Exhibit 26

Before the North Dakota Public Service Commission

State of North Dakota

In the Matter of the Application of
Northern States Power Company – North Dakota
a Division of Xcel Energy
For Authority to Establish Increased Rates for
Electric Service

Case No. PU-20-441

Direct Testimony of James Garren

April 23, 2021

156 **PU-20-441** Filed: 7/26/2021 Pages: 59
Exhibit 26 - Prefiled Direct Testimony of James Garren

Public Service Commission Advocacy Staff

Mitch Armstrong, Advocacy Staff Counsel

DIRECT TESTIMONY AND EXHIBITS

OF JAMES S. GARREN

INTRODUCTION

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

A. My name is James S. Garren. I am an analyst with the economic consulting firm of Snavely King Majoros & Associates, Inc. ("Snavely King").

Q. HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND EXPERIENCE?

A. Yes. Attachment A is a summary of my qualifications and experience.

Q. Q. PLEASE DESCRIBE YOUR BACKGROUND IN UTILITY DEPRECIATION.

A. Since my employment at Snavely King in 2010, I have participated as an analyst in approximately 30 separate depreciation studies of electric, gas and water utilities on behalf of the firm's clients, most of which are state commissions or state-funded consumer advocate agencies. In that role, I have worked closely with the firm's principals in performing life and net salvage analyses, calculation of depreciation rates, and preparation of testimony. Additionally, I am familiar with the firm's proprietary depreciation software, the Snavely Comprehensive Investment Analysis System ("**SCIAS**"). I am also recognized as a Certified Depreciation Professional by the Society of Depreciation Professionals.[1]

Q. FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?

A. I am appearing on behalf of the North Dakota Public Service Commission Advocacy Staff. ("PSC")

Q. WHAT IS THE OBJECTIVE OF YOUR TESTIMONY?

A. The purpose of my testimony is to review and assess the proposed depreciation rates and expenses of Northern States Power in this case. The Company has filed direct testimony from Mr. Moeller in which he proposed depreciation rates and expenses for production, transmission, distribution and general. I am proposing adjustments to these rates based on an independent study of service lives.

Q. ARE YOU SPONSORING ANY EXHIBITS IN CONJUNCTION WITH THIS TESTIMONY?

A. Yes, I am sponsoring two exhibits.

Exhibit JSG-1, Calculation of depreciation rates and accruals

[1] [1] "The Society of Depreciation Professionals was organized in 1987 to recognize the professional field of depreciation analysis and individuals contributing to this field; to promote the professional development and professional ethics of practitioners in the field of depreciation analysis; to collect and exchange information about depreciation analysis; and to provide a national forum of programs and publications concerning depreciation." http://www.depr.org/?page=AboutUs . For certification, an applicant must have at least 5 years of full time professional depreciation experience, at least 2 years of which must be in the area of depreciation administration. Among other requirements, the applicant must pass a two part (Technical and Ethics) closed book examination which includes questions about, *inter alia*, Plant and Reserve Accounting, Life Analysis Concepts, Life Analysis Using Actuarial Models, Life Analysis Using Simulation Models, Salvage and Cost of Retiring Analysis, Technology Forecasting and Depreciation Calculations." http://www.depr.org/?page=Certification

Exhibit JSG-2: Life Analysis

Q. WHAT IS THE RESULT OF YOUR PROPOSED DEPRECIATION PARAMETERS?

A. Depreciation accruals based on my proposed depreciation parameters produce a depreciation expense of $215.5 million, which is a $4.4 million reduction from the $219.1 million depreciation expense listed by the Company. These amounts are based on the current and proposed parameters calculated on a January 1, 2020 plant balance. This total expense adjustment is based on individual adjustments I have made on four accounts, two transmission accounts, 352.00 Structures and Improvements, 353.00 Station Equipment, 364 Poles Towers and Fixtures, and 369.01 Services, Overhead. The impact on depreciation expense of each of these adjustments is shown in the table below.

TABLE 1
Summary of Depreciation Rates and Expenses
($) in millions
Based on December 31, 2020 Plant Balances

	Company Proposed		Garren Proposed		Difference
	Life/Curve	Expense	Life/Curve	Expense	Expense
352.00	70-R5	$1,831,898	80-R4	$1,544,152	$287,746
353.00	56-R2	$25,762,300	60-R1.5	$22.599,402	$3,162,898
364.00	47-R1	$729,914	60-S3	$581,482	$148,432
369.10	42-R1.5	$250,557	52-R3	$197,619	$52,938

The Jurisdictional allocation for Transmission is 5.1744% for Transmission, which means that the adjustment to the depreciation expense for transmission in North Dakota is $178,548.5. This makes the total revenue requirement adjustment to depreciation expense $379,918.5 after allocating the transmission expense adjustment.

SUMMARY

Q. WHAT INFORMATION HAVE YOU REVIEWED IN PREPARATION FOR THIS TESTIMONY?

A. Having reviewed both Mr. Moeller's testimony as well as the Company's 2017 depreciation study, prepared by Mr. Watson. Based on my review of both, I prepared numerous data requests which the PSC Staff propounded to NSP. I have now had the opportunity to review the Company's responses to these data requests as well as the documents attached to the Company's filing. NSP's responses to these data requests provided the data used by Mr. Watson to prepare his depreciation study. Utilizing this data and applying my own analysis, I have proposed adjustments to the depreciation rates and accruals utilized for plant depreciation.

DEPRECIATION – GENERAL

Q. WHAT IS DEPRECIATION?

A. In 1958, the National Association of Regulatory Utility Commissioners ("NARUC") sanctioned the following definition of depreciation: "Depreciation," as applied to depreciable utility plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities.[2] Another commonly cited definition of depreciation is that of the American Institute of Certified Public Accountants[3]:

> Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any) over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences.

In short, depreciation is the process of recovering the initial investment in tangible capital assets in a systematic fashion over the useful service life of the plant, recognizing that utility plant is typically a group of investments.

Q. CAN DEPRECIATION BE CALCULATED WITH PRECISION?

A. No, but to ensure that the analysis is as accurate as is reasonably possible, it requires the knowledge and informed judgment of an expert trained in the field of utility depreciation. The judgment pertains to the estimation of the future surviving life of plant as indicated by past patterns of retirements, industry trends, and corporate investment plans.

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[2] *Uniform System of Accounts for Class A and Class B Electric Utilities,* 1958, rev. 1962.

[3] American Institute of Certified Public Accountants, *Accounting Research and Terminology Bulletin #1.*

Q. HOW DOES THIS JUDGMENTAL CHARACTERISTIC OF DEPRECIATION ACCOUNTING INFLUENCE THE COMMISSION'S APPROACH TO THESE SUBJECTS?

A. The Commission must recognize that the development of depreciation and rates is not a refined science subject to mathematical precision. Because depreciation analysts use judgment in their estimation of depreciation, the Commission must necessarily exercise its own judgment, based on the analyses and evidence before it, in assessing the rationale and data that underlie alternative depreciation rates.

Q. WHAT ARE THE BASIC PARAMETERS REQUIRED TO DEVELOP A DEPRECIATION RATE?

A. At its simplest level, the only parameter that is absolutely required is an estimate of the service life of the asset being retired. The reciprocal of that number can be used as the depreciation rate. However, because most utility depreciation is applied to accounts that are *groups* of assets which have varying lives, virtually all utilities use "remaining life" depreciation. This procedure computes the depreciation rate by dividing the unrecovered net investment by the estimated remaining years of the asset's (or group of assets') service life. It is intended to ensure that any past under- or over-accruals of depreciation are recovered during the remaining life of the asset.

The remaining life procedure requires an estimate of the dispersion of retirements around an average service life. In the electric utility industry, this dispersion is usually described in terms of "Iowa Curves," so named because they were developed at Iowa State

University. These curves describe how closely the retirements are grouped around the average service life and whether they tend to occur more rapidly before, after or coincident with the average service life.[4] I discuss Iowa curves in more detail in a later section of this testimony.

Q. PLEASE ILLUSTRATE HOW THE PARAMETERS YOU HAVE JUST DESCRIBED ARE USED TO DEVELOP DEPRECIATON RATES.

A. Beginning with the simplest example, assume a single asset with a 20 year life[5] Its depreciation rate is the reciprocal of 20:

$$1/20 = 5\%$$

Now, let us assume that the asset is expected to have salvage value equivalent to 5 percent of its investment value. The depreciation rate declines:

$$\frac{1-.05}{20} = \frac{.95}{20} = 4.75\%$$

This is called a "whole life" rate because it is based on the whole life of 20 years. To develop the remaining life rate, we must identify some additional items of data: the original cost of the asset, the depreciation reserve (the amount of depreciation that has already been recovered), and the remaining life of the asset.

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[4] For a complete discussion of Iowa Curves, see Appendix A, part 3 of *Public Utility Depreciation Practices*, National Association of Regulatory Utility Commissioners, August 1996.

[5] This example is only to illustrate *basic principles*. As I explain in the next section, there are primarily *groups* of assets rather than a single asset, with each asset group assigned to an account. Thus, this example is not illustrative of how depreciation is actually calculated in current practice.

In this illustration, let us assume that the asset originally cost $1 million and that past depreciation charges have recovered $400,000. This means that we have yet to recover $600,000 in original cost less 5 percent positive salvage, or $50,000. The total amount yet to be recovered is thus $550,000. Let us further assume that the asset is 10 years old, leaving 10 years of remaining life. In remaining life depreciation, the unrecovered amount is divided by the remaining life:

$$\frac{\$550{,}000}{10 \text{ years}} = \$55{,}000 \text{ required annual accrual}$$

The depreciation rate is then calculated by dividing the annual amount to be recovered by the gross investment, in this case:

$$\$55{,}000 \,/\, \$1{,}000{,}000 = 5.5\%$$

<u>DISCUSSION OF SERVICE LIVES</u>

Q. PLEASE DEFINE "AVERAGE SERVICE LIFE" AS IT IS USED IN UTILITY DEPRECIATION CALCULATIONS?

A. The "average service life" for a given account is a projection of the number years that a new unit of plant can be expected to remain used and useful on average. This concept is useful because modern depreciation utilizes what we call "group depreciation". That is, rather than depreciate the value of an individual unit or units over the lifetime of those units, we depreciate the value of a collection of units all together. This group depreciation assumes that many units in each account will be retired at earlier ages, and thus have a shorter than average life, and many units will retire at later ages, and thus have a longer than average life. Average service life is used to calculate the average remaining life, which, in turn, is the denominator in the calculation of depreciation expense. Group depreciation is also why we do not study the lives of units in an account, but rather, the lives of dollars in these accounts. Therefore, all else being equal, a longer average service life directly results in a lower depreciation expense.

Q. DO THE LENGTH OF SURVICE LIVES OF PLANT AFFECT WHAT RATEPAYERS ARE OBLIGATED TO PAY TO UTILITY COMPANIES?

A. Yes. As I go through the analysis below, it is important for the Commission to remember that, all else held constant, shorter service life estimates result in higher depreciation rates and expense for customers.

Q. PLEASE DESCRIBE THE PROPER WAY TO DETERMINE THE AVERAGE SERVICE LIFE COMPONENT OF DEPRECIATION RATES.

A. I have analyzed NSP's distribution accounts using an actuarial life analysis process called the Retirement Rate method. Actuarial methodologies were developed initially in the 17th and 18th centuries, primarily by life insurance companies that needed mathematical means of estimating the mortality risk of individuals over a long period of time. This resulted in the development of "life tables," which show the mortality risk of a group of individuals with similar risk factors at each age.

The Retirement Rate method is an actuarial technique used to study plant lives, much like the actuarial techniques used in the insurance industry to study human lives. It requires a record of the dates of placement (birth) and retirement (death) for each asset unit studied. Retirement data that contains this date of placement and retirement is referred to as "aged data" because it tells the analyst the age of the plant at the time it was retired. The Retirement Rate method is the most sophisticated of the statistical life analysis methods because it relies on the most refined level of data.

In the Retirement Rate method, aged retirement data as described above, and total plant in service at a given age (referred to collectively as "exposures") from a company's records are used to construct an observed or original life table. I discuss the composition of an observed life table in detail below. These tables are important because they result in data points showing the percentage of a given unit of plant that is expected to survive to a given age. The actuarial analysis smooths and extends the observed life table by fitting it to a family of 31 standardized survivor curves ("Iowa curves"). The curve-fitting uses the least squared differences approach to find a best fit life for each curve. The "sum of least squared difference" is a common means of fitting curves (in this case the Iowa curves) to a set of data (in this case the observed life table data). The difference between each point of data and a point on a line is squared,[6] and the square of all those differences is summed to provide the total difference between the set of data and the line. The line that produces the least difference from the set of data is considered the "best fit." The purpose of squaring the difference is to ensure that negative differences contribute to the overall difference rather than canceling out positive differences.

[6] "Square" in mathematics means you multiply a quantity by itself. This quantity can be a number, variable or even an algebraic expression. When you square a number, the answer will always be positive; thus, the product of a negative number multiplied by another negative number equals a positive number. Squaring is the same as raising to the power 2, and is denoted by a superscript 2; for instance, the square of 3 may be written as 3^2, which is the number 9.

Numerous iterative calculations are required for a Retirement Rate analysis. In the end, the analysis produces a life and Iowa curve best fit for a single average vintage.

Q. WHAT ARE IOWA CURVES?

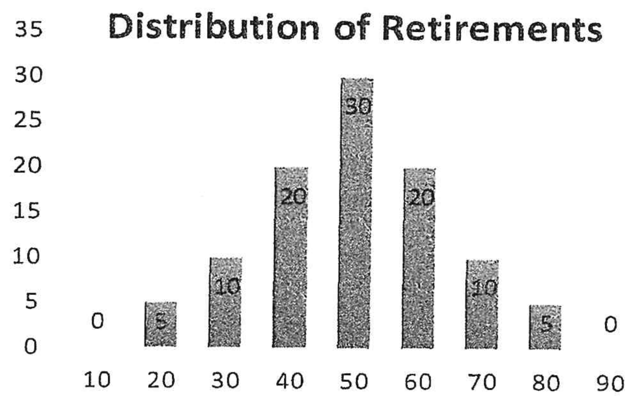
A. An "observed life table" is a table listing the percent surviving (in other words, the "observed life") of a common class of assets, as of a particular calendar year. An Iowa curve is a surrogate or standardized "observed life table" based on a specific pattern of retirements around an average service life. The Iowa curves were devised over 60 years ago at Iowa State University. The curves provide a set of standard patterns of retirement dispersion. Retirement dispersion merely recognizes that accounts are comprised of individual assets or units having different lives. Each curve represents a probability distribution and has a series of attributes. The curves are helpful in a variety of ways, including:

- To make realistic forecasts of the remaining useful life of groups of assets.
- To assist in anticipating the potential failure and functional failure of assets.

For example, imagine an account that begins with a new addition of one hundred units. These units are unlikely to all retire at the same time. Rather, different units within the group will retire at different times. Represented graphically, the result might appear as follows:

Graph JSG-1

Age:	Units Retired
10	0
20	5
30	10
40	20
50	30
60	20
70	10
80	5
90	0

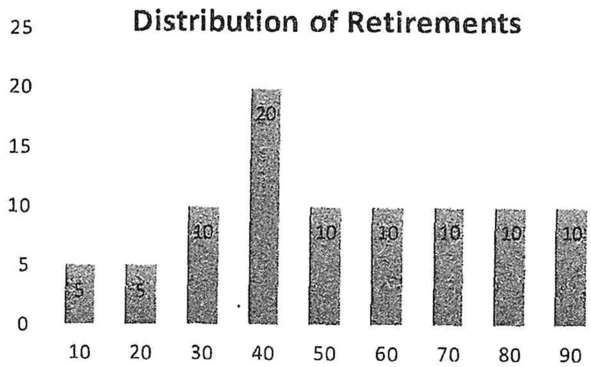


In this example, the average service life would be fifty, and the retirement dispersion curve would tell us how the retirements are arranged around the average service life. As well, the distribution of retirements around the average service life is symmetrical, with the "mode" – that is, the age with the highest number of retirements -- being at the average service life. In this data, the retirements are also relatively tightly grouped around the average service life.

Iowa curves describe many different patterns of dispersions. Returning to our example, imagine a different pattern of retirements as follows:

Graph JSG-2

Age:	Units Retired
10	5
20	5
30	10
40	20
50	10
60	10
70	10
80	10
90	10



In this example, the average service life is still fifty, but the dispersion characteristics are very different. The mode (again, the highest number of retirements) is at age 40, which is an earlier age than the average, and overall the distribution of retirements is more spread out than in the previous example. By using different types of Iowa curves, I can capture these different characteristics that can be seen in retirement data.

One way that Iowa curves illustrate these different patterns is by their orientation as left-skewed ("L curves"), symmetrical ("S curves") or right-skewed curves ("R curves"). The letters describe the location of the "mode," as discussed above, relative to the average service life. Hence, in the first example, I would use an "S curve" because the number of retirements are relatively equal on both sides of the mode. In the second example, however, in which the mode falls <u>before</u> the average service life (that is, the mode falls at a younger age than the average service life), I would use an "L curve." If the mode were to fall after the average service life, then I would use an "R curve."[7]

In addition to the letter that describes the location of the mode (e.g. L curve), Iowa curves are numbered zero (0) through six (6), which identifies the spread of the retirement dispersion. Lower numbers represent a wider retirement dispersion while higher numbers represent a narrower dispersion. Referring to the first example above, in which the retirements were more tightly grouped around the average service life, a higher number would be used, whereas in the second example, in which the retirements were more diffuse, a lower number would be used.

To combine these two concepts, an appropriate Iowa curve for the first example might be an S5, where the "S" indicates a symmetrical curve to either side of the mode and the 5 indicates a relatively narrow dispersion of retirements. In contrast, for the second example, the data indicate a more likely curve of L2, with an "L" because the mode falls before the average service life and a "2" because there is a relatively wider retirement dispersion. This combination of one letter and one number defines a dispersion pattern. Adding an average service life to an Iowa curve (*e.g.*, 5-S0) provides a survivor curve intended to depict a reasonable expectation of how a group of assets will survive, or conversely be retired, over the expected average service life.

Table JSG-2 below compares curves with the same shape (S0) but different average service lives (5- and 10-years) to illustrate different iterations with the same curve. The

[7] In addition to L, S and R curves, there is a set of Origin Modal, or "O curves," which are so called because the mode for these curves is at age one, or the "origin." Generally speaking, O-shaped Iowa curves are not appropriate for utility plant.

percent surviving represents the amount of plant surviving at each age interval shown in the first column. The 5-S0 life and curve sums to the five-year average service life, while the 10-S0 life and curve sums to a ten-year average service life.

Table JSG-3

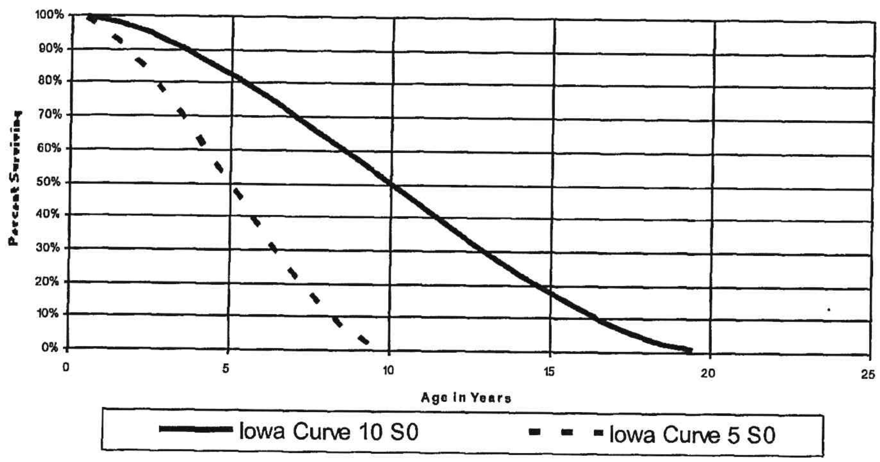
Sample Survivor Curves

Age	5-S0 Curve Percent Surviving	10-S0 Curve Percent Surviving
0.5	0.99	1.00
1.5	0.92	0.98
2.5	0.83	0.94
3.5	0.70	0.90
4.5	0.57	0.85
5.5	0.43	0.80
6.5	0.30	0.74
7.5	0.17	0.67
8.5	0.08	0.60
9.5	0.01	0.53
10.5		0.47
11.5		0.40
12.5		0.33
13.5		0.26
14.5		0.20
15.5		0.15
16.5		0.10
17.5		0.06
18.5		0.02
19.5		0.00
Total	**5.00**	**10.00**

These are called "curves" because, when plotted on charts with the x-axis representing "age" and the y-axis representing "percent surviving," they appear as shown below in Graph 3:

Graph JSG-3

Example of Same Curve With Different Lives



Q. HOW DO YOU USE THE IOWA CURVES IN YOUR SERVICE LIFE ANALYSIS?

A. The purpose of Iowa curves is to enable the calculation of an average remaining life. Remaining life calculations take the current age of each vintage within an account and then use the retirement rate projected by the appropriate Iowa curve to project the remaining life of each of these vintages of plant. Ultimately, depreciation accruals for plant investment are calculated from remaining lives, so it is important to select the correct average service life and the correct Iowa curve.

Q. CAN YOU WALK THROUGH THE ANALYSIS OF A PARTICULAR ACCOUNT AS AN EXAMPLE?

A. Yes. Understanding how a life table functions is crucial to understanding life analyses. Therefore, let us take 364.00 – Poles Towers and Fixtures, as an example. Below, I have reproduced ages 0 to 4.5 of the observed life table for Account 364 using an experience band of 2001-2016.

Table JSG-4

Observed Life Table for Account 364

Age	Exposures	Retirements	Retirement Ratio (%)	Survivor Ratio (%)	Cumulative Survivors
BAND		2001 - 2016			
0	215,768,363	18,759	0.0087	99.9913	1.0000
0.5	202,211,848	479,014	0.2369	99.7631	0.9999
1.5	192,025,423	194,614	0.1013	99.8987	0.9975
2.5	187,515,281	131,212	0.0700	99.9300	0.9965
3.5	174,081,320	881,362	0.5063	99.4937	0.9958
4.5	168,193,350	35,756	0.0213	99.9787	0.9908

The first column shows the age. The observed life table groups data from all vintages together and analyzes the mortality characteristics based on the age of the plant. In the next column are exposures. This is the total plant in service exposed to retirement at a given age. *Exposures decrease as age increases* because the most recent vintages have not yet had time to attain higher ages. Next, we have retirements, which are total retirements on all vintages that occur at a given age. Earlier, we discussed aged retirement data, and this is where that data comes into play. To review, the age of the retirement equals the year that it was taken out of service minus the age that it was put into service. The next column, retirement ratio, is simply retirements divided by exposures. Broadly, this tells you what the odds of a given unit retiring at this age should be. The survivor ratio is then 100% minus the retirement ratio, which, converse to retirement ratio, tells you what percent of the exposures should survive this age. Finally, cumulative survivors are an iterative calculation that begins at 100% and then is multiplied by the previous year's survivor ratio.

This measures the chance that a unit will survive at the beginning of its life, which is 100%, and then subjects that percentage to the risk of retirement at each subsequent age.

The cumulative survivors at each age become the data points that are then compared to the points on each Iowa curve by an algorithm to arrive at the best fit.[8] For Account 364, the life-curve combination with the lowest sum of squared differences is a L3 curve with a 65-year average service life with a sum of squared differences of 142.406. The curve fitting results display the average service life that gives the lowest sum of squared differences for each different curve shape. Table JSG-4 presents the top five curve fits for this account:

Table JSG-5

Curve Fitting Results for Account 364

Curve	Life	Sum of Squared Differences
BAND	2001 - 2016	
L3	65.0	142.406
S2	63.0	322.207
S3	61.0	389.458
R3	60.0	428.410
L2	70.0	777.157

Reviewing this table provides a sense of the range of lives that might be appropriate given the curve shape selection. Looking further down the curve fitting results for Account 364, we can see that the best fit average service lives fall in the range between 60 years and

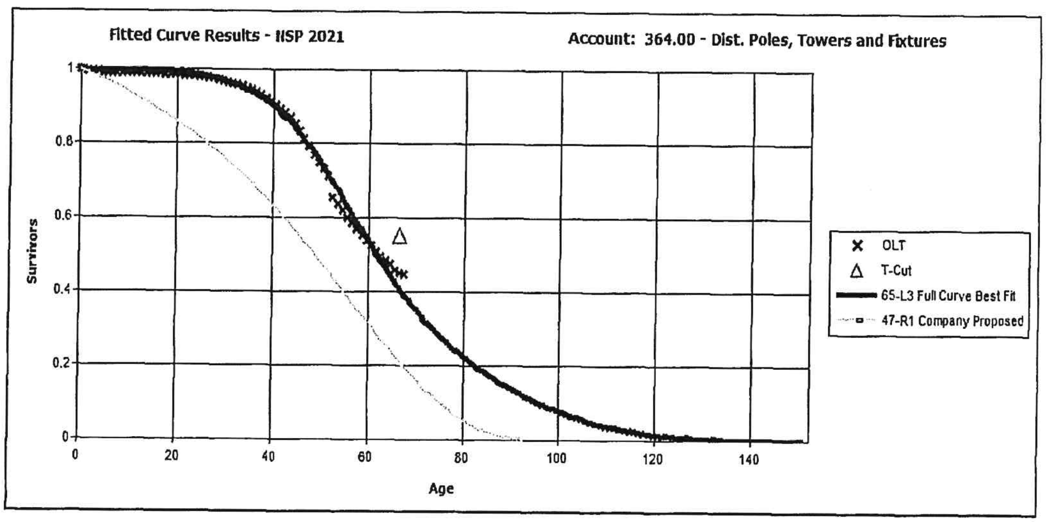
[8] The basic definition of an algorithm is a set of guidelines that describe how to perform a task. In more precise terms, an algorithm is a process or set of rules to be followed in calculations.

70 years. The number components in the best fitting Iowa curves are either a 2 or 3, which means that each of the best fit curves is consistent with an intermediate distribution of retirements around the mode. We can also see that the Company's proposed curve for Account 364, a 47-R1 does not match the data in this account particularly well overall.

The next section of the life analysis is a graph, depicted below as Graph JSG-5, which plots the cumulative survivors from the observed life table against the best fitting Iowa curve and currently approved life and curve.

Graph JSG-4

Best Curve Fit Results for Account 364



This graph clearly shows how necessary it was to perform an updated depreciation study. As we can see, the Company's proposed average service life of 47 is really not a good fit to the available data at any point on the curve, showing retirements that begin much earlier than in the data, and then are fairly broadly distributed across the life of the plant. In contrast, the data shows almost no retirements through the first twenty years of plant, followed by a relatively sharp increase in retirements around age 40.

Q. HAVE YOU PROVIDED THE RESULTS OF YOUR MATHEMATICAL FITTING ANALYSIS?

A. Yes, Exhibit JSG-2 includes a schedule for each account studied titled "Best Fit Curve Results" that shows my mathematical curve fitting analysis. My proposed lives and curves take into account both these best fit curve results as well as information provided by Mr. Watson in his depreciation study, and the various life analyses performed by Mr. Watson and provided in response to NDPSC-6-16.

Q. ARE THERE INSTANCES WHERE THE MATHEMATICAL BEST FIT LIFE AND CURVE ARE NOT APPROPRIATE?

A. Yes. The mathematical best fit is appropriate in most cases in which the future retirement patterns can reasonably be expected to follow historical experience. Future retirement patterns may not always be expected to follow historical experience, however. Numerous factors might lead a utility depreciation expert, familiar with the plant account for a given company for a given account, to conclude that future depreciation expectations are different than historical experience. These factors include major replacement or maintenance projects, differing life expectations of new technologies, and economic or engineering decisions of utility management, any of which could significantly affect the expectations for future retirement rates. Thus, informed judgment is an important component of the service life analysis, but any decision not to follow historical experience must be supported by a reasonable basis.

Q. CAN YOU PROVIDE A DISCUSSION OF THE LIFE ANALYSIS FOR EACH ACCOUNT YOU ARE PROPOSING TO ADJUST?

A. Yes. Below is a brief discussion of my life analysis for accounts

<u>Account 352 – Transmission Structures and Improvements</u>

For account 352, Mr. Moeller has proposed a life and curve of 70-R5. The preponderance of the available actuarial data is consistent with a significantly longer life and a somewhat lower modal curve number. I am proposing to adjust the average service life and curve to this account up to an 80-year average service life and a R4 curve. It should be noted that this can be considered an incremental adjustment, and further adjustments to lengthen the lives may be appropriate if this account continues to experience low retirement rates in the future.

<u>Account 353 – Transmission Station Equipment</u>

For account 353, Mr. Moeller has proposed a life and curve of 56-R2. The best-fitting lives and curves for this account are significantly longer lives. However, the longest-lived exposures in this account, those beyond approximate age 50, begin to show a different retirement pattern than the bulk of the plant in service. If we discount the longest-lived assets, the 60-R2 life and curve appears to be a better fit to the historical data than Mr. Moeller's 56-R2 life and curve. I am proposing a 60-R2 life and curve for this account.

<u>Account 364 – Distribution Poles Towers and Fixtures</u>

For account 364, Mr. Moeller has proposed a life and curve of 47-R1. The available actuarial analysis is limited, however with sixteen years of retirement data, I would consider it more reliable than the Simulated Plant Record analysis Mr. Watson relied upon. Additionally, in my experience, a 47-year average service life is below what I would consider a generally reasonable range for distribution poles. Based on the preponderance of historical experience, incorporating my judgment about this type of plant, I am proposing a 60-S3 life and curve for this account.

Account 369.01 – Distribution Services, Overhead

For account 369.01, Mr. Moeller has proposed a life and curve of 42-R1.5. For this account the best fit according to the historical data is a 52-R3 life and curve. I would generally consider this to be a very reasonable life and curve shape for this account. Therefore, I am proposing a 52-R3 life and curve for this account.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

Northern States Power Company 2021 Electric Rate Increase Application	**Case No. PU-20-441 OAH No. 20200422**

VERIFICATION

~~STATE OF~~ District of Columbia)
) ss.
~~COUNTY OF~~ City of Washington)

James Garren, being first duly sworn on oath, deposes and states that he has read the testimony and exhibits submitted in the above captioned matters under his name, that they were prepared by him or under his direction, that he knows the contents thereof, and that the same are true and correct to the best of his knowledge and belief.

James Garren

Subscribed and sworn to before me this 22 day of April, 2021.

DANIEL SOLOMONRAJ NOTARY PUBLIC MY COMMISSION EXPIRES 11/14/2021 DISTRICT OF COLUMBIA

Notary Public
My Commission Expires: 11-14-2021

James S. Garren

Experience

Snavely, King, Majoros, and Associates, Inc.

Consultant (2010-Present)

Mr. Garren provides expert witness testimony to clients, specializing in the area of depreciation. Mr. Garren also provides analytical support to SK clients and principals including quantitative and qualitative analysis, preparation of client presentations, and case management. Mr. Garren works primarily in the areas of depreciation but has also prepared exhibits for use in the revenue requirement, cost-allocation, rate design, and rate of return aspects of regulatory proceedings. Mr. Garren has also assisted with the preparation of two valuation studies on municipal water companies.

Mr. Garren is a member of, and has been made a Certified Depreciation Professional, by the Society of Depreciation Professionals. In addition, Mr. Garren has attended the National Association of Regulated Utility Commissioners' Rate School.

Issue Advocacy Organization

State Policies Assistant 2009

Assisted with a wide variety of tasks including, but not limited to research, updating organization website with current news, extensive member/supporter communication, and database maintenance.

Binder and Binder, LLC

Client Advocate/Non-Attorney Representative 2007-2008

Mr. Garren's primary duties at Binder were legal writing; producing client and ALJ correspondence, case memoranda, expert witness interrogatories, and arguments in favor of appeal. From July 2007 acted as the company president's primary legal writer. In June of 2007, Mr. Garren became certified as a non-attorney representative. From that time, responsibilities included performing three to five Social Security Disability hearings per week.

Mr. Garren was also responsible for thoroughly developing medical and vocational evidence from the initial filing phase, through Administrative hearing.

Education

Marlboro College, Marlboro, Vermont, B.A. - Literature and Philosophy

Mr. Garren fulfilled Marlboro College's graduation requirement with a thesis on ethical issues in the works of Dostoevsky and Nietzsche. Exploring early post-modern ethical thinking in literature and philosophy.

James Shay Garren

PROJECTS AND APPEARANCES

Arizona Corporation Commission

Tucson Electric Power Company
In the matter of the application of Tucson Electric Power Company for the establishment of just and reasonable rates and charges designed to realize a reasonable rate of return on the fair value of the properties of Tucson Electric Power Company devoted to its operations throughout the state of Arizona and for related approvals. (pre-filed testimony regarding depreciation issues including average service lives and net salvage. Assisted and advised with mitigation of rate increases resulting from shortening of coal production plant lives)
AZ KCC Docket No, E-01933A-19-0028

Colorado Public Service Commission

Public Service Company of Colorado
In the matter of the application of Public Service Company of Colorado for authorization to revise the depreciation and amortization of electric utility plant, common utility plant and retired generating units.
Proceeding No. 16A-0231E

Federal Energy Regulatory Commission

Pacific Gas and Electric Company
General Rate Case (Type of Filing Code 320):
Pacific Gas and Electric Company Transmission Owner Tariff Rate Filing
FERC Electric Tariff Volume No. 5
(Assisted attorneys with analysis of depreciation issues, including service lives and net salvage.
FERC Docket No. ER17-2154-000 Pacific Gas and Electric

Pacific Gas and Electric Company
General Rate Case (Type of Filing Code 320):
Pacific Gas and Electric Company Transmission Owner Tariff Rate Filing
FERC Electric Tariff Volume No. 5
(Pre-field testimony on depreciation issues including average service life and net salvage analysis. Assisted attorneys with filing of briefs.
FERC Docket No. ER16-2320-000

Eastern Shore Natural Gas
Eastern Shore Natural Gas Company submits tariff filing per 154.312: General Section 4 Rate Case Filing to be effective 3/1/2017 under RP17-363 Filing Type : 690
(Assisted attorneys with analysis of depreciation issues, including service lives and net salvage. Assisted with the analysis of settlement.)
FERC Docket No. FERC RP17-363

Georgia Public Service Commission

Georgia Power Company
In the matter of Georgia Power Company's 2010 rate case (Appeared at hearing, adopted the testimony of Charles W. King regarding depreciation issues).
GA PSC Docket No. 36989

James Shay Garren

Hawai'i Public Utilities Commission

Hawai'i Electric, Hawai'i Electric Light, and Maui Electric
In the matter of the application of Hawaiian Electric Company, Inc., Hawai'i Electric Light Company, Inc., and Maui Electric Company, Limited for approval of change in depreciation and amortization rates and CIAC amortization period (pre-filed testimony regarding depreciation issues, including service lives, net salvage and depreciation reserves.
Docket No. 2016-0431

Kansas Corporation Commission

Kansas Gas Service
In the matter of the application of Kansas Gas Service, a Division of ONE Gas, Inc. for adjustment of its natural gas rats in the state of Kansas (pre-filed testimony regarding depreciation issues, including service lives and net salvage).
KS KCC Docket No. 18-KGSG-560-RTS

Empire District Electric Co.
In the matter of the application of The Empire District Electric Company for approval of the commission to make certain changes in its charges for electric service. (pre-filed testimony regarding depreciation issues, including service lives and net salvage).
KS KCC Docket No. 19-EPDE-223-RTS

Maryland Public Service Commission

Potomac Edison Company
In the matter of the application of the Potomac Edison Company for adjustments to its retail rates for the distribution of electric energy. (Pre-filed testimony and hearing appearance addressing depreciation issues, including service lives and net salvage, including use of the SFAS-143 present value methodology.)
Maryland Case No. 9490

Columbia Gas Company
In the matter of the application of Columbia Gas of Maryland. Inc. for authority to increase rates and charges. (Pre-filed testimony on depreciation issues, focusing on net salvage methodology issues, including the use of SFAS-143 present value methodology.)
MD Case No. 9480

Columbia Gas Company
In the matter of the application of Columbia Gas of Maryland. Inc. for authority to increase rates and charges. (Pre-filed testimony on depreciation issues, focusing on net salvage methodology issues, including the use of SFAS-143 present value methodology.)
MD Case No. 9447

Delmarva Power & Light Company
In the matter of the application of Delmarva Power & Light Company for adjustments to its retail rates for distribution of electric energy. (Pre-filed testimony addressing depreciation issues, including service lives and net salvage, depreciation reserves, and rate calculation methodology. Addressed depreciation treatment of legacy meter systems.)
MD Case No 9424

Pepco Electric Company

James Shay Garren

In the Application of Potomac electronic power company for approval of its depreciation rates. (Pre-filed testimony and hearing appearance on depreciation issues including service lives, net salvage, depreciation reserves, and rate calculation methodology.)
MD Case No. 9385

Baltimore Gas and Electric
In the matter of the application of Baltimore Gas and Electric Company for adjustments to its electric and gas base rates. (Pre-filed testimony and hearing appearance on depreciation issues including service lives, net salvage, depreciation reserves, and rate calculation methodology.)
MD PSC Case No. 9355.

New Jersey Board of Public Utilities

Elizabethtown Gas
In the Matter of the Petition of Elizabethtown Gas Company For Approval of Increased Base Tariff Rates and Charges for Gas Service, Changes to Depreciation Rates and Other Tariff Revisions (Assisted attorneys with analysis of depreciation issues, including service lives and net salvage. Assisted with settlement negotiations.)
NJ BPU Docket No GR19040486

Public Service Electric and Gas Company
In the matter of the petition of Public Service Electric and Gas Company for approval of an increase in electric and gas rates for changes In the tariffs for electric and gas service. (pre-filed direct testimony on depreciation issues including average service lives and net salvage)
NJ BPU Docket No. ER18010029 & GR18010030

New Jersey American Water
In the matter of the petition of New Jersey American Water Company for Approve of increased tariff rates and charges for water and wastewater service, change in depreciation rates and other tariff modifications.
NJ BPU Docket No WR17090985

Rockland Electric Company
In the matter of the verified petition of Rockland Electric Company for approve of changes in electric rates, its tariff for electric service and its depreciation rates; and for the other relief (pre-filed direct testimony on depreciation issues focused predominantly on average service lives)
NJ BPU Docket No. ER13111135

Elizabethtown Gas
In the matter of the petition of Pivotal Utility Holdings, Inc. D/B/A Elizabethtown Gas for approval of increased base tariff rates and charges for gas service and other tariff revisions. (Assisted attorneys with analysis of depreciation issues, including service lives and net salvage. Assisted with settlement negotiations.)
NJ BPU Docket No. GR16090826

Suez Water and Wastewater
In the Matter of the Joint Petition for Approval of an Increase in Rates for Water and Wastewater Service and Other Tariff Changes. (Assisted attorneys with analysis of depreciation issues, including service lives and net salvage. Assisted with settlement negotiations.)
NJ BPU Docket No. WR18050593

Pennsylvania Public Utilities Commission

UGI Utilities Inc. – Electric Division
In re: Pennsylvania Public Utility Commission v. UGI Utilities, Inc. - Electric Division (pre-filed testimony regarding depreciation issues focusing on average service life analysis and remaining life

methodology)
PA PUC Docket No. R-2017-2640058

UGI Utilities Inc. – Gas Division
In Re: Pennsylvania PUC, et al., v UGI Penn Natural Gas, Inc. (pre-filed testimony regarding depreciation issues focusing on average service life analysis and remaining life methodology)
PA PUC Docket # R-2016-2580030

First Energy Companies.
In Re: Pennsylvania PUC, et al. v. Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, West Penn Power Company (pre-filed testimony regarding depreciation issues focusing on average service life analysis and remaining life methodology)
PA PUC Docket Nos. R-2016-2537349, 2537352, 2537355, 2537459

UGI Utilities, Inc. – Gas Division
In Re: Pennsylvania PUC, et al., v UGI Penn Natural Gas, Inc. (pre-filed testimony regarding depreciation issues focusing on average service life analysis and remaining life methodology)
PA PUC Docket No. 2015-2518439

Utah Public Service Commission

Rocky Mountain Power
In the matter of the application of Rocky Mountain Power, a Division of PacifiCorp, for authority to change its depreciation rates effective January 1, 2021 (Assisted attorneys with the analysis of depreciation issues, including average service lives and net salvage. Assisted with multi-party negotiations of settlement stipulation regarding depreciation rates)
UT PSC Docket No. 18-035-036

West Virginia Public Service Commission

Mountaineer Gas
Rule 42T Tariff filing to increase rates and charges and proposed charges in depreciation rates. (Pre-filed testimony on depreciation issues including service life parameter analysis and rate calculation.)
Case No. 15-0048-G-D

Northern States Power Company
ND PSC Staff Proposed Rate Calculation for T, D and G

FERC Accot	Account Description	Adjusted Plant 1/1/2020	Depreciation Reserve 1/1/2020	Net Salvage %	Net Salvage Amount	Unacrrued Balance	Remaining Life (Yrs)	Annual Accrual	Depreciation/ Amortization Rate	Reserve Ratio
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intangible Plant - Total Company										
302	Franchise and Consents	$254,353,164	$92,129,160	0%	$0	$162,224,004	0	0	0.00%	36.22%
303	Computer Software 3 Year	-	-	0%	-	$0	0	-	33.33%	0.00%
303	Computer Software 5 Year	84,834,782	39,752,559	0%	$0	$45,082,223	2.35	19,183,925	22.61%	46.86%
303	Computer Software 7 Year	-	-	0%	-	$0	0	-	14.29%	0.00%
303	Computer Software 10 Year	-	-	0%	-	$0	0	-	10.00%	0.00%
303	Computer Software 15 Year	-	-	0%	-	$0	0	-	6.67%	0.00%
	Total Intangible Plant	339,187,946	131,881,719	-		207,306,227		19,183,925		
Transmission - Total Company										
352	Structures and Improvements	125,866,620	25,783,317	-5%	-6,293,331	$106,376,634	69	1,544,152	1.23%	20.48%
353	Station Equipment	1,282,548,604	356,938,460	-15%	-192,382,291	1,117,992,435	49.47	22,599,402	1.76%	27.83%
354	Towers and Fixtures	118,022,279	93,957,416	-35%	-41,307,798	65,372,661	40.02	1,633,500	1.38%	79.61%
355	Poles and Fixtures	1,441,024,312	280,060,038	-50%	-720,512,156	1,881,476,430	54.11	34,771,326	2.41%	19.43%
356	Overhead Conductors and Devices	595,600,941	155,146,601	-35%	-208,460,329	648,914,669	57.48	11,289,399	1.90%	26.05%
357	Underground Conduit	29,883,406	5,845,634	0%	0	24,037,772	60.84	395,098	1.32%	19.56%
358	Underground Conductor and Devic	36,985,970	10,215,408	-5%	-1,849,299	28,619,861	38.51	743,180	2.01%	27.62%
359	Roads and Trails	-	-	0%	-	-	0	0	0.00%	0.00%
	Total Transmission	3,629,932,132	927,946,874		-1,170,805,203	3,872,790,461		72,976,057		
Distribution - ND Only										
361	Structures and Improvements	1,089,400	541,555	-30%	-326,820	874,665	42.96	20,360	1.87%	49.71%
362	Station Equipment	34,463,023	8,450,072	-25%	-8,615,756	34,628,707	41.74	829,629	2.41%	24.52%
364	Poles, Towers, and Fixtures	17,242,070	12,946,269	-120%	-20,690,484	24,986,285	42.97	581,482	3.37%	75.09%
365	Overhead Conductors and Devices	22,573,598	6,380,243	-25%	-5,643,400	21,836,755	30.19	723,311	3.20%	28.26%
366	Underground Conduit	7,319,050	4,253,324	-20%	-1,463,810	4,529,536	33.07	136,968	1.87%	58.11%
367	Underground Conductor and Devic	66,455,866	22,068,896	-10%	-6,645,587	51,032,557	36.28	1,406,631	2.12%	33.21%
368	Line Transformers	26,472,691	5,532,556	-5%	-1,323,635	22,263,770	19.77	1,126,139	4.25%	20.90%
368	Line Capacitors	619,830	309,104	-7%	-43,388	354,114	15.57	22,743	3.67%	49.87%
369	Overhead Services	5,645,012	4,372,423	-85%	-4,798,260	6,070,849	30.72	197,619	3.50%	77.46%
369	Underground Services	9,384,994	6,014,824	-5%	-469,250	3,839,420	23.8	161,320	1.72%	64.09%
370	Meters	3,396,024	-1,010,720	-5%	-169,801	4,576,545	7.89	580,044	17.08%	-29.76%
373	Street Lighting and Signal Systems	3,206,047	1,105,849	-40%	-1,282,419	3,382,617	23.69	142,787	4.45%	34.49%
	Total Distribution - ND Only	$197,867,605	$70,964,395		($51,472,608)	$178,375,818		$5,929,032		

Adjusted Depreciation Remaining Depreciation/

FERC Accoı	Account Description	Plant 1/1/2020	Reserve 1/1/2020	%	Net Salvage Amount	Unacrrued Balance	Life (Yrs)	Annual Accrual	Amortization Rate	Reserve Ratio
General - Total Company										
390	Structures and Improvements	$72,970,511	$26,628,536	-20%	($14,594,102)	$60,936,077	37.91	1,607,388	2.20%	36.49%
390	Structures and Improvements - Leasehold Improvements	1,075,433	352,898	0%		722,535	8.22	87,900	8.17%	32.81%
391	Office Furniture and Equipment	31,852,266	19,329,498	0%	0	12,522,768	8.94	1,400,757	4.40%	60.68%
391	Network Equipment	48,587,258	28,849,203	0%	0	19,738,055	3.02	6,535,780	13.45%	59.38%
392	Automobiles	6,383,510	1,412,787	5%	319,175	4,651,548	7.66	607,252	9.51%	22.13%
392	Light Trucks	26,363,136	11,863,590	10%·	2,636,314	11,863,232	4.53	2,618,815	9.93%	45.00%
392	Trailers	20,963,111	9,126,295	20%	4,192,622	7,644,194	6.32	1,209,524	5.77%	43.54%
392	Heavy Trucks	106,143,649	46,412,379	15%	15,921,547	43,809,723	6.04	7,253,265	6.83%	43.73%
393	Stores Equipment	1,624,278	923,711	0%	0	700,567	8.72	80,340	4.95%	56.87%
394	Tools, Shop, and Garage Equipmen	99,182,174	40,454,197	0%	0	58,727,977	8.68	6,765,896	6.82%	40.79%
395	Laboratory Equipment	2,570,365	1,304,300	0%	0	1,266,065	4.47	283,236	11.02%	50.74%
396	Power Operated Equipment	51,534,536	33,283,045	15%	7,730,180	10,521,311	5.63	1,868,794	3.63%	64.58%
397	General Communication Equipmer	11,245,667	8,410,341	0%	0	2,835,326	2.99	948,270	8.43%	74.79%
397	Communication Equipment - Two '	58,409,389	13,600,117	0%	0	44,809,272	7.57	5,919,323	10.13%	23.28%
397	Comm. & Telecomm. Equipment -	6,539,567	4,369,037	0%	0	2,170,530	4.87	445,694	6.82%	66.81%
397	Comm. & Telecomm. Equipment -	41,674,693	16,120,977	0%	0	25,553,716	9.59	2,664,621	6.39%	38.68%
398	Miscellaneous Equipment	1,597,851	571,524	0%	-	1,026,327	9.75	105,264	6.59%	35.77%
	Total General	588,717,394	263,012,435		16,205,736	309,499,223		40,402,119		
	Total Common	703,185,439	204,872,865		-45,707,508	544,020,083		77,054,132		
	Total Electric Utility	$5,458,890,516	$1,598,678,288	$0	($1,251,779,584)	$5,111,991,813	$0	$215,545,265		

Observed Life Table Results
NSP 2021
Account: 352.00 - Trans. S&I

Age	Exposures	Retirements	Retiremen Ratio (%)	Survivor Ratio (%)	Cumulative Survivors
BAND		2001 - 2016			
0	68,624,614	0	0.0000	100.0000	1.0000
0.5	59,518,121	0	0.0000	100.0000	1.0000
1.5	57,534,720	0	0.0000	100.0000	1.0000
2.5	30,980,959	13,780	0.0445	99.9555	1.0000
3.5	26,721,083	0	0.0000	100.0000	0.9996
4.5	29,618,282	0	0.0000	100.0000	0.9996
5.5	29,150,891	5,193	0.0178	99.9822	0.9996
6.5	26,058,108	0	0.0000	100.0000	0.9994
7.5	25,151,026	40,844	0.1624	99.8376	0.9994
8.5	20,070,852	16,056	0.0800	99.9200	0.9978
9.5	15,750,663	0	0.0000	100.0000	0.9970
10.5	15,213,848	0	0.0000	100.0000	0.9970
11.5	11,071,533	0	0.0000	100.0000	0.9970
12.5	11,791,084	0	0.0000	100.0000	0.9970
13.5	11,547,890	0	0.0000	100.0000	0.9970
14.5	10,306,936	0	0.0000	100.0000	0.9970
15.5	9,248,117	14,959	0.1618	99.8382	0.9970
16.5	9,463,740	4,906	0.0518	99.9482	0.9953
17.5	10,542,899	0	0.0000	100.0000	0.9948
18.5	11,980,133	8,801	0.0735	99.9265	0.9948
19.5	11,349,304	0	0.0000	100.0000	0.9941
20.5	11,430,581	14,065	0.1230	99.8770	0.9941
21.5	11,602,995	0	0.0000	100.0000	0.9929
22.5	7,985,421	0	0.0000	100.0000	0.9929
23.5	7,486,479	0	0.0000	100.0000	0.9929
24.5	7,777,730	0	0.0000	100.0000	0.9929
25.5	7,735,174	0	0.0000	100.0000	0.9929
26.5	3,889,919	302	0.0078	99.9922	0.9929
27.5	4,709,215	0	0.0000	100.0000	0.9928
28.5	4,790,157	0	0.0000	100.0000	0.9928
29.5	5,045,455	0	0.0000	100.0000	0.9928
30.5	5,268,337	5,105	0.0969	99.9031	0.9928
31.5	5,703,592	0	0.0000	100.0000	0.9918
32.5	5,532,039	0	0.0000	100.0000	0.9918
33.5	4,951,876	0	0.0000	100.0000	0.9918
34.5	5,528,469	0	0.0000	100.0000	0.9918
35.5	5,769,909	1,064	0.0184	99.9816	0.9918
36.5	5,410,427	20,878	0.3859	99.6141	0.9917
37.5	5,339,958	166	0.0031	99.9969	0.9878
38.5	5,652,658	4,592	0.0812	99.9188	0.9878

39.5	5,463,234	3,286	0.0601	99.9399	0.9870
40.5	4,952,844	0	0.0000	100.0000	0.9864
41.5	5,059,163	0	0.0000	100.0000	0.9864
42.5	4,478,389	0	0.0000	100.0000	0.9864
43.5	3,827,569	11,442	0.2989	99.7011	0.9864
44.5	3,627,301	890	0.0245	99.9755	0.9834
45.5	3,434,307	0	0.0000	100.0000	0.9832
46.5	3,188,016	42,736	1.3405	98.6595	0.9832
47.5	3,093,554	0	0.0000	100.0000	0.9700
48.5	3,006,283	12,671	0.4215	99.5785	0.9700
49.5	2,858,563	25,518	0.8927	99.1073	0.9659
50.5	2,284,726	2,805	0.1228	99.8772	0.9573
51.5	1,332,127	6,221	0.4670	99.5330	0.9561
52.5	1,279,833	5,422	0.4237	99.5763	0.9517
53.5	1,284,418	5,943	0.4627	99.5373	0.9476
54.5	1,252,715	16,208	1.2939	98.7061	0.9433
55.5	1,085,518	816	0.0751	99.9249	0.9311
56.5	937,721	5,781	0.6165	99.3835	0.9304
57.5	581,084	0	0.0000	100.0000	0.9246
58.5	454,931	0	0.0000	100.0000	0.9246
59.5	313,781	0	0.0000	100.0000	0.9246
60.5	222,295	0	0.0000	100.0000	0.9246
61.5	132,923	0	0.0000	100.0000	0.9246
62.5	122,402	0	0.0000	100.0000	0.9246
63.5	120,663	0	0.0000	100.0000	0.9246
64.5	102,748	0	0.0000	100.0000	0.9246
65.5	17,262	0	0.0000	100.0000	0.9246
66.5	3,807	0	0.0000	100.0000	0.9246
67.5	3,807	0	0.0000	100.0000	0.9246
68.5	3,807	0	0.0000	100.0000	0.9246
69.5	6,451	0	0.0000	100.0000	0.9246
70.5	6,451	0	0.0000	100.0000	0.9246
71.5	6,451	0	0.0000	100.0000	0.9246
72.5	2,989	0	0.0000	100.0000	0.9246
73.5	2,989	0	0.0000	100.0000	0.9246
74.5	2,989	0	0.0000	100.0000	0.9246
75.5	2,989	0	0.0000	100.0000	0.9246
76.5	15,684	0	0.0000	100.0000	0.9246
77.5	20,408	345	1.6888	98.3112	0.9246
78.5	20,063	0	0.0000	100.0000	0.9090
79.5	20,063	0	0.0000	100.0000	0.9090
80.5	20,063	0	0.0000	100.0000	0.9090
81.5	26,575	0	0.0000	100.0000	0.9090
82.5	27,922	0	0.0000	100.0000	0.9090
83.5	27,922	0	0.0000	100.0000	0.9090
84.5	27,922	15,339	54.9347	45.0653	0.9090
85.5	12,583	0	0.0000	100.0000	0.4096

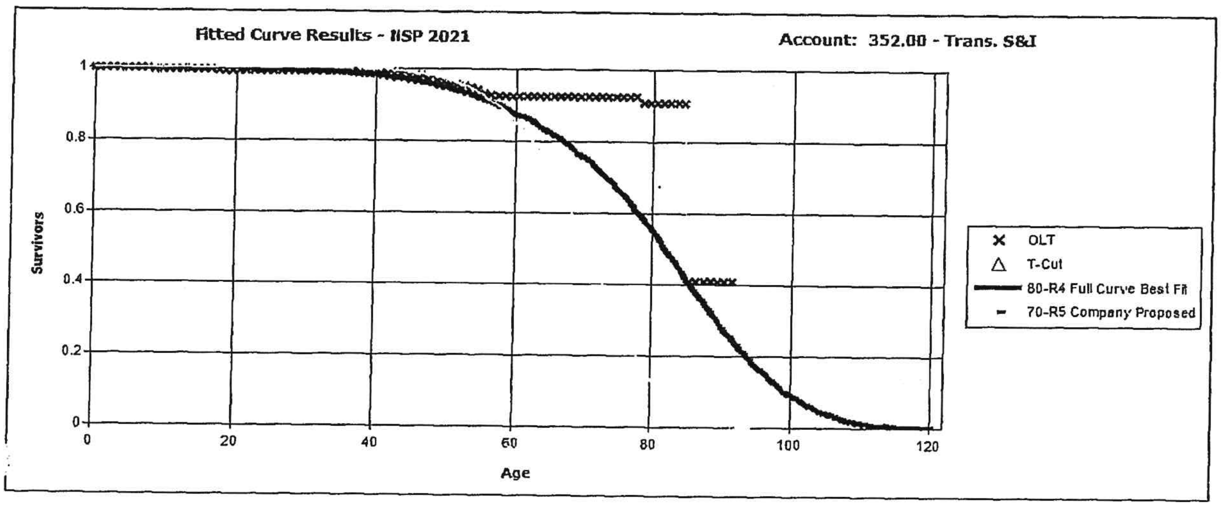
86.5	36,822	0	0.0000	100.0000	0.4096
87.5	32,098	0	0.0000	100.0000	0.4096
88.5	32,098	0	0.0000	100.0000	0.4096
89.5	32,098	0	0.0000	100.0000	0.4096
90.5	32,098	0	0.0000	100.0000	0.4096
91.5	0	0	0.0000	100.0000	0.4096

Best Fit Curve Results
NSP 2021
Account: 352.00 - Trans. S&I

Curve	Life	Sum of Squared Differences
BAND	**2001 - 2016**	
R4	80.0	17,127.731
R5	80.0	17,148.550
S5	80.0	20,002.633
R3	80.0	20,628.333
S6	80.0	21,083.358
S4	80.0	21,110.184
L5	80.0	22,917.747
R2.5	80.0	23,596.906
S3	80.0	24,281.028
L4	80.0	26,458.857
R2	80.0	27,344.555
S2	80.0	28,590.944
S1.5	80.0	31,474.492
R1.5	80.0	32,241.112
S1	80.0	35,032.336
L3	80.0	36,257.759
SQ	80.0	37,539.813
R1	80.0	38,093.798
S0.5	80.0	39,000.855
S0	80.0	43,733.402
L2	80.0	45,088.020
R0.5	80.0	47,191.028
L1.5	80.0	49,018.607
S-0.5	80.0	50,092.552
L1	80.0	54,022.620
O1	80.0	57,727.559
L0.5	80.0	60,392.377
L0	80.0	67,723.523
O2	80.0	75,675.842
O3	80.0	124,092.874
O4	80.0	174,378.867

Analytical Parameters

OLT Placement Band:	1918 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter	4
Maximum Life Paramete	80
Life Increment Paramete	1
Max Age (T-Cut):	84.5



Analytical Parameters	
OLT Placement Band:	1918 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter:	4
Maximum Life Parameter:	80
Life Increment Parameter:	1
Max Age (T-Cut):	84.5

NSP 2021

352 - Transmission Structures and Improvements

Calculation of Remaining Life
Based Upon Broad Group/Vintage Group Procedures
Related to Original Cost as of December 31, 2016

Survivor Curve .. IOWA: 80 R4

			BG/VG Average			
Year (1)	Age (2)	Surviving Investment (3)	Service Life (4)	Remaining Life (5)	ASL Weights (6)=(3)/(4)	RL Weights (7)=(6)*(5)
2016	0.5	9,171,747	80.00	79.50	114,647	9,114,402
2015	1.5	6,807,530	80.00	78.50	85,094	6,679,951
2014	2.5	27,835,042	80.00	77.50	347,938	26,965,830
2013	3.5	5,897,738	80.00	76.50	73,722	5,639,943
2012	4.5	537,114	80.00	75.50	6,714	506,932
2011	5.5	1,849,713	80.00	74.51	23,121	1,722,694
2010	6.5	4,599,746	80.00	73.51	57,497	4,226,505
2009	7.5	1,955,860	80.00	72.51	24,448	1,772,766
2008	8.5	5,937,685	80.00	71.51	74,221	5,307,829
2007	9.5	4,572,716	80.00	70.52	57,159	4,030,680
2006	10.5	2,355,370	80.00	69.52	29,442	2,046,841
2005	11.5	3,841,182	80.00	68.53	48,015	3,290,226
2004	12.5	1,209,653	80.00	67.53	15,121	1,021,103
2003	13.5	250,821	80.00	66.54	3,135	208,608
2002	14.5	1,494,413	80.00	65.54	18,680	1,224,346
2001	15.5	494,628	80.00	64.55	6,183	399,104
2000	16.5	181,853	80.00	63.56	2,273	144,480
1999	17.5	215,465	80.00	62.57	2,693	168,516
1998	18.5	176,115	80.00	61.58	2,201	135,563
1997	19.5	1,158,189	80.00	60.59	14,477	877,207
1996	20.5	332,140	80.00	59.61	4,152	247,467
1995	21.5	2,154,495	80.00	58.62	26,931	1,578,731
1994	22.5	3,642,589	80.00	57.64	45,532	2,624,407
1993	23.5	917,537	80.00	56.66	11,469	649,820
1992	24.5	59,494	80.00	55.68	744	41,407
1991	25.5	55,988	80.00	54.70	700	38,284
1990	26.5	4,217,291	80.00	53.73	52,716	2,832,422
1989	27.5	173,717	80.00	52.76	2,171	114,565
1988	28.5	180,678	80.00	51.79	2,258	116,970
1987	29.5	16,854	80.00	50.83	211	10,708

1986	30.5	156,203	80.00	49.87	1,953	97,366
1985	31.5	34,621	80.00	48.91	433	21,166
1984	32.5	283,552	80.00	47.96	3,544	169,975
1983	33.5	891,162	80.00	47.01	11,140	523,633
1982	34.5	32,152	80.00	46.06	402	18,512
1981	35.5	634,980	80.00	45.12	7,937	358,153
1980	36.5	515,096	80.00	44.19	6,439	284,517
1979	37.5	421,445	80.00	43.26	5,268	227,891
1978	38.5	168,923	80.00	42.34	2,112	89,393
1977	39.5	341,895	80.00	41.42	4,274	177,009
1976	40.5	537,850	80.00	40.51	6,723	272,332
1975	41.5	107,919	80.00	39.60	1,349	53,422
1974	42.5	864,729	80.00	38.70	10,809	418,348
1973	43.5	841,500	80.00	37.81	10,519	397,740
1972	44.5	326,451	80.00	36.93	4,081	150,692
1971	45.5	327,952	80.00	36.05	4,099	147,791
1970	46.5	475,242	80.00	35.18	5,941	209,008
1969	47.5	294,427	80.00	34.32	3,680	126,322
1968	48.5	198,717	80.00	33.47	2,484	83,141
1967	49.5	250,796	80.00	32.63	3,135	102,285
1966	50.5	599,505	80.00	31.79	7,494	238,245
1965	51.5	985,104	80.00	30.97	12,314	381,317
1964	52.5	182,673	80.00	30.15	2,283	68,844
1963	53.5	27,825	80.00	29.34	348	10,205
1962	54.5	26,369	80.00	28.54	330	9,408
1961	55.5	155,936	80.00	27.75	1,949	54,097
1960	56.5	133,695	80.00	26.97	1,671	45,078
1959	57.5	350,856	80.00	26.20	4,386	114,917
1958	58.5	127,377	80.00	25.44	1,592	40,509
1957	59.5	141,151	80.00	24.69	1,764	43,564
1956	60.5	96,438	80.00	23.95	1,205	28,870
1955	61.5	89,372	80.00	23.22	1,117	25,935
1954	62.5	10,522	80.00	22.49	132	2,958
1953	63.5	1,739	80.00	21.78	22	473
1952	64.5	17,915	80.00	21.07	224	4,719
1951	65.5	85,486	80.00	20.37	1,069	21,772
1950	66.5	13,455	80.00	19.69	168	3,311
1949	67.5	0	80.00	19.01	0	0
1948	68.5	0	80.00	18.34	0	0
1947	69.5	0	80.00	17.67	0	0
1946	70.5	0	80.00	17.02	0	0
1945	71.5	0	80.00	16.39	0	0
1944	72.5	3,807	80.00	15.77	48	750
1943	73.5	0	80.00	15.16	0	0
1942	74.5	0	80.00	14.58	0	0
1941	75.5	0	80.00	14.01	0	0
1940	76.5	0	80.00	13.47	0	0

1939	77.5	0	80.00	12.94	0	0
1938	78.5	0	80.00	12.43	0	0
1937	79.5	0	80.00	11.95	0	0
1936	80.5	0	80.00	11.48	0	0
1935	81.5	0	80.00	11.04	0	0
1934	82.5	0	80.00	10.61	0	0
1933	83.5	0	80.00	10.20	0	0
1932	84.5	0	80.00	9.81	0	0
1931	85.5	0	80.00	9.43	0	0
1930	86.5	1,347	80.00	9.07	17	153
1929	87.5	4,724	80.00	8.72	59	515
1928	88.5	0	80.00	8.39	0	0
1927	89.5	0	80.00	8.06	0	0
1926	90.5	0	80.00	7.75	0	0
1925	91.5	32,098	80.00	7.44	401	2,985
		103,086,366			1,288,580	88,765,630

AVERAGE SERVICE LIFE 80.00

AVERAGE REMAINING LIFE 68.89

Observed Life Table Results
NSP 2021
Account: 353.00 - Trans - Station Eqpt.

Age	Exposures	Retirements	Retirement Ratio (%)	Survivor Ratio (%)	Cumulative Survivors
BAND		2001 - 2016			
0	790,842,407	2,445,310	0.3092	99.6908	1.0000
0.5	748,751,421	796,678	0.1064	99.8936	0.9969
1.5	690,728,036	589,510	0.0853	99.9147	0.9958
2.5	578,360,423	639,094	0.1105	99.8895	0.9950
3.5	533,930,695	1,068,866	0.2002	99.7998	0.9939
4.5	515,725,964	1,060,023	0.2055	99.7945	0.9919
5.5	476,721,540	890,536	0.1868	99.8132	0.9899
6.5	440,094,181	1,346,567	0.3060	99.6940	0.9880
7.5	408,911,709	1,081,376	0.2645	99.7355	0.9850
8.5	350,995,464	1,073,022	0.3057	99.6943	0.9824
9.5	297,545,226	3,167,317	1.0645	98.9355	0.9794
10.5	333,626,492	1,768,610	0.5301	99.4699	0.9690
11.5	304,889,930	680,836	0.2233	99.7767	0.9638
12.5	299,493,364	197,462	0.0659	99.9341	0.9617
13.5	278,930,453	893,542	0.3203	99.6797	0.9610
14.5	264,920,036	1,067,288	0.4029	99.5971	0.9580
15.5	254,069,117	794,989	0.3129	99.6871	0.9541
16.5	260,114,782	1,892,140	0.7274	99.2726	0.9511
17.5	261,183,664	650,643	0.2491	99.7509	0.9442
18.5	252,556,442	1,484,354	0.5877	99.4123	0.9418
19.5	245,191,534	1,139,275	0.4646	99.5354	0.9363
20.5	230,402,741	1,205,673	0.5233	99.4767	0.9320
21.5	185,918,335	129,720	0.0698	99.9302	0.9271
22.5	163,201,967	437,351	0.2680	99.7320	0.9264
23.5	145,572,623	230,791	0.1585	99.8415	0.9240
24.5	156,993,132	351,991	0.2242	99.7758	0.9225
25.5	160,249,280	141,857	0.0885	99.9115	0.9204
26.5	104,798,412	903,365	0.8620	99.1380	0.9196
27.5	108,597,316	304,052	0.2800	99.7200	0.9117
28.5	110,191,935	2,447,579	2.2212	97.7788	0.9091
29.5	108,192,954	426,254	0.3940	99.6060	0.8889
30.5	104,517,183	1,126,442	1.0778	98.9222	0.8854
31.5	107,015,967	299,969	0.2803	99.7197	0.8759
32.5	97,348,886	279,735	0.2874	99.7126	0.8734
33.5	92,944,872	1,617,536	1.7403	98.2597	0.8709
34.5	98,823,613	750,596	0.7595	99.2405	0.8558
35.5	95,077,370	1,813,981	1.9079	98.0921	0.8493
36.5	88,580,883	550,626	0.6216	99.3784	0.8331
37.5	78,019,015	638,756	0.8187	99.1813	0.8279
38.5	75,087,649	693,643	0.9238	99.0762	0.8211

39.5	71,466,420	636,686	0.8909	99.1091	0.8135
40.5	65,366,333	720,829	1.1028	98.8972	0.8063
41.5	63,192,317	1,511,762	2.3923	97.6077	0.7974
42.5	54,785,808	688,415	1.2566	98.7434	0.7783
43.5	48,288,062	613,072	1.2696	98.7304	0.7685
44.5	43,090,189	516,250	1.1981	98.8019	0.7588
45.5	39,735,757	780,461	1.9641	98.0359	0.7497
46.5	35,806,431	1,171,702	3.2723	96.7277	0.7350
47.5	29,062,051	253,810	0.8733	99.1267	0.7109
48.5	28,087,042	436,761	1.5550	98.4450	0.7047
49.5	24,225,062	335,311	1.3841	98.6159	0.6937
50.5	17,044,318	665,552	3.9048	96.0952	0.6841
51.5	12,264,376	438,440	3.5749	96.4251	0.6574
52.5	9,844,114	63,952	0.6496	99.3504	0.6339
53.5	9,263,067	147,306	1.5902	98.4098	0.6298
54.5	9,012,837	137,843	1.5294	98.4706	0.6198
55.5	7,439,626	61,422	0.8256	99.1744	0.6103
56.5	5,425,810	48,107	0.8866	99.1134	0.6053
57.5	4,672,675	8,298	0.1776	99.8224	0.5999
58.5	4,492,529	5,723	0.1274	99.8726	0.5988
59.5	3,836,593	17,631	0.4595	99.5405	0.5981
60.5	3,337,366	64,302	1.9267	98.0733	0.5953
61.5	2,849,323	12,994	0.4560	99.5440	0.5839
62.5	2,484,560	29,764	1.1980	98.8020	0.5812
63.5	2,391,165	9,152	0.3828	99.6172	0.5742
64.5	1,002,719	18,002	1.7953	98.2047	0.5720
65.5	650,388	2,294	0.3527	99.6473	0.5618
66.5	610,960	2,549	0.4172	99.5828	0.5598
67.5	450,251	819	0.1818	99.8182	0.5574
68.5	514,508	2,041	0.3967	99.6033	0.5564
69.5	507,071	0	0.0000	100.0000	0.5542
70.5	518,983	0	0.0000	100.0000	0.5542
71.5	600,373	121	0.0202	99.9798	0.5542
72.5	524,473	473	0.0902	99.9098	0.5541
73.5	507,701	4,066	0.8008	99.1992	0.5536
74.5	182,442	0	0.0000	100.0000	0.5492
75.5	659,594	3,781	0.5732	99.4268	0.5492
76.5	652,925	4,190	0.6417	99.3583	0.5460
77.5	644,012	432	0.0671	99.9329	0.5425
78.5	638,185	4,205	0.6589	99.3411	0.5422
79.5	625,544	3,144	0.5026	99.4974	0.5386
80.5	622,400	13,772	2.2128	97.7872	0.5359
81.5	603,491	0	0.0000	100.0000	0.5240
82.5	612,960	0	0.0000	100.0000	0.5240
83.5	612,960	45,409	7.4081	92.5919	0.5240
84.5	519,591	1,661	0.3197	99.6803	0.4852
85.5	514,357	0	0.0000	100.0000	0.4837

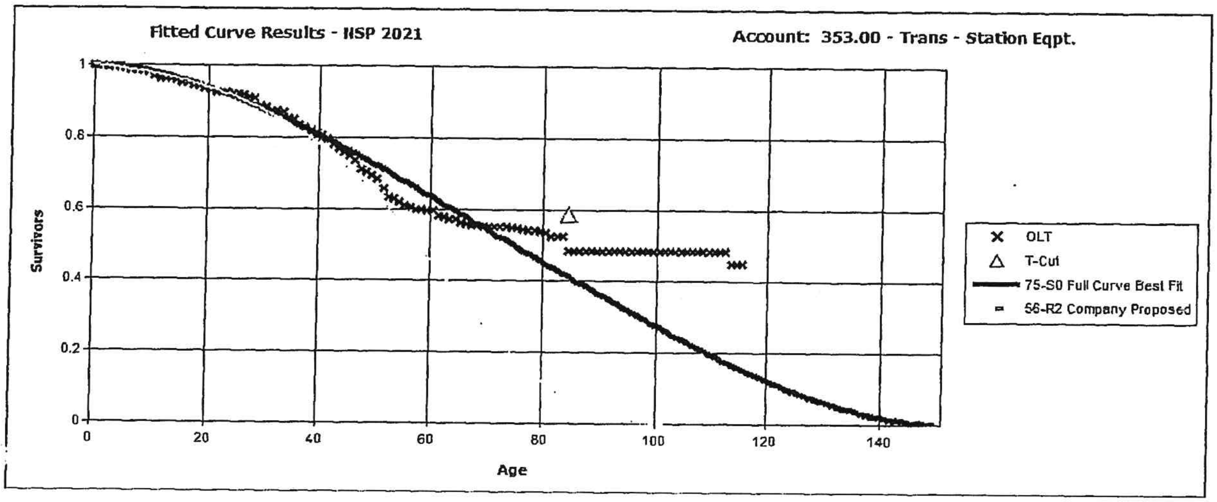
86.5	467,922	0	0.0000	100.0000	0.4837
87.5	396,885	0	0.0000	100.0000	0.4837
88.5	392,973	0	0.0000	100.0000	0.4837
89.5	392,973	0	0.0000	100.0000	0.4837
90.5	386,644	0	0.0000	100.0000	0.4837
91.5	0	0	0.0000	100.0000	0.4837
92.5	0	0	0.0000	100.0000	0.4837
93.5	0	0	0.0000	100.0000	0.4837
94.5	0	0	0.0000	100.0000	0.4837
95.5	0	0	0.0000	100.0000	0.4837
96.5	0	0	0.0000	100.0000	0.4837
97.5	0	0	0.0000	100.0000	0.4837
98.5	0	0	0.0000	100.0000	0.4837
99.5	0	0	0.0000	100.0000	0.4837
100.5	0	0	0.0000	100.0000	0.4837
101.5	0	0	0.0000	100.0000	0.4837
102.5	0	0	0.0000	100.0000	0.4837
103.5	0	0	0.0000	100.0000	0.4837
104.5	0	0	0.0000	100.0000	0.4837
105.5	0	0	0.0000	100.0000	0.4837
106.5	0	0	0.0000	100.0000	0.4837
107.5	139,175	0	0.0000	100.0000	0.4837
108.5	139,175	0	0.0000	100.0000	0.4837
109.5	139,175	0	0.0000	100.0000	0.4837
110.5	139,175	0	0.0000	100.0000	0.4837
111.5	139,175	0	0.0000	100.0000	0.4837
112.5	139,175	9,523	6.8426	93.1574	0.4837
113.5	129,652	0	0.0000	100.0000	0.4506
114.5	129,652	0	0.0000	100.0000	0.4506
115.5	129,652	0	0.0000	100.0000	0.4506

Best Fit Curve Results
NSP 2021
Account: 353.00 - Trans - Station Eqpt.

Curve	Life	Sum of Squared Differences
BAND	2001 - 2016	
S0	75.0	1,164.276
S-0.5	75.0	1,289.890
R0.5	75.0	1,398.849
R1	74.0	1,485.681
L1	75.0	1,874.326
S0.5	75.0	2,021.610
L0.5	75.0	2,387.112
R1.5	72.0	2,497.399
O1	75.0	2,621.608
L1.5	75.0	2,693.627
S1	73.0	3,502.929
L0	75.0	3,801.609
R2	72.0	4,300.867
L2	75.0	4,542.558
S1.5	73.0	5,620.490
O2	75.0	6,339.960
R2.5	72.0	7,130.158
S2	72.0	8,371.184
R3	72.0	10,763.177
L3	74.0	10,961.191
S3	72.0	15,211.528
R4	73.0	19,382.270
L4	73.0	20,461.891
O3	75.0	23,788.220
S4	73.0	26,034.493
L5	74.0	31,393.187
R5	75.0	32,825.792
S5	75.0	37,803.516
O4	75.0	49,029.094
S6	75.0	50,153.790
SQ	75.0	78,029.594

Analytical Parameters

OLT Placement Band:	1900 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter	4
Maximum Life Paramete	75
Life Increment Paramete	1
Max Age (T-Cut):	84.5



Analytical Parameters

OLT Placement Band:	1900 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter:	4
Maximum Life Parameter:	75
Life Increment Parameter:	1
Max Age (T-Cut):	84.5

NSP 2021

353 - Transmission Station Equipment

Calculation of Remaining Life
Based Upon Broad Group/Vintage Group Procedures
Related to Original Cost as of December 31, 2016

Survivor Curve .. IOWA: 60 R1.5

Year (1)	Age (2)	Surviving Investment (3)	BG/VG Average Service Life (4)	BG/VG Average Remaining Life (5)	ASL Weights (6)=(3)/(4)	RL Weights (7)=(6)*(5)
2016	0.5	46,693,859	60.00	59.59	778,231	46,372,080
2015	1.5	83,478,935	60.00	58.77	1,391,316	81,760,919
2014	2.5	122,574,222	60.00	57.95	2,042,904	118,381,085
2013	3.5	61,623,350	60.00	57.13	1,027,056	58,679,486
2012	4.5	37,103,278	60.00	56.32	618,388	34,829,964
2011	5.5	84,895,139	60.00	55.52	1,414,919	78,552,902
2010	6.5	52,177,205	60.00	54.72	869,620	47,581,587
2009	7.5	55,278,106	60.00	53.92	921,302	49,673,949
2008	8.5	58,087,401	60.00	53.12	968,123	51,429,172
2007	9.5	51,315,556	60.00	52.33	855,259	44,757,410
2006	10.5	35,027,012	60.00	51.55	583,784	30,091,380
2005	11.5	43,773,228	60.00	50.76	729,554	37,034,036
2004	12.5	21,373,362	60.00	49.98	356,223	17,805,358
2003	13.5	21,994,922	60.00	49.21	366,582	18,039,172
2002	14.5	20,068,724	60.00	48.44	334,479	16,201,505
2001	15.5	12,909,592	60.00	47.67	215,160	10,256,929
2000	16.5	4,599,461	60.00	46.91	76,658	3,595,890
1999	17.5	4,318,940	60.00	46.15	71,982	3,321,939
1998	18.5	9,239,616	60.00	45.39	153,994	6,990,460
1997	19.5	14,964,540	60.00	44.64	249,409	11,134,577
1996	20.5	21,764,420	60.00	43.90	362,740	15,923,256
1995	21.5	53,848,095	60.00	43.15	897,468	38,730,107
1994	22.5	25,407,414	60.00	42.42	423,457	17,961,831
1993	23.5	24,255,639	60.00	41.68	404,261	16,851,072
1992	24.5	1,522,465	60.00	40.96	25,374	1,039,211
1991	25.5	521,440	60.00	40.23	8,691	349,638
1990	26.5	64,708,140	60.00	39.51	1,078,469	42,612,966
1989	27.5	3,004,056	60.00	38.80	50,068	1,942,560
1988	28.5	4,177,892	60.00	38.09	69,632	2,652,301
1987	29.5	1,860,136	60.00	37.39	31,002	1,159,092

1986	30.5	7,922,059	60.00	36.69	132,034	4,844,333
1985	31.5	3,167,836	60.00	36.00	52,797	1,900,621
1984	32.5	10,725,677	60.00	35.31	178,761	6,312,511
1983	33.5	8,871,573	60.00	34.63	147,860	5,120,794
1982	34.5	1,875,767	60.00	33.96	31,263	1,061,669
1981	35.5	7,904,036	60.00	33.29	131,734	4,385,707
1980	36.5	6,651,788	60.00	32.63	110,863	3,617,625
1979	37.5	10,305,497	60.00	31.98	171,758	5,492,428
1978	38.5	3,180,316	60.00	31.33	53,005	1,660,667
1977	39.5	5,220,389	60.00	30.69	87,006	2,670,221
1976	40.5	8,325,964	60.00	30.06	138,766	4,170,875
1975	41.5	2,285,155	60.00	29.43	38,086	1,120,894
1974	42.5	8,114,910	60.00	28.81	135,249	3,896,773
1973	43.5	6,728,563	60.00	28.20	112,143	3,162,531
1972	44.5	5,386,263	60.00	27.60	89,771	2,477,423
1971	45.5	3,169,387	60.00	27.00	52,823	1,426,287
1970	46.5	3,511,141	60.00	26.41	58,519	1,545,682
1969	47.5	6,131,473	60.00	25.83	102,191	2,639,903
1968	48.5	2,404,094	60.00	25.26	40,068	1,012,159
1967	49.5	4,276,292	60.00	24.70	71,272	1,760,205
1966	50.5	6,741,250	60.00	24.14	112,354	2,712,373
1965	51.5	4,263,799	60.00	23.59	71,063	1,676,664
1964	52.5	1,806,226	60.00	23.06	30,104	694,050
1963	53.5	442,152	60.00	22.52	7,369	165,989
1962	54.5	134,315	60.00	22.00	2,239	49,255
1961	55.5	1,022,195	60.00	21.49	17,037	366,115
1960	56.5	2,005,770	60.00	20.99	33,430	701,526
1959	57.5	772,829	60.00	20.49	12,880	263,914
1958	58.5	497,994	60.00	20.00	8,300	166,020
1957	59.5	665,554	60.00	19.52	11,093	216,574
1956	60.5	515,414	60.00	19.05	8,590	163,685
1955	61.5	423,741	60.00	18.59	7,062	131,318
1954	62.5	362,065	60.00	18.14	6,034	109,477
1953	63.5	72,147	60.00	17.70	1,202	21,282
1952	64.5	1,379,294	60.00	17.26	22,988	396,871
1951	65.5	334,329	60.00	16.84	5,572	93,823
1950	66.5	8,465	60.00	16.42	141	2,317
1949	67.5	158,633	60.00	16.01	2,644	42,331
1948	68.5	671	60.00	15.61	11	175
1947	69.5	7,615	60.00	15.22	127	1,931
1946	70.5	0	60.00	14.83	0	0
1945	71.5	0	60.00	14.45	0	0
1944	72.5	80,122	60.00	14.08	1,335	18,806
1943	73.5	20,504	60.00	13.72	342	4,689
1942	74.5	315,506	60.00	13.36	5,258	70,274
1941	75.5	4,373	60.00	13.01	73	949
1940	76.5	6,136	60.00	12.67	102	1,296

1939	77.5	0	60.00	12.33	0	0
1938	78.5	5,395	60.00	12.00	90	1,079
1937	79.5	8,437	60.00	11.68	141	1,642
1936	80.5	0	60.00	11.36	0	0
1935	81.5	0	60.00	11.04	0	0
1934	82.5	0	60.00	10.73	0	0
1933	83.5	0	60.00	10.42	0	0
1932	84.5	47,960	60.00	10.12	799	8,090
1931	85.5	3,572	60.00	9.82	60	585
1930	86.5	20,849	60.00	9.53	347	3,310
1929	87.5	71,037	60.00	9.23	1,184	10,933
1928	88.5	3,912	60.00	8.95	65	583
1927	89.5	0	60.00	8.66	0	0
1926	90.5	6,329	60.00	8.38	105	884
1925	91.5	386,644	60.00	8.10	6,444	52,209
1924	92.5	0	60.00	7.83	0	0
1923	93.5	0	60.00	7.56	0	0
1922	94.5	0	60.00	7.29	0	0
1921	95.5	0	60.00	7.03	0	0
1920	96.5	0	60.00	6.78	0	0
1919	97.5	0	60.00	6.52	0	0
1918	98.5	0	60.00	6.28	0	0
1917	99.5	0	60.00	6.04	0	0
1916	100.5	0	60.00	5.80	0	0
1915	101.5	0	60.00	5.57	0	0
1914	102.5	0	60.00	5.35	0	0
1913	103.5	0	60.00	5.12	0	0
1912	104.5	0	60.00	4.90	0	0
1911	105.5	0	60.00	4.67	0	0
1910	106.5	0	60.00	4.44	0	0
1909	107.5	0	60.00	4.20	0	0
1908	108.5	0	60.00	3.94	0	0
1907	109.5	0	60.00	3.67	0	0
1906	110.5	0	60.00	3.37	0	0
1905	111.5	0	60.00	3.05	0	0
1904	112.5	0	60.00	2.71	0	0
1903	113.5	0	60.00	2.38	0	0
1902	114.5	0	60.00	2.04	0	0
1901	115.5	0	60.00	1.71	0	0
1900	116.5	129,652	60.00	1.39	2,161	2,998
		1,181,449,210			19,690,820	974,145,159

AVERAGE SERVICE LIFE	60.00
AVERAGE REMAINING LIFE	49.47

Observed Life Table Results
NSP 2021
Account: 364.00 - Dist. Poles, Towers and Fixtures

Age	Exposures	Retirements	Retirement Ratio (%)	Survivor Ratio (%)	Cumulative Survivors
BAND		2001 - 2016			
0	215,768,363	18,759	0.0087	99.9913	1.0000
0.5	202,211,848	479,014	0.2369	99.7631	0.9999
1.5	192,025,423	194,614	0.1013	99.8987	0.9975
2.5	187,515,281	131,212	0.0700	99.9300	0.9965
3.5	174,081,320	881,362	0.5063	99.4937	0.9958
4.5	168,193,350	35,756	0.0213	99.9787	0.9908
5.5	159,871,353	14,037	0.0088	99.9912	0.9906
6.5	152,807,817	6,549	0.0043	99.9957	0.9905
7.5	148,499,499	4,034	0.0027	99.9973	0.9905
8.5	143,175,295	17,765	0.0124	99.9876	0.9904
9.5	137,318,066	25,109	0.0183	99.9817	0.9903
10.5	130,855,641	22,555	0.0172	99.9828	0.9901
11.5	126,377,182	23,123	0.0183	99.9817	0.9900
12.5	118,161,947	27,662	0.0234	99.9766	0.9898
13.5	115,362,742	26,951	0.0234	99.9766	0.9895
14.5	113,347,499	37,616	0.0332	99.9668	0.9893
15.5	109,842,766	64,443	0.0587	99.9413	0.9890
16.5	106,110,568	60,565	0.0571	99.9429	0.9884
17.5	99,616,428	72,080	0.0724	99.9276	0.9878
18.5	90,444,562	62,293	0.0689	99.9311	0.9871
19.5	87,525,391	77,974	0.0891	99.9109	0.9864
20.5	84,502,549	90,009	0.1065	99.8935	0.9856
21.5	81,326,849	100,595	0.1237	99.8763	0.9845
22.5	79,418,894	106,699	0.1343	99.8657	0.9833
23.5	75,811,550	116,188	0.1533	99.8467	0.9820
24.5	71,395,578	124,953	0.1750	99.8250	0.9805
25.5	68,504,901	129,722	0.1894	99.8106	0.9788
26.5	65,827,903	144,257	0.2191	99.7809	0.9769
27.5	63,226,874	156,417	0.2474	99.7526	0.9748
28.5	61,245,163	178,115	0.2908	99.7092	0.9723
29.5	58,477,443	183,077	0.3131	99.6869	0.9695
30.5	56,731,060	203,130	0.3581	99.6419	0.9665
31.5	54,975,210	208,482	0.3792	99.6208	0.9630
32.5	53,179,948	227,792	0.4283	99.5717	0.9594
33.5	51,455,482	270,445	0.5256	99.4744	0.9553
34.5	49,555,208	280,309	0.5657	99.4343	0.9502
35.5	46,719,560	312,979	0.6699	99.3301	0.9449
36.5	44,594,553	332,289	0.7451	99.2549	0.9385
37.5	43,072,027	369,381	0.8576	99.1424	0.9315
38.5	41,506,543	377,638	0.9098	99.0902	0.9236

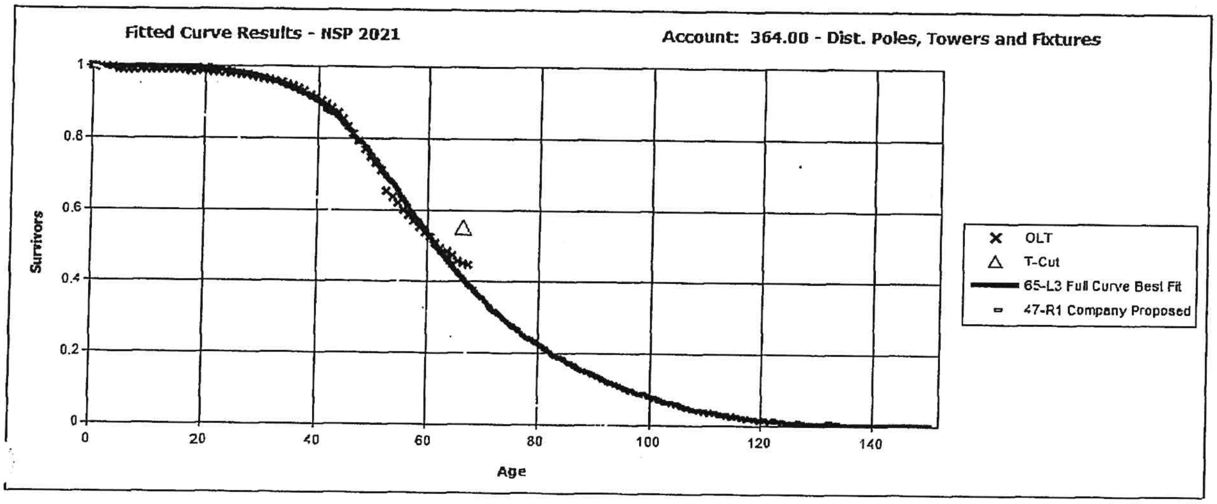
39.5	39,581,766	418,049	1.0562	98.9438	0.9152
40.5	38,342,916	442,187	1.1532	98.8468	0.9055
41.5	36,790,327	479,020	1.3020	98.6980	0.8950
42.5	35,071,796	528,095	1.5058	98.4942	0.8834
43.5	33,455,743	582,154	1.7401	98.2599	0.8701
44.5	31,390,423	711,726	2.2673	97.7327	0.8549
45.5	28,980,883	756,128	2.6091	97.3909	0.8356
46.5	25,966,988	700,830	2.6989	97.3011	0.8138
47.5	22,686,327	613,626	2.7048	97.2952	0.7918
48.5	19,872,488	547,404	2.7546	97.2454	0.7704
49.5	17,233,449	428,747	2.4879	97.5121	0.7492
50.5	14,860,285	379,005	2.5505	97.4495	0.7305
51.5	13,453,575	1,117,587	8.3070	91.6930	0.7119
52.5	10,627,614	271,405	2.5538	97.4462	0.6528
53.5	8,767,047	233,117	2.6590	97.3410	0.6361
54.5	6,950,195	197,530	2.8421	97.1579	0.6192
55.5	6,053,560	161,829	2.6733	97.3267	0.6016
56.5	4,931,612	125,308	2.5409	97.4591	0.5855
57.5	4,074,840	122,564	3.0078	96.9922	0.5706
58.5	3,278,310	85,660	2.6129	97.3871	0.5535
59.5	2,455,607	63,516	2.5866	97.4134	0.5390
60.5	1,803,277	51,158	2.8370	97.1630	0.5251
61.5	1,384,215	45,002	3.2511	96.7489	0.5102
62.5	1,008,934	20,100	1.9922	98.0078	0.4936
63.5	675,441	13,843	2.0495	97.9505	0.4837
64.5	413,641	13,829	3.3432	96.6568	0.4738
65.5	242,374	3,420	1.4111	98.5889	0.4580
66.5	59,530	400	0.6726	99.3274	0.4515
67.5	0	0	0.0000	100.0000	0.4485

Best Fit Curve Results
NSP 2021
Account: 364.00 - Dist. Poles, Towers and Fixtures

Curve	Life	Sum of Squared Differences
BAND	**2001 - 2016**	
L3	65.0	142.406
S2	63.0	322.207
S3	61.0	389.458
R3	60.0	428.410
L2	70.0	777.157
S1.5	64.0	781.670
R2.5	61.0	848.651
R4	60.0	1,158.273
L4	61.0	1,300.397
S1	66.0	1,494.604
R2	63.0	1,703.997
L1.5	73.0	1,754.906
S4	60.0	2,373.517
S0.5	69.0	2,510.732
R1.5	65.0	3,054.311
L1	75.0	3,086.007
S0	73.0	3,697.611
L5	61.0	4,246.260
R1	69.0	4,619.995
R5	60.0	4,727.932
L0.5	75.0	5,122.503
S-0.5	75.0	5,772.739
R0.5	75.0	6,368.660
S5	60.0	6,608.974
L0	75.0	8,050.422
O1	75.0	9,001.110
O2	75.0	11,778.981
S6	61.0	12,791.821
O3	75.0	28,896.450
SQ	62.0	32,401.377
O4	75.0	53,915.975

Analytical Parameters

OLT Placement Band:	1942 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter	3
Maximum Life Paramete	75
Life Increment Paramete	1
Max Age (T-Cut):	66.5



Analytical Parameters	
OLT Placement Band:	1942 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter:	3
Maximum Life Parameter:	75
Life Increment Parameter:	1
Max Age (T-Cut):	66.5

NSP 2021

364 - Distribution Poles, Towers and Fixtures

Calculation of Remaining Life
Based Upon Broad Group/Vintage Group Procedures
Related to Original Cost as of December 31, 2016

Survivor Curve .. IOWA: 60 S3

			BG/VG Average			
Year	Age	Surviving Investment	Service Life	Remaining Life	ASL Weights	RL Weights
(1)	(2)	(3)	(4)	(5)	(6)=(3)/(4)	(7)=(6)*(5)
2016	0.5	21,958,540	60.00	59.50	365,976	21,774,749
2015	1.5	19,744,118	60.00	58.50	329,069	19,249,793
2014	2.5	17,072,753	60.00	57.50	284,546	16,360,764
2013	3.5	20,872,529	60.00	56.50	347,875	19,654,201
2012	4.5	12,033,351	60.00	55.50	200,556	11,130,410
2011	5.5	14,238,502	60.00	54.50	237,308	12,932,785
2010	6.5	12,202,799	60.00	53.50	203,380	10,880,382
2009	7.5	10,655,632	60.00	52.50	177,594	9,323,303
2008	8.5	12,317,546	60.00	51.50	205,292	10,572,145
2007	9.5	11,233,388	60.00	50.50	187,223	9,454,422
2006	10.5	12,386,655	60.00	49.50	206,444	10,218,684
2005	11.5	9,472,585	60.00	48.50	157,876	7,656,879
2004	12.5	12,868,896	60.00	47.50	214,482	10,187,935
2003	13.5	8,049,985	60.00	46.50	134,166	6,239,013
2002	14.5	6,835,409	60.00	45.50	113,923	5,184,054
2001	15.5	8,741,577	60.00	44.51	145,693	6,484,595
2000	16.5	8,430,403	60.00	43.51	140,507	6,114,050
1999	17.5	10,812,898	60.00	42.52	180,215	7,663,108
1998	18.5	13,545,931	60.00	41.53	225,766	9,376,626
1997	19.5	8,165,801	60.00	40.55	136,097	5,518,263
1996	20.5	7,384,295	60.00	39.56	123,072	4,869,289
1995	21.5	6,682,335	60.00	38.59	111,372	4,297,609
1994	22.5	5,491,693	60.00	37.62	91,528	3,443,009
1993	23.5	6,503,667	60.00	36.65	108,394	3,972,932
1992	24.5	6,994,855	60.00	35.70	116,581	4,161,482
1991	25.5	5,322,478	60.00	34.75	88,708	3,082,482
1990	26.5	5,224,113	60.00	33.81	87,069	2,943,838
1989	27.5	4,948,563	60.00	32.88	82,476	2,712,107
1988	28.5	4,598,651	60.00	31.97	76,644	2,450,220
1987	29.5	5,193,256	60.00	31.07	86,554	2,688,911

1986	30.5	4,772,110	60.00	30.18	79,535	2,400,189
1985	31.5	5,145,673	60.00	29.30	85,761	2,513,174
1984	32.5	4,628,226	60.00	28.45	77,137	2,194,218
1983	33.5	4,289,418	60.00	27.60	71,490	1,973,398
1982	34.5	4,295,682	60.00	26.78	71,595	1,917,247
1981	35.5	5,093,658	60.00	25.97	84,894	2,204,817
1980	36.5	4,250,780	60.00	25.18	70,846	1,784,050
1979	37.5	3,374,944	60.00	24.41	56,249	1,373,129
1978	38.5	3,485,940	60.00	23.66	58,099	1,374,569
1977	39.5	2,782,168	60.00	22.93	46,369	1,063,069
1976	40.5	2,506,870	60.00	22.21	41,781	928,076
1975	41.5	2,350,973	60.00	21.52	39,183	843,129
1974	42.5	2,379,312	60.00	20.84	39,655	826,515
1973	43.5	2,233,595	60.00	20.19	37,227	751,493
1972	44.5	2,477,649	60.00	19.55	41,294	807,281
1971	45.5	2,283,500	60.00	18.93	38,058	720,497
1970	46.5	2,783,749	60.00	18.33	46,396	850,540
1969	47.5	3,049,371	60.00	17.75	50,823	902,133
1968	48.5	2,574,188	60.00	17.19	42,903	737,384
1967	49.5	2,340,883	60.00	16.64	39,015	649,274
1966	50.5	2,208,438	60.00	16.11	36,807	593,067
1965	51.5	1,981,339	60.00	15.60	33,022	515,174
1964	52.5	1,719,098	60.00	15.11	28,652	432,794
1963	53.5	1,589,307	60.00	14.63	26,488	387,398
1962	54.5	1,583,886	60.00	14.16	26,398	373,812
1961	55.5	700,033	60.00	13.71	11,667	159,969
1960	56.5	980,846	60.00	13.28	16,347	217,017
1959	57.5	734,151	60.00	12.85	12,236	157,276
1958	58.5	674,826	60.00	12.45	11,247	139,975
1957	59.5	746,163	60.00	12.05	12,436	149,854
1956	60.5	613,683	60.00	11.67	10,228	119,331
1955	61.5	367,917	60.00	11.30	6,132	69,265
1954	62.5	330,425	60.00	10.94	5,507	60,227
1953	63.5	326,483	60.00	10.59	5,441	57,612
1952	64.5	247,956	60.00	10.25	4,133	42,357
1951	65.5	158,085	60.00	9.92	2,635	26,142
1950	66.5	179,424	60.00	9.60	2,990	28,719
1949	67.5	59,130	60.00	9.29	985	9,160
		392,283,082			6,538,051	280,951,369

AVERAGE SERVICE LIFE	60.00
AVERAGE REMAINING LIFE	42.97

Observed Life Table Results
NSP 2021
Account: 369.01 - Dist. Services, Overhead

Age	Exposures	Retirements	Retirement Ratio (%)	Survivor Ratio (%)	Cumulative Survivors
BAND		2001 - 2016			
0	28,035,717	368	0.0013	99.9987	1.0000
0.5	29,944,239	694	0.0023	99.9977	1.0000
1.5	31,138,266	4,425	0.0142	99.9858	1.0000
2.5	33,606,269	11,288	0.0336	99.9664	0.9998
3.5	34,676,709	24,465	0.0706	99.9294	0.9995
4.5	34,997,813	26,042	0.0744	99.9256	0.9988
5.5	35,802,383	49,353	0.1378	99.8622	0.9980
6.5	37,181,756	49,169	0.1322	99.8678	0.9967
7.5	37,325,693	67,746	0.1815	99.8185	0.9953
8.5	37,633,553	66,684	0.1772	99.8228	0.9935
9.5	37,464,630	70,406	0.1879	99.8121	0.9918
10.5	38,115,780	67,877	0.1781	99.8219	0.9899
11.5	38,294,389	59,739	0.1560	99.8440	0.9881
12.5	36,764,738	69,156	0.1881	99.8119	0.9866
13.5	35,380,548	70,203	0.1984	99.8016	0.9848
14.5	31,207,636	67,803	0.2173	99.7827	0.9828
15.5	31,042,392	72,763	0.2344	99.7656	0.9807
16.5	30,443,225	78,273	0.2571	99.7429	0.9784
17.5	29,474,665	89,084	0.3022	99.6978	0.9758
18.5	28,230,579	93,889	0.3326	99.6674	0.9729
19.5	27,910,421	99,492	0.3565	99.6435	0.9697
20.5	27,910,211	112,668	0.4037	99.5963	0.9662
21.5	27,752,551	123,139	0.4437	99.5563	0.9623
22.5	27,611,437	138,752	0.5025	99.4975	0.9580
23.5	27,590,635	146,624	0.5314	99.4686	0.9532
24.5	27,313,428	150,182	0.5498	99.4502	0.9482
25.5	27,033,967	169,187	0.6258	99.3742	0.9429
26.5	26,333,502	173,273	0.6580	99.3420	0.9370
27.5	25,412,536	185,105	0.7284	99.2716	0.9309
28.5	24,493,772	196,433	0.8020	99.1980	0.9241
29.5	23,517,465	211,513	0.8994	99.1006	0.9167
30.5	22,654,429	219,241	0.9678	99.0322	0.9084
31.5	21,487,744	212,858	0.9906	99.0094	0.8996
32.5	20,181,272	235,247	1.1657	98.8343	0.8907
33.5	19,058,169	250,117	1.3124	98.6876	0.8804
34.5	17,930,675	252,231	1.4067	98.5933	0.8688
35.5	16,605,692	231,849	1.3962	98.6038	0.8566
36.5	15,308,310	205,668	1.3435	98.6565	0.8446
37.5	14,191,370	219,524	1.5469	98.4531	0.8333
38.5	13,059,233	204,024	1.5623	98.4377	0.8204

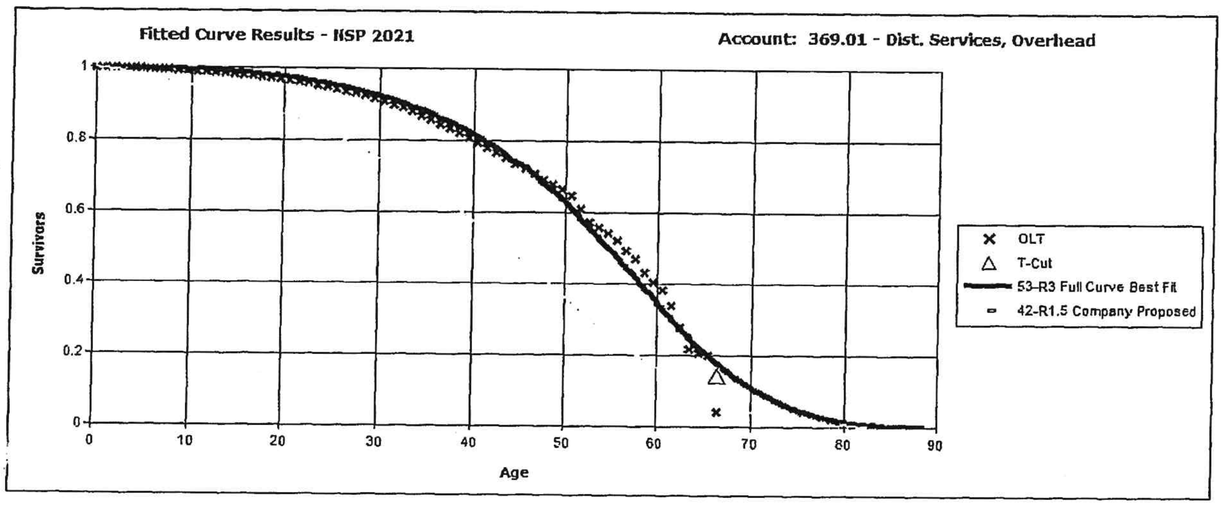
39.5	11,719,311	193,751	1.6533	98.3467	0.8076
40.5	10,486,984	190,271	1.8144	98.1856	0.7942
41.5	9,460,561	164,511	1.7389	98.2611	0.7798
42.5	8,602,088	169,280	1.9679	98.0321	0.7662
43.5	7,738,369	150,401	1.9436	98.0564	0.7512
44.5	6,859,252	137,810	2.0091	97.9909	0.7366
45.5	6,097,363	119,934	1.9670	98.0330	0.7218
46.5	5,277,719	112,468	2.1310	97.8690	0.7076
47.5	4,464,098	96,330	2.1579	97.8421	0.6925
48.5	3,748,895	73,748	1.9672	98.0328	0.6775
49.5	3,112,454	77,580	2.4926	97.5074	0.6642
50.5	2,667,400	158,754	5.9516	94.0484	0.6477
51.5	2,168,112	128,656	5.9340	94.0660	0.6091
52.5	1,750,150	45,776	2.6156	97.3844	0.5730
53.5	1,421,803	38,372	2.6988	97.3012	0.5580
54.5	1,106,110	39,951	3.6118	96.3882	0.5429
55.5	876,702	45,172	5.1525	94.8475	0.5233
56.5	618,335	31,656	5.1196	94.8804	0.4964
57.5	373,766	32,314	8.6456	91.3544	0.4709
58.5	203,089	12,027	5.9219	94.0781	0.4302
59.5	172,601	9,280	5.3766	94.6234	0.4047
60.5	105,271	12,368	11.7489	88.2511	0.3830
61.5	62,340	10,890	17.4694	82.5306	0.3380
62.5	44,812	10,145	22.6386	77.3614	0.2789
63.5	21,320	921	4.3179	95.6821	0.2158
64.5	10,467	339	3.2390	96.7610	0.2065
65.5	1,512	1,195	79.0331	20.9669	0.1998
66.5	317	317	100.0000	0.0000	0.0419

Best Fit Curve Results
NSP 2021
Account: 369.01 - Dist. Services, Overhead

Curve	Life	Sum of Squared Differences
BAND	**2001 - 2016**	
R3	53.0	428.100
R2.5	53.0	701.444
S2	55.0	1,011.082
S3	54.0	1,199.681
L3	57.0	1,319.672
S1.5	55.0	1,507.428
R4	54.0	1,665.502
R2	53.0	1,718.390
L4	55.0	2,241.527
L2	59.0	2,418.544
S1	55.0	2,529.013
R1.5	54.0	3,379.354
S4	55.0	3,618.707
L1.5	60.0	3,647.841
S0.5	56.0	3,882.693
L5	55.0	5,498.773
L1	62.0	5,499.912
R1	54.0	5,685.296
S0	57.0	5,705.538
R5	55.0	6,330.001
L0.5	64.0	7,208.145
S5	56.0	8,343.495
S-0.5	59.0	8,366.403
R0.5	57.0	8,629.748
L0	68.0	9,231.158
O1	63.0	11,563.594
O2	71.0	11,573.706
S6	56.0	14,572.734
O3	75.0	18,510.234
SQ	56.0	32,753.898
O4	75.0	35,032.073

Analytical Parameters

OLT Placement Band:	1949 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter:	3
Maximum Life Parameter:	75
Life Increment Parameter:	1
Max Age (T-Cut):	66.5



Analytical Parameters

OLT Placement Band:	1949 - 2016
OLT Experience Band:	2001 - 2016
Minimum Life Parameter:	3
Maximum Life Parameter:	75
Life Increment Parameter:	1
Max Age (T-Cut):	66.5

NSP 2021

369.01 - Services - Overhead

Calculation of Remaining Life
Based Upon Broad Group/Vintage Group Procedures
Related to Original Cost as of December 31, 2016

Survivor Curve .. IOWA: 52 R3

Year	Age	Surviving Investment	BG/VG Average Service Life	BG/VG Average Remaining Life	ASL Weights	RL Weights
(1)	(2)	(3)	(4)	(5)	(6)=(3)/(4)	(7)=(6)*(5)
2016	0.5	1,345,321	52.00	51.51	25,872	1,332,555
2015	1.5	1,625,629	52.00	50.52	31,262	1,579,477
2014	2.5	929,763	52.00	49.54	17,880	885,839
2013	3.5	916,562	52.00	48.57	17,626	856,032
2012	4.5	1,318,224	52.00	47.59	25,350	1,206,466
2011	5.5	738,634	52.00	46.62	14,204	662,220
2010	6.5	117,069	52.00	45.65	2,251	102,780
2009	7.5	1,370,609	52.00	44.69	26,358	1,177,923
2008	8.5	1,371,377	52.00	43.73	26,373	1,153,287
2007	9.5	1,665,002	52.00	42.78	32,019	1,369,653
2006	10.5	1,007,061	52.00	41.83	19,367	810,031
2005	11.5	1,632,781	52.00	40.88	31,400	1,283,677
2004	12.5	3,428,784	52.00	39.94	65,938	2,633,775
2003	13.5	3,139,992	52.00	39.01	60,384	2,355,616
2002	14.5	5,827,991	52.00	38.08	112,077	4,268,306
2001	15.5	2,188,152	52.00	37.16	42,080	1,563,848
2000	16.5	2,678,317	52.00	36.25	51,506	1,867,135
1999	17.5	2,737,247	52.00	35.34	52,639	1,860,531
1998	18.5	2,840,199	52.00	34.45	54,619	1,881,435
1997	19.5	2,069,956	52.00	33.56	39,807	1,335,745
1996	20.5	1,606,764	52.00	32.67	30,899	1,009,571
1995	21.5	1,513,794	52.00	31.80	29,111	925,698
1994	22.5	1,489,462	52.00	30.93	28,643	886,013
1993	23.5	1,497,091	52.00	30.08	28,790	865,870
1992	24.5	1,667,282	52.00	29.23	32,063	937,102
1991	25.5	1,486,835	52.00	28.39	28,593	811,684
1990	26.5	1,639,248	52.00	27.56	31,524	868,732
1989	27.5	1,771,196	52.00	26.74	34,061	910,726
1988	28.5	1,834,500	52.00	25.93	35,279	914,690
1987	29.5	1,702,116	52.00	25.13	32,733	822,486

1986	30.5	1,597,024	52.00	24.34	30,712	747,438
1985	31.5	1,924,721	52.00	23.56	37,014	871,946
1984	32.5	1,973,136	52.00	22.79	37,945	864,698
1983	33.5	1,683,121	52.00	22.03	32,368	713,065
1982	34.5	1,519,060	52.00	21.28	29,213	621,741
1981	35.5	1,656,836	52.00	20.55	31,862	654,703
1980	36.5	1,513,799	52.00	19.82	29,112	577,124
1979	37.5	1,294,329	52.00	19.11	24,891	475,754
1978	38.5	1,280,860	52.00	18.42	24,632	453,604
1977	39.5	1,399,136	52.00	17.73	26,906	477,064
1976	40.5	1,312,980	52.00	17.06	25,250	430,750
1975	41.5	1,133,574	52.00	16.40	21,799	357,579
1974	42.5	910,891	52.00	15.76	17,517	276,094
1973	43.5	781,096	52.00	15.13	15,021	227,343
1972	44.5	837,917	52.00	14.52	16,114	234,043
1971	45.5	679,770	52.00	13.93	13,072	182,103
1970	46.5	733,592	52.00	13.35	14,108	188,377
1969	47.5	760,043	52.00	12.79	14,616	186,984
1968	48.5	659,473	52.00	12.25	12,682	155,363
1967	49.5	597,182	52.00	11.73	11,484	134,665
1966	50.5	449,638	52.00	11.22	8,647	97,016
1965	51.5	420,558	52.00	10.73	8,088	86,795
1964	52.5	289,307	52.00	10.26	5,564	57,096
1963	53.5	282,571	52.00	9.81	5,434	53,315
1962	54.5	277,321	52.00	9.38	5,333	50,016
1961	55.5	189,458	52.00	8.96	3,643	32,657
1960	56.5	213,194	52.00	8.57	4,100	35,118
1959	57.5	212,913	52.00	8.18	4,094	33,512
1958	58.5	138,363	52.00	7.82	2,661	20,808
1957	59.5	18,461	52.00	7.47	355	2,652
1956	60.5	58,051	52.00	7.14	1,116	7,967
1955	61.5	30,563	52.00	6.82	588	4,006
1954	62.5	6,637	52.00	6.51	128	831
1953	63.5	13,347	52.00	6.21	257	1,594
1952	64.5	9,933	52.00	5.92	191	1,131
1951	65.5	8,615	52.00	5.64	166	935
		82,024,426			1,577,393	48,454,788

AVERAGE SERVICE LIFE 52.00

AVERAGE REMAINING LIFE 30.72