Exhibit No. 46

Liberty – Exhibit 46
Dane Watson
Rebuttal Testimony
File No. ER-2021-0312

Exhibit No.: _____
Issue: Depreciation Study
Witness: Dane A. Watson
Type of Exhibit: Rebuttal Testimony
Sponsoring Party: The Empire District Electric Company
Case No.: ER-2021-0312
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Before the Public Service Commission
of the State of Missouri

Rebuttal Testimony

of

Dane A. Watson

on behalf of

The Empire District Electric Company

December 2021

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THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION
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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Dane A. Watson. My business address is 101 E. Park Blvd, Suite 220, Plano, TX, 75074.

Q. Are you the same Dane A. Watson who provided Direct Testimony in this matter on behalf of The Empire District Electric Company ("Empire" or the "Company")?

A. Yes.

Q. What is the purpose of your Rebuttal Testimony in this proceeding before the Missouri Public Service Commission ("Commission")?

A. I address the depreciation rates proposed in the Staff Report filed by the Commission Staff ("Staff") filed on October 29, 2021. Since the filing of Staff's testimony, as discussed later, they have communicated changes to their recommendations. This testimony addresses the revised recommendations communicated by Staff.

Q. When was the Company's depreciation study provided to Staff and the other parties?

A. On October 16, 2020, the Company provided the depreciation study to Staff, Division of Energy and Office of the Public Counsel, in accordance with Commission Rule 20 CSR 4240-3.175. It was also filed with my direct testimony in this proceeding in May 2021.

Q. What information was provided as required by Commission Rule 20 CSR 4240-3.175?

A. The rule determines the items that accompany a Company's depreciation study filing. As shown below:

PURPOSE: This rule sets forth the requirements regarding the submission of depreciation studies by electric utilizes.

(1) Each electric utility subject to the commission's jurisdiction shall submit a depreciation study, database and property unit catalog to the manager of the commission's energy department and to the Office of the Public Counsel, as required by the terms of subsection (1)(B).

(A) The depreciation study, database and property unit catalog shall be compiled as follows:

1. The study shall reflect the average life and remaining life of each primary plant account or subaccount;
2. The database shall consist of dollar amounts, by plant account or subaccount, representing-

A. Annual dollar additions and dollar retirements by vintage year and year retired, beginning with the earliest year of available data;

B. Reserve for depreciation;

C. Surviving plant balance as of the study date; and

D. Estimated date of final retirement and surviving dollar investment for each warehouse, electric generating facility,

combustion turbine, general office building or other large structure; and

3. The property unit catalog shall contain a description of each retirement unit used by the company.

Q. Did the Company's filings comply with those requirements?

A. Yes. Most of the files were in Excel format. Some of the files were in Adobe or picture format when giving actuarial analysis results. Two of the folders specifically contained the complete data base for both actuarial analysis and net salvage. The same information was provided in the May filing of the Company's direct case.

II. REBUTTAL TO STAFF'S PROPOSALS

Q. What positions does Staff recommend?

A. Staff makes recommendations for alternative life and net salvage parameters for a number of accounts. After reviewing data responses from Empire to Staff with data requests 373 and 374, Staff set up a meeting with the Company to discuss differences in data. Discussions with Staff after their filing pointed to some confusion on the appropriate dataset to use in the analysis. The Company then provided a full and accurate dataset. Subsequently, Staff has communicated some changes to their recommendations. This rebuttal addresses those remaining differences between Staff's recommendations and those of the Company. While the Staff's filing did not provide any specific rationale for their recommendations, it appears that they relied solely on the analytics without factoring any other information into their recommendations. The following discussion will provide some insight into the reasons that the Company's recommendations are different than those of Staff. As provided in **Rebuttal Schedule**

DAW-1, using Staff's life and net salvage recommendations will result in an increase in depreciation expense of $3.0 million as compared to the Company's request.

Q. Are there positions on which you and Staff agree?

A. Yes. Staff and the Company agree on many of the lives and dispersion curves, most of the net salvage recommendations, the retirement dates for most of the Company's generating units, the date to use for the computations (December 31, 2019), and the depreciation system to be used in the case (Straight line, broad group, average service life procedure, remaining life technique).

Q. Are there positions on which you and Staff disagree?

A. Yes. Staff and the Company differ on life and net salvage recommendations for a number of accounts. For example, Staff decreased interim retirement pattern lives for many of the generating accounts, increased lives for a several transmission, distribution and general plant accounts and moderated two negative net salvage recommendations. My computations for production net salvage were very conservative, and only included retirement activity through the terminal date of the facility, whereas Staff's proposal of interim retirement percentage was used for the entire plant basis. Additionally, I modeled meters into two groups - those that would retire with AMR meter deployment and meters that would remain in service. Staff did not incorporate any meter deployment scenario in their computations. I reallocated the accumulated provision for depreciation within each function, whereas Staff used per book data. I feel that my recommendations are more appropriate, but some of the Staff's recommendations are also within the realm of reasonableness.

Q. Did you identify any errors in your depreciation study after your review of Staff's documents?

A. Yes. In Staff's original filing, I found small differences in plant in service for accounts: 371, 391, 391.3, and 397. I am correcting these issues in **Rebuttal Schedule DAW-2**, which will replace Appendix A-1, A-2 and B of Schedule DAW-2, the depreciation study. The difference in plant in total is $57 thousand, or 0.22% of the total. The overall change is de minimus given the proposed depreciation accrual of $79.6 million.

Q. How do your proposed depreciation accrual rates compare to those proposed by Staff when considering their revised recommendations?

A. Staff's proposed depreciation expenses are approximately $3.0 million higher than what the Company is proposing.

Table 1
Depreciation Expense Comparison Company vs Staff

Function	Plant at 12/31/2019	Company Proposed Expense	Staff Proposed Expense	Difference Proposed Expense
Production	506,915,355	13,178,388	15,623,903	2,445,515
Hydro	12,250,897	343,199	704,666	361,467
Other Production	582,396,976	18,222,765	18,762,267	539,502
Transmission	399,899,913	10,208,510	10,219,537	11,026
Distribution	1,052,849,941	31,706,266	32,457,403	751,138
General	89,578,931	5,983,667	4,899,087	(1,084,580)
AR 15 retirement	18,950,552	0	0	0
Total	2,662,842,565	79,642,795	82,666,863	3,024,068

Notes:

1. Distribution - Company models Meters in AMI deployment. Staff does not consider that model adjustment. The above calculations follow the Staff's calculations in this area.

In the next section of my testimony, I will discuss areas where my recommendation varies from Staff's proposal. The first section will address life analysis results, the second will address net salvage results. Finally, I discuss general plant amortization.

Q. Are there issues with Staff's computations for production plant?

A. Initially in their Direct Testimony, yes. However, those were all resolved after Staff communicated their revisions to be filed in rebuttal. Staff witness Mr. Cedric Cunigan, P.E., provided the Company a copy of his Schedule CEC2- Corrected Depreciation Schedule and workpapers. The methodology we used is consistent with Staff's revised calculations in that all generating units have a terminal retirement date. There are differences in interim retirement curves and interim net salvage, but the plant amounts and methodology are identical. One other remaining difference is that Staff used per book depreciation reserves, and I reallocated the depreciation reserve for each generating units and plant account.

A. LIFE ANALYSIS

Q. What source data did Staff use for life analysis?

A. As mentioned earlier, originally, Staff did not have a clear understanding of the dataset to be used in the life analysis. The original database used by Staff was not accurate. After subsequent conversations, the correct database was provided to Staff to update their analysis.

Q. What are your concerns with Staff's specific analyses and methodologies?

A. There are a number of questions related to Staff's analyses and methodologies that make their service life recommendations less predictive of the future use of the Company's assets. As stated in several of the data responses, Staff used a version of

Gannett Fleming software to sort the data, plot a stub curve, and fit an Iowa curve to the stub curve. Staff's curve provided a better fit with Staff's data set than the Company's proposed curve.[1]

Staff only relied on statistical analysis and disregarded the type and nature of the assets within an account and their operating characteristics. No further explanation was given why information from Company operating personnel (which was provided in my workpapers) was not incorporated in the life selection process. This is inconsistent with sound depreciation methodology, which directly recommends consultation with operators, who are knowledgeable about the operational characteristics of the assets. Their input is invaluable to perform a thorough analysis.

In addition, as explained below, Staff's actuarial analyses workpapers show an overall placement and experience band but do not contain calculations for multiple bands (as I employed). Neither is it clear what portion of the curve they focused on in the life selection process or if Staff solely relied upon statistics from one calculation (band).

Q. What period did you analyze to develop your proposed depreciation life parameters for production, transmission, distribution, and general property?

A. I analyzed Empire assets through December 31, 2019. The depreciation study is shown in Schedule DAW-2 to my direct testimony. I then applied those parameters to investments at December 31, 2019, which is shown in Schedule DAW-2.

Q. How did you determine the reasonable service lives for Empire's production, transmission, distribution, and general plant assets?

[1] Data responses MO PSC DR 0313-0337.

A. As discussed in my Depreciation Study report, Attachment DAW-1 to my direct testimony, I relied on industry-accepted analyses and the guidance included in authoritative texts as well as my 36 years of experience performing depreciation studies for electric utilities across North America. I also relied on Empire's actual historical experience and expectations and the operational characteristics I learned from Empire's Subject Matter Experts ("SMEs"), which is consistent with sound depreciation practice.

Q. Why is it necessary to evaluate all assets within each account to verify the reasonableness of the service lives calculated using statistical analysis?

A. The service lives Staff selected for some accounts at issue vary from what would reasonably be expected operationally by SMEs or by any seasoned depreciation analyst with knowledge of the life characteristics of these assets from years of experience. Different asset types (also called retirement units or "RUs") make up each plant account, and these RUs can have significantly different lives. For example, transformers (with possibly up to a 50-year life) and digital relays (with a much shorter 20-year life) are in the same substation account. In some cases, the composite life Staff proposes for an account varies from the reasonable expectations for the life of many or most of the different asset types that make up a plant account.

Q. Please provide an example.

A. For instance, if most of the balance of an account is associated with assets that have projected lives of between 20 and 40 years, an overall life of 60 years for that account would not be reasonable. This is true even if a particular- mathematical curve match mechanically produces a 60-year overall life. A statistical analysis may suggest a longer life because there may be insufficient retirement data (i.e., the full life cycle of

assets are not yet visible in the mathematical calculations)[2] or because there have been recent changes in technology or changes in how the assets are operated that are not adequately reflected in the statistical results. While the results of the calculations themselves may seem accurate to someone who is not aware of or ignores the actual life cycles exhibited, failure modes and engineering expectations for the various assets in the account, the results are not accurate since they do not accurately reflect the real life expectations of the assets in the account.

Q. Why is it important to evaluate Empire's specific assets and operating characteristics when recommending a service life?

A. As noted above, the manner in which Empire currently uses its assets provides important indicators as to the expected service life of those assets and reveals flaws in generic statistical assumptions. Specifically, using statistics that examine the life over the full experience available (x years) may be indicative of the average historical life over all of those years, but it may not be indicative of the life when examining more recent experience or current expectations. Under the remaining life technique (which both the Staff and I use), the life estimate is related to future life expectations, not historical. Staff does not appear to take into account Company-specific operational life expectations for a number of these assets and solely relied on the long-term, average, historical analysis.

Q. Did you incorporate information from the SMES in your depreciation study?

A. Yes. The information was extracted from interviews with Empire SMEs and is described in my study and accompanying workpapers.

[2] This is the case for Accounts 353. 362, and 390, as discussed more below.

Q. How did you validate that the information received from the SMEs is reliable?

A. First, one of the most important pieces of information in understanding the operational characteristics of assets is the input from engineers and operational experts in a company. Also valuable is my reliance on my engineering knowledge from working for 20 years at an electric utility, my training as an Electrical Engineer (as well as being a Professional Engineer), and my research and experience as a depreciation analyst for 36 years (which includes several depreciation studies I have previously performed on Empire's assets). This allows further validation of the information from Company SMEs. As an example, if an SME suggests a life for a specific asset or group that is shorter or longer than I would expect from my experience, I conduct further investigation as to why they understand the life expectation to vary from what I would normally expect, conduct my own research of the asset as necessary, and use my judgment to determine how much weight to give the SMEs' feedback.

In addition, the actuarial analyses and any trends in life shown by the analysis of various bands provide another check on the operational information. Accordingly, as I noted before, one must consider the operational information, the expectations across the country for similar assets in similar environments and the statistical analysis to verify the reasonableness of the results.

Q. Is reliance on information from Empire SMEs consistent with sound depreciation practice?

A. Yes. Information provided by SMEs on the specific plant and equipment being studied is of critical importance in the depreciation study process to ensure the statistical analysis accurately reflects the expected service lives of the assets. In its 1996 edition of the publication *Public Utility Depreciation Practices*, the National Association of

Regulatory Utility Commissioners ("NARUC") specifically advises against strict reliance on historical data and curve fitting:

> Depreciation analysts should avoid becoming ensnared in the historical life study and relying solely on mathematical solutions. The reason for making an historic life analysis is to develop a sufficient understanding of history in order to evaluate whether it is a reasonable predictor of the future. The importance of being aware of circumstances having direct bearing on the reason for making an historical life analysis cannot be understated…. The analyst should become familiar with the physical plant under study and its operating environment, ***including talking with the field people who use the equipment being studied***.[3]

Staff does not appear to have incorporated any of the information from Empire experts in his life recommendations, contrary to good industry practice and precedent. Accordingly, his analyses lack critical information that he should have considered to verify the reasonableness of his results.

Q. Did Staff present any explicit evidence that any specific information you relied on from Company employees was unreliable?

A. No.

Q. What are the differences in life recommendations between the Company's analysis and those of Staff?

A. The two tables below show the differences in the curves I proposed versus the Staff recommendation. I have separated the accounts into two groups: assets modeled with interim retirements and other transmission, distribution, and general assets.

[3] National Association of Regulatory Utility Commissioners ("NARUC"), *Public Utility Depreciation Practices* (1996) at 126 (emphasis added).

Table DAW-RR-1R
Summary of Approved and Proposed Lives
for Accounts Analyzed via Actuarial Analysis
for Interim Retirements

Account	Description	Empire Proposed Life	Staff Proposed Life
311	Structures	90 R1.5	77 L1.5
312	Boiler Plant	55 R0.5	40 S0.5
314	Turbogenerators	60 L1	52 S1.5
331	Structures	100 R1.5	70 O3
332	Dams	85 R0.5	35 L1.5
334	Access. Electric	70 L2.5	60 L2.5
335	Misc. Equipment	45 R0.5	80 O4
343	Prime Movers	50 R1.5	50 R2
344	Generators	55 R1	50 R1
346	Misc. Equipment	55 R2.5	60 R2.5

Table DAW-RR-2R
Summary of Approved and Proposed Lives
for Transmission, Distribution, and General
Accounts Analyzed via Actuarial Analysis

Account	Description	Empire Proposed Life	Staff Proposed Life
352	Structure and Improvements	70 R2.5	80 R3
353	Station Equipment	50 R1.5	50 S1
356	OH Conductors and Devices	65 R3	70 L3
361	Structures and Improvements	52 R2	55 R1.5
362	Station Equipment	55 R1.5	51 R1.5
370.1	AMI Meters	20 R2	NA
392	Transportation Equipment	11 L3	13 L2
396	Power Operated Equipment	13 L3	17 L3

Q. Did any other party challenge your proposed service lives for these accounts?

A. No, not at this point in the proceeding.

Q. What is involved in performing actuarial analysis for life estimation?

A. Actuarial analysis uses aged data to match Company specific experience to the Iowa curve patterns, using both visual and mathematical curve fitting. Visual matching is my preference in fitting historical data, in part because it allows the analyst to see the underlying data that is used to create the single numerical statistic and better describes how the "fit" is at various points in the life of the curve. I have used this methodology consistently in performing depreciation studies before regulatory bodies across North America over the past 36 years. As I noted before, Staff has not provided any information to explain further the selection process. Based on the limited information I have at this point, I believe Staff's recommendations are overly reliant on mathematical curve-fitting, which results in less accurate recommendations for certain accounts, especially when considering the variety of assets in an account and how they are operated by the Company.

Q. How does mathematical fitting compare to visual fitting?

A. Mathematical fitting uses a computer model to minimize the sum of squares differences between the observed data and a proposed survivor curve in order to approximate the most accurate life curve. In real-world applications, theoretical statistical models are not always accurate due to the interrelationship of the data in various years (e.g., storms would trigger common causes of retirement between vintages, inflation would change the unit price from year to year, etc.). Visual matching does not have this issue. Over my approximate 3.5 decades of performing depreciation studies, I believe that visual fitting is a superior approach.

Q. Do depreciation experts and authoritative texts address the use of mathematical and visual curve fitting?

A. Yes. *Depreciation Systems* cautions that "blind acceptance of mechanical fitting processes will occasionally but consistently result in poor choices"[4] and that "…the results of mathematical fitting should be checked visually and the final determination of best fit made by the analyst."[5]

Sound depreciation practice and authoritative guidance advise that a curve representing the company-specific data (that is to be compared to the standardized Iowa curve) needs to drop to at least 50% to take into account a statistically valid portion of the assets' life cycle (i.e., 50% of the historical experience) of the account to order to have a fully predictive analysis.[6]

Also, sound depreciation practice and the authoritative texts advise that the analyst focus on retirement experience within the middle section of the life curve (i.e., 80% to 20% surviving) because this portion of the experience is more reflective of the retirement characteristics of the assets in the account:

> The weight placed on those points will depend on the size of the exposures. Often the middle section of the curve (that section ranging from approximately 80% to 20% surviving) is given more weight than the first and last sections. This middle section is relatively straight and is the portion of the curve that often best characterizes the survivor curve.[7]

Since Staff has not provided any workpapers at this point, I cannot determine how the various curve matches were evaluated.

Q. Do you have other concerns with Staff's actuarial methodology?

A. Yes. I cannot determine how many bands Staff performed to examine the life characteristics of each account. Authoritative texts recommend looking at

[4] F.K. Wolf and W.C. Fitch, *Depreciation Systems*, Iowa State Press (1994) at p. 47.
[5] *Id*. at p. 48.
[6] NARUC, *Public Utility Depreciation Practices* at 120 ("It is generally desirable to have the stub curve drop below 50%.").
[7] *Depreciation Systems* at pp. 46-47 (emphasis added).

combinations of retirement history over different periods of time, so the analyst can discern patterns that may influence the recommendations. The authoritative texts provide as follows:

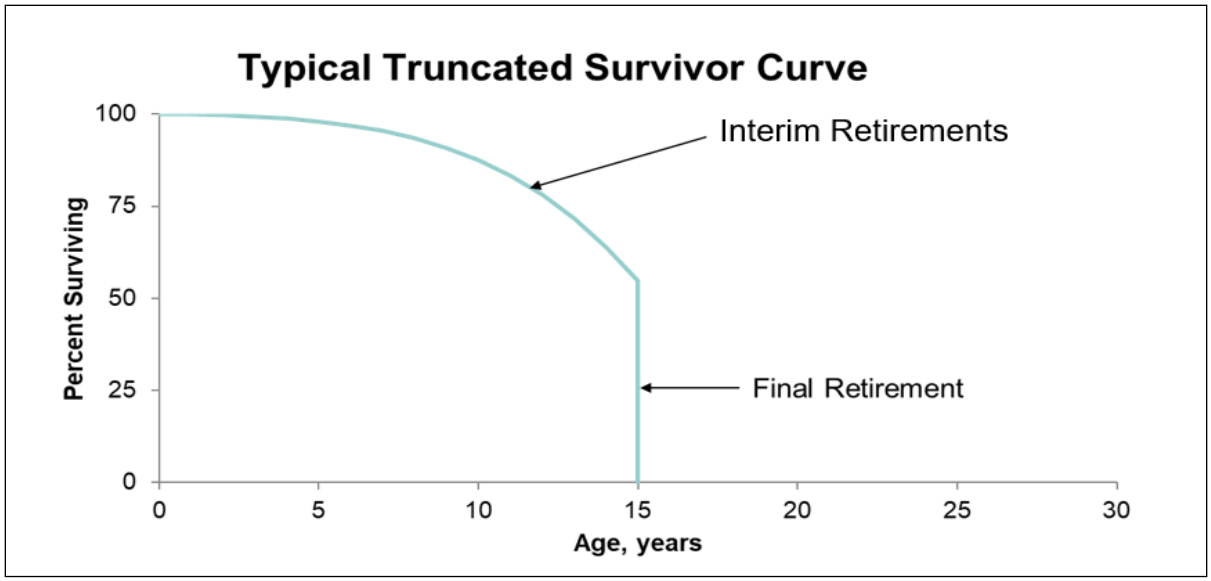
> The ultimate combination of bands is the overall band, which combines all individual placement and experience bands into a single, overall band. The major attribute of the survivor curve obtained from this band is that it uses every available exposure and retirement. On the other hand, this grand average obscures the dynamic characteristics of the life characteristics of the property…It is difficult to figure out the exact meaning of the overall band, and, in spite of the fact it does contain all the data points, it should be given limited significance.[8]

Until further data is provided, Staff recommendations are unsupported with the exception of a schedule showing their proposed rates and computation of those rates.

Q. How are various generation assets modeled in the depreciation study?

A. In my depreciation study, I modeled all generation facilities using the life span procedure. The life span procedure is used for production facilities for which most components are expected to have a retirement date concurrent with the planned retirement date of the generating unit. The terminal retirement date refers to the year that each unit will cease operations. The terminal retirement date, along with the interim retirement characteristics of the assets that will retire prior to the facility ceasing operation, describe the pattern of retirement of the assets that comprise a generating unit. The estimated terminal retirement date of each facility was provided to Alliance by the Company. An example of a life span and interim retirement application is shown below.

[8] *Depreciation Systems* at pp. 46-47 (emphasis added).



Q. What is an interim retirement curve?

A. An interim retirement curve is a prediction of how assets within each plant account are predicted to retire before the terminal retirement data of a generating unit. In my depreciation study, I modeled all generation facilities using the life span procedure. Interim retirement curves were used to model the retirement of individual assets within primary plant accounts for each generating unit prior to the terminal retirement of the facility. The life span procedure assumes all assets are depreciated (straight-line) for the same number of periods and retire at the same time (the terminal retirement date). Adding interim retirement curves to the procedure reflects the fact that some of the assets at a power plant will not survive to the end of the life of the facility and should be depreciated (straight-line) more quickly and retired earlier than the terminal life of the facility. The goal of interim retirement curves is to project how many of the assets that are currently in service will retire each year in the future using historical analysis and judgment. By applying interim retirements, recognition is given to the obvious fact that generating units will have retirements of depreciable property before the end of their lives.

Although interim retirements have been recognized in the study, interim additions (i.e., future additions) have been excluded from the study. The estimated amount of future additions might or might not occur. However, there is no uncertainty as to whether the full level of interim retirements will happen. The assets that are being modeled for retirement are already in rate base. Depreciation rates using interim retirements are known and measurable in the same way that setting depreciation rates for transmission or distribution property using Iowa Curves is known and measurable. There is no depreciable asset that is expected to live forever. All assets at a power plant will retire at some point. Interim retirements simply model when those retirements will occur in the same way that is done for transmission or distribution assets.

Q. Did Staff also use interim retirement curves to model the lives of generation facilities?

A. Yes. In Staff's initial filing, there were certain exceptions which were subsequently resolved. In workpaper DEP18CIP PRODUCTION, there were certain facilities where no terminal retirement data was used: Iatan Common Accounts 311-316. Asbury Wind Center Accounts 341. 342 345. 346. Energy Center Common Account 345, and State Line Common Account 341, 342, 343. 345 346. I modeled all facilities with a terminal retirement date. Our understanding is that when Staff files their rebuttal testimony, our treatment of interim retirement curves will be the same.

Q. Did you make adjustments to the interim retirement data for production?

A. Since interim retirements exclude terminal activity, I removed terminal retirements for Riverton (2014-2017). As stated in Schedule DAW-2, pages 23-24:

> In performing actuarial analysis on accounts 311-316, the initial data set included all retirements except life span retirements of Riverton and Asbury. After reviewing the results, the interim survivor curves showed a much shorter life than is usually seen in generation assets. We concluded that the retirements near the end of

the economic life of those generating units were atypical of the existing steam generation plant at Iatan and Plum Point. It was not possible to remove all life data related to Riverton and Asbury in the history since no segregated source data before 2005 was available. Thus, interim net salvage from 2005-2019 was used to estimate net salvage for accounts 311-316.

After a meeting with Staff to discuss the issue, we supplied Staff with identical data that I analyzed, and this was used in Staff's rebuttal testimony. In the sections below, I will discuss each account where Staff and I have different recommendations on life for each account.

Account 311 Structures and Improvements

Q. What are the alternative recommendations for the life of account 311, structures and improvements?

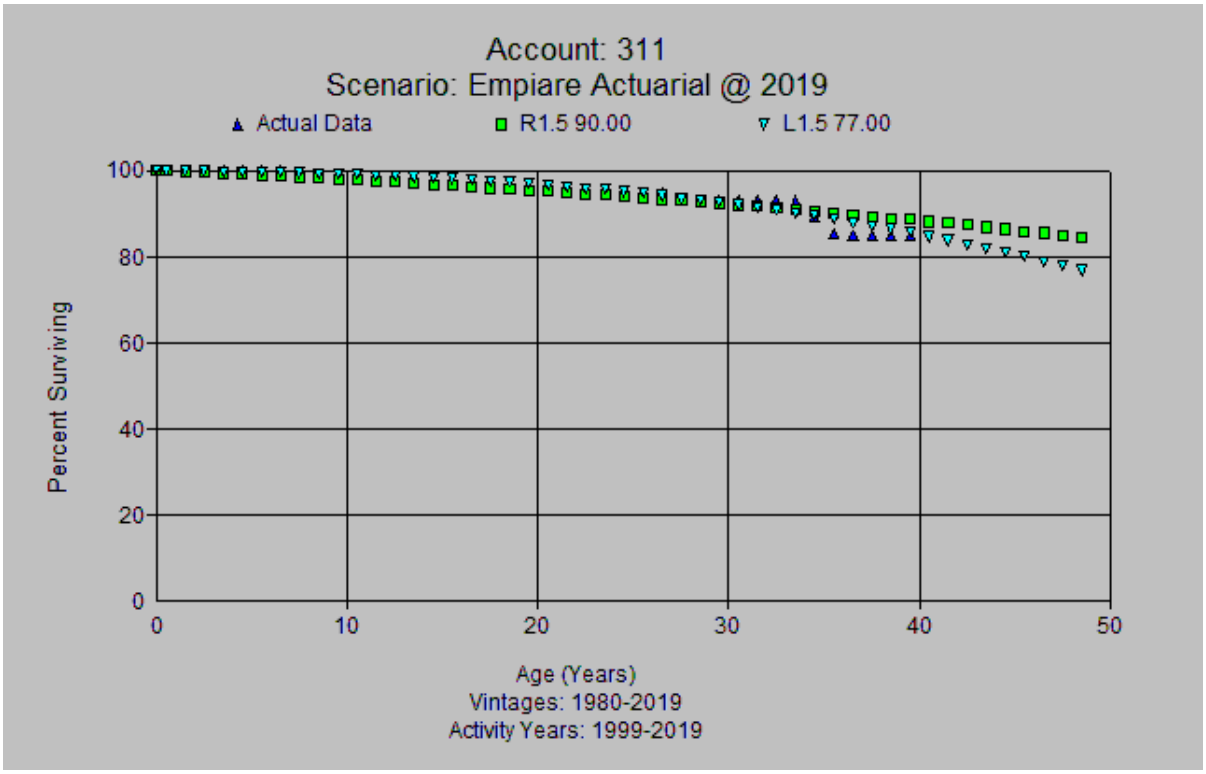
A. The Company proposal for Account 311 is 90 years with a R1.5 dispersion, as compared to Staff's proposed a 77-year life with an L1.5 dispersion. This account consists of buildings, concrete structures, fences, lighting systems, railroad tracks, and other related assets. The plant balance in this account is $63.9 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 10.64 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How will you display the various curve comparisons?

A. I will display various graphs from my software to show how the curves compare. The dark blue triangles rectangles represent the actual data, the green rectangles represent the Company's proposed curve, and the light blue triangles show Staff's proposed life for this account. I will use the same format to show each account's visual match.

Q. How does your proposed curve compare to Staff's proposal?

A. Both curves match closely through age 40. Since the experience band goes from 1999-2019, there is not as much history to match. Since the curve does not drop as much with limited data, it is more difficult to differentiate between the competing proposals. However, I think my proposal is more reasonable for assets such as buildings, concrete and other long-lived fixed assets.



Account 312 Boiler Plant and Equipment

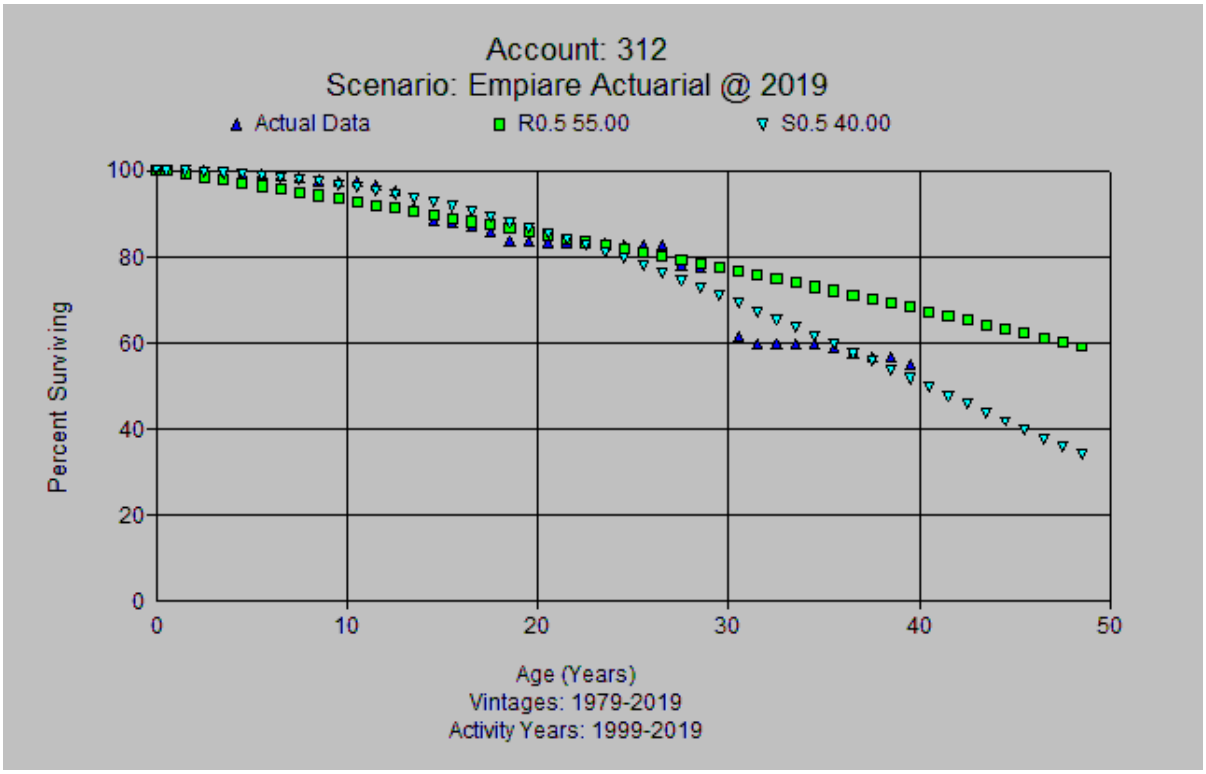
Q. What are the alternative recommendations for the life of Account 312, Boiler Plant Equipment?

A. The Company proposal for Account 312 is 55 years with a R0.5 dispersion, as compared to Staff's proposed 40-year life with an S0.5 dispersion. This account consists of boiler plant equipment, super heaters, water walls, fuel burning equipment, reheaters. and other related equipment. The balance in this account is $317.9 million.

Rebuttal Schedule DAW-3 shows a list of the various retirement units in this account. The investment in this account is 8.57 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. Staff's curve matches better through age 30. However, based on the types of assets in the account, it is difficult to envision that half of the assets in the account would be retired and replaced by age 40. I seldom, if ever, see an interim retirement curve for this account as low as 40 years. I feel my proposal is a better representation of the retirement characteristics of this account.



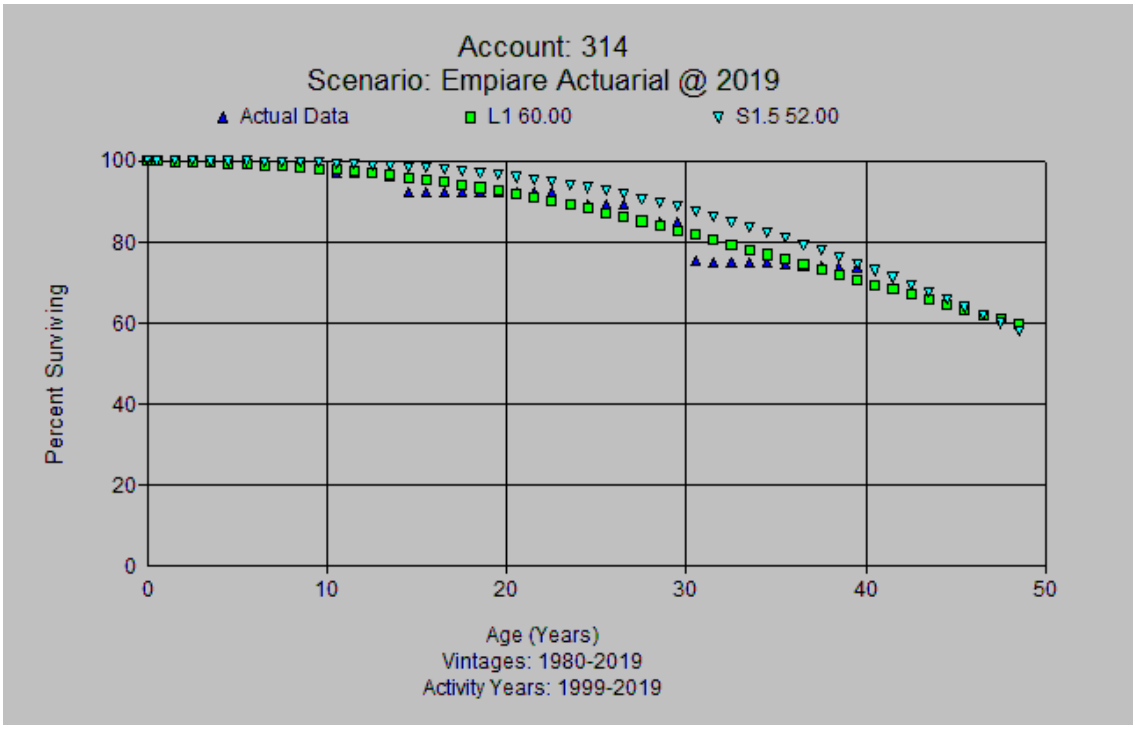
Account 314 Turbogenerator Equipment

Q. What are the alternative recommendations for the life of Account 314, Turbogenerator Equipment?

A. The Company proposal for Account 314 is 60 years with a L1 dispersion, as compared to Staff's proposed 52-year life with an S1.5 dispersion. This account consists of turbo-generator main structures, pumps, condensers, rotating blades, and other related assets. The balance in this account is $82.9 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 11.70 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. My proposal is a much better visual match and is more typical of electric utility property in this account. Staff's proposal does not match the shape of the curve from ages 0 to 40 as well as my proposal does.



Account 331- Structures and Improvements

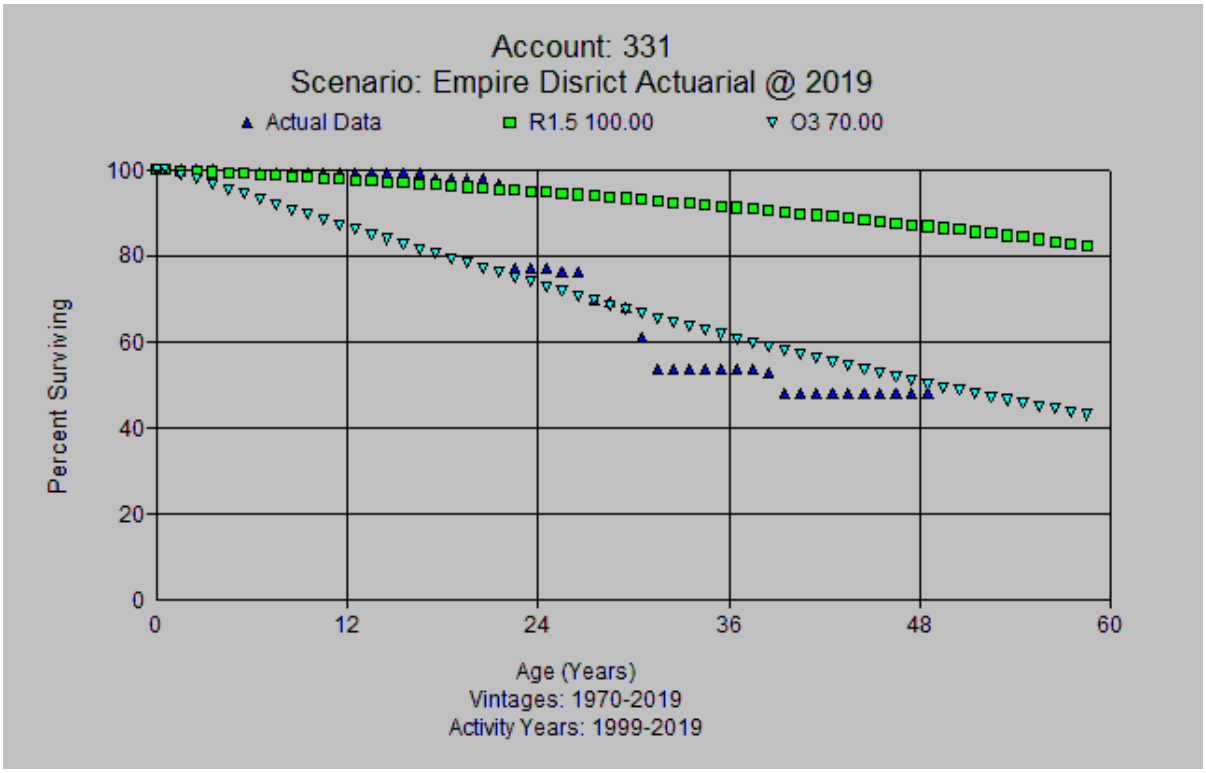
Q. What are the alternative recommendations for the life of Account 331, Structures and Improvements?

A. The Company proposal for Account 331 is 100 years with a R1.5 dispersion, as compared to Staff's proposed 70-year life with a O3 dispersion. This account consists of buildings, structures, fences, lighting systems, and other related assets. The balance in this account is $1.7 million. **Rebuttal Schedule DAW-R-3** shows a list of the various retirement units in this account. The investment in this account is 14.43 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. In this case, Staff's proposal is a superior visual fit. However, the choice of an O curve is a very unusual one in this case. O curves are uncommon in utility applications and have very long tails (i.e., when the last asset retires)[9]. Although dam structures can have a long life, it is difficult to envision any of the components in this account as shown in **Rebuttal Schedule DAW-3**, (especially assets such as refrigerators, HVAC equipment, windows, and cabinetry) will last the 270 years a 70 O3 curve would imply. For structures, I believe my proposal is a better one.

[9]The O3 curve will last 385 percent of the average service life. (Depreciation Systems, by W C Fitch and F K Wolf, p. 334). This would mean assets modeled with the 70 O3 curve would last as long as 270 years.



Account 332 Dams

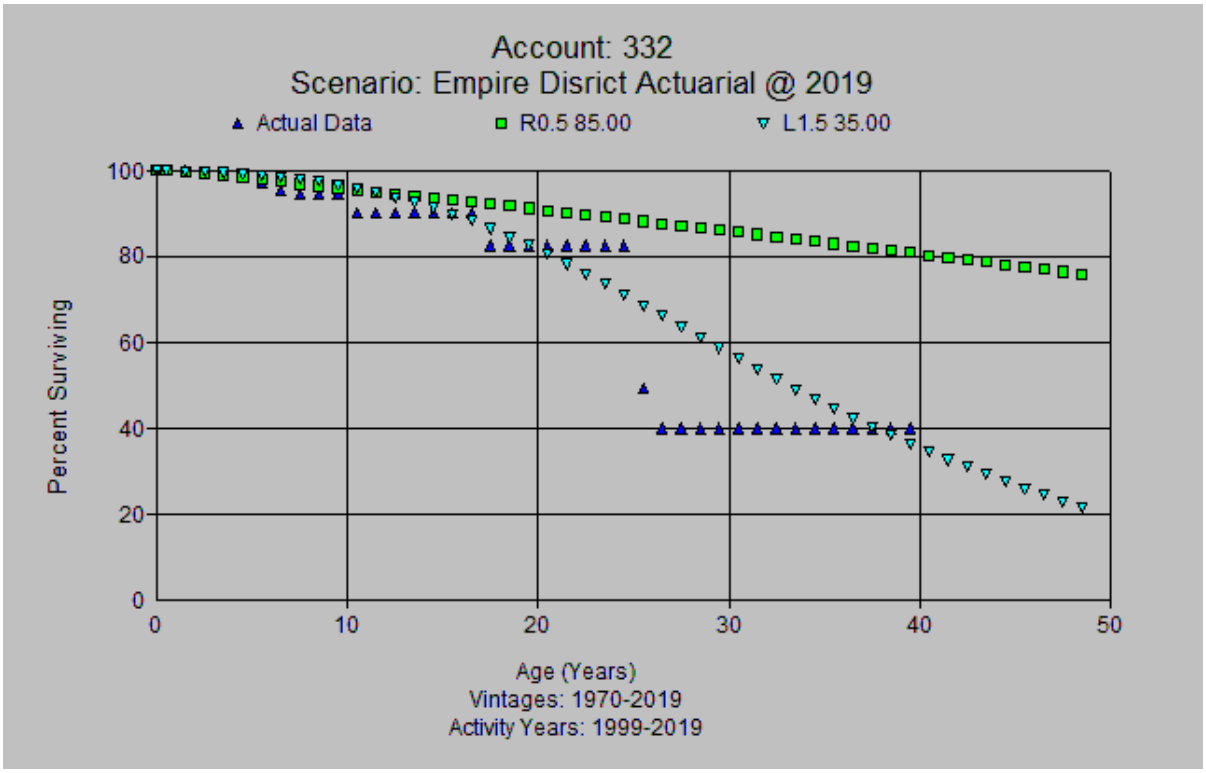
Q. What are the alternative recommendations for the life of Account 332, Dams?

A. The Company proposal for Account 332 is 85 years with a R0.5 dispersion, as compared to Staff's proposed 35-year life with a L1.5 dispersion. This account consists of reservoirs, dams, waterways, and other related assets. The account balance is $3.5 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 41.07 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. Staff's curve is a closer visual match. However, given that the average age of the assets is already longer than Staff's proposal, I believe my proposal better matches the dams which are made of concrete, steel and similar materials. As stated in Schedule DAW-2, page 37 of 137, in 2011, the crest gate and flashboard were replaced. This could

signal in the statistics a shorter life than would be expected for the remaining assets in this account. Given that recent activity, I think it is unlikely the dam will have that type of replacement occurring at such a young age over the remaining life of Ozark Beach. I believe the Company proposal is the superior recommendation.



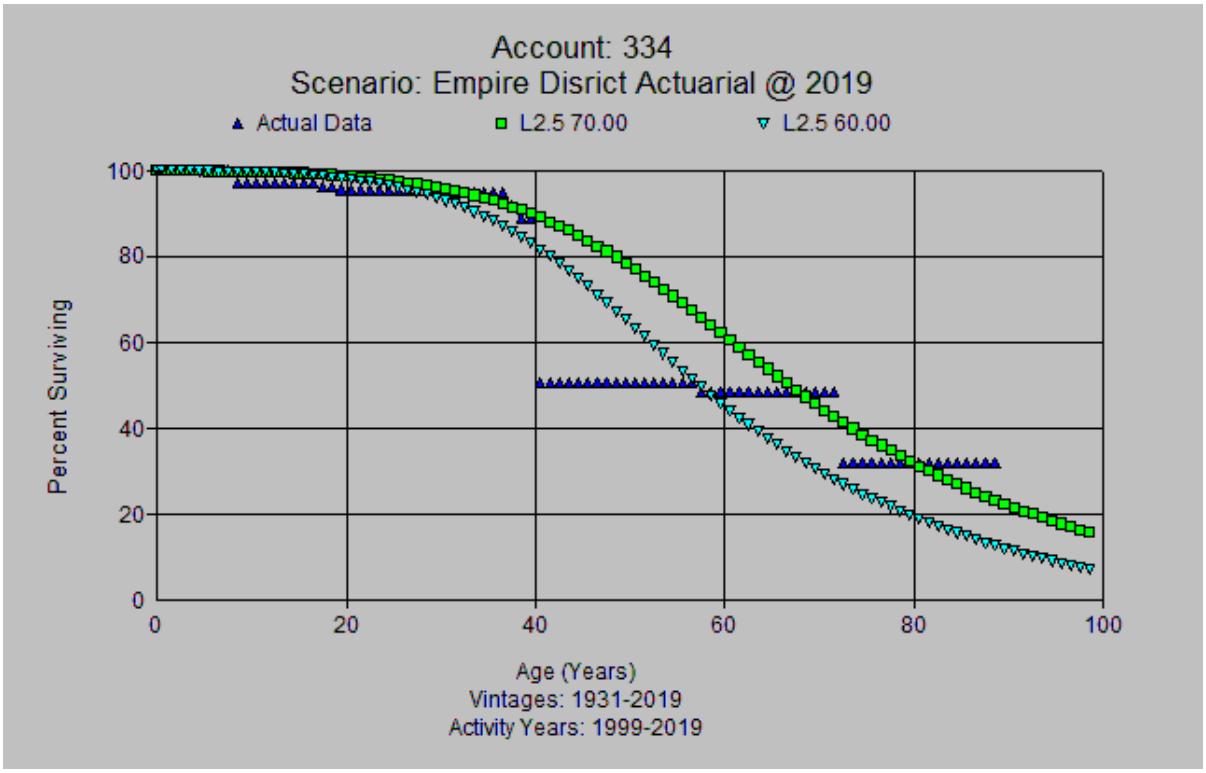
Account 334 Accessory Electric Equipment

Q. What are the alternative recommendations for the life of Account 334, Accessory Electric Equipment?

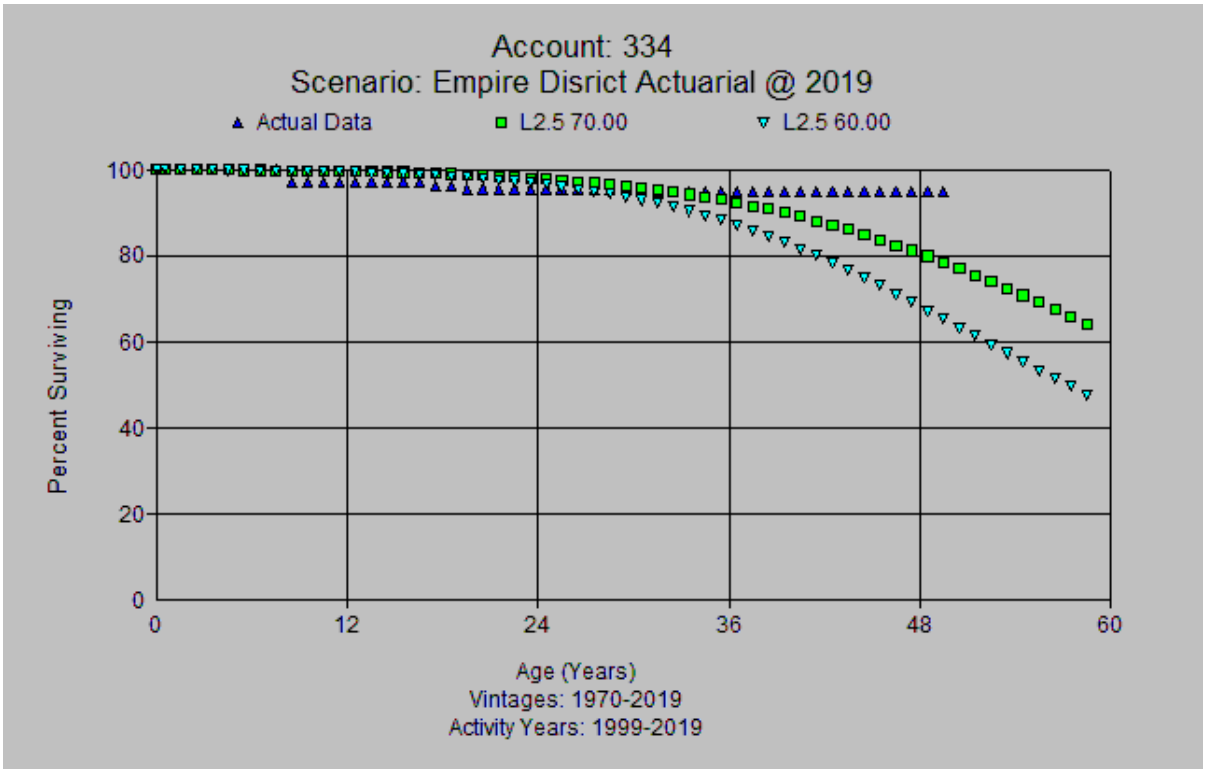
A. The Company proposal for Account 334 is 70 years with a L2.5 dispersion, as compared to Staff's proposed 60-year life with a L2.5 dispersion. This account consists of generator controls, bus equipment, and other related assets. The account balance is $1.5 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 25.19 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. Although the available data does not create a statistical validity to select either life with certainty, in the overall band, Staff's proposal is a closer match.



However, that changes in a narrower band as shown below, where the Company's life is a slightly better fit.



I believe my proposal is a superior recommendation both from the newer experience and the life expectations for electrical components.

Account 335 Misc. Equipment

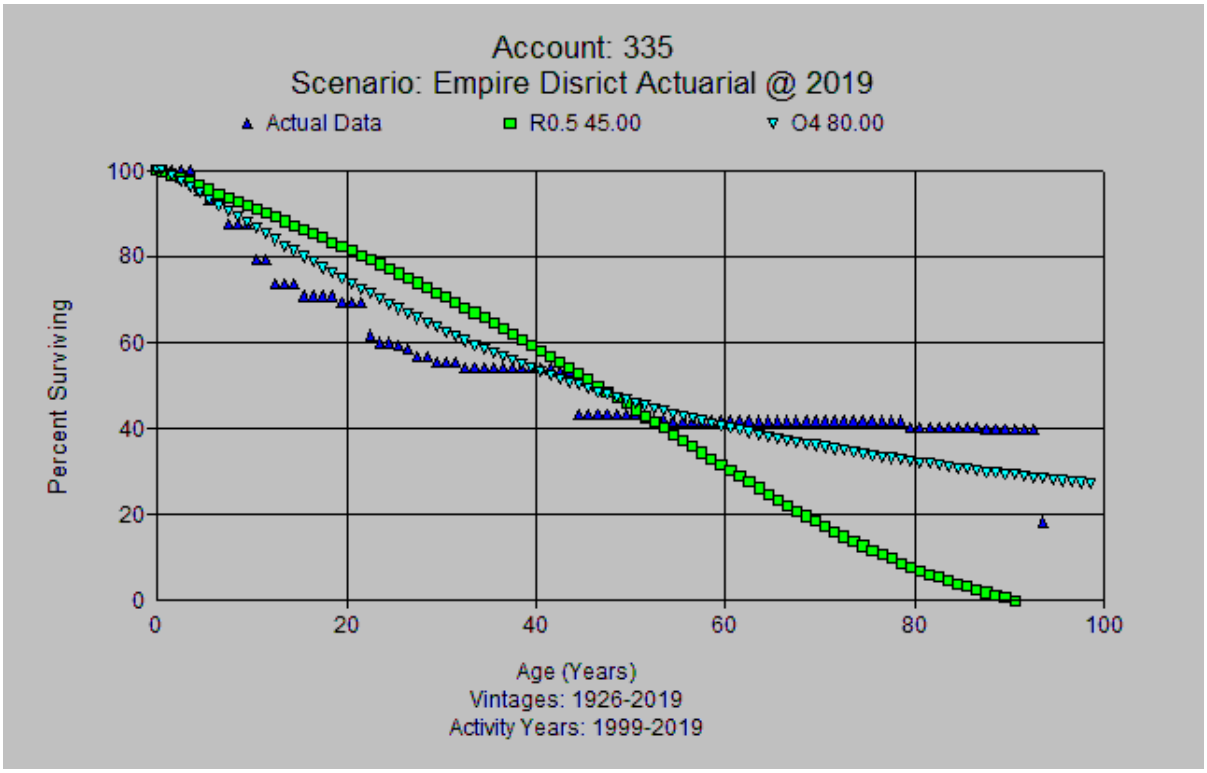
Q. What are the alternative recommendations for the life of Account 335, Miscellaneous Equipment?

A. The Company proposal for Account 335 is 45 years with a R0.5 dispersion, as compared to Staff's proposed 80-year life with a O4 dispersion. This account consists of storage tanks, boats, test equipment, and other related assets. The account balance is $1.2 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 9.20 years old on average, which means that more recent experience is indicative of the future for this account.

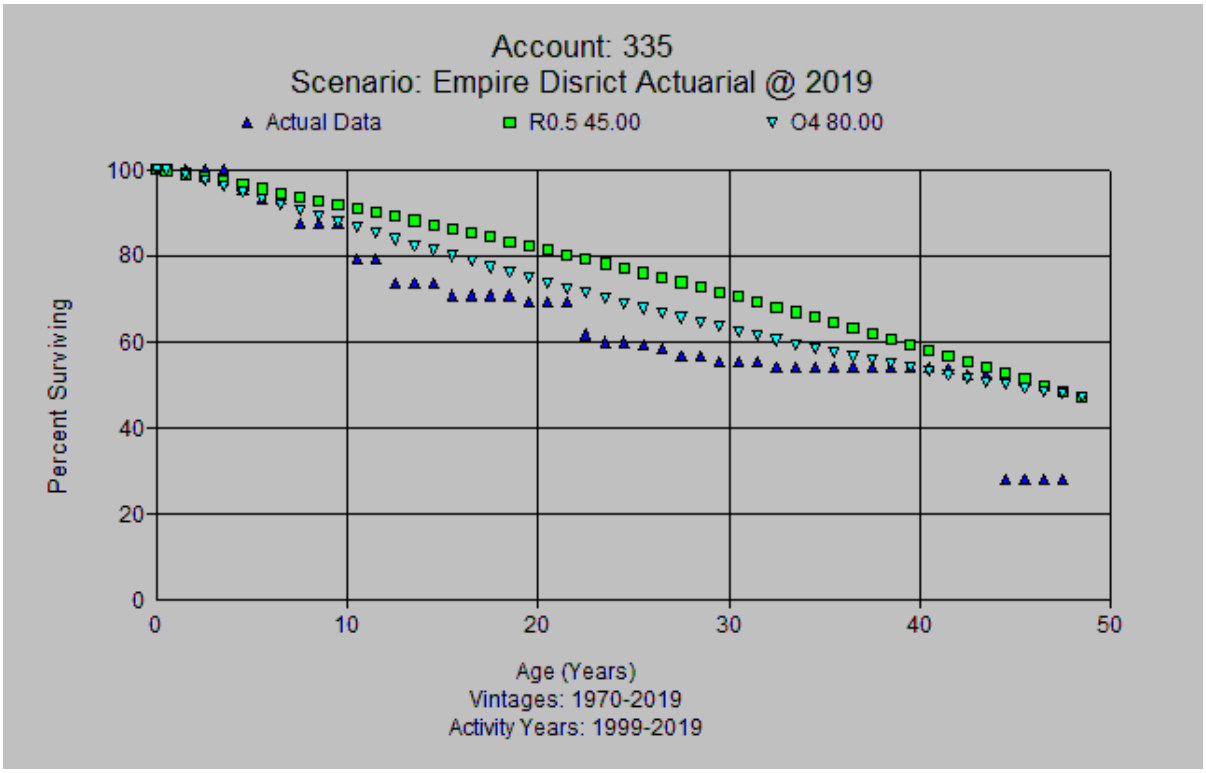
Q. How does your proposed curve compare to Staff's proposal?

A. In the overall band, Staff's proposal is a superior visual fit. However, the choice of an O curve is a very unusual one in this case. O curves are uncommon in utility applications with very long tails.

An 80 O4 curve will last as long as 350 years (up to 440 percent of average service life). Staff's proposal would suggest these assets would last longer than the dam itself for Ozark Beach. As shown in **Rebuttal Schedule DAW-3**, the assets in this account are assets such as backhoes, signage, mower, test equipment, pumps, and welding equipment., none of which will have a life of 350 years. (or even 80 years).



In a narrower band, the Company's R0.5 curve matches better than Staff's O curve.



I believe my proposal is a superior one for this account. Staff's proposal does not reflect the characteristics of the small tools, pumps, ATVs, and other small assets booked in account 335.

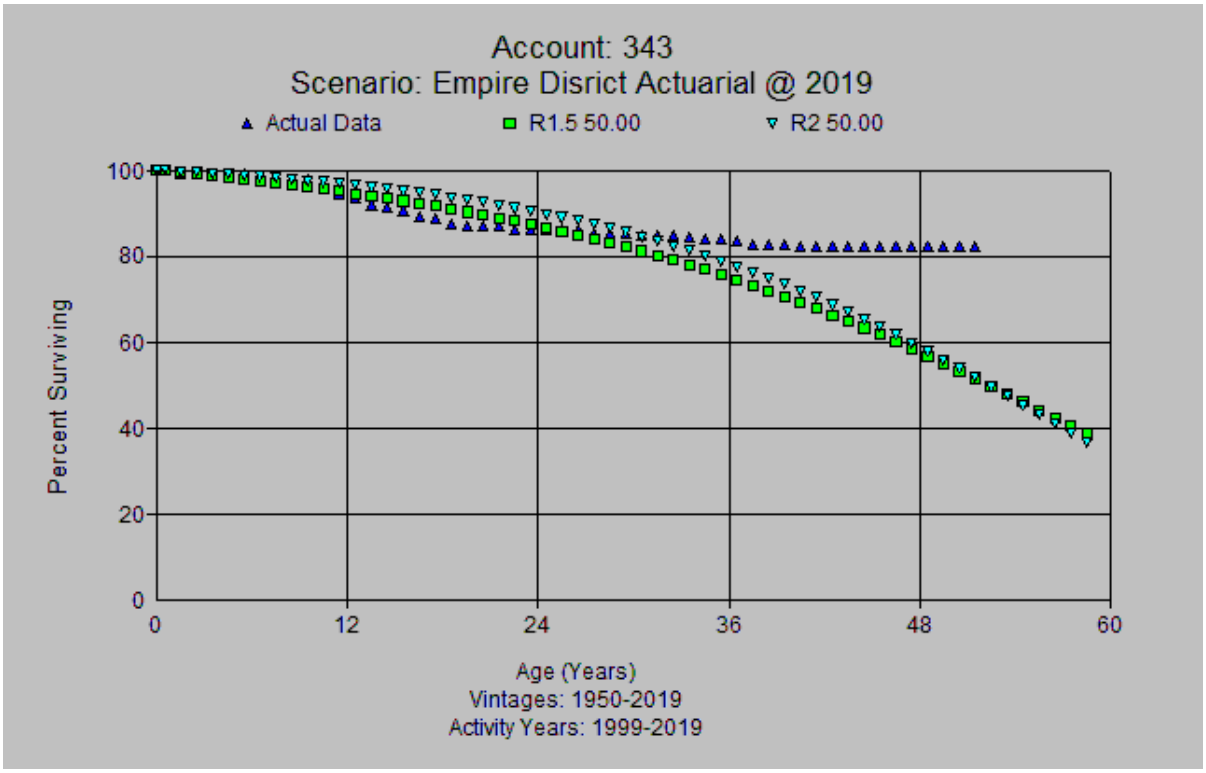
Account 343 Prime Movers

Q. What are the alternative recommendations for the life of Account 343, Prime Movers?

A. The Company proposal for Account 343 is 50 years with a R1.5 dispersion, as compared to Staff's proposed 50-year life with a R2 dispersion. This account consists of foundations, chimneys, demineralizers, fire protection systems, and other related assets at each power plant. The balance in this account is $376.1 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 12.94 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. These curves are very close to each other. Given the close curve match and same life, Staff's recommendation is also reasonable.



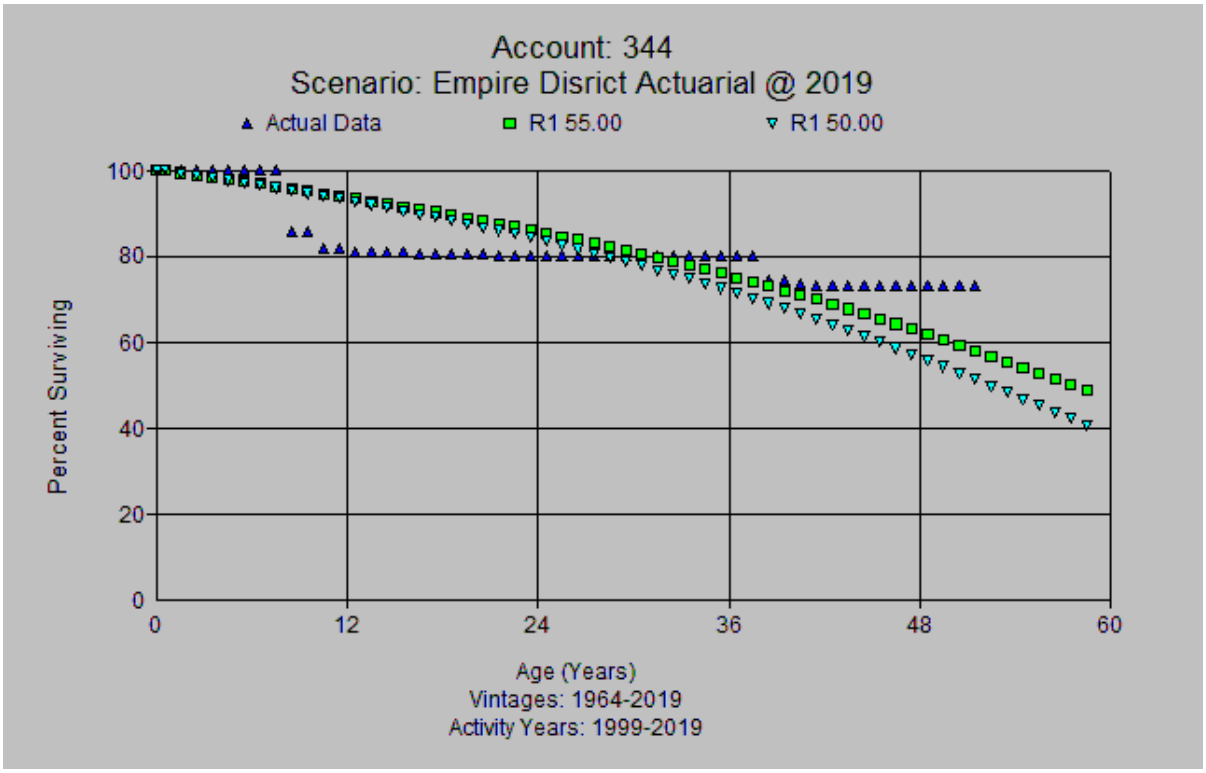
Account 344 Generators

Q. What are the alternative recommendations for the life of Account 344, Generators?

A. The Company proposal for Account 344 is 55 years with a R1 dispersion, as compared to Staff's proposed 50-year life with a R1 dispersion. This account consists of generators, turbine equipment, and other related assets. The balance in this account is $73.4 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 13.87 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. Neither curve is a good match given the large drop in the curve that occurs around age 10. Given the fit for both curves and reasonable life, Staff's recommendation is also reasonable.



Account 346 Misc. Equipment

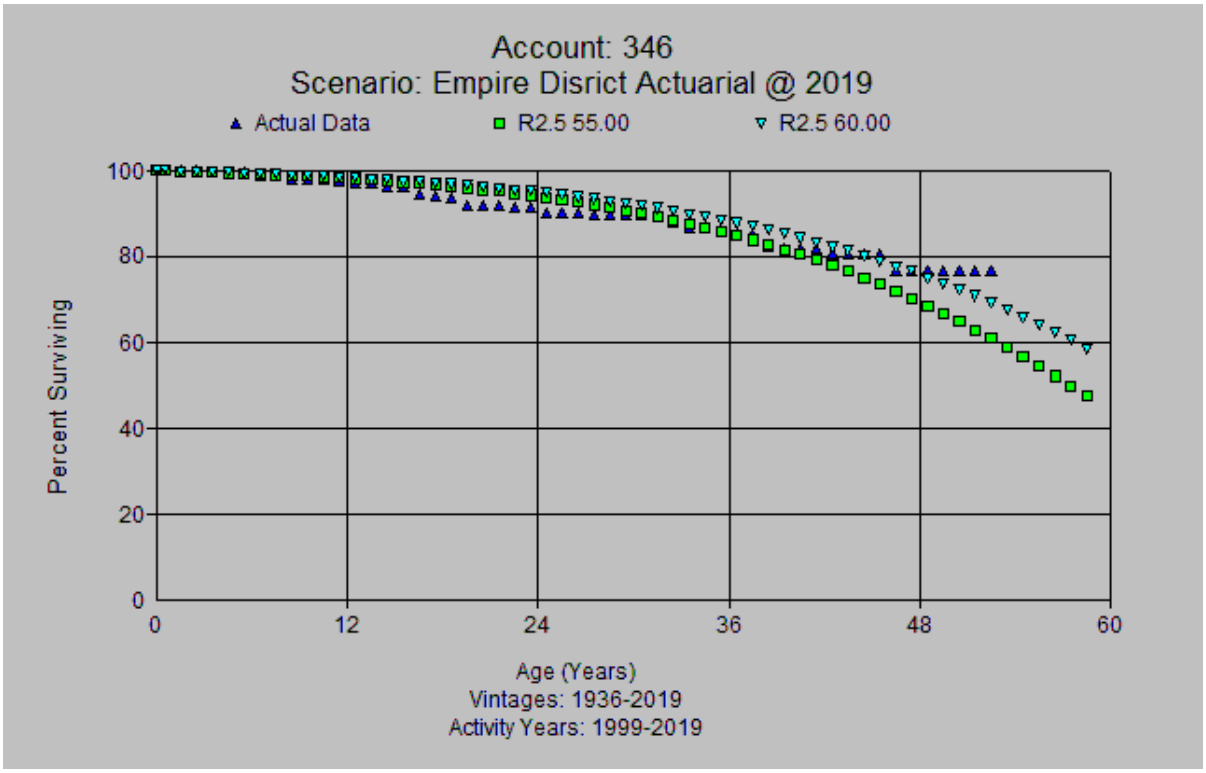
Q. What are the alternative recommendations for the life of Account 346, Miscellaneous Equipment?

A. The Company proposal for Account 346 is 55 years with a R2.5 dispersion, as compared to Staff's proposed 60-year life with a R2.5 dispersion. This account consists of work equipment, pumps, work benches, and other related assets. The balance in this account is $13 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 13.84 years old on

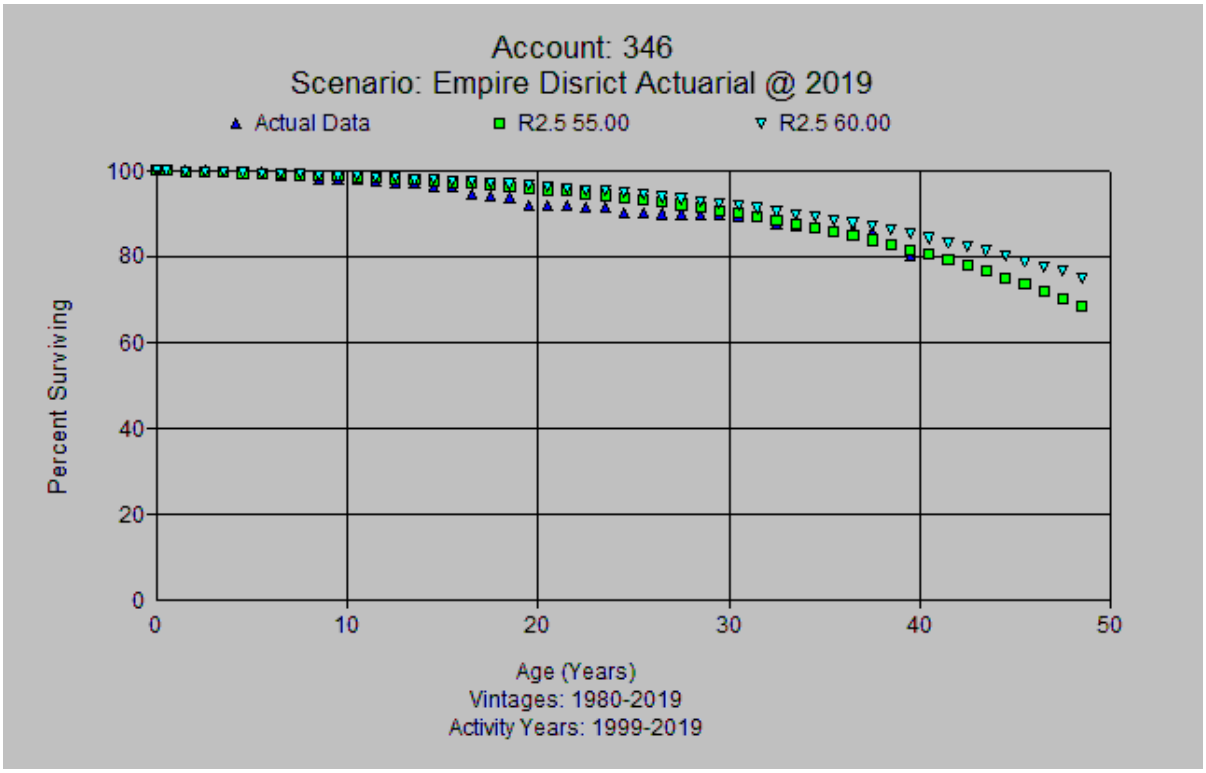
average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. In the overall placement experience band, Staff's proposal is a better visual match.



In a more recent placment band, my proposal becomes a slightly better fit as shown below.



Neither proposed curve has a very long stub ending with percent surviving of 77 percent, making matching an Iowa curve more difficult. Given the average age of the account is less than 14 years, I believe my proposal is the better recommendation but either selection would be a reasonable selection.

Account 352 Structures and Improvements

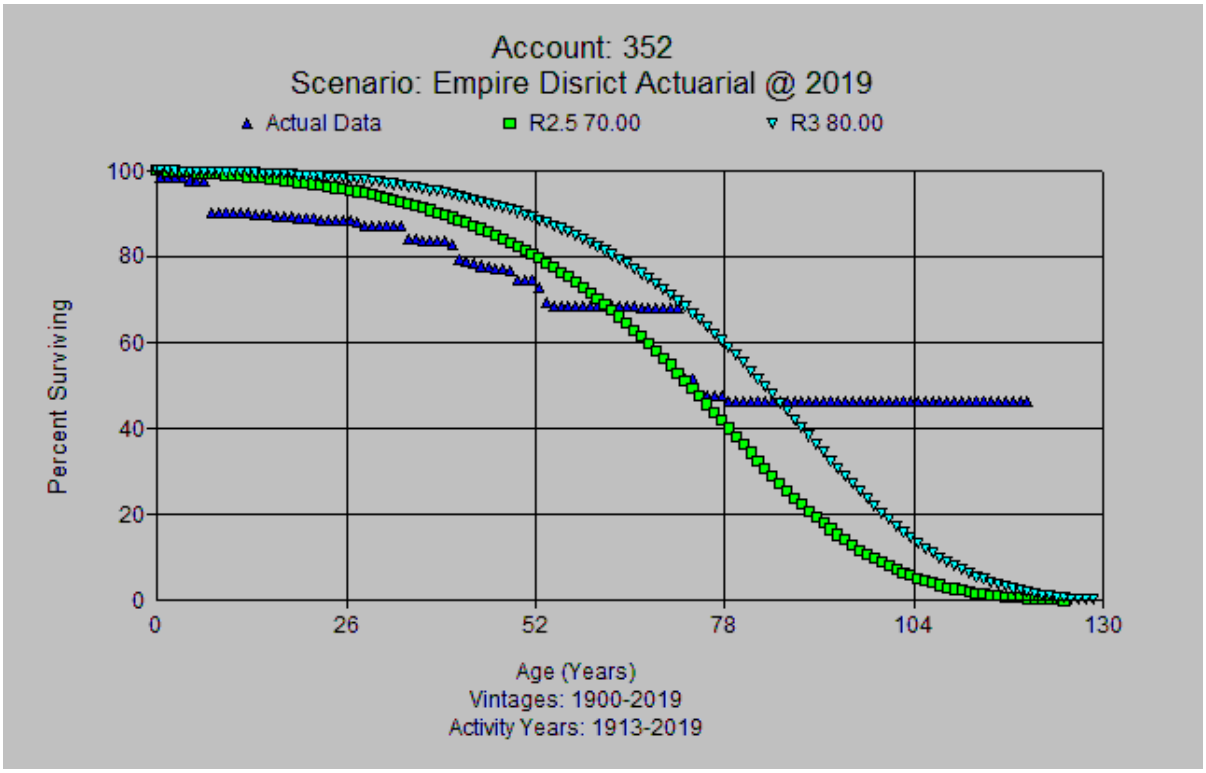
Q. What are the alternative recommendations for the life of Account 352, Structures and Improvements?

A. The Company proposal for Account 352 is 70 years with a R2.5 dispersion, as compared to Staff's proposed 80-year life with a R3 dispersion. This account consists of buildings, structures, fences, lighting systems, and other related assets related to Transmission Plant. The account balance is $4.7 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this

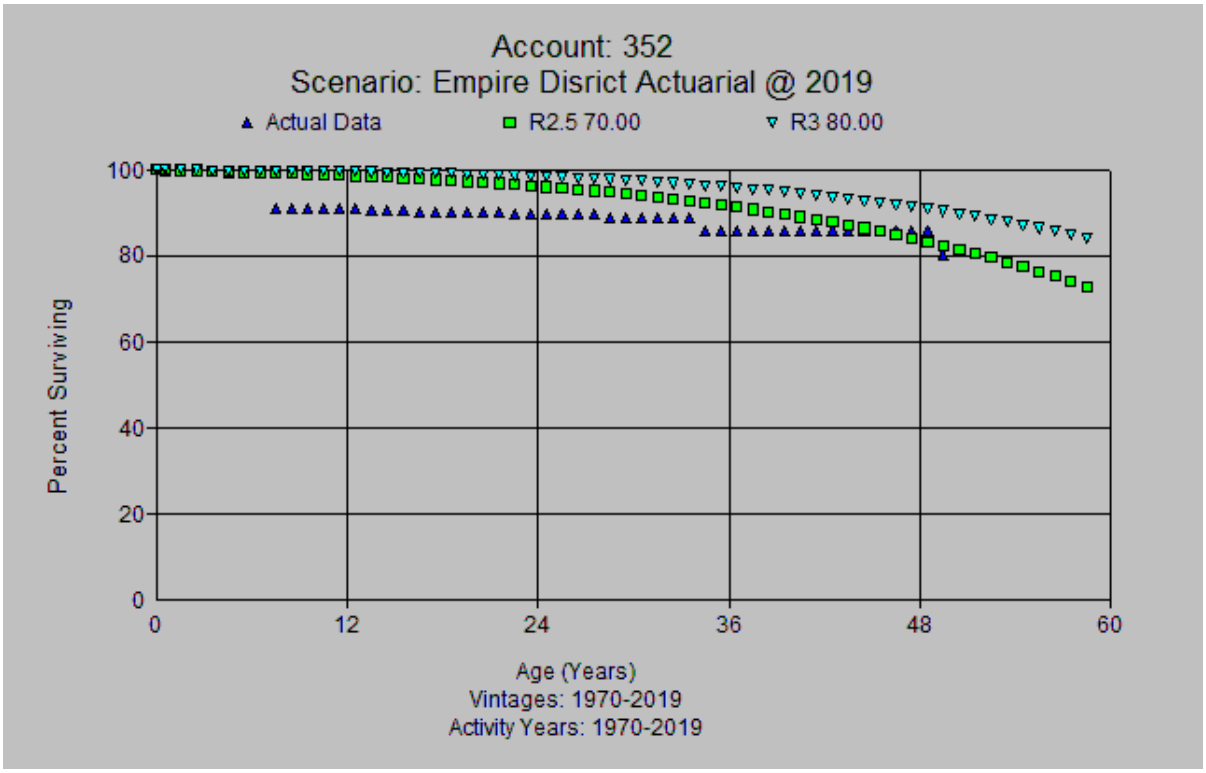
account is 18.44 years old on average, which means that more recent experience is indicative of the future for this account.

Q. How does your proposed curve compare to Staff's proposal?

A. Although neither curve fits well, in the overall placement experience band my proposal is a better visual match.



In a more recent placment band and experieince band, my proposal is a better fit as shown below even though the data is limited only going to 80 percent suriviving.



Account 353 Station Equipment

Q. What are the alternative recommendations for the life of Account 353, Station Equipment?

A. The Company proposal for Account 353 is 50 years with a R1.5 dispersion, as compared to Staff's proposed 50-year life with a S1 dispersion. This account consists of conductors, switches, relays, grounding systems, panels, breakers, and other assets related to station equipment. The account balance is $189.9 million. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 12.77 years old on average, which means that more recent experience is indicative of the future for this account.

Q. What important information did Company SMES provide regarding this account?

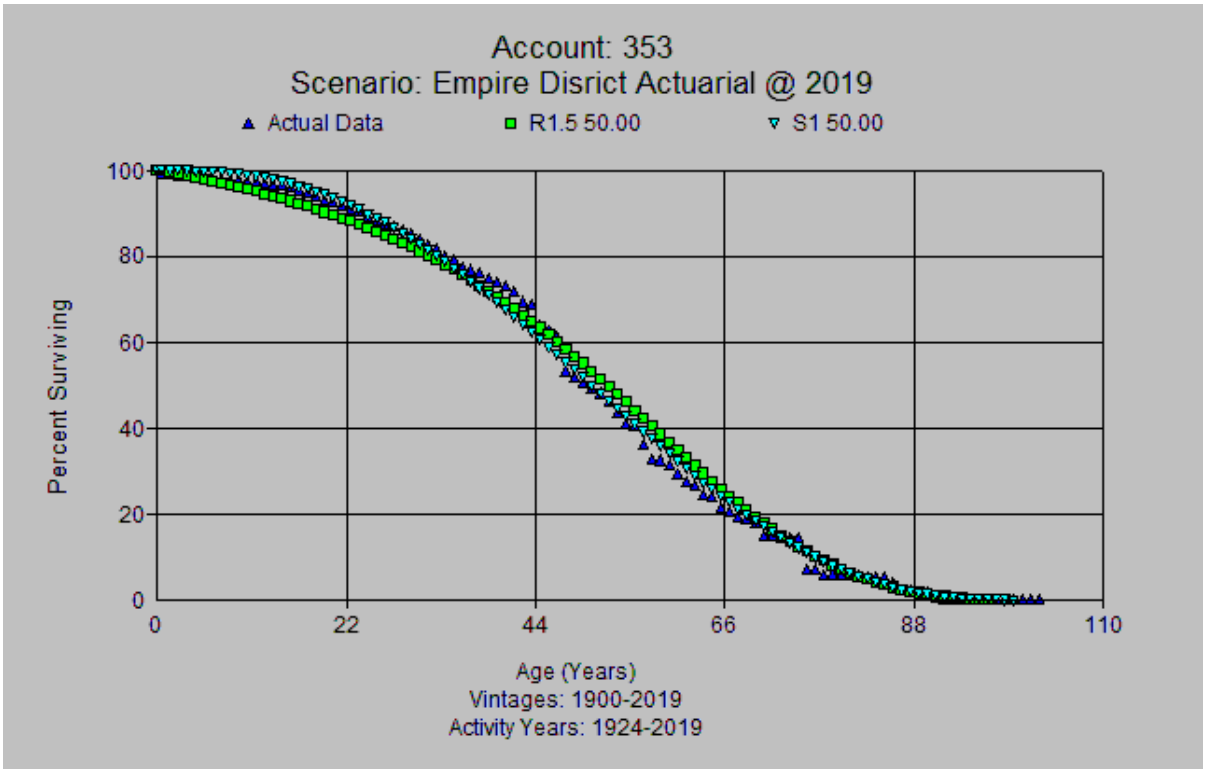
A. As mentioned in my depreciation study, Schedule DAW-2, page 51 of 137,

> Discussions with Company personnel indicate they are moving to digital relays. They are in the process of changing out the SF6 with dry air relays. The Company is also moving away from oil breakers. There have not been any big changes related to transformers

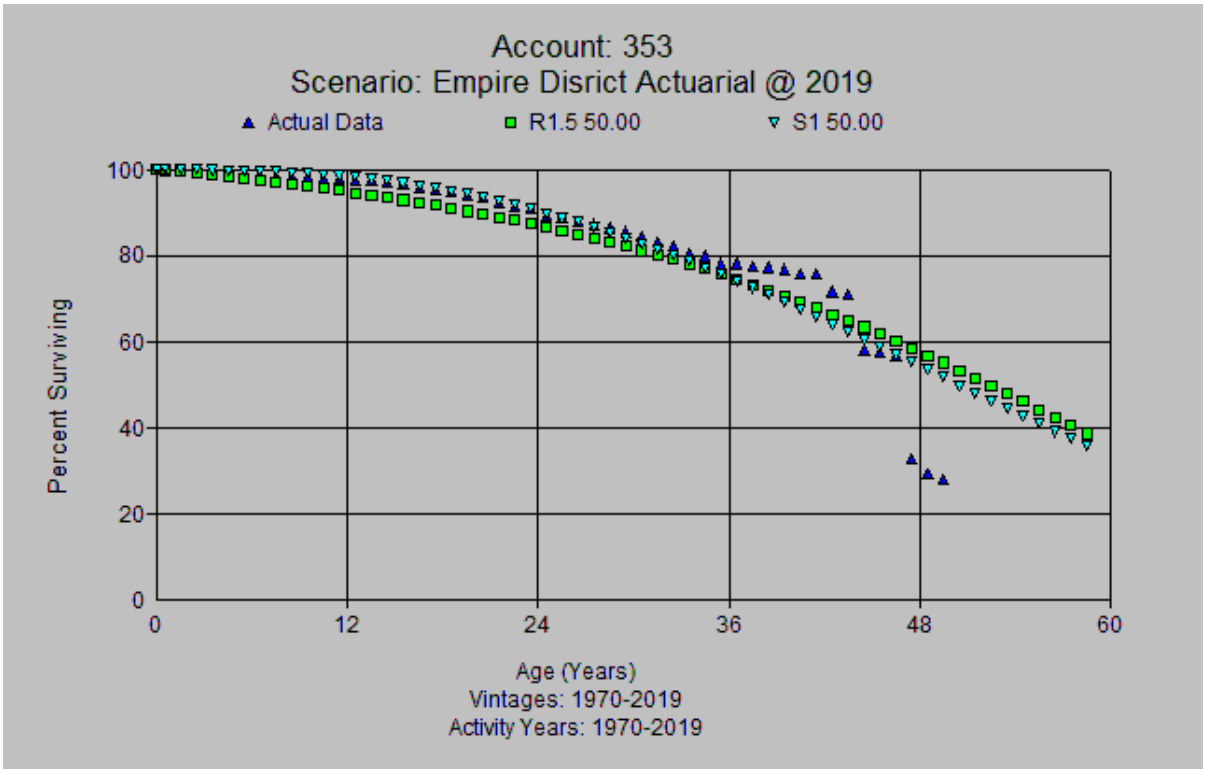
As I interview utility professionals across North America, many companies are converting to electronic components in this account, which is lowering the life of this account.

Q. How does your proposed curve compare to Staff's proposal?

A. In the overall placement experience band the two curves are a very close match.



In a narrower placement and experience band the same comparison holds true. Given the similar match, consistent lives and a small variation in curve pattern, either selection would be reasonable.



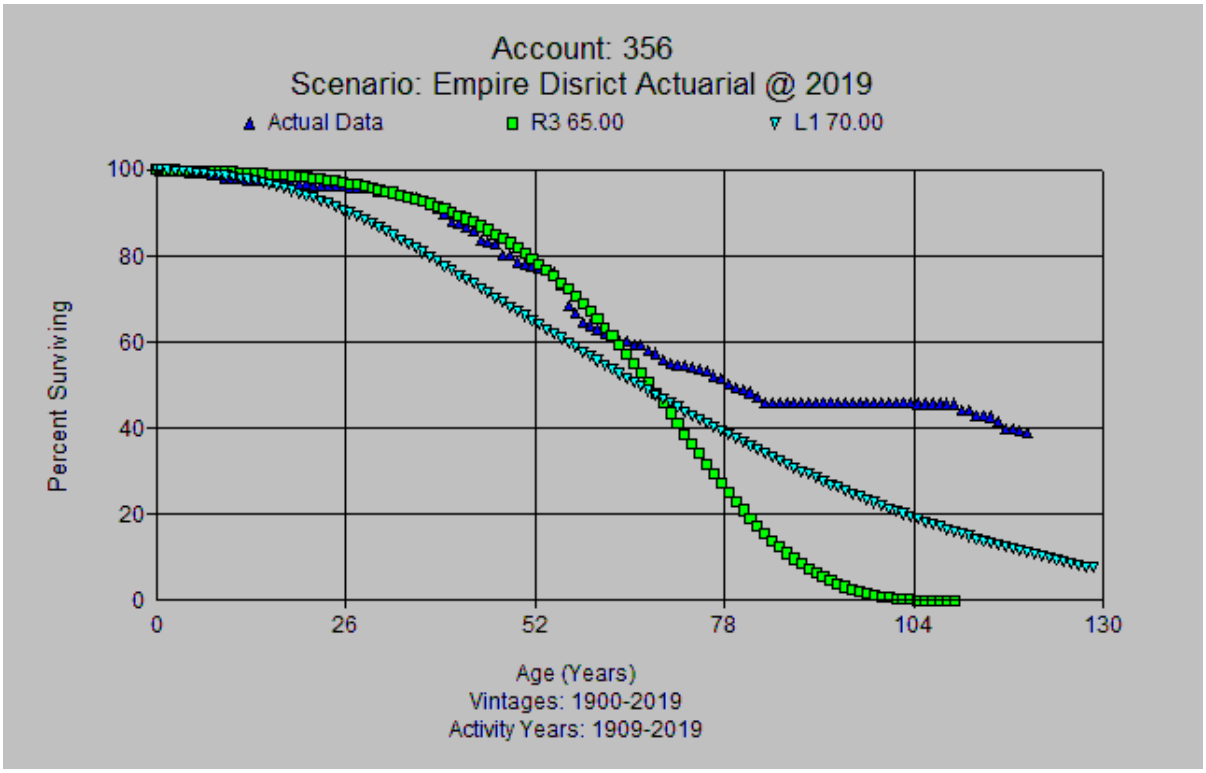
Account 356 OH Conductor

Q. What are the alternative recommendations for the life of Account 356, Overhead Conductor?

A. The Company proposal for Account 356 is 65 years with a R3 dispersion, as compared to Staff's proposed 70-year life with a L3 dispersion. This account consists of conductors, arrestors, switches, and other related devices. The balance in this account is $100.3 million. The investment in this account is 18.03 years old on average, which means that more recent experience is indicative of the future for this account.

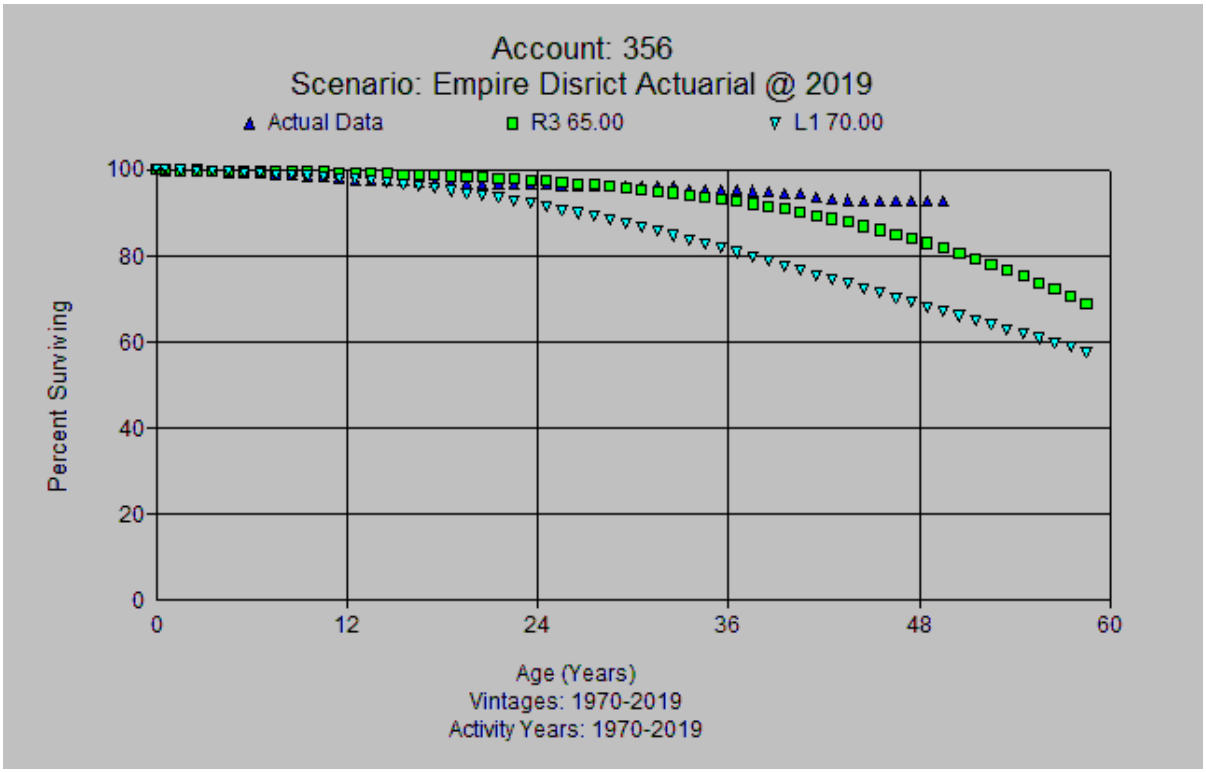
Q. How does your proposed curve compare to Staff's visually?

A. The graph below compares the actual data to the Company's proposed curve versus Staff's recommendation for the overall placement/ experience band. The Company's recommendation is a significantly better fit than Staff's.



Q. What does a different placement experience band show for this account?

A. For a narrower band of 1970-2019, the observed life table does not go below 90%. surviving. However, the Company's proposal still matches the data of the Company's actual experience better than Staff's recommendation. Another consideration is that the 70 L1 curve will have assets that last up to 315 percent of average service e life which is 220 years. In contrast, the Company's proposed 65 R3 will last until age 110 years. A maximum life of 110 for conductor is more rational than 220 years from an operational standpoint.



Account 361 Structures and Improvements

Q. What are the alternative recommendations for the life of Account 361, Structures and Improvements?

A. The Company proposal for Account 361 is 52 years with a R2 dispersion, as compared to Staff's proposed 55-year life with an R1.5 dispersion. This grouping contains facilities ranging from landscaping, main building structures, lighting systems, sewer systems, and other improvements. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 10.65 years old on average, which means that more recent experience is indicative of the future for this account.

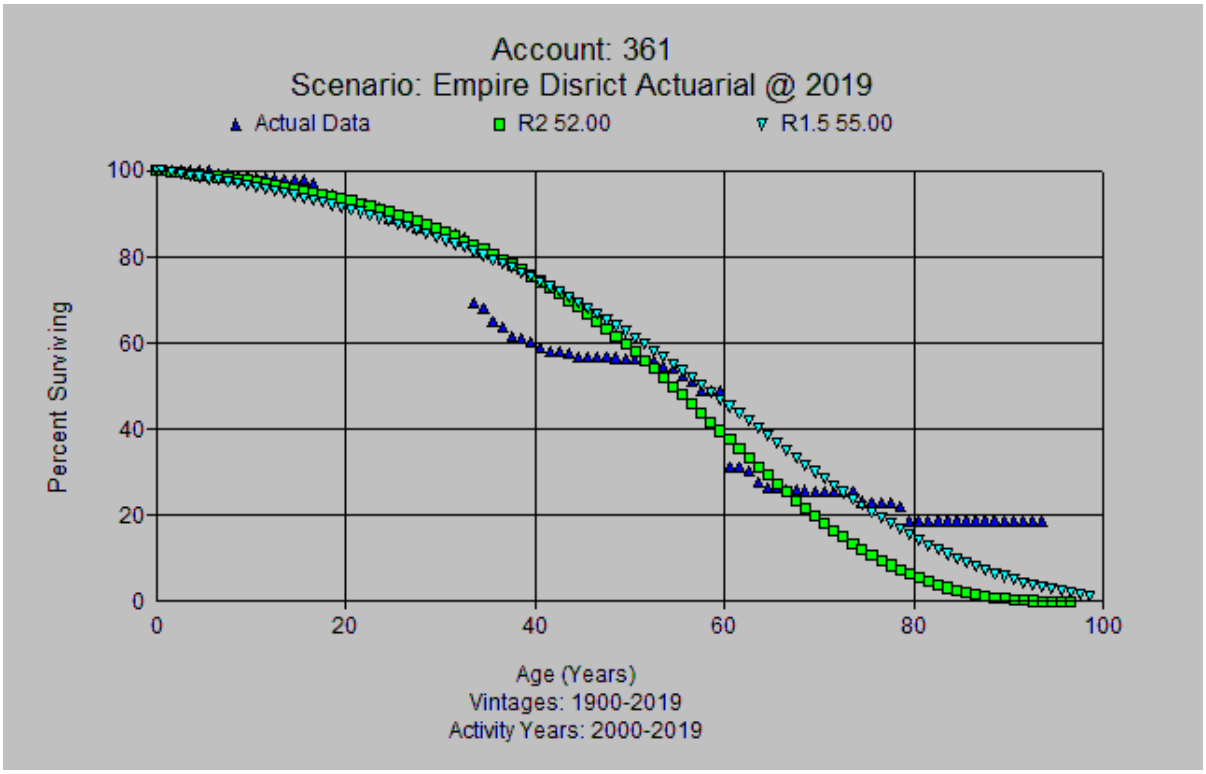
Q. What important information did Company SMEs provide regarding this account?

A. As mentioned in my depreciation study, Schedule DAW-2, page 55 of 137,

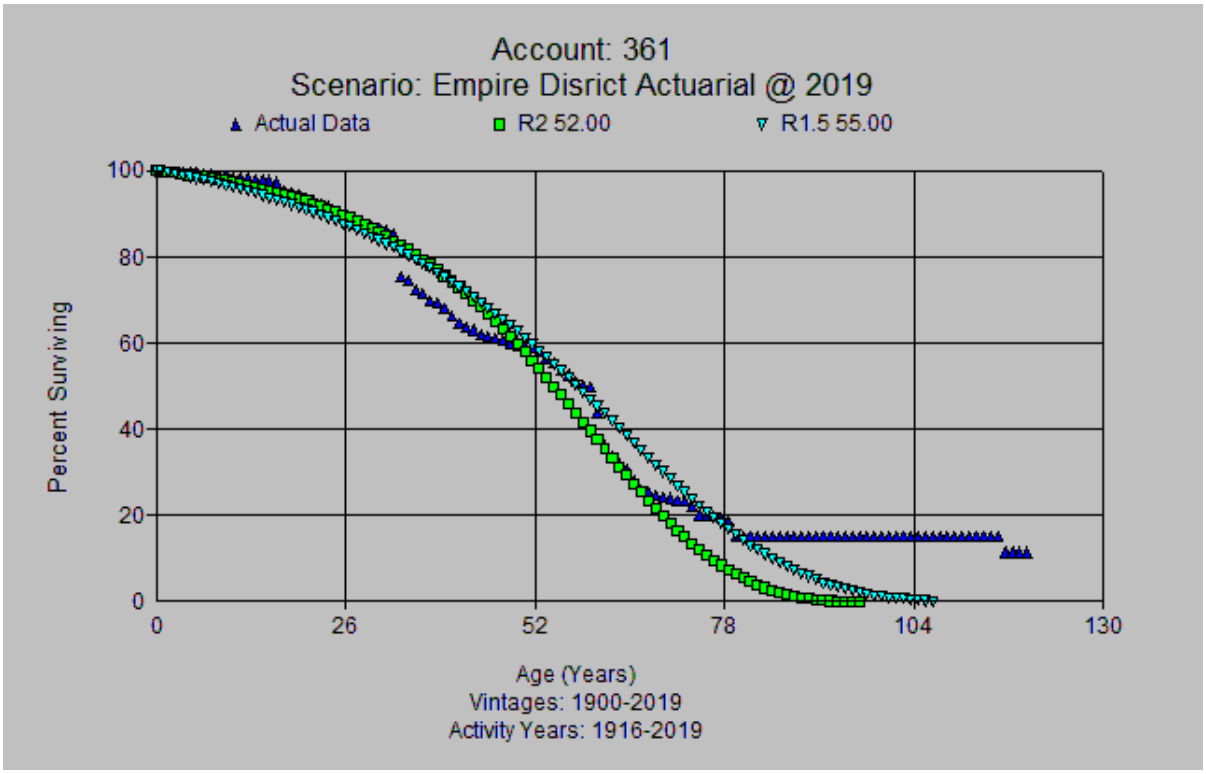
Discussions with Company personnel indicated that they are no longer using wood in distribution structures, and the change out to steel is ongoing as the Company is focusing on its aging infrastructure. There is a difference in life expectations between transmission and distribution structures, in that transmission structures are stronger and built to last longer. Also, more of these exist on the distribution system than on the transmission system.

Q. How does your proposed curve compare to Staff's visually?

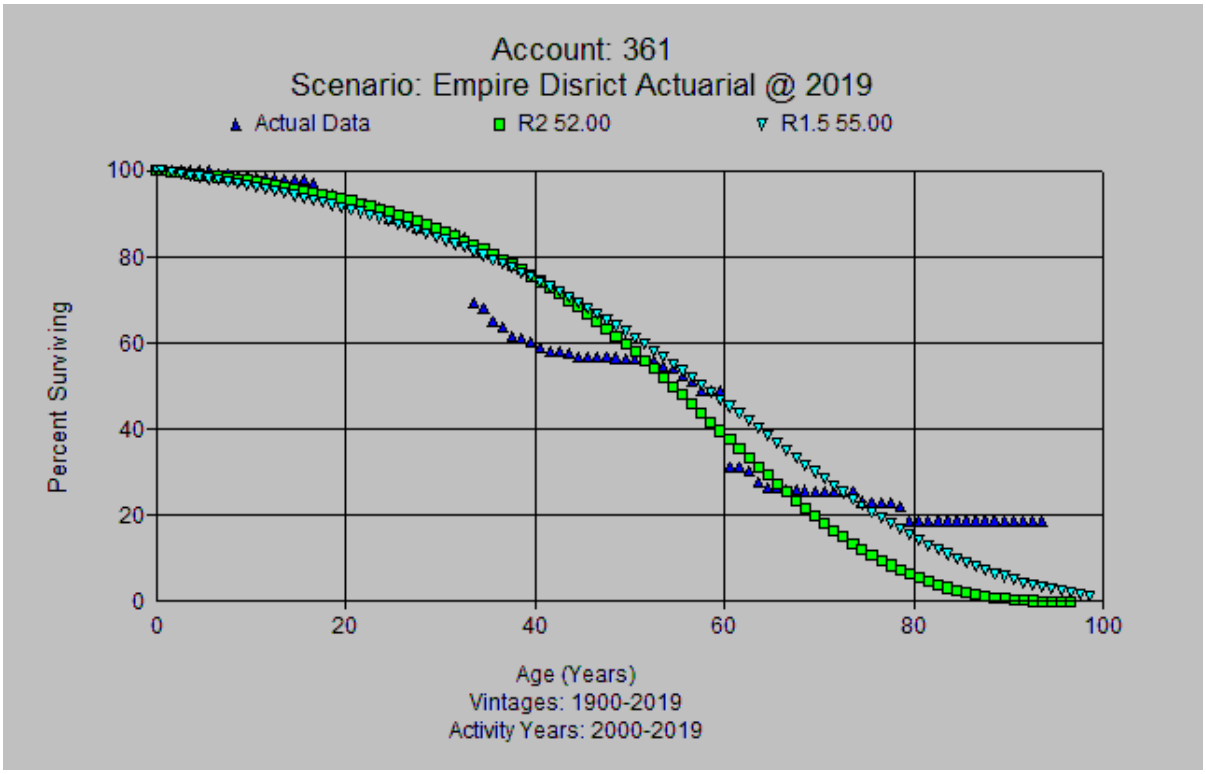
A. The graph below compares the actual data to the Company's proposed curve versus Staff's recommendation for the overall placement/ experience band. The Company's proposal is a significantly better visual match.



In a narrower experience band, the Company's proposal is still a better match.



When narrowing the placement/experience band, the Company's proposal is still a better visual match.



Account 362 Distribution Station Equipment

Q. What are the alternative recommendations for the life of Account 362, Distribution Station equipment?

A. The Company proposal for Account 362 is 55 years with a R1.5 dispersion, as compared to Staff's proposed 51-year life with a R1.5 dispersion. This grouping contains switchboards, station wiring, transformers, and a wide variety of other equipment, from circuit breakers to switchgear. The current balance is $157.4 million for this account. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 12.73 years old on average, which means that more recent experience is indicative of the future for this account.

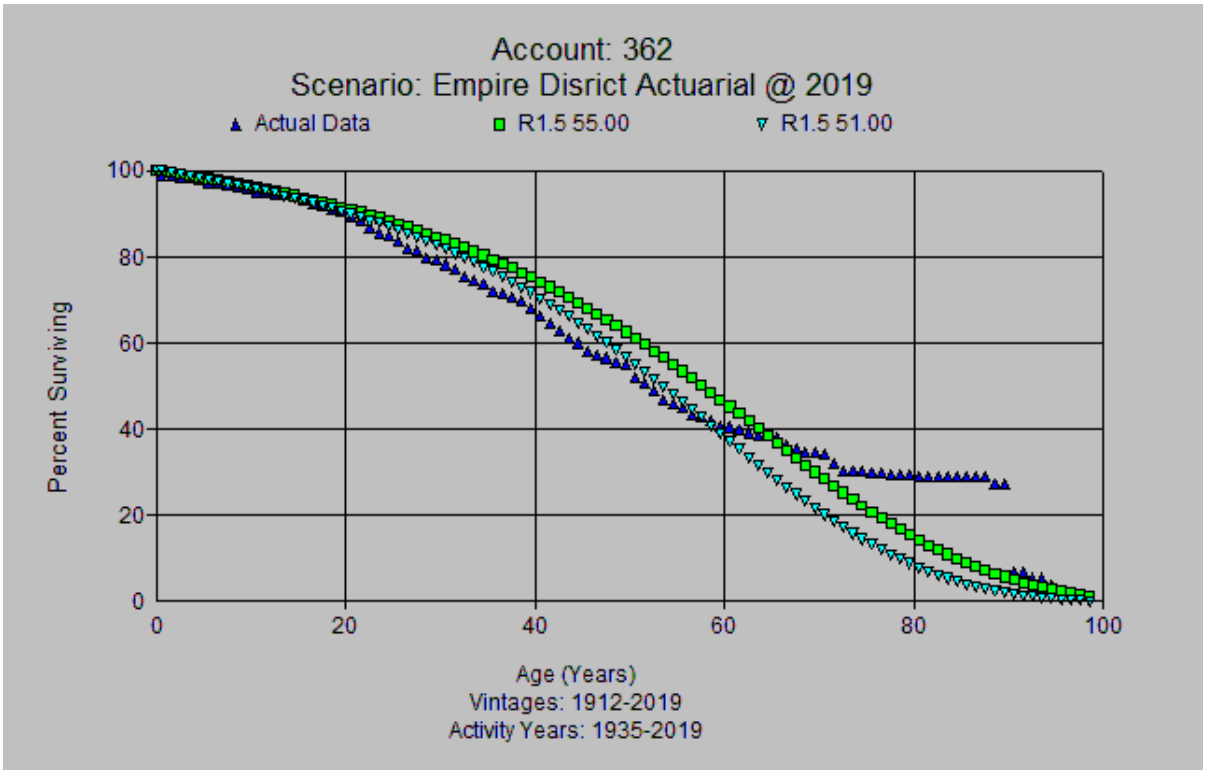
Q. What important information did Company SMEs provide regarding this account?

A. As mentioned in my depreciation study, Schedule DAW-2, page 57 of 137,

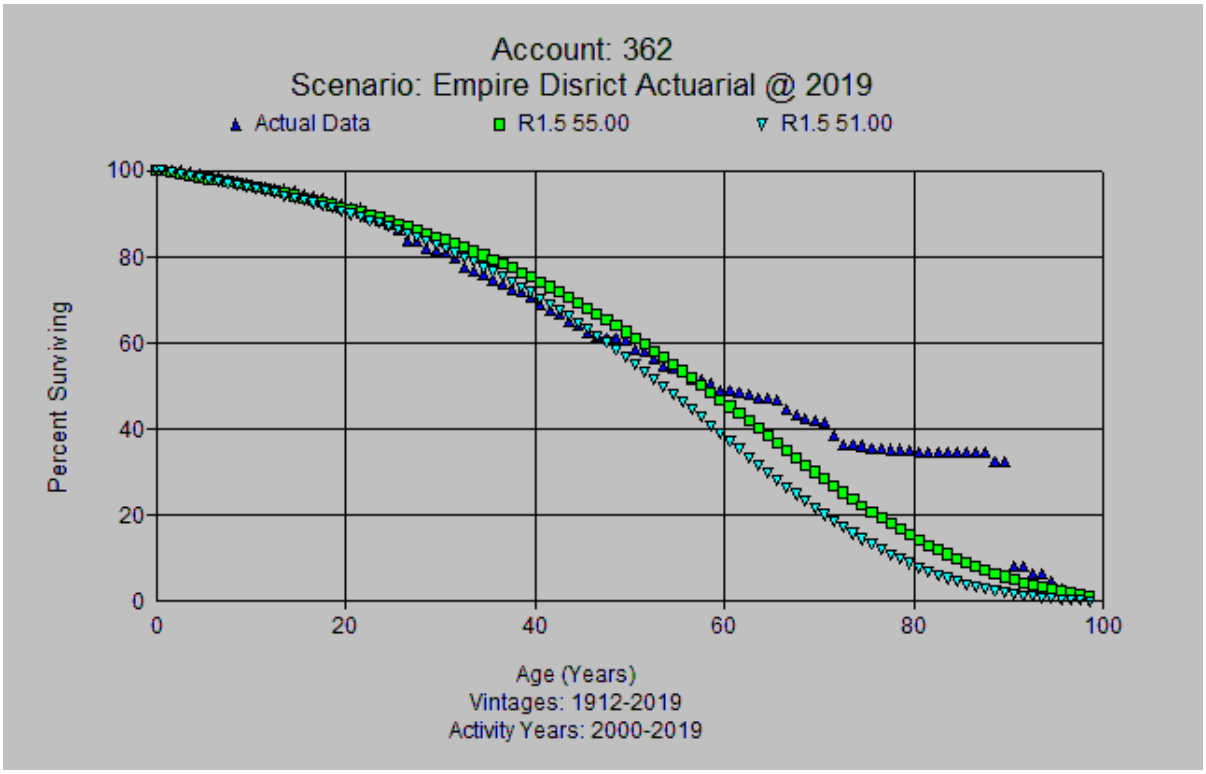
> Similar to Account 353.00 Transmission Station Equipment, the discussions with Company personnel indicated that they are moving to digital relays and changing out the SF6 with dry air relays. The Company is also moving away from oil breakers. There have not been any big changes related to transformers. In the analysis, the life indications range from low 50s to 60 years, but the 51 R1.5 is a good fit across multiple bands.

Q. How does your proposed curve compare to Staff's visually?

A. The graph below compares the actual data to the Company's proposed curve versus Staff's recommendation for the overall placement/ experience band. In this case, Staff's proposal is a better visual match.



With a narrow experience band, the visual comparison is shown below.



In the 1970-2019 placement and experience band, the Staff curve is a better fit. Considering the similarity of the actuarial analysis in this account, Staff's proposal is also reasonable.

Account 370.1 AMI Meters

Q. What are the alternative recommendations for the life of Account 370.1, AMI Meters?

A. The Company proposal for Account 370.1 20 R2, and Staff made no recommendation for this account.

Q. What are the Company's plans regarding AMI meters?

A. The Company plans to create a regulatory asset for early retiring meters that will not be used after the AMI deployment. Empire installed AMI meters, beginning in June 2020. The majority of Missouri will complete the transition to AMI in 2021. Discussions with Company personnel indicated they would expect up to a 20-year life. The Company is planning to complete its entire service territory by 2022. This study recommends a 20-year life and the R2 dispersion based on estimated battery life.

Q. Do any other Missouri electric companies have AMI meters in service?

A. Ameren does not have any electric meters that are designated as AMI. In its gas case, the Company requested a 15-year life with 0 percent salvage for modules to be added to existing gas meters. The modules are planned to be installed as Ameren retrofits its gas meters in 2023 and 2024.[10] KCPL has an account 370.02 Meters-AMI Distribution with a 5.00% depreciation accrual rate. That rate would imply a 20-year life with 0 percent net salvage parameter is being used. They also have load research meters with a depreciation rate of 7.14%.[11]

[10] Spanos Rebuttal testimony, p. 14, lines 10-21. GR-2021-0241
[11] MPSC DR 0350 response. Rates from ER-2016-0156. See also response to Staff interrogatory, 0359.

Q. Do you have any further remarks?

A. I recommend that the Commission segregate AMI meters into a separate account with a specific depreciation accrual rate appropriate to those assets.

Account 392 Transportation Equipment

Q. What are the alternative recommendations for the life of Account 392, Transportation Equipment?

A. The Company proposal for Account 392 is 11 years with a L3 dispersion, as compared to Staff's proposed 13-year life with a L2 dispersion. This account includes the cost of automobiles used for utility service. There is approximately $20.9 million in this account. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 4.70 years old on average, which means that more recent account should be relied upon to determine the life characteristics for this account.

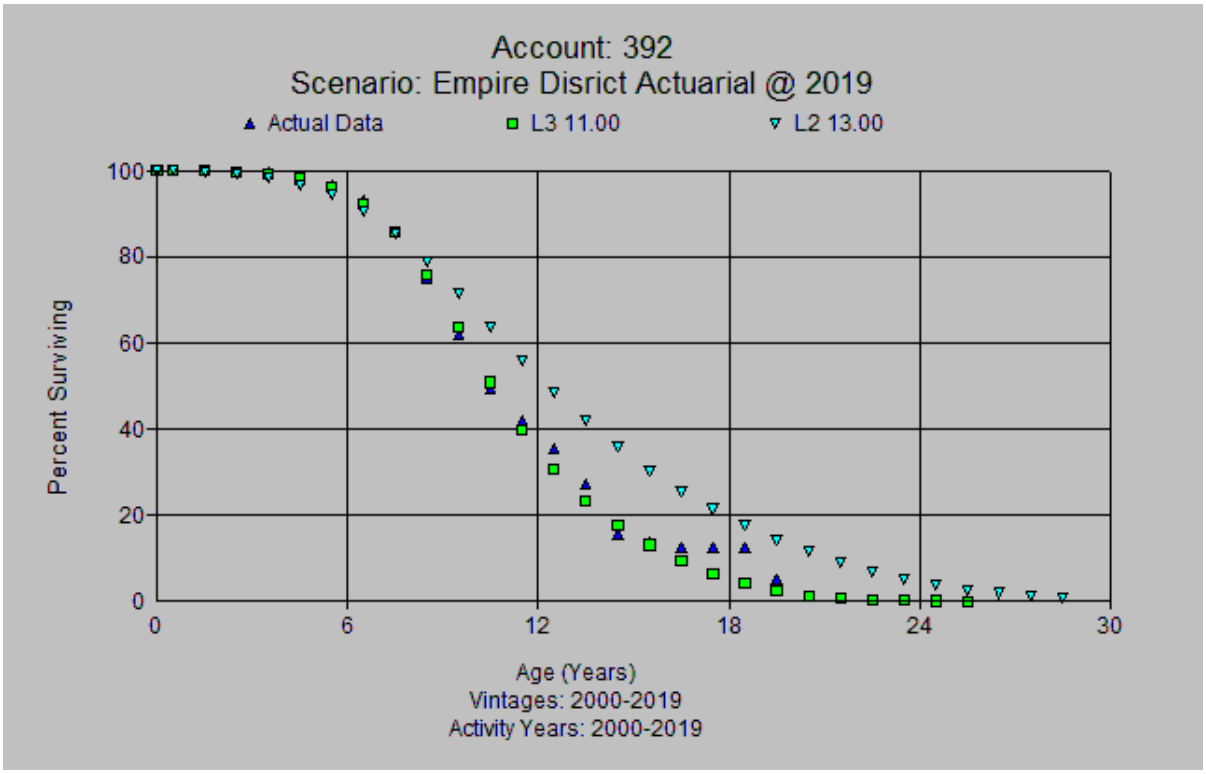
Q. What important information did Company SMEs provide regarding this account?

A. As stated in Schedule DAW-2, page 71 of 137.

> Discussions with Company personnel indicated the refresh cycles are based on usage (hours) and mileage. Small vehicles will turn quicker than a digger derrick truck. Bigger trucks will probably have less mileage but large number of hours. The Company provided the following breakdown: cars (5-7 years), small trucks (7-11 years), heavy trucks (10-15 years), and trailers (15 or more years). They have retired old vehicles in recent years, due to fleet modernization plan.

Q. How does your proposed curve compare to Staff's visually?

A. The graph below compares the actual data to the Company's proposed curve versus Staff's recommendation. The Company's proposal is a better visual match and incorporates important information from Company SMES.



Account 396 Power Operated Equipment

Q. What are the alternative recommendations for the life of Account 396, Power Operated Equipment?

A. The Company proposal for Account 396 is 13 years with a L3 dispersion, as compared to Staff's proposed 17-year life with a L3 dispersion. This account consists of bulldozers, forklifts, trenchers, and other power operated equipment that cannot be licensed on roadways. There is approximately $22.7 million in equipment in this account. **Rebuttal Schedule DAW-3** shows a list of the various retirement units in this account. The investment in this account is 6.25 years old on average, which means that more recent experience is indicative of the future for this account.

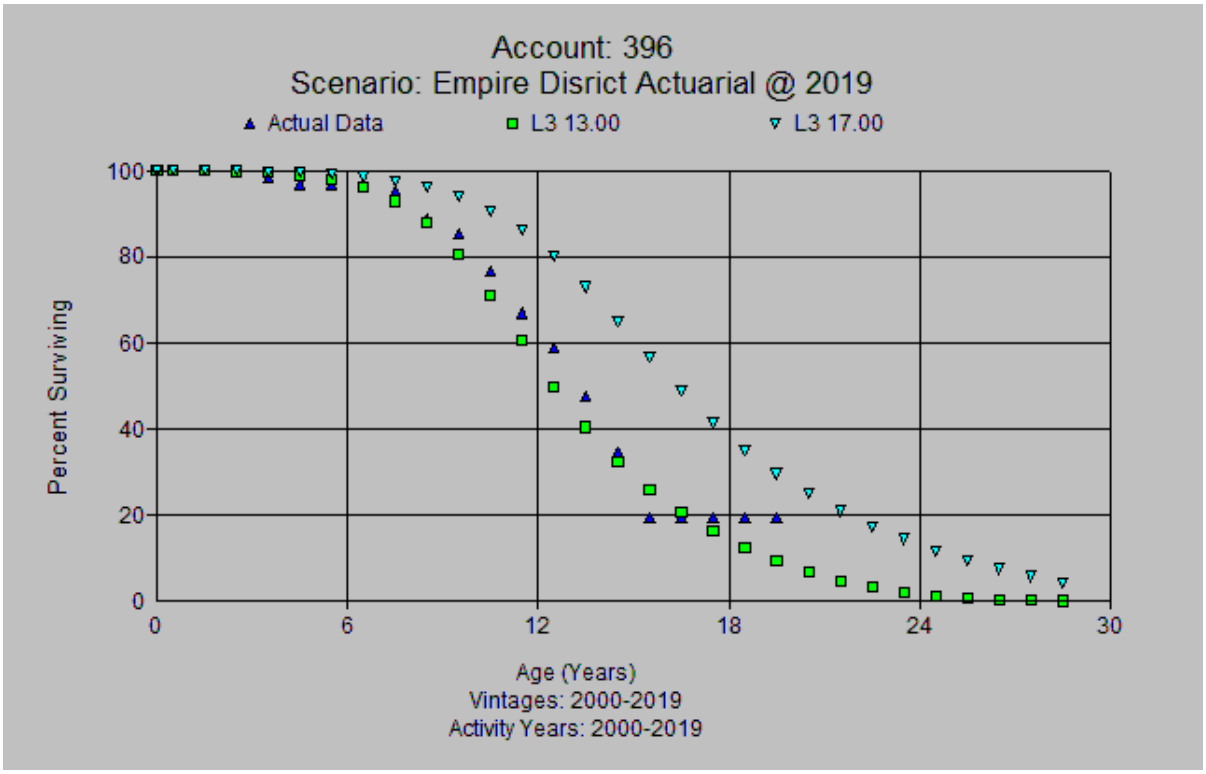
Q. What important information did Company SMEs provide regarding this account?

A. My depreciation study provides information from SMEs on page 72 of 137.

Discussions with Company personnel indicate power operated equipment are part of the fleet modernization that has been occurring over the past 2 years. Technology changes in equipment are occurring. The backyard machines are being changed out frequently, as they don't last as long as a digger/derrick. Backyard machines are relatively new assets. The account contains a large variety of assets with different life expectations. The analysis best fits are in the range of 13-15 years with the L and R dispersion patterns across the bands analyzed. The 13 L3 is an excellent fit in the most recent placement and experience band (2000-2019).

Q. How does your proposed curve compare to Staff's visually?

A. The graph below compares the actual data to the Company's proposed curve versus Staff's recommendation. The Company's proposal is a better visual match and incorporates important information from Company SMES.



B. NET SALVAGE ANALYSIS

Q. What data did Staff used for net salvage?

A. In its Direct case, Staff did not update net salvage estimates from the current authorized level. However, in discussions with Staff in response to DR 373 and 374, Staff reviewed data and is modifying their recommendations to the levels shown in their rebuttal and in my **Rebuttal Schedule DAW-R-1**.

Q. What are the differences that you and Staff have in net salvage recommendations by account?

A. Those differences are shown in Table DAW-R-3 and DAW-R-4 below. I have used the net salvage data base provided in my depreciation study to illustrate how these recommendations compare. I have separated the results into two tables as shown below.

Q. How are you presenting the data comparing the recommendations?

A. For each account, I show the 3-, 5-, and 10-year moving averages for each account compared to my proposed recommendation. This data is found in Schedule DAW-2, Appendix E as well as my pre-filed workpapers.

Table DAW-RR-3R
Summary of Proposed Net Salvage
for Generation Accounts

Account	Description	Empire Proposed Net Salvage	Staff Proposed Net Salvage
345	Accessory Electric Equipment	0	-5

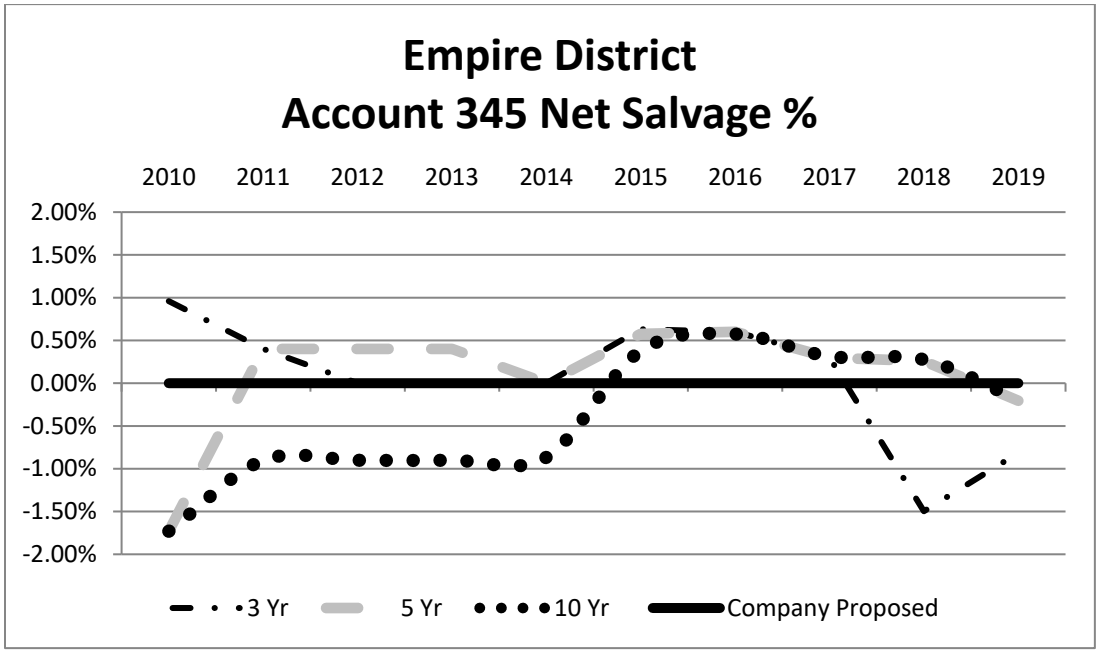
Table DAW-RR-4R
Summary of Proposed Net Salvage
for Transmission, Distribution,
and General Accounts

Account	Description	Empire Proposed Net Salvage	Staff Proposed Net Salvage
390	Structures and Improvements	-5	-10

Account 345 Accessory Electric Equipment

Q. What are the alternative recommendations for the net salvage parameter for Account 345, Accessory Electric Equipment?

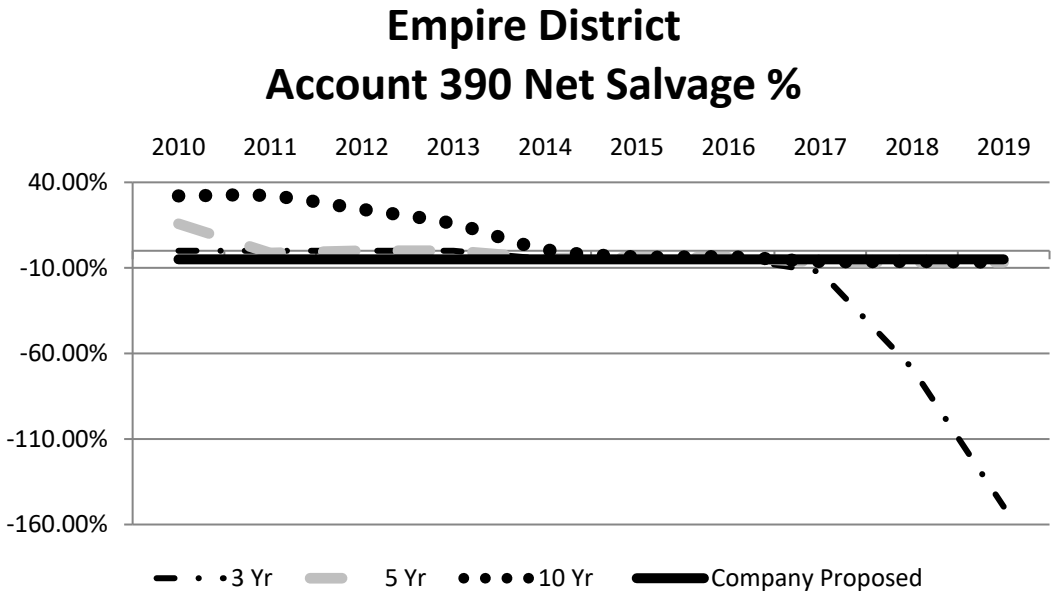
A. For this account, I recommend 0% net salvage, and Staff recommends negative 5% net salvage. As can be seen from the graph below, my recommendation is closer to current net salvage characteristics for this account. However, a negative 5% is more widely seen in the industry and could be reasonably expected in the future. Staff's recommendation is also reasonable.



Account 390 Structures and Improvements

Q. What are the alternative recommendations for the net salvage parameter for Account 390, Structures, and Improvements?

A. For this account, I recommend negative 5% net salvage, and Staff recommends negative 10% net salvage. Net salvage has been moving more negative since the last depreciation study. The 5-year average has been near or more negative than negative 5% since 2014. However, the 3- year average over the last couple years has bene significantly more negative than the Company recommended negative 5%. The Staff's recommendation is also reasonable.



III. AR15 IMPLEMENTATION (VINTAGE GROUP AMORTIZATION

Q. What is vintage group amortization?

A. Vintage group amortization (otherwise known as AR15) is an accounting release issued by FERC. FERC adopted Accounting Release 15 ("AR15") in 1997 using the following criteria:

1. The individual classes of assets for which vintage year accounting is followed are high volume, low value items;
2. There is no change in existing retirement unit designations, for purposes of determining when expenditures are capital or expense;
3. The cost of the vintage groups is amortized to depreciation expense over their useful lives and there is no change in depreciation rates resulting from the adoption of the vintage year accounting;
4. Interim retirements are not recognized;
5. Salvage and removal cost relative to items in the vintage categories are included in the accumulated depreciation account and assigned to the oldest vintage first; and
6. Properties are retired from the affected accounts that, at the date of the adoption of vintage year accounting, meet or exceed the average service life of properties in that account.

A vintage year method of accounting for the general plant accounts that meets all of the foregoing requirements may be implemented without obtaining specific authorization from the Commission to do so.

Q. Has Empire been using vintage group amortization?

A. No. They propose to adopt vintage group amortization after this proceeding. With the adoption of vintage group amortization, it is no longer necessary to keep track of the location and retirement of specific assets. Annually, assets are retired after reaching the average service life for that account. The retirement amounts for fully accrued assets are shown for each account in Appendix A-2. After those assets are retired, the remaining plant in service for each account will be amortized using the amortization

rates shown in Appendix A-1 of Schedule DAW-2. An additional accrual is necessary for each plant account to make up the difference between the book depreciation reserve and the theoretical depreciation reserve. For Empire, there is a small difference between the book and theoretical reserve that needs to be amortized over the remaining life of each plant account. This amount is shown for each account in Appendix A-2. Empire will use caution in implementation of AR15 accounting and will perform physical inspections in addition to determine if assets should retire.

Q. Did Staff's computations incorporate vintage group amortization?

A. Yes. They did not include any computation for those accounts in the rebuttal case, so I assume they are adopting the Company's proposals. I have made that assumption in the numbers shown in Table 1.

Q. Given that you find some of Staff's life recommendations reasonable what lives would you be comfortable with modifying?

A. Based on the previous discussion, I would be comfortable with modifying my original recommendation and adopt Staff's position for the following accounts.:

Table 2

Acct	Description	Original Proposed Life	Staff Proposed Life
343	Prime Movers	50 R1.5	50 R2
344	Generators	55 R1	50 R1
346	Misc. Equipment	55 R2.5	60 R2.5
353	Station Equipment	50 R1.5	50 S1
362	Station Equipment	55 R1.5	51 R1.5

Q. Given that you find Staff's net salvage recommendations reasonable, would you be comfortable accepting Staff's net salvage recommendations?

A. Yes, I would be comfortable with modifying my original recommendation and adopt Staff's two differing position for the following accounts.:

Table 3

Acct	Description	Original Net Salvage %	Staff Proposed Net Salvage %
345	Accessory Electric Equip	0	-5
390	Structures and Improvements	-5	-10

I can also accept Staff's treatment of net salvage for production plant. In my filed depreciation study, I did not include any dismantling cost for production, computing removal cost only on the interim retirement activity. Staff's proposed net salvage parameters applied to all plant in service is reasonable.

Q. Do these position changes impact only the accounts listed above?

A. No. Any change for a parameter within a function changes the computation for all assets in the function, since I have performed reserve reallocation for each functional group.

Q. What impact would this have on proposed depreciation expense?

A. My detailed computations are provided in **Rebuttal Schedule DAW-4**. All workpapers are provided with this testimony with formulae intact. To summarize the results, the Table below compares the difference depreciation amounts.

Table 4

Function	Company Original Proposed Expense	Staff Proposed Expense	Company Revised Proposed Expense
Production	13,178,388	15,623,903	14,309,729
Hydro	343,199	704,666	376,368
Other Production	18,222,765	18,762,267	18,687,103
Transmission	10,208,510	10,219,537	10,319,271
Distribution	31,706,266	32,457,403	31,706,266
General	5,983,667	4,899,087	6,029,041
AR 15 retirement	0	0	0
Total	79,642,795	82,666,863	81,427,778

Note (1) Company proposes regulatory asset for meters to be retired with AMI Deployment
Staff makes no proposal for AMI meters, so their proposed accrual is computed on total plant balance for account 370.

IV. CONCLUSION

Q. Please summarize your recommendations.

A. I conducted a complete depreciation study using standard depreciation processes and methodologies that resulted in the recommended parameters and depreciation rates. My recommended life and net salvage parameters are reasonable and specific to Empire's unique circumstances. The depreciation rates, as shown in **Rebuttal Schedule DAW-2**, Appendices A, A-1, and B to my Direct Testimony, should be applied to Empire's plant in service. My depreciation rates, when applied to Empire's plant in service balances provide fair and reasonable recovery to both Empire and its customers and should be adopted by this Commission. The alternative shown in

Rebuttal Schedule DAW-4 would also be an acceptable and reasonable result in my opinion.

Q. Does this conclude your Rebuttal Testimony?

A. Yes.

VERIFICATION

I, Dane A. Watson, under penalty of perjury, on this 20th day of December, 2021, declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/ Dane A. Watson