is called the "cost of removal." The term "net salvage" equates to gross salvage less the cost of removal. Often, the net salvage for utility assets is a negative number (or percentage) because the cost of removing the assets from service exceeds any proceeds received from selling the assets. When a negative net salvage rate is applied to an account to calculate the depreciation rate, it results in increasing the total depreciable base to be recovered over a particular period of time and increases the depreciation rate. Therefore, a greater negative net salvage rate equates to a higher depreciation rate and expense, all else held constant.

Q. DESCRIBE HOW YOU ANALYZED THE COMPANY'S NET SALVAGE RATES.

A. In this case, I examined the Company's historical net salvage data over different periods of time.

[27] Exhibit DJG-12.

Q. ARE YOU RECOMMENDING ANY ADJUSTMENTS TO THE COMPANY'S PROPOSED NET SALVAGE RATES?

A. Yes. I am recommending net salvage rate adjustments on two accounts: Account 355 (Poles and Fixtures) and Account 365 (Overhead Conductors and Devices).

Q. DESCRIBE THE COMPANY'S NET SALVAGE PROPOSAL FOR ACCOUNT 355.

A. For Account 355, Dr. White proposes a negative 110% net salvage rate.[28] A negative net salvage percentage means the Company estimates that the cost to remove an asset from service will be greater than the proceeds received from selling the asset once it is removed. It is not unusual to see recorded and estimated negative net salvage rates when dealing with utility property. However, the Company must still make a convincing showing that its proposed net salvage rates are not excessive (i.e., too negative).

Q. DO YOU AGREE WITH THE COMPANY'S PROPOSED NET SALVAGE RATES FOR THIS ACCOUNT?

A. No. According to the historical net salvage data for this account, the overall net salvage rate is -57%.[29] This means the Company's net salvage estimate of -110% is nearly double that amount. While recent trends show that the negative net salvage rate going forward will be more negative than -57%, three out of the last five years have shown salvage rates less than (more positive than) -75%, equating to a recent five-year average of only -92%.[30]

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[28] *See* Exhibit REW-2, Statement F.

[29] *See* 2018 Depreciation Rate Study Volume I Work Papers, Schedule F, Unadjusted Net Salvage History for Account 355.

[30] *Id*.

Q. WHAT IS YOUR RECOMMENDED NET SALVAGE RATE FOR ACCOUNT 355?

A. While I would acknowledge that the future net salvage rate in this account will likely be more negative than the total net salvage rate of -57%, I believe an estimate of -110% goes too far. Instead, I believe a more reasonable net salvage rate estimate for this account would be -90%. This estimate represents a good balance between the average historical net salvage rate observed in this account and the trending net salvage rates observed more recently. Also, a net salvage rate of -90% is reflective of the most recent five-year average of net salvage rates in this account.

Q. DESCRIBE THE COMPANY'S NET SALVAGE PROPOSAL FOR ACCOUNT 365.

A. For Account 365, Dr. White proposes a negative 100% net salvage rate.[31]

Q. DO YOU AGREE WITH THE COMPANY'S PROPOSED NET SALVAGE RATES FOR THIS ACCOUNT?

A. No. According to the historical net salvage data for this account, the overall net salvage rate is a positive 18%.[32] While recent trends show that the net salvage rate going forward will be less than 18%, I believe it is equitable to give some consideration to more than a few years of historical data when making net salvage estimates; doing so provides more data points for analysis and can help smooth trends in otherwise volatile data. For example, the net salvage rate in 2010 was a positive 914% followed by a dramatic decrease to 6%

[31] *See* Exhibit REW-2, Statement F.

[32] *See* 2018 Depreciation Rate Study Volume I Work Papers, Schedule F, Unadjusted Net Salvage History for Account 365.

the following year, then to -225% the year after.[33] When net salvage rates are fluctuating so drastically, it is prudent to consider a longer period of time for analysis.

Q. WHAT IS YOUR RECOMMENDED NET SALVAGE RATE FOR ACCOUNT 355?

A. While I would acknowledge the future net salvage rate in this account will likely be less than the total net salvage rate of 18%, I believe an estimate of -100% goes too far. Instead, I believe a more reasonable net salvage rate estimate for this account would be -90%. This estimate represents a good balance between the average historical net salvage rate observed in this account and the trending net salvage rates observed more recently. Also, a net salvage rate of -90% is reflective of the most recent five-year average of net salvage rates in this account.

VII. CONCLUSION AND RECOMMENDATION

Q. SUMMARIZE THE KEY POINTS OF YOUR TESTIMONY.

A. I employed a well-established depreciation system and used actuarial analysis to statistically analyze the Company's depreciable assets in order to develop reasonable depreciation rates in this case. I made adjustments to the Company's proposed service lives and net salvage rates for several of its transmission and distribution accounts. For these accounts, the Company did not meet its burden to make a convincing showing that its proposed depreciation rates are not excessive. I used a combination of visual and mathematical Iowa curve fitting techniques along with professional judgment to arrive at well-supported estimates for service life and net salvage rates for these accounts. The

[33] *Id.*

impact to depreciation expense resulting from the depreciation rates I propose in my testimony and workpapers is discussed and presented in the direct testimony of MCC witness Ralph Smith.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

APPENDIX A:

THE DEPRECIATION SYSTEM

A depreciation accounting system may be thought of as a dynamic system in which estimates of life and salvage are inputs to the system, and the accumulated depreciation account is a measure of the state of the system at any given time.[34] The primary objective of the depreciation system is the timely recovery of capital. The process for calculating the annual accruals is determined by the factors required to define the system. A depreciation system should be defined by four primary factors: 1) a method of allocation; 2) a procedure for applying the method of allocation to a group of property; 3) a technique for applying the depreciation rate; and 4) a model for analyzing the characteristics of vintage groups comprising a continuous property group.[35] The figure below illustrates the basic concept of a depreciation system and includes some of the available parameters.[36]

There are hundreds of potential combinations of methods, procedures, techniques, and models, but in practice, analysts use only a few combinations. Ultimately, the system selected must result in the systematic and rational allocation of capital recovery for the utility. Each of the four primary factors defining the parameters of a depreciation system is discussed further below.

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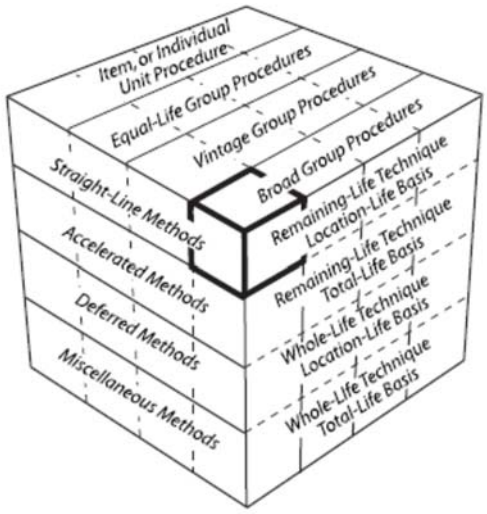
[34] Wolf *supra* n. 7, at 69-70.

[35] *Id.* at 70, 139-40.

[36] Edison Electric Institute, *Introduction to Depreciation* (inside cover) (EEI April 2013). Some definitions of the terms shown in this diagram are not consistent among depreciation practitioners and literature due to the fact that depreciation analysis is a relatively small and fragmented field. This diagram simply illustrates some of the available parameters of a depreciation system.

Figure 9:
The Depreciation System Cube



1. Allocation Methods

The "method" refers to the pattern of depreciation in relation to the accounting periods. The method most commonly used in the regulatory context is the "straight-line method" – a type of age-life method in which the depreciable cost of plant is charged in equal amounts to each accounting period over the service life of plant.[37] Because group depreciation rates and plant balances often change, the amount of the annual accrual rarely remains the same, even when the straight-line method is employed.[38] The basic formula for the straight-line method is as follows:[39]

[37] NARUC *supra* n. 8, at 56.

[38] *Id*.

[39] *Id*.

Equation 1:
Straight-Line Accrual

$$Annual\ Accrual = \frac{Gross\ Plant - Net\ Salavage}{Service\ Life}$$

Gross plant is a known amount from the utility's records, while both net salvage and service life must be estimated to calculate the annual accrual. The straight-line method differs from accelerated methods of recovery, such as the "sum-of-the-years-digits" method and the "declining balance" method. Accelerated methods are primarily used for tax purposes and are rarely used in the regulatory context for determining annual accruals.[40] In practice, the annual accrual is expressed as a rate which is applied to the original cost of plant to determine the annual accrual in dollars. The formula for determining the straight-line rate is as follows:[41]

Equation 2:
Straight-Line Rate

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

2. Grouping Procedures

The "procedure" refers to the way the allocation method is applied through subdividing the total property into groups.[42] While single units may be analyzed for depreciation, a group plan of depreciation is particularly adaptable to utility property. Employing a grouping procedure allows for a composite application of depreciation rates to groups of similar property, rather than

[40] *Id*. at 57.

[41] *Id*. at 56.

[42] Wolf *supra* n. 7, at 74-75.

conducting calculations for each unit. Whereas an individual unit of property has a single life, a group of property displays a dispersion of lives and the life characteristics of the group must be described statistically.[43] When analyzing mass property categories, it is important that each group contains homogenous units of plant that are used in the same general manner throughout the plant and operated under the same general conditions.[44]

The "average life" and "equal life" grouping procedures are the two most common. In the average life procedure, a constant annual accrual rate based on the average life of all property in the group is applied to the surviving property. While property having shorter lives than the group average will not be fully depreciated, and likewise, property having longer lives than the group average will be over-depreciated, the ultimate result is that the group will be fully depreciated by the time of the final retirement.[45] Thus, the average life procedure treats each unit as though its life is equal to the average life of the group. In contrast, the equal life procedure treats each unit in the group as though its life was known.[46] Under the equal life procedure the property is divided into subgroups that each has a common life.[47]

3. Application Techniques

The third factor of a depreciation system is the "technique" for applying the depreciation rate. There are two commonly used techniques: "whole life" and "remaining life." The whole life

[43] *Id*. at 74.

[44] NARUC *supra* n. 8, at 61-62.

[45] *See* Wolf *supr*a n. 7, at 74-75.

[46] *Id*. at 75.

[47] *Id*.

technique applies the depreciation rate on the estimated average service life of a group, while the remaining life technique seeks to recover undepreciated costs over the remaining life of the plant.[48]

In choosing the application technique, consideration should be given to the proper level of the accumulated depreciation account. Depreciation accrual rates are calculated using estimates of service life and salvage. Periodically these estimates must be revised due to changing conditions, which cause the accumulated depreciation account to be higher or lower than necessary. Unless some corrective action is taken, the annual accruals will not equal the original cost of the plant at the time of final retirement.[49] Analysts can calculate the level of imbalance in the accumulated depreciation account by determining the "calculated accumulated depreciation," (a.k.a. "theoretical reserve" and referred to in these appendices as "CAD"). The CAD is the calculated balance that would be in the accumulated depreciation account at a point in time using current depreciation parameters.[50] An imbalance exists when the actual accumulated depreciation account does not equal the CAD. The choice of application technique will affect how the imbalance is dealt with.

Use of the whole life technique requires that an adjustment be made to accumulated depreciation after calculation of the CAD. The adjustment can be made in a lump sum or over a period of time. With use of the remaining life technique, however, adjustments to accumulated depreciation are amortized over the remaining life of the property and are automatically included

[48] NARUC *supra* n. 8, at 63-64.

[49] Wolf *supra* n. 7, at 83.

[50] NARUC *supra* n. 8, at 325.

in the annual accrual.[51] This is one reason that the remaining life technique is popular among practitioners and regulators. The basic formula for the remaining life technique is as follows:[52]

Equation 3:
Remaining Life Accrual

$$Annual\ Accrual = \frac{Gross\ Plant - Accumulated\ Depreciation - Net\ Salvage}{Average\ Remaining\ Life}$$

The remaining life accrual formula is similar to the basic straight-line accrual formula above with two notable exceptions. First, the numerator has an additional factor in the remaining life formula: the accumulated depreciation. Second, the denominator is "average remaining life" instead of "average life." Essentially, the future accrual of plant (gross plant less accumulated depreciation) is allocated over the remaining life of plant. Thus, the adjustment to accumulated depreciation is "automatic" in the sense that it is built into the remaining life calculation.[53]

4. Analysis Model

The fourth parameter of a depreciation system, the "model," relates to the way of viewing the life and salvage characteristics of the vintage groups that have been combined to form a continuous property group for depreciation purposes.[54] A continuous property group is created when vintage groups are combined to form a common group. Over time, the characteristics of the property may change, but the continuous property group will continue. The two analysis models

[51] NARUC *supra* n. 8, at 65 ("The desirability of using the remaining life technique is that any necessary adjustments of [accumulated depreciation] . . . are accrued automatically over the remaining life of the property. Once commenced, adjustments to the depreciation reserve, outside of those inherent in the remaining life rate would require regulatory approval.").

[52] *Id*. at 64.

[53] Wolf *supra* n. 7, at 178.

[54] *See* Wolf *supra* n. 7, at 139 (I added the term "model" to distinguish this fourth depreciation system parameter from the other three parameters).

used among practitioners, the "broad group" and the "vintage group," are two ways of viewing the life and salvage characteristics of the vintage groups that have been combined to form a continuous property group.

The broad group model views the continuous property group as a collection of vintage groups that each have the same life and salvage characteristics. Thus, a single survivor curve and a single salvage schedule are chosen to describe all the vintages in the continuous property group. In contrast, the vintage group model views the continuous property group as a collection of vintage groups that may have different life and salvage characteristics. Typically, there is not a significant difference between vintage group and broad group results unless vintages within the applicable property group experienced dramatically different retirement levels than anticipated in the overall estimated life for the group. For this reason, many analysts utilize the broad group procedure because it is more efficient.

APPENDIX B:

IOWA CURVES

Early work in the analysis of the service life of industrial property was based on models that described the life characteristics of human populations.[55] This explains why the word "mortality" is often used in the context of depreciation analysis. In fact, a group of property installed during the same accounting period is analogous to a group of humans born during the same calendar year. Each period the group will incur a certain fraction of deaths / retirements until there are no survivors. Describing this pattern of mortality is part of actuarial analysis and is regularly used by insurance companies to determine life insurance premiums. The pattern of mortality may be described by several mathematical functions, particularly the survivor curve and frequency curve. Each curve may be derived from the other so that if one curve is known, the other may be obtained. A survivor curve is a graph of the percent of units remaining in service expressed as a function of age.[56] A frequency curve is a graph of the frequency of retirements as a function of age. Several types of survivor and frequency curves are illustrated in the figures below.

1. Development

The survivor curves used by analysts today were developed over several decades from extensive analysis of utility and industrial property. In 1931, Edwin Kurtz and Robley Winfrey used extensive data from a range of 65 industrial property groups to create survivor curves representing the life characteristics of each group of property.[57] They generalized the 65 curves

[55] Wolf *supra* n. 7, at 276.

[56] *Id*. at 23.

[57] *Id*. at 34.

into 13 survivor curve types and published their results in *Bulletin 103: Life Characteristics of Physical Property*. The 13 type curves were designed to be used as valuable aids in forecasting probable future service lives of industrial property. Over the next few years, Winfrey continued gathering additional data, particularly from public utility property, and expanded the examined property groups from 65 to 176.[58] This resulted in 5 additional survivor curve types for a total of 18 curves. In 1935, Winfrey published *Bulletin 125: Statistical Analysis of Industrial Property Retirements*. According to Winfrey, "[t]he 18 type curves are expected to represent quite well all survivor curves commonly encountered in utility and industrial practices."[59] These curves are known as the "Iowa curves" and are used extensively in depreciation analysis in order to obtain the average service lives of property groups. (Use of Iowa curves in actuarial analysis is further discussed in Appendix C.)

In 1942, Winfrey published *Bulletin 155: Depreciation of Group Properties*. In Bulletin 155, Winfrey made some slight revisions to a few of the 18 curve types, and published the equations, tables of the percent surviving, and probable life of each curve at five-percent intervals.[60] Rather than using the original formulas, analysts typically rely on the published tables containing the percentages surviving. This is because absent knowledge of the integration technique applied to each age interval, it is not possible to recreate the exact original published table values. In the 1970s, John Russo collected data from over 2,000 property accounts reflecting

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[58] *Id*.

[59] Robley Winfrey, *Bulletin 125: Statistical Analyses of Industrial Property Retirements* 85, Vol. XXXIV, No. 23 (Iowa State College of Agriculture and Mechanic Arts 1935).

[60] Robley Winfrey, Bulletin 155: Depreciation of Group Properties 121-28, Vol XLI, No. 1 (The Iowa State College Bulletin 1942); see also Wolf supra n. 7, at 305-38 (publishing the percent surviving for each Iowa curve, including "O" type curve, at one percent intervals).

observations during the period 1965 – 1975 as part of his Ph.D. dissertation at Iowa State. Russo essentially repeated Winfrey's data collection, testing, and analysis methods used to develop the original Iowa curves, except that Russo studied industrial property in service several decades after Winfrey published the original Iowa curves. Russo drew three major conclusions from his research:[61]

1. No evidence was found to conclude that the Iowa curve set, as it stands, is not a valid system of standard curves;

2. No evidence was found to conclude that new curve shapes could be produced at this time that would add to the validity of the Iowa curve set; and

3. No evidence was found to suggest that the number of curves within the Iowa curve set should be reduced.

Prior to Russo's study, some had criticized the Iowa curves as being potentially obsolete because their development was rooted in the study of industrial property in existence during the early 1900s. Russo's research, however, negated this criticism by confirming that the Iowa curves represent a sufficiently wide range of life patterns, and that though technology will change over time, the underlying patterns of retirements remain constant and can be adequately described by the Iowa curves.[62]

Over the years, several more curve types have been added to Winfrey's 18 Iowa curves. In 1967, Harold Cowles added four origin-modal curves. In addition, a square curve is sometimes used to depict retirements which are all planned to occur at a given age. Finally, analysts

[61] *See* Wolf *supra* n. 7, at 37.

[62] *Id*.

commonly rely on several "half curves" derived from the original Iowa curves. Thus, the term "Iowa curves" could be said to describe up to 31 standardized survivor curves.

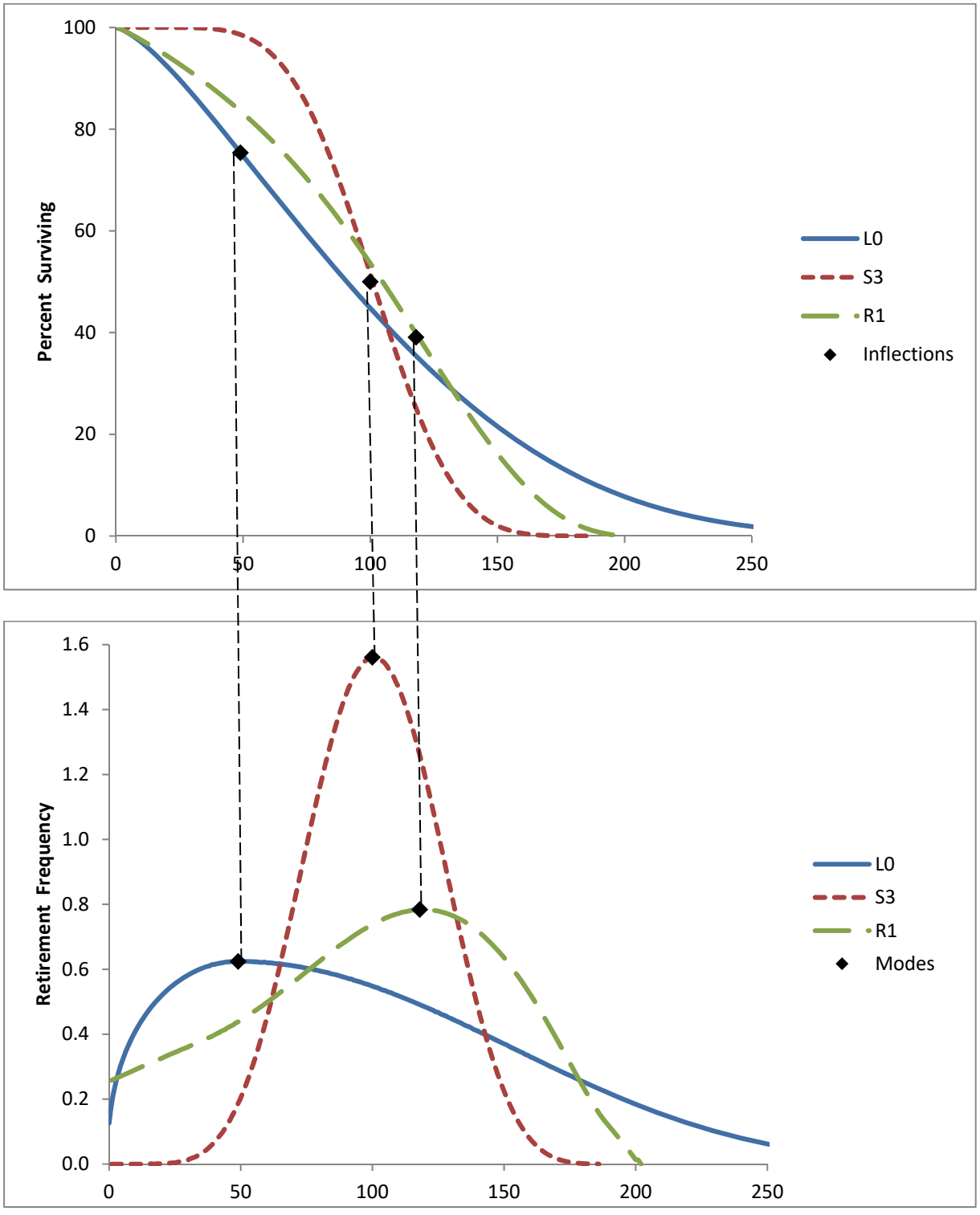
2. Classification

The Iowa curves are classified by three variables: modal location, average life, and variation of life. First, the mode is the percent life that results in the highest point of the frequency curve and the "inflection point" on the survivor curve. The modal age is the age at which the greatest rate of retirement occurs. As illustrated in the figure below, the modes appear at the steepest point of each survivor curve in the top graph, as well as the highest point of each corresponding frequency curve in the bottom graph.

The classification of the survivor curves was made according to whether the mode of the retirement frequency curves was to the left, to the right, or coincident with average service life. There are three modal "families" of curves: six left modal curves (L0, L1, L2, L3, L4, L5); five right modal curves (R1, R2, R3, R4, R5); and seven symmetrical curves (S0, S1, S2, S3, S4, S5, S6).[63] In the figure below, one curve from each family is shown: L0, S3 and R1, with average life at 100 on the x-axis. It is clear from the graphs that the modes for the L0 and R1 curves appear to the left and right of average life respectively, while the S3 mode is coincident with average life.

[63] In 1967, Harold A. Cowles added four origin-modal curves known as "O type" curves. There are also several "half" curves and a square curve, so the total amount of survivor curves commonly called "Iowa" curves is about 31 (see NARUC supra n. 8, at 68).

Figure 10:
Modal Age Illustration



The second Iowa curve classification variable is average life. The Iowa curves were designed using a single parameter of age expressed as a percent of average life instead of actual age. This was necessary for the curves to be of practical value. As Winfrey notes:

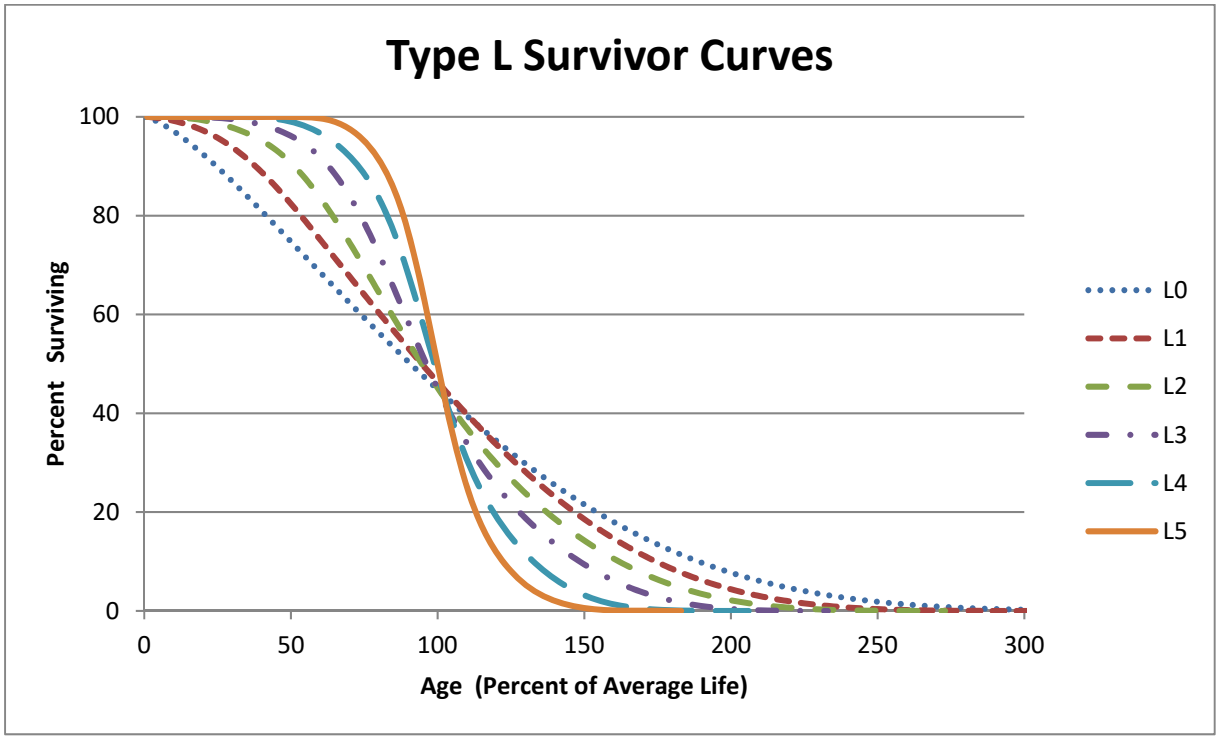
> Since the location of a particular survivor on a graph is affected by both its span in years and the shape of the curve, it is difficult to classify a group of curves unless one of these variables can be controlled. This is easily done by expressing the age in percent of average life."[64]

Because age is expressed in terms of percent of average life, any particular Iowa curve type can be modified to forecast property groups with various average lives.

The third variable, variation of life, is represented by the numbers next to each letter. A lower number (e.g., L1) indicates a relatively low mode, large variation, and large maximum life; a higher number (e.g., L5) indicates a relatively high mode, small variation, and small maximum life. All three classification variables – modal location, average life, and variation of life – are used to describe each Iowa curve. For example, a 13-L1 Iowa curve describes a group of property with a 13-year average life, with the greatest number of retirements occurring before (or to the left of) the average life, and a relatively low mode. The graphs below show these 18 survivor curves, organized by modal family.

[64] Winfrey *supra* n. 75, at 60.

Figure 11:
Type L Survivor and Frequency Curves



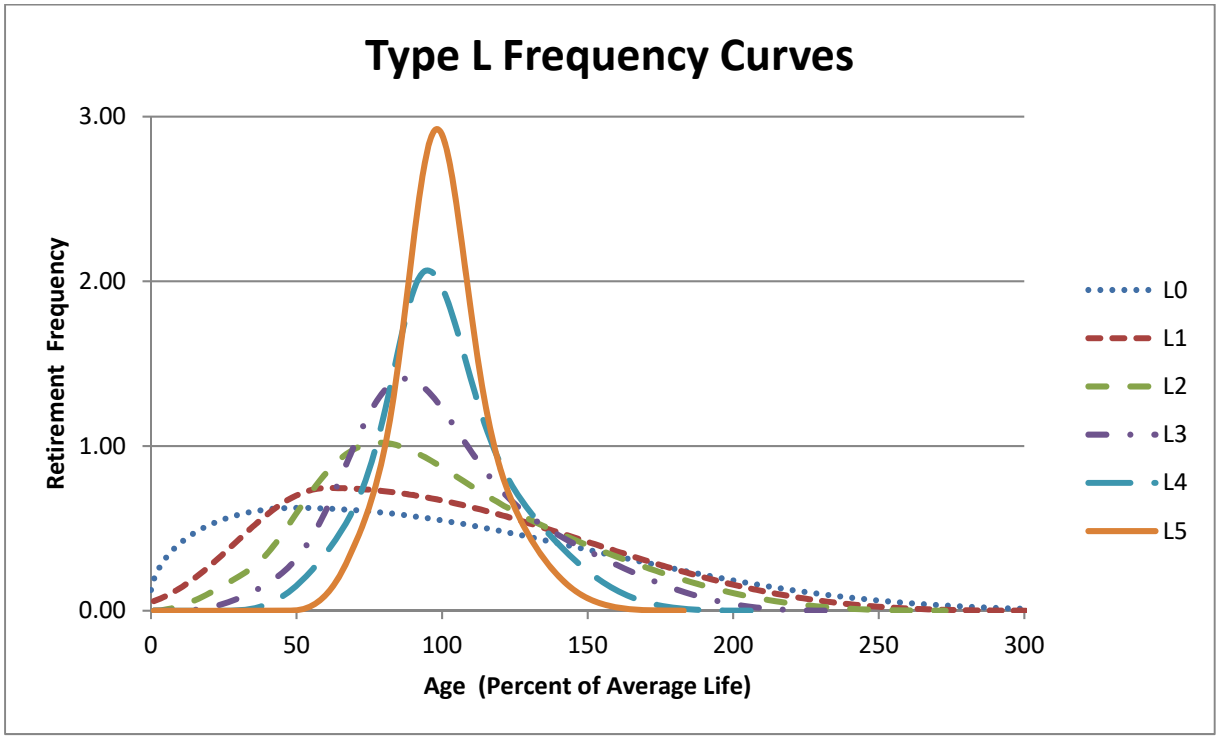
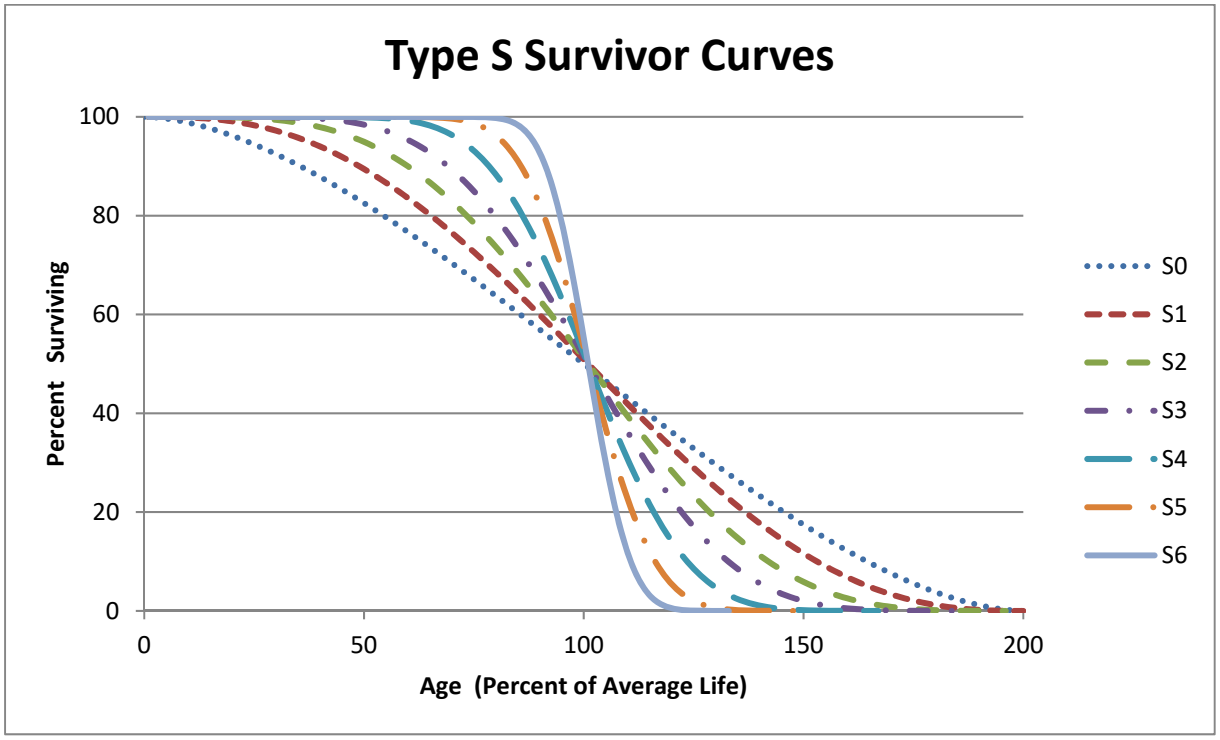


Figure 12:
Type S Survivor and Frequency Curves



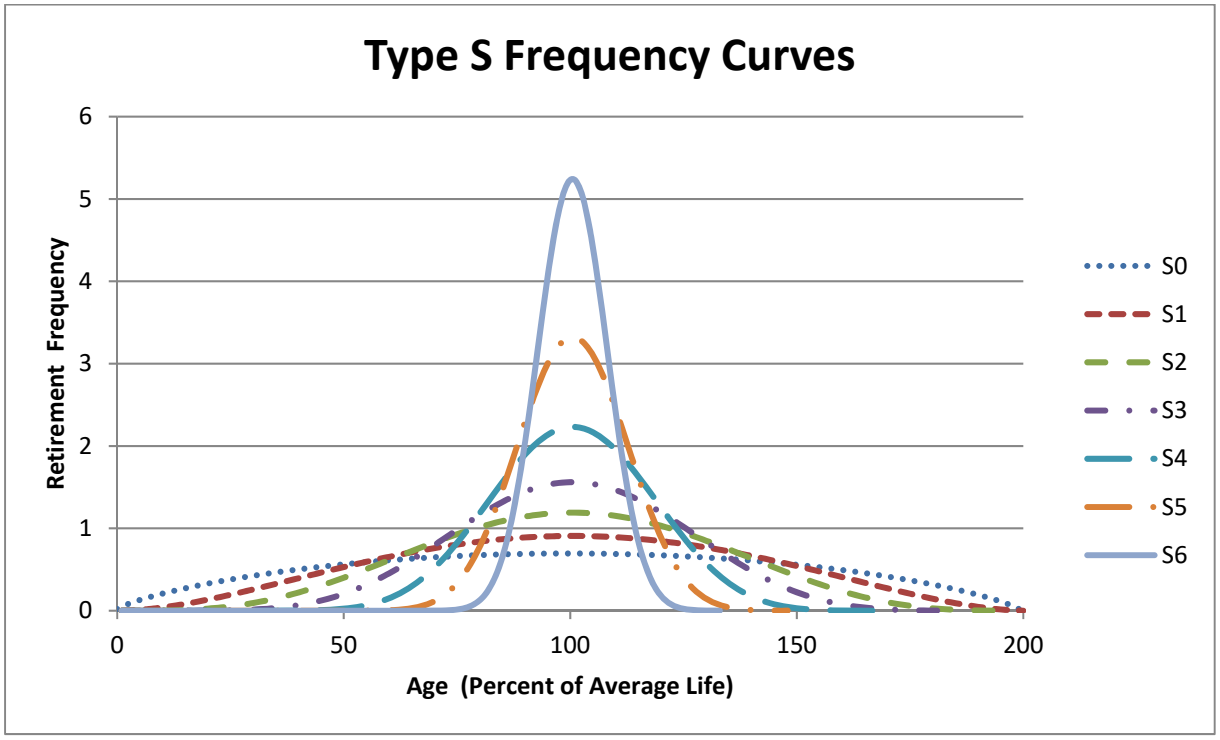
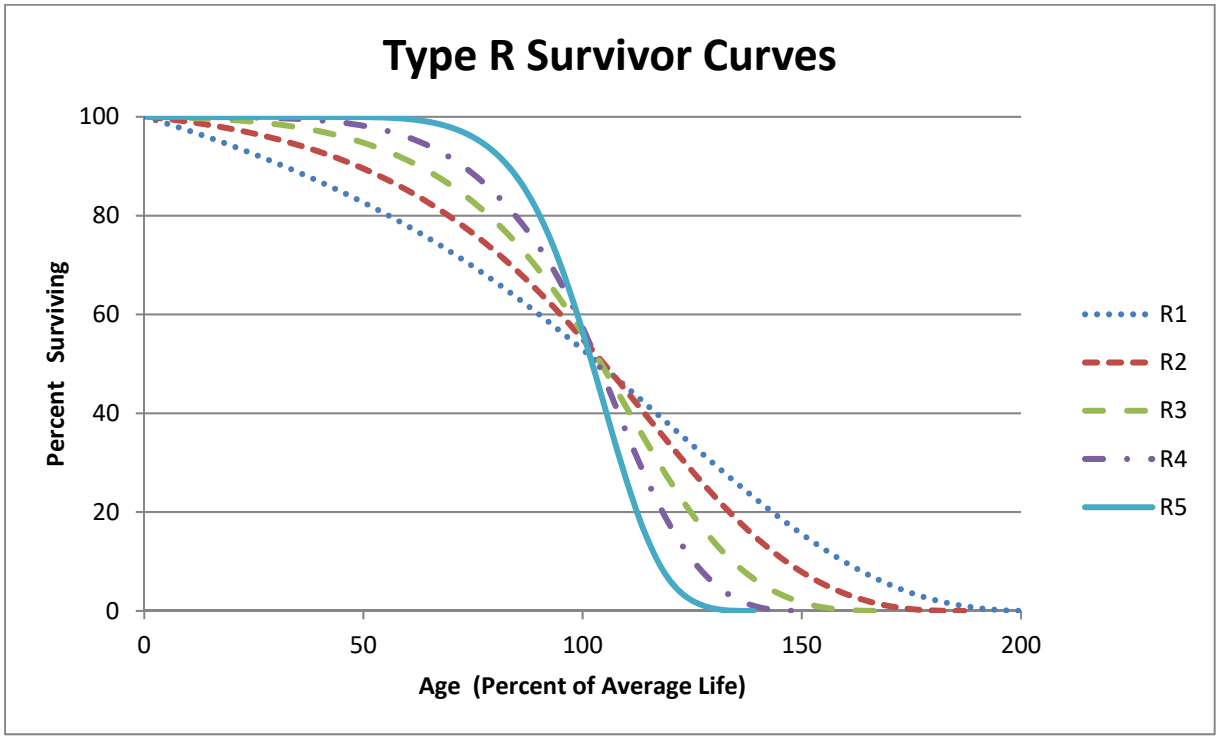
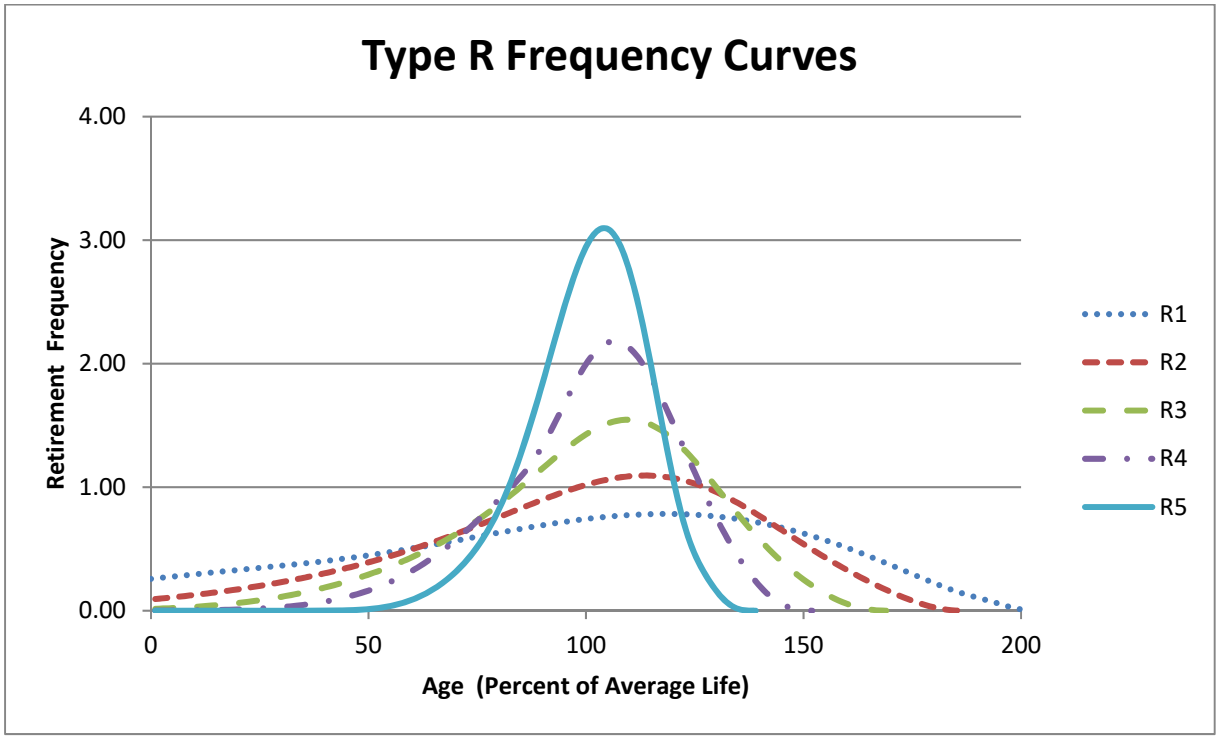


Figure 13:
Type R Survivor and Frequency Curves





As shown in the graphs above, the modes for the L family frequency curves occur to the left of average life (100% on the x-axis), while the S family modes occur at the average, and the R family modes occur after the average.

3. Types of Lives

Several other important statistical analyses and types of lives may be derived from an Iowa curve. These include: 1) average life; 2) realized life; 3) remaining life; and 4) probable life. The figure below illustrates these concepts. It shows the frequency curve, survivor curve, and probable life curve. Age M_x on the x-axis represents the modal age, while age AL_x represents the average age. Thus, this figure illustrates an "L type" Iowa curve since the mode occurs before the average.[65]

First, average life is the area under the survivor curve from age zero to maximum life. Because the survivor curve is measured in percent, the area under the curve must be divided by 100% to convert it from percent-years to years. The formula for average life is as follows:[66]

Equation 4:
Average Life

$$Average\ Life\ = \frac{Area\ Under\ Survivor\ Curve\ from\ Age\ 0\ to\ Max\ Life}{100\%}$$

Thus, average life may not be determined without a complete survivor curve. Many property groups being analyzed will not have experienced full retirement. This results in a "stub" survivor

[65] From age zero to age M_x on the survivor curve, it could be said that the percent surviving from this property group is decreasing at an increasing rate. Conversely, from point M_x to maximum on the survivor curve, the percent surviving is decreasing at a decreasing rate.

[66] *See* NARUC *supra* n. 8, at 71.

curve. Iowa curves are used to extend stub curves to maximum life in order for the average life calculation to be made (see Appendix C).

Realized life is similar to average life, except that realized life is the average years of service experienced to date from the vintage's original installations.[67] As shown in the figure below, realized life is the area under the survivor curve from zero to age RL_X. Likewise, unrealized life is the area under the survivor curve from age RL_X to maximum life. Thus, it could be said that average life equals realized life plus unrealized life.

Average remaining life represents the future years of service expected from the surviving property.[68] Remaining life is sometimes referred to as "average remaining life" and "life expectancy." To calculate average remaining life at age x, the area under the estimated future portion of the survivor curve is divided by the percent surviving at age x (denoted S_X). Thus, the average remaining life formula is:

Equation 5:
Average Remaining Life

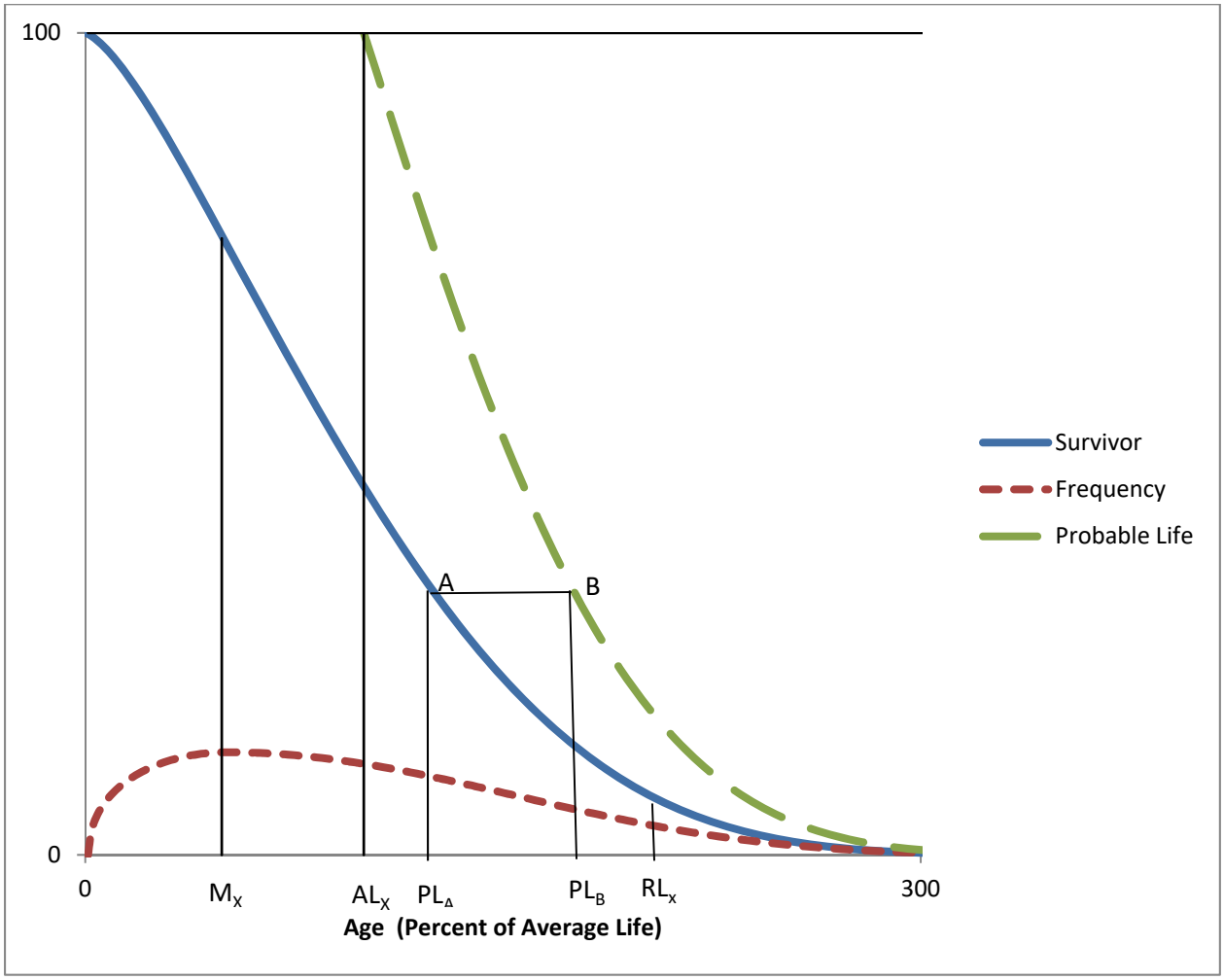
$$Average\ Remaining\ Life\ = \frac{Area\ Under\ Survivor\ Curve\ from\ Age\ x\ to\ Max\ Life}{S_X}$$

It is necessary to determine average remaining life to calculate the annual accrual under the remaining life technique.

[67] *Id*. at 73.

[68] *Id*. at 74.

Figure 14:
Iowa Curve Derivations



Finally, the probable life may also be determined from the Iowa curve. The probable life of a property group is the total life expectancy of the property surviving at any age and is equal to the remaining life plus the current age.[69] The probable life is also illustrated in this figure. The probable life at age PL_A is the age at point PL_B. Thus, to read the probable life at age PL_A, see the

[69] Wolf *supra* n. 7, at 28.

corresponding point on the survivor curve above at point "A," then horizontally to point "B" on the probable life curve, and back down to the age corresponding to point "B." It is no coincidence that the vertical line from AL_X connects at the top of the probable life curve. This is because at age zero, probable life equals average life.

APPENDIX C:

ACTUARIAL ANALYSIS

Actuarial science is a discipline that applies various statistical methods to assess risk probabilities and other related functions. Actuaries often study human mortality. The results from historical mortality data are used to predict how long similar groups of people who are alive today will live. Insurance companies rely on actuarial analysis in determining premiums for life insurance policies.

The study of human mortality is analogous to estimating service lives of industrial property groups. While some humans die solely from chance, most deaths are related to age; that is, death rates generally increase as age increases. Similarly, physical plant is also subject to forces of retirement. These forces include physical, functional, and contingent factors, as shown in the table below.[70]

Figure 15:
Forces of Retirement

Physical Factors	Functional Factors	Contingent Factors
Wear and tear Decay or deterioration Action of the elements	Inadequacy Obsolescence Changes in technology Regulations Managerial discretion	Casualties or disasters Extraordinary obsolescence

While actuaries study historical mortality data in order to predict how long a group of people will live, depreciation analysts must look at a utility's historical data in order to estimate the average lives of property groups. A utility's historical data is often contained in the Continuing Property Records ("CPR"). Generally, a CPR should contain 1) an inventory of property record

[70] NARUC *supra* n. 8, at 14-15.

units; 2) the association of costs with such units; and 3) the dates of installation and removal of plant. Since actuarial analysis includes the examination of historical data to forecast future retirements, the historical data used in the analysis should not contain events that are anomalous or unlikely to recur.[71] Historical data is used in the retirement rate actuarial method, which is discussed further below.

The Retirement Rate Method

There are several systematic actuarial methods that use historical data to calculate observed survivor curves for property groups. Of these methods, the retirement rate method is superior, and is widely employed by depreciation analysts.[72] The retirement rate method is ultimately used to develop an observed survivor curve, which can be fitted with an Iowa curve discussed in Appendix B to forecast average life. The observed survivor curve is calculated by using an observed life table ("OLT"). The figures below illustrate how the OLT is developed. First, historical property data are organized in a matrix format, with placement years on the left forming rows, and experience years on the top forming columns. The placement year (a.k.a. "vintage year" or "installation year") is the year of placement into service of a group of property. The experience year (a.k.a. "activity year") refers to the accounting data for a particular calendar year. The two matrices below use aged data – that is, data for which the dates of placements, retirements, transfers, and other transactions are known. Without aged data, the retirement rate actuarial method may not be employed. The first matrix is the exposure matrix, which shows the exposures

[71] *Id*. at 112-13.

[72] Anson Marston, Robley Winfrey & Jean C. Hempstead, *Engineering Valuation and Depreciation* 154 (2nd ed., McGraw-Hill Book Company, Inc. 1953).

at the beginning of each year.[73] An exposure is simply the depreciable property subject to retirement during a period. The second matrix is the retirement matrix, which shows the annual retirements during each year. Each matrix covers placement years 2003–2015, and experience years 2008-2015. In the exposure matrix, the number in the 2012 experience column and the 2003 placement row is $192,000. This means at the beginning of 2012, there was $192,000 still exposed to retirement from the vintage group placed in 2003. Likewise, in the retirement matrix, $19,000 of the dollars invested in 2003 were retired during 2012.

Figure 16:
Exposure Matrix

	Experience Years									
	Exposures at January 1 of Each Year (Dollars in 000's)									
Placement Years	2008	2009	2010	2011	2012	2013	2014	2015	Total at Start of Age Interval	Age Interval
2003	261	245	228	211	**192**	173	152	131	131	11.5 - 12.5
2004	267	252	236	220	202	**184**	165	145	297	10.5 - 11.5
2005	304	291	277	263	248	232	**216**	198	536	9.5 - 10.5
2006	345	334	322	310	298	284	270	**255**	**847**	8.5 - 9.5
2007	367	357	347	335	324	312	299	286	1,201	7.5 - 8.5
2008	375	366	357	347	336	325	314	302	1,581	6.5 - 7.5
2009		377	366	356	346	336	327	319	1,986	5.5 - 6.5
2010			381	369	358	347	336	327	2,404	4.5 - 5.5
2011				386	372	359	346	334	2,559	3.5 - 4.5
2012					395	380	366	352	2,722	2.5 - 3.5
2013						401	385	370	2,866	1.5 - 2.5
2014							410	393	2,998	0.5 - 1.5
2015								416	3,141	0.0 - 0.5
Total	1919	2222	2514	2796	3070	3333	3586	3827	23,268	

[73] Technically, the last numbers in each column are "gross additions" rather than exposures. Gross additions do not include adjustments and transfers applicable to plant placed in a previous year. Once retirements, adjustments, and transfers are factored in, the balance at the beginning of the next accounting period is called an "exposure" rather than an addition.

Figure 17:
Retirement Matrix

Placement Years	Experience Years: Retirments During the Year (Dollars in 000's) 2008	2009	2010	2011	2012	2013	2014	2015	Total During Age Interval	Age Interval
2003	16	17	18	19	**19**	20	21	23	23	11.5 - 12.5
2004	15	16	17	17	18	**19**	20	21	43	10.5 - 11.5
2005	13	14	14	15	16	17	**17**	18	59	9.5 - 10.5
2006	11	12	12	13	13	14	15	**15**	**71**	8.5 - 9.5
2007	10	11	11	12	12	13	13	14	82	7.5 - 8.5
2008	9	9	10	10	11	11	12	13	91	6.5 - 7.5
2009		11	10	10	9	9	9	8	95	5.5 - 6.5
2010			12	11	11	10	10	9	100	4.5 - 5.5
2011				14	13	13	12	11	93	3.5 - 4.5
2012					15	14	14	13	91	2.5 - 3.5
2013						16	15	14	93	1.5 - 2.5
2014							17	16	100	0.5 - 1.5
2015								18	112	0.0 - 0.5
Total	74	89	104	121	139	157	175	194	1,052	

These matrices help visualize how exposure and retirement data are calculated for each age interval. An age interval is typically one year. A common convention is to assume that any unit installed during the year is installed in the middle of the calendar year (i.e., July 1st). This convention is called the "half-year convention" and effectively assumes that all units are installed uniformly during the year.[74] Adoption of the half-year convention leads to age intervals of 0-0.5 years, 0.5-1.5 years, etc., as shown in the matrices.

The purpose of the matrices is to calculate the totals for each age interval, which are shown in the second column from the right in each matrix. This column is calculated by adding each number from the corresponding age interval in the matrix. For example, in the exposure matrix, the total amount of exposures at the beginning of the 8.5-9.5 age interval is $847,000. This number was calculated by adding the numbers shown on the "stairs" to the left (192+184+216+255=847).

[74] Wolf *supra* n. 7, at 22.

The same calculation is applied to each number in the column. The amounts retired during the year in the retirements matrix affect the exposures at the beginning of each year in the exposures matrix. For example, the amount exposed to retirement in 2008 from the 2003 vintage is $261,000. The amount retired during 2008 from the 2003 vintage is $16,000. Thus, the amount exposed to retirement at the beginning of 2009 from the 2003 vintage is $245,000 ($261,000 - $16,000). The company's property records may contain other transactions which affect the property, including sales, transfers, and adjusting entries. Although these transactions are not shown in the matrices above, they would nonetheless affect the amount exposed to retirement at the beginning of each year.

The totaled amounts for each age interval in both matrices are used to form the exposure and retirement columns in the OLT, as shown in the chart below. This chart also shows the retirement ratio and the survivor ratio for each age interval. The retirement ratio for an age interval is the ratio of retirements during the interval to the property exposed to retirement at the beginning of the interval. The retirement ratio represents the probability that the property surviving at the beginning of an age interval will be retired during the interval. The survivor ratio is simply the complement to the retirement ratio (1 – retirement ratio). The survivor ratio represents the probability that the property surviving at the beginning of an age interval will survive to the next age interval.

Figure 18:
Observed Life Table

Age at Start of Interval	Exposures at Start of Age Interval	Retirements During Age Interval	Retirement Ratio	Survivor Ratio	Percent Surviving at Start of Age Interval
A	B	C	D = C / B	E = 1 - D	F
0.0	3,141	112	0.036	0.964	**100.00**
0.5	2,998	100	0.033	0.967	**96.43**
1.5	2,866	93	0.032	0.968	**93.21**
2.5	2,722	91	0.033	0.967	**90.19**
3.5	2,559	93	0.037	0.963	**87.19**
4.5	2,404	100	0.042	0.958	**84.01**
5.5	1,986	95	0.048	0.952	**80.50**
6.5	1,581	91	0.058	0.942	**76.67**
7.5	1,201	82	0.068	0.932	**72.26**
8.5	847	71	0.084	0.916	**67.31**
9.5	536	59	0.110	0.890	**61.63**
10.5	297	43	0.143	0.857	**54.87**
11.5	131	23	0.172	0.828	**47.01**
					38.91
Total	23,268	1,052			

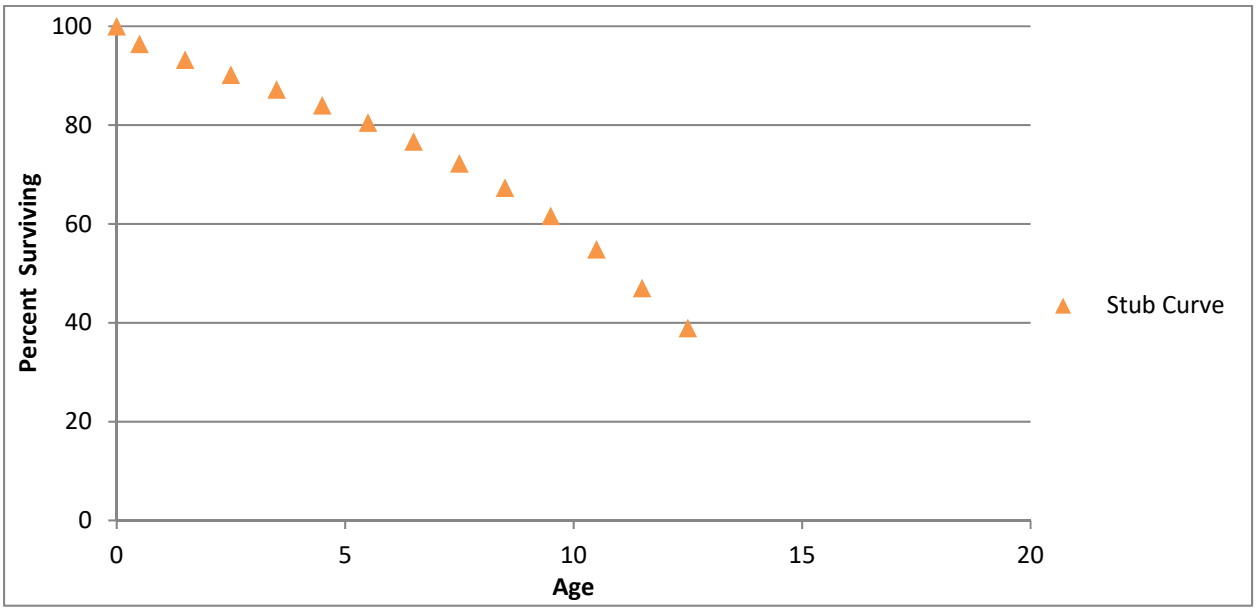
Column F on the right shows the percentages surviving at the beginning of each age interval. This column starts at 100% surviving. Each consecutive number below is calculated by multiplying the percent surviving from the previous age interval by the corresponding survivor ratio for that age interval. For example, the percent surviving at the start of age interval 1.5 is 93.21%, which was calculated by multiplying the percent surviving for age interval 0.5 (96.43%) by the survivor ratio for age interval 0.5 (0.967)[75].

The percentages surviving in Column F are the numbers that are used to form the original survivor curve. This particular curve starts at 100% surviving and ends at 38.91% surviving. An

[75] Multiplying 96.43 by 0.967 does not equal 93.21 exactly due to rounding.

observed survivor curve such as this that does not reach zero percent surviving is called a "stub" curve. The figure below illustrates the stub survivor curve derived from the OLT above.

Figure 19:
Original "Stub" Survivor Curve



The matrices used to develop the basic OLT and stub survivor curve provide a basic illustration of the retirement rate method in that only a few placement and experience years were used. In reality, analysts may have several decades of aged property data to analyze. In that case, it may be useful to use a technique called "banding" in order to identify trends in the data.

Banding

The forces of retirement and characteristics of industrial property are constantly changing. A depreciation analyst may examine the magnitude of these changes. Analysts often use a technique called "banding" to assist with this process. Banding refers to the merging of several years of data into a single data set for further analysis, and it is a common technique associated

with the retirement rate method.[76] There are three primary benefits of using bands in depreciation analysis:

1. Increasing the sample size. In statistical analyses, the larger the sample size in relation to the body of total data, the greater the reliability of the result;

2. Smooth the observed data. Generally, the data obtained from a single activity or vintage year will not produce an observed life table that can be easily fit; and

3. Identify trends. By looking at successive bands, the analyst may identify broad trends in the data that may be useful in projecting the future life characteristics of the property.[77]

Two common types of banding methods are the "placement band" method and the "experience band" method." A placement band, as the name implies, isolates selected placement years for analysis. The figure below illustrates the same exposure matrix shown above, except that only the placement years 2005-2008 are considered in calculating the total exposures at the beginning of each age interval.

[76] NARUC *supra* n. 8, at 113.

[77] *Id*.

Figure 20:
Placement Bands

Placement Years	Experience Years: Exposures at January 1 of Each Year (Dollars in 000's) 2008	2009	2010	2011	2012	2013	2014	2015	Total at Start of Age Interval	Age Interval
2003	261	245	228	211	192	173	152	131		11.5 - 12.5
2004	267	252	236	220	202	184	165	145		10.5 - 11.5
2005	304	291	277	263	248	232	216	198	198	9.5 - 10.5
2006	345	334	322	310	298	284	270	255	471	8.5 - 9.5
2007	367	357	347	335	324	312	299	286	788	7.5 - 8.5
2008	375	366	357	347	336	325	314	302	1,133	6.5 - 7.5
2009		377	366	356	346	336	327	319	1,186	5.5 - 6.5
2010			381	369	358	347	336	327	1,237	4.5 - 5.5
2011				386	372	359	346	334	1,285	3.5 - 4.5
2012					395	380	366	352	1,331	2.5 - 3.5
2013						401	385	370	1,059	1.5 - 2.5
2014							410	393	733	0.5 - 1.5
2015								416	375	0.0 - 0.5
Total	1919	2222	2514	2796	3070	3333	3586	3827	9,796	

The shaded cells within the placement band equal the total exposures at the beginning of age interval 4.5–5.5 ($1,237). The same placement band would be used for the retirement matrix covering the same placement years of 2005 – 2008. This of course would result in a different OLT and original stub survivor curve than those that were calculated above without the restriction of a placement band.

Analysts often use placement bands for comparing the survivor characteristics of properties with different physical characteristics.[78] Placement bands allow analysts to isolate the effects of changes in technology and materials that occur in successive generations of plant. For example, if in 2005 an electric utility began placing transmission poles into service with a special chemical treatment that extended the service lives of those poles, an analyst could use placement bands to isolate and analyze the effect of that change in the property group's physical characteristics. While

[78] Wolf *supra* n. 7, at 182.

placement bands are very useful in depreciation analysis, they also possess an intrinsic dilemma. A fundamental characteristic of placement bands is that they yield fairly complete survivor curves for older vintages. However, with newer vintages, which are arguably more valuable for forecasting, placement bands yield shorter survivor curves. Longer "stub" curves are considered more valuable for forecasting average life. Thus, an analyst must select a band width broad enough to provide confidence in the reliability of the resulting curve fit yet narrow enough so that an emerging trend may be observed.[79]

Analysts also use "experience bands." Experience bands show the composite retirement history for all vintages during a select set of activity years. The figure below shows the same data presented in the previous exposure matrices, except that the experience band from 2011 – 2013 is isolated, resulting in different interval totals.

[79] NARUC *supra* n. 8, at 114.

Figure 21:
Experience Bands

Placement Years	Experience Years: Exposures at January 1 of Each Year (Dollars in 000's) 2008	2009	2010	2011	2012	2013	2014	2015	Total at Start of Age Interval	Age Interval
2003	261	245	228	211	192	173	152	131		11.5 - 12.5
2004	267	252	236	220	202	184	165	145		10.5 - 11.5
2005	304	291	277	263	248	232	216	198	173	9.5 - 10.5
2006	345	334	322	310	298	284	270	255	376	8.5 - 9.5
2007	367	357	347	335	324	312	299	286	645	7.5 - 8.5
2008	375	366	357	347	336	325	314	302	752	6.5 - 7.5
2009		377	366	356	346	336	327	319	872	5.5 - 6.5
2010			381	369	358	347	336	327	959	4.5 - 5.5
2011				386	372	359	346	334	1,008	3.5 - 4.5
2012					395	380	366	352	1,039	2.5 - 3.5
2013						401	385	370	1,072	1.5 - 2.5
2014							410	393	1,121	0.5 - 1.5
2015								416	1,182	0.0 - 0.5
Total	1919	2222	2514	2796	3070	3333	3586	3827	9,199	

The shaded cells within the experience band equal the total exposures at the beginning of age interval 4.5–5.5 ($1,237). The same experience band would be used for the retirement matrix covering the same experience years of 2011 – 2013. This of course would result in a different OLT and original stub survivor than if the band had not been used. Analysts often use experience bands to isolate and analyze the effects of an operating environment over time.[80] Likewise, the use of experience bands allows analysis of the effects of an unusual environmental event. For example, if an unusually severe ice storm occurred in 2013, destruction from that storm would affect an electric utility's line transformers of all ages. That is, each of the line transformers from each placement year would be affected, including those recently installed in 2012, as well as those installed in 2003. Using experience bands, an analyst could isolate or even eliminate the 2013 experience year from the analysis. In contrast, a placement band would not effectively isolate the

[80] *Id.*

ice storm's effect on life characteristics. Rather, the placement band would show an unusually large rate of retirement during 2013, making it more difficult to accurately fit the data with a smooth Iowa curve. Experience bands tend to yield the most complete stub curves for recent bands because they have the greatest number of vintages included. Longer stub curves are better for forecasting. The experience bands, however, may also result in more erratic retirement dispersion making the curve fitting process more difficult.

Depreciation analysts must use professional judgment in determining the types of bands to use and the band widths. In practice, analysts may use various combinations of placement and experience bands in order to increase the data sample size, identify trends and changes in life characteristics, and isolate unusual events. Regardless of which bands are used, observed survivor curves in depreciation analysis rarely reach zero percent. This is because, as seen in the OLT above, relatively newer vintage groups have not yet been fully retired at the time the property is studied. An analyst could confine the analysis to older, fully retired vintage groups to get complete survivor curves, but such analysis would ignore some of the property currently in service and would arguably not provide an accurate description of life characteristics for current plant in service. Because a complete curve is necessary to calculate the average life of the property group, however, curve fitting techniques using Iowa curves or other standardized curves may be employed in order to complete the stub curve.

Curve Fitting

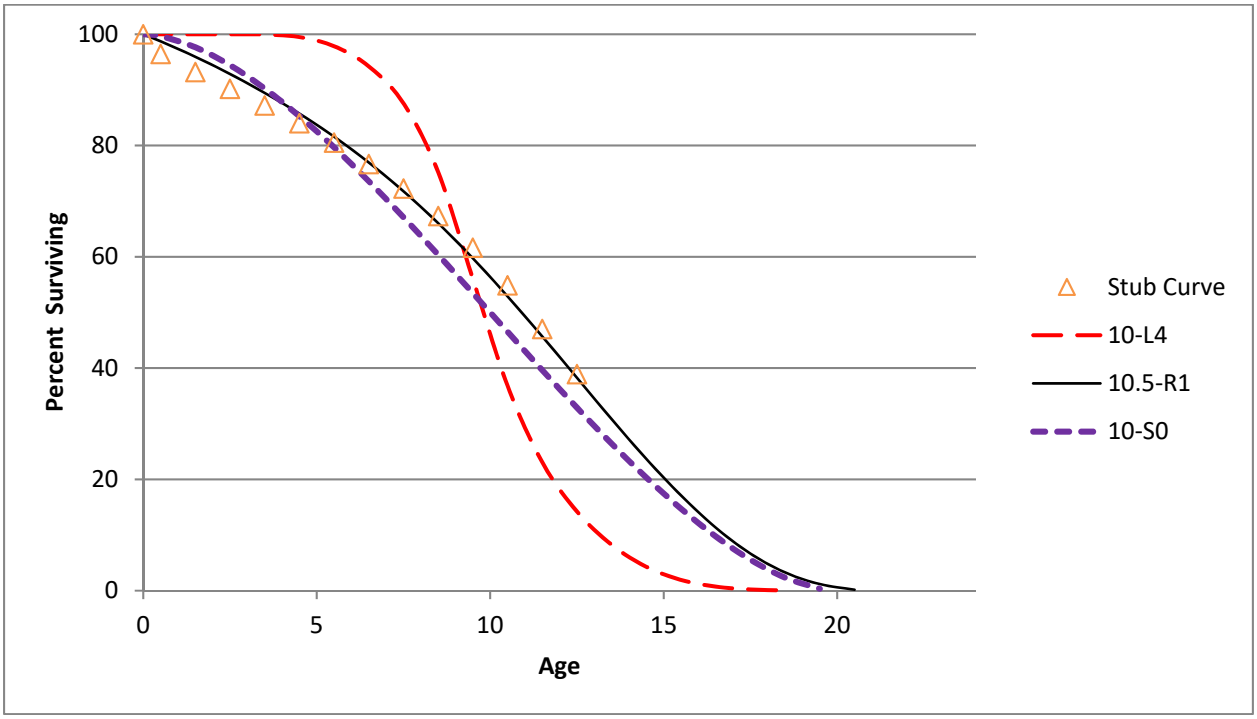
Depreciation analysts typically use the survivor curve rather than the frequency curve to fit the observed stub curves. The most commonly used generalized survivor curves in the curve fitting process are the Iowa curves discussed above. As Wolf notes, if "the Iowa curves are adopted

as a model, an underlying assumption is that the process describing the retirement pattern is one of the 22 [or more] processes described by the Iowa curves."[81]

Curve fitting may be done through visual matching or mathematical matching. In visual curve fitting, the analyst visually examines the plotted data to make an initial judgment about the Iowa curves that may be a good fit. The figure below illustrates the stub survivor curve shown above. It also shows three different Iowa curves: the 10-L4, the 10.5-R1, and the 10-S0. Visually, it is clear that the 10.5-R1 curve is a better fit than the other two curves.

[81] Wolf *supra* n. 7, at 46 (22 curves includes Winfrey's 18 original curves plus Cowles's four "O" type curves).

Figure 22:
Visual Curve Fitting



In mathematical fitting, the least squares method is used to calculate the best fit. This mathematical method would be excessively time consuming if done by hand. With the use of modern computer software however, mathematical fitting is an efficient and useful process. The typical logic for a computer program, as well as the software employed for the analysis in this testimony is as follows:

> First (an Iowa curve) curve is arbitrarily selected. . . . If the observed curve is a stub curve, . . . calculate the area under the curve and up to the age at final data point. Call this area the realized life. Then systematically vary the average life of the theoretical survivor curve and calculate its realized life at the age corresponding to the study date. This trial and error procedure ends when you find an average life such that the realized life of the theoretical curve equals the realized life of the observed curve. Call this the average life.
>
> Once the average life is found, calculate the difference between each percent surviving point on the observed survivor curve and the corresponding point on the Iowa curve. Square each difference and sum them. The sum of squares is used as a measure of goodness of fit for that particular Iowa type curve. This procedure is

> repeated for the remaining 21 Iowa type curves. The "best fit" is declared to be the type of curve that minimizes the sum of differences squared.[82]

Mathematical fitting requires less judgment from the analyst and is thus less subjective. Blind reliance on mathematical fitting, however, may lead to poor estimates. Thus, analysts should employ both mathematical and visual curve fitting in reaching their final estimates. This way, analysts may utilize the objective nature of mathematical fitting while still employing professional judgment. As Wolf notes: "The results of mathematical curve fitting serve as a guide for the analyst and speed the visual fitting process. But the results of the mathematical fitting should be checked visually, and the final determination of the best fit be made by the analyst."[83]

In the graph above, visual fitting was sufficient to determine that the 10.5-R1 Iowa curve was a better fit than the 10-L4 and the 10-S0 curves. Using the sum of least squares method, mathematical fitting confirms the same result. In the chart below, the percentages surviving from the OLT that formed the original stub curve are shown in the left column, while the corresponding percentages surviving for each age interval are shown for the three Iowa curves. The right portion of the chart shows the differences between the points on each Iowa curve and the stub curve. These differences are summed at the bottom. Curve 10.5-R1 is the best fit because the sum of the squared differences for this curve is less than the same sum for the other two curves. Curve 10-L4 is the worst fit, which was also confirmed visually.

---

[82] Wolf *supra* n. 7, at 47.

[83] *Id*. at 48.

Figure 23:
Mathematical Fitting

Age Interval	Stub Curve	Iowa Curves			Squared Differences		
		10-L4	10-S0	10.5-R1	10-L4	10-S0	10.5-R1
0.0	100.0	100.0	100.0	100.0	0.0	0.0	0.0
0.5	96.4	100.0	99.7	98.7	12.7	10.3	5.3
1.5	93.2	100.0	97.7	96.0	46.1	19.8	7.6
2.5	90.2	100.0	94.4	92.9	96.2	18.0	7.2
3.5	87.2	100.0	90.2	89.5	162.9	9.3	5.2
4.5	84.0	99.5	85.3	85.7	239.9	1.6	2.9
5.5	80.5	97.9	79.7	81.6	301.1	0.7	1.2
6.5	76.7	94.2	73.6	77.0	308.5	9.5	0.1
7.5	72.3	87.6	67.1	71.8	235.2	26.5	0.2
8.5	67.3	75.2	60.4	66.1	62.7	48.2	1.6
9.5	61.6	56.0	53.5	59.7	31.4	66.6	3.6
10.5	54.9	36.8	46.5	52.9	325.4	69.6	3.9
11.5	47.0	23.1	39.6	45.7	572.6	54.4	1.8
12.5	38.9	14.2	32.9	38.2	609.6	36.2	0.4
SUM					**3004.2**	**371.0**	**41.0**

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American Indian Law Review — Norman, OK
"Vine of the Dead: Reviving Equal Protection Rites for Religious Drug Use" — 2006
(31 Am. Indian L. Rev. 143)

VOLUNTEER EXPERIENCE

Calm Waters — Oklahoma City, OK
Board Member — 2015 – Present
Participate in management of operations, attend meetings, review performance, compensation, and financial records. Assist in fundraising events.

Group Facilitator & Fundraiser — 2014 – Present
Facilitate group meetings designed to help children and families cope with divorce and tragic events. Assist in fundraising events.

St. Jude Children's Research Hospital — Oklahoma City, OK
Oklahoma Fundraising Committee — 2008 – 2010
Raised money for charity by organizing local fundraising events.

PROFESSIONAL ASSOCIATIONS

Oklahoma Bar Association 2007 – Present

Society of Depreciation Professionals 2014 – Present
Board Member – President 2017
Participate in management of operations, attend meetings, review performance, organize presentation agenda.

Society of Utility Regulatory Financial Analysts 2014 – Present

SELECTED CONTINUING PROFESSIONAL EDUCATION

Society of Depreciation Professionals — Austin, TX
"Life and Net Salvage Analysis" — 2015
Extensive instruction on utility depreciation, including actuarial and simulation life analysis modes, gross salvage, cost of removal, life cycle analysis, and technology forecasting.

Society of Depreciation Professionals — New Orleans, LA
"Introduction to Depreciation" and "Extended Training" — 2014
Extensive instruction on utility depreciation, including average lives and net salvage.

Society of Utility and Regulatory Financial Analysts — Indianapolis, IN
46th Financial Forum. "The Regulatory Compact: Is it Still Relevant?" — 2014
Forum discussions on current issues.

New Mexico State University, Center for Public Utilities — Santa Fe, NM
Current Issues 2012, "The Santa Fe Conference" — 2012
Forum discussions on various current issues in utility regulation.

Michigan State University, Institute of Public Utilities — Clearwater, FL
"39th Eastern NARUC Utility Rate School" — 2011
One-week, hands-on training emphasizing the fundamentals of the utility ratemaking process.

New Mexico State University, Center for Public Utilities — Albuquerque, NM
"The Basics: Practical Regulatory Training for the Changing Electric Industries" — 2010
One-week, hands-on training designed to provide a solid foundation in core areas of utility ratemaking.

The Mediation Institute — Oklahoma City, OK
"Civil / Commercial & Employment Mediation Training" — 2009
Extensive instruction and mock mediations designed to build foundations in conducting mediations in civil matters.

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Indiana Utility Regulatory Commission	Citizens Energy Group	45039	Depreciation rates, service lifes, net salvage	Indiana Office of Consumer Counselor
Public Utility Commission of Texas	Entergy Texas, Inc.	PUC 48371	Depreciation rates, decommissioning costs	Texas Municipal Group
Washington Utilities & Transportation Commission	Avista Corporation	UE-180167	Depreciation rates, service lives, net salvage	Washington Office of Attorney General
New Mexico Public Regulation Commission	Southwestern Public Service Company	17-00255-UT	Cost of capital and authorized rate of return	HollyFrontier Navajo Refining; Occidental Permian
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 47527	Depreciation rates, plant service lives	Alliance of Xcel Municipalities
Public Service Commission of the State of Montana	Montana-Dakota Utilities Co.	D2017.9.79	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Florida Public Service Commission	Florida City Gas	20170179-GU	Cost of capital, depreciation rates	Florida Office of Public Counsel
Washington Utilities & Transportation Commission	Avista Corporation	UE-170485	Cost of capital and authorized rate of return	Washington Office of Attorney General
Wyoming Public Service Commission	Powder River Energy Corporation	10014-182-CA-17	Credit analysis, cost of capital	Private customer
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201700151	Depreciation, terminal salvage, risk analysis	Oklahoma Industrial Energy Consumers
Public Utility Commission of Texas	Oncor Electric Delivery Company	PUC 46957	Depreciation rates, simulated analysis	Alliance of Oncor Cities
Nevada Public Utilities Commission	Nevada Power Company	17-06004	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	El Paso Electric Company	PUC 46831	Depreciation rates, interim retirements	City of El Paso
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-24	Accelerated depreciation of North Valmy plant	Micron Technology, Inc.
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-23	Depreciation rates, service lives, net salvage	Micron Technology, Inc.
Public Utility Commission of Texas	Southwestern Electric Power Company	PUC 46449	Depreciation rates, decommissioning costs	Cities Advocating Reasonable Deregulation

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Massachusetts Department of Public Utilities	Eversource Energy	D.P.U. 17-05	Cost of capital, capital structure, and rate of return	Sunrun Inc.; Energy Freedom Coalition of America
Railroad Commission of Texas	Atmos Pipeline - Texas	GUD 10580	Depreciation rates, grouping procedure	City of Dallas
Public Utility Commission of Texas	Sharyland Utility Co.	PUC 45414	Depreciation rates, simulated analysis	City of Mission
Oklahoma Corporation Commission	Empire District Electric Co.	PUD 201600468	Cost of capital, depreciation rates	Oklahoma Industrial Energy Consumers
Railroad Commission of Texas	CenterPoint Energy Texas Gas	GUD 10567	Depreciation rates, simulated plant analysis	Texas Coast Utilities Coalition
Arkansas Public Service Commission	Oklahoma Gas & Electric Co.	160-159-GU	Cost of capital, depreciation rates, terminal salvage	Arkansas River Valley Energy Consumers; Wal-Mart
Florida Public Service Commission	Peoples Gas	160-159-GU	Depreciation rates, service lives, net salvage	Florida Office of Public Counsel
Arizona Corporation Commission	Arizona Public Service Co.	E-01345A-16-0036	Cost of capital, depreciation rates, terminal salvage	Energy Freedom Coalition of America
Nevada Public Utilities Commission	Sierra Pacific Power Co.	16-06008	Depreciation rates, net salvage, theoretical reserve	Northern Nevada Utility Customers
Oklahoma Corporation Commission	Oklahoma Gas & Electric Co.	PUD 201500273	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201500208	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Oklahoma Natural Gas Co.	PUD 201500213	Cost of capital, depreciation rates, net salvage	Public Utility Division

Summary Accrual Adjustment

Plant Function	Plant Balance 12/31/2017	NWE Accrual	MCC Accrual	MCC Adjustment
Steam Production	$ 91,523,075	$ 2,889,378	$ 2,890,616	$ 1,238
Hydraulic Production	517,958,201	9,280,327	9,277,523	(2,804)
Other Production	263,140,036	10,680,253	10,715,884	35,631
Transmission	782,164,759	20,092,856	15,863,714	(4,229,142)
Distribution	1,385,048,678	44,283,866	40,445,703	(3,838,163)
General	57,351,329	2,735,119	2,674,075	(61,044)
Total	$ 3,097,186,078	$ 89,961,799	$ 81,867,516	**$ (8,094,283)**

Depreciation Parameter Comparison

Account No.	Description	NWE Proposal Net Salvage	NWE Proposal Iowa Curve Type	NWE Proposal Iowa Curve AL	NWE Proposal Depr Rate	NWE Proposal Annual Accrual	MCC Proposal Net Salvage	MCC Proposal Iowa Curve Type	MCC Proposal Iowa Curve AL	MCC Proposal Depr Rate	MCC Proposal Annual Accrual
	TRANSMISSION PLANT										
353.00	Station Equipment	-10.0%	R1	55	1.96%	4,887,660	-10.0%	R0.5	68	1.44%	3,589,182
355.00	Poles and Fixtures	-110.0%	S4	55	3.77%	10,346,806	-90.0%	R2.5	64	2.58%	7,084,042
	DISTRIBUTION PLANT										
362.00	Station Equipment	-10.0%	L1.5	55	1.97%	4,045,737	-10.0%	L1.5	61	1.66%	3,394,209
364.00	Poles, Towers and Fixtures	-125.0%	R3	45	4.97%	13,850,248	-125.0%	L3	49	4.49%	12,510,393
365.00	OH Conductors and Devices	-100.0%	R4	50	3.87%	4,605,301	-90.0%	R4	50	3.84%	4,564,035
368.00	Line Transformers	-5.0%	R4	45	2.28%	4,802,683	-5.0%	R4	51	1.82%	3,839,491
369.20	Underground Services	-30.0%	S4	40	3.15%	2,851,334	-30.0%	R4	51	2.19%	1,986,364

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
	ACCOUNTS CONSOLIDATED											
	STEAM PRODUCTION PLANT											
310.00	Land and Land Rights											
311.00	Structures and Improvements	26,907,546	1.17%	314,818	2.64%	710,359	1.32%	356,150	0.15%	41,332	-1.32%	-354,209
312.00	Boiler Plant Equipment	23,479,555	3.39%	795,957	3.70%	868,744	4.41%	1,034,420	1.02%	238,463	0.71%	165,676
314.00	Turbogenerator Units	16,795,827	0.00%	497,156	3.39%	569,379	3.61%	606,880	3.61%	109,724	0.22%	37,501
315.00	Accessory Electric Equipment	1,843,541	0.00%	45,351	3.58%	65,998	3.30%	60,883	3.30%	15,532	-0.28%	-5,115
316.00	Miscellaneous Power Plant Equipment	22,496,606	3.46%	778,383	3.00%	674,898	3.70%	832,283	0.24%	53,900	0.70%	157,385
	Total Steam Production Plant	91,523,075	2.66%	2,431,665	3.16%	2,889,378	3.16%	2,890,616	0.50%	458,951	0.00%	1,238
	HYDRAULIC PRODUCTION PLANT											
330.00	Land and Land Rights											
331.10	Structures and Improvements	123,420,566	3.78%	1,977,926	1.81%	2,249,751	1.85%	2,278,372	-1.93%	300,446	0.04%	28,621
332.10	Reservoirs, Dams and Waterways	167,589,523	3.13%	2,801,060	1.75%	2,957,647	1.64%	2,750,666	-1.49%	-50,394	-0.11%	-206,981
333.00	Water Wheels, Turbines and Generators	120,972,361	0.00%	1,981,609	1.74%	2,118,221	1.88%	2,274,860	1.88%	293,251	0.14%	156,639
334.00	Accessory Electric Equipment	84,118,033	0.00%	1,359,461	1.82%	1,544,655	1.98%	1,665,378	1.98%	305,917	0.16%	120,723
335.10	Miscellaneous Power Plant Equipment	19,363,882	3.29%	317,170	1.84%	358,616	1.45%	280,729	-1.84%	-36,441	-0.39%	-77,887
336.00	Roads, Railroads and Bridges	2,493,836	3.57%	49,689	2.05%	51,437	1.10%	27,517	-2.47%	-22,172	-0.95%	-23,920
	Total Hydraulic Production Plant	517,958,201	1.64%	8,486,915	1.79%	9,280,327	1.79%	9,277,523	0.15%	790,608	0.00%	-2,804
	OTHER PRODUCTION PLANT											
340.00	Land and Land Rights											
341.00	Structures and Improvements	51,404,540	3.72%	1,910,112	4.07%	2,091,451	3.88%	1,993,429	0.16%	83,317	-0.19%	-98,022
342.00	Fuel Holders and Accessories	21,230,045	3.33%	706,719	3.73%	786,465	3.56%	754,909	0.23%	48,190	-0.17%	-31,556
343.00	Prime Movers	100,614,123	0.00%	3,360,512	4.09%	4,155,363	4.40%	4,423,719	4.40%	1,063,207	0.31%	268,356
344.00	Generators	47,711,321	0.00%	1,851,616	4.17%	1,992,551	4.31%	2,057,523	4.31%	205,907	0.14%	64,972
345.00	Accessory Electric Equipment	16,208,757	3.60%	583,831	3.95%	643,944	3.95%	640,883	0.35%	57,052	0.00%	-3,061
346.00	Miscellaneous Power Plant Equipment	25,971,250	3.39%	880,952	3.88%	1,010,479	3.26%	845,421	-0.14%	-35,531	-0.62%	-165,058
	Total Other Production Plant	263,140,036	3.53%	9,293,742	4.06%	10,680,253	4.07%	10,715,884	0.54%	1,422,142	0.01%	35,631
	TRANSMISSION PLANT											
350.20	Land Rights and Rights-of-Way	30,727,757	1.71%	525,445	1.64%	503,935	1.68%	515,954	-0.03%	-9,491	0.04%	12,019
352.00	Structures and Improvements	30,995,178	2.02%	626,103	2.00%	619,904	2.03%	630,074	0.01%	3,971	0.03%	10,170
353.00	Station Equipment	249,370,391	2.20%	5,486,149	1.96%	4,887,660	1.44%	3,589,182	-0.76%	-1,896,967	-0.52%	-1,298,478
354.10	Towers and Fixtures	27,223,483	2.53%	688,754	2.30%	626,140	2.50%	680,959	-0.03%	-7,795	0.20%	54,819
354.20	Clearing Land and Rights-of-Way	1,504,241	1.93%	29,032	1.77%	26,625	1.90%	28,608	-0.03%	-424	0.13%	1,983
355.00	Poles and Fixtures	274,569,098	4.55%	12,487,657	3.77%	10,346,806	2.58%	7,084,042	-1.97%	-5,403,615	-1.19%	-3,262,764

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
355.20	Clearing Land and Rights-of-Way	5,070,927	2.11%	107,070	1.66%	84,341	1.58%	80,370	-0.53%	-26,700	-0.08%	-3,971
356.00	Overhead Conductors and Devices	143,978,985	1.88%	2,702,346	1.83%	2,629,159	2.00%	2,874,328	0.12%	171,982	0.17%	245,169
356.10	Switching Station Equipment	14,656,645	2.17%	317,690	2.08%	304,166	2.16%	316,180	-0.01%	-1,510	0.08%	12,014
357.00	Underground Conduit	137,878	1.87%	2,577	1.55%	2,144	1.56%	2,152	-0.31%	-425	0.01%	8
358.00	Underground Conductors and Devices	1,410,535	2.71%	38,195	2.20%	31,043	2.10%	29,640	-0.61%	-8,555	-0.10%	-1,403
359.00	Roads and Trails	2,519,641	1.29%	32,463	1.23%	30,933	1.28%	32,225	-0.01%	-238	0.05%	1,292
	Total Transmission Plant	782,164,759	2.95%	23,043,481	2.57%	20,092,856	2.03%	15,863,714	-0.92%	-7,179,767	-0.54%	-4,229,142
	DISTRIBUTION PLANT											
360.20	Land Rights and Rights-of-Way	2,242,547	-0.42%	-9,406	-0.27%	-6,043	-0.54%	-12,025	-0.12%	-2,619	-0.27%	-5,982
361.00	Structures and Improvements	19,088,103	2.07%	395,438	2.02%	385,334	2.01%	384,605	-0.06%	-10,833	0.00%	-729
362.00	Station Equipment	205,014,444	2.31%	4,728,010	1.97%	4,045,737	1.66%	3,394,209	-0.65%	-1,333,801	-0.32%	-651,528
364.00	Poles, Towers and Fixtures	278,687,203	4.83%	13,460,212	4.97%	13,850,248	4.49%	12,510,393	-0.34%	-949,819	-0.48%	-1,339,855
365.00	Overhead Conductors and Devices	118,997,468	3.32%	3,950,765	3.87%	4,605,301	3.84%	4,564,035	0.52%	613,270	-0.03%	-41,266
366.00	Underground Conduit	116,024,132	2.07%	2,401,946	1.94%	2,251,064	1.91%	2,218,370	-0.16%	-183,576	-0.03%	-32,694
367.00	Underground Conductors and Devices	200,069,425	2.84%	5,676,212	3.20%	6,400,942	3.37%	6,735,767	0.53%	1,059,555	0.17%	334,825
368.00	Line Transformers	210,715,294	2.24%	4,713,967	2.28%	4,802,683	1.82%	3,839,491	-0.42%	-874,476	-0.46%	-963,192
369.10	Overhead Services	34,429,051	3.83%	1,318,419	3.89%	1,339,490	3.81%	1,310,322	-0.02%	-8,097	-0.08%	-29,168
369.20	Underground Services	90,520,882	3.07%	2,778,672	3.15%	2,851,334	2.19%	1,986,364	-0.88%	-792,308	-0.96%	-864,970
370.00	Meters	41,971,710	3.22%	1,351,266	3.14%	1,317,738	2.91%	1,221,765	-0.31%	-129,501	-0.23%	-95,973
370.20	AMR Equipment	12,795,224	5.00%	639,761	5.00%	639,761	5.01%	641,056	0.01%	1,295	0.01%	1,295
373.10	Street Lighting Equipment	29,611,764	2.89%	855,741	2.96%	876,504	2.98%	882,572	0.09%	26,831	0.02%	6,068
373.20	Yard Lighting	17,242,326	4.22%	727,621	3.90%	672,448	3.11%	536,396	-1.11%	-191,225	-0.79%	-136,052
373.30	Post Top Lights	7,639,105	3.32%	253,607	3.29%	251,325	3.04%	232,382	-0.28%	-21,225	-0.25%	-18,943
	Total Distribution Plant	1,385,048,678	3.12%	43,242,231	3.20%	44,283,866	2.92%	40,445,703	-0.20%	-2,796,528	-0.28%	-3,838,163
	GENERAL PLANT											
	Depreciable											
390.10	Structures - Office	7,404,805	1.56%	115,515	0.97%	71,827	1.46%	108,242	-0.10%	-7,273	0.49%	36,415
390.60	Structures - Communication	1,261,379	1.74%	21,947	1.72%	21,718	2.00%	25,227	0.26%	3,280	0.28%	3,509
390.80	Structures - Multipurpose	392,351	2.11%	8,278	3.44%	13,497	2.00%	7,860	-0.11%	-418	-1.44%	-5,637
397.10	Microwave Equipment	11,106,723	2.36%	262,119	2.33%	258,787	2.42%	268,859	0.06%	6,740	0.09%	10,072
	Total Depreciable	20,165,258	2.02%	407,859	1.81%	365,829	2.03%	410,188	0.01%	2,329	0.22%	44,359
	Amortizable											
391.00	Office Furniture and Equipment	363,845	4.96%	18,042	4.96%	18,042	5.07%	18,451	0.11%	409	0.11%	409
391.10	Data Handling Equipment	255,090	5.00%	12,755	5.00%	12,755	5.09%	12,990	0.09%	235	0.09%	235
391.20	Computer Equipment	1,863,193	13.03%	242,762	13.03%	242,762	11.69%	217,797	-1.34%	-24,965	-1.34%	-24,965
393.00	Stores Equipment	638,697	4.79%	30,610	4.79%	30,610	4.99%	31,851	0.19%	1,241	0.19%	1,241
394.00	Tools, Shop and Garage Equipment	8,113,371	4.91%	398,082	4.91%	398,082	5.08%	412,154	0.17%	14,072	0.17%	14,072
395.00	Laboratory Equipment	1,521,272	4.82%	73,359	4.82%	73,359	4.69%	71,410	-0.13%	-1,949	-0.13%	-1,949
397.20	Other Communication Equipment	21,449,425	6.66%	1,429,531	6.66%	1,429,531	6.21%	1,331,687	-0.46%	-97,844	-0.46%	-97,844
397.30	Office Communication Equipment	915,884	6.65%	60,937	6.65%	60,937	6.68%	61,194	0.03%	257	0.03%	257

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
398.00	Miscellaneous Equipment	2,065,294	5.00%	103,212	5.00%	103,212	5.15%	106,354	0.15%	3,142	0.15%	3,142
	Total Amortizable	37,186,071	6.37%	2,369,290	6.37%	2,369,290	6.09%	2,263,887	-0.28%	-105,403	-0.28%	-105,403
	Total General Plant	57,351,329	4.84%	2,777,149	4.77%	2,735,119	4.66%	2,674,075	-0.18%	-103,074	-0.11%	-61,044
	TOTAL UTILITY	**3,097,186,078**	**2.88%**	**89,275,183**	**2.90%**	**89,961,799**	**2.64%**	**81,867,516**	**-0.24%**	**-7,407,667**	**-0.26%**	**-8,094,283**
	ACCOUNTS DETAILED											
	STEAM PRODUCTION PLANT											
	Colstrip Unit 4											
310.00	Land and Land Rights											
311.00	Structures and Improvements	26,907,546	1.17%	314,818	2.63%	710,359	1.32%	356,150	0.15%	41,332	-1.31%	-354,209
312.00	Boiler Plant Equipment	23,479,555	3.39%	795,957	3.68%	868,744	4.41%	1,034,420	1.02%	238,463	0.73%	165,676
314.00	Turbogenerator Units	16,795,827	2.96%	497,156	3.38%	569,379	3.61%	606,880	0.65%	109,724	0.23%	37,501
315.00	Accessory Electric Equipment	1,843,541	2.46%	45,351	3.56%	65,998	3.30%	60,883	0.84%	15,532	-0.26%	-5,115
316.00	Miscellaneous Power Plant Equipment	22,496,606	3.46%	778,383	2.99%	674,898	3.70%	832,283	0.24%	53,900	0.71%	157,385
	Total Colstrip Unit 4	91,523,075	2.66%	2,431,665	3.16%	2,889,378	3.16%	2,890,616	0.50%	458,951	0.00%	1,238
	HYDRAULIC PRODUCTION PLANT											
	Black Eagle											
330.00	Land and Land Rights											
331.10	Structures and Improvements	461,290	1.58%	7,288	1.37%	6,320	0.40%	1,847	-1.18%	-5,441	-0.97%	-4,473
332.10	Reservoirs, Dams and Waterways	3,372,715	1.61%	54,301	1.49%	50,253	1.21%	40,766	-0.40%	-13,535	-0.28%	-9,487
333.00	Water Wheels, Turbines and Generators	1,579,786	1.68%	26,540	1.59%	25,119	1.64%	25,942	-0.04%	-598	0.05%	823
334.00	Accessory Electric Equipment	8,320,215	1.62%	134,787	1.92%	159,748	2.18%	181,678	0.56%	46,891	0.26%	21,930
335.10	Miscellaneous Power Plant Equipment	645,505	2.00%	12,910	2.12%	13,685	1.39%	8,990	-0.61%	-3,920	-0.73%	-4,695
336.00	Roads, Railroads and Bridges	131,446	2.00%	2,629	2.12%	2,787	1.87%	2,464	-0.13%	-165	-0.25%	-323
	Total Black Eagle	14,510,957	1.64%	238,455	1.78%	257,912	1.80%	261,687	0.16%	23,232	0.03%	3,775
	Cochrane											
330.00	Land and Land Rights											
331.10	Structures and Improvements	1,140,408	1.58%	18,018	1.37%	15,624	0.89%	10,151	-0.69%	-7,867	-0.48%	-5,473
332.10	Reservoirs, Dams and Waterways	6,126,510	1.59%	97,412	1.39%	85,159	0.88%	53,690	-0.71%	-43,722	-0.51%	-31,469
333.00	Water Wheels, Turbines and Generators	7,449,660	1.59%	118,450	1.47%	109,510	1.51%	112,412	-0.08%	-6,038	0.04%	2,902
334.00	Accessory Electric Equipment	8,642,385	1.64%	141,735	1.92%	165,934	2.06%	178,324	0.42%	36,589	0.14%	12,390
335.10	Miscellaneous Power Plant Equipment	1,177,283	1.63%	19,190	1.81%	21,308	1.37%	16,152	-0.26%	-3,038	-0.44%	-5,156
336.00	Roads, Railroads and Bridges	93,874	2.00%	1,877	2.07%	1,943	0.94%	879	-1.06%	-998	-1.13%	-1,064
	Total Cochrane	24,630,120	1.61%	396,682	1.62%	399,478	1.51%	371,608	-0.10%	-25,074	-0.11%	-27,870

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
	Hauser											
330.00	Land and Land Rights											
331.10	Structures and Improvements	1,014,582	1.59%	16,132	1.49%	15,117	1.18%	11,956	-0.41%	-4,176	-0.31%	-3,161
332.10	Reservoirs, Dams and Waterways	9,948,017	1.58%	157,179	1.56%	155,189	1.00%	99,316	-0.58%	-57,863	-0.56%	-55,873
333.00	Water Wheels, Turbines and Generators	5,476,022	1.72%	94,188	2.30%	125,949	2.21%	120,811	0.49%	26,623	-0.09%	-5,138
334.00	Accessory Electric Equipment	5,684,492	1.59%	90,383	1.59%	90,383	1.66%	94,425	0.07%	4,042	0.07%	4,042
335.10	Miscellaneous Power Plant Equipment	727,859	1.58%	11,500	1.63%	11,864	1.07%	7,776	-0.51%	-3,724	-0.56%	-4,088
336.00	Roads, Railroads and Bridges	39,494	2.00%	790	2.07%	818	0.73%	289	-1.27%	-501	-1.34%	-529
	Total Hauser	22,890,466	1.62%	370,172	1.74%	399,320	1.46%	334,572	-0.16%	-35,600	-0.28%	-64,748
	Hebgon											
330.00	Land and Land Rights											
331.10	Structures and Improvements	37,693	1.58%	596	1.64%	618	15.24%	5,744	13.66%	5,148	13.60%	5,126
332.10	Reservoirs, Dams and Waterways	47,994,327	1.87%	897,494	2.17%	1,041,477	2.16%	1,038,750	0.29%	141,256	-0.01%	-2,727
333.00	Water Wheels, Turbines and Generators	8,399	1.58%	133	1.85%	156	1.92%	161	0.34%	28	0.07%	5
334.00	Accessory Electric Equipment	0										
335.10	Miscellaneous Power Plant Equipment	261,164	1.58%	4,126	1.85%	4,831	1.09%	2,838	-0.49%	-1,288	-0.76%	-1,993
336.00	Roads, Railroads and Bridges	1,044	2.00%	21	2.07%	22	0.61%	6	-1.39%	-15	-1.46%	-16
	Total Hebgon	48,302,627	1.87%	902,370	2.17%	1,047,104	2.17%	1,047,500	0.30%	145,130	0.00%	396
	Holter											
330.00	Land and Land Rights											
331.10	Structures and Improvements	1,463,178	1.58%	23,118	1.45%	21,216	1.24%	18,215	-0.34%	-4,903	-0.21%	-3,001
332.10	Reservoirs, Dams and Waterways	6,794,183	1.58%	107,348	1.39%	94,439	0.94%	63,648	-0.64%	-43,700	-0.45%	-30,791
333.00	Water Wheels, Turbines and Generators	2,983,204	1.70%	50,714	1.62%	48,328	1.52%	45,385	-0.18%	-5,329	-0.10%	-2,943
334.00	Accessory Electric Equipment	3,621,427	1.67%	60,478	1.81%	65,548	1.87%	67,800	0.20%	7,322	0.06%	2,252
335.10	Miscellaneous Power Plant Equipment	1,814,924	2.00%	36,298	2.07%	37,568	1.08%	19,539	-0.92%	-16,759	-0.99%	-18,029
336.00	Roads, Railroads and Bridges	5,550	2.00%	111	2.07%	115	0.47%	26	-1.53%	-85	-1.60%	-89
	Total Holter	16,682,466	1.67%	278,067	1.60%	267,214	1.29%	214,613	-0.38%	-63,454	-0.32%	-52,601
	Madison											
330.00	Land and Land Rights											
331.10	Structures and Improvements	1,182,531	1.68%	19,867	1.63%	19,275	1.22%	14,389	-0.46%	-5,478	-0.41%	-4,886
332.10	Reservoirs, Dams and Waterways	16,409,516	1.58%	259,270	1.73%	283,885	1.25%	204,453	-0.33%	-54,817	-0.48%	-79,432
333.00	Water Wheels, Turbines and Generators	3,175,052	1.58%	50,166	1.70%	53,976	1.63%	51,703	0.05%	1,537	-0.07%	-2,273
334.00	Accessory Electric Equipment	3,865,967	1.72%	66,495	1.77%	68,428	1.87%	72,472	0.15%	5,977	0.10%	4,044
335.10	Miscellaneous Power Plant Equipment	739,858	1.58%	11,690	1.69%	12,504	1.17%	8,643	-0.41%	-3,047	-0.52%	-3,861
336.00	Roads, Railroads and Bridges	628,052	1.97%	12,373	2.03%	12,750	0.92%	5,775	-1.05%	-6,598	-1.11%	-6,975
	Total Madison	26,000,976		419,861	1.73%	450,818	1.37%	357,436	1.37%	-62,425	-0.36%	-93,382
	Morony											
330.00	Land and Land Rights											
331.10	Structures and Improvements	681,339	1.58%	10,765	1.39%	9,470	1.00%	6,836	-0.58%	-3,929	-0.39%	-2,634
332.10	Reservoirs, Dams and Waterways	3,781,975	1.60%	60,512	1.42%	53,704	0.92%	34,826	-0.68%	-25,686	-0.50%	-18,878
333.00	Water Wheels, Turbines and Generators	16,226,226	1.92%	311,544	2.00%	324,525	2.07%	335,303	0.15%	23,759	0.07%	10,778
334.00	Accessory Electric Equipment	12,687,026	1.58%	200,455	1.86%	235,979	2.10%	266,600	0.52%	66,145	0.24%	30,621

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
335.10	Miscellaneous Power Plant Equipment	2,304,460	1.58%	36,410	1.93%	44,476	1.63%	37,627	0.05%	1,217	-0.30%	-6,849
336.00	Roads, Railroads and Bridges	3,930	2.00%	79	2.07%	81	0.25%	10	-1.75%	-69	-1.82%	-71
	Total Morony	35,684,956	1.74%	619,765	1.87%	668,235	1.91%	681,202	0.17%	61,437	0.04%	12,967
	Mystic											
330.00	Land and Land Rights											
331.10	Structures and Improvements	1,291,925	1.58%	20,412	1.50%	19,379	0.79%	10,218	-0.79%	-10,194	-0.71%	-9,161
332.10	Reservoirs, Dams and Waterways	11,333,661	1.58%	179,072	1.53%	173,405	1.03%	116,356	-0.55%	-62,716	-0.50%	-57,049
333.00	Water Wheels, Turbines and Generators	2,774,667	1.60%	44,395	1.64%	45,505	1.18%	32,810	-0.42%	-11,585	-0.46%	-12,695
334.00	Accessory Electric Equipment	3,298,847	1.63%	53,771	1.87%	61,689	2.01%	66,211	0.38%	12,440	0.14%	4,522
335.10	Miscellaneous Power Plant Equipment	2,989,425	1.59%	47,532	1.59%	47,532	1.66%	49,498	0.07%	1,966	0.07%	1,966
336.00	Roads, Railroads and Bridges	1,453,511	2.00%	29,070	2.07%	30,087	1.15%	16,682	-0.85%	-12,388	-0.92%	-13,405
	Total Mystic	23,142,036	1.62%	374,252	1.63%	377,597	1.26%	291,774	-0.36%	-82,478	-0.37%	-85,823
	Rainbow											
330.00	Land and Land Rights											
331.10	Structures and Improvements	75,536,805	1.58%	1,193,482	2.01%	1,518,290	2.09%	1,579,518	0.51%	386,036	0.08%	61,228
332.10	Reservoirs, Dams and Waterways	23,650,771	1.59%	376,047	1.73%	409,158	2.00%	473,843	0.41%	97,796	0.27%	64,685
333.00	Water Wheels, Turbines and Generators	36,686,952	1.58%	579,654	2.01%	737,408	2.24%	823,583	0.66%	243,929	0.23%	86,175
334.00	Accessory Electric Equipment	5,813,929	1.58%	91,860	1.96%	113,953	2.33%	135,647	0.75%	43,787	0.37%	21,694
335.10	Miscellaneous Power Plant Equipment	1,282,576	1.58%	20,265	1.93%	24,754	0.73%	9,415	-0.85%	-10,850	-1.20%	-15,339
336.00	Roads, Railroads and Bridges	3,792	2.00%	76	2.07%	78	-0.05%	-2	-2.05%	-78	-2.12%	-80
	Total Rainbow	142,974,825	1.58%	2,261,384	1.96%	2,803,641	2.11%	3,022,005	0.53%	760,621	0.15%	218,364
	Ryan											
330.00	Land and Land Rights											
331.10	Structures and Improvements	2,420,542	1.58%	38,245	1.42%	34,372	1.37%	33,137	-0.21%	-5,108	-0.05%	-1,235
332.10	Reservoirs, Dams and Waterways	9,214,588	1.68%	154,805	1.63%	150,198	1.57%	144,805	-0.11%	-10,000	-0.06%	-5,393
333.00	Water Wheels, Turbines and Generators	9,497,375	1.59%	151,008	1.60%	151,958	2.11%	200,707	0.52%	49,699	0.51%	48,749
334.00	Accessory Electric Equipment	17,243,937	1.60%	275,903	1.85%	319,013	2.01%	346,344	0.41%	70,441	0.16%	27,331
335.10	Miscellaneous Power Plant Equipment	1,334,398	1.58%	21,083	1.75%	23,352	1.46%	19,537	-0.12%	-1,546	-0.29%	-3,815
336.00	Roads, Railroads and Bridges	30,735	2.00%	615	2.07%	636	0.96%	296	-1.04%	-319	-1.11%	-340
	Total Ryan	39,741,575	1.61%	641,659	1.71%	679,529	1.87%	744,826	0.26%	103,167	0.16%	65,297
	Thompson Falls											
330.00	Land and Land Rights											
331.10	Structures and Improvements	28,339,628	1.58%	447,766	1.38%	391,087	1.42%	403,582	-0.16%	-44,184	0.04%	12,495
332.10	Reservoirs, Dams and Waterways	18,430,744	1.58%	291,206	1.50%	276,461	1.54%	284,687	-0.04%	-6,519	0.04%	8,226
333.00	Water Wheels, Turbines and Generators	26,761,644	1.58%	422,834	1.40%	374,663	1.39%	370,898	-0.19%	-51,936	-0.01%	-3,765
334.00	Accessory Electric Equipment	7,375,919	1.59%	117,277	1.61%	118,753	1.50%	110,769	-0.09%	-6,508	-0.11%	-7,984
335.10	Miscellaneous Power Plant Equipment	4,633,669	1.58%	73,212	1.93%	89,430	1.59%	73,819	0.01%	607	-0.34%	-15,611
336.00	Roads, Railroads and Bridges	102,408	2.00%	2,048	2.07%	2,120	1.07%	1,092	-0.93%	-956	-1.00%	-1,028
	Total Thompson Falls	85,644,012	1.58%	1,354,343	1.46%	1,252,514	1.45%	1,244,849	-0.13%	-109,494	-0.01%	-7,665
	Common											

Detailed Rate Comparison

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330.00	Land and Land Rights											
331.10	Structures and Improvements	9,850,645	1.85%	182,237	2.02%	198,983	1.85%	182,597	0.00%	360	-0.17%	-16,386
332.10	Reservoirs, Dams and Waterways	10,532,516	1.58%	166,414	1.75%	184,319	1.85%	195,178	0.27%	28,764	0.10%	10,859
333.00	Water Wheels, Turbines and Generators	8,353,374	1.58%	131,983	1.45%	121,124	1.86%	154,973	0.28%	22,990	0.41%	33,849
334.00	Accessory Electric Equipment	7,563,889	1.67%	126,317	1.92%	145,227	1.92%	145,070	0.25%	18,753	0.00%	-157
335.10	Miscellaneous Power Plant Equipment	1,452,761	1.58%	22,954	1.88%	27,312	1.85%	26,909	0.27%	3,955	-0.03%	-403
336.00	Roads, Railroads and Bridges											
	Total Common	37,753,185	1.67%	629,905	1.79%	676,965	1.87%	704,728	0.20%	74,823	0.07%	27,763
	OTHER PRODUCTION PLANT											
	Dave Gates Generating Station											
340.00	Land and Land Rights											
341.00	Structures and Improvements	22,122,874	3.34%	738,904	3.75%	829,607	3.57%	790,435	0.23%	51,531	-0.18%	-39,172
342.00	Fuel Holders and Accessories	21,117,961	3.34%	705,340	3.75%	791,924	3.55%	749,614	0.21%	44,274	-0.20%	-42,310
343.00	Prime Movers	100,614,123	3.34%	3,360,512	4.13%	4,155,363	4.41%	4,438,365	1.07%	1,077,853	0.28%	283,002
344.00	Generators											
345.00	Accessory Electric Equipment	9,049,010	3.34%	302,237	3.75%	339,338	3.57%	322,608	0.23%	20,371	-0.18%	-16,730
346.00	Miscellaneous Power Plant Equipment	23,914,137	3.34%	798,732	3.87%	925,477	3.17%	757,018	-0.17%	-41,714	-0.70%	-168,459
	Total Dave Gates Generating Station	176,818,105		5,905,725		7,041,709	3.99%	7,058,039	3.99%	1,152,314	3.99%	16,330
	Spion Kop Wind Farm											
340.00	Land and Land Rights											
341.00	Structures and Improvements	29,262,434	4.00%	1,170,497	4.31%	1,261,210	4.07%	1,189,651	0.07%	19,154	-0.24%	-71,559
342.00	Fuel Holders and Accessories											
343.00	Prime Movers											
344.00	Generators	44,855,231	4.00%	1,794,209	4.29%	1,924,290	4.42%	1,980,398	0.42%	186,189	0.13%	56,108
345.00	Accessory Electric Equipment	6,360,485	4.00%	254,419	4.26%	270,957	4.45%	282,867	0.45%	28,448	0.19%	11,910
346.00	Miscellaneous Power Plant Equipment	2,049,845	4.00%	81,994	4.14%	84,864	4.26%	87,290	0.26%	5,296	0.12%	2,426
	Total Spion Kop Wind Farm	82,527,995		3,301,119		3,541,321	4.29%	3,540,206	4.29%	239,087	4.29%	-1,115
	Yellowstone Park											
340.00	Land and Land Rights											
341.00	Structures and Improvements	19,232	3.70%	711	3.30%	634	3.69%	709	-0.01%	-2	0.39%	75
342.00	Fuel Holders and Accessories	112,084	1.23%	1,379	-4.87%	-5,459	-5.35%	-5,996	-6.58%	-7,375	-0.48%	-537
343.00	Prime Movers											
344.00	Generators	2,856,090	2.01%	57,407	2.39%	68,261	2.21%	63,065	0.20%	5,658	-0.18%	-5,196
345.00	Accessory Electric Equipment	799,262	3.40%	27,175	4.21%	33,649	4.50%	35,975	1.10%	8,800	0.29%	2,326
346.00	Miscellaneous Power Plant Equipment	7,268	3.11%	226	1.89%	138	1.66%	120	-1.45%	-106	-0.23%	-18
	Total Yellowstone Park	3,793,936		86,898		97,223	2.47%	93,874	2.47%	6,976	2.47%	-3,349
	TRANSMISSION PLANT											
	Non-Yellowstone Park											

Detailed Rate Comparison

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350.20	Land Rights and Rights-of-Way	30,727,757	1.71%	525,445	1.64%	503,935	1.68%	515,954	-0.03%	-9,491	0.04%	12,019
352.00	Structures and Improvements	30,995,178	2.02%	626,103	2.00%	619,904	2.03%	630,074	0.01%	3,971	0.03%	10,170
353.00	Station Equipment	249,370,391	2.20%	5,486,149	1.96%	4,887,660	1.44%	3,589,182	-0.76%	-1,896,967	-0.52%	-1,298,478
354.10	Towers and Fixtures	27,223,483	2.53%	688,754	2.30%	626,140	2.50%	680,959	-0.03%	-7,795	0.20%	54,819
354.20	Clearing Land and Rights-of-Way	1,504,241	1.93%	29,032	1.77%	26,625	1.90%	28,608	-0.03%	-424	0.13%	1,983
355.00	Poles and Fixtures	273,851,709	4.55%	12,460,253	3.77%	10,324,209	2.58%	7,071,012	-1.97%	-5,389,241	-1.19%	-3,253,197
355.20	Clearing Land and Rights-of-Way	4,819,790	2.16%	104,107	1.74%	83,864	1.61%	77,739	-0.55%	-26,368	-0.13%	-6,125
356.00	Overhead Conductors and Devices	143,313,518	1.88%	2,694,294	1.83%	2,622,638	2.00%	2,863,705	0.12%	169,411	0.17%	241,067
356.10	Switching Station Equipment	14,606,031	2.17%	316,951	2.08%	303,806	2.16%	315,231	-0.01%	-1,720	0.08%	11,425
357.00	Underground Conduit	35,592	1.81%	644	1.57%	559	1.55%	552	-0.26%	-92	-0.02%	-7
358.00	Underground Conductors and Devices	856,499	2.59%	22,183	2.46%	21,070	2.50%	21,431	-0.09%	-752	0.04%	361
359.00	Roads and Trails	2,474,735	1.29%	31,924	1.23%	30,439	1.28%	31,690	-0.01%	-234	0.05%	1,251
	Total Non-Yellowstone Park	779,778,924	2.95%	22,985,839	2.57%	20,050,849	2.03%	15,826,136	-0.92%	-7,159,703	-0.54%	-4,224,713
	Yellowstone Park											
350.20	Land Rights and Rights-of-Way											
352.00	Structures and Improvements											
353.00	Station Equipment											
354.10	Towers and Fixtures											
354.20	Clearing Land and Rights-of-Way											
355.00	Poles and Fixtures	717,389	3.82%	27,404	3.15%	22,597	1.82%	13,030	-2.00%	-14,374	-1.33%	-9,567
355.20	Clearing Land and Rights-of-Way	251,137	1.18%	2,963	0.19%	477	0.44%	1,109	-0.74%	-1,854	0.25%	632
356.00	Overhead Conductors and Devices	665,467	1.21%	8,052	0.98%	6,521	1.48%	9,875	0.27%	1,823	0.50%	3,354
356.10	Switching Station Equipment	50,614	1.46%	739	0.71%	360	1.52%	770	0.06%	31	0.81%	410
357.00	Underground Conduit	102,286	1.89%	1,933	1.55%	1,585	1.57%	1,601	-0.32%	-332	0.02%	16
358.00	Underground Conductors and Devices	554,036	2.89%	16,012	1.80%	9,973	1.32%	7,332	-1.57%	-8,680	-0.48%	-2,641
359.00	Roads and Trails	44,906	1.20%	539	1.10%	494	1.19%	536	-0.01%	-3	0.09%	42
	Total Yellowstone Park	2,385,835	2.42%	57,642	1.76%	42,007	1.44%	34,253	-0.98%	-23,389	-0.33%	-7,754
	DISTRIBUTION PLANT											
	Non-Yellowstone Park											
360.20	Land Rights and Rights-of-Way	2,241,946	-0.42%	-9,416	-0.27%	-6,054	-0.54%	-12,033	-0.12%	-2,617	-0.27%	-5,979
361.00	Structures and Improvements	17,861,499	2.08%	371,519	2.02%	360,802	2.02%	359,926	-0.06%	-11,593	0.00%	-876
362.00	Station Equipment	200,668,956	2.31%	4,635,452	1.97%	3,953,178	1.65%	3,312,020	-0.66%	-1,323,432	-0.32%	-641,158
364.00	Poles, Towers and Fixtures	278,264,657	4.83%	13,440,183	4.97%	13,829,754	4.49%	12,492,790	-0.34%	-947,393	-0.48%	-1,336,964
365.00	Overhead Conductors and Devices	118,501,603	3.32%	3,934,253	3.87%	4,586,012	3.84%	4,545,305	0.52%	611,052	-0.03%	-40,707
366.00	Underground Conduit	115,531,014	2.07%	2,391,492	1.94%	2,241,301	1.91%	2,208,956	-0.16%	-182,536	-0.03%	-32,345
367.00	Underground Conductors and Devices	196,870,123	2.84%	5,591,111	3.20%	6,299,844	3.37%	6,630,036	0.53%	1,038,925	0.17%	330,192
368.00	Line Transformers	209,811,378	2.24%	4,699,775	2.28%	4,783,700	1.82%	3,827,105	-0.42%	-872,670	-0.46%	-956,595
369.10	Overhead Services	34,414,498	3.83%	1,318,076	3.89%	1,338,724	3.81%	1,309,889	-0.02%	-8,187	-0.08%	-28,835
369.20	Underground Services	90,275,853	3.07%	2,771,468	3.15%	2,843,689	2.20%	1,981,742	-0.87%	-789,726	-0.95%	-861,947
370.00	Meters	41,874,755	3.22%	1,348,367	3.14%	1,314,868	2.91%	1,219,358	-0.31%	-129,009	-0.23%	-95,510
370.20	AMR Equipment	12,795,224	5.00%	639,761	5.00%	639,761	5.01%	641,056	0.01%	1,295	0.01%	1,295
373.10	Street Lighting Equipment	29,595,352	2.89%	855,306	2.96%	876,023	2.98%	882,132	0.09%	26,826	0.02%	6,109
373.20	Yard Lighting	17,241,479	4.22%	727,591	3.90%	672,418	3.11%	536,378	-1.11%	-191,213	-0.79%	-136,040
373.30	Post Top Lights	7,636,491	3.32%	253,531	3.29%	251,241	3.04%	232,315	-0.28%	-21,216	-0.25%	-18,926

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
	Total Non-Yellowstone Park	1,373,584,828	3.13%	42,968,469	3.20%	43,985,261	2.92%	40,166,975	-0.20%	-2,801,494	-0.28%	-3,818,286
	Yellowstone Park											
360.20	Land Rights and Rights-of-Way	601	1.66%	10	1.91%	11	1.50%	9	-0.16%	-1	-0.41%	-2
361.00	Structures and Improvements	1,226,604	1.95%	23,919	2.00%	24,532	2.01%	24,679	0.06%	760	0.01%	147
362.00	Station Equipment	4,345,488	2.13%	92,558	2.13%	92,559	1.89%	82,189	-0.24%	-10,369	-0.24%	-10,370
364.00	Poles, Towers and Fixtures	422,546	4.74%	20,029	4.85%	20,494	4.17%	17,603	-0.57%	-2,426	-0.68%	-2,891
365.00	Overhead Conductors and Devices	495,865	3.33%	16,512	3.89%	19,289	3.78%	18,730	0.45%	2,218	-0.11%	-559
366.00	Underground Conduit	493,118	2.12%	10,454	1.98%	9,763	1.91%	9,414	-0.21%	-1,040	-0.07%	-349
367.00	Underground Conductors and Devices	3,199,302	2.66%	85,101	3.16%	101,098	3.27%	104,570	0.61%	19,469	0.11%	3,472
368.00	Line Transformers	903,916	1.57%	14,192	2.10%	18,983	1.37%	12,386	-0.20%	-1,806	-0.73%	-6,597
369.10	Overhead Services	14,553	2.36%	343	5.26%	766	2.97%	432	0.61%	89	-2.29%	-334
369.20	Underground Services	245,029	2.94%	7,204	3.12%	7,645	1.89%	4,623	-1.05%	-2,581	-1.23%	-3,022
370.00	Meters	96,955	2.99%	2,899	2.96%	2,870	2.46%	2,384	-0.53%	-515	-0.50%	-486
370.20	AMR Equipment											
373.10	Street Lighting Equipment	16,412	2.65%	435	2.93%	481	2.61%	428	-0.04%	-7	-0.32%	-53
373.20	Yard Lighting	847	3.47%	30	3.58%	30	1.84%	16	-1.63%	-14	-1.74%	-14
373.30	Post Top Lights	2,614	2.90%	76	3.23%	84	2.38%	62	-0.52%	-14	-0.85%	-22
	Total Yellowstone Park	11,463,850	2.39%	273,762	2.60%	298,605	2.42%	277,524	0.03%	3,762	-0.18%	-21,081
	GENERAL PLANT											
	Non-Yellowstone Park											
	Depreciable											
390.10	Structures - Office	7,404,805	1.56%	115,515	0.97%	71,827	1.46%	108,242	-0.10%	-7,273	0.49%	36,415
390.60	Structures - Communication	1,146,761	1.74%	19,953	1.64%	18,807	1.94%	22,296	0.20%	2,343	0.30%	3,489
390.80	Structures - Multipurpose							0				
397.10	Microwave Equipment	11,106,723	2.36%	262,119	2.33%	258,787	2.42%	268,859	0.06%	6,740	0.09%	10,072
	Total Depreciable	19,658,289	2.02%	397,587	1.78%	349,421	2.03%	399,397	0.01%	1,810	0.25%	49,976
	Amortizable											
391.00	Office Furniture and Equipment	363,845	4.96%	18,042	4.96%	18,042	5.07%	18,451	0.11%	409	0.11%	409
391.10	Data Handling Equipment	255,090	5.00%	12,755	5.00%	12,755	5.09%	12,990	0.09%	235	0.09%	235
391.20	Computer Equipment	1,863,193	13.03%	242,762	13.03%	242,762	11.69%	217,797	-1.34%	-24,965	-1.34%	-24,965
393.00	Stores Equipment	638,697	4.79%	30,610	4.79%	30,610	4.99%	31,851	0.19%	1,241	0.19%	1,241
394.00	Tools, Shop and Garage Equipment	8,108,196	4.91%	397,871	4.91%	397,871	5.08%	411,899	0.17%	14,028	0.17%	14,028
395.00	Laboratory Equipment	1,519,975	4.82%	73,327	4.82%	73,327	4.69%	71,355	-0.13%	-1,972	-0.13%	-1,972
397.20	Other Communication Equipment	19,411,181	6.66%	1,293,648	6.66%	1,293,648	6.06%	1,176,247	-0.60%	-117,401	-0.60%	-117,401
397.30	Office Communication Equipment	915,884	6.65%	60,937	6.65%	60,937	6.68%	61,194	0.03%	257	0.03%	257
398.00	Miscellaneous Equipment	2,065,294	5.00%	103,212	5.00%	103,212	5.15%	106,354	0.15%	3,142	0.15%	3,142
	Total Amortizable	35,141,355	6.35%	2,233,164	6.35%	2,233,164	6.00%	2,108,139	-0.36%	-125,025	-0.36%	-125,025
	Total Non-Yellowstone Park	54,799,644	4.80%	2,630,751	4.71%	2,582,585	4.58%	2,507,536	-0.22%	-123,215	-0.14%	-75,049

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] Current Parameters Rate	[2] Current Parameters Annual Accrual	[3] NWE Proposal Rate	[3] NWE Proposal Annual Accrual	[4] MCC Proposal Rate	[4] MCC Proposal Annual Accrual	[5] MCC less Current Rates Rate	[5] MCC less Current Rates Annual Accrual	[6] MCC less Proposed Rates Rate	[6] MCC less Proposed Rates Annual Accrual
	Yellowstone Park											
	Depreciable											
390.10	Structures - Office											
390.60	Structures - Communication	114,618	1.74%	1,994	2.54%	2,911	2.44%	2,798	0.70%	804	-0.10%	-113
390.80	Structures - Multipurpose	392,351	2.11%	8,278	3.44%	13,497	2.00%	7,860	-0.11%	-418	-1.44%	-5,637
397.10	Microwave Equipment											
	Total Depreciable	506,969	2.03%	10,272	3.24%	16,408	2.10%	10,658	0.08%	386	-1.13%	-5,750
	Amortizable											
391.00	Office Furniture and Equipment											
391.10	Data Handling Equipment											
391.20	Computer Equipment											
393.00	Stores Equipment											
394.00	Tools, Shop and Garage Equipment	5,175	4.08%	211	4.08%	211	3.96%	205	-0.12%	-6	-0.12%	-6
395.00	Laboratory Equipment	1,297	2.50%	32	2.50%	32	-0.03%	0	-2.53%	-32	-2.53%	-32
397.20	Other Communication Equipment	2,038,244	6.67%	135,883	6.67%	135,883	7.48%	152,562	0.82%	16,679	0.82%	16,679
397.30	Office Communication Equipment											
398.00	Miscellaneous Equipment											
	Total Amortizable	2,044,716	6.66%	136,126	6.66%	136,126	7.47%	152,766	0.81%	16,640	0.81%	16,640
	Total Yellowstone Park	2,551,685	5.74%	146,398	5.98%	152,534	6.40%	163,424	0.67%	17,026	0.43%	10,890

[1], [2], [3] Depreciation study
[4] DJG rate development exhibit
[5] = [4] - [2]
[6] = [4] - [3]

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
	ACCOUNTS CONSOLIDATED														
	STEAM PRODUCTION PLANT														
310.00	Land and Land Rights														
311.00	Structures and Improvements	26,907,546			-0.3%	26,988,269	18,540,399	8,447,870	23.72	352,746	1.31%	3,403	0.01%	356,150	**1.32%**
312.00	Boiler Plant Equipment	23,479,555			-0.3%	23,549,994	-1,007,129	24,557,123	23.74	1,031,453	4.39%	2,967	0.01%	1,034,420	**4.41%**
314.00	Turbogenerator Units	16,795,827			-0.3%	16,846,214	2,438,875	14,407,339	23.74	604,758	3.60%	2,122	0.01%	606,880	**3.61%**
315.00	Accessory Electric Equipment	1,843,541			-0.3%	1,849,072	403,702	1,445,370	23.74	60,650	3.29%	233	0.01%	60,883	**3.30%**
316.00	Miscellaneous Power Plant Equipment	22,496,606			-0.3%	22,564,096	2,814,016	19,750,080	23.73	829,439	3.69%	2,844	0.01%	832,283	**3.70%**
	Total Steam Production Plant	91,523,075			-0.3%	91,797,644	23,189,863	68,607,781	23.73	2,879,046	3.15%	11,570	0.01%	2,890,616	**3.16%**
	HYDRAULIC PRODUCTION PLANT														
330.00	Land and Land Rights														
331.10	Structures and Improvements	123,420,566			-0.6%	124,161,089	24,494,615	99,666,475	43.74	2,261,444	1.83%	16,928	0.01%	2,278,372	**1.85%**
332.10	Reservoirs, Dams and Waterways	167,589,523			-0.6%	168,595,060	48,313,636	120,281,424	43.73	2,727,671	1.63%	22,995	0.01%	2,750,666	**1.64%**
333.00	Water Wheels, Turbines and Generators	120,972,361			-0.6%	121,698,195	22,221,860	99,476,335	43.73	2,258,261	1.87%	16,599	0.01%	2,274,860	**1.88%**
334.00	Accessory Electric Equipment	84,118,033			-0.6%	84,622,741	11,774,638	72,848,104	43.74	1,653,840	1.97%	11,538	0.01%	1,665,378	**1.98%**
335.10	Miscellaneous Power Plant Equipment	19,363,882			-0.6%	19,480,065	7,199,283	12,280,782	43.75	278,073	1.44%	2,656	0.01%	280,729	**1.45%**
336.00	Roads, Railroads and Bridges	2,493,836			-0.6%	2,508,799	1,304,349	1,204,451	43.77	27,176	1.09%	342	0.01%	27,517	**1.10%**
	Total Hydraulic Production Plant	517,958,201			-0.6%	521,065,950	115,308,381	405,757,570	43.74	9,206,465	1.78%	71,058	0.01%	9,277,523	**1.79%**
	OTHER PRODUCTION PLANT														
340.00	Land and Land Rights														
341.00	Structures and Improvements	51,404,540			-0.5%	51,661,563	11,618,947	40,042,616	20.09	1,980,633	3.85%	12,795	0.02%	1,993,429	**3.88%**
342.00	Fuel Holders and Accessories	21,230,045			-0.5%	21,336,195	4,918,438	16,417,757	21.75	750,029	3.53%	4,881	0.02%	754,909	**3.56%**
343.00	Prime Movers	100,614,123			-0.5%	101,117,194	9,944,343	91,172,851	20.61	4,399,310	4.37%	24,409	0.02%	4,423,719	**4.40%**
344.00	Generators	47,711,321			-0.5%	47,949,878	9,738,724	38,211,154	18.57	2,044,678	4.29%	12,845	0.03%	2,057,523	**4.31%**
345.00	Accessory Electric Equipment	16,208,757			-0.5%	16,289,801	3,166,983	13,122,818	20.48	636,925	3.93%	3,958	0.02%	640,883	**3.95%**
346.00	Miscellaneous Power Plant Equipment	25,971,250			-0.5%	26,101,106	7,838,003	18,263,103	21.60	839,410	3.23%	6,011	0.02%	845,421	**3.26%**
	Total Other Production Plant	263,140,036			-0.5%	264,455,736	47,225,438	217,230,298	20.27	10,650,984	4.05%	64,900	0.02%	10,715,884	**4.07%**
	TRANSMISSION PLANT														
350.20	Land Rights and Rights-of-Way	30,727,757			0.0%	30,727,757	8,995,779	21,731,978	42.12	515,954	1.68%	0	0.00%	515,954	**1.68%**
352.00	Structures and Improvements	30,995,178			-10.0%	34,094,696	6,182,428	27,912,268	44.30	560,107	1.81%	69,967	0.23%	630,074	**2.03%**
353.00	Station Equipment	249,370,391			-10.0%	274,307,430	66,314,324	207,993,106	57.95	3,158,862	1.27%	430,320	0.17%	3,589,182	**1.44%**
354.10	Towers and Fixtures	27,223,483			-30.0%	35,390,528	19,953,177	15,437,351	22.67	320,702	1.18%	360,258	1.32%	680,959	**2.50%**
354.20	Clearing Land and Rights-of-Way	1,504,241			0.0%	1,504,241	811,931	692,310	24.20	28,608	1.90%	0	0.00%	28,608	**1.90%**
355.00	Poles and Fixtures	274,569,098			-90.0%	521,681,286	155,776,407	365,904,880	38.76	3,064,920	1.12%	4,019,122	1.46%	7,084,042	**2.58%**
355.20	Clearing Land and Rights-of-Way	5,070,927			0.0%	5,070,927	3,230,578	1,840,349	22.90	80,370	1.58%	0	0.00%	80,370	**1.58%**
356.00	Overhead Conductors and Devices	143,978,985			-15.0%	165,575,833	70,850,898	94,724,934	32.96	2,218,995	1.54%	655,334	0.46%	2,874,328	**2.00%**
356.10	Switching Station Equipment	14,656,645			-15.0%	16,855,142	4,260,211	12,594,931	39.83	260,990	1.78%	55,191	0.38%	316,180	**2.16%**
357.00	Underground Conduit	137,878			0.0%	137,878	63,550	74,328	34.54	2,152	1.56%	0	0.00%	2,152	**1.56%**
358.00	Underground Conductors and Devices	1,410,535			0.0%	1,410,535	814,848	595,687	20.10	29,640	2.10%	0	0.00%	29,640	**2.10%**
359.00	Roads and Trails	2,519,641			0.0%	2,519,641	888,575	1,631,066	50.62	32,225	1.28%	0	0.00%	32,225	**1.28%**
	Total Transmission Plant	782,164,759			-39.3%	1,089,275,894	338,142,704	751,133,189	47.35	10,273,524	1.31%	5,590,190	0.71%	15,863,714	**2.03%**

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
	DISTRIBUTION PLANT														
360.20	Land Rights and Rights-of-Way	2,242,547			0.0%	2,242,547	2,455,984	-213,437	17.75	-12,025	-0.54%	0	0.00%	-12,025	**-0.54%**
361.00	Structures and Improvements	19,088,103			-10.0%	20,996,913	3,045,842	17,951,072	46.67	343,708	1.80%	40,897	0.21%	384,605	**2.01%**
362.00	Station Equipment	205,014,444			-10.0%	225,515,888	57,863,823	167,652,065	60.40	2,436,218	1.19%	957,991	0.47%	3,394,209	**1.66%**
364.00	Poles, Towers and Fixtures	278,687,203			-125.0%	627,046,207	167,969,713	459,076,494	22.28	4,970,157	1.78%	7,540,235	2.71%	12,510,393	**4.49%**
365.00	Overhead Conductors and Devices	118,997,468			-90.0%	226,095,189	87,157,905	138,937,284	30.44	1,045,916	0.88%	3,518,119	2.96%	4,564,035	**3.84%**
366.00	Underground Conduit	116,024,132			-10.0%	127,626,545	26,661,519	100,965,026	45.51	1,963,446	1.69%	254,924	0.22%	2,218,370	**1.91%**
367.00	Underground Conductors and Devices	200,069,425			-30.0%	260,090,253	66,707,889	193,382,364	28.71	4,645,161	2.32%	2,090,606	1.04%	6,735,767	**3.37%**
368.00	Line Transformers	210,715,294			-5.0%	221,251,059	100,086,885	121,164,174	54.88	2,015,785	0.96%	1,823,706	0.87%	3,839,491	**1.82%**
369.10	Overhead Services	34,429,051			-100.0%	68,858,102	28,591,960	40,266,142	30.73	189,948	0.55%	1,120,374	3.25%	1,310,322	**3.81%**
369.20	Underground Services	90,520,882			-30.0%	117,677,147	44,897,926	72,779,220	45.57	1,001,137	1.11%	985,227	1.09%	1,986,364	**2.19%**
370.00	Meters	41,971,710			-5.0%	44,070,296	18,869,890	25,200,406	20.63	1,120,022	2.67%	101,744	0.24%	1,221,765	**2.91%**
370.20	AMR Equipment	12,795,224			0.0%	12,795,224	9,186,078	3,609,146	5.63	641,056	5.01%	0	0.00%	641,056	**5.01%**
373.10	Street Lighting Equipment	29,611,764			-30.0%	38,495,293	16,874,865	21,620,429	24.50	519,936	1.76%	362,636	1.22%	882,572	**2.98%**
373.20	Yard Lighting	17,242,326			-30.0%	22,415,024	13,489,498	8,925,526	16.64	225,533	1.31%	310,863	1.80%	536,396	**3.11%**
373.30	Post Top Lights	7,639,105			-20.0%	9,166,926	4,868,350	4,298,576	18.50	149,788	1.96%	82,595	1.08%	232,382	**3.04%**
	Total Distribution Plant	1,385,048,678			-46.2%	2,024,342,612	648,728,126	1,375,614,486	34.01	21,255,787	1.53%	19,189,916	1.39%	40,445,703	**2.92%**
	GENERAL PLANT														
	Depreciable														
390.10	Structures - Office	7,404,805			-5.0%	7,775,045	4,876,328	2,898,717	26.78	94,417	1.28%	13,825	0.19%	108,242	**1.46%**
390.60	Structures - Communication	1,261,379			-5.0%	1,324,448	473,915	850,533	33.71	23,357	1.85%	1,871	0.15%	25,227	**2.00%**
390.80	Structures - Multipurpose	392,351			-5.0%	411,969	131,384	280,585	35.70	7,310	1.86%	550	0.14%	7,860	**2.00%**
397.10	Microwave Equipment	11,106,723			0.0%	11,106,723	3,586,724	7,519,999	27.97	268,859	2.42%	0	0.00%	268,859	**2.42%**
	Total Depreciable	20,165,258			-2.2%	20,618,185	9,068,351	11,549,834	28.16	393,943	1.95%	16,245	0.08%	410,188	**2.03%**
	Amortizable														
391.00	Office Furniture and Equipment	363,845			0.0%	363,845	164,940	198,905	10.78	18,451	5.07%	0	0.00%	18,451	**5.07%**
391.10	Data Handling Equipment	255,090			0.0%	255,090	42,964	212,126	16.33	12,990	5.09%	0	0.00%	12,990	**5.09%**
391.20	Computer Equipment	1,863,193			0.0%	1,863,193	1,192,379	670,814	3.08	217,797	11.69%	0	0.00%	217,797	**11.69%**
393.00	Stores Equipment	638,697			0.0%	638,697	274,320	364,377	11.44	31,851	4.99%	0	0.00%	31,851	**4.99%**
394.00	Tools, Shop and Garage Equipment	8,113,371			0.0%	8,113,371	2,964,267	5,149,104	12.49	412,154	5.08%	0	0.00%	412,154	**5.08%**
395.00	Laboratory Equipment	1,521,272			0.0%	1,521,272	873,365	647,907	9.07	71,410	4.69%	0	0.00%	71,410	**4.69%**
397.20	Other Communication Equipment	21,449,425			0.0%	21,449,425	6,485,419	14,964,006	11.24	1,331,687	6.21%	0	0.00%	1,331,687	**6.21%**
397.30	Office Communication Equipment	915,884			0.0%	915,884	177,278	738,606	12.07	61,194	6.68%	0	0.00%	61,194	**6.68%**
398.00	Miscellaneous Equipment	2,065,294			0.0%	2,065,294	394,475	1,670,819	15.71	106,354	5.15%	0	0.00%	106,354	**5.15%**
	Total Amortizable	37,186,071			0.0%	37,186,071	12,569,406	24,616,665	10.87	2,263,887	6.09%	0	0.00%	2,263,887	**6.09%**
	Total General Plant	57,351,329			-0.8%	57,804,256	21,637,757	36,166,498	13.52	2,657,830	4.63%	16,245	0.03%	2,674,075	**4.66%**
	TOTAL UTILITY	**3,097,186,078**			**-30.7%**	**4,048,742,092**	**1,194,232,269**	**2,854,509,823**	**34.87**	**56,923,637**	**1.84%**	**24,943,879**	**0.81%**	**81,867,516**	**2.64%**
	ACCOUNTS DETAILED														
	STEAM PRODUCTION PLANT														
	Colstrip Unit 4														
310.00	Land and Land Rights	0													
311.00	Structures and Improvements	26,907,546			-0.3%	26,988,269	18,540,399	8,447,870	23.72	352,746	1.31%	3,403	0.01%	356,150	**1.32%**
312.00	Boiler Plant Equipment	23,479,555			-0.3%	23,549,994	-1,007,129	24,557,123	23.74	1,031,453	4.39%	2,967	0.01%	1,034,420	**4.41%**
314.00	Turbogenerator Units	16,795,827			-0.3%	16,846,214	2,438,875	14,407,339	23.74	604,758	3.60%	2,122	0.01%	606,880	**3.61%**

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
315.00	Accessory Electric Equipment	1,843,541			-0.3%	1,849,072	403,702	1,445,370	23.74	60,650	3.29%	233	0.01%	60,883	**3.30%**
316.00	Miscellaneous Power Plant Equipment	22,496,606			-0.3%	22,564,096	2,814,016	19,750,080	23.73	829,439	3.69%	2,844	0.01%	832,283	**3.70%**
	Total Colstrip Unit 4	91,523,075			-0.3%	91,797,644	23,189,863	68,607,781	23.73	2,879,046	3.15%	11,570	0.01%	2,890,616	**3.16%**
	HYDRAULIC PRODUCTION PLANT														
	Black Eagle														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	461,290			-0.6%	464,058	383,411	80,646	43.67	1,783	0.39%	63	0.01%	1,847	**0.40%**
332.10	Reservoirs, Dams and Waterways	3,372,715			-0.6%	3,392,951	1,611,891	1,781,060	43.69	40,303	1.19%	463	0.01%	40,766	**1.21%**
333.00	Water Wheels, Turbines and Generators	1,579,786			-0.6%	1,589,265	455,588	1,133,676	43.70	25,725	1.63%	217	0.01%	25,942	**1.64%**
334.00	Accessory Electric Equipment	8,320,215			-0.6%	8,370,136	421,705	7,948,431	43.75	180,537	2.17%	1,141	0.01%	181,678	**2.18%**
335.10	Miscellaneous Power Plant Equipment	645,505			-0.6%	649,378	255,786	393,592	43.78	8,902	1.38%	88	0.01%	8,990	**1.39%**
336.00	Roads, Railroads and Bridges	131,446			-0.6%	132,235	24,367	107,868	43.78	2,446	1.86%	18	0.01%	2,464	**1.87%**
	Total Black Eagle	14,510,957			-0.6%	14,598,023	3,152,748	11,445,274	43.74	259,696	1.79%	1,991	0.01%	261,687	**1.80%**
	Cochrane														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	1,140,408			-0.6%	1,147,250	703,969	443,281	43.67	9,994	0.88%	157	0.01%	10,151	**0.89%**
332.10	Reservoirs, Dams and Waterways	6,126,510			-0.6%	6,163,269	3,818,646	2,344,623	43.67	52,848	0.86%	842	0.01%	53,690	**0.88%**
333.00	Water Wheels, Turbines and Generators	7,449,660			-0.6%	7,494,358	2,584,199	4,910,159	43.68	111,389	1.50%	1,023	0.01%	112,412	**1.51%**
334.00	Accessory Electric Equipment	8,642,385			-0.6%	8,694,239	890,766	7,803,473	43.76	177,139	2.05%	1,185	0.01%	178,324	**2.06%**
335.10	Miscellaneous Power Plant Equipment	1,177,283			-0.6%	1,184,347	477,861	706,485	43.74	15,990	1.36%	161	0.01%	16,152	**1.37%**
336.00	Roads, Railroads and Bridges	93,874			-0.6%	94,437	55,959	38,478	43.77	866	0.92%	13	0.01%	879	**0.94%**
	Total Cochrane	24,630,120			-0.6%	24,777,901	8,531,401	16,246,500	43.72	368,227	1.50%	3,381	0.01%	371,608	**1.51%**
	Hauser														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	1,014,582			-0.6%	1,020,669	498,327	522,343	43.69	11,816	1.16%	139	0.01%	11,956	**1.18%**
332.10	Reservoirs, Dams and Waterways	9,948,017			-0.6%	10,007,705	5,667,617	4,340,088	43.70	97,950	0.98%	1,366	0.01%	99,316	**1.00%**
333.00	Water Wheels, Turbines and Generators	5,476,022			-0.6%	5,508,878	222,194	5,286,684	43.76	120,060	2.19%	751	0.01%	120,811	**2.21%**
334.00	Accessory Electric Equipment	5,684,492			-0.6%	5,718,599	1,591,261	4,127,338	43.71	93,645	1.65%	780	0.01%	94,425	**1.66%**
335.10	Miscellaneous Power Plant Equipment	727,859			-0.6%	732,226	392,344	339,882	43.71	7,676	1.05%	100	0.01%	7,776	**1.07%**
336.00	Roads, Railroads and Bridges	39,494			-0.6%	39,731	27,102	12,629	43.77	283	0.72%	5	0.01%	289	**0.73%**
	Total Hauser	22,890,466			-0.6%	23,027,809	8,398,844	14,628,965	43.72	331,430	1.45%	3,142	0.01%	334,572	**1.46%**
	Hebgon														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	37,693			-0.6%	37,919	-213,148	251,067	43.71	5,739	15.22%	5	0.01%	5,744	**15.24%**
332.10	Reservoirs, Dams and Waterways	47,994,327			-0.6%	48,282,293	2,816,203	45,466,090	43.77	1,032,171	2.15%	6,579	0.01%	1,038,750	**2.16%**
333.00	Water Wheels, Turbines and Generators	8,399			-0.6%	8,449	1,392	7,057	43.75	160	1.91%	1	0.01%	161	**1.92%**
334.00	Accessory Electric Equipment	0													
335.10	Miscellaneous Power Plant Equipment	261,164			-0.6%	262,731	138,574	124,157	43.75	2,802	1.07%	36	0.01%	2,838	**1.09%**
336.00	Roads, Railroads and Bridges	1,044			-0.6%	1,050	772	278	43.77	6	0.59%	0	0.01%	6	**0.61%**
	Total Hebgon	48,302,627			-0.6%	48,592,443	2,743,794	45,848,649	43.77	1,040,878	2.15%	6,621	0.01%	1,047,500	**2.17%**
	Holter														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	1,463,178			-0.6%	1,471,957	676,341	795,616	43.68	18,014	1.23%	201	0.01%	18,215	**1.24%**
332.10	Reservoirs, Dams and Waterways	6,794,183			-0.6%	6,834,948	4,055,425	2,779,523	43.67	62,715	0.92%	933	0.01%	63,648	**0.94%**
333.00	Water Wheels, Turbines and Generators	2,983,204			-0.6%	3,001,103	1,017,331	1,983,772	43.71	44,975	1.51%	409	0.01%	45,385	**1.52%**
334.00	Accessory Electric Equipment	3,621,427			-0.6%	3,643,156	677,563	2,965,592	43.74	67,304	1.86%	497	0.01%	67,800	**1.87%**
335.10	Miscellaneous Power Plant Equipment	1,814,924			-0.6%	1,825,814	970,597	855,216	43.77	19,290	1.06%	249	0.01%	19,539	**1.08%**
336.00	Roads, Railroads and Bridges	5,550			-0.6%	5,583	4,447	1,136	43.77	25	0.45%	1	0.01%	26	**0.47%**

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
	Total Holter	16,682,466			-0.6%	16,782,561	7,401,705	9,380,856	43.71	212,323	1.27%	2,290	0.01%	214,613	**1.29%**
	Madison														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	1,182,531			-0.6%	1,189,626	560,667	628,959	43.71	14,227	1.20%	162	0.01%	14,389	**1.22%**
332.10	Reservoirs, Dams and Waterways	16,409,516			-0.6%	16,507,973	7,567,245	8,940,728	43.73	202,201	1.23%	2,251	0.01%	204,453	**1.25%**
333.00	Water Wheels, Turbines and Generators	3,175,052			-0.6%	3,194,102	933,630	2,260,472	43.72	51,268	1.61%	436	0.01%	51,703	**1.63%**
334.00	Accessory Electric Equipment	3,865,967			-0.6%	3,889,163	719,948	3,169,215	43.73	71,942	1.86%	530	0.01%	72,472	**1.87%**
335.10	Miscellaneous Power Plant Equipment	739,858			-0.6%	744,297	366,408	377,889	43.72	8,542	1.15%	102	0.01%	8,643	**1.17%**
336.00	Roads, Railroads and Bridges	628,052			-0.6%	631,820	379,060	252,761	43.77	5,689	0.91%	86	0.01%	5,775	**0.92%**
	Total Madison	26,000,976			-0.6%	26,156,982	10,526,958	15,630,024	43.73	353,869	1.36%	3,568	0.01%	357,436	**1.37%**
	Morony														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	681,339			-0.6%	685,427	386,905	298,522	43.67	6,742	0.99%	94	0.01%	6,836	**1.00%**
332.10	Reservoirs, Dams and Waterways	3,781,975			-0.6%	3,804,667	2,283,827	1,520,840	43.67	34,306	0.91%	520	0.01%	34,826	**0.92%**
333.00	Water Wheels, Turbines and Generators	16,226,226			-0.6%	16,323,583	1,650,720	14,672,864	43.76	333,078	2.05%	2,225	0.01%	335,303	**2.07%**
334.00	Accessory Electric Equipment	12,687,026			-0.6%	12,763,148	1,099,382	11,663,767	43.75	264,860	2.09%	1,740	0.01%	266,600	**2.10%**
335.10	Miscellaneous Power Plant Equipment	2,304,460			-0.6%	2,318,287	671,727	1,646,560	43.76	37,311	1.62%	316	0.01%	37,627	**1.63%**
336.00	Roads, Railroads and Bridges	3,930			-0.6%	3,954	3,515	439	43.77	9	0.24%	1	0.01%	10	**0.25%**
	Total Morony	35,684,956			-0.6%	35,899,066	6,096,076	29,802,990	43.75	676,308	1.90%	4,894	0.01%	681,202	**1.91%**
	Mystic														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	1,291,925			-0.6%	1,299,677	853,266	446,411	43.69	10,040	0.78%	177	0.01%	10,218	**0.79%**
332.10	Reservoirs, Dams and Waterways	11,333,661			-0.6%	11,401,663	6,316,927	5,084,736	43.70	114,799	1.01%	1,556	0.01%	116,356	**1.03%**
333.00	Water Wheels, Turbines and Generators	2,774,667			-0.6%	2,791,315	1,357,187	1,434,128	43.71	32,429	1.17%	381	0.01%	32,810	**1.18%**
334.00	Accessory Electric Equipment	3,298,847			-0.6%	3,318,640	421,895	2,896,745	43.75	65,759	1.99%	452	0.01%	66,211	**2.01%**
335.10	Miscellaneous Power Plant Equipment	2,989,425			-0.6%	3,007,362	844,319	2,163,042	43.70	49,087	1.64%	410	0.01%	49,498	**1.66%**
336.00	Roads, Railroads and Bridges	1,453,511			-0.6%	1,462,232	732,045	730,187	43.77	16,483	1.13%	199	0.01%	16,682	**1.15%**
	Total Mystic	23,142,036			-0.6%	23,280,888	10,525,640	12,755,249	43.72	288,598	1.25%	3,177	0.01%	291,774	**1.26%**
	Rainbow														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	75,536,805			-0.6%	75,990,026	6,854,533	69,135,493	43.77	1,569,163	2.08%	10,355	0.01%	1,579,518	**2.09%**
332.10	Reservoirs, Dams and Waterways	23,650,771			-0.6%	23,792,676	3,071,501	20,721,174	43.73	470,598	1.99%	3,245	0.01%	473,843	**2.00%**
333.00	Water Wheels, Turbines and Generators	36,686,952			-0.6%	36,907,074	858,829	36,048,245	43.77	818,554	2.23%	5,029	0.01%	823,583	**2.24%**
334.00	Accessory Electric Equipment	5,813,929			-0.6%	5,848,813	-87,094	5,935,907	43.76	134,850	2.32%	797	0.01%	135,647	**2.33%**
335.10	Miscellaneous Power Plant Equipment	1,282,576			-0.6%	1,290,271	878,251	412,020	43.76	9,240	0.72%	176	0.01%	9,415	**0.73%**
336.00	Roads, Railroads and Bridges	3,792			-0.6%	3,815	3,895	-80	43.77	-2	-0.06%	1	0.01%	-2	**-0.05%**
	Total Rainbow	142,974,825			-0.6%	143,832,674	11,579,915	132,252,758	43.76	3,002,403	2.10%	19,602	0.01%	3,022,005	**2.11%**
	Ryan														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	2,420,542			-0.6%	2,435,065	987,641	1,447,425	43.68	32,805	1.36%	332	0.01%	33,137	**1.37%**
332.10	Reservoirs, Dams and Waterways	9,214,588			-0.6%	9,269,876	2,940,439	6,329,436	43.71	143,540	1.56%	1,265	0.01%	144,805	**1.57%**
333.00	Water Wheels, Turbines and Generators	9,497,375			-0.6%	9,554,359	781,453	8,772,906	43.71	199,403	2.10%	1,304	0.01%	200,707	**2.11%**
334.00	Accessory Electric Equipment	17,243,937			-0.6%	17,347,401	2,198,316	15,149,084	43.74	343,979	1.99%	2,365	0.01%	346,344	**2.01%**
335.10	Miscellaneous Power Plant Equipment	1,334,398			-0.6%	1,342,404	488,049	854,355	43.73	19,354	1.45%	183	0.01%	19,537	**1.46%**
336.00	Roads, Railroads and Bridges	30,735			-0.6%	30,919	17,979	12,940	43.77	291	0.95%	4	0.01%	296	**0.96%**
	Total Ryan	39,741,575			-0.6%	39,980,024	7,413,878	32,566,147	43.72	739,372	1.86%	5,454	0.01%	744,826	**1.87%**
	Thompson Falls														
330.00	Land and Land Rights	0													

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
331.10	Structures and Improvements	28,339,628			-0.6%	28,509,666	10,885,227	17,624,439	43.67	399,689	1.41%	3,894	0.01%	403,582	**1.42%**
332.10	Reservoirs, Dams and Waterways	18,430,744			-0.6%	18,541,328	6,103,334	12,437,995	43.69	282,156	1.53%	2,531	0.01%	284,687	**1.54%**
333.00	Water Wheels, Turbines and Generators	26,761,644			-0.6%	26,922,214	10,725,083	16,197,131	43.67	367,221	1.37%	3,677	0.01%	370,898	**1.39%**
334.00	Accessory Electric Equipment	7,375,919			-0.6%	7,420,175	2,578,455	4,841,720	43.71	109,757	1.49%	1,012	0.01%	110,769	**1.50%**
335.10	Miscellaneous Power Plant Equipment	4,633,669			-0.6%	4,661,471	1,431,148	3,230,323	43.76	73,184	1.58%	635	0.01%	73,819	**1.59%**
336.00	Roads, Railroads and Bridges	102,408			-0.6%	103,022	55,207	47,815	43.77	1,078	1.05%	14	0.01%	1,092	**1.07%**
	Total Thompson Falls	85,644,012			-0.6%	86,157,876	31,778,453	54,379,423	43.68	1,233,085	1.44%	11,764	0.01%	1,244,849	**1.45%**
	Common														
330.00	Land and Land Rights	0													
331.10	Structures and Improvements	9,850,645			-0.6%	9,909,749	1,917,476	7,992,273	43.77	181,247	1.84%	1,350	0.01%	182,597	**1.85%**
332.10	Reservoirs, Dams and Waterways	10,532,516			-0.6%	10,595,711	2,060,580	8,535,131	43.73	193,733	1.84%	1,445	0.01%	195,178	**1.85%**
333.00	Water Wheels, Turbines and Generators	8,353,374			-0.6%	8,403,494	1,634,253	6,769,241	43.68	153,826	1.84%	1,147	0.01%	154,973	**1.86%**
334.00	Accessory Electric Equipment	7,563,889			-0.6%	7,609,272	1,262,440	6,346,832	43.75	144,033	1.90%	1,037	0.01%	145,070	**1.92%**
335.10	Miscellaneous Power Plant Equipment	1,452,761			-0.6%	1,461,478	284,218	1,177,259	43.75	26,710	1.84%	199	0.01%	26,909	**1.85%**
336.00	Roads, Railroads and Bridges	0													
	Total Common	37,753,185			-0.6%	37,979,704	7,158,968	30,820,736	43.73	699,548	1.85%	5,179	0.01%	704,728	**1.87%**
	OTHER PRODUCTION PLANT														
	Dave Gates Generating Station														
340.00	Land and Land Rights	0													
341.00	Structures and Improvements	22,122,874			-0.3%	22,189,243	4,910,331	17,278,911	21.86	787,399	3.56%	3,036	0.01%	790,435	**3.57%**
342.00	Fuel Holders and Accessories	21,117,961			-0.3%	21,181,315	4,794,753	16,386,562	21.86	746,716	3.54%	2,898	0.01%	749,614	**3.55%**
343.00	Prime Movers	100,614,123			-0.8%	101,419,036	9,944,343	91,474,693	20.61	4,399,310	4.37%	39,054	0.04%	4,438,365	**4.41%**
344.00	Generators	0													
345.00	Accessory Electric Equipment	9,049,010			-0.3%	9,076,157	2,023,956	7,052,201	21.86	321,366	3.55%	1,242	0.01%	322,608	**3.57%**
346.00	Miscellaneous Power Plant Equipment	23,914,137			-0.3%	23,985,879	7,437,475	16,548,404	21.86	753,736	3.15%	3,282	0.01%	757,018	**3.17%**
	Total Dave Gates Generating Station	176,818,105			-0.6%	177,851,630	29,110,858	148,740,771	21.07	7,008,526	3.96%	49,512	0.03%	7,058,039	**3.99%**
	Spion Kop Wind Farm														
340.00	Land and Land Rights	0													
341.00	Structures and Improvements	29,262,434			-0.2%	29,320,959	6,693,798	22,627,160	19.02	1,186,574	4.05%	3,077	0.01%	1,189,651	**4.07%**
342.00	Fuel Holders and Accessories	0													
343.00	Prime Movers	0													
344.00	Generators	44,855,231			-0.2%	44,944,941	7,277,778	37,667,164	19.02	1,975,681	4.40%	4,717	0.01%	1,980,398	**4.42%**
345.00	Accessory Electric Equipment	6,360,485			-0.2%	6,373,206	993,079	5,380,127	19.02	282,198	4.44%	669	0.01%	282,867	**4.45%**
346.00	Miscellaneous Power Plant Equipment	2,049,845			-0.2%	2,053,945	393,680	1,660,265	19.02	87,075	4.25%	216	0.01%	87,290	**4.26%**
	Total Spion Kop Wind Farm	82,527,995			-0.2%	82,693,051	15,358,335	67,334,716	19.02	3,531,528	4.28%	8,678	0.01%	3,540,206	**4.29%**
	Yellowstone Park														
340.00	Land and Land Rights	0													
341.00	Structures and Improvements	19,232			-5.0%	20,194	14,817	5,376	7.58	582	3.03%	127	0.66%	709	**3.69%**
342.00	Fuel Holders and Accessories	112,084			-5.0%	117,688	123,685	-5,996	1.00	-11,601	-10.35%	5,604	5.00%	-5,996	**-5.35%**
343.00	Prime Movers	0													
344.00	Generators	2,856,090			-5.0%	2,998,895	2,460,946	537,948	8.53	46,324	1.62%	16,741	0.59%	63,065	**2.21%**
345.00	Accessory Electric Equipment	799,262			-5.0%	839,225	149,948	689,277	19.16	33,889	4.24%	2,086	0.26%	35,975	**4.50%**
346.00	Miscellaneous Power Plant Equipment	7,268			-5.0%	7,631	6,848	783	6.50	65	0.89%	56	0.77%	120	**1.66%**
	Total Yellowstone Park	3,793,936			-5.0%	3,983,633	2,756,244	1,227,389	13.07	69,260	1.83%	24,614	0.65%	93,874	**2.47%**
	TRANSMISSION PLANT														
	Non-Yellowstone Park														

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
350.20	Land Rights and Rights-of-Way	30,727,757	S4	60	0.0%	30,727,757	8,995,779	21,731,978	42.12	515,954	1.68%	0	0.00%	515,954	**1.68%**
352.00	Structures and Improvements	30,995,178	R5	55	-10.0%	34,094,696	6,182,428	27,912,268	44.30	560,107	1.81%	69,967	0.23%	630,074	**2.03%**
353.00	Station Equipment	249,370,391	R0.5	68	-10.0%	274,307,430	66,314,324	207,993,106	57.95	3,158,862	1.27%	430,320	0.17%	3,589,182	**1.44%**
354.10	Towers and Fixtures	27,223,483	S4	55	-30.0%	35,390,528	19,953,177	15,437,351	22.67	320,702	1.18%	360,258	1.32%	680,959	**2.50%**
354.20	Clearing Land and Rights-of-Way	1,504,241	S4	55	0.0%	1,504,241	811,931	692,310	24.20	28,608	1.90%	0	0.00%	28,608	**1.90%**
355.00	Poles and Fixtures	273,851,709	R2.5	64	-90.0%	520,318,247	154,959,072	365,359,175	51.67	2,300,999	0.84%	4,770,012	1.74%	7,071,012	**2.58%**
355.20	Clearing Land and Rights-of-Way	4,819,790	S4	55	0.0%	4,819,790	2,991,367	1,828,423	23.52	77,739	1.61%	0	0.00%	77,739	**1.61%**
356.00	Overhead Conductors and Devices	143,313,518	S4	60	-15.0%	164,810,546	70,336,928	94,473,617	32.99	2,212,082	1.54%	651,623	0.45%	2,863,705	**2.00%**
356.10	Switching Station Equipment	14,606,031	R4	55	-15.0%	16,796,936	4,212,906	12,584,030	39.92	260,349	1.78%	54,882	0.38%	315,231	**2.16%**
357.00	Underground Conduit	35,592	R3	55	0.0%	35,592	14,065	21,527	39.01	552	1.55%	0	0.00%	552	**1.55%**
358.00	Underground Conductors and Devices	856,499	R4	40	0.0%	856,499	388,234	468,265	21.85	21,431	2.50%	0	0.00%	21,431	**2.50%**
359.00	Roads and Trails	2,474,735	R4	80	0.0%	2,474,735	871,234	1,603,501	50.60	31,690	1.28%	0	0.00%	31,690	**1.28%**
	Total Non-Yellowstone Park	779,778,924			-39.3%	1,086,136,996	336,031,445	750,105,551	47.40	9,489,075	1.22%	6,337,062	0.81%	15,826,136	**2.03%**
	Yellowstone Park														
350.20	Land Rights and Rights-of-Way	0													
352.00	Structures and Improvements	0													
353.00	Station Equipment	0													
354.10	Towers and Fixtures	0													
354.20	Clearing Land and Rights-of-Way	0													
355.00	Poles and Fixtures	717,389	R2.5	64	-90.0%	1,363,039	817,334	545,705	41.88	-2,386	-0.33%	15,417	2.15%	13,030	**1.82%**
355.20	Clearing Land and Rights-of-Way	251,137	S4	55	0.0%	251,137	239,211	11,926	10.75	1,109	0.44%	0	0.00%	1,109	**0.44%**
356.00	Overhead Conductors and Devices	665,467	S4	60	-15.0%	765,287	513,970	251,317	25.45	5,953	0.89%	3,922	0.59%	9,875	**1.48%**
356.10	Switching Station Equipment	50,614	R4	55	-15.0%	58,206	47,305	10,901	14.15	234	0.46%	537	1.06%	770	**1.52%**
357.00	Underground Conduit	102,286	R3	55	0.0%	102,286	49,485	52,802	32.98	1,601	1.57%	0	0.00%	1,601	**1.57%**
358.00	Underground Conductors and Devices	554,036	R4	40	0.0%	554,036	426,613	127,423	17.38	7,332	1.32%	0	0.00%	7,332	**1.32%**
359.00	Roads and Trails	44,906	R4	80	0.0%	44,906	17,341	27,565	51.46	536	1.19%	0	0.00%	536	**1.19%**
	Total Yellowstone Park	2,385,835			-31.6%	3,138,897	2,111,260	1,027,638	30.00	14,378	0.60%	19,875	0.83%	34,253	**1.44%**
	DISTRIBUTION PLANT														
	Non-Yellowstone Park														
360.20	Land Rights and Rights-of-Way	2,241,946	R4	50	0.0%	2,241,946	2,455,532	-213,586	17.75	-12,033	-0.54%	0	0.00%	-12,033	**-0.54%**
361.00	Structures and Improvements	17,861,499	R4	55	-10.0%	19,647,649	2,921,882	16,725,767	46.47	321,490	1.80%	38,437	0.22%	359,926	**2.02%**
362.00	Station Equipment	200,668,956	L1.5	61	-10.0%	220,735,852	57,188,318	163,547,533	49.38	2,905,643	1.45%	406,377	0.20%	3,312,020	**1.65%**
364.00	Poles, Towers and Fixtures	278,264,657	L3	49	-125.0%	626,095,478	167,610,094	458,485,385	36.70	3,015,111	1.08%	9,477,679	3.41%	12,492,790	**4.49%**
365.00	Overhead Conductors and Devices	118,501,603	R4	50	-90.0%	225,153,046	86,793,953	138,359,093	30.44	1,041,644	0.88%	3,503,661	2.96%	4,545,305	**3.84%**
366.00	Underground Conduit	115,531,014	R4	55	-10.0%	127,084,115	26,532,448	100,551,668	45.52	1,955,153	1.69%	253,803	0.22%	2,208,956	**1.91%**
367.00	Underground Conductors and Devices	196,870,123	R5	40	-30.0%	255,931,160	64,522,024	191,409,136	28.87	4,584,278	2.33%	2,045,758	1.04%	6,630,036	**3.37%**
368.00	Line Transformers	209,811,378	R4	51	-5.0%	220,301,947	99,365,433	120,936,514	31.60	3,495,125	1.67%	331,980	0.16%	3,827,105	**1.82%**
369.10	Overhead Services	34,414,498	R3	50	-100.0%	68,828,996	28,576,098	40,252,898	30.73	189,990	0.55%	1,119,899	3.25%	1,309,889	**3.81%**
369.20	Underground Services	90,275,853	R4	51	-30.0%	117,358,609	44,727,771	72,630,838	36.65	1,242,785	1.38%	738,957	0.82%	1,981,742	**2.20%**
370.00	Meters	41,874,755	S0.5	33	-5.0%	43,968,493	18,813,142	25,155,351	20.63	1,117,868	2.67%	101,490	0.24%	1,219,358	**2.91%**
370.20	AMR Equipment	12,795,224	SQ	20	0.0%	12,795,224	9,186,078	3,609,146	5.63	641,056	5.01%	0	0.00%	641,056	**5.01%**
373.10	Street Lighting Equipment	29,595,352	R3	43	-30.0%	38,473,958	16,861,718	21,612,239	24.50	519,740	1.76%	362,392	1.22%	882,132	**2.98%**
373.20	Yard Lighting	17,241,479	R2	33	-30.0%	22,413,923	13,488,594	8,925,329	16.64	225,534	1.31%	310,844	1.80%	536,378	**3.11%**
373.30	Post Top Lights	7,636,491	R3	35	-20.0%	9,163,789	4,865,959	4,297,830	18.50	149,758	1.96%	82,557	1.08%	232,315	**3.04%**
	Total Non-Yellowstone Park	1,373,584,828			-46.3%	2,010,194,184	643,909,043	1,366,285,141	34.02	21,393,142	1.56%	18,773,833	1.37%	40,166,975	**2.92%**
	Yellowstone Park														
360.20	Land Rights and Rights-of-Way	601	R4	50	0.0%	601	452	149	16.55	9	1.50%	0	0.00%	9	**1.50%**
361.00	Structures and Improvements	1,226,604	R4	55	-10.0%	1,349,264	123,960	1,225,305	49.65	22,208	1.81%	2,471	0.20%	24,679	**2.01%**
362.00	Station Equipment	4,345,488	L1.5	61	-10.0%	4,780,037	675,505	4,104,532	49.94	73,488	1.69%	8,701	0.20%	82,189	**1.89%**
364.00	Poles, Towers and Fixtures	422,546	L3	49	-125.0%	950,729	359,619	591,109	33.58	1,874	0.44%	15,729	3.72%	17,603	**4.17%**
365.00	Overhead Conductors and Devices	495,865	R4	50	-90.0%	942,144	363,952	578,191	30.87	4,273	0.86%	14,457	2.92%	18,730	**3.78%**
366.00	Underground Conduit	493,118	R4	55	-10.0%	542,430	129,071	413,359	43.91	8,291	1.68%	1,123	0.23%	9,414	**1.91%**

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
367.00	Underground Conductors and Devices	3,199,302	R5	40	-30.0%	4,159,093	2,185,865	1,973,227	18.87	53,706	1.68%	50,863	1.59%	104,570	**3.27%**
368.00	Line Transformers	903,916	R4	51	-5.0%	949,112	721,452	227,660	18.38	9,927	1.10%	2,459	0.27%	12,386	**1.37%**
369.10	Overhead Services	14,553	R3	50	-100.0%	29,106	15,862	13,244	30.65	-43	-0.29%	475	3.26%	432	**2.97%**
369.20	Underground Services	245,029	R4	51	-30.0%	318,538	170,155	148,382	32.10	2,333	0.95%	2,290	0.93%	4,623	**1.89%**
370.00	Meters	96,955	S0.5	33	-5.0%	101,803	56,748	45,055	18.90	2,127	2.19%	256	0.26%	2,384	**2.46%**
370.20	AMR Equipment	0													
373.10	Street Lighting Equipment	16,412	R3	43	-30.0%	21,336	13,146	8,189	19.13	171	1.04%	257	1.57%	428	**2.61%**
373.20	Yard Lighting	847	R2	33	-30.0%	1,101	905	197	12.60	-5	-0.54%	20	2.38%	16	**1.84%**
373.30	Post Top Lights	2,614	R3	35	-20.0%	3,137	2,391	745	11.99	19	0.71%	44	1.67%	62	**2.38%**
	Total Yellowstone Park	11,463,850			-23.4%	14,148,428	4,819,084	9,329,345	33.62	178,379	1.56%	99,145	0.86%	277,524	**2.42%**
	GENERAL PLANT														
	Non-Yellowstone Park														
	Depreciable														
390.10	Structures - Office	7,404,805	R1	45	-5.0%	7,775,045	4,876,328	2,898,717	26.78	94,417	1.28%	13,825	0.19%	108,242	**1.46%**
390.60	Structures - Communication	1,146,761	R1	45	-5.0%	1,204,099	473,915	730,184	32.75	20,545	1.79%	1,751	0.15%	22,296	**1.94%**
390.80	Structures - Multipurpose	0													
397.10	Microwave Equipment	11,106,723	R5	100	0.0%	11,106,723	3,586,724	7,519,999	27.97	268,859	2.42%	0	0.00%	268,859	**2.42%**
	Total Depreciable	19,658,289			-2.2%	20,085,867	8,936,967	11,148,900	27.91	383,821	1.95%	15,576	0.08%	399,397	**2.03%**
	Amortizable														
391.00	Office Furniture and Equipment	363,845	SQ	20	0.0%	363,845	164,940	198,905	10.78	18,451	5.07%	0	0.00%	18,451	**5.07%**
391.10	Data Handling Equipment	255,090	SQ	20	0.0%	255,090	42,964	212,126	16.33	12,990	5.09%	0	0.00%	12,990	**5.09%**
391.20	Computer Equipment	1,863,193	SQ	7	0.0%	1,863,193	1,192,379	670,814	3.08	217,797	11.69%	0	0.00%	217,797	**11.69%**
393.00	Stores Equipment	638,697	SQ	20	0.0%	638,697	274,320	364,377	11.44	31,851	4.99%	0	0.00%	31,851	**4.99%**
394.00	Tools, Shop and Garage Equipment	8,108,196	SQ	20	0.0%	8,108,196	2,959,452	5,148,744	12.50	411,899	5.08%	0	0.00%	411,899	**5.08%**
395.00	Laboratory Equipment	1,519,975	SQ	20	0.0%	1,519,975	872,068	647,907	9.08	71,355	4.69%	0	0.00%	71,355	**4.69%**
397.20	Other Communication Equipment	19,411,181	SQ	15	0.0%	19,411,181	6,331,310	13,079,871	11.12	1,176,247	6.06%	0	0.00%	1,176,247	**6.06%**
397.30	Office Communication Equipment	915,884	SQ	15	0.0%	915,884	177,278	738,606	12.07	61,194	6.68%	0	0.00%	61,194	**6.68%**
398.00	Miscellaneous Equipment	2,065,294	SQ	20	0.0%	2,065,294	394,475	1,670,819	15.71	106,354	5.15%	0	0.00%	106,354	**5.15%**
	Total Amortizable	35,141,355			0.0%	35,141,355	12,409,185	22,732,170	10.78	2,108,139	6.00%	0	0.00%	2,108,139	**6.00%**
	Total Non-Yellowstone Park	54,799,644			-0.8%	55,227,222	21,346,153	33,881,069	13.51	2,491,960	4.55%	15,576	0.03%	2,507,536	**4.58%**
	Yellowstone Park														
	Depreciable														
390.10	Structures - Office	0													
390.60	Structures - Communication	114,618	R1	45	-5.0%	120,349	0	120,349	43.01	2,665	2.33%	133	0.12%	2,798	**2.44%**
390.80	Structures - Multipurpose	392,351	R1	45	-5.0%	411,969	131,384	280,585	35.70	7,310	1.86%	550	0.14%	7,860	**2.00%**
397.10	Microwave Equipment	0													
	Total Depreciable	506,969			-5.0%	532,317	131,384	400,934	37.62	9,975	1.97%	683	0.13%	10,658	**2.10%**
	Amortizable														
391.00	Office Furniture and Equipment	0													
391.10	Data Handling Equipment	0													
391.20	Computer Equipment	0													
393.00	Stores Equipment	0													
394.00	Tools, Shop and Garage Equipment	5,175	SQ	20	0.0%	5,175	4,815	360	1.76	205	3.96%	0	0.00%	205	**3.96%**
395.00	Laboratory Equipment	1,297	SQ	20	0.0%	1,297	1,297	0	1.00	0	-0.03%	0	0.00%	0	**-0.03%**
397.20	Other Communication Equipment	2,038,244	SQ	15	0.0%	2,038,244	154,109	1,884,135	12.35	152,562	7.48%	0	0.00%	152,562	**7.48%**
397.30	Office Communication Equipment	0													
398.00	Miscellaneous Equipment	0													

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
	Total Amortizable	2,044,716			0.0%	2,044,716	160,221	1,884,495	12.34	152,766	7.47%	0	0.00%	152,766	**7.47%**
	Total Yellowstone Park	2,551,685			-1.0%	2,577,033	291,604	2,285,429	13.98	162,741	6.38%	683	0.03%	163,424	**6.40%**

[1] From depreciation study, Statement B
[2] Average life and Iowa curve shape developed through actuarial analysis and professional judgment
[3] Net salvage rate estimates developed through statistical analysis and professional judgment
[4] = [1]*(1-[3])
[5] Recorded reserve from depreciation study, Statement C
[6] = [4] - [5]
[7] Composite remaining life based on Iowa cuve in [2]; see remaining life exhibit for detailed calculations
[8] = ([1] - [5]) / [7]
[9] = [8] / [1]
[10] = [12] - [8]
[11] = [13] - [9]
[12] = [6] / [7]
[13] = [12] / [1].

Depreciation Rate Development (With Adjusted Reserve)

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[5] Reserve Adjustment	[5] Adjsuted Reserve	[6] Adj. Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
	ACCOUNTS CONSOLIDATED																
	STEAM PRODUCTION PLANT																
310.00	Land and Land Rights																
311.00	Structures and Improvements	26,907,546			-0.3%	26,988,269	18,540,399	0	18,540,399	8,447,870	23.72	352,746	1.31%	3,403	0.01%	356,150	**1.32%**
312.00	Boiler Plant Equipment	23,479,555			-0.3%	23,549,994	-1,007,129	0	-1,007,129	24,557,123	23.74	1,031,453	4.39%	2,967	0.01%	1,034,420	**4.41%**
314.00	Turbogenerator Units	16,795,827			-0.3%	16,846,214	2,438,875	0	2,438,875	14,407,339	23.74	604,758	3.60%	2,122	0.01%	606,880	**3.61%**
315.00	Accessory Electric Equipment	1,843,541			-0.3%	1,849,072	403,702	0	403,702	1,445,370	23.74	60,650	3.29%	233	0.01%	60,883	**3.30%**
316.00	Miscellaneous Power Plant Equipment	22,496,606			-0.3%	22,564,096	2,814,016	0	2,814,016	19,750,080	23.73	829,439	3.69%	2,844	0.01%	832,283	**3.70%**
	Total Steam Production Plant	91,523,075			-0.3%	91,797,644	23,189,863	0	23,189,863	68,607,781	23.73	2,879,046	3.15%	11,570	0.01%	2,890,616	**3.16%**
	HYDRAULIC PRODUCTION PLANT																
330.00	Land and Land Rights																
331.10	Structures and Improvements	123,420,566			-0.6%	124,161,089	24,494,615	0	24,494,615	99,666,475	43.74	2,261,444	1.83%	16,928	0.01%	2,278,372	**1.85%**
332.10	Reservoirs, Dams and Waterways	167,589,523			-0.6%	168,595,060	48,313,636	0	48,313,636	120,281,424	43.73	2,727,671	1.63%	22,995	0.01%	2,750,666	**1.64%**
333.00	Water Wheels, Turbines and Generators	120,972,361			-0.6%	121,698,195	22,221,860	0	22,221,860	99,476,335	43.73	2,258,261	1.87%	16,599	0.01%	2,274,860	**1.88%**
334.00	Accessory Electric Equipment	84,118,033			-0.6%	84,622,741	11,774,638	0	11,774,638	72,848,104	43.74	1,653,840	1.97%	11,538	0.01%	1,665,378	**1.98%**
335.10	Miscellaneous Power Plant Equipment	19,363,882			-0.6%	19,480,065	7,199,283	0	7,199,283	12,280,782	43.75	278,073	1.44%	2,656	0.01%	280,729	**1.45%**
336.00	Roads, Railroads and Bridges	2,493,836			-0.6%	2,508,799	1,304,349	0	1,304,349	1,204,451	43.77	27,176	1.09%	342	0.01%	27,517	**1.10%**
	Total Hydraulic Production Plant	517,958,201			-0.6%	521,065,950	115,308,381	0	115,308,381	405,757,570	43.74	9,206,465	1.78%	71,058	0.01%	9,277,523	**1.79%**
	OTHER PRODUCTION PLANT																
340.00	Land and Land Rights																
341.00	Structures and Improvements	51,404,540			-0.5%	51,661,563	11,618,947	0	11,618,947	40,042,616	20.09	1,980,633	3.85%	12,795	0.02%	1,993,429	**3.88%**
342.00	Fuel Holders and Accessories	21,230,045			-0.5%	21,336,195	4,918,438	0	4,918,438	16,417,757	21.75	750,029	3.53%	4,881	0.02%	754,909	**3.56%**
343.00	Prime Movers	100,614,123			-0.5%	101,117,194	9,944,343	0	9,944,343	91,172,851	20.61	4,399,310	4.37%	24,409	0.02%	4,423,719	**4.40%**
344.00	Generators	47,711,321			-0.5%	47,949,878	9,738,724	0	9,738,724	38,211,154	18.57	2,044,678	4.29%	12,845	0.03%	2,057,523	**4.31%**
345.00	Accessory Electric Equipment	16,208,757			-0.5%	16,289,801	3,166,983	0	3,166,983	13,122,818	20.48	636,925	3.93%	3,958	0.02%	640,883	**3.95%**
346.00	Miscellaneous Power Plant Equipment	25,971,250			-0.5%	26,101,106	7,838,003	0	7,838,003	18,263,103	21.60	839,410	3.23%	6,011	0.02%	845,421	**3.26%**
	Total Other Production Plant	263,140,036			-0.5%	264,455,736	47,225,438	0	47,225,438	217,230,298	20.27	10,650,984	4.05%	64,900	0.02%	10,715,884	**4.07%**
	TRANSMISSION PLANT																
350.20	Land Rights and Rights-of-Way	30,727,757			0.0%	30,727,757	8,995,779	75,273	9,071,052	21,656,705	42.12	515,954	1.68%	-1,787	-0.01%	514,167	**1.67%**
352.00	Structures and Improvements	30,995,178			-10.0%	34,094,696	6,182,428	-50,294	6,132,134	27,962,562	44.30	560,107	1.81%	71,102	0.23%	631,209	**2.04%**
353.00	Station Equipment	249,370,391			-10.0%	274,307,430	66,314,324	-1,298,094	65,016,229	209,291,201	57.95	3,158,862	1.27%	452,720	0.18%	3,611,582	**1.45%**
354.10	Towers and Fixtures	27,223,483			-30.0%	35,390,528	19,953,177	181,064	20,134,240	15,256,287	22.67	320,702	1.18%	352,271	1.29%	672,973	**2.47%**
354.20	Clearing Land and Rights-of-Way	1,504,241			0.0%	1,504,241	811,931	22,150	834,081	670,160	24.20	28,608	1.90%	-915	-0.06%	27,693	**1.84%**
355.00	Poles and Fixtures	274,569,098			-90.0%	521,681,286	155,776,407	4,592,747	160,369,153	361,312,133	39.25	3,026,464	1.10%	3,968,692	1.45%	6,995,156	**2.55%**
355.20	Clearing Land and Rights-of-Way	5,070,927			0.0%	5,070,927	3,230,578	84,005	3,314,583	1,756,344	22.90	80,370	1.58%	-3,669	-0.07%	76,702	**1.51%**
356.00	Overhead Conductors and Devices	143,978,985			-15.0%	165,575,833	70,850,898	691,475	71,542,373	94,033,460	32.96	2,218,995	1.54%	634,351	0.44%	2,853,346	**1.98%**
356.10	Switching Station Equipment	14,656,645			-15.0%	16,855,142	4,260,211	-58,303	4,201,908	12,653,234	39.83	260,990	1.78%	56,654	0.39%	317,644	**2.17%**
357.00	Underground Conduit	137,878			0.0%	137,878	63,550	372	63,922	73,956	34.54	2,152	1.56%	-11	-0.01%	2,141	**1.55%**
358.00	Underground Conductors and Devices	1,410,535			0.0%	1,410,535	814,848	35,395	850,242	560,293	20.10	29,640	2.10%	-1,761	-0.12%	27,879	**1.98%**
359.00	Roads and Trails	2,519,641			0.0%	2,519,641	888,575	3,526	892,101	1,627,540	50.62	32,225	1.28%	-70	0.00%	32,155	**1.28%**
	Total Transmission Plant	782,164,759			-39.3%	1,089,275,894	338,142,704	4,279,315	342,422,020	746,853,874	47.38	10,235,068	1.31%	5,527,578	0.71%	15,762,646	**2.02%**
	DISTRIBUTION PLANT																
360.20	Land Rights and Rights-of-Way	2,242,547			0.0%	2,242,547	2,455,984	264,002	2,719,986	-477,439	17.75	-12,025	-0.54%	-14,874	-0.66%	-26,898	**-1.20%**
361.00	Structures and Improvements	19,088,103			-10.0%	20,996,913	3,045,842	312,334	3,358,176	17,638,737	46.67	343,708	1.80%	34,205	0.18%	377,913	**1.98%**
362.00	Station Equipment	205,014,444			-10.0%	225,515,888	57,863,823	-1,992,281	55,871,542	169,644,347	59.69	2,465,177	1.20%	969,378	0.47%	3,434,555	**1.68%**
364.00	Poles, Towers and Fixtures	278,687,203			-125.0%	627,046,207	167,969,713	3,928,073	171,897,786	455,148,421	22.47	4,927,636	1.77%	7,475,725	2.68%	12,403,361	**4.45%**
365.00	Overhead Conductors and Devices	118,997,468			-90.0%	226,095,189	87,157,905	1,725,376	88,883,281	137,211,908	26.40	1,206,010	1.01%	3,301,344	2.77%	4,507,354	**3.79%**
366.00	Underground Conduit	116,024,132			-10.0%	127,626,545	26,661,519	469,745	27,131,264	100,495,281	45.51	1,963,446	1.69%	244,603	0.21%	2,208,049	**1.90%**
367.00	Underground Conductors and Devices	200,069,425			-30.0%	260,090,253	66,707,889	1,180,635	67,888,524	192,201,729	28.71	4,645,161	2.32%	2,049,483	1.02%	6,694,644	**3.35%**
368.00	Line Transformers	210,715,294			-5.0%	221,251,059	100,086,885	11,202,951	111,289,836	109,961,223	60.46	1,829,656	0.87%	1,655,312	0.79%	3,484,967	**1.65%**
369.10	Overhead Services	34,429,051			-100.0%	68,858,102	28,591,960	169,283	28,761,244	40,096,858	30.73	189,948	0.55%	1,114,865	3.24%	1,304,813	**3.79%**
369.20	Underground Services	90,520,882			-30.0%	117,677,147	44,897,926	1,851,708	46,749,635	70,927,512	46.76	975,673	1.08%	960,168	1.06%	1,935,840	**2.14%**

Depreciation Rate Development (With Adjusted Reserve)

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[5] Reserve Adjustment	[5] Adjsuted Reserve	[6] Adj. Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
370.00	Meters	41,971,710			-5.0%	44,070,296	18,869,890	525,102	19,394,992	24,675,304	20.63	1,120,022	2.67%	76,286	0.18%	1,196,307	**2.85%**
370.20	AMR Equipment	12,795,224			0.0%	12,795,224	9,186,078	0	9,186,078	3,609,146	5.63	641,056	5.01%	0	0.00%	641,056	**5.01%**
373.10	Street Lighting Equipment	29,611,764			-30.0%	38,495,293	16,874,865	284,255	17,159,120	21,336,173	24.50	519,936	1.76%	351,033	1.19%	870,968	**2.94%**
373.20	Yard Lighting	17,242,326			-30.0%	22,415,024	13,489,498	-16,271	13,473,227	8,941,797	16.64	225,533	1.31%	311,841	1.81%	537,374	**3.12%**
373.30	Post Top Lights	7,639,105			-20.0%	9,166,926	4,868,350	406,833	5,275,183	3,891,743	18.50	149,788	1.96%	60,601	0.79%	210,389	**2.75%**
	Total Distribution Plant	1,385,048,678			-46.2%	2,024,342,612	648,728,126	20,311,746	669,039,873	1,355,302,739	34.07	21,190,724	1.53%	18,589,969	1.34%	39,780,693	**2.87%**
	GENERAL PLANT																
	Depreciable																
390.10	Structures - Office	7,404,805			-5.0%	7,775,045	4,876,328	276,223	5,152,551	2,622,494	26.78	94,417	1.28%	3,511	0.05%	97,927	**1.32%**
390.60	Structures - Communication	1,261,379			-5.0%	1,324,448	473,915	27,216	501,131	823,317	33.71	23,357	1.85%	1,063	0.08%	24,420	**1.94%**
390.80	Structures - Multipurpose	392,351			-5.0%	411,969	131,384	0	131,384	280,585	35.70	7,310	1.86%	550	0.14%	7,860	**2.00%**
397.10	Microwave Equipment	11,106,723			0.0%	11,106,723	3,586,724	1,783,895	5,370,619	5,736,104	27.97	268,859	2.42%	-63,779	-0.57%	205,081	**1.85%**
	Total Depreciable	20,165,258			-2.2%	20,618,185	9,068,351	2,087,333	11,155,685	9,462,500	28.22	393,943	1.95%	-58,655	-0.29%	335,288	**1.66%**
	Amortizable																
391.00	Office Furniture and Equipment	363,845			0.0%	363,845	164,940	0	164,940	198,905	10.78	18,451	5.07%	0	0.00%	18,451	**5.07%**
391.10	Data Handling Equipment	255,090			0.0%	255,090	42,964	0	42,964	212,126	16.33	12,990	5.09%	0	0.00%	12,990	**5.09%**
391.20	Computer Equipment	1,863,193			0.0%	1,863,193	1,192,379	0	1,192,379	670,814	3.08	217,797	11.69%	0	0.00%	217,797	**11.69%**
393.00	Stores Equipment	638,697			0.0%	638,697	274,320	0	274,320	364,377	11.44	31,851	4.99%	0	0.00%	31,851	**4.99%**
394.00	Tools, Shop and Garage Equipment	8,113,371			0.0%	8,113,371	2,964,267	0	2,964,267	5,149,104	12.49	412,154	5.08%	0	0.00%	412,154	**5.08%**
395.00	Laboratory Equipment	1,521,272			0.0%	1,521,272	873,365	0	873,365	647,907	9.07	71,410	4.69%	0	0.00%	71,410	**4.69%**
397.20	Other Communication Equipment	21,449,425			0.0%	21,449,425	6,485,419	151,427	6,636,846	14,812,579	11.24	1,331,687	6.21%	-13,476	-0.06%	1,318,211	**6.15%**
397.30	Office Communication Equipment	915,884			0.0%	915,884	177,278	16,244	193,522	722,362	12.07	61,194	6.68%	-1,346	-0.15%	59,848	**6.53%**
398.00	Miscellaneous Equipment	2,065,294			0.0%	2,065,294	394,475	0	394,475	1,670,819	15.71	106,354	5.15%	0	0.00%	106,354	**5.15%**
	Total Amortizable	37,186,071			0.0%	37,186,071	12,569,406	167,671	12,737,077	24,448,994	10.87	2,263,887	6.09%	-14,822	-0.04%	2,249,065	**6.05%**
	Total General Plant	57,351,329			-0.8%	57,804,256	21,637,757	2,255,004	23,892,762	33,911,494	13.12	2,657,830	4.63%	-73,477	-0.13%	2,584,353	**4.51%**
	TOTAL UTILITY	**3,097,186,078**			**-30.7%**	**4,048,742,092**	**1,194,232,269**	**26,846,066**	**1,221,078,335**	**2,827,663,757**	**34.90**	**56,820,117**	**1.83%**	**24,191,597**	**0.78%**	**81,011,714**	**2.62%**
	ACCOUNTS DETAILED																
	STEAM PRODUCTION PLANT																
	Colstrip Unit 4																
310.00	Land and Land Rights	0															
311.00	Structures and Improvements	26,907,546			-0.3%	26,988,269	18,540,399	0	18,540,399	8,447,870	23.72	352,746	1.31%	3,403	0.01%	356,150	**1.32%**
312.00	Boiler Plant Equipment	23,479,555			-0.3%	23,549,994	-1,007,129	0	-1,007,129	24,557,123	23.74	1,031,453	4.39%	2,967	0.01%	1,034,420	**4.41%**
314.00	Turbogenerator Units	16,795,827			-0.3%	16,846,214	2,438,875	0	2,438,875	14,407,339	23.74	604,758	3.60%	2,122	0.01%	606,880	**3.61%**
315.00	Accessory Electric Equipment	1,843,541			-0.3%	1,849,072	403,702	0	403,702	1,445,370	23.74	60,650	3.29%	233	0.01%	60,883	**3.30%**
316.00	Miscellaneous Power Plant Equipment	22,496,606			-0.3%	22,564,096	2,814,016	0	2,814,016	19,750,080	23.73	829,439	3.69%	2,844	0.01%	832,283	**3.70%**
	Total Colstrip Unit 4	91,523,075			-0.3%	91,797,644	23,189,863	0	23,189,863	68,607,781	23.73	2,879,046	3.15%	11,570	0.01%	2,890,616	**3.16%**
	HYDRAULIC PRODUCTION PLANT																
	Black Eagle																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	461,290			-0.6%	464,058	383,411	0	383,411	80,646	43.67	1,783	0.39%	63	0.01%	1,847	**0.40%**
332.10	Reservoirs, Dams and Waterways	3,372,715			-0.6%	3,392,951	1,611,891	0	1,611,891	1,781,060	43.69	40,303	1.19%	463	0.01%	40,766	**1.21%**
333.00	Water Wheels, Turbines and Generators	1,579,786			-0.6%	1,589,265	455,588	0	455,588	1,133,676	43.70	25,725	1.63%	217	0.01%	25,942	**1.64%**
334.00	Accessory Electric Equipment	8,320,215			-0.6%	8,370,136	421,705	0	421,705	7,948,431	43.75	180,537	2.17%	1,141	0.01%	181,678	**2.18%**
335.10	Miscellaneous Power Plant Equipment	645,505			-0.6%	649,378	255,786	0	255,786	393,592	43.78	8,902	1.38%	88	0.01%	8,990	**1.39%**
336.00	Roads, Railroads and Bridges	131,446			-0.6%	132,235	24,367	0	24,367	107,868	43.78	2,446	1.86%	18	0.01%	2,464	**1.87%**
	Total Black Eagle	14,510,957			-0.6%	14,598,023	3,152,748	0	3,152,748	11,445,274	43.74	259,696	1.79%	1,991	0.01%	261,687	**1.80%**
	Cochrane																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	1,140,408			-0.6%	1,147,250	703,969	0	703,969	443,281	43.67	9,994	0.88%	157	0.01%	10,151	**0.89%**
332.10	Reservoirs, Dams and Waterways	6,126,510			-0.6%	6,163,269	3,818,646	0	3,818,646	2,344,623	43.67	52,848	0.86%	842	0.01%	53,690	**0.88%**
333.00	Water Wheels, Turbines and Generators	7,449,660			-0.6%	7,494,358	2,584,199	0	2,584,199	4,910,159	43.68	111,389	1.50%	1,023	0.01%	112,412	**1.51%**

Depreciation Rate Development (With Adjusted Reserve)

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[5] Reserve Adjustment	[5] Adjsuted Reserve	[6] Adj. Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[8] Service Life Rate	[9] Net Salvage Accrual	[9] Net Salvage Rate	[10] Total Accrual	[11] Total Rate
334.00	Accessory Electric Equipment	8,642,385			-0.6%	8,694,239	890,766	0	890,766	7,803,473	43.76	177,139	2.05%	1,185	0.01%	178,324	**2.06%**
335.10	Miscellaneous Power Plant Equipment	1,177,283			-0.6%	1,184,347	477,861	0	477,861	706,485	43.74	15,990	1.36%	161	0.01%	16,152	**1.37%**
336.00	Roads, Railroads and Bridges	93,874			-0.6%	94,437	55,959	0	55,959	38,478	43.77	866	0.92%	13	0.01%	879	**0.94%**
	Total Cochrane	24,630,120			-0.6%	24,777,901	8,531,401	0	8,531,401	16,246,500	43.72	368,227	1.50%	3,381	0.01%	371,608	**1.51%**
	Hauser																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	1,014,582			-0.6%	1,020,669	498,327	0	498,327	522,343	43.69	11,816	1.16%	139	0.01%	11,956	**1.18%**
332.10	Reservoirs, Dams and Waterways	9,948,017			-0.6%	10,007,705	5,667,617	0	5,667,617	4,340,088	43.70	97,950	0.98%	1,366	0.01%	99,316	**1.00%**
333.00	Water Wheels, Turbines and Generators	5,476,022			-0.6%	5,508,878	222,194	0	222,194	5,286,684	43.76	120,060	2.19%	751	0.01%	120,811	**2.21%**
334.00	Accessory Electric Equipment	5,684,492			-0.6%	5,718,599	1,591,261	0	1,591,261	4,127,338	43.71	93,645	1.65%	780	0.01%	94,425	**1.66%**
335.10	Miscellaneous Power Plant Equipment	727,859			-0.6%	732,226	392,344	0	392,344	339,882	43.71	7,676	1.05%	100	0.01%	7,776	**1.07%**
336.00	Roads, Railroads and Bridges	39,494			-0.6%	39,731	27,102	0	27,102	12,629	43.77	283	0.72%	5	0.01%	289	**0.73%**
	Total Hauser	22,890,466			-0.6%	23,027,809	8,398,844	0	8,398,844	14,628,965	43.72	331,430	1.45%	3,142	0.01%	334,572	**1.46%**
	Hebgon																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	37,693			-0.6%	37,919	-213,148	0	-213,148	251,067	43.71	5,739	15.22%	5	0.01%	5,744	**15.24%**
332.10	Reservoirs, Dams and Waterways	47,994,327			-0.6%	48,282,293	2,816,203	0	2,816,203	45,466,090	43.77	1,032,171	2.15%	6,579	0.01%	1,038,750	**2.16%**
333.00	Water Wheels, Turbines and Generators	8,399			-0.6%	8,449	1,392	0	1,392	7,057	43.75	160	1.91%	1	0.01%	161	**1.92%**
334.00	Accessory Electric Equipment	0															
335.10	Miscellaneous Power Plant Equipment	261,164			-0.6%	262,731	138,574	0	138,574	124,157	43.75	2,802	1.07%	36	0.01%	2,838	**1.09%**
336.00	Roads, Railroads and Bridges	1,044			-0.6%	1,050	772	0	772	278	43.77	6	0.59%	0	0.01%	6	**0.61%**
	Total Hebgon	48,302,627			-0.6%	48,592,443	2,743,794	0	2,743,794	45,848,649	43.77	1,040,878	2.15%	6,621	0.01%	1,047,500	**2.17%**
	Holter																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	1,463,178			-0.6%	1,471,957	676,341	0	676,341	795,616	43.68	18,014	1.23%	201	0.01%	18,215	**1.24%**
332.10	Reservoirs, Dams and Waterways	6,794,183			-0.6%	6,834,948	4,055,425	0	4,055,425	2,779,523	43.67	62,715	0.92%	933	0.01%	63,648	**0.94%**
333.00	Water Wheels, Turbines and Generators	2,983,204			-0.6%	3,001,103	1,017,331	0	1,017,331	1,983,772	43.71	44,975	1.51%	409	0.01%	45,385	**1.52%**
334.00	Accessory Electric Equipment	3,621,427			-0.6%	3,643,156	677,563	0	677,563	2,965,592	43.74	67,304	1.86%	497	0.01%	67,800	**1.87%**
335.10	Miscellaneous Power Plant Equipment	1,814,924			-0.6%	1,825,814	970,597	0	970,597	855,216	43.77	19,290	1.06%	249	0.01%	19,539	**1.08%**
336.00	Roads, Railroads and Bridges	5,550			-0.6%	5,583	4,447	0	4,447	1,136	43.77	25	0.45%	1	0.01%	26	**0.47%**
	Total Holter	16,682,466			-0.6%	16,782,561	7,401,705	0	7,401,705	9,380,856	43.71	212,323	1.27%	2,290	0.01%	214,613	**1.29%**
	Madison																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	1,182,531			-0.6%	1,189,626	560,667	0	560,667	628,959	43.71	14,227	1.20%	162	0.01%	14,389	**1.22%**
332.10	Reservoirs, Dams and Waterways	16,409,516			-0.6%	16,507,973	7,567,245	0	7,567,245	8,940,728	43.73	202,201	1.23%	2,251	0.01%	204,453	**1.25%**
333.00	Water Wheels, Turbines and Generators	3,175,052			-0.6%	3,194,102	933,630	0	933,630	2,260,472	43.72	51,268	1.61%	436	0.01%	51,703	**1.63%**
334.00	Accessory Electric Equipment	3,865,967			-0.6%	3,889,163	719,948	0	719,948	3,169,215	43.73	71,942	1.86%	530	0.01%	72,472	**1.87%**
335.10	Miscellaneous Power Plant Equipment	739,858			-0.6%	744,297	366,408	0	366,408	377,889	43.72	8,542	1.15%	102	0.01%	8,643	**1.17%**
336.00	Roads, Railroads and Bridges	628,052			-0.6%	631,820	379,060	0	379,060	252,761	43.77	5,689	0.91%	86	0.01%	5,775	**0.92%**
	Total Madison	26,000,976			-0.6%	26,156,982	10,526,958	0	10,526,958	15,630,024	43.73	353,869	1.36%	3,568	0.01%	357,436	**1.37%**
	Morony																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	681,339			-0.6%	685,427	386,905	0	386,905	298,522	43.67	6,742	0.99%	94	0.01%	6,836	**1.00%**
332.10	Reservoirs, Dams and Waterways	3,781,975			-0.6%	3,804,667	2,283,827	0	2,283,827	1,520,840	43.67	34,306	0.91%	520	0.01%	34,826	**0.92%**
333.00	Water Wheels, Turbines and Generators	16,226,226			-0.6%	16,323,583	1,650,720	0	1,650,720	14,672,864	43.76	333,078	2.05%	2,225	0.01%	335,303	**2.07%**
334.00	Accessory Electric Equipment	12,687,026			-0.6%	12,763,148	1,099,382	0	1,099,382	11,663,767	43.75	264,860	2.09%	1,740	0.01%	266,600	**2.10%**
335.10	Miscellaneous Power Plant Equipment	2,304,460			-0.6%	2,318,287	671,727	0	671,727	1,646,560	43.76	37,311	1.62%	316	0.01%	37,627	**1.63%**
336.00	Roads, Railroads and Bridges	3,930			-0.6%	3,954	3,515	0	3,515	439	43.77	9	0.24%	1	0.01%	10	**0.25%**
	Total Morony	35,684,956			-0.6%	35,899,066	6,096,076	0	6,096,076	29,802,990	43.75	676,308	1.90%	4,894	0.01%	681,202	**1.91%**
	Mystic																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	1,291,925			-0.6%	1,299,677	853,266	0	853,266	446,411	43.69	10,040	0.78%	177	0.01%	10,218	**0.79%**
332.10	Reservoirs, Dams and Waterways	11,333,661			-0.6%	11,401,663	6,316,927	0	6,316,927	5,084,736	43.70	114,799	1.01%	1,556	0.01%	116,356	**1.03%**
333.00	Water Wheels, Turbines and Generators	2,774,667			-0.6%	2,791,315	1,357,187	0	1,357,187	1,434,128	43.71	32,429	1.17%	381	0.01%	32,810	**1.18%**
334.00	Accessory Electric Equipment	3,298,847			-0.6%	3,318,640	421,895	0	421,895	2,896,745	43.75	65,759	1.99%	452	0.01%	66,211	**2.01%**
335.10	Miscellaneous Power Plant Equipment	2,989,425			-0.6%	3,007,362	844,319	0	844,319	2,163,042	43.70	49,087	1.64%	410	0.01%	49,498	**1.66%**
336.00	Roads, Railroads and Bridges	1,453,511			-0.6%	1,462,232	732,045	0	732,045	730,187	43.77	16,483	1.13%	199	0.01%	16,682	**1.15%**
	Total Mystic	23,142,036			-0.6%	23,280,888	10,525,640	0	10,525,640	12,755,249	43.72	288,598	1.25%	3,177	0.01%	291,774	**1.26%**

Depreciation Rate Development (With Adjusted Reserve)

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[5] Reserve Adjustment	[5] Adjsuted Reserve	[6] Adj. Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
	Rainbow																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	75,536,805			-0.6%	75,990,026	6,854,533	0	6,854,533	69,135,493	43.77	1,569,163	2.08%	10,355	0.01%	1,579,518	**2.09%**
332.10	Reservoirs, Dams and Waterways	23,650,771			-0.6%	23,792,676	3,071,501	0	3,071,501	20,721,174	43.73	470,598	1.99%	3,245	0.01%	473,843	**2.00%**
333.00	Water Wheels, Turbines and Generators	36,686,952			-0.6%	36,907,074	858,829	0	858,829	36,048,245	43.77	818,554	2.23%	5,029	0.01%	823,583	**2.24%**
334.00	Accessory Electric Equipment	5,813,929			-0.6%	5,848,813	-87,094	0	-87,094	5,935,907	43.76	134,850	2.32%	797	0.01%	135,647	**2.33%**
335.10	Miscellaneous Power Plant Equipment	1,282,576			-0.6%	1,290,271	878,251	0	878,251	412,020	43.76	9,240	0.72%	176	0.01%	9,415	**0.73%**
336.00	Roads, Railroads and Bridges	3,792			-0.6%	3,815	3,895	0	3,895	-80	43.77	-2	-0.06%	1	0.01%	-2	**-0.05%**
	Total Rainbow	142,974,825			-0.6%	143,832,674	11,579,915	0	11,579,915	132,252,758	43.76	3,002,403	2.10%	19,602	0.01%	3,022,005	**2.11%**
	Ryan																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	2,420,542			-0.6%	2,435,065	987,641	0	987,641	1,447,425	43.68	32,805	1.36%	332	0.01%	33,137	**1.37%**
332.10	Reservoirs, Dams and Waterways	9,214,588			-0.6%	9,269,876	2,940,439	0	2,940,439	6,329,436	43.71	143,540	1.56%	1,265	0.01%	144,805	**1.57%**
333.00	Water Wheels, Turbines and Generators	9,497,375			-0.6%	9,554,359	781,453	0	781,453	8,772,906	43.71	199,403	2.10%	1,304	0.01%	200,707	**2.11%**
334.00	Accessory Electric Equipment	17,243,937			-0.6%	17,347,401	2,198,316	0	2,198,316	15,149,084	43.74	343,979	1.99%	2,365	0.01%	346,344	**2.01%**
335.10	Miscellaneous Power Plant Equipment	1,334,398			-0.6%	1,342,404	488,049	0	488,049	854,355	43.73	19,354	1.45%	183	0.01%	19,537	**1.46%**
336.00	Roads, Railroads and Bridges	30,735			-0.6%	30,919	17,979	0	17,979	12,940	43.77	291	0.95%	4	0.01%	296	**0.96%**
	Total Ryan	39,741,575			-0.6%	39,980,024	7,413,878	0	7,413,878	32,566,147	43.72	739,372	1.86%	5,454	0.01%	744,826	**1.87%**
	Thompson Falls																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	28,339,628			-0.6%	28,509,666	10,885,227	0	10,885,227	17,624,439	43.67	399,689	1.41%	3,894	0.01%	403,582	**1.42%**
332.10	Reservoirs, Dams and Waterways	18,430,744			-0.6%	18,541,328	6,103,334	0	6,103,334	12,437,995	43.69	282,156	1.53%	2,531	0.01%	284,687	**1.54%**
333.00	Water Wheels, Turbines and Generators	26,761,644			-0.6%	26,922,214	10,725,083	0	10,725,083	16,197,131	43.67	367,221	1.37%	3,677	0.01%	370,898	**1.39%**
334.00	Accessory Electric Equipment	7,375,919			-0.6%	7,420,175	2,578,455	0	2,578,455	4,841,720	43.71	109,757	1.49%	1,012	0.01%	110,769	**1.50%**
335.10	Miscellaneous Power Plant Equipment	4,633,669			-0.6%	4,661,471	1,431,148	0	1,431,148	3,230,323	43.76	73,184	1.58%	635	0.01%	73,819	**1.59%**
336.00	Roads, Railroads and Bridges	102,408			-0.6%	103,022	55,207	0	55,207	47,815	43.77	1,078	1.05%	14	0.01%	1,092	**1.07%**
	Total Thompson Falls	85,644,012			-0.6%	86,157,876	31,778,453	0	31,778,453	54,379,423	43.68	1,233,085	1.44%	11,764	0.01%	1,244,849	**1.45%**
	Common																
330.00	Land and Land Rights	0															
331.10	Structures and Improvements	9,850,645			-0.6%	9,909,749	1,917,476	0	1,917,476	7,992,273	43.77	181,247	1.84%	1,350	0.01%	182,597	**1.85%**
332.10	Reservoirs, Dams and Waterways	10,532,516			-0.6%	10,595,711	2,060,580	0	2,060,580	8,535,131	43.73	193,733	1.84%	1,445	0.01%	195,178	**1.85%**
333.00	Water Wheels, Turbines and Generators	8,353,374			-0.6%	8,403,494	1,634,253	0	1,634,253	6,769,241	43.68	153,826	1.84%	1,147	0.01%	154,973	**1.86%**
334.00	Accessory Electric Equipment	7,563,889			-0.6%	7,609,272	1,262,440	0	1,262,440	6,346,832	43.75	144,033	1.90%	1,037	0.01%	145,070	**1.92%**
335.10	Miscellaneous Power Plant Equipment	1,452,761			-0.6%	1,461,478	284,218	0	284,218	1,177,259	43.75	26,710	1.84%	199	0.01%	26,909	**1.85%**
336.00	Roads, Railroads and Bridges	0															
	Total Common	37,753,185			-0.6%	37,979,704	7,158,968	0	7,158,968	30,820,736	43.73	699,548	1.85%	5,179	0.01%	704,728	**1.87%**
	OTHER PRODUCTION PLANT																
	Dave Gates Generating Station																
340.00	Land and Land Rights	0															
341.00	Structures and Improvements	22,122,874			-0.3%	22,189,243	4,910,331	0	4,910,331	17,278,911	21.86	787,399	3.56%	3,036	0.01%	790,435	**3.57%**
342.00	Fuel Holders and Accessories	21,117,961			-0.3%	21,181,315	4,794,753	0	4,794,753	16,386,562	21.86	746,716	3.54%	2,898	0.01%	749,614	**3.55%**
343.00	Prime Movers	100,614,123			-0.8%	101,419,036	9,944,343	0	9,944,343	91,474,693	20.61	4,399,310	4.37%	39,054	0.04%	4,438,365	**4.41%**
344.00	Generators	0															
345.00	Accessory Electric Equipment	9,049,010			-0.3%	9,076,157	2,023,956	0	2,023,956	7,052,201	21.86	321,366	3.55%	1,242	0.01%	322,608	**3.57%**
346.00	Miscellaneous Power Plant Equipment	23,914,137			-0.3%	23,985,879	7,437,475	0	7,437,475	16,548,404	21.86	753,736	3.15%	3,282	0.01%	757,018	**3.17%**
	Total Dave Gates Generating Station	176,818,105			-0.6%	177,851,630	29,110,858	0	29,110,858	148,740,771	21.07	7,008,526	3.96%	49,512	0.03%	7,058,039	**3.99%**
	Spion Kop Wind Farm																
340.00	Land and Land Rights	0															
341.00	Structures and Improvements	29,262,434			-0.2%	29,320,959	6,693,798	0	6,693,798	22,627,160	19.02	1,186,574	4.05%	3,077	0.01%	1,189,651	**4.07%**
342.00	Fuel Holders and Accessories	0															
343.00	Prime Movers	0															
344.00	Generators	44,855,231			-0.2%	44,944,941	7,277,778	0	7,277,778	37,667,164	19.02	1,975,681	4.40%	4,717	0.01%	1,980,398	**4.42%**
345.00	Accessory Electric Equipment	6,360,485			-0.2%	6,373,206	993,079	0	993,079	5,380,127	19.02	282,198	4.44%	669	0.01%	282,867	**4.45%**
346.00	Miscellaneous Power Plant Equipment	2,049,845			-0.2%	2,053,945	393,680	0	393,680	1,660,265	19.02	87,075	4.25%	216	0.01%	87,290	**4.26%**
	Total Spion Kop Wind Farm	82,527,995			-0.2%	82,693,051	15,358,335	0	15,358,335	67,334,716	19.02	3,531,528	4.28%	8,678	0.01%	3,540,206	**4.29%**
	Yellowstone Park																
340.00	Land and Land Rights	0															
341.00	Structures and Improvements	19,232			-5.0%	20,194	14,817	0	14,817	5,376	7.58	582	3.03%	127	0.66%	709	**3.69%**

Depreciation Rate Development (With Adjusted Reserve)

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[5] Reserve Adjustment	[5] Adjsuted Reserve	[6] Adj. Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Service Life Rate	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
342.00	Fuel Holders and Accessories	112,084			-5.0%	117,688	123,685	0	123,685	-5,996	1.00	-11,601	-10.35%	5,604	5.00%	-5,996	**-5.35%**
343.00	Prime Movers	0															
344.00	Generators	2,856,090			-5.0%	2,998,895	2,460,946	0	2,460,946	537,948	8.53	46,324	1.62%	16,741	0.59%	63,065	**2.21%**
345.00	Accessory Electric Equipment	799,262			-5.0%	839,225	149,948	0	149,948	689,277	19.16	33,889	4.24%	2,086	0.26%	35,975	**4.50%**
346.00	Miscellaneous Power Plant Equipment	7,268			-5.0%	7,631	6,848	0	6,848	783	6.50	65	0.89%	56	0.77%	120	**1.66%**
	Total Yellowstone Park	3,793,936			-5.0%	3,983,633	2,756,244	0	2,756,244	1,227,389	13.07	69,260	1.83%	24,614	0.65%	93,874	**2.47%**
	TRANSMISSION PLANT																
	Non-Yellowstone Park																
350.20	Land Rights and Rights-of-Way	30,727,757	S4	60	0.0%	30,727,757	8,995,779	75,273	9,071,052	21,656,705	42.12	515,954	1.68%	-1,787	-0.01%	514,167	**1.67%**
352.00	Structures and Improvements	30,995,178	R5	55	-10.0%	34,094,696	6,182,428	-50,294	6,132,134	27,962,562	44.30	560,107	1.81%	71,102	0.23%	631,209	**2.04%**
353.00	Station Equipment	249,370,391	R0.5	68	-10.0%	274,307,430	66,314,324	-1,298,094	65,016,229	209,291,201	57.95	3,158,862	1.27%	452,720	0.18%	3,611,582	**1.45%**
354.10	Towers and Fixtures	27,223,483	S4	55	-30.0%	35,390,528	19,953,177	181,064	20,134,240	15,256,287	22.67	320,702	1.18%	352,271	1.29%	672,973	**2.47%**
354.20	Clearing Land and Rights-of-Way	1,504,241	S4	55	0.0%	1,504,241	811,931	22,150	834,081	670,160	24.20	28,608	1.90%	-915	-0.06%	27,693	**1.84%**
355.00	Poles and Fixtures	273,851,709	R2.5	64	-90.0%	520,318,247	154,959,072	4,592,747	159,551,819	360,766,428	51.67	2,300,999	0.84%	4,681,126	1.71%	6,982,126	**2.55%**
355.20	Clearing Land and Rights-of-Way	4,819,790	S4	55	0.0%	4,819,790	2,991,367	84,005	3,075,372	1,744,418	23.52	77,739	1.61%	-3,572	-0.07%	74,167	**1.54%**
356.00	Overhead Conductors and Devices	143,313,518	S4	60	-15.0%	164,810,546	70,336,928	691,475	71,028,403	93,782,143	32.99	2,212,082	1.54%	630,662	0.44%	2,842,745	**1.98%**
356.10	Switching Station Equipment	14,606,031	R4	55	-15.0%	16,796,936	4,212,906	-58,303	4,154,603	12,642,333	39.92	260,349	1.78%	56,343	0.39%	316,692	**2.17%**
357.00	Underground Conduit	35,592	R3	55	0.0%	35,592	14,065	372	14,437	21,155	39.01	552	1.55%	-10	-0.03%	542	**1.52%**
358.00	Underground Conductors and Devices	856,499	R4	40	0.0%	856,499	388,234	35,395	423,629	432,870	21.85	21,431	2.50%	-1,620	-0.19%	19,811	**2.31%**
359.00	Roads and Trails	2,474,735	R4	80	0.0%	2,474,735	871,234	3,526	874,760	1,599,975	50.60	31,690	1.28%	-70	0.00%	31,620	**1.28%**
	Total Non-Yellowstone Park	779,778,924			-39.3%	1,086,136,996	336,031,445	4,279,315	340,310,760	745,826,236	47.43	9,489,075	1.22%	6,236,251	0.80%	15,725,326	**2.02%**
	Yellowstone Park																
350.20	Land Rights and Rights-of-Way	0							0								
352.00	Structures and Improvements	0							0								
353.00	Station Equipment	0							0								
354.10	Towers and Fixtures	0							0								
354.20	Clearing Land and Rights-of-Way	0							0								
355.00	Poles and Fixtures	717,389	R2.5	64	-90.0%	1,363,039	817,334	0	817,334	545,705	41.88	-2,386	-0.33%	15,417	2.15%	13,030	**1.82%**
355.20	Clearing Land and Rights-of-Way	251,137	S4	55	0.0%	251,137	239,211	0	239,211	11,926	10.75	1,109	0.44%	0	0.00%	1,109	**0.44%**
356.00	Overhead Conductors and Devices	665,467	S4	60	-15.0%	765,287	513,970	0	513,970	251,317	25.45	5,953	0.89%	3,922	0.59%	9,875	**1.48%**
356.10	Switching Station Equipment	50,614	R4	55	-15.0%	58,206	47,305	0	47,305	10,901	14.15	234	0.46%	537	1.06%	770	**1.52%**
357.00	Underground Conduit	102,286	R3	55	0.0%	102,286	49,485	0	49,485	52,802	32.98	1,601	1.57%	0	0.00%	1,601	**1.57%**
358.00	Underground Conductors and Devices	554,036	R4	40	0.0%	554,036	426,613	0	426,613	127,423	17.38	7,332	1.32%	0	0.00%	7,332	**1.32%**
359.00	Roads and Trails	44,906	R4	80	0.0%	44,906	17,341	0	17,341	27,565	51.46	536	1.19%	0	0.00%	536	**1.19%**
	Total Yellowstone Park	2,385,835			-31.6%	3,138,897	2,111,260	0	2,111,260	1,027,638	30.00	14,378	0.60%	19,875	0.83%	34,253	**1.44%**
	DISTRIBUTION PLANT																
	Non-Yellowstone Park																
360.20	Land Rights and Rights-of-Way	2,241,946	R4	50	0.0%	2,241,946	2,455,532	264,002	2,719,534	-477,588	17.75	-12,033	-0.54%	-14,873	-0.66%	-26,906	**-1.20%**
361.00	Structures and Improvements	17,861,499	R4	55	-10.0%	19,647,649	2,921,882	312,334	3,234,216	16,413,433	46.47	321,490	1.80%	31,715	0.18%	353,205	**1.98%**
362.00	Station Equipment	200,668,956	L1.5	61	-10.0%	220,735,852	57,188,318	-1,992,281	55,196,037	165,539,815	49.38	2,905,643	1.45%	446,723	0.22%	3,352,366	**1.67%**
364.00	Poles, Towers and Fixtures	278,264,657	L3	49	-125.0%	626,095,478	167,610,094	3,928,073	171,538,167	454,557,311	36.70	3,015,111	1.08%	9,370,647	3.37%	12,385,758	**4.45%**
365.00	Overhead Conductors and Devices	118,501,603	R4	50	-90.0%	225,153,046	86,793,953	1,725,376	88,519,329	136,633,717	30.44	1,041,644	0.88%	3,446,980	2.91%	4,488,624	**3.79%**
366.00	Underground Conduit	115,531,014	R4	55	-10.0%	127,084,115	26,532,448	469,745	27,002,193	100,081,922	45.52	1,955,153	1.69%	243,483	0.21%	2,198,636	**1.90%**
367.00	Underground Conductors and Devices	196,870,123	R5	40	-30.0%	255,931,160	64,522,024	1,180,635	65,702,659	190,228,501	28.87	4,584,278	2.33%	2,004,863	1.02%	6,589,141	**3.35%**
368.00	Line Transformers	209,811,378	R4	51	-5.0%	220,301,947	99,365,433	11,202,951	110,568,384	109,733,563	31.60	3,495,125	1.67%	-22,544	-0.01%	3,472,581	**1.66%**
369.10	Overhead Services	34,414,498	R3	50	-100.0%	68,828,996	28,576,098	169,283	28,745,381	40,083,615	30.73	189,990	0.55%	1,114,390	3.24%	1,304,381	**3.79%**
369.20	Underground Services	90,275,853	R4	51	-30.0%	117,358,609	44,727,771	1,851,708	46,579,479	70,779,130	36.65	1,242,785	1.38%	688,432	0.76%	1,931,218	**2.14%**
370.00	Meters	41,874,755	S0.5	33	-5.0%	43,968,493	18,813,142	525,102	19,338,244	24,630,249	20.63	1,117,868	2.67%	76,037	0.18%	1,193,904	**2.85%**
370.20	AMR Equipment	12,795,224	SQ	20	0.0%	12,795,224	9,186,078	0	9,186,078	3,609,146	5.63	641,056	5.01%	0	0.00%	641,056	**5.01%**
373.10	Street Lighting Equipment	29,595,352	R3	43	-30.0%	38,473,958	16,861,718	284,255	17,145,974	21,327,984	24.50	519,740	1.76%	350,790	1.19%	870,530	**2.94%**
373.20	Yard Lighting	17,241,479	R2	33	-30.0%	22,413,923	13,488,594	-16,271	13,472,322	8,941,601	16.64	225,534	1.31%	311,822	1.81%	537,356	**3.12%**
373.30	Post Top Lights	7,636,491	R3	35	-20.0%	9,163,789	4,865,959	406,833	5,272,792	3,890,997	18.50	149,758	1.96%	60,566	0.79%	210,324	**2.75%**
	Total Non-Yellowstone Park	1,373,584,828			-46.3%	2,010,194,184	643,909,043	20,311,746	664,220,789	1,345,973,395	34.07	21,393,142	1.56%	18,109,031	1.32%	39,502,173	**2.88%**
	Yellowstone Park																
360.20	Land Rights and Rights-of-Way	601	R4	50	0.0%	601	452	0	452	149	16.55	9	1.50%	0	0.00%	9	**1.50%**
361.00	Structures and Improvements	1,226,604	R4	55	-10.0%	1,349,264	123,960	0	123,960	1,225,305	49.65	22,208	1.81%	2,471	0.20%	24,679	**2.01%**
362.00	Station Equipment	4,345,488	L1.5	61	-10.0%	4,780,037	675,505	0	675,505	4,104,532	49.94	73,488	1.69%	8,701	0.20%	82,189	**1.89%**
364.00	Poles, Towers and Fixtures	422,546	L3	49	-125.0%	950,729	359,619	0	359,619	591,109	33.58	1,874	0.44%	15,729	3.72%	17,603	**4.17%**
365.00	Overhead Conductors and Devices	495,865	R4	50	-90.0%	942,144	363,952	0	363,952	578,191	30.87	4,273	0.86%	14,457	2.92%	18,730	**3.78%**
366.00	Underground Conduit	493,118	R4	55	-10.0%	542,430	129,071	0	129,071	413,359	43.91	8,291	1.68%	1,123	0.23%	9,414	**1.91%**

Depreciation Rate Development (With Adjusted Reserve)

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	[2] Iowa Curve AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[5] Reserve Adjustment	[5] Adjsuted Reserve	[6] Adj. Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[8] Service Life Rate	[9]	[10] Net Salvage Accrual	[11] Net Salvage Rate	[12] Total Accrual	[13] Total Rate
367.00	Underground Conductors and Devices	3,199,302	R5	40	-30.0%	4,159,093	2,185,865	0	2,185,865	1,973,227	18.87	53,706	1.68%		50,863	1.59%	104,570	**3.27%**
368.00	Line Transformers	903,916	R4	51	-5.0%	949,112	721,452	0	721,452	227,660	18.38	9,927	1.10%		2,459	0.27%	12,386	**1.37%**
369.10	Overhead Services	14,553	R3	50	-100.0%	29,106	15,862	0	15,862	13,244	30.65	-43	-0.29%		475	3.26%	432	**2.97%**
369.20	Underground Services	245,029	R4	51	-30.0%	318,538	170,155	0	170,155	148,382	32.10	2,333	0.95%		2,290	0.93%	4,623	**1.89%**
370.00	Meters	96,955	S0.5	33	-5.0%	101,803	56,748	0	56,748	45,055	18.90	2,127	2.19%		256	0.26%	2,384	**2.46%**
370.20	AMR Equipment	0																
373.10	Street Lighting Equipment	16,412	R3	43	-30.0%	21,336	13,146	0	13,146	8,189	19.13	171	1.04%		257	1.57%	428	**2.61%**
373.20	Yard Lighting	847	R2	33	-30.0%	1,101	905	0	905	197	12.60	-5	-0.54%		20	2.38%	16	**1.84%**
373.30	Post Top Lights	2,614	R3	35	-20.0%	3,137	2,391	0	2,391	745	11.99	19	0.71%		44	1.67%	62	**2.38%**
	Total Yellowstone Park	11,463,850			-23.4%	14,148,428	4,819,084	0	4,819,084	9,329,345	33.62	178,379	1.56%		99,145	0.86%	277,524	**2.42%**
	GENERAL PLANT																	
	Non-Yellowstone Park																	
	Depreciable																	
390.10	Structures - Office	7,404,805	R1	45	-5.0%	7,775,045	4,876,328	276,223	5,152,551	2,622,494	26.78	94,417	1.28%		3,511	0.05%	97,927	**1.32%**
390.60	Structures - Communication	1,146,761	R1	45	-5.0%	1,204,099	473,915	27,216	501,131	702,968	32.75	20,545	1.79%		920	0.08%	21,465	**1.87%**
390.80	Structures - Multipurpose	0																
397.10	Microwave Equipment	11,106,723	R5	100	0.0%	11,106,723	3,586,724	1,783,895	5,370,619	5,736,104	27.97	268,859	2.42%		-63,779	-0.57%	205,081	**1.85%**
	Total Depreciable	19,658,289			-2.2%	20,085,867	8,936,967	2,087,333	11,024,301	9,061,567	27.93	383,821	1.95%		-59,348	-0.30%	324,473	**1.65%**
	Amortizable																	
391.00	Office Furniture and Equipment	363,845	SQ	20	0.0%	363,845	164,940	0	164,940	198,905	10.78	18,451	5.07%		0	0.00%	18,451	**5.07%**
391.10	Data Handling Equipment	255,090	SQ	20	0.0%	255,090	42,964	0	42,964	212,126	16.33	12,990	5.09%		0	0.00%	12,990	**5.09%**
391.20	Computer Equipment	1,863,193	SQ	7	0.0%	1,863,193	1,192,379	0	1,192,379	670,814	3.08	217,797	11.69%		0	0.00%	217,797	**11.69%**
393.00	Stores Equipment	638,697	SQ	20	0.0%	638,697	274,320	0	274,320	364,377	11.44	31,851	4.99%		0	0.00%	31,851	**4.99%**
394.00	Tools, Shop and Garage Equipment	8,108,196	SQ	20	0.0%	8,108,196	2,959,452	0	2,959,452	5,148,744	12.50	411,899	5.08%		0	0.00%	411,899	**5.08%**
395.00	Laboratory Equipment	1,519,975	SQ	20	0.0%	1,519,975	872,068	0	872,068	647,907	9.08	71,355	4.69%		0	0.00%	71,355	**4.69%**
397.20	Other Communication Equipment	19,411,181	SQ	15	0.0%	19,411,181	6,331,310	151,427	6,482,737	12,928,444	11.12	1,176,247	6.06%		-13,618	-0.07%	1,162,630	**5.99%**
397.30	Office Communication Equipment	915,884	SQ	15	0.0%	915,884	177,278	16,244	193,522	722,362	12.07	61,194	6.68%		-1,346	-0.15%	59,848	**6.53%**
398.00	Miscellaneous Equipment	2,065,294	SQ	20	0.0%	2,065,294	394,475	0	394,475	1,670,819	15.71	106,354	5.15%		0	0.00%	106,354	**5.15%**
	Total Amortizable	35,141,355			0.0%	35,141,355	12,409,185	167,671	12,576,857	22,564,498	10.78	2,108,139	6.00%		-14,963	-0.04%	2,093,175	**5.96%**
	Total Non-Yellowstone Park	54,799,644			-0.8%	55,227,222	21,346,153	2,255,004	23,601,157	31,626,065	13.08	2,491,960	4.55%		-74,312	-0.14%	2,417,648	**4.41%**
	Yellowstone Park																	
	Depreciable																	
390.10	Structures - Office	0																
390.60	Structures - Communication	114,618	R1	45	-5.0%	120,349	0	0		120,349	43.01	2,665	2.33%		133	0.12%	2,798	**2.44%**
390.80	Structures - Multipurpose	392,351	R1	45	-5.0%	411,969	131,384	0	131,384	280,585	35.70	7,310	1.86%		550	0.14%	7,860	**2.00%**
397.10	Microwave Equipment	0																
	Total Depreciable	506,969			-5.0%	532,317	131,384	0	131,384	400,934	37.62	9,975	1.97%		683	0.13%	10,658	**2.10%**
	Amortizable																	
391.00	Office Furniture and Equipment	0																
391.10	Data Handling Equipment	0																
391.20	Computer Equipment	0																
393.00	Stores Equipment	0																
394.00	Tools, Shop and Garage Equipment	5,175	SQ	20	0.0%	5,175	4,815	0	4,815	360	1.76	205	3.96%		0	0.00%	205	**3.96%**
395.00	Laboratory Equipment	1,297	SQ	20	0.0%	1,297	1,297	0	1,297	0	1.00	0	-0.03%		0	0.00%	0	**-0.03%**
397.20	Other Communication Equipment	2,038,244	SQ	15	0.0%	2,038,244	154,109	0	154,109	1,884,135	12.35	152,562	7.48%		0	0.00%	152,562	**7.48%**
397.30	Office Communication Equipment	0																
398.00	Miscellaneous Equipment	0																
	Total Amortizable	2,044,716			0.0%	2,044,716	160,221	0	160,221	1,884,495	12.34	152,766	7.47%		0	0.00%	152,766	**7.47%**
	Total Yellowstone Park	2,551,685			-1.0%	2,577,033	291,604	0	291,604	2,285,429	13.98	162,741	6.38%		683	0.03%	163,424	**6.40%**
	TOTAL UTILITY	**3,097,186,078**			**-30.7%**	**4,048,814,670**	**1,194,232,269**	**26,846,066**	**1,221,078,335**	**2,827,736,334**	**34.92**	**56,423,770**	**1.82%**		**24,556,112**	**0.79%**	**80,979,882**	**2.61%**

[1] From depreciation study, Statement B

[2] Average life and Iowa curve shape developed through actuarial analysis and professional judgment

Depreciation Rate Development (With Adjusted Reserve)

		[1]	[2]		[3]	[4]	[5]	[5]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
Account No.	Description	Original Cost	Iowa Curve Type	Iowa Curve AL	Net Salvage	Depreciable Base	Book Reserve	Reserve Adjustment	Adjsuted Reserve	Adj. Future Accruals	Remaining Life	Service Life Accrual	Service Life Rate	Net Salvage Accrual	Net Salvage Rate	Total Accrual	Total Rate

[3] Net salvage rate estimates developed through statistical analysis and professional judgment
[4] = [1]*(1-[3])
[5] Recorded reserve from depreciation study, Statement C
[6] = [4] - [5]
[7] Composite remaining life based on Iowa cuve in [2]; see remaining life exhibit for detailed calculations
[8] = ([1] - [5]) / [7]
[9] = [8] / [1]
[10] = [12] - [8]
[11] = [13] - [9]
[12] = [6] / [7]
[13] = [12] / [1].

Account 353 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE R1-55**	**MCC R0.5-68**	**NWE SSD**	**MCC SSD**
0.0	268,241,304	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	253,436,361	100.00%	99.77%	99.72%	0.0000	0.0000
1.5	243,951,560	99.95%	99.29%	99.16%	0.0000	0.0001
2.5	219,161,027	99.73%	98.80%	98.60%	0.0001	0.0001
3.5	216,406,808	99.45%	98.30%	98.03%	0.0001	0.0002
4.5	212,707,717	98.51%	97.78%	97.46%	0.0001	0.0001
5.5	198,076,845	98.34%	97.26%	96.88%	0.0001	0.0002
6.5	184,724,957	98.10%	96.72%	96.30%	0.0002	0.0003
7.5	167,601,675	97.63%	96.17%	95.72%	0.0002	0.0004
8.5	160,717,995	96.43%	95.61%	95.13%	0.0001	0.0002
9.5	156,471,638	95.97%	95.03%	94.54%	0.0001	0.0002
10.5	154,227,754	95.42%	94.45%	93.94%	0.0001	0.0002
11.5	170,699,149	94.86%	93.85%	93.35%	0.0001	0.0002
12.5	168,484,469	94.58%	93.24%	92.74%	0.0002	0.0003
13.5	165,927,202	94.01%	92.62%	92.14%	0.0002	0.0004
14.5	163,981,202	93.51%	91.99%	91.53%	0.0002	0.0004
15.5	161,265,837	92.93%	91.35%	90.91%	0.0003	0.0004
16.5	155,971,662	92.72%	90.69%	90.29%	0.0004	0.0006
17.5	143,833,549	92.33%	90.03%	89.67%	0.0005	0.0007
18.5	131,010,166	91.07%	89.35%	89.05%	0.0003	0.0004
19.5	120,690,074	90.23%	88.66%	88.42%	0.0002	0.0003
20.5	117,873,604	89.96%	87.96%	87.78%	0.0004	0.0005
21.5	113,243,357	89.16%	87.25%	87.15%	0.0004	0.0004
22.5	102,519,453	88.56%	86.52%	86.51%	0.0004	0.0004
23.5	94,387,219	87.26%	85.78%	85.86%	0.0002	0.0002
24.5	91,552,463	86.40%	85.02%	85.21%	0.0002	0.0001
25.5	86,308,079	86.07%	84.25%	84.56%	0.0003	0.0002
26.5	60,790,346	85.58%	83.47%	83.90%	0.0004	0.0003
27.5	57,839,417	85.07%	82.67%	83.24%	0.0006	0.0003
28.5	52,528,803	84.77%	81.85%	82.58%	0.0009	0.0005
29.5	52,243,073	84.46%	81.01%	81.91%	0.0012	0.0007
30.5	48,552,746	83.99%	80.15%	81.23%	0.0015	0.0008
31.5	47,740,914	83.28%	79.28%	80.55%	0.0016	0.0007
32.5	44,613,799	82.02%	78.39%	79.87%	0.0013	0.0005
33.5	40,945,486	80.48%	77.48%	79.18%	0.0009	0.0002
34.5	37,801,620	79.96%	76.55%	78.48%	0.0012	0.0002
35.5	33,592,389	77.59%	75.59%	77.78%	0.0004	0.0000
36.5	30,683,639	77.41%	74.62%	77.08%	0.0008	0.0000
37.5	24,617,644	77.19%	73.63%	76.36%	0.0013	0.0001
38.5	22,696,200	76.42%	72.62%	75.65%	0.0014	0.0001
39.5	22,587,341	76.20%	71.58%	74.92%	0.0021	0.0002
40.5	19,874,856	75.75%	70.52%	74.19%	0.0027	0.0002
41.5	14,119,436	74.94%	69.44%	73.45%	0.0030	0.0002
42.5	13,301,059	73.93%	68.34%	72.71%	0.0031	0.0001
43.5	12,597,709	72.41%	67.22%	71.96%	0.0027	0.0000
44.5	11,544,746	71.60%	66.08%	71.20%	0.0030	0.0000
45.5	10,187,308	70.81%	64.91%	70.44%	0.0035	0.0000
46.5	9,734,051	70.42%	63.73%	69.66%	0.0045	0.0001
47.5	9,172,055	69.85%	62.52%	68.89%	0.0054	0.0001
48.5	7,480,455	69.52%	61.30%	68.10%	0.0068	0.0002
49.5	6,639,771	68.85%	60.06%	67.31%	0.0077	0.0002
50.5	6,297,716	68.30%	58.79%	66.51%	0.0090	0.0003
51.5	5,914,974	67.14%	57.51%	65.70%	0.0093	0.0002
52.5	5,612,235	65.74%	56.21%	64.89%	0.0091	0.0001
53.5	5,119,630	65.54%	54.90%	64.07%	0.0113	0.0002
54.5	4,197,335	64.89%	53.57%	63.24%	0.0128	0.0003
55.5	3,810,253	63.45%	52.22%	62.41%	0.0126	0.0001
56.5	3,778,200	63.32%	50.86%	61.57%	0.0155	0.0003
57.5	3,766,320	63.23%	49.49%	60.72%	0.0189	0.0006
58.5	3,528,519	60.18%	48.10%	59.87%	0.0146	0.0000

Account 353 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE R1-55**	**MCC R0.5-68**	**NWE SSD**	**MCC SSD**
59.5	3,490,861	59.96%	46.71%	59.01%	0.0176	0.0001
60.5	3,020,563	59.92%	45.31%	58.14%	0.0213	0.0003
61.5	2,422,368	58.97%	43.90%	57.27%	0.0227	0.0003
62.5	2,173,140	57.35%	42.48%	56.39%	0.0221	0.0001
63.5	1,689,448	57.35%	41.06%	55.50%	0.0265	0.0003
64.5	1,654,350	57.34%	39.64%	54.61%	0.0313	0.0007
65.5	1,622,915	56.47%	38.21%	53.71%	0.0333	0.0008
66.5	1,396,160	56.46%	36.79%	52.81%	0.0387	0.0013
67.5	1,239,423	56.45%	35.37%	51.90%	0.0445	0.0021
68.5	1,150,463	56.45%	33.95%	50.99%	0.0506	0.0030
69.5	994,356	56.45%	32.53%	50.07%	0.0572	0.0041
70.5	994,263	56.45%	31.13%	49.15%	0.0641	0.0053
71.5	980,250	56.37%	29.73%	48.23%	0.0710	0.0066
72.5	929,817	56.37%	28.35%	47.30%	0.0785	0.0082
73.5	733,474	56.30%	26.98%	46.37%	0.0860	0.0099
74.5	695,012	53.43%	25.62%	45.44%	0.0773	0.0064
75.5	516,435	40.86%	24.28%	44.50%	0.0275	0.0013
76.5	516,100	40.86%	22.96%	43.56%	0.0320	0.0007
77.5	429,102	40.86%	21.66%	42.62%	0.0369	0.0003
78.5	423,045	40.86%	20.39%	41.68%	0.0419	0.0001
79.5	414,446	40.86%	19.14%	40.73%	0.0472	0.0000
80.5	391,438	40.86%	17.91%	39.79%	0.0527	0.0001
81.5	339,842	40.86%	16.72%	38.85%	0.0583	0.0004
82.5	337,678	40.86%	15.56%	37.90%	0.0640	0.0009
83.5	337,599	40.86%	14.43%	36.96%	0.0699	0.0015
84.5	222,133	40.86%	13.33%	36.02%	0.0758	0.0023
85.5	215,116	40.86%	12.27%	35.08%	0.0817	0.0033
86.5	194,085	40.86%	11.25%	34.14%	0.0876	0.0045
87.5	60,125	40.86%	10.27%	33.21%	0.0935	0.0059
88.5	59,935	40.86%	9.34%	32.27%	0.0994	0.0074
89.5	34,063	40.86%	8.44%	31.35%	0.1051	0.0091
90.5	33,872	40.86%	7.59%	30.42%	0.1107	0.0109
91.5	33,872	40.86%	6.79%	29.50%	0.1161	0.0129
92.5	31,412	40.86%	6.03%	28.59%	0.1213	0.0151
93.5	31,412	40.86%	5.32%	27.68%	0.1263	0.0174
94.5	17,294	40.86%	4.65%	26.78%	0.1311	0.0198
95.5	0	40.86%	4.04%	25.89%		
Sum of Squared Differences				[8]	2.4985	0.1788
Up to 1% of Beginning Exposures				[9]	0.2155	0.0158

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table based on the Company's property records. These numbers form the original survivor curve.

[4] The Company's selected Iowa curve to be fitted to the OLT.

[5] My selected Iowa curve to be fitted to the OLT.

[6] = ([4] - [3])^2. This is the squared difference between each point on the Company's curve and the observed survivor curve.

[7] = ([5] - [3])^2. This is the squared difference between each point on my curve and the observed survivor curve.

[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

Account 355 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE S4-55**	**MCC R2.5-64**	**NWE SSD**	**MCC SSD**
0.0	238,414,107	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	191,987,417	100.00%	100.00%	99.96%	0.0000	0.0000
1.5	168,910,112	99.98%	100.00%	99.87%	0.0000	0.0000
2.5	140,233,911	99.96%	100.00%	99.77%	0.0000	0.0000
3.5	128,681,641	99.96%	100.00%	99.67%	0.0000	0.0000
4.5	115,454,659	99.92%	100.00%	99.56%	0.0000	0.0000
5.5	115,952,270	99.86%	100.00%	99.44%	0.0000	0.0000
6.5	115,202,564	99.57%	100.00%	99.32%	0.0000	0.0000
7.5	112,203,480	99.54%	100.00%	99.19%	0.0000	0.0000
8.5	111,070,302	99.38%	100.00%	99.05%	0.0000	0.0000
9.5	109,223,247	99.33%	100.00%	98.90%	0.0000	0.0000
10.5	106,314,514	99.14%	100.00%	98.74%	0.0001	0.0000
11.5	103,324,738	98.83%	100.00%	98.57%	0.0001	0.0000
12.5	102,448,495	98.76%	100.00%	98.39%	0.0002	0.0000
13.5	102,791,881	98.48%	100.00%	98.20%	0.0002	0.0000
14.5	100,047,538	98.02%	100.00%	98.00%	0.0004	0.0000
15.5	96,899,419	96.84%	100.00%	97.78%	0.0010	0.0001
16.5	97,155,287	96.39%	100.00%	97.56%	0.0013	0.0001
17.5	94,834,008	95.48%	100.00%	97.31%	0.0020	0.0003
18.5	94,025,972	95.25%	100.00%	97.06%	0.0023	0.0003
19.5	90,612,580	94.82%	100.00%	96.79%	0.0027	0.0004
20.5	85,512,878	94.66%	100.00%	96.50%	0.0028	0.0003
21.5	77,651,518	94.44%	100.00%	96.20%	0.0031	0.0003
22.5	70,967,946	94.32%	99.99%	95.88%	0.0032	0.0002
23.5	68,383,519	94.05%	99.99%	95.54%	0.0035	0.0002
24.5	64,998,584	93.96%	99.98%	95.18%	0.0036	0.0001
25.5	58,122,327	93.72%	99.96%	94.80%	0.0039	0.0001
26.5	55,870,426	93.50%	99.93%	94.40%	0.0041	0.0001
27.5	48,521,151	93.30%	99.89%	93.98%	0.0043	0.0000
28.5	44,353,817	93.15%	99.83%	93.54%	0.0045	0.0000
29.5	41,714,221	93.02%	99.74%	93.07%	0.0045	0.0000
30.5	38,277,581	92.68%	99.62%	92.58%	0.0048	0.0000
31.5	37,478,316	92.47%	99.45%	92.06%	0.0049	0.0000
32.5	36,917,481	92.12%	99.23%	91.52%	0.0051	0.0000
33.5	38,056,248	91.71%	98.94%	90.95%	0.0052	0.0001
34.5	36,551,749	91.38%	98.55%	90.35%	0.0051	0.0001
35.5	30,872,274	90.90%	98.07%	89.72%	0.0051	0.0001
36.5	28,845,486	90.44%	97.46%	89.06%	0.0049	0.0002
37.5	27,694,360	89.82%	96.71%	88.37%	0.0048	0.0002
38.5	26,628,733	89.21%	95.81%	87.65%	0.0044	0.0002
39.5	25,641,925	88.75%	94.72%	86.89%	0.0036	0.0003
40.5	24,969,603	88.38%	93.43%	86.10%	0.0025	0.0005
41.5	19,445,305	87.52%	91.92%	85.27%	0.0019	0.0005
42.5	18,761,151	86.71%	90.20%	84.40%	0.0012	0.0005
43.5	15,439,284	85.63%	88.23%	83.49%	0.0007	0.0005
44.5	14,725,416	84.48%	86.01%	82.54%	0.0002	0.0004
45.5	14,043,430	83.17%	83.54%	81.55%	0.0000	0.0003
46.5	12,744,997	82.42%	80.82%	80.52%	0.0003	0.0004

Account 355 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE S4-55**	**MCC R2.5-64**	**NWE SSD**	**MCC SSD**
47.5	12,430,615	81.85%	77.86%	79.44%	0.0016	0.0006
48.5	7,782,703	81.12%	74.67%	78.32%	0.0042	0.0008
49.5	6,624,998	80.55%	71.28%	77.14%	0.0086	0.0012
50.5	6,433,855	79.02%	67.68%	75.92%	0.0129	0.0010
51.5	5,781,871	76.66%	63.93%	74.65%	0.0162	0.0004
52.5	4,162,867	75.78%	60.04%	73.33%	0.0248	0.0006
53.5	3,986,782	74.02%	56.07%	71.96%	0.0322	0.0004
54.5	3,534,135	71.53%	52.03%	70.53%	0.0380	0.0001
55.5	3,130,492	70.54%	47.97%	69.05%	0.0509	0.0002
56.5	2,030,582	68.74%	43.93%	67.52%	0.0615	0.0001
57.5	1,972,474	66.77%	39.96%	65.93%	0.0719	0.0001
58.5	1,954,566	66.17%	36.07%	64.29%	0.0906	0.0004
59.5	1,911,827	64.72%	32.32%	62.60%	0.1050	0.0004
60.5	1,783,363	60.36%	28.72%	60.85%	0.1001	0.0000
61.5	1,667,336	56.44%	25.33%	59.06%	0.0968	0.0007
62.5	1,602,177	54.23%	22.14%	57.22%	0.1030	0.0009
63.5	209	48.44%	19.18%	55.34%		
Sum of Squared Differences				[8]	0.9210	0.0152
Up to 1% of Beginning Exposures				[9]	0.2922	0.0125

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table based on the Company's property records. These numbers form the original survivor curve.

[4] The Company's selected Iowa curve to be fitted to the OLT.

[5] My selected Iowa curve to be fitted to the OLT.

[6] = ([4] - [3])^2. This is the squared difference between each point on the Company's curve and the observed survivor curve.

[7] = ([5] - [3])^2. This is the squared difference between each point on my curve and the observed survivor curve.

[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

Account 362 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE L1.5-55**	**MCC L1.5-61**	**NWE SSD**	**MCC SSD**
0.0	174,661,202	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	138,741,954	100.00%	99.97%	99.98%	0.0000	0.0000
1.5	132,793,120	99.81%	99.91%	99.92%	0.0000	0.0000
2.5	119,969,434	99.63%	99.83%	99.85%	0.0000	0.0000
3.5	117,992,148	99.45%	99.74%	99.77%	0.0000	0.0000
4.5	112,779,720	99.21%	99.62%	99.67%	0.0000	0.0000
5.5	105,287,056	99.05%	99.47%	99.55%	0.0000	0.0000
6.5	98,705,680	98.86%	99.30%	99.41%	0.0000	0.0000
7.5	97,273,651	98.47%	99.09%	99.25%	0.0000	0.0001
8.5	97,607,117	98.35%	98.85%	99.06%	0.0000	0.0001
9.5	93,482,320	97.67%	98.58%	98.84%	0.0001	0.0001
10.5	89,608,451	97.30%	98.27%	98.59%	0.0001	0.0002
11.5	87,209,129	97.00%	97.92%	98.31%	0.0001	0.0002
12.5	86,417,793	96.26%	97.52%	98.00%	0.0002	0.0003
13.5	83,654,975	95.71%	97.09%	97.66%	0.0002	0.0004
14.5	82,796,640	95.25%	96.61%	97.28%	0.0002	0.0004
15.5	79,786,223	95.06%	96.09%	96.87%	0.0001	0.0003
16.5	78,651,911	94.37%	95.52%	96.42%	0.0001	0.0004
17.5	73,571,887	93.70%	94.91%	95.93%	0.0001	0.0005
18.5	71,058,922	93.29%	94.25%	95.41%	0.0001	0.0005
19.5	66,058,652	92.62%	93.54%	94.86%	0.0001	0.0005
20.5	61,881,002	92.16%	92.79%	94.26%	0.0000	0.0004
21.5	56,720,664	91.91%	91.98%	93.63%	0.0000	0.0003
22.5	54,861,640	91.16%	91.11%	92.95%	0.0000	0.0003
23.5	52,764,709	90.67%	90.19%	92.24%	0.0000	0.0002
24.5	47,224,488	89.99%	89.20%	91.47%	0.0001	0.0002
25.5	44,576,944	88.92%	88.16%	90.67%	0.0001	0.0003
26.5	40,834,412	87.50%	87.06%	89.81%	0.0000	0.0005
27.5	37,652,558	86.77%	85.90%	88.90%	0.0001	0.0005
28.5	35,102,648	85.34%	84.68%	87.95%	0.0000	0.0007
29.5	33,754,822	84.60%	83.41%	86.95%	0.0001	0.0006
30.5	33,223,098	84.08%	82.08%	85.90%	0.0004	0.0003
31.5	32,427,604	83.48%	80.72%	84.80%	0.0008	0.0002
32.5	31,812,630	82.72%	79.31%	83.66%	0.0012	0.0001
33.5	28,909,445	81.24%	77.86%	82.48%	0.0011	0.0002
34.5	27,447,580	79.94%	76.39%	81.26%	0.0013	0.0002
35.5	25,081,384	79.01%	74.89%	80.01%	0.0017	0.0001
36.5	23,854,012	78.38%	73.36%	78.72%	0.0025	0.0000
37.5	20,345,477	77.44%	71.81%	77.41%	0.0032	0.0000
38.5	17,341,734	76.44%	70.25%	76.07%	0.0038	0.0000
39.5	15,977,244	74.70%	68.67%	74.71%	0.0036	0.0000
40.5	15,036,668	72.82%	67.09%	73.33%	0.0033	0.0000
41.5	13,258,239	71.74%	65.50%	71.94%	0.0039	0.0000
42.5	11,078,594	70.95%	63.91%	70.53%	0.0050	0.0000
43.5	9,509,416	70.43%	62.32%	69.11%	0.0066	0.0002
44.5	8,407,591	69.96%	60.73%	67.69%	0.0085	0.0005
45.5	7,241,606	68.14%	59.16%	66.26%	0.0081	0.0004
46.5	6,463,525	66.62%	57.59%	64.82%	0.0082	0.0003
47.5	5,836,960	65.28%	56.03%	63.39%	0.0085	0.0004
48.5	5,097,127	64.39%	54.49%	61.95%	0.0098	0.0006
49.5	4,688,545	63.77%	52.97%	60.53%	0.0117	0.0011
50.5	4,129,319	61.86%	51.47%	59.10%	0.0108	0.0008
51.5	3,387,923	59.51%	49.98%	57.69%	0.0091	0.0003

Account 362 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE L1.5-55**	**MCC L1.5-61**	**NWE SSD**	**MCC SSD**
52.5	3,182,063	58.44%	48.52%	56.29%	0.0098	0.0005
53.5	2,863,883	56.71%	47.08%	54.90%	0.0093	0.0003
54.5	2,217,539	56.19%	45.66%	53.52%	0.0111	0.0007
55.5	1,931,283	53.79%	44.27%	52.15%	0.0091	0.0003
56.5	1,722,423	52.45%	42.90%	50.81%	0.0091	0.0003
57.5	1,644,964	52.00%	41.56%	49.48%	0.0109	0.0006
58.5	1,487,012	49.86%	40.24%	48.16%	0.0093	0.0003
59.5	1,335,932	46.09%	38.95%	46.87%	0.0051	0.0001
60.5	1,062,376	45.72%	37.68%	45.59%	0.0065	0.0000
61.5	792,064	42.94%	36.44%	44.34%	0.0042	0.0002
62.5	672,996	41.29%	35.23%	43.10%	0.0037	0.0003
63.5	450,988	39.21%	34.04%	41.88%	0.0027	0.0007
64.5	359,942	38.32%	32.87%	40.69%	0.0030	0.0006
65.5	243,572	38.10%	31.73%	39.52%	0.0041	0.0002
66.5	148,461	37.47%	30.62%	38.36%	0.0047	0.0001
67.5	144,480	37.38%	29.53%	37.23%	0.0062	0.0000
68.5	129,822	37.38%	28.47%	36.12%	0.0079	0.0002
69.5	121,843	37.23%	27.43%	35.03%	0.0096	0.0005
70.5	117,910	37.23%	26.41%	33.96%	0.0117	0.0011
71.5	117,716	37.23%	25.42%	32.91%	0.0139	0.0019
72.5	111,447	37.23%	24.45%	31.88%	0.0163	0.0029
73.5	97,535	33.48%	23.51%	30.88%	0.0099	0.0007
74.5	97,224	33.45%	22.59%	29.89%	0.0118	0.0013
75.5	96,890	33.44%	21.68%	28.92%	0.0138	0.0020
76.5	93,255	33.44%	20.81%	27.97%	0.0160	0.0030
77.5	88,466	33.37%	19.95%	27.04%	0.0180	0.0040
78.5	75,234	32.91%	19.12%	26.14%	0.0190	0.0046
79.5	73,998	32.91%	18.31%	25.25%	0.0213	0.0059
80.5	68,304	32.91%	17.52%	24.37%		
Sum of Squared Differences				[8]	0.3928	0.0466
Up to 1% of Beginning Exposures				[9]	0.1541	0.0153

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table based on the Company's property records. These numbers form the original survivor curve.

[4] The Company's selected Iowa curve to be fitted to the OLT.

[5] My selected Iowa curve to be fitted to the OLT.

[6] = ([4] - [3])^2. This is the squared difference between each point on the Company's curve and the observed survivor curve.

[7] = ([5] - [3])^2. This is the squared difference between each point on my curve and the observed survivor curve.

[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

Account 364 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE R3-45**	**MCC L3-49**	**NWE SSD**	**MCC SSD**
0.0	252,529,207	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	236,889,335	100.00%	99.98%	100.00%	0.0000	0.0000
1.5	220,558,248	99.98%	99.94%	100.00%	0.0000	0.0000
2.5	198,454,815	99.95%	99.90%	100.00%	0.0000	0.0000
3.5	174,195,610	99.92%	99.84%	100.00%	0.0000	0.0000
4.5	158,610,663	99.87%	99.77%	100.00%	0.0000	0.0000
5.5	149,565,309	99.81%	99.69%	100.00%	0.0000	0.0000
6.5	142,919,769	99.75%	99.60%	99.99%	0.0000	0.0000
7.5	138,671,373	99.68%	99.49%	99.98%	0.0000	0.0000
8.5	132,642,564	99.61%	99.37%	99.96%	0.0000	0.0000
9.5	127,370,317	99.54%	99.22%	99.93%	0.0000	0.0000
10.5	123,749,877	99.48%	99.06%	99.89%	0.0000	0.0000
11.5	117,308,417	98.13%	98.87%	99.82%	0.0001	0.0003
12.5	115,032,648	98.00%	98.66%	99.73%	0.0000	0.0003
13.5	111,563,797	97.93%	98.41%	99.62%	0.0000	0.0003
14.5	109,282,288	97.84%	98.14%	99.48%	0.0000	0.0003
15.5	106,042,298	97.74%	97.83%	99.31%	0.0000	0.0002
16.5	106,852,730	97.63%	97.49%	99.10%	0.0000	0.0002
17.5	97,787,166	97.51%	97.10%	98.86%	0.0000	0.0002
18.5	93,455,113	97.35%	96.68%	98.59%	0.0000	0.0002
19.5	89,201,521	97.19%	96.20%	98.27%	0.0001	0.0001
20.5	84,533,525	97.02%	95.68%	97.90%	0.0002	0.0001
21.5	78,673,315	96.80%	95.10%	97.48%	0.0003	0.0000
22.5	72,397,992	96.55%	94.47%	97.00%	0.0004	0.0000
23.5	66,935,953	96.29%	93.77%	96.45%	0.0006	0.0000
24.5	60,549,841	95.95%	93.01%	95.83%	0.0009	0.0000
25.5	55,997,248	95.56%	92.18%	95.12%	0.0011	0.0000
26.5	50,879,301	95.12%	91.28%	94.30%	0.0015	0.0001
27.5	45,681,318	94.55%	90.30%	93.36%	0.0018	0.0001
28.5	40,223,261	93.95%	89.23%	92.29%	0.0022	0.0003
29.5	36,886,164	93.32%	88.08%	91.08%	0.0027	0.0005
30.5	34,432,439	92.51%	86.84%	89.71%	0.0032	0.0008
31.5	32,112,292	91.24%	85.49%	88.17%	0.0033	0.0009
32.5	29,905,557	89.81%	84.04%	86.47%	0.0033	0.0011
33.5	28,895,033	88.19%	82.47%	84.59%	0.0033	0.0013
34.5	25,819,519	86.50%	80.79%	82.54%	0.0033	0.0016
35.5	22,663,483	84.22%	78.98%	80.32%	0.0027	0.0015
36.5	19,575,657	82.03%	77.04%	77.95%	0.0025	0.0017
37.5	16,583,726	79.42%	74.95%	75.45%	0.0020	0.0016
38.5	13,942,706	76.73%	72.73%	72.82%	0.0016	0.0015
39.5	11,741,880	73.91%	70.36%	70.10%	0.0013	0.0015
40.5	9,965,920	70.53%	67.84%	67.31%	0.0007	0.0010
41.5	8,551,923	66.83%	65.17%	64.46%	0.0003	0.0006
42.5	7,058,287	63.27%	62.36%	61.59%	0.0001	0.0003
43.5	5,653,577	59.44%	59.40%	58.72%	0.0000	0.0001
44.5	4,479,021	56.03%	56.32%	55.87%	0.0000	0.0000
45.5	3,631,423	53.00%	53.13%	53.06%	0.0000	0.0000
46.5	2,943,074	49.92%	49.83%	50.32%	0.0000	0.0000

Account 364 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE R3-45**	**MCC L3-49**	**NWE SSD**	**MCC SSD**
47.5	2,386,194	46.94%	46.47%	47.65%	0.0000	0.0000
48.5	1,951,062	44.05%	43.05%	45.07%	0.0001	0.0001
49.5	1,538,871	41.15%	39.62%	42.59%	0.0002	0.0002
50.5	1,248,168	38.72%	36.20%	40.21%	0.0006	0.0002
51.5	973,532	36.28%	32.82%	37.95%	0.0012	0.0003
52.5	765,722	33.98%	29.52%	35.79%	0.0020	0.0003
53.5	602,980	31.81%	26.33%	33.75%	0.0030	0.0004
54.5	485,939	29.67%	23.28%	31.82%	0.0041	0.0005
55.5	419,031	27.73%	20.40%	29.98%	0.0054	0.0005
56.5	218,625	25.60%	17.70%	28.25%	0.0062	0.0007
57.5	212,113	24.84%	15.21%	26.61%	0.0093	0.0003
58.5	193,701	22.68%	12.93%	25.06%	0.0095	0.0006
59.5	181,780	21.29%	10.87%	23.59%	0.0109	0.0005
60.5	153,516	17.98%	9.03%	22.20%	0.0080	0.0018
61.5	138,493	16.22%	7.40%	20.87%	0.0078	0.0022
62.5	104,246	14.42%	5.98%	19.61%	0.0071	0.0027
63.5	63	12.08%	4.74%	18.42%	0.0054	0.0040
64.5	63	12.08%	3.69%	17.27%	0.0070	0.0027
65.5	63	12.08%	2.81%	16.18%	0.0086	0.0017
66.5	63	12.08%	2.07%	15.14%		
Sum of Squared Differences				[8]	0.1362	0.0384
Up to 1% of Beginning Exposures				[9]	0.0397	0.0187

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table based on the Company's property records. These numbers form the original survivor curve.

[4] The Company's selected Iowa curve to be fitted to the OLT.

[5] My selected Iowa curve to be fitted to the OLT.

[6] = ([4] - [3])^2. This is the squared difference between each point on the Company's curve and the observed survivor curve.

[7] = ([5] - [3])^2. This is the squared difference between each point on my curve and the observed survivor curve.

[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

Account 368 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE R4-45**	**MCC R4-51**	**NWE SSD**	**MCC SSD**
0.0	159,551,705	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	151,922,759	100.00%	100.00%	100.00%	0.0000	0.0000
1.5	144,823,930	99.97%	100.00%	100.00%	0.0000	0.0000
2.5	135,953,324	99.95%	99.99%	99.99%	0.0000	0.0000
3.5	128,149,134	99.90%	99.99%	99.99%	0.0000	0.0000
4.5	121,780,015	99.85%	99.98%	99.99%	0.0000	0.0000
5.5	116,202,658	99.79%	99.97%	99.98%	0.0000	0.0000
6.5	111,226,577	99.68%	99.96%	99.97%	0.0000	0.0000
7.5	109,797,271	99.59%	99.95%	99.96%	0.0000	0.0000
8.5	99,959,431	99.48%	99.93%	99.95%	0.0000	0.0000
9.5	92,602,466	99.37%	99.91%	99.93%	0.0000	0.0000
10.5	84,393,167	98.96%	99.88%	99.91%	0.0001	0.0001
11.5	75,638,827	98.81%	99.84%	99.89%	0.0001	0.0001
12.5	69,968,427	98.10%	99.79%	99.86%	0.0003	0.0003
13.5	64,216,711	97.67%	99.73%	99.82%	0.0004	0.0005
14.5	59,315,535	97.40%	99.65%	99.77%	0.0005	0.0006
15.5	50,869,861	97.19%	99.56%	99.72%	0.0006	0.0006
16.5	50,802,001	96.91%	99.44%	99.65%	0.0006	0.0007
17.5	114,317,273	96.62%	99.30%	99.57%	0.0007	0.0009
18.5	109,825,908	96.51%	99.13%	99.47%	0.0007	0.0009
19.5	104,541,366	96.39%	98.93%	99.35%	0.0006	0.0009
20.5	99,391,312	96.24%	98.68%	99.21%	0.0006	0.0009
21.5	93,785,059	96.09%	98.39%	99.04%	0.0005	0.0009
22.5	87,402,487	95.96%	98.04%	98.84%	0.0004	0.0008
23.5	80,191,578	95.82%	97.63%	98.62%	0.0003	0.0008
24.5	74,716,785	95.70%	97.15%	98.35%	0.0002	0.0007
25.5	70,281,286	95.60%	96.59%	98.04%	0.0001	0.0006
26.5	71,238,562	95.49%	95.95%	97.68%	0.0000	0.0005
27.5	71,091,007	95.29%	95.21%	97.27%	0.0000	0.0004
28.5	70,960,954	95.11%	94.36%	96.80%	0.0001	0.0003
29.5	70,812,334	94.91%	93.39%	96.27%	0.0002	0.0002
30.5	70,562,956	94.59%	92.30%	95.66%	0.0005	0.0001
31.5	70,142,928	94.02%	91.07%	94.97%	0.0009	0.0001
32.5	69,730,948	93.46%	89.69%	94.20%	0.0014	0.0001
33.5	71,855,754	93.22%	88.16%	93.33%	0.0026	0.0000
34.5	71,033,607	92.16%	86.46%	92.37%	0.0032	0.0000
35.5	70,745,949	91.78%	84.60%	91.30%	0.0052	0.0000
36.5	70,322,825	91.24%	82.56%	90.11%	0.0075	0.0001
37.5	69,090,594	89.63%	80.34%	88.81%	0.0086	0.0001
38.5	68,216,395	88.50%	77.93%	87.38%	0.0112	0.0001
39.5	67,294,513	87.30%	75.30%	85.83%	0.0144	0.0002
40.5	65,988,855	85.61%	72.42%	84.13%	0.0174	0.0002
41.5	64,430,667	83.59%	69.22%	82.30%	0.0207	0.0002
42.5	64,276,092	83.38%	65.68%	80.34%	0.0313	0.0009
43.5	61,220,962	79.42%	61.80%	78.22%	0.0311	0.0001
44.5	58,616,770	76.04%	57.59%	75.94%	0.0340	0.0000
45.5	53,819,261	69.82%	53.10%	73.46%	0.0280	0.0013
46.5	52,929,163	68.66%	48.40%	70.76%		

Account 368 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE R4-45**	**MCC R4-51**	**NWE SSD**	**MCC SSD**
Sum of Squared Differences				[8]	0.2252	0.0152
Up to 1% of Beginning Exposures				[9]	0.2252	0.0152

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table based on the Company's property records. These numbers form the original survivor curve.

[4] The Company's selected Iowa curve to be fitted to the OLT.

[5] My selected Iowa curve to be fitted to the OLT.

[6] = ([4] - [3])^2. This is the squared difference between each point on the Company's curve and the observed survivor curve.

[7] = ([5] - [3])^2. This is the squared difference between each point on my curve and the observed survivor curve.

[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

Account 369.2 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE S4-40**	**MCC R4-51**	**NWE SSD**	**MCC SSD**
0.0	81,932,299	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	75,613,133	100.00%	100.00%	100.00%	0.0000	0.0000
1.5	70,417,531	99.99%	100.00%	100.00%	0.0000	0.0000
2.5	66,003,759	99.99%	100.00%	99.99%	0.0000	0.0000
3.5	62,643,300	99.98%	100.00%	99.99%	0.0000	0.0000
4.5	60,410,369	99.97%	100.00%	99.99%	0.0000	0.0000
5.5	59,118,017	99.97%	100.00%	99.98%	0.0000	0.0000
6.5	58,494,815	99.96%	100.00%	99.97%	0.0000	0.0000
7.5	56,841,653	99.95%	100.00%	99.96%	0.0000	0.0000
8.5	55,445,291	99.94%	100.00%	99.95%	0.0000	0.0000
9.5	53,478,369	99.93%	100.00%	99.93%	0.0000	0.0000
10.5	51,574,841	99.92%	100.00%	99.91%	0.0000	0.0000
11.5	48,740,714	99.18%	100.00%	99.89%	0.0001	0.0001
12.5	46,868,020	99.18%	100.00%	99.86%	0.0001	0.0000
13.5	44,691,509	99.17%	100.00%	99.82%	0.0001	0.0000
14.5	42,916,802	99.16%	100.00%	99.77%	0.0001	0.0000
15.5	41,624,782	99.15%	100.00%	99.72%	0.0001	0.0000
16.5	41,660,342	99.15%	99.99%	99.65%	0.0001	0.0000
17.5	38,187,010	99.14%	99.98%	99.57%	0.0001	0.0000
18.5	35,802,239	99.14%	99.96%	99.47%	0.0001	0.0000
19.5	32,578,990	99.13%	99.92%	99.35%	0.0001	0.0000
20.5	28,884,640	99.12%	99.85%	99.21%	0.0001	0.0000
21.5	25,345,449	99.11%	99.74%	99.04%	0.0000	0.0000
22.5	21,485,312	99.11%	99.55%	98.84%	0.0000	0.0000
23.5	17,867,791	99.09%	99.28%	98.62%	0.0000	0.0000
24.5	15,700,404	99.08%	98.87%	98.35%	0.0000	0.0001
25.5	14,271,958	99.05%	98.30%	98.04%	0.0001	0.0001
26.5	12,883,492	99.00%	97.50%	97.68%	0.0002	0.0002
27.5	11,796,181	98.93%	96.45%	97.27%	0.0006	0.0003
28.5	10,362,774	98.86%	95.08%	96.80%	0.0014	0.0004
29.5	9,557,552	98.31%	93.34%	96.27%	0.0025	0.0004
30.5	8,700,239	97.16%	91.20%	95.66%	0.0036	0.0002
31.5	7,906,256	95.79%	88.61%	94.97%	0.0052	0.0001
32.5	6,975,964	94.62%	85.56%	94.20%	0.0082	0.0000
33.5	5,928,558	93.85%	82.04%	93.33%	0.0139	0.0000
34.5	4,879,356	92.96%	78.05%	92.37%	0.0222	0.0000
35.5	4,170,856	91.88%	73.63%	91.30%	0.0333	0.0000
36.5	3,439,839	90.13%	68.82%	90.11%	0.0454	0.0000
37.5	2,772,323	87.96%	63.69%	88.81%	0.0589	0.0001
38.5	2,012,227	86.04%	58.31%	87.38%	0.0769	0.0002
39.5	1,365,388	85.11%	52.79%	85.83%	0.1045	0.0001
40.5	861,773	84.10%	47.21%	84.13%	0.1361	0.0000
41.5	495,537	82.64%	41.69%	82.30%	0.1677	0.0000
42.5	255,866	81.02%	36.31%	80.34%	0.1999	0.0000
43.5	144,252	79.01%	31.18%	78.22%	0.2288	0.0001
44.5	21,028	76.95%	26.37%	75.94%		

Account 369.2 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**NWE S4-40**	**MCC R4-51**	**NWE SSD**	**MCC SSD**
Sum of Squared Differences				[8]	1.1101	0.0026
Up to 1% of Beginning Exposures				[9]	0.5137	0.0025

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table based on the Company's property records. These numbers form the original survivor curve.

[4] The Company's selected Iowa curve to be fitted to the OLT.

[5] My selected Iowa curve to be fitted to the OLT.

[6] = ([4] - [3])^2. This is the squared difference between each point on the Company's curve and the observed survivor curve.

[7] = ([5] - [3])^2. This is the squared difference between each point on my curve and the observed survivor curve.

[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

NWE
Electric Division
353.00 Station Equipment
Observed Life Table
Retirement Expr. 1967 TO 2017
Placement Years 1905 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
0.0 - 0.5	$268,241,304.02	$11,152.80	0.00004	100.00
0.5 - 1.5	$253,436,360.64	$117,074.77	0.00046	100.00
1.5 - 2.5	$243,951,559.72	$546,186.37	0.00224	99.95
2.5 - 3.5	$219,161,026.95	$597,289.15	0.00273	99.73
3.5 - 4.5	$216,406,807.75	$2,045,062.26	0.00945	99.45
4.5 - 5.5	$212,707,716.76	$373,394.19	0.00176	98.51
5.5 - 6.5	$198,076,844.87	$494,056.24	0.00249	98.34
6.5 - 7.5	$184,724,956.62	$884,235.19	0.00479	98.10
7.5 - 8.5	$167,601,674.96	$2,059,733.60	0.01229	97.63
8.5 - 9.5	$160,717,995.08	$767,545.44	0.00478	96.43
9.5 - 10.5	$156,471,638.22	$894,123.28	0.00571	95.97
10.5 - 11.5	$154,227,753.79	$895,194.45	0.00580	95.42
11.5 - 12.5	$170,699,149.33	$510,241.24	0.00299	94.86
12.5 - 13.5	$168,484,469.32	$1,013,755.81	0.00602	94.58
13.5 - 14.5	$165,927,201.67	$882,807.67	0.00532	94.01
14.5 - 15.5	$163,981,201.59	$1,012,654.25	0.00618	93.51
15.5 - 16.5	$161,265,837.01	$376,507.48	0.00233	92.93
16.5 - 17.5	$155,971,662.00	$646,832.31	0.00415	92.72
17.5 - 18.5	$143,833,548.70	$1,966,585.56	0.01367	92.33
18.5 - 19.5	$131,010,166.33	$1,208,609.12	0.00923	91.07
19.5 - 20.5	$120,690,074.35	$362,110.18	0.00300	90.23
20.5 - 21.5	$117,873,604.27	$1,050,706.01	0.00891	89.96
21.5 - 22.5	$113,243,356.59	$761,004.91	0.00672	89.16
22.5 - 23.5	$102,519,453.06	$1,498,102.63	0.01461	88.56
23.5 - 24.5	$94,387,218.67	$933,839.91	0.00989	87.26
24.5 - 25.5	$91,552,463.45	$349,985.39	0.00382	86.40
25.5 - 26.5	$86,308,078.95	$487,816.35	0.00565	86.07
26.5 - 27.5	$60,790,345.78	$364,873.56	0.00600	85.58
27.5 - 28.5	$57,839,417.31	$203,590.97	0.00352	85.07
28.5 - 29.5	$52,528,802.52	$190,980.76	0.00364	84.77
29.5 - 30.5	$52,243,073.24	$289,065.74	0.00553	84.46
30.5 - 31.5	$48,552,745.59	$414,274.67	0.00853	83.99
31.5 - 32.5	$47,740,913.93	$720,217.20	0.01509	83.28
32.5 - 33.5	$44,613,799.19	$836,650.14	0.01875	82.02
33.5 - 34.5	$40,945,485.94	$266,103.64	0.00650	80.48
34.5 - 35.5	$37,801,620.19	$1,120,696.33	0.02965	79.96
35.5 - 36.5	$33,592,388.57	$77,835.02	0.00232	77.59

NWE
Electric Division
353.00 Station Equipment
Observed Life Table
Retirement Expr. 1967 TO 2017
Placement Years 1905 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$30,683,639.08	$87,315.22	0.00285	77.41
37.5 - 38.5	$24,617,644.38	$246,672.68	0.01002	77.19
38.5 - 39.5	$22,696,199.88	$64,832.74	0.00286	76.42
39.5 - 40.5	$22,587,341.03	$133,286.16	0.00590	76.20
40.5 - 41.5	$19,874,856.31	$211,385.91	0.01064	75.75
41.5 - 42.5	$14,119,435.81	$191,438.32	0.01356	74.94
42.5 - 43.5	$13,301,058.78	$272,325.87	0.02047	73.93
43.5 - 44.5	$12,597,709.15	$140,752.48	0.01117	72.41
44.5 - 45.5	$11,544,746.31	$127,615.14	0.01105	71.60
45.5 - 46.5	$10,187,308.25	$56,782.63	0.00557	70.81
46.5 - 47.5	$9,734,050.60	$79,036.16	0.00812	70.42
47.5 - 48.5	$9,172,055.03	$42,917.71	0.00468	69.85
48.5 - 49.5	$7,480,455.13	$71,596.29	0.00957	69.52
49.5 - 50.5	$6,639,771.40	$53,705.26	0.00809	68.85
50.5 - 51.5	$6,297,715.85	$107,063.97	0.01700	68.30
51.5 - 52.5	$5,914,973.55	$123,103.13	0.02081	67.14
52.5 - 53.5	$5,612,234.67	$16,907.10	0.00301	65.74
53.5 - 54.5	$5,119,629.63	$51,077.61	0.00998	65.54
54.5 - 55.5	$4,197,335.48	$92,807.61	0.02211	64.89
55.5 - 56.5	$3,810,252.87	$8,070.09	0.00212	63.45
56.5 - 57.5	$3,778,200.43	$5,116.29	0.00135	63.32
57.5 - 58.5	$3,766,320.14	$181,611.85	0.04822	63.23
58.5 - 59.5	$3,528,518.51	$13,201.74	0.00374	60.18
59.5 - 60.5	$3,490,860.91	$2,122.70	0.00061	59.96
60.5 - 61.5	$3,020,562.77	$47,914.39	0.01586	59.92
61.5 - 62.5	$2,422,368.10	$66,786.75	0.02757	58.97
62.5 - 63.5	$2,173,139.74	$0.00	0.00000	57.35
63.5 - 64.5	$1,689,447.76	$91.52	0.00005	57.35
64.5 - 65.5	$1,654,350.24	$25,259.00	0.01527	57.34
65.5 - 66.5	$1,622,915.24	$301.89	0.00019	56.47
66.5 - 67.5	$1,396,160.41	$239.72	0.00017	56.46
67.5 - 68.5	$1,239,422.69	$0.00	0.00000	56.45
68.5 - 69.5	$1,150,462.69	$0.00	0.00000	56.45
69.5 - 70.5	$994,355.69	$0.00	0.00000	56.45
70.5 - 71.5	$994,262.69	$1,310.69	0.00132	56.45
71.5 - 72.5	$980,250.00	$0.00	0.00000	56.37
72.5 - 73.5	$929,817.00	$1,242.00	0.00134	56.37

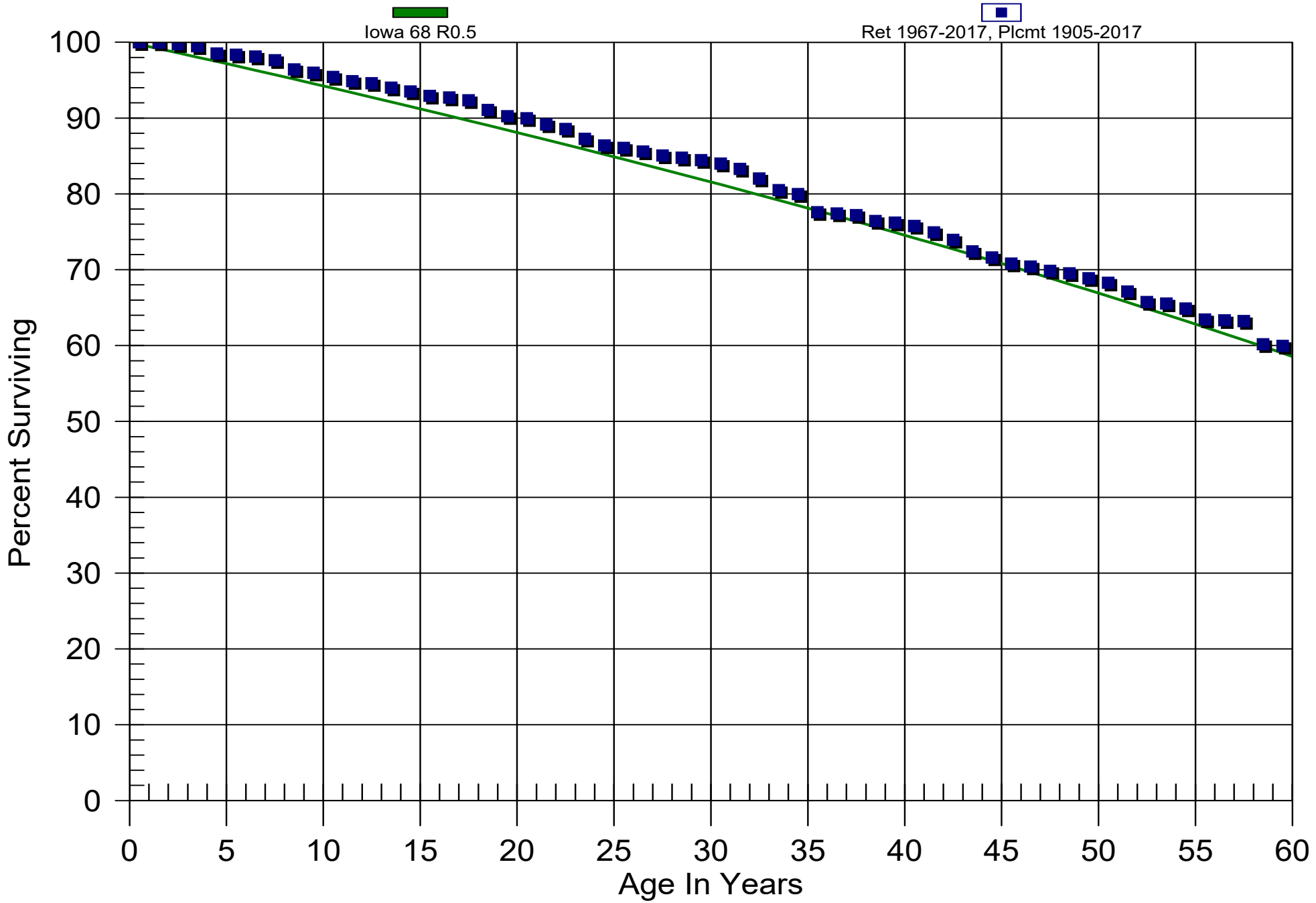
NWE
Electric Division
353.00 Station Equipment
Observed Life Table
Retirement Expr. 1967 TO 2017
Placement Years 1905 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
73.5 - 74.5	$733,474.00	$37,305.00	0.05086	56.30
74.5 - 75.5	$695,012.00	$163,514.00	0.23527	53.43
75.5 - 76.5	$516,435.00	$0.00	0.00000	40.86
76.5 - 77.5	$516,100.00	$0.00	0.00000	40.86
77.5 - 78.5	$429,102.00	$0.00	0.00000	40.86
78.5 - 79.5	$423,045.00	$0.00	0.00000	40.86
79.5 - 80.5	$414,446.00	$0.00	0.00000	40.86
80.5 - 81.5	$391,438.00	$0.00	0.00000	40.86
81.5 - 82.5	$339,842.00	$0.00	0.00000	40.86
82.5 - 83.5	$337,678.00	$0.00	0.00000	40.86
83.5 - 84.5	$337,599.00	$0.00	0.00000	40.86
84.5 - 85.5	$222,133.00	$0.00	0.00000	40.86
85.5 - 86.5	$215,116.00	$0.00	0.00000	40.86
86.5 - 87.5	$194,085.00	$0.00	0.00000	40.86
87.5 - 88.5	$60,125.00	$0.00	0.00000	40.86
88.5 - 89.5	$59,935.00	$0.00	0.00000	40.86
89.5 - 90.5	$34,063.00	$0.00	0.00000	40.86
90.5 - 91.5	$33,872.00	$0.00	0.00000	40.86
91.5 - 92.5	$33,872.00	$0.00	0.00000	40.86
92.5 - 93.5	$31,412.00	$0.00	0.00000	40.86
93.5 - 94.5	$31,412.00	$0.00	0.00000	40.86
94.5 - 95.5	$17,294.00	$0.00	0.00000	40.86
95.5 - 96.5	$0.00	$0.00	0.00000	40.86
96.5 - 97.5	$0.00	$0.00	0.00000	40.86
97.5 - 98.5	$0.00	$0.00	0.00000	40.86
98.5 - 99.5	$0.00	$0.00	0.00000	40.86
99.5 - 100.5	$0.00	$0.00	0.00000	40.86
100.5 - 101.5	$0.00	$0.00	0.00000	40.86
101.5 - 102.5	$0.00	$0.00	0.00000	40.86
102.5 - 103.5	$0.00	$0.00	0.00000	40.86
103.5 - 104.5	$0.00	$0.00	0.00000	40.86
104.5 - 105.5	$0.00	$0.00	0.00000	40.86
105.5 - 106.5	$0.00	$0.00	0.00000	40.86
106.5 - 107.5	$0.00	$0.00	0.00000	40.86
107.5 - 108.5	$0.00	$0.00	0.00000	40.86
108.5 - 109.5	$0.00	$0.00	0.00000	40.86
109.5 - 110.5	$0.00	$0.00	0.00000	40.86

NWE
Electric Division
353.00 Station Equipment
Observed Life Table
Retirement Expr. 1967 TO 2017
Placement Years 1905 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
110.5 - 111.5	$0.00	$0.00	0.00000	40.86
111.5 - 112.5	$0.00	$0.00	0.00000	40.86

NWE
Electric Division
353.00 Station Equipment
Original And Smooth Survivor Curves



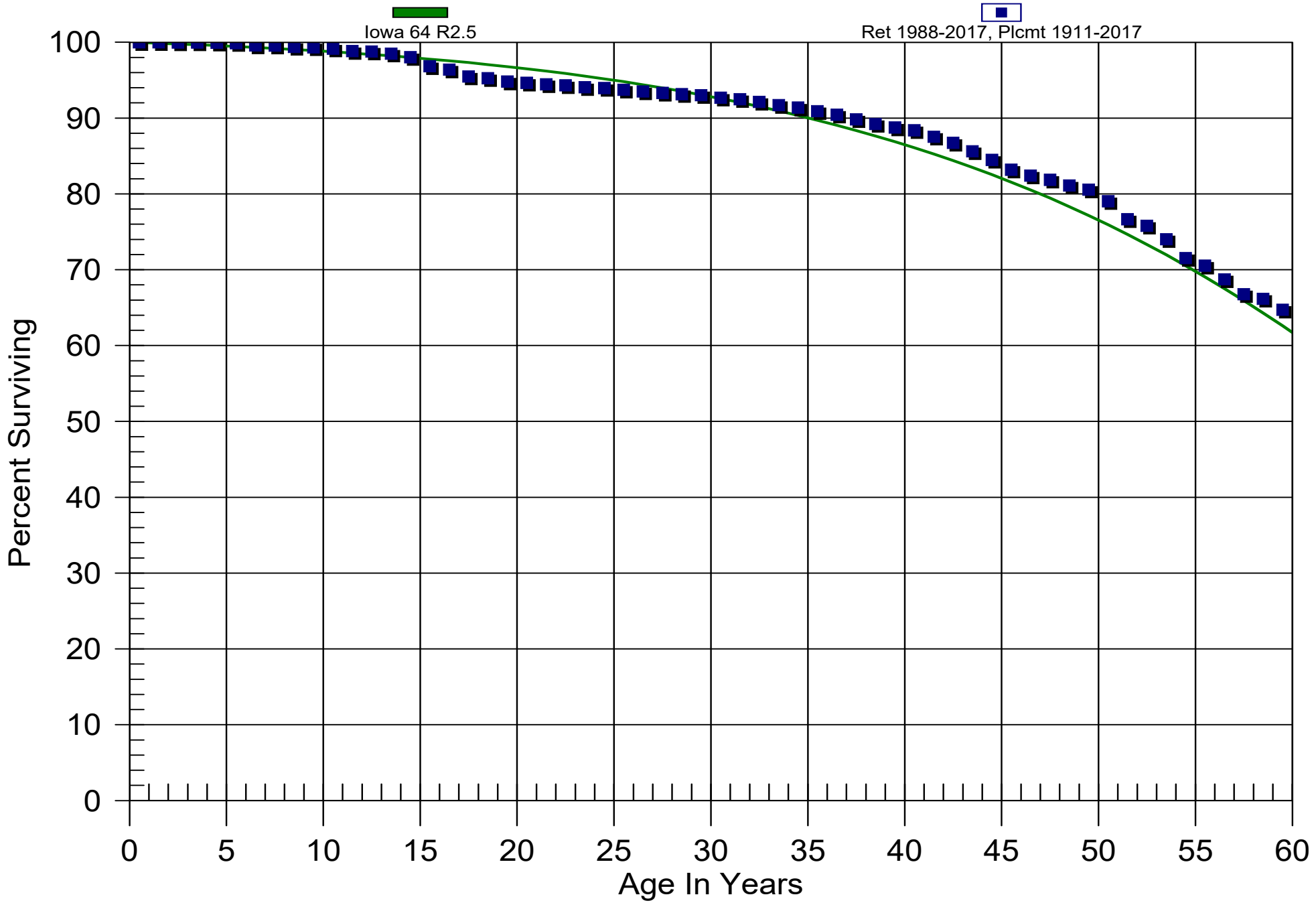
NWE
Electric Division
355.00 Poles and Fixtures
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1911 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
0.0 - 0.5	$238,414,106.56	$0.00	0.00000	100.00
0.5 - 1.5	$191,987,417.40	$42,804.10	0.00022	100.00
1.5 - 2.5	$168,910,112.43	$22,836.20	0.00014	99.98
2.5 - 3.5	$140,233,910.90	$12,646.26	0.00009	99.96
3.5 - 4.5	$128,681,641.16	$47,448.31	0.00037	99.96
4.5 - 5.5	$115,454,659.07	$62,558.47	0.00054	99.92
5.5 - 6.5	$115,952,269.86	$345,521.50	0.00298	99.86
6.5 - 7.5	$115,202,563.88	$29,500.13	0.00026	99.57
7.5 - 8.5	$112,203,479.67	$177,625.09	0.00158	99.54
8.5 - 9.5	$111,070,301.78	$61,667.95	0.00056	99.38
9.5 - 10.5	$109,223,247.17	$205,118.55	0.00188	99.33
10.5 - 11.5	$106,314,514.35	$335,559.77	0.00316	99.14
11.5 - 12.5	$103,324,737.51	$74,693.88	0.00072	98.83
12.5 - 13.5	$102,448,494.71	$286,603.50	0.00280	98.76
13.5 - 14.5	$102,791,881.34	$485,560.08	0.00472	98.48
14.5 - 15.5	$100,047,538.03	$1,203,558.60	0.01203	98.02
15.5 - 16.5	$96,899,418.69	$447,294.75	0.00462	96.84
16.5 - 17.5	$97,155,286.58	$913,543.64	0.00940	96.39
17.5 - 18.5	$94,834,008.18	$234,199.00	0.00247	95.48
18.5 - 19.5	$94,025,972.10	$425,082.47	0.00452	95.25
19.5 - 20.5	$90,612,579.99	$153,441.76	0.00169	94.82
20.5 - 21.5	$85,512,878.21	$196,191.37	0.00229	94.66
21.5 - 22.5	$77,651,517.64	$99,571.06	0.00128	94.44
22.5 - 23.5	$70,967,945.80	$198,857.39	0.00280	94.32
23.5 - 24.5	$68,383,518.74	$67,506.03	0.00099	94.05
24.5 - 25.5	$64,998,584.10	$167,258.50	0.00257	93.96
25.5 - 26.5	$58,122,327.15	$137,377.90	0.00236	93.72
26.5 - 27.5	$55,870,426.47	$117,221.84	0.00210	93.50
27.5 - 28.5	$48,521,150.61	$78,285.14	0.00161	93.30
28.5 - 29.5	$44,353,817.12	$62,098.39	0.00140	93.15
29.5 - 30.5	$41,714,220.67	$152,742.89	0.00366	93.02
30.5 - 31.5	$38,277,581.29	$86,856.78	0.00227	92.68
31.5 - 32.5	$37,478,316.08	$141,852.56	0.00378	92.47
32.5 - 33.5	$36,917,481.30	$162,949.56	0.00441	92.12
33.5 - 34.5	$38,056,248.38	$139,420.92	0.00366	91.71
34.5 - 35.5	$36,551,749.31	$191,270.63	0.00523	91.38
35.5 - 36.5	$30,872,273.68	$154,985.46	0.00502	90.90

NWE
Electric Division
355.00 Poles and Fixtures
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1911 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$28,845,485.50	$198,109.48	0.00687	90.44
37.5 - 38.5	$27,694,359.92	$188,023.06	0.00679	89.82
38.5 - 39.5	$26,628,732.86	$137,941.16	0.00518	89.21
39.5 - 40.5	$25,641,924.70	$106,637.81	0.00416	88.75
40.5 - 41.5	$24,969,602.89	$243,803.57	0.00976	88.38
41.5 - 42.5	$19,445,305.32	$178,514.20	0.00918	87.52
42.5 - 43.5	$18,761,151.12	$234,889.22	0.01252	86.71
43.5 - 44.5	$15,439,283.90	$206,228.02	0.01336	85.63
44.5 - 45.5	$14,725,415.88	$228,649.79	0.01553	84.48
45.5 - 46.5	$14,043,430.09	$127,539.43	0.00908	83.17
46.5 - 47.5	$12,744,996.66	$87,682.93	0.00688	82.42
47.5 - 48.5	$12,430,614.73	$111,514.63	0.00897	81.85
48.5 - 49.5	$7,782,703.10	$54,090.03	0.00695	81.12
49.5 - 50.5	$6,624,998.49	$125,721.93	0.01898	80.55
50.5 - 51.5	$6,433,855.35	$192,529.67	0.02992	79.02
51.5 - 52.5	$5,781,870.68	$66,166.69	0.01144	76.66
52.5 - 53.5	$4,162,866.99	$97,033.05	0.02331	75.78
53.5 - 54.5	$3,986,781.94	$133,782.47	0.03356	74.02
54.5 - 55.5	$3,534,135.47	$49,227.73	0.01393	71.53
55.5 - 56.5	$3,130,491.87	$79,631.78	0.02544	70.54
56.5 - 57.5	$2,030,581.96	$58,127.02	0.02863	68.74
57.5 - 58.5	$1,972,473.94	$17,908.21	0.00908	66.77
58.5 - 59.5	$1,954,565.73	$42,738.83	0.02187	66.17
59.5 - 60.5	$1,911,826.90	$128,673.21	0.06730	64.72
60.5 - 61.5	$1,783,362.69	$116,026.45	0.06506	60.36
61.5 - 62.5	$1,667,336.24	$65,159.32	0.03908	56.44
62.5 - 63.5	$1,602,176.92	$171,163.92	0.10683	54.23
63.5 - 64.5	$209.00	$0.00	0.00000	48.44

NWE
Electric Division
355.00 Poles and Fixtures
Original And Smooth Survivor Curves



NWE
Electric Division
362.00 Station Equipment
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1936 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
0.0 - 0.5	$174,661,202.00	($1,352.17)	-0.00001	100.00
0.5 - 1.5	$138,741,953.91	$264,896.07	0.00191	100.00
1.5 - 2.5	$132,793,120.29	$237,711.12	0.00179	99.81
2.5 - 3.5	$119,969,434.09	$222,077.74	0.00185	99.63
3.5 - 4.5	$117,992,147.57	$286,309.41	0.00243	99.45
4.5 - 5.5	$112,779,720.43	$178,618.18	0.00158	99.21
5.5 - 6.5	$105,287,056.36	$197,669.60	0.00188	99.05
6.5 - 7.5	$98,705,679.73	$387,612.94	0.00393	98.86
7.5 - 8.5	$97,273,651.16	$125,498.45	0.00129	98.47
8.5 - 9.5	$97,607,117.13	$674,587.68	0.00691	98.35
9.5 - 10.5	$93,482,320.22	$355,686.14	0.00380	97.67
10.5 - 11.5	$89,608,451.11	$276,905.70	0.00309	97.30
11.5 - 12.5	$87,209,128.84	$661,619.70	0.00759	97.00
12.5 - 13.5	$86,417,792.87	$488,660.17	0.00565	96.26
13.5 - 14.5	$83,654,974.90	$409,156.38	0.00489	95.71
14.5 - 15.5	$82,796,640.17	$164,296.41	0.00198	95.25
15.5 - 16.5	$79,786,223.01	$578,126.83	0.00725	95.06
16.5 - 17.5	$78,651,911.38	$560,443.31	0.00713	94.37
17.5 - 18.5	$73,571,887.46	$317,796.54	0.00432	93.70
18.5 - 19.5	$71,058,921.89	$511,396.38	0.00720	93.29
19.5 - 20.5	$66,058,652.34	$328,913.39	0.00498	92.62
20.5 - 21.5	$61,881,002.36	$164,231.12	0.00265	92.16
21.5 - 22.5	$56,720,664.43	$465,244.42	0.00820	91.91
22.5 - 23.5	$54,861,640.45	$296,699.88	0.00541	91.16
23.5 - 24.5	$52,764,708.87	$397,276.70	0.00753	90.67
24.5 - 25.5	$47,224,488.47	$558,293.41	0.01182	89.99
25.5 - 26.5	$44,576,943.71	$713,128.32	0.01600	88.92
26.5 - 27.5	$40,834,412.09	$341,926.57	0.00837	87.50
27.5 - 28.5	$37,652,558.38	$617,877.67	0.01641	86.77
28.5 - 29.5	$35,102,647.95	$306,512.04	0.00873	85.34
29.5 - 30.5	$33,754,821.64	$204,395.93	0.00606	84.60
30.5 - 31.5	$33,223,097.66	$240,732.12	0.00725	84.08
31.5 - 32.5	$32,427,603.93	$292,347.64	0.00902	83.48
32.5 - 33.5	$31,812,630.17	$570,860.46	0.01794	82.72
33.5 - 34.5	$28,909,445.30	$462,082.59	0.01598	81.24
34.5 - 35.5	$27,447,580.04	$318,098.85	0.01159	79.94
35.5 - 36.5	$25,081,384.44	$201,215.48	0.00802	79.01

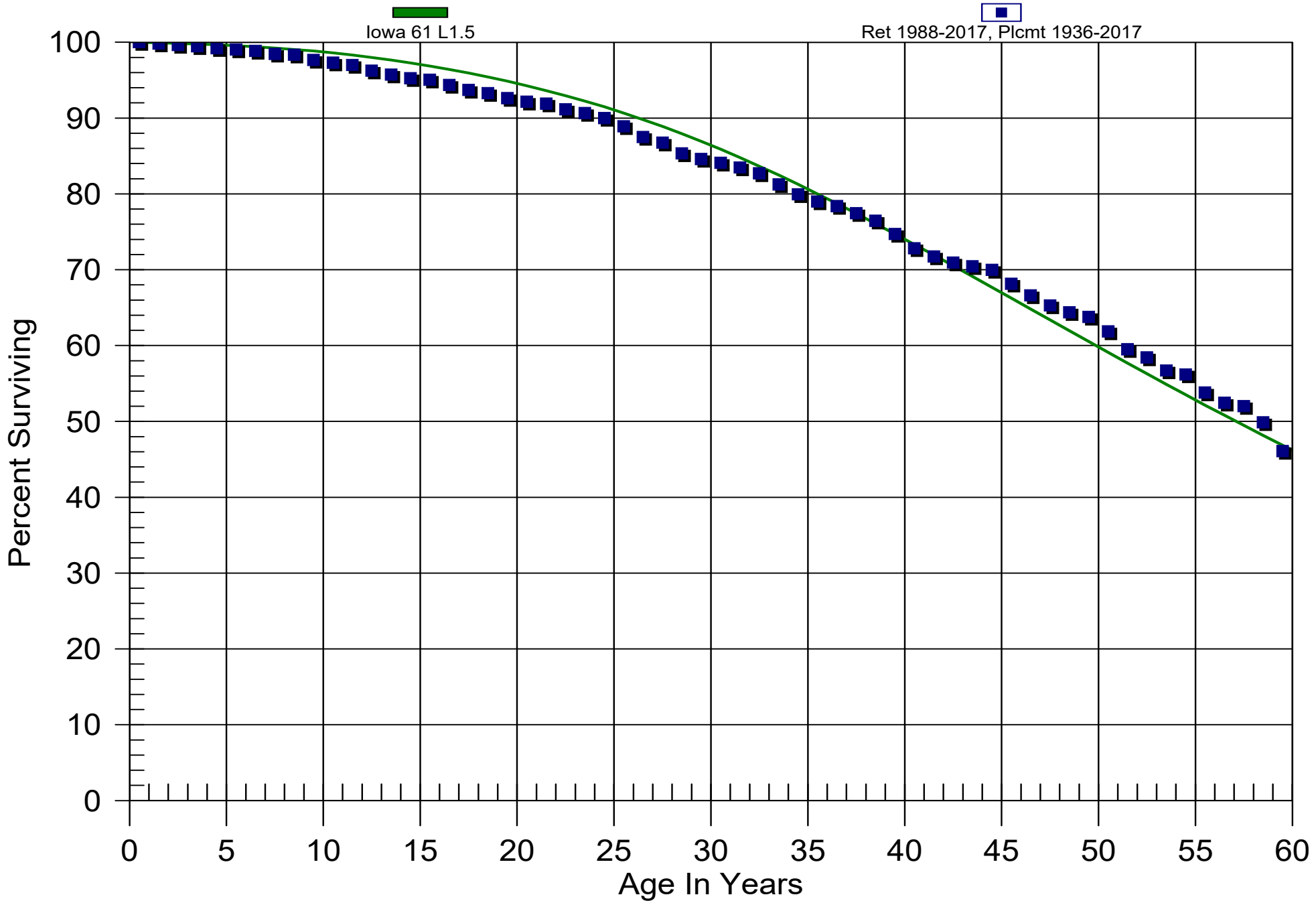
NWE
Electric Division
362.00 Station Equipment
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1936 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$23,854,011.79	$285,959.94	0.01199	78.38
37.5 - 38.5	$20,345,476.62	$262,563.35	0.01291	77.44
38.5 - 39.5	$17,341,734.06	$395,610.31	0.02281	76.44
39.5 - 40.5	$15,977,243.77	$401,210.21	0.02511	74.70
40.5 - 41.5	$15,036,668.44	$222,428.33	0.01479	72.82
41.5 - 42.5	$13,258,239.35	$146,696.21	0.01106	71.74
42.5 - 43.5	$11,078,593.73	$80,807.02	0.00729	70.95
43.5 - 44.5	$9,509,415.76	$63,539.75	0.00668	70.43
44.5 - 45.5	$8,407,591.06	$218,627.70	0.02600	69.96
45.5 - 46.5	$7,241,606.34	$161,485.97	0.02230	68.14
46.5 - 47.5	$6,463,525.24	$129,884.13	0.02009	66.62
47.5 - 48.5	$5,836,959.88	$79,864.24	0.01368	65.28
48.5 - 49.5	$5,097,126.82	$49,208.78	0.00965	64.39
49.5 - 50.5	$4,688,544.77	$140,464.50	0.02996	63.77
50.5 - 51.5	$4,129,318.92	$156,480.51	0.03789	61.86
51.5 - 52.5	$3,387,923.31	$60,957.75	0.01799	59.51
52.5 - 53.5	$3,182,062.56	$94,302.75	0.02964	58.44
53.5 - 54.5	$2,863,882.81	$26,167.69	0.00914	56.71
54.5 - 55.5	$2,217,539.12	$94,721.42	0.04271	56.19
55.5 - 56.5	$1,931,282.70	$48,257.97	0.02499	53.79
56.5 - 57.5	$1,722,422.73	$14,623.12	0.00849	52.45
57.5 - 58.5	$1,644,963.61	$67,714.96	0.04117	52.00
58.5 - 59.5	$1,487,011.65	$112,462.07	0.07563	49.86
59.5 - 60.5	$1,335,931.58	$10,793.55	0.00808	46.09
60.5 - 61.5	$1,062,376.03	$64,703.54	0.06090	45.72
61.5 - 62.5	$792,064.49	$30,432.31	0.03842	42.94
62.5 - 63.5	$672,996.18	$33,903.64	0.05038	41.29
63.5 - 64.5	$450,987.54	$10,154.19	0.02252	39.21
64.5 - 65.5	$359,942.35	$2,076.55	0.00577	38.32
65.5 - 66.5	$243,571.80	$4,034.60	0.01656	38.10
66.5 - 67.5	$148,461.20	$340.96	0.00230	37.47
67.5 - 68.5	$144,480.24	$0.00	0.00000	37.38
68.5 - 69.5	$129,822.24	$546.01	0.00421	37.38
69.5 - 70.5	$121,843.23	$0.00	0.00000	37.23
70.5 - 71.5	$117,910.23	$0.00	0.00000	37.23
71.5 - 72.5	$117,716.23	$0.00	0.00000	37.23
72.5 - 73.5	$111,447.23	$11,213.13	0.10061	37.23

NWE
Electric Division
362.00 Station Equipment
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1936 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
73.5 - 74.5	$97,535.10	$93.34	0.00096	33.48
74.5 - 75.5	$97,223.76	$22.14	0.00023	33.45
75.5 - 76.5	$96,889.62	$0.00	0.00000	33.44
76.5 - 77.5	$93,254.62	$210.90	0.00226	33.44
77.5 - 78.5	$88,465.72	$1,200.24	0.01357	33.37
78.5 - 79.5	$75,234.48	$0.00	0.00000	32.91
79.5 - 80.5	$73,998.48	$0.00	0.00000	32.91
80.5 - 81.5	$68,304.48	$451.48	0.00661	32.91

NWE
Electric Division
362.00 Station Equipment
Original And Smooth Survivor Curves



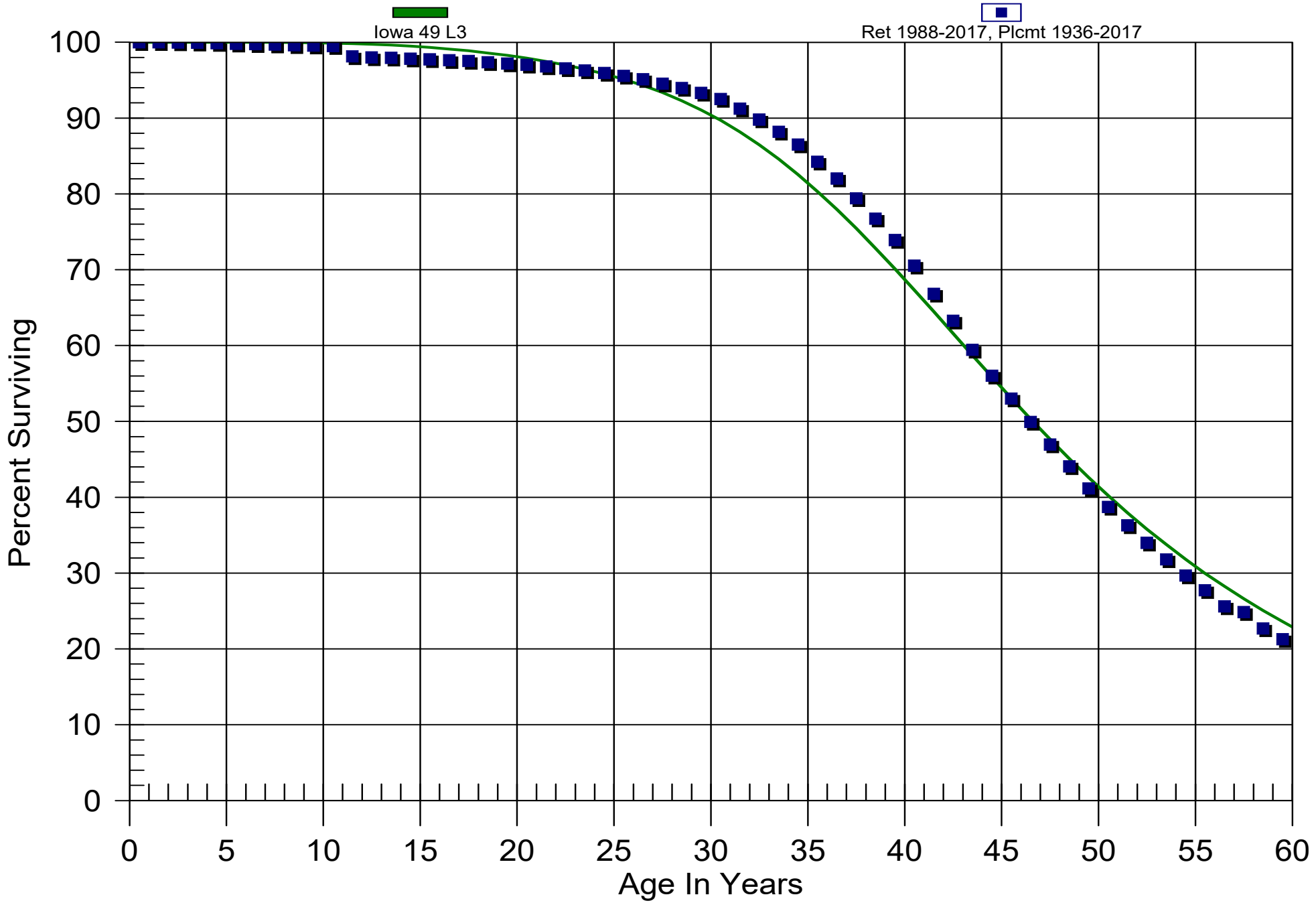
NWE
Electric Division
364.00 Poles, Towers, and Fixtures
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1936 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
0.0 - 0.5	$252,529,207.12	$70.00	0.00000	100.00
0.5 - 1.5	$236,889,334.83	$44,676.52	0.00019	100.00
1.5 - 2.5	$220,558,248.05	$64,589.38	0.00029	99.98
2.5 - 3.5	$198,454,814.96	$68,778.14	0.00035	99.95
3.5 - 4.5	$174,195,609.76	$88,673.51	0.00051	99.92
4.5 - 5.5	$158,610,662.82	$95,976.07	0.00061	99.87
5.5 - 6.5	$149,565,308.55	$83,983.13	0.00056	99.81
6.5 - 7.5	$142,919,768.57	$103,616.62	0.00072	99.75
7.5 - 8.5	$138,671,372.78	$96,988.73	0.00070	99.68
8.5 - 9.5	$132,642,564.19	$90,497.39	0.00068	99.61
9.5 - 10.5	$127,370,316.67	$71,685.91	0.00056	99.54
10.5 - 11.5	$123,749,877.36	$1,679,310.31	0.01357	99.48
11.5 - 12.5	$117,308,416.97	$160,719.67	0.00137	98.13
12.5 - 13.5	$115,032,647.98	$76,846.50	0.00067	98.00
13.5 - 14.5	$111,563,797.25	$112,522.66	0.00101	97.93
14.5 - 15.5	$109,282,287.92	$103,905.44	0.00095	97.84
15.5 - 16.5	$106,042,298.14	$125,148.59	0.00118	97.74
16.5 - 17.5	$106,852,730.22	$128,433.78	0.00120	97.63
17.5 - 18.5	$97,787,166.30	$157,497.61	0.00161	97.51
18.5 - 19.5	$93,455,112.82	$151,086.76	0.00162	97.35
19.5 - 20.5	$89,201,520.59	$156,272.83	0.00175	97.19
20.5 - 21.5	$84,533,524.88	$198,082.45	0.00234	97.02
21.5 - 22.5	$78,673,315.27	$199,893.35	0.00254	96.80
22.5 - 23.5	$72,397,992.27	$199,329.97	0.00275	96.55
23.5 - 24.5	$66,935,952.52	$232,282.49	0.00347	96.29
24.5 - 25.5	$60,549,840.83	$246,364.36	0.00407	95.95
25.5 - 26.5	$55,997,248.43	$257,196.75	0.00459	95.56
26.5 - 27.5	$50,879,301.37	$308,462.00	0.00606	95.12
27.5 - 28.5	$45,681,317.57	$288,450.67	0.00631	94.55
28.5 - 29.5	$40,223,260.74	$268,689.84	0.00668	93.95
29.5 - 30.5	$36,886,164.01	$318,783.16	0.00864	93.32
30.5 - 31.5	$34,432,438.94	$474,133.85	0.01377	92.51
31.5 - 32.5	$32,112,291.64	$503,209.75	0.01567	91.24
32.5 - 33.5	$29,905,556.66	$539,064.68	0.01803	89.81
33.5 - 34.5	$28,895,032.56	$555,536.74	0.01923	88.19
34.5 - 35.5	$25,819,518.76	$678,241.82	0.02627	86.50
35.5 - 36.5	$22,663,482.94	$591,272.39	0.02609	84.22

NWE
Electric Division
364.00 Poles, Towers, and Fixtures
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1936 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$19,575,656.69	$622,690.30	0.03181	82.03
37.5 - 38.5	$16,583,726.39	$561,773.48	0.03387	79.42
38.5 - 39.5	$13,942,705.91	$512,256.39	0.03674	76.73
39.5 - 40.5	$11,741,880.46	$536,925.72	0.04573	73.91
40.5 - 41.5	$9,965,919.74	$522,706.09	0.05245	70.53
41.5 - 42.5	$8,551,922.65	$455,770.99	0.05329	66.83
42.5 - 43.5	$7,058,286.66	$427,406.96	0.06055	63.27
43.5 - 44.5	$5,653,576.70	$324,512.33	0.05740	59.44
44.5 - 45.5	$4,479,021.37	$241,864.91	0.05400	56.03
45.5 - 46.5	$3,631,423.46	$211,028.94	0.05811	53.00
46.5 - 47.5	$2,943,073.52	$175,833.70	0.05974	49.92
47.5 - 48.5	$2,386,193.82	$146,619.88	0.06145	46.94
48.5 - 49.5	$1,951,061.94	$128,528.24	0.06588	44.05
49.5 - 50.5	$1,538,870.70	$90,960.18	0.05911	41.15
50.5 - 51.5	$1,248,167.52	$78,486.77	0.06288	38.72
51.5 - 52.5	$973,531.75	$61,885.12	0.06357	36.28
52.5 - 53.5	$765,721.63	$48,895.20	0.06386	33.98
53.5 - 54.5	$602,980.43	$40,537.15	0.06723	31.81
54.5 - 55.5	$485,939.28	$31,706.88	0.06525	29.67
55.5 - 56.5	$419,031.33	$32,192.81	0.07683	27.73
56.5 - 57.5	$218,624.52	$6,511.10	0.02978	25.60
57.5 - 58.5	$212,113.42	$18,412.63	0.08681	24.84
58.5 - 59.5	$193,700.79	$11,921.20	0.06154	22.68
59.5 - 60.5	$181,779.59	$28,263.77	0.15548	21.29
60.5 - 61.5	$153,515.82	$15,023.08	0.09786	17.98
61.5 - 62.5	$138,492.74	$15,334.29	0.11072	16.22
62.5 - 63.5	$104,246.45	$16,911.45	0.16223	14.42
63.5 - 64.5	$63.00	$0.00	0.00000	12.08
64.5 - 65.5	$63.00	$0.00	0.00000	12.08
65.5 - 66.5	$63.00	$0.00	0.00000	12.08
66.5 - 67.5	$63.00	$0.00	0.00000	12.08

NWE
Electric Division
364.00 Poles, Towers, and Fixtures
Original And Smooth Survivor Curves



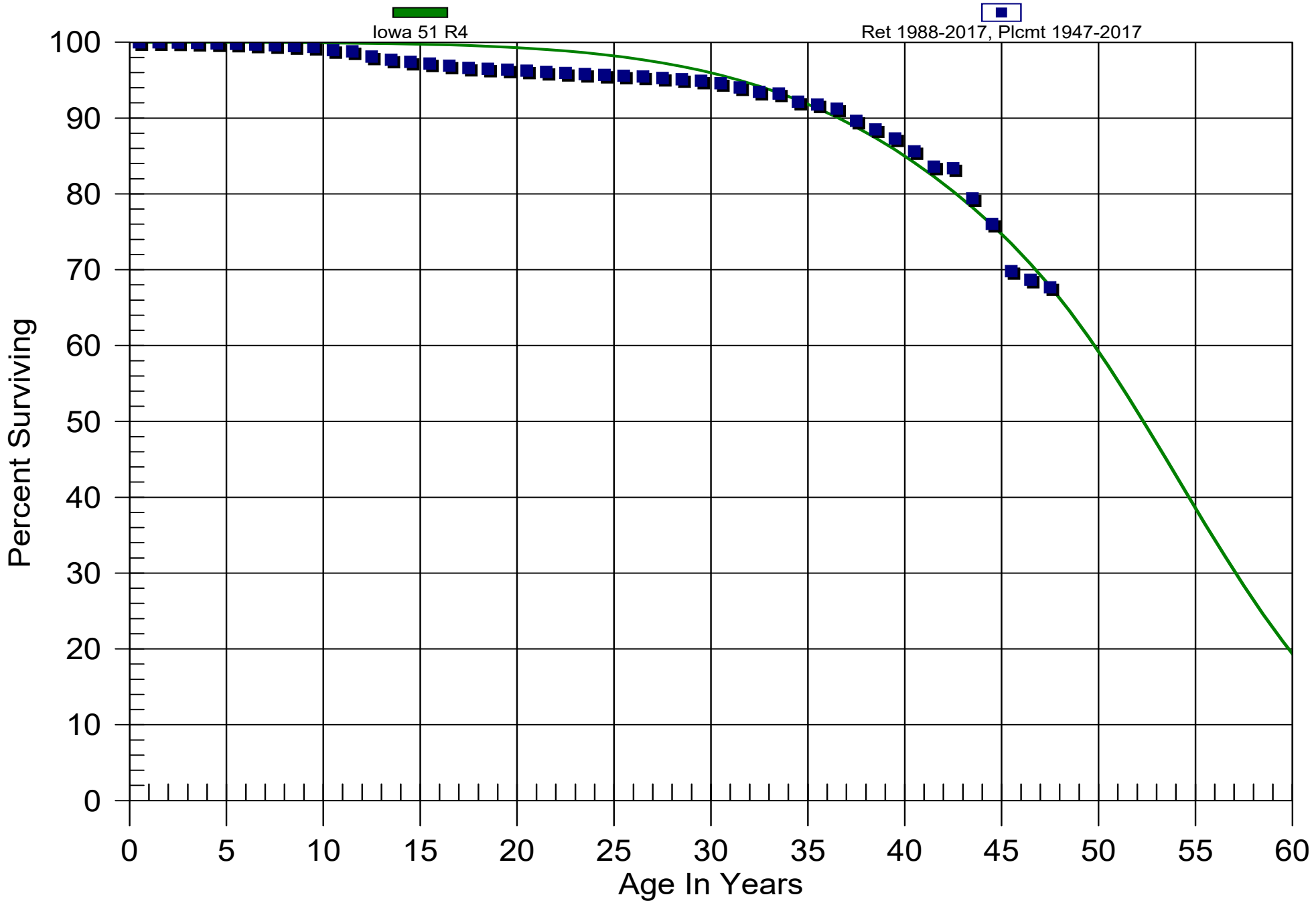
NWE
Electric Division
368.00 Line Transformers
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1947 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
0.0 - 0.5	$159,551,704.62	$0.00	0.00000	100.00
0.5 - 1.5	$151,922,759.28	$38,111.91	0.00025	100.00
1.5 - 2.5	$144,823,930.01	$41,031.60	0.00028	99.97
2.5 - 3.5	$135,953,324.28	$69,769.82	0.00051	99.95
3.5 - 4.5	$128,149,133.95	$63,524.66	0.00050	99.90
4.5 - 5.5	$121,780,015.40	$72,643.93	0.00060	99.85
5.5 - 6.5	$116,202,657.81	$125,782.51	0.00108	99.79
6.5 - 7.5	$111,226,576.53	$100,510.36	0.00090	99.68
7.5 - 8.5	$109,797,270.89	$120,052.82	0.00109	99.59
8.5 - 9.5	$99,959,431.21	$111,935.52	0.00112	99.48
9.5 - 10.5	$92,602,465.64	$376,099.35	0.00406	99.37
10.5 - 11.5	$84,393,167.20	$133,194.36	0.00158	98.96
11.5 - 12.5	$75,638,827.46	$539,808.54	0.00714	98.81
12.5 - 13.5	$69,968,427.30	$305,242.73	0.00436	98.10
13.5 - 14.5	$64,216,711.49	$177,591.32	0.00277	97.67
14.5 - 15.5	$59,315,534.90	$131,089.77	0.00221	97.40
15.5 - 16.5	$50,869,860.58	$147,221.10	0.00289	97.19
16.5 - 17.5	$50,802,001.31	$150,243.61	0.00296	96.91
17.5 - 18.5	$114,317,273.39	$137,721.70	0.00120	96.62
18.5 - 19.5	$109,825,908.30	$134,854.77	0.00123	96.51
19.5 - 20.5	$104,541,365.78	$154,740.93	0.00148	96.39
20.5 - 21.5	$99,391,312.12	$161,683.53	0.00163	96.24
21.5 - 22.5	$93,785,059.21	$129,178.91	0.00138	96.09
22.5 - 23.5	$87,402,487.45	$124,634.23	0.00143	95.96
23.5 - 24.5	$80,191,578.47	$101,229.37	0.00126	95.82
24.5 - 25.5	$74,716,784.55	$78,956.30	0.00106	95.70
25.5 - 26.5	$70,281,285.89	$80,266.96	0.00114	95.60
26.5 - 27.5	$71,238,561.99	$149,252.44	0.00210	95.49
27.5 - 28.5	$71,091,006.55	$130,917.12	0.00184	95.29
28.5 - 29.5	$70,960,954.43	$149,133.08	0.00210	95.11
29.5 - 30.5	$70,812,334.35	$240,659.02	0.00340	94.91
30.5 - 31.5	$70,562,956.33	$421,922.80	0.00598	94.59
31.5 - 32.5	$70,142,927.66	$420,124.91	0.00599	94.02
32.5 - 33.5	$69,730,947.88	$176,159.59	0.00253	93.46
33.5 - 34.5	$71,855,754.28	$822,152.64	0.01144	93.22
34.5 - 35.5	$71,033,606.64	$287,657.56	0.00405	92.16
35.5 - 36.5	$70,745,949.08	$423,150.57	0.00598	91.78

NWE
Electric Division
368.00 Line Transformers
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1947 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$70,322,824.51	$1,236,859.81	0.01759	91.24
37.5 - 38.5	$69,090,593.68	$874,199.09	0.01265	89.63
38.5 - 39.5	$68,216,394.59	$921,622.05	0.01351	88.50
39.5 - 40.5	$67,294,512.54	$1,305,657.23	0.01940	87.30
40.5 - 41.5	$65,988,855.31	$1,558,448.55	0.02362	85.61
41.5 - 42.5	$64,430,666.76	$154,574.58	0.00240	83.59
42.5 - 43.5	$64,276,092.18	$3,055,129.79	0.04753	83.38
43.5 - 44.5	$61,220,962.39	$2,604,192.81	0.04254	79.42
44.5 - 45.5	$58,616,769.58	$4,797,508.33	0.08185	76.04
45.5 - 46.5	$53,819,261.25	$890,098.62	0.01654	69.82
46.5 - 47.5	$52,929,162.63	$760,928.63	0.01438	68.66

NWE
Electric Division
368.00 Line Transformers
Original And Smooth Survivor Curves



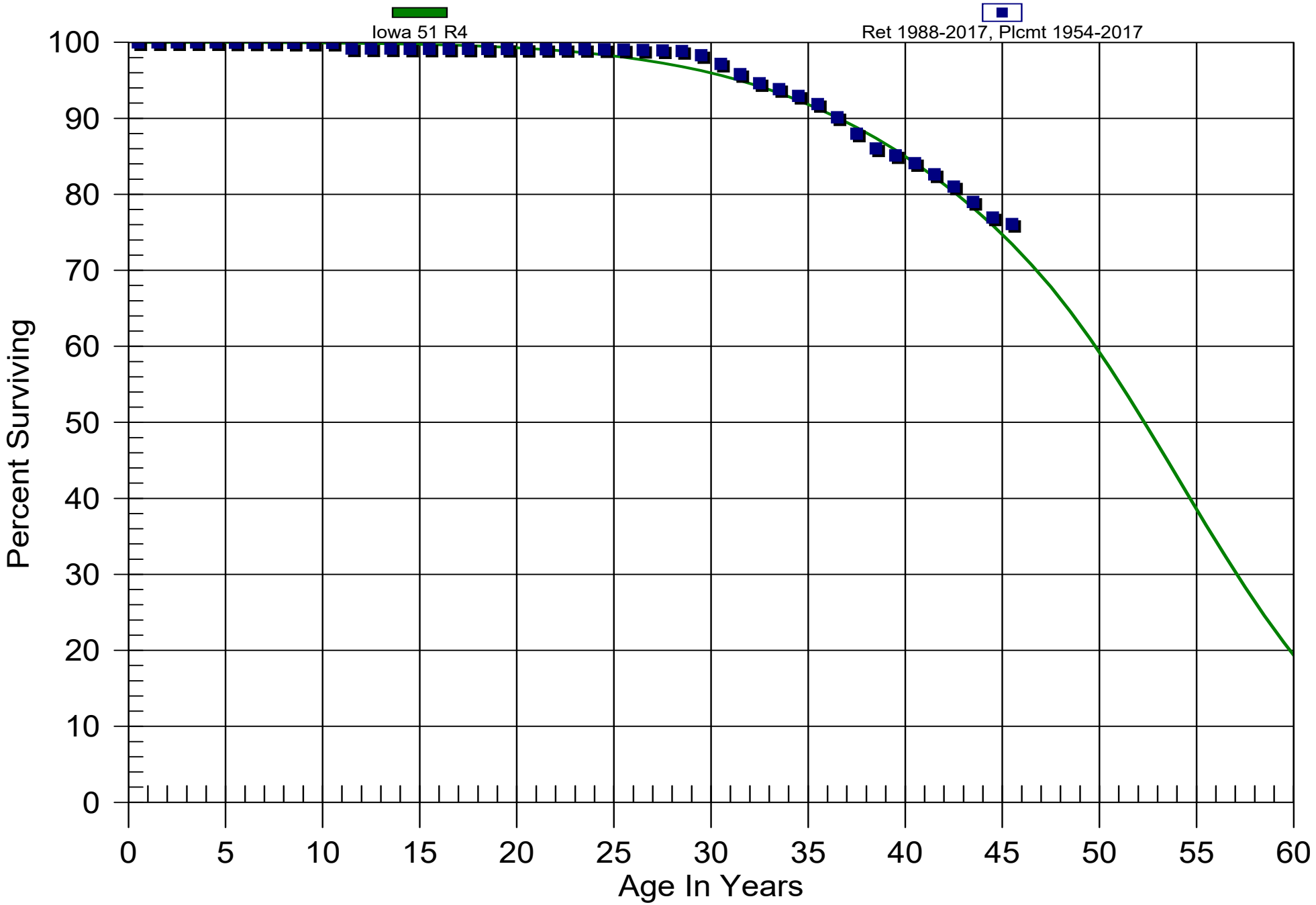
NWE
Electric Division
369.20 Underground Services
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1954 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
0.0 - 0.5	$81,932,299.24	$0.00	0.00000	100.00
0.5 - 1.5	$75,613,133.46	$6,205.00	0.00008	100.00
1.5 - 2.5	$70,417,530.57	$2,823.00	0.00004	99.99
2.5 - 3.5	$66,003,759.41	$5,372.10	0.00008	99.99
3.5 - 4.5	$62,643,300.49	$3,114.27	0.00005	99.98
4.5 - 5.5	$60,410,369.30	$5,823.50	0.00010	99.97
5.5 - 6.5	$59,118,016.67	$3,526.50	0.00006	99.97
6.5 - 7.5	$58,494,814.85	$7,675.29	0.00013	99.96
7.5 - 8.5	$56,841,652.95	$5,052.89	0.00009	99.95
8.5 - 9.5	$55,445,290.76	$5,642.50	0.00010	99.94
9.5 - 10.5	$53,478,368.54	$3,058.36	0.00006	99.93
10.5 - 11.5	$51,574,841.38	$380,137.38	0.00737	99.92
11.5 - 12.5	$48,740,713.88	$4,684.02	0.00010	99.18
12.5 - 13.5	$46,868,019.59	$2,437.72	0.00005	99.18
13.5 - 14.5	$44,691,508.95	$5,442.41	0.00012	99.17
14.5 - 15.5	$42,916,802.12	$2,784.91	0.00006	99.16
15.5 - 16.5	$41,624,781.66	$1,634.18	0.00004	99.15
16.5 - 17.5	$41,660,342.43	$1,464.99	0.00004	99.15
17.5 - 18.5	$38,187,009.57	$2,197.52	0.00006	99.14
18.5 - 19.5	$35,802,239.14	$1,880.47	0.00005	99.14
19.5 - 20.5	$32,578,989.51	$3,197.17	0.00010	99.13
20.5 - 21.5	$28,884,639.94	$2,902.12	0.00010	99.12
21.5 - 22.5	$25,345,448.96	$1,654.36	0.00007	99.11
22.5 - 23.5	$21,485,311.72	$3,436.95	0.00016	99.11
23.5 - 24.5	$17,867,791.49	$1,822.00	0.00010	99.09
24.5 - 25.5	$15,700,404.49	$5,184.52	0.00033	99.08
25.5 - 26.5	$14,271,957.97	$6,993.77	0.00049	99.05
26.5 - 27.5	$12,883,492.21	$9,025.58	0.00070	99.00
27.5 - 28.5	$11,796,180.63	$7,928.24	0.00067	98.93
28.5 - 29.5	$10,362,774.39	$58,191.69	0.00562	98.86
29.5 - 30.5	$9,557,551.70	$111,770.57	0.01169	98.31
30.5 - 31.5	$8,700,239.13	$122,382.70	0.01407	97.16
31.5 - 32.5	$7,906,256.43	$96,563.49	0.01221	95.79
32.5 - 33.5	$6,975,963.94	$56,762.11	0.00814	94.62
33.5 - 34.5	$5,928,557.83	$56,182.43	0.00948	93.85
34.5 - 35.5	$4,879,356.40	$57,093.98	0.01170	92.96
35.5 - 36.5	$4,170,856.42	$79,326.94	0.01902	91.88

NWE
Electric Division
369.20 Underground Services
Observed Life Table
Retirement Expr. 1988 TO 2017
Placement Years 1954 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$3,439,839.48	$82,729.53	0.02405	90.13
37.5 - 38.5	$2,772,322.95	$60,375.51	0.02178	87.96
38.5 - 39.5	$2,012,227.44	$21,954.44	0.01091	86.04
39.5 - 40.5	$1,365,388.00	$16,062.43	0.01176	85.11
40.5 - 41.5	$861,772.57	$15,006.30	0.01741	84.10
41.5 - 42.5	$495,537.27	$9,713.69	0.01960	82.64
42.5 - 43.5	$255,865.58	$6,348.18	0.02481	81.02
43.5 - 44.5	$144,252.40	$3,766.67	0.02611	79.01
44.5 - 45.5	$21,027.73	$231.73	0.01102	76.95

NWE
Electric Division
369.20 Underground Services
Original And Smooth Survivor Curves



NWE
Electric Division
353.00 Station Equipment
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: ***68*** ***Survivor Curve:*** ***R0.5***

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1936	51,555.00	68.00	758.15	23.18	17,576.42
1939	3,121.00	68.00	45.90	24.51	1,124.76
1940	6,423.00	68.00	94.45	24.95	2,356.98
1942	11,539.00	68.00	169.69	25.86	4,387.66
1943	53.00	68.00	0.78	26.31	20.51
1944	828.00	68.00	12.18	26.77	326.00
1946	218.00	68.00	3.21	27.70	88.81
1948	156,093.00	68.00	2,295.45	28.64	65,753.01
1949	86,862.00	68.00	1,277.36	29.12	37,197.90
1950	150,384.00	68.00	2,211.49	29.60	65,461.94
1951	288,068.00	68.00	4,236.23	30.08	127,440.35
1952	2,477.00	68.00	36.43	30.57	1,113.54
1953	32,473.00	68.00	477.54	31.06	14,832.12
1954	480,223.00	68.00	7,061.99	31.55	222,828.11
1955	145,444.00	68.00	2,138.85	32.05	68,549.10
1956	241,185.00	68.00	3,546.78	32.55	115,447.24
1957	473,036.00	68.00	6,956.30	33.05	229,927.24
1958	24,373.00	68.00	358.42	33.56	12,028.67
1959	70,235.00	68.00	1,032.85	34.07	35,189.51
1960	20,882.00	68.00	307.08	34.58	10,619.97
1961	5,229.00	68.00	76.90	35.10	2,699.12
1962	288,399.00	68.00	4,241.09	35.62	151,071.19
1963	697,253.00	68.00	10,253.55	36.15	370,615.51
1964	379,832.00	68.00	5,585.67	36.67	204,835.21
1965	171,115.00	68.00	2,516.36	37.20	93,614.18
1966	348,522.00	68.00	5,125.24	37.74	193,402.09
1967	442,650.00	68.00	6,509.45	38.27	249,131.85

NWE
Electric Division
353.00 Station Equipment
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *68* ***Survivor Curve:*** *R0.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1968	776,515.00	68.00	11,419.15	38.81	443,195.76
1969	1,105,963.00	68.00	16,263.90	39.35	640,063.11
1970	444,416.00	68.00	6,535.42	39.90	260,765.33
1971	244,902.00	68.00	3,601.44	40.45	145,676.36
1972	1,042,866.00	68.00	15,336.02	41.00	628,789.67
1973	801,594.00	68.00	11,787.96	41.56	489,856.68
1974	427,726.00	68.00	6,289.99	42.11	264,888.61
1975	582,468.00	68.00	8,565.57	42.67	365,510.97
1976	5,400,130.00	68.00	79,412.39	43.24	3,433,433.74
1977	2,606,046.00	68.00	38,323.58	43.80	1,678,577.10
1978	429,268.00	68.00	6,312.66	44.37	280,082.92
1979	1,627,517.00	68.00	23,933.69	44.94	1,075,531.55
1980	6,051,773.00	68.00	88,995.22	45.51	4,050,254.25
1981	3,162,886.00	68.00	46,512.28	46.09	2,143,521.07
1982	2,981,367.00	68.00	43,842.92	46.66	2,045,810.07
1983	2,590,629.00	68.00	38,096.87	47.24	1,799,720.44
1984	2,818,906.00	68.00	41,453.83	47.82	1,982,394.58
1985	2,379,306.00	68.00	34,989.23	48.40	1,693,617.82
1986	327,692.00	68.00	4,818.92	48.99	236,072.38
1987	3,142,779.00	68.00	46,216.59	49.57	2,291,156.58
1988	204,389.00	68.00	3,005.67	50.16	150,770.99
1989	3,564,041.00	68.00	52,411.52	50.75	2,659,935.27
1990	2,224,277.00	68.00	32,709.43	51.34	1,679,354.84
1991	23,104,710.00	68.00	339,769.64	51.93	17,645,316.26
1992	5,573,048.00	68.00	81,955.26	52.53	4,304,808.02
1993	1,629,689.00	68.00	23,965.63	53.12	1,273,061.27
1994	6,560,386.00	68.00	96,474.70	53.72	5,182,150.62

NWE
Electric Division
353.00 Station Equipment
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *68* ***Survivor Curve:*** *R0.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1995	10,130,320.00	68.00	148,972.88	54.31	8,090,980.58
1996	3,758,233.00	68.00	55,267.24	54.91	3,034,648.93
1997	2,589,681.00	68.00	38,082.93	55.51	2,113,874.50
1998	1,703,177.00	68.00	25,046.31	56.11	1,405,245.80
1999	4,491,709.00	68.00	66,053.47	56.71	3,745,639.90
2000	3,621,421.00	68.00	53,255.33	57.31	3,051,892.36
2001	864,406.00	68.00	12,711.65	57.91	736,118.01
2002	1,435,250.00	68.00	21,106.28	58.51	1,234,960.72
2003	1,026,677.00	68.00	15,097.95	59.12	892,525.24
2004	1,220,163.00	68.00	17,943.28	59.72	1,071,579.21
2005	3,206,394.00	68.00	47,152.09	60.33	2,844,524.64
2006	9,948,030.00	68.00	146,292.19	60.93	8,914,091.95
2007	1,424,872.00	68.00	20,953.66	61.54	1,289,528.12
2008	4,481,806.00	68.00	65,907.84	62.15	4,096,245.58
2009	5,375,403.00	68.00	79,048.76	62.76	4,961,196.83
2010	16,590,377.00	68.00	243,972.18	63.37	15,461,350.39
2011	12,990,403.00	68.00	191,032.24	63.99	12,223,379.77
2012	12,901,895.00	68.00	189,730.67	64.60	12,256,705.21
2013	2,438,379.00	68.00	35,857.93	65.22	2,338,496.75
2014	12,991,776.00	68.00	191,052.43	65.83	12,577,491.25
2015	25,054,175.00	68.00	368,437.78	66.45	24,482,795.28
2016	9,054,206.00	68.00	133,147.93	67.07	8,930,217.06
2017	15,687,878.00	68.00	230,700.35	67.69	15,616,138.11
Total	249,370,392.00	68.00	3,667,152.18	57.95	212,511,581.46

Composite Average Remaining Life ... 57.95 Years

NWE
Electric Division
355.00 Poles and Fixtures
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *64* ***Survivor Curve:*** *R2.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1954	1,430,804.00	64.00	22,356.28	15.53	347,096.44
1961	1,021,278.00	64.00	15,957.44	19.11	305,020.97
1962	353,416.00	64.00	5,522.12	19.68	108,660.36
1963	318,864.00	64.00	4,982.24	20.26	100,917.66
1964	79,052.00	64.00	1,235.19	20.84	25,743.52
1965	1,552,837.00	64.00	24,263.04	21.44	520,295.03
1966	485,258.00	64.00	7,582.14	22.06	167,232.52
1967	65,909.00	64.00	1,029.83	22.68	23,353.95
1968	1,104,037.00	64.00	17,250.55	23.31	402,142.04
1969	4,536,397.00	64.00	70,881.10	23.95	1,697,893.11
1970	226,730.00	64.00	3,542.65	24.61	87,182.26
1971	1,170,894.00	64.00	18,295.19	25.27	462,343.47
1972	459,774.00	64.00	7,183.96	25.95	186,397.67
1973	507,640.00	64.00	7,931.86	26.63	211,202.26
1974	3,086,978.00	64.00	48,233.96	27.32	1,317,797.18
1975	505,640.00	64.00	7,900.61	28.02	221,395.62
1976	5,280,494.00	64.00	82,507.59	28.73	2,370,534.12
1977	565,684.00	64.00	8,838.80	29.45	260,304.96
1978	848,924.00	64.00	13,264.42	30.18	400,258.27
1979	877,780.00	64.00	13,715.29	30.91	423,957.03
1980	953,042.00	64.00	14,891.26	31.65	471,341.75
1981	1,873,029.00	64.00	29,266.03	32.40	948,344.54
1982	5,488,534.00	64.00	85,758.21	33.16	2,844,001.04
1983	1,366,041.00	64.00	21,344.36	33.93	724,171.67
1984	1,612,889.00	64.00	25,201.35	34.70	874,537.33
1985	427,974.00	64.00	6,687.08	35.48	237,267.61
1986	723,035.00	64.00	11,297.40	36.27	409,758.91

NWE
Electric Division
355.00 Poles and Fixtures
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *64* ***Survivor Curve:*** *R2.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1987	3,285,813.00	64.00	51,340.75	37.06	1,902,875.46
1988	2,583,203.00	64.00	40,362.49	37.87	1,528,387.93
1989	4,111,442.00	64.00	64,241.18	38.67	2,484,434.37
1990	7,236,674.00	64.00	113,072.86	39.49	4,465,261.61
1991	3,465,672.00	64.00	54,151.04	40.31	2,182,960.21
1992	7,134,292.00	64.00	111,473.14	41.14	4,585,990.47
1993	3,826,014.00	64.00	59,781.38	41.98	2,509,329.23
1994	2,526,701.00	64.00	39,479.64	42.81	1,690,313.01
1995	8,260,245.00	64.00	129,066.13	43.66	5,635,338.36
1996	8,342,259.00	64.00	130,347.60	44.51	5,802,277.16
1997	5,078,189.00	64.00	79,346.58	45.37	3,600,217.01
1998	4,461,374.00	64.00	69,708.86	46.24	3,223,175.13
1999	5,465,142.00	64.00	85,392.71	47.11	4,022,562.68
2000	1,727,145.00	64.00	26,986.60	47.98	1,294,869.81
2001	706,857.00	64.00	11,044.62	48.86	539,654.42
2002	2,626,038.00	64.00	41,031.78	49.75	2,041,206.58
2003	2,887,764.00	64.00	45,121.24	50.64	2,284,762.50
2004	2,870,772.00	64.00	44,855.74	51.53	2,311,484.12
2005	1,502,646.00	64.00	23,478.81	52.43	1,230,990.26
2006	8,156,325.00	64.00	127,442.38	53.33	6,797,065.89
2007	3,334,828.00	64.00	52,106.61	54.24	2,826,406.45
2008	2,689,793.00	64.00	42,027.95	55.15	2,318,029.63
2009	2,169,679.00	64.00	33,901.18	56.07	1,900,875.48
2010	4,102,001.00	64.00	64,093.67	56.99	3,652,732.46
2011	2,418,247.00	64.00	37,785.05	57.91	2,188,313.05
2012	5,233,159.00	64.00	81,767.99	58.84	4,811,345.88
2013	14,635,219.00	64.00	228,674.95	59.77	13,668,535.85

NWE
Electric Division
355.00 Poles and Fixtures
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: ***64*** ***Survivor Curve:*** ***R2.5***

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
2014	13,386,111.00	64.00	209,157.67	60.71	12,697,336.91
2015	29,103,284.00	64.00	454,738.12	61.64	28,031,849.54
2016	23,778,788.00	64.00	371,543.00	62.58	23,252,818.08
2017	49,823,102.00	64.00	778,484.79	63.53	49,455,009.52
Total	273,851,712.00	64.00	4,278,926.51	51.67	221,085,560.34

Composite Average Remaining Life ... 51.67 Years

NWE
Electric Division
355.09 Poles and Fixtures - Yellowstone
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *64* ***Survivor Curve:*** *R2.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1961	156,460.00	64.00	2,444.68	19.11	46,729.28
1963	1,415.00	64.00	22.11	20.26	447.84
1967	189.00	64.00	2.95	22.68	66.97
1968	711.00	64.00	11.11	23.31	258.98
1969	126.00	64.00	1.97	23.95	47.16
1970	156.00	64.00	2.44	24.61	59.99
1971	10,113.00	64.00	158.02	25.27	3,993.26
1972	1,316.00	64.00	20.56	25.95	533.52
1974	3,349.00	64.00	52.33	27.32	1,429.65
1977	1,154.00	64.00	18.03	29.45	531.02
1981	1,326.00	64.00	20.72	32.40	671.38
1982	755.00	64.00	11.80	33.16	391.22
1984	18,120.00	64.00	283.12	34.70	9,824.99
1988	153,092.00	64.00	2,392.06	37.87	90,579.01
1991	24,894.00	64.00	388.97	40.31	15,680.25
1992	21,003.00	64.00	328.17	41.14	13,500.93
1994	2,129.00	64.00	33.27	42.81	1,424.26
1995	14,884.00	64.00	232.56	43.66	10,154.22
1996	17,229.00	64.00	269.20	44.51	11,983.26
1997	4,343.00	64.00	67.86	45.37	3,079.00
1998	10,635.00	64.00	166.17	46.24	7,683.39
1999	12,015.00	64.00	187.73	47.11	8,843.52
2005	1,344.00	64.00	21.00	52.43	1,101.03
2006	15,227.00	64.00	237.92	53.33	12,689.41
2007	12,446.00	64.00	194.47	54.24	10,548.51
2009	51,845.00	64.00	810.08	56.07	45,421.88
2010	7,961.00	64.00	124.39	56.99	7,089.08

NWE

Electric Division

355.09 Poles and Fixtures - Yellowstone

Original Cost Of Utility Plant In Service

And Development Of Composite Remaining Life as of December 31, 2017

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: ***64*** ***Survivor Curve:*** ***R2.5***

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
2011	11,758.00	64.00	183.72	57.91	10,640.02
2012	18,460.00	64.00	288.44	58.84	16,972.05
2013	48,514.00	64.00	758.03	59.77	45,309.56
2014	22,094.00	64.00	345.22	60.71	20,957.17
2015	28,110.00	64.00	439.22	61.64	27,075.13
2016	10,070.00	64.00	157.34	62.58	9,847.26
2017	34,146.00	64.00	533.53	63.53	33,893.73
Total	717,389.00	64.00	11,209.19	41.88	469,457.88

Composite Average Remaining Life ... ***41.88 Years***

NWE
Electric Division
362.00 Station Equipment
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *61* ***Survivor Curve:*** *L1.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1936	67,853.00	61.00	1,112.31	20.84	23,180.65
1937	5,694.00	61.00	93.34	21.09	1,968.83
1938	1,236.00	61.00	20.26	21.35	432.53
1939	12,031.00	61.00	197.22	21.61	4,261.09
1940	4,578.00	61.00	75.05	21.86	1,640.61
1941	3,635.00	61.00	59.59	22.12	1,318.01
1942	312.00	61.00	5.11	22.38	114.46
1943	218.00	61.00	3.57	22.64	80.90
1944	2,699.00	61.00	44.24	22.90	1,013.04
1945	6,269.00	61.00	102.77	23.16	2,379.89
1946	194.00	61.00	3.18	23.42	74.48
1947	3,933.00	61.00	64.47	23.68	1,526.83
1948	7,433.00	61.00	121.85	23.94	2,917.30
1949	14,658.00	61.00	240.29	24.20	5,815.82
1950	3,640.00	61.00	59.67	24.47	1,460.02
1951	91,076.00	61.00	1,493.00	24.73	36,922.16
1952	114,294.00	61.00	1,873.61	24.99	46,828.09
1953	80,891.00	61.00	1,326.04	25.26	33,494.88
1954	188,105.00	61.00	3,083.59	25.52	78,704.20
1955	88,636.00	61.00	1,453.00	25.79	37,471.98
1956	205,608.00	61.00	3,370.52	26.06	87,827.34
1957	262,762.00	61.00	4,307.44	26.33	113,393.95
1958	38,618.00	61.00	633.06	26.60	16,837.35
1959	90,237.00	61.00	1,479.25	26.87	39,743.08
1960	62,836.00	61.00	1,030.07	27.14	27,956.08
1961	160,602.00	61.00	2,632.74	27.42	72,182.34
1962	191,535.00	61.00	3,139.82	27.69	86,957.01

NWE
Electric Division
362.00 Station Equipment
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *61* ***Survivor Curve:*** *L1.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1963	620,176.00	61.00	10,166.51	27.98	284,419.85
1964	223,877.00	61.00	3,670.00	28.26	103,721.82
1965	144,903.00	61.00	2,375.39	28.55	67,818.36
1966	714,016.00	61.00	11,704.82	28.84	337,609.99
1967	437,536.00	61.00	7,172.50	29.14	209,023.67
1968	361,597.00	61.00	5,927.64	29.45	174,543.73
1969	691,358.00	61.00	11,333.39	29.76	337,234.10
1970	517,738.00	61.00	8,487.25	30.07	255,225.83
1971	626,547.00	61.00	10,270.95	30.39	312,185.36
1972	948,536.00	61.00	15,549.29	30.73	477,767.88
1973	1,039,382.00	61.00	17,038.52	31.07	529,311.89
1974	1,498,678.00	61.00	24,567.73	31.41	771,778.10
1975	2,072,330.00	61.00	33,971.57	31.77	1,079,345.40
1976	1,566,321.00	61.00	25,676.60	32.14	825,270.61
1977	409,503.00	61.00	6,712.96	32.52	218,310.31
1978	1,059,979.00	61.00	17,376.17	32.91	571,868.13
1979	2,779,524.00	61.00	45,564.56	33.31	1,517,982.31
1980	3,323,794.00	61.00	54,486.74	33.73	1,837,910.93
1981	1,313,560.00	61.00	21,533.11	34.16	735,566.81
1982	2,306,243.00	61.00	37,806.10	34.60	1,308,239.87
1983	1,125,928.00	61.00	18,457.27	35.06	647,115.11
1984	2,787,727.00	61.00	45,699.03	35.54	1,623,960.22
1985	436,888.00	61.00	7,161.88	36.03	258,029.31
1986	1,118,622.00	61.00	18,337.50	36.53	669,956.88
1987	726,207.00	61.00	11,904.67	37.06	441,232.67
1988	917,674.00	61.00	15,043.37	37.61	565,794.85
1989	2,075,317.00	61.00	34,020.54	38.17	1,298,702.35

NWE
Electric Division
362.00 Station Equipment
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *61* ***Survivor Curve:*** *L1.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1990	3,035,999.00	61.00	49,768.94	38.76	1,929,072.66
1991	3,271,750.00	61.00	53,633.59	39.37	2,111,309.32
1992	2,286,108.00	61.00	37,476.02	39.99	1,498,549.28
1993	6,132,890.00	61.00	100,536.08	40.63	4,084,832.54
1994	2,144,736.00	61.00	35,158.52	41.29	1,451,614.22
1995	1,901,621.00	61.00	31,173.15	41.97	1,308,268.37
1996	5,983,456.00	61.00	98,086.42	42.66	4,184,694.43
1997	4,554,591.00	61.00	74,663.12	43.37	3,238,216.40
1998	5,257,485.00	61.00	86,185.62	44.10	3,800,594.62
1999	3,271,281.00	61.00	53,625.90	44.84	2,404,473.86
2000	5,449,037.00	61.00	89,325.72	45.59	4,072,322.24
2001	1,774,025.00	61.00	29,081.48	46.36	1,348,196.69
2002	4,017,040.00	61.00	65,851.08	47.14	3,104,407.11
2003	1,738,120.00	61.00	28,492.89	47.94	1,365,917.04
2004	4,344,418.00	61.00	71,217.77	48.75	3,472,057.62
2005	2,871,529.00	61.00	47,072.79	49.58	2,333,886.71
2006	4,236,462.00	61.00	69,448.05	50.42	3,501,636.89
2007	4,194,072.00	61.00	68,753.16	51.28	3,525,541.23
2008	5,017,008.00	61.00	82,243.50	52.15	4,288,695.81
2009	2,948,132.00	61.00	48,328.54	53.03	2,562,956.50
2010	4,949,129.00	61.00	81,130.76	53.93	4,375,372.36
2011	8,086,652.00	61.00	132,563.98	54.84	7,269,539.07
2012	10,060,377.00	61.00	164,919.12	55.76	9,196,035.26
2013	6,667,362.00	61.00	109,297.64	56.69	6,196,534.64
2014	5,404,772.00	61.00	88,600.09	57.64	5,106,554.58
2015	13,624,197.00	61.00	223,340.60	58.59	13,085,300.29
2016	6,965,850.00	61.00	114,190.74	59.55	6,799,995.07

NWE

Electric Division

362.00 Station Equipment

Original Cost Of Utility Plant In Service

And Development Of Composite Remaining Life as of December 31, 2017

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *61* ***Survivor Curve:*** *L1.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
2017	36,927,313.00	61.00	605,347.11	60.52	36,633,149.68
Total	200,668,956.00	61.00	3,289,553.51	49.38	162,436,153.75

Composite Average Remaining Life ... 49.38 Years

NWE
Electric Division
362.09 Station Equipment - Yellowstone
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *61* ***Survivor Curve:*** *L1.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1951	591.00	61.00	9.69	24.73	239.59
1956	317.00	61.00	5.20	26.06	135.41
1958	20.00	61.00	0.33	26.60	8.72
1959	48,943.00	61.00	802.32	26.87	21,555.96
1960	4,365.00	61.00	71.56	27.14	1,942.01
1961	1,919.00	61.00	31.46	27.42	862.49
1962	38.00	61.00	0.62	27.69	17.25
1963	1,782.00	61.00	29.21	27.98	817.25
1965	676.00	61.00	11.08	28.55	316.39
1966	61.00	61.00	1.00	28.84	28.84
1967	54,438.00	61.00	892.40	29.14	26,006.62
1968	24,002.00	61.00	393.46	29.45	11,585.82
1969	5,446.00	61.00	89.28	29.76	2,656.48
1970	1,264.00	61.00	20.72	30.07	623.11
1971	10,338.00	61.00	169.47	30.39	5,151.05
1972	1,438.00	61.00	23.57	30.73	724.31
1974	39,315.00	61.00	644.49	31.41	20,246.15
1975	9,239.00	61.00	151.45	31.77	4,812.01
1976	6,978.00	61.00	114.39	32.14	3,676.60
1977	1,473.00	61.00	24.15	32.52	785.27
1978	454.00	61.00	7.44	32.91	244.94
1979	110,055.00	61.00	1,804.12	33.31	60,104.37
1980	12,989.00	61.00	212.93	33.73	7,182.34
1981	17,130.00	61.00	280.81	34.16	9,592.45
1982	20,964.00	61.00	343.66	34.60	11,892.04
1983	8,604.00	61.00	141.04	35.06	4,945.06
1984	18,180.00	61.00	298.02	35.54	10,590.56

NWE

Electric Division

362.09 Station Equipment - Yellowstone

Original Cost Of Utility Plant In Service

And Development Of Composite Remaining Life as of December 31, 2017

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *61* ***Survivor Curve:*** *L1.5*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1985	44,215.00	61.00	724.81	36.03	26,113.71
1987	47,019.00	61.00	770.78	37.06	28,568.05
1988	61,496.00	61.00	1,008.10	37.61	37,915.56
1989	194,049.00	61.00	3,181.03	38.17	121,432.96
1990	22,442.00	61.00	367.89	38.76	14,259.64
1991	4,008.00	61.00	65.70	39.37	2,586.42
1992	345,430.00	61.00	5,662.61	39.99	226,430.19
1993	10,139.00	61.00	166.21	40.63	6,753.12
1994	563,821.00	61.00	9,242.68	41.29	381,609.01
1995	1,151.00	61.00	18.87	41.97	791.86
1997	26,938.00	61.00	441.59	43.37	19,152.34
1998	7,894.00	61.00	129.41	44.10	5,706.51
2003	43,357.00	61.00	710.75	47.94	34,072.48
2007	2,811.00	61.00	46.08	51.28	2,362.93
2008	1,500.00	61.00	24.59	52.15	1,282.25
2009	43,206.00	61.00	708.27	53.03	37,561.11
2010	104.00	61.00	1.70	53.93	91.94
2011	271,854.00	61.00	4,456.49	54.84	244,384.61
2012	167,239.00	61.00	2,741.54	55.76	152,870.59
2013	13,531.00	61.00	221.81	56.69	12,575.48
2014	125,589.00	61.00	2,058.77	57.64	118,659.41
2015	1,765,498.00	61.00	28,941.70	58.59	1,695,664.82
2017	181,179.00	61.00	2,970.06	60.52	179,735.73
Total	4,345,489.00	61.00	71,235.33	49.94	3,557,323.80

Composite Average Remaining Life ... 49.94 Years

NWE
Electric Division
364.00 Poles, Towers, and Fixtures
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *49* ***Survivor Curve:*** *L3*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1950	63.00	49.00	1.29	10.75	13.83
1954	87,272.00	49.00	1,781.09	11.78	20,986.39
1955	18,912.00	49.00	385.97	12.03	4,644.08
1961	168,214.00	49.00	3,433.00	13.39	45,956.90
1962	32,158.00	49.00	656.30	13.58	8,915.46
1963	76,504.00	49.00	1,561.33	13.77	21,505.36
1964	113,846.00	49.00	2,323.43	13.96	32,423.92
1965	145,925.00	49.00	2,978.12	14.13	42,080.92
1966	196,199.00	49.00	4,004.13	14.30	57,258.32
1967	199,743.00	49.00	4,076.46	14.47	58,971.57
1968	283,663.00	49.00	5,789.15	14.63	84,706.88
1969	288,512.00	49.00	5,888.11	14.80	87,140.16
1970	381,144.00	49.00	7,778.59	14.97	116,454.96
1971	477,321.00	49.00	9,741.42	15.15	147,588.78
1972	605,733.00	49.00	12,362.12	15.34	189,644.32
1973	850,043.00	49.00	17,348.13	15.54	269,672.64
1974	977,303.00	49.00	19,945.32	15.77	314,454.77
1975	1,039,042.00	49.00	21,205.32	16.01	339,435.12
1976	891,291.00	49.00	18,189.94	16.27	295,976.53
1977	1,240,157.00	49.00	25,309.79	16.56	419,173.79
1978	1,689,415.00	49.00	34,478.48	16.88	582,015.17
1979	2,079,749.00	49.00	42,444.63	17.23	731,328.95
1980	2,370,094.00	49.00	48,370.14	17.61	851,930.17
1981	2,497,493.00	49.00	50,970.17	18.03	919,173.06
1982	2,478,804.00	49.00	50,588.76	18.49	935,242.98
1983	2,521,040.00	49.00	51,450.73	18.98	976,411.62
1984	1,771,578.00	49.00	36,155.31	19.51	705,220.84

NWE
Electric Division
364.00 Poles, Towers, and Fixtures
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *49* ***Survivor Curve:*** *L3*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1985	1,757,219.00	49.00	35,862.26	20.07	719,767.04
1986	1,859,982.00	49.00	37,959.51	20.67	784,703.25
1987	2,139,739.00	49.00	43,668.94	21.31	930,573.29
1988	3,077,035.00	49.00	62,797.77	21.98	1,380,403.11
1989	5,176,931.00	49.00	105,653.57	22.69	2,396,878.04
1990	4,903,869.00	49.00	100,080.78	23.42	2,343,984.46
1991	5,786,673.00	49.00	118,097.51	24.18	2,855,998.36
1992	4,490,457.00	49.00	91,643.64	24.97	2,288,427.37
1993	6,398,140.00	49.00	130,576.66	25.78	3,366,380.89
1994	5,635,630.00	49.00	115,014.95	26.61	3,060,622.42
1995	6,467,823.00	49.00	131,998.78	27.46	3,624,408.14
1996	6,065,775.00	49.00	123,793.57	28.32	3,505,904.47
1997	4,952,830.00	49.00	101,080.00	29.20	2,951,234.28
1998	4,702,533.00	49.00	95,971.80	30.09	2,887,400.20
1999	4,675,637.00	49.00	95,422.90	30.99	2,956,805.31
2000	9,596,805.00	49.00	195,856.72	31.90	6,247,353.56
2002	4,204,035.00	49.00	85,798.19	33.75	2,895,752.54
2003	3,468,118.00	49.00	70,779.20	34.69	2,455,469.59
2004	4,964,916.00	49.00	101,326.66	35.64	3,611,528.87
2005	3,711,590.00	49.00	75,748.11	36.60	2,772,511.10
2006	6,030,317.00	49.00	123,069.93	37.57	4,623,770.17
2007	5,304,843.00	49.00	108,264.07	38.55	4,173,058.93
2008	7,411,983.00	49.00	151,267.71	39.53	5,979,122.64
2009	7,404,913.00	49.00	151,123.42	40.51	6,122,623.58
2010	8,250,020.00	49.00	168,370.81	41.51	6,988,407.14
2011	9,556,250.00	49.00	195,029.05	42.50	8,289,054.56
2012	11,893,112.00	49.00	242,720.98	43.50	10,558,288.62

NWE

Electric Division

364.00 Poles, Towers, and Fixtures

Original Cost Of Utility Plant In Service

And Development Of Composite Remaining Life as of December 31, 2017

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *49* ***Survivor Curve:*** *L3*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
2013	18,376,347.00	49.00	375,034.30	44.50	16,688,710.85
2014	26,213,012.00	49.00	534,969.14	45.50	24,340,620.43
2015	24,013,530.00	49.00	490,080.94	46.50	22,788,327.65
2016	18,341,413.00	49.00	374,321.35	47.50	17,779,930.98
2017	17,951,963.00	49.00	366,373.24	48.50	17,768,776.38
Total	278,264,658.00	49.00	5,678,973.67	36.70	208,395,125.68

Composite Average Remaining Life ... *36.70 Years*

NWE
Electric Division
364.09 Poles, Towers, and Fixtures - Yellowstone
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *49* ***Survivor Curve:*** *L3*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1991	152,402.00	49.00	3,110.30	24.18	75,217.64
1992	4,242.00	49.00	86.57	24.97	2,161.81
1994	635.00	49.00	12.96	26.61	344.86
1995	2,582.00	49.00	52.69	27.46	1,446.89
1996	4,311.00	49.00	87.98	28.32	2,491.68
1997	1,416.00	49.00	28.90	29.20	843.75
1998	2,307.00	49.00	47.08	30.09	1,416.52
1999	802.00	49.00	16.37	30.99	507.17
2001	245.00	49.00	5.00	32.82	164.10
2002	8,839.00	49.00	180.39	33.75	6,088.33
2003	24,640.00	49.00	502.87	34.69	17,445.42
2004	39,530.00	49.00	806.75	35.64	28,754.51
2005	1.00	49.00	0.02	36.60	0.75
2006	26,888.00	49.00	548.74	37.57	20,616.48
2007	1.00	49.00	0.02	38.55	0.79
2008	977.00	49.00	19.94	39.53	788.13
2009	51,495.00	49.00	1,050.94	40.51	42,577.75
2010	23,519.00	49.00	479.99	41.51	19,922.42
2011	65,636.00	49.00	1,339.53	42.50	56,932.41
2014	933.00	49.00	19.04	45.50	866.36
2017	11,147.00	49.00	227.49	48.50	11,033.25
Total	422,548.00	49.00	8,623.59	33.58	289,621.01

Composite Average Remaining Life ... 33.58 Years

NWE
Electric Division
368.00 Line Transformers
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *51* ***Survivor Curve:*** *R4*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1970	52,168,234.00	51.00	1,022,919.16	9.29	9,503,275.74
1992	4,481,005.00	51.00	87,863.93	26.11	2,294,348.21
1993	5,450,591.00	51.00	106,875.65	27.03	2,888,729.83
1994	7,199,540.00	51.00	141,169.19	27.95	3,946,313.45
1995	6,386,957.00	51.00	125,236.00	28.89	3,617,898.09
1996	5,518,845.00	51.00	108,213.98	29.83	3,228,093.44
1997	5,061,800.00	51.00	99,252.20	30.78	3,054,966.52
1998	5,243,764.00	51.00	102,820.17	31.74	3,263,053.39
1999	4,424,608.00	51.00	86,758.09	32.70	2,836,740.64
2000	6,016,938.00	51.00	117,980.63	33.66	3,971,701.66
2002	8,400,514.00	51.00	164,717.99	35.61	5,865,836.86
2003	4,830,390.00	51.00	94,714.70	36.59	3,465,691.67
2004	5,581,638.00	51.00	109,445.23	37.57	4,112,245.31
2005	5,233,408.00	51.00	102,617.11	38.56	3,956,780.79
2006	8,734,331.00	51.00	171,263.50	39.55	6,772,904.61
2007	7,975,826.00	51.00	156,390.67	40.54	6,339,573.71
2008	7,366,778.00	51.00	144,448.41	41.53	5,998,743.69
2009	6,041,349.00	51.00	118,459.28	42.52	5,037,122.25
2010	5,308,697.00	51.00	104,093.38	43.52	4,529,786.17
2011	4,957,078.00	51.00	97,198.81	44.51	4,326,534.75
2012	5,559,450.00	51.00	109,010.17	45.51	4,960,915.37
2013	6,413,461.00	51.00	125,755.69	46.51	5,848,391.63
2014	7,828,568.00	51.00	153,503.23	47.50	7,291,988.12
2015	8,872,689.00	51.00	173,976.44	48.50	8,438,224.86
2016	7,104,311.00	51.00	139,301.93	49.50	6,895,556.22
2017	7,650,609.00	51.00	150,013.79	50.50	7,575,663.73

NWE

Electric Division

368.00 Line Transformers

Original Cost Of Utility Plant In Service

And Development Of Composite Remaining Life as of December 31, 2017

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: ***51*** ***Survivor Curve:*** ***R4***

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Total	209,811,379.00	51.00	4,113,999.33	31.60	130,021,080.72

Composite Average Remaining Life ... 31.60 Years

NWE

Electric Division

368.09 Line Transformers - Yellowstone

Original Cost Of Utility Plant In Service

And Development Of Composite Remaining Life as of December 31, 2017

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *51* ***Survivor Curve:*** *R4*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1970	648,005.00	51.00	12,706.14	9.29	118,044.44
1992	66,979.00	51.00	1,313.33	26.11	34,294.35
2001	106.00	51.00	2.08	34.64	71.99
2009	23,739.00	51.00	465.48	42.52	19,792.97
2010	4,912.00	51.00	96.31	43.52	4,191.29
2011	41,433.00	51.00	812.42	44.51	36,162.70
2015	111,347.00	51.00	2,183.30	48.50	105,894.73
2016	1.00	51.00	0.02	49.50	0.97
2017	7,394.00	51.00	144.98	50.50	7,321.57
Total	903,916.00	51.00	17,724.06	18.38	325,775.02

Composite Average Remaining Life ... ***18.38 Years***

NWE
Electric Division
369.20 Underground Services
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *51* ***Survivor Curve:*** *R4*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1972	20,796.00	51.00	407.77	10.50	4,281.29
1973	119,458.00	51.00	2,342.34	11.14	26,095.33
1974	105,265.00	51.00	2,064.05	11.80	24,358.37
1975	229,958.00	51.00	4,509.04	12.48	56,261.11
1976	351,229.00	51.00	6,886.93	13.17	90,680.43
1977	487,553.00	51.00	9,559.98	13.87	132,596.30
1978	624,885.00	51.00	12,252.80	14.59	178,727.43
1979	699,720.00	51.00	13,720.17	15.32	210,161.37
1980	584,787.00	51.00	11,466.55	16.06	184,160.30
1981	651,690.00	51.00	12,778.39	16.82	214,952.35
1982	651,406.00	51.00	12,772.82	17.60	224,767.12
1983	993,019.00	51.00	19,471.20	18.39	358,032.99
1984	990,769.00	51.00	19,427.08	19.19	372,863.28
1985	833,729.00	51.00	16,347.83	20.01	327,160.03
1986	671,600.00	51.00	13,168.79	20.85	274,515.64
1987	745,542.00	51.00	14,618.65	21.69	317,121.92
1988	747,031.00	51.00	14,647.85	22.55	330,354.09
1989	1,425,478.00	51.00	27,950.89	23.43	654,769.42
1990	1,078,286.00	51.00	21,143.12	24.31	513,994.69
1991	1,381,625.00	51.00	27,091.02	25.21	682,858.33
1992	1,423,291.00	51.00	27,908.01	26.11	728,748.39
1993	2,165,565.00	51.00	42,462.58	27.03	1,147,716.32
1994	3,623,838.00	51.00	71,056.52	27.95	1,986,349.22
1995	3,859,839.00	51.00	75,684.05	28.89	2,186,409.61
1996	3,536,877.00	51.00	69,351.38	29.83	2,068,796.90
1997	3,692,027.00	51.00	72,393.58	30.78	2,228,262.45
1998	3,223,827.00	51.00	63,213.07	31.74	2,006,100.89

NWE
Electric Division
369.20 Underground Services
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *51* ***Survivor Curve:*** *R4*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1999	2,384,533.00	51.00	46,756.13	32.70	1,528,791.18
2000	3,474,048.00	51.00	68,119.43	33.66	2,293,173.41
2002	1,452,373.00	51.00	28,478.25	35.61	1,014,150.22
2003	2,075,621.00	51.00	40,698.95	36.59	1,489,209.44
2004	2,408,389.00	51.00	47,223.90	37.57	1,774,369.17
2005	2,226,936.00	51.00	43,665.95	38.56	1,683,701.63
2006	2,817,739.00	51.00	55,250.47	39.55	2,184,973.01
2007	2,446,933.00	51.00	47,979.67	40.54	1,944,941.14
2008	2,672,260.00	51.00	52,397.90	41.53	2,176,012.75
2009	2,119,373.00	51.00	41,556.85	42.52	1,767,078.99
2010	2,244,579.00	51.00	44,011.90	43.52	1,915,246.42
2011	1,289,305.00	51.00	25,280.80	44.51	1,125,304.64
2012	1,950,427.00	51.00	38,244.14	45.51	1,740,442.54
2013	3,239,356.00	51.00	63,517.57	46.51	2,953,946.79
2014	4,362,141.00	51.00	85,533.23	47.50	4,063,154.38
2015	5,254,142.00	51.00	103,023.66	48.50	4,996,865.29
2016	5,866,339.00	51.00	115,027.67	49.50	5,693,961.09
2017	7,072,267.00	51.00	138,673.61	50.50	7,002,987.16
Total	90,275,851.00	51.00	1,770,136.55	36.65	64,879,404.78

Composite Average Remaining Life ... 36.65 Years

NWE
Electric Division
369.29 Underground Services - Yellowstone
Original Cost Of Utility Plant In Service
And Development Of Composite Remaining Life as of December 31, 2017
Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: *51* ***Survivor Curve:*** *R4*

Year	*Original Cost*	*Avg. Service Life*	*Avg. Annual Accrual*	*Avg. Remaining Life*	*Future Annual Accruals*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1991	134,275.00	51.00	2,632.88	25.21	66,364.46
1996	1,543.00	51.00	30.26	29.83	902.53
1997	9,329.00	51.00	182.92	30.78	5,630.37
1998	13,079.00	51.00	256.45	31.74	8,138.71
1999	2,183.00	51.00	42.80	32.70	1,399.58
2001	489.00	51.00	9.59	34.64	332.10
2002	3,375.00	51.00	66.18	35.61	2,356.67
2003	453.00	51.00	8.88	36.59	325.02
2004	6,733.00	51.00	132.02	37.57	4,960.51
2005	1.00	51.00	0.02	38.56	0.76
2007	256.00	51.00	5.02	40.54	203.48
2009	6,161.00	51.00	120.81	42.52	5,136.88
2010	27,457.00	51.00	538.38	43.52	23,428.41
2011	37,593.00	51.00	737.13	44.51	32,811.15
2014	2,842.00	51.00	55.73	47.50	2,647.21
2015	158.00	51.00	3.10	48.50	150.26
2016	1.00	51.00	0.02	49.50	0.97
2017	1.00	51.00	0.02	50.50	0.99
Total	245,929.00	51.00	4,822.20	32.10	154,790.05

Composite Average Remaining Life ... 32.10 Years