

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE)
APPLICATION OF OKLAHOMA)
GAS AND ELECTRIC COMPANY)
FOR AN ORDER OF THE)
COMMISSION AUTHORIZING)
APPLICANT TO MODIFY ITS)
RATES, CHARGES, AND TARIFFS)
FOR RETAIL ELECTRIC SERVICE)
IN OKLAHOMA)
_____)

CAUSE NO. PUD 201700496

Responsive Testimony and Exhibits of

Brian C. Andrews

Senior Consultant

Brubaker & Associates, Inc.

On behalf of

Federal Executive Agencies

May 2, 2018

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Responsive Testimony of Brian C. Andrews**

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Responsive Testimony of Brian C. Andrews

1 **Introduction and Summary**

2 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A Brian C. Andrews. My business address is 16690 Swingley Ridge Road, Suite 140,
4 Chesterfield, MO 63017.

5 **Q WHAT IS YOUR OCCUPATION?**

6 A I am a Senior Consultant in the field of public utility regulation with the firm Brubaker
7 & Associates, Inc., energy, economic and regulatory consultants.

8 **Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

9 A This information is included in Appendix A to my testimony.

10 **Q DO YOU BELONG TO ANY PROFESSIONAL SOCIETIES?**

11 A Yes. I am a member and the current Vice-President of the Society of Depreciation
12 Professionals.

1 **Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

2 A I am testifying on behalf of the Federal Executive Agencies (“FEA”), consisting of
3 certain agencies of the United States government which have offices, facilities, and/or
4 installations in the service area of Oklahoma Gas and Electric Company (“OG&E” or
5 “Company”), from whom they purchase electricity and energy services.

6 **Q WHAT IS THE SUBJECT MATTER OF YOUR RESPONSIVE TESTIMONY?**

7 A My testimony will address OG&E’s proposed depreciation rates and expense. I will
8 propose adjustments to OG&E proposed depreciation rates for its steam production,
9 other production, transmission, distribution, and general plant accounts. I will present
10 my Depreciation Study on OG&E’s Transmission, Distribution, and General (“TD&G,”
11 FERC Accounts 350-398) plant accounts, referred to as the “BCA Depreciation
12 Study”, recommend a reduction of dismantlement costs for the steam and other
13 production plants by removing excessive contingency factors from the cost estimates,
14 and recommend an alternate method for escalating the dismantlement cost to give
15 current customers benefit for the time value of money.

16 It is important to note that some of the parameters shown in my exhibits
17 represent OG&E’s assumptions that I have not taken a position on. My silence in
18 regard to any OG&E assumptions should not be construed as an endorsement of
19 OG&E’s position.

1 Q HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THE CORPORATION
2 COMMISSION OF THE STATE OF OKLAHOMA (“COMMISSION”) REGARDING
3 DEPRECIATION ISSUES?

4 A Yes. I filed testimony in OG&E’s last rate case, PUD 201500273, regarding OG&E’s
5 depreciation rates. In addition, I have filed depreciation related testimony in Arizona,
6 Florida, Indiana, Michigan, and New Mexico.

7 Q PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.

8 A My conclusions and recommendations are summarized as follows:

- 9 1. OG&E has proposed a \$53.4 million increase to its depreciation expense based
10 on plant balances as of March 31, 2018.¹ This increase is based on overstated
11 depreciation rates. These rates produce an excessive amount of depreciation
12 expense, thus overstating the test year revenue requirement.
- 13 2. The average service lives that OG&E, through its witness Mr. John J. Spanos, is
14 recommending for several TD&G accounts should be increased. Statistical fitting
15 methods indicate that survivor curves with longer average service lives fit OG&E’s
16 historic retirement data better than what is being proposed by Mr. Spanos.
- 17 3. The depreciation rates for the majority of TD&G accounts should be decreased
18 such that the average service life and Iowa Curves dispersion of the survivor
19 curves for these property accounts produces a better statistical fit to the
20 Company’s retirement data.
- 21 4. OG&E’s proposal for the recovery of production plant dismantlement costs is
22 excessive. OG&E’s cost studies supporting its proposed level of dismantlement
23 expense include excessive contingencies that provide protection for OG&E at its
24 customers’ expense.
- 25 5. There is uncertainty on whether or not OG&E will actually return its power plant
26 sites to brownfield status as it proposes. Some of the infrastructure in place at
27 these production sites could potentially be utilized for the next generation of
28 power plants. If existing infrastructure can be utilized for the next generation,
29 dismantlement expenses for the current generation of power plants would be
30 reduced, as would development costs of the next generation. This is the exact
31 reason why OG&E decided to re-use the existing Mustang Power plant site for
32 new generating units.

¹This \$53.4 million figure is sourced from an updated version of OG&E’s WP_H2.21 provided in response to FEA 1-3.

- 1 6. The escalation of production dismantlement costs should be reduced in such a
2 way as to give current customers the benefit of the time value of money by more
3 evenly distributing the price burden across generations of customers. Revenues
4 received in the near term are worth far more than revenues received far in the
5 future, due to erosion of value caused by inflation.
- 6 7. I present my recommended depreciation rates in Exhibit BCA-1. These rates
7 include all adjustments I propose regarding the TD&G plant account survivor
8 curves, production plant decommissioning costs, and the escalation of
9 decommissioning costs.
- 10 8. My recommended adjustments to OG&E's depreciation rates reduces OG&E's
11 total Company test year depreciation expense by \$27.5 million. This \$27.5 million
12 reduction consists of the reductions to depreciable groups shown below in Table
13 1. I provide a comparison of my proposed test year depreciation expense with
14 OG&E's in Exhibit BCA-2.
- 15 9. The Oklahoma jurisdictional share of my proposed \$27.5 million reduction is
16 \$25.0 million.

TABLE 1	
<u>BCA Recommended Reduction to OG&E's Test Year Depreciation Expense</u>	
(\$ Millions)	
<u>Depreciable Group</u>	<u>Impact</u>
Production (Steam & Other)	\$ (8.8)
Transmission	\$ (3.9)
Distribution	\$ (14.3)
General	\$ <u>(0.5)</u>
Total	\$ (27.5)
Source: Exhibit BCA-2	

17 **Book Depreciation Concepts**

18 **Q PLEASE EXPLAIN THE PURPOSE OF BOOK DEPRECIATION ACCOUNTING.**

19 A Book depreciation is the recognition in a utility's income statement of the consumption
20 or use of assets to provide utility service. Book depreciation is recorded as an
21 expense and is included in the ratemaking formula to calculate the utility's overall
22 revenue requirement.

1 Book depreciation provides for the recovery of the original cost of the utility's
2 assets that are currently providing service. Book depreciation expense is not
3 intended to provide for replacement of the current assets, but provides for capital
4 recovery or return of current investment. Generally, this capital recovery occurs over
5 the average service life ("ASL") of the investment or assets. As a result, it is critical
6 that appropriate average service lives be used to develop the depreciation rates so
7 no generation of ratepayers is disadvantaged.

8 In addition to capital recovery, depreciation rates also contain a provision for
9 net salvage. Net salvage is simply the scrap or reuse value less the removal cost of
10 the asset being depreciated. Accordingly, a utility will also recover the net salvage
11 costs over the useful life of the asset.

12 **Q ARE THERE ANY DEFINITIONS OF DEPRECIATION ACCOUNTING THAT ARE**
13 **UTILIZED FOR RATEMAKING PURPOSES?**

14 A Yes. One of the most quoted definitions of depreciation accounting is the one
15 contained in the Code of Federal Regulations:

16 "Depreciation, as applied to depreciable electric plant, means the loss
17 in service value not restored by current maintenance, incurred in
18 connection with the consumption of prospective retirement of electric
19 plant in the course of service from causes which are known to be in
20 current operation and against which the utility is not protected by
21 insurance. Among the causes to be given consideration are wear and
22 tear, decay, action of the elements, inadequacy, obsolescence,
23 changes in the art, changes in demand and requirements of public
24 authorities."

25 (Electronic Code of Federal Regulations, Title 18, Chapter 1,
26 Subchapter C, Part 101)

27 Effectively, depreciation accounting provides for the recovery of the original cost of an
28 asset, adjusted for net salvage, over its useful life.

1 Q WHAT METHOD, PROCEDURE AND TECHNIQUE WERE USED TO CALCULATE
2 THE PROPOSED DEPRECIATION RATES FOR OG&E?

3 A The proposed depreciation rates were calculated using the straight line method, the
4 ASL procedure and the remaining life technique. Under this method, procedure and
5 technique of developing depreciation rates, the unrecovered cost of plant in service is
6 adjusted for the cost of net salvage, and is recovered over the remaining life of the
7 asset or group of assets. At the end of the useful life, the asset is fully depreciated.

8 Q IS YOUR METHOD OF CALCULATING DEPRECIATION RATES DIFFERENT
9 THAN THE COMPANY'S?

10 A No, both the Company and I utilized the same method to calculate depreciation rates.
11 OG&E witness John Spanos discusses the depreciation calculation process in his
12 pre-filed direct testimony and the depreciation study filed as Direct Exhibit JJS-2.

13 Q PLEASE DESCRIBE THE ACTUARIAL LIFE ANALYSIS THAT IS PERFORMED
14 TO EVALUATE HISTORICAL ASSET RETIREMENT DATA.

15 A I will first provide the description of actuarial life analysis (retirement rate method) that
16 is contained in the National Association of Regulatory Utility Commissioners'
17 ("NARUC") Public Utility Depreciation Practices manual.

18 Actuarial analysis is the process of using statistics and probability to
19 describe the retirement history of property. The process may be used
20 as a basis for estimating the probable future life characteristics of a
21 group of property.

22 Actuarial analysis requires information in greater detail than do other
23 life analysis models (e.g., turnover, simulation) and, as a result, may
24 be impractical to implement for certain accounts (see Chapter VII).
25 However, for accounts for which application of actuarial analysis is
26 practical; **it is a powerful analytical tool and, therefore, is generally**
27 **considered the preferred approach.**

1 Actuarial analysis objectively measures how the company has retired
2 its investment. The analyst must then judge whether this historical
3 view depicts the future life of the property in service. The analyst takes
4 into consideration various factors, such as changes in technology,
5 services provided, or, capital budgets.

6 (NARUC Public Utility Depreciation Practices Manual, 1996, Page 111,
7 Emphasis Added).

8 As explained by NARUC, when the required data exists, a database that
9 contains the year of installation and the year of retirements for each vintage of
10 property, actuarial life analysis is the preferred method of determining the life, and
11 thus retirement, characteristics of a group of property. In this type of analysis, there
12 are three major steps. The first step is to gather and use available aged data from
13 the Company's continuing plant records to create an observed life table. The
14 observed life table provides the percent surviving for each age interval of property.

15 The second step is to conduct a fitting analysis to match the actual survivor
16 data from the observed life table to a standard set of mortality or survivor curves.
17 Typically, the observed life table data is matched to Iowa Curves. The fitting process
18 is a mathematical fitting process, which minimizes the Sum of Squared Differences
19 ("SSD") between the actual data and the Iowa Curves.

20 The third step is to select the best fitting curve while using informed judgment
21 to determine the curve that best represents the property being studied. This includes
22 the use of a visual matching process. Although the mathematical fitting process
23 provides a curve that is theoretically possible, the visual matching process will allow
24 the trained depreciation professional to use informed judgment in the determination of
25 the best fitting survivor curve.

1 Q PLEASE PROVIDE FURTHER EXPLANATION OF THE SSD STATISTICAL
2 MEASUREMENT.

3 A In the Actuarial Life Analysis section of the NARUC Depreciation Manual, it describes
4 SSD as follows:

5 "Generally, the goodness of fit criterion is the least sum of squared
6 deviations. The difference between the observed and projected data is
7 calculated for each data point in the observed data. This difference is
8 squared, and the resulting amounts are summed to provide a single
9 statistic that represents the quality of the fit between the observed and
10 projected curves.

11 The difference between the observed and projected data points is
12 squared for two reasons: (1) the importance of large differences is
13 increased, and (2) the result is a positive number, hence the squared
14 differences can be summed to generate a measure of the total
15 absolute difference between the two curves. The curves with the least
16 sum of squared deviations are considered the best fits."

17 (NARUC, Public Utility Depreciation Practices, 1996, pages 124-125)

18 Q PLEASE EXPLAIN SURVIVOR CURVES AND THE NOTATION USED TO
19 REFERENCE THEM.

20 A A survivor curve is a visual representation of the amount of property existing at each
21 age interval throughout the life of a group of property. From the survivor curve,
22 parameters required to calculate depreciation rates can be determined, such as the
23 average service life of the group of property and the composite remaining life. In this
24 case, as well as the majority of others throughout the U.S. and Canada, the Iowa
25 Curves are the general survivor curves utilized to describe the mortality
26 characteristics of group property. There are four types of Iowa Curves: right-moded,
27 left-moded, symmetrical-moded, and origin-moded. Each type describes where the
28 greatest frequency of retirements occur relative to the average service life. Mr.
29 Spanos provides a more detailed explanation of Iowa Curves in his Direct Exhibit
30 JJS-2.

1 A survivor curve consists of an average service life and an Iowa Curve
2 combination. When describing property with a 50-year average service life that has
3 mortality characteristics of the R2 Iowa Curve, the survivor curve would simply be
4 notated as “50-R2.”

5 **Book Depreciation Recommendations**

6 **Q PLEASE SUMMARIZE THE CHANGES THAT YOU ARE RECOMMENDING TO**
7 **OG&E’S PROPOSED TRANSMISSION, DISTRIBUTION AND GENERAL**
8 **DEPRECIATION RATES.**

9 A The TD&G book depreciation rates should be reduced for Accounts 350.2, 353, 355,
10 356, 360.2, 361, 362, 364, 365, 366, 367, 368, 369, 371, 373, 390, 392.6, and 396.
11 The reduction to the depreciation rates for these accounts is achieved by increasing
12 the average service life estimates such that the survivor curves produce a better
13 statistical fit to OG&E’s property retirement data relative to the survivor curves being
14 proposed by Mr. Spanos. I also recommend a slight increase for Account 392.5. For
15 the TD&G accounts to which I recommend adjustments, my recommended
16 depreciation rates compared to OG&E’s are shown below in Table 2.

TABLE 2
Recommended TD&G
Depreciation Rate Adjustments

<u>Account</u>	<u>OG&E</u>	<u>BCA</u>	<u>Delta</u>
350.2	1.35%	1.24%	-0.11%
353	2.34%	2.23%	-0.11%
355	2.79%	2.58%	-0.21%
356	2.49%	2.35%	-0.14%
360.2	1.34%	1.21%	-0.13%
361	1.42%	1.30%	-0.12%
362	2.16%	1.87%	-0.29%
364	2.85%	2.55%	-0.30%
365	2.69%	2.52%	-0.17%
366	1.80%	1.63%	-0.17%
367	1.98%	1.90%	-0.08%
368	3.37%	2.73%	-0.64%
369	1.76%	1.55%	-0.21%
371	9.75%	5.76%	-3.99%
373	5.43%	4.34%	-1.09%
390	2.33%	2.05%	-0.28%
392.5	5.49%	5.75%	0.26%
392.6	3.47%	3.38%	-0.09%
396	4.58%	4.32%	-0.26%

Source: Exhibit BCA-2

1 **Q PLEASE SUMMARIZE THE PROPOSED CHANGES THAT YOU ARE**
2 **RECOMMENDING TO OG&E’S PROPOSED STEAM AND OTHER PRODUCTION**
3 **DEPRECIATION RATES.**

4 **A The steam production net salvage rates used to calculate OG&E’s proposed book**
5 **depreciation rates should be reduced by removing any contingencies related to**
6 **dismantlement costs of these plants. The inclusion of contingency costs in these**
7 **dismantlement cost estimates is a safeguard for OG&E at the customers’ expense.**
8 **OG&E does not have a mandate to dismantle its production plants to a brownfield site**
9 **as it is proposing. Further, some of the infrastructure in place at existing production**
10 **sites could be utilized for the next generation of power plants and for maintaining the**

1 stability of the transmission system. This not only would reduce dismantlement
2 expenses for the current generation of power plants, but also would reduce the
3 development costs of the next generation of power plants located at existing sites.
4 The removal of the contingencies provides an opportunity to provide current
5 customers with some cost protections, considering there is potential that some of the
6 dismantlement expenses forecast may not be needed if the power plant sites are
7 reused.

8 In addition, the escalation of dismantlement costs should be reduced such that
9 current customers are given benefit for the time value of money. The escalation
10 procedure utilized by OG&E is not just and reasonable for current customers as it
11 results in a greater price burden on current customers relative to future customers. I
12 recommend an alternative method of the escalation of dismantlement costs, so that
13 the value of the revenues provided from both current customers and future customers
14 is more uniform than OG&E's proposal which favors future customers.

15 My proposed production plant depreciation rates compared to OG&E's
16 proposal are shown below in Table 3.

TABLE 3

**Recommended Production Plant
Depreciation Rate Adjustments**

<u>Account</u>	<u>OG&E</u>	<u>BCA</u>	<u>Delta</u>
311	2.60%	2.12%	-0.48%
312	2.84%	2.50%	-0.34%
314	3.74%	3.19%	-0.55%
315	2.64%	2.27%	-0.37%
316	3.74%	3.11%	-0.63%
341	2.97%	2.86%	-0.11%
342	2.38%	2.21%	-0.17%
343	3.74%	3.53%	-0.21%
344	4.21%	4.11%	-0.10%
345	3.16%	3.07%	-0.09%
346	3.47%	3.36%	-0.11%

Source: Exhibit BCA-2

1 **BCA TD&G Depreciation Study**

2 **Q PLEASE DESCRIBE YOUR TD&G PLANT ACCOUNTS DEPRECIATION STUDY.**

3 A My Exhibit BCA-3 contains the BCA TD&G Depreciation Study. I have studied all
 4 depreciable TD&G accounts. This study was conducted by performing an actuarial
 5 analysis (retirement rate method) on OG&E's property data. This is the NARUC
 6 preferred method of utility property life analysis and is the same method used by Mr.
 7 Spanos on behalf of OG&E. Using an Excel based model, I am recommending
 8 increasing the lives of 18 of the 26 accounts studied. This results in a \$17.5 million
 9 reduction to the 2016 study year depreciation expense, which is shown on page 4 of
 10 my Exhibit BCA-3.

1 Q PLEASE PROVIDE ADDITIONAL DETAIL ON THE PROCESS USED FOR YOUR
2 DEPRECIATION STUDY.

3 A The first step in my analysis was a thorough review of the OG&E depreciation study
4 and of Mr. Spanos' workpapers. I conducted my own actuarial analysis based on the
5 observed life tables created by Mr. Spanos for his actuarial analysis. I utilized a
6 depreciation model to determine the Iowa Curve and average service life combination
7 that best fits the significant points of the observed life table created by Mr. Spanos. I
8 then used a statistical and visual analysis to select Iowa Curves and average service
9 lives that result in a better statistical fit (lower SSD) than the survivor curves being
10 recommended by Mr. Spanos. Again, the SSD is the sum of the squared differences
11 between the Iowa Curves and the significant data points from the observed life tables,
12 see Exhibit BCA-3.

13 In my Exhibit BCA-3, for each account studied, I present five sections of
14 information. The first section contains a description of the plant account per the
15 FERC uniform system of accounts. The second section contains a discussion of the
16 proposed adjustment. The third section contains the results of the fitting analysis.
17 This chart shows for each Iowa Curve type, the average service life that minimizes
18 the SSD. In addition, the table contains the SSD of the OG&E and BCA proposals,
19 as well as the currently approved curve. For each account to which an adjustment is
20 proposed, the BCA proposal has a lower SSD, which indicates a better statistical fit
21 than both OG&E's proposal and the currently approved curve.

22 The next section contains a graph that shows the actual OG&E retirement
23 data (blue triangles), the OG&E proposed curve (green dashed line), the BCA
24 proposed curve (purple dotted line), the best fit curve (orange short dash-dotted line),
25 and the currently approved curve (red long dash-dotted line). The best fit curve

1 shown on the graph is the curve determined by the statistical fitting analysis to have
2 the lowest SSD.

3 The last section for each account shows the calculation of the annual accrual
4 and depreciation rate. This procedure is the same performed by Mr. Spanos and is
5 shown in part IX of his depreciation study.

6 **Q DO THE SURVIVOR CURVES THAT YOU ARE RECOMMENDING TO PRODUCE**
7 **A BETTER FIT TO OG&E'S DATA THAN THOSE BEING RECOMMENDED BY**
8 **MR. SPANOS?**

9 A Yes. For each of the 19 accounts where I am proposing a survivor curve that differs
10 from Mr. Spanos' recommendation, the SSD is lower. That is, all of my
11 recommendations result in survivor curves that mathematically and statistically fit
12 OG&E's data better than those recommended by Mr. Spanos. The SSDs of my
13 recommendations compared to the recommendations of Mr. Spanos are shown
14 below in Table 4. In each case, the SSD of the BCA proposal is lower than the
15 OG&E proposal.

TABLE 4

Goodness of Fit Statistics

<u>Account</u>	<u>OG&E</u>		<u>BCA</u>	
	<u>Curve</u>	<u>SSD</u>	<u>Curve</u>	<u>SSD</u>
350.2	75-S4	261	80-S5	2
353	57-R2	469	58-R1.5	196
355	60-R1	1039	63-R0.5	548
356	65-R2.5	1587	68-R2.5	890
360.2	70-S4	749	75-S5	8
361	65-R2.5	4130	70-R2.5	2335
362	60-R2.5	437	66-R2	76
364	55-R1	1032	60-R1	348
365	55-R0.5	1036	58-R0.5	622
366	60-R2	651	65-R2	340
367	62-R2.5	135	64-R2.5	126
368	42-O1	703	47-O2	684
369	55-R4	919	60-R4	197
371	7-R4	1.1	10-L2.5	0.8
373	27-L1	5550	30-L0.5	3585
390	40-R2.5	9059	43-R2	3024
392.5	13-L2.5	153	13-L3	139
392.6	23-S0.5	680	23-S0	362
396	18-L2	520	18-L1.5	342

1 **Q WHAT ARE THE IMPACTS ON THE DEPRECIATION RATES FOR THE TD&G**
2 **ACCOUNTS FOR WHICH YOU ARE RECOMMENDING SURVIVOR CURVE**
3 **CHANGES?**

4 **A For the 19 TD&G accounts for which I am recommending a change to the survivor**
5 **curves, the resulting depreciation rates are shown below in Table 5.**

TABLE 5			
<u>Recommended Depreciation Rates</u>			
<u>Account</u>	<u>OG&E</u>	<u>BCA</u>	<u>Delta</u>
350.2	1.35%	1.24%	-0.11%
353	2.34%	2.23%	-0.11%
355	2.79%	2.58%	-0.21%
356	2.49%	2.35%	-0.14%
360.2	1.34%	1.21%	-0.13%
361	1.42%	1.30%	-0.12%
362	2.16%	1.87%	-0.29%
364	2.85%	2.55%	-0.30%
365	2.69%	2.52%	-0.17%
366	1.80%	1.63%	-0.17%
367	1.98%	1.90%	-0.08%
368	3.37%	2.73%	-0.64%
369	1.76%	1.55%	-0.21%
371	9.75%	5.76%	-3.99%
373	5.43%	4.34%	-1.09%
390	2.33%	2.05%	-0.28%
392.5	5.49%	5.75%	0.26%
393	3.47%	3.38%	-0.09%
396	4.58%	4.32%	-0.26%

1 **Q WHAT IS THE IMPACT ON THE TEST YEAR DEPRECIATION EXPENSE FOR**
2 **THE TD&G ACCOUNTS DUE TO YOUR RECOMMENDED RATES?**

3 **A As is shown in my Exhibit BCA-2, my recommended TD&G depreciation rates result**
4 **in an \$18.7 million reduction to the TD&G depreciation expense based on**
5 **March 31, 2018 plant balances. These reductions are shown below in Table 6.**

TABLE 6

**BCA Recommended Reduction to
OG&E's TD&G
Test Year Depreciation Expense
(\$ Millions)**

<u>Depreciable Group</u>	<u>Impact</u>
Transmission	\$ (3.9)
Distribution	\$ (14.3)
General	\$ <u>(0.5)</u>
Total	\$ (18.7)

Source: Exhibit BCA-2

1 **Production Dismantlement Costs**

2 **Q BEFORE YOU BEGIN YOUR DISCUSSION ON OG&E'S PROPOSAL TO**
 3 **RECOVER PRODUCTION DISMANTLEMENT COSTS, PLEASE DEFINE NET**
 4 **SALVAGE.**

5 **A** Net salvage is simply the value received from the sale or reuse of retired property
 6 (gross salvage value), less the cost of retiring such property (cost of removal). Net
 7 salvage can be either positive or negative. If the salvage value exceeds the cost of
 8 removal, the net salvage is positive. If the cost of removal is greater than the salvage
 9 value received as a result of retirement, the resulting net salvage is negative. For
 10 OG&E, negative net salvage is a significant component of its depreciation rates and
 11 expense.

12 **Q HOW DOES PRODUCTION DISMANTLEMENT AFFECT DEPRECIATION RATES?**

13 **A** Depreciation rates can be described as having two components, one to recover the
 14 original cost of the investment and another to recover the net salvage. The general
 15 formula for determining the annual accrual using remaining life depreciation rates is

1 as follows: (unrecovered original cost – net salvage) ÷ remaining life = annual
2 accrual, where negative net salvage would indicate the cost of removal is greater
3 than any gross salvage proceeds. Production dismantlement impacts the net salvage
4 component of the depreciation calculations. In the depreciation study, net salvage is
5 expressed as a net salvage rate and the dismantlement cost estimates directly impact
6 the net salvage rates and thus depreciation rates.

7 **Q DOES OG&E CURRENTLY RECOVER DISMANTLEMENT COSTS THROUGH**
8 **THE PRODUCTION NET SALVAGE RATES THAT WERE USED TO DEVELOP ITS**
9 **CURRENTLY APPROVED DEPRECIATION RATES?**

10 A No. While OG&E did propose to recover an estimate of dismantlement costs in its
11 last rate case, PUD 201500273, the Commission ultimately ruled that those estimates
12 were “lacking in sufficient detail and support to justify the increased depreciation
13 levels sought by OG&E.”² OG&E currently collects net salvage for interim retirements
14 but does not explicitly collect any expense for terminal dismantlement, an expense
15 that it expects to incur at the end of the power plant's useful life.

16 **Q WHY DOES OG&E CLAIM IT NEEDS TO RECOVER DISMANTLEMENT COSTS**
17 **THROUGH ITS DEPRECIATION RATES AND WHAT IS THE COST IMPACT?**

18 A OG&E's witness Mr. Rowlett in his direct testimony justifies the inclusion of
19 dismantlement costs in this depreciation study by stating, “Retirement of OG&E's
20 generating plants is inevitable and the decommissioning costs to dismantle are
21 reasonable costs to include in rates.” Mr. Rowlett goes on to state that

²Final Order in Cause No. PUD 201500273 at page 8.

1 dismantlement costs represents \$12 million of the total depreciation expense
2 supported by OG&E witness Spanos' Depreciation Study.³

3 **Q HOW HAS OG&E INCORPORATED DISMANTLEMENT COSTS INTO ITS NET**
4 **SALVAGE COMPONENT OF DEPRECIATION RATES?**

5 A As is shown on page VIII-3 of Mr. Spanos' Direct Exhibit JJS-2, a weighted average
6 net salvage rate is calculated for each production plant. This weighted average net
7 salvage rate consists of both terminal and interim net salvage rates. For each plant,
8 the weighted average net salvage rate is calculated as the estimated terminal net
9 salvage rate multiplied by the ratio of terminal retirements to total retirements, plus
10 the interim net salvage rate times the ratio of interim retirements to total retirements.
11 The terminal net salvage rate calculation is shown on page VIII-3 of Direct Exhibit
12 JJS-2.

13 **Q DID OG&E CONDUCT A DISMANTLEMENT COST STUDY TO DETERMINE THE**
14 **TERMINAL NET SALVAGE RATE PORTION OF ITS PRODUCTION NET**
15 **SALVAGE RATES?**

16 A Yes. OG&E retained Burns & McDonnell Engineering Company to conduct
17 decommissioning cost studies for its entire generating fleet. (For clarification, the
18 terms decommissioning and dismantling are used interchangeably. OG&E witnesses
19 Kopp and Rowlett use the term decommissioning, while OG&E witness Spanos and I
20 use both terms.) Mr. Kopp presents the decommissioning study in his Direct Exhibit
21 JTK-1. The entire estimated cost to decommission OG&E's generating fleet is
22 \$161.9 million.⁴

³Rowlett Direct at page 16, lines 16-25.

⁴Exhibit JTK-1, page 1-2.

1 Q WHAT COSTS ARE INCLUDED IN THE DECOMMISSIONING COST STUDY
2 PRESENTED AS DIRECT EXHIBIT JTK-1?

3 A This is discussed in detail in the exhibit, however, I offer the following paragraph from
4 page 4-1 of the study:

5 "The decommissioning costs include the cost to return the site to an
6 industrial condition, suitable for reuse for development of an industrial
7 facility. Included are the costs to dismantle all of the assets owned by
8 OG&E at the sites, including power generating equipment and BOP
9 facilities, as well as environmental site restoration activities."

10 The return to industrial condition is commonly called a "brownfield" site.

11 In addition to the costs described above, the cost estimates are arbitrarily
12 increased by a 20% contingency on the direct costs as part of the study to cover
13 unknown costs.

14 Q IS IT REASONABLE FOR OG&E TO INCLUDE IN ITS DEPRECIATION EXPENSE
15 A COMPONENT FOR FULL DISMANTLEMENT OF ITS PRODUCTION PLANTS
16 TO A BROWNFIELD SITE?

17 A No, it is not reasonable for OG&E to collect the full estimate of these
18 decommissioning cost estimates to return the sites to brownfield status. These sites
19 have significant value to OG&E since they can be reused for the next generation of
20 power plants. As the Administrative Law Judge ("ALJ") stated in his report, as
21 contained in the Final Order in PUD 201500273, "most power plant sites will remain
22 power plant sites indefinitely because of the supporting infrastructure and the difficulty
23 in siting new plants elsewhere."⁵

⁵Report of the Administrative Law Judge on the Full Evidentiary Hearing in Cause No. PUD 201500273 at pages 59 and 60, as included in the Final Order in that case.

1 **Q IS THERE SPECIFIC EVIDENCE THAT POWER PLANT SITES HAVE VALUE TO**
2 **OG&E FOR THE NEXT GENERATION OF POWER PLANTS?**

3 A Yes. A specific example is the modernization of OG&E's Mustang Power Plant.
4 OG&E has installed 462 MW of quick-start combustion turbines ("CT") at the existing
5 Mustang site. The Mustang Power Plant had consisted of 480 MW of coal-fired
6 generation installed in the 1950s, but they have been retired and OG&E has reused
7 the site for these new CTs. Importantly, Mr. Rowlett states:

8 "The Mustang location already has the necessary infrastructure in
9 place to support a generating facility, including a secure property,
10 roads, facilities to support operations and maintenance, water supply
11 and rights, fuel supply facilities, and most importantly, existing
12 switchyard interconnections to both the 138 kV and 69 kV transmission
13 systems. As discussed by OG&E Witness Burch, utilizing this existing
14 infrastructure at the Mustang site is estimated to save OG&E
15 customers \$45 million compared to replicating that same infrastructure
16 at a new Greenfield facility."⁶

17 These new units at the Mustang site have an estimated retirement date of 2054,⁷
18 resulting in the Mustang site being used as a power plant site for a century.
19 Incredibly, OG&E is still requesting to recover from customers \$14.7 million of
20 decommissioning costs for the Mustang Units 3 and 4 and the Common facilities⁸
21 through its proposed depreciation rates.

22 **Q DOES THE EXISTING MUSTANG SITE PROVIDE VALUE IN OTHER WAYS?**

23 A Yes. The Mustang site also provides reliability benefits to OG&E's transmission
24 system. Mr. Rowlett states:

25 "CTs at the Mustang site can manage increases or decreases in
26 voltage to stabilize the transmission system. The site's connection to
27 both the 138kV and 69kV transmission systems on the west side of
28 Oklahoma City provides specific operational and reliability benefits
29 including reduced line losses, reduced line congestion and cost,

⁶Rowlett Direct at page 9, lines 14-20.

⁷OG&E Response to AG 20-6.

⁸Direct Exhibit JJS-2 page VIII-4.

1 voltage control support, and support for the Company's system
2 restoration plan.”⁹

3 **Q DO YOU AGREE THAT OG&E SHOULD RECOVER THE FULL COST OF**
4 **DISMANTLEMENT OR DECOMMISSIONING FOR ITS POWER PLANTS**
5 **THROUGH ITS DEPRECIATION RATES?**

6 A No. As I have discussed above, these sites have value to OG&E and have value to
7 future customers by reducing the costs of future power plants relative to new sites as
8 well as provide reliability benefits. I recommend that the decommissioning cost
9 estimates be reduced by removing the 20% contingencies. As a result of reducing
10 the level of decommissioning costs included in the depreciation rates, current
11 customers receive some benefit for the potential re-use of these power plant sites.

12 **Q ASIDE FROM THE RE-USE OF THE POWER PLANT SITES, ARE THERE**
13 **ADDITIONAL REASONS WHY YOU RECOMMEND REMOVING CONTINGENCIES**
14 **FROM THE DECOMMISSIONING COST ESTIMATES?**

15 A Yes. These contingencies significantly inflate the decommissioning cost estimates
16 and burden the ratepayers with excessive and unnecessary depreciation expense.
17 The contingencies inappropriately increase the estimated decommissioning costs
18 because they do not reflect a real cost but instead safeguard the utility at the expense
19 of current ratepayers in the event that the cost estimates are low. However, if the
20 estimates, excluding contingencies, are accurate, the ratepayers will be paying
21 depreciation rates that are higher than they should be. Furthermore, the inclusion of
22 contingencies provides OG&E with a disincentive to control actual decommissioning
23 costs. Further, the 20% contingency is only applied to the cost of removal; there is no

⁹Rowlett Direct, page 9, lines 9-14.

1 contingency applied to expected scrap value. I recommend that the contingencies be
2 removed from the decommissioning cost estimates.

3 **Q WHAT IS THE IMPACT ON THE PRODUCTION PLANT DEPRECIATION**
4 **EXPENSE OF REMOVING THE CONTINGENCIES FROM THE**
5 **DECOMMISSIONING COST ESTIMATES?**

6 A I will be recommending an additional adjustment with regard to the escalation of
7 decommissioning costs which also impacts the production plant depreciation rates.
8 My proposed rates shown in Exhibits BCA-1 and BCA-2 include both adjustments.
9 However, I estimate the impact of only the contingency adjustment to be \$6.4 million
10 of the total \$8.8 million reduction to OG&E's proposal for Production Plant
11 Depreciation Expense on March 31, 2018 plant balances.

12 **Escalation of Decommissioning Costs**

13 **Q WHAT IS OG&E'S PROPOSAL WITH REGARD TO THE ESCALATION OF**
14 **DECOMMISSIONING COSTS IN THE DEPRECIATION RATE CALCULATIONS?**

15 A OG&E has proposed to escalate the decommissioning cost estimates presented in
16 Mr. Kopp's Direct Exhibit JTK-1, to the year in which the final retirement is expected
17 to occur. The escalation is calculated by annually increasing the cost estimates by
18 Mr. Spanos' proposed inflation rate of 2.5%. This escalation procedure, shown on
19 page VIII-4 of Direct Exhibit JJS-2, results in the total \$154 million current cost to
20 decommission all of the power plants to be increased by 79% to \$276 million. This
21 escalated cost is then utilized in the depreciation rate calculations. Mr. Rowlett states

1 that the escalation of decommissioning costs has an annual cost to ratepayers of
2 \$7 million.¹⁰

3 **Q DID OG&E REQUEST ESCALATED DECOMMISSIONING COSTS IN ITS**
4 **PREVIOUS RATE CASE?**

5 A No. In the previous case, OG&E attempted only to recover a general estimate of
6 \$40/kW for the steam plants, \$10/kW for the other production plants and \$5/kW for
7 wind facilities.¹¹ Escalation of those estimates was not requested in that proceeding.

8 **Q DO YOU HAVE CONCERNS WITH OG&E'S PROPOSED ESCALATION OF**
9 **DECOMMISSIONING COSTS?**

10 A Yes. The current methodology does not give customers the benefit of the time value
11 of money because the price burden of providing revenues for projected final
12 decommissioning costs is not evenly distributed to all generations of ratepayers. The
13 benefit is given to OG&E because it is allowed to significantly inflate its depreciation
14 expense and to future customers whose price burden will be significantly less than
15 current customers. The current procedure, in the simplest terms, is to estimate the
16 decommissioning cost in today's dollars, inflate those costs to a future retirement
17 year, then distribute the inflated cost estimate evenly over the remaining life of a
18 power plant. Under this procedure, customers in year one would pay the exact same
19 dollar amount as the customers in year 10 or 20 or 50. Although this calculation is
20 performed every time the depreciation rates are updated, the assumption remains
21 that an inflated cost estimate is evenly distributed over the remaining life of the asset.
22 Current customers are harmed because they are not given the benefit of the time

¹⁰Rowlett Direct at page 17, line 2.

¹¹Report of the Administrative Law Judge on the Full Evidentiary Hearing in Cause No. PUD 201500273 at page 58, as included in the Final Order in that case.

1 value of money, even though the value of a dollar today is greater than the value of a
2 dollar at any point in the future if inflation is above 0%.

3 **Q DOES OG&E'S PROPOSAL CREATE INTERGENERATIONAL INEQUITIES?**

4 A Yes. Unlike the recovery of the original investment, which is a known cost, the
5 recovery of decommissioning costs as proposed by OG&E creates intergenerational
6 inequities by requiring current customers to bear a greater price burden than future
7 customers.

8 The payments from current customers to fund the uncertain future
9 decommissioning expenses are based on inflated cost estimates that are expected to
10 be realized in a period far beyond the end of the test year in this proceeding. If future
11 customers pay the same dollar amount to fund decommissioning expenses, as is
12 proposed by OG&E, their price burden is far less than current customers due to
13 inflation's erosion of purchasing power.

14 **Q HOW DO YOU RECOMMEND THESE INTERGENERATIONAL INEQUITIES BE**
15 **MITIGATED?**

16 A While I do not disagree that costs in the future will be higher than estimates of current
17 costs, current ratepayers should be provided some benefit for the fact that revenues
18 provided to OG&E now are far more valuable than revenues provided in the future.
19 Further, there is still uncertainty on whether or not the power plant sites will actually
20 be returned to brownfield status or used again for future generating capacity. A fairer
21 manner of escalating decommissioning cost estimates would be to base them on a
22 sinking fund annuity payment. The sinking fund annuity assumes that the annual
23 payments grow at some interest rate. This methodology is used for the determination
24 of nuclear decommissioning funding. I will note that I am not suggesting an external

1 reserve be created for production plant decommissioning expenses as is done with
2 nuclear plants. I only propose to make the manner in which the escalated
3 decommissioning costs are calculated consistent with sinking fund annuity
4 calculations.

5 **Q HAVE YOU CREATED AN EXHIBIT THAT SHOWS YOUR PROPOSAL FOR THE**
6 **CALCULATION OF TERMINAL NET SALVAGE RATES FOR PRODUCTION**
7 **PLANTS, BASED ON BOTH THE REMOVAL OF CONTINGENCIES AND YOUR**
8 **ALTERNATE METHOD OF ESCALATION?**

9 A Yes. My Exhibit BCA-4 shows this exact procedure. In columns a, b, and c, I show
10 the current estimated decommissioning costs and the removal of the contingencies.
11 In columns d, e, and f, I show the probable retirement year, the number of years until
12 retirement, and the escalated cost in the future year of retirement. This escalated
13 cost is calculated by assuming the current cost is escalated annually by the inflation
14 rate. In this instance, the inflation rate has been assumed to be 2.5%, consistent with
15 OG&E's assumptions. I'll also note that the escalated value shown in column f would
16 be the same value Mr. Spanos would utilize in his net salvage rate calculations, if the
17 contingencies were removed from the decommissioning cost estimates.

18 In column g, I present the sinking fund annuity which would be the annual
19 payment required to meet the escalated decommissioning costs in the final retirement
20 year, if those annual payments grew at the inflation rate. Next, in column h, I present
21 the level of decommissioning costs that I recommend be included in the calculation of
22 the terminal net salvage rate. That value is equal to the sinking fund annuity payment
23 calculated in column g multiplied by the number of years remaining until the final
24 retirement year in column e. In column i, I present the amount of terminal retirements,
25 essentially that part of the original cost of the plant that is still providing service right

1 up until the final retirement. Finally, column j shows the terminal net salvage rate,
2 which is column h divided by column i.

3 **Q HOW DO THE TERMINAL NET SALVAGE RATES PRESENTED IN EXHIBIT**
4 **BCA-4 IMPACT THE WEIGHTED AVERAGE NET SALVAGE RATES AND YOUR**
5 **PROPOSED DEPRECIATION RATES?**

6 A In my Exhibit BCA-5, I present my calculations for the weighted average net salvage
7 rates. This exhibit is simply an updated version of the calculations presented on page
8 VIII-3 of OG&E's depreciation study, Direct Exhibit JJS-2. The weighted average net
9 salvage rates presented in my Exhibit BCA-5 are then used in my Exhibit BCA-1 to
10 calculate my proposed depreciation rates.

11 **Q SINCE OG&E DOES NOT KEEP ITS ANNUAL ACCRUALS FOR FUTURE**
12 **DECOMMISSIONING COSTS IN AN EXTERNAL, INTEREST-BEARING**
13 **ACCOUNT, WON'T YOUR PROPOSAL RESULT IN OG&E NOT RECOVERING**
14 **ENOUGH FUNDS TO COVER THOSE FUTURE COSTS?**

15 A No. First, it is important to remember that these are only estimates. The cost to
16 decommission the plant is an estimate, the inflation rate is an estimate, and there is
17 uncertainty on whether or not the decommissioning will actually occur, since the sites
18 have value for the next generation of power plants. Further, utilities typically update
19 the depreciation rates every five years. The utility will be made whole through the
20 self-correcting nature of remaining-life depreciation rates. My proposal merely
21 reduces the proportion of final decommissioning costs that is recovered from current
22 customers through the depreciation rates set in this proceeding.

1 In addition, I have created an exhibit, Exhibit BCA-6, which demonstrates that
2 if the same procedure is utilized for each generation of customers leading up to the
3 final generation,¹² then the utility will meet its future requirements.

4 The example presented in this exhibit is that a decommissioning cost study is
5 conducted today for a plant that will retire 20 years from now. The estimated
6 decommissioning cost today is \$20 million; inflated to the year of retirement, that cost
7 is \$31.97 million. This example assumes four depreciation studies are conducted and
8 annual accruals are updated every five years. It is assumed that the cost estimate
9 conducted today is completely accurate and inflation never changes from 2.5%
10 annually; simplifying assumptions to demonstrate a point.

11 Under the methodology proposed by OG&E, the escalated cost of the
12 decommissioning cost estimate is distributed over the remaining life, which yields an
13 annual accrual of \$1.599 million. Since the assumption is that the cost study and
14 inflation rates are completely accurate, the \$1.599 million will be the annual accrual
15 calculated in each hypothetical depreciation study conducted at five year intervals.
16 To demonstrate that current customers are overly burdened, I present the present
17 value calculations of the annual accruals. The present value of the \$1.599 million
18 annual accrual from 2018 customers is \$1.599 million; however, the present value of
19 an annual accrual from the 2037 customers is only \$1.0 million in today's dollars.
20 That means that current customers provide 60% more value than future customers.
21 The sum of the annual accruals using this methodology is the \$31.97 million needed
22 to pay for the future decommissioning cost.

23 Under my proposed method, in the first three hypothetical depreciation
24 studies, the annual accrual is based on the sinking fund annuity formula assuming an

¹²In this instance, generation of customers means a period over which depreciation rates are in effect; therefore, this example has four generations of customers, with a depreciation study conducted every five years.

1 interest rate equal to the assumed inflation rate of 2.5%. In the hypothetical
2 depreciation study that occurs prior to retirement, the annual accrual would be
3 calculated the same way as OG&E's current proposal which ensures that the sum of
4 the annual accruals equals the future cost estimate of \$31.97 million. With my
5 proposal, the first generation of customers would pay \$1.25 million, the second would
6 pay \$1.43 million, the third \$1.65 million, and the last generation would pay
7 \$2.05 million. By increasing the payments at each depreciation study, the present
8 value provided from each generation of customers is much more uniform. The
9 present value of the \$1.25 million from 2018 customers is \$1.25 million and the
10 present value of the \$2.05 million from 2037 customers is \$1.28 million. The sum of
11 the annual accruals using this methodology is the \$31.97 million needed to pay for the
12 future decommissioning cost.

13 **Q PLEASE SUMMARIZE WHY YOUR PROPOSAL FOR THE ESCALATION OF**
14 **DECOMMISSIONING COST ESTIMATES IS SUPERIOR TO OG&E'S PROPOSAL.**

15 A Under my proposed methodology, the value provided from each generation is much
16 more uniform. OG&E's proposal significantly burdens the current generation for the
17 benefit of the future generations and does not evenly distribute the burden of
18 decommissioning costs among current and future ratepayers. If my proposed
19 methodology is adopted, OG&E will collect enough revenues from ratepayers to meet
20 its claimed decommissioning expense needs, but in a manner that more fairly
21 allocates costs across generations of ratepayers, thus representing a just and
22 reasonable proposal.

1 **Q WHAT SAFEGUARDS FUTURE RATEPAYERS FROM PAYING MORE THAN**
2 **THEIR FAIR SHARE OF DECOMMISSIONING EXPENSES?**

3 A The routine update of depreciation studies and decommissioning cost studies will
4 ensure that future ratepayers are protected. As time progresses, estimates of
5 remaining lives and forecasts of future expenses will improve due to a reduced time
6 horizon.

7 **Q IS YOUR PROPOSAL TO REDUCE THE LEVEL OF DECOMMISSIONING COSTS**
8 **INCLUDED IN THE CALCULATION OF DEPRECIATION RATES AT ODDS WITH**
9 **STRAIGHT LINE DEPRECIATION METHODS?**

10 A No. Straight line depreciation calculations provide for the recovery of the original cost
11 of an asset, adjusted for net salvage, over its useful life. To my knowledge, there are
12 no authoritative texts on the subject of depreciation that suggest the decommissioning
13 cost estimates must be inflated to the cost level in the year of final retirement before
14 they are factored into net salvage ratio and depreciation rate calculations. Wolf &
15 Fitch's "Depreciation Systems," one of the preeminent texts on depreciation, states:
16 "Estimated future costs of retiring an asset currently in service must be accrued and
17 allocated as part of current expenses."¹³ It does not state those future costs should
18 be stated in future dollars. The NARUC Depreciation Manual addresses escalated
19 nuclear decommissioning costs. It states, "Once the escalated decommissioning
20 amount is calculated, then a sinking fund annuity can be calculated to determine the
21 needed annual annuity."¹⁴ The methodology I propose produces the same result as
22 calculating a sinking fund annuity. As I demonstrated in Exhibit BCA-6, the utility
23 recovers enough revenues to meet its future decommissioning expense needs.

¹³Depreciation Systems, W.C. Fitch and Frank K. Wolf, 1994, p. 7.

¹⁴NARUC, Public Utility Depreciation Practices, 1996, page 308.

1 In the end, my proposal simply reduces the level of decommissioning costs
2 that is factored into the depreciation rate calculations in this proceeding to reflect the
3 time value of money. OG&E will still recover the total cost to decommission power
4 plants over the remaining life. The total cost to be recovered in future accruals is still
5 divided by the remaining life of the asset yielding an equal accrual that will be
6 expensed each year until the next depreciation study is performed, which is
7 consistent with straight line depreciation.

8 **Q WHAT IS THE IMPACT ON THE PRODUCTION PLANT DEPRECIATION**
9 **EXPENSE OF REDUCING THE ESCALATION OF THE DECOMMISSIONING**
10 **COST ESTIMATES?**

11 A As I stated previously, the rates that I propose, shown in Exhibits BCA-1 and BCA-2,
12 include adjustments for both the removal of contingencies and the reduction of
13 escalation. However, I estimate the impact of only the escalation adjustment to
14 account for \$2.4 million of the total \$8.8 million reduction to OG&E's proposal for
15 production plant depreciation expense on plant balances as of March 31, 2018.

16 **Conclusion**

17 **Q PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

18 A My conclusions and recommendations are summarized as follows:

- 19 1. OG&E has proposed a \$53.4 million increase to its depreciation expense based
20 on plant balances as of March 31, 2018.¹⁵ This increase is based on overstated
21 depreciation rates. These rates produce an excessive amount of depreciation
22 expense, thus overstating the test year revenue requirement.
- 23 2. The average service lives that OG&E, through its witness Mr. John J. Spanos, is
24 recommending for several TD&G accounts should be increased. Statistical fitting

¹⁵This \$53.4 million figure is sourced from an updated version of OG&E's WP_H2.21 provided in response to FEA 1-3.

- 1 methods indicate that survivor curves with longer average service lives fit OG&E's
2 historic retirement data better than what is being proposed by Mr. Spanos.
- 3 3. The depreciation rates for the majority of TD&G accounts should be decreased
4 such that the average service life and Iowa Curves dispersion of the survivor
5 curves for these property accounts produces a better statistical fit to the
6 Company's retirement data.
- 7 4. OG&E's proposal for the recovery of production plant dismantlement costs is
8 excessive. OG&E's cost studies supporting its proposed level of dismantlement
9 expense include excessive contingencies that provide protection for OG&E at its
10 customers' expense.
- 11 5. There is uncertainty on whether or not OG&E will actually return its power plant
12 sites to brownfield status as it proposes. Some of the infrastructure in place at
13 these production sites could potentially be utilized for the next generation of
14 power plants. If existing infrastructure can be utilized for the next generation,
15 dismantlement expenses for the current generation of power plants would be
16 reduced, as would development costs of the next generation. This is the exact
17 reason why OG&E decided to re-use the existing Mustang Power plant site for
18 new generating units.
- 19 6. The escalation of production dismantlement costs should be reduced in such a
20 way as to give current customers the benefit of the time value of money by more
21 evenly distributing the price burden across generations of customers. Revenues
22 received in the near term are worth far more than revenues received far in the
23 future, due to erosion of value caused by inflation.
- 24 7. I present my recommended depreciation rates in Exhibit BCA-1. These rates
25 include all adjustments I propose regarding the TD&G plant account survivor
26 curves, production plant decommissioning costs, and the escalation of
27 decommissioning costs.
- 28 8. My recommended adjustments to OG&E's depreciation rates reduces OG&E's
29 total Company test year depreciation expense by \$27.5 million. This \$27.5 million
30 reduction consists of the reductions to depreciable groups shown below in Table
31 1. I provide a comparison of my proposed test year depreciation expense with
32 OG&E's in Exhibit BCA-2.
- 33 9. The Oklahoma jurisdictional share of my proposed \$27.5 million reduction is
34 \$25.0 million.

TABLE 7

**BCA Recommended Reduction to
OG&E's Test Year Depreciation Expense**
(\$ Millions)

<u>Depreciable Group</u>	<u>Impact</u>
Production (Steam & Other)	\$ (8.8)
Transmission	\$ (3.9)
Distribution	\$ (14.3)
<u>General</u>	<u>\$ (0.5)</u>
Total	\$ (27.5)

Source: Exhibit BCA-2

1 Q DOES THIS CONCLUDE YOUR RESPONSIVE TESTIMONY?

2 A Yes, it does.

Qualifications of Brian C. Andrews

1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A Brian C. Andrews. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 **Q PLEASE STATE YOUR OCCUPATION.**

5 A I am a Senior Consultant in the field of public utility regulation with the firm of
6 Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

7 **Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL
8 EMPLOYMENT EXPERIENCE.**

9 A I received a Bachelor of Science Degree in Electrical Engineering from the
10 Washington University in St. Louis/University of Missouri - St. Louis Joint Engineering
11 Program. I have also received a Master of Science Degree in Applied Economics
12 from Georgia Southern University.

13 I have attended training seminars on multiple topics including class cost of
14 service, depreciation, power risk analysis, production cost modeling, cost-estimation
15 for transmission projects, transmission line routing, MISO load serving entity
16 fundamentals and more.

17 I am a certified Engineer Intern in the State of Missouri, and I am a member
18 and current Vice-President of the Society of Depreciation Professionals.

19 As a Senior Consultant at BAI, and as a Consultant, Associate Consultant and
20 Assistant Engineer before that, I have been involved with several regulated and
21 competitive electric service issues. These have included book depreciation, fuel and
22 purchased power cost, transmission planning, transmission line routing, resource

1 planning including renewable portfolio standards compliance, electric price
2 forecasting, class cost of service, power procurement, and rate design. This has
3 involved use of power flow, production cost, cost of service, and various other
4 analyses and models to address these issues, utilizing, but not limited to, various
5 programs such as Strategist, RealTime, PSS/E, MatLab, R Studio, ArcGIS, Excel,
6 and the United States Department of Energy/Bonneville Power Administration's
7 Corona and Field Effects ("CAFÉ") Program. In addition, I have received extensive
8 training on the PLEXOS Integrated Energy Model.

9 BAI was formed in April 1995. BAI provides consulting services in the
10 economic, technical, accounting, and financial aspects of public utility rates and in the
11 acquisition of utility and energy services through RFPs and negotiations, in both
12 regulated and unregulated markets. Our clients include large industrial and
13 institutional customers, some utilities and, on occasion, state regulatory agencies.
14 We also prepare special studies and reports, forecasts, surveys and siting studies,
15 and present seminars on utility-related issues.

16 In general, we are engaged in energy and regulatory consulting, economic
17 analysis and contract negotiation. In addition to our main office in St. Louis, the firm
18 also has branch offices in Phoenix, Arizona and Corpus Christi, Texas.

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BCA RECOMMENDED DEPRECIATION RATES
OKLAHOMA GAS AND ELECTRIC COMPANY

SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2016

ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)	
INTANGIBLE PLANT								
301.0	ORGANIZATION	NONDEPRECIABLE	80,900.00					
302.0	FRANCHISES AND CONSENTS	25-SQ 0	2,414,265.55	1,387,832	1,026,434	107,032	4.43	9.6
303.2	MISCELLANEOUS INTANGIBLE PLANT - SOFTWARE	10-SQ 0	78,991,151.98	42,499,699	36,491,453	4,930,470	6.24	7.4
TOTAL INTANGIBLE PLANT			81,486,317.53	43,887,531	37,517,887	5,037,502		
STEAM PRODUCTION PLANT								
310.1	LAND							
	HORSESHOE LAKE 6	NONDEPRECIABLE	116,198.62					
	MUSTANG 1	NONDEPRECIABLE	101,936.34					
	SEMINOLE 1	NONDEPRECIABLE	1,477,854.02					
	MUSKOGEE 4	NONDEPRECIABLE	1,880,431.93					
	SOONER 1	NONDEPRECIABLE	7,006,282.38					
	TOTAL LAND		10,582,703.29					
310.2	RIGHTS OF WAY							
	HORSESHOE LAKE 6	100-S4 *	28,509.08	26,384	2,125	304	1.07	7.0
	MUSTANG 4	100-S4 *	27,941.18	27,941	0	0	-	-
	SEMINOLE 1	100-S4 *	78,916.24	55,613	23,303	1,666	2.11	14.0
	MUSKOGEE 4	100-S4 *	18,934.31	5,739	13,195	510	2.69	25.9
	SOONER 1	100-S4 *	813,703.89	86,129	727,575	25,989	3.19	28.0
	TOTAL RIGHTS OF WAY		968,004.70	201,806	766,199	28,469	2.94	26.9
311.0	STRUCTURES AND IMPROVEMENTS							
	HORSESHOE LAKE 6	105-R1.5 *	15,801,688.02	9,088,582	8,451,292	1,224,825	8.43	6.9
	HORSESHOE LAKE 7	105-R1.5 *	2,757,683.26	2,634,285	454,320	38,831	1.76	11.7
	HORSESHOE LAKE 8	105-R1.5 *	4,972,754.72	4,465,046	1,054,712	83,048	2.07	12.7
	MUSTANG 3	105-R1.5 *	1,628,466.84	1,847,492	57,814	57,814	8.55	1.0
	MUSTANG 4	105-R1.5 *	11,263,217.10	13,255,136	(77,172)	(77,172)	4.31	1.0
	SEMINOLE 1	105-R1.5 *	19,334,384.88	13,364,689	8,289,822	605,097	3.56	13.7
	SEMINOLE 2	105-R1.5 *	2,515,482.74	1,699,503	1,117,838	82,194	3.70	13.6
	SEMINOLE 3	105-R1.5 *	7,193,503.82	5,579,398	2,477,326	182,156	2.96	13.6
	MUSKOGEE 4	105-R1.5 *	42,323,393.31	18,364,553	27,344,712	1,089,431	2.81	25.1
	MUSKOGEE 5	105-R1.5 *	7,062,478.30	3,872,506	3,825,595	147,706	2.29	25.9
	MUSKOGEE 6	105-R1.5 *	51,734,197.57	35,669,065	21,238,552	682,912	1.48	31.1
	SOONER 1	105-R1.5 *	92,130,298.88	62,641,184	38,702,145	1,449,519	1.76	26.7
	SOONER 2	105-R1.5 *	12,443,473.66	8,373,828	5,313,993	193,941	1.74	27.4
	TOTAL STRUCTURES AND IMPROVEMENTS		271,161,023.10	180,855,267	118,250,949	5,760,302	2.12	20.5
312.0	BOILER PLANT EQUIPMENT							
	HORSESHOE LAKE 6	85-R0.5 *	17,172,926.35	14,727,368	4,334,580	628,200	4.41	6.9
	HORSESHOE LAKE 7	85-R0.5 *	14,425,033.65	12,945,476	3,210,562	276,773	2.26	11.6
	HORSESHOE LAKE 8	85-R0.5 *	18,937,831.36	14,383,618	6,637,375	530,990	3.20	12.5
	MUSTANG 3	85-R0.5 *	6,594,325.74	7,210,525	504,836	504,836	12.66	1.0
	MUSTANG 4	85-R0.5 *	17,554,422.73	19,593,026	945,649	945,649	10.39	1.0
	SEMINOLE 1	85-R0.5 *	51,896,788.89	19,695,832	38,428,572	2,846,561	5.93	13.5
	SEMINOLE 2	85-R0.5 *	42,764,009.94	18,406,076	29,489,615	2,184,416	5.56	13.5
	SEMINOLE 3	85-R0.5 *	48,100,089.31	33,885,282	19,986,818	1,491,554	3.55	13.4
	MUSKOGEE 4	85-R0.5 *	155,515,021.52	73,853,627	94,102,596	3,904,672	2.76	24.1
	MUSKOGEE 5	85-R0.5 *	127,323,629.44	64,613,632	74,169,124	2,966,765	2.53	25.0
	MUSKOGEE 6	85-R0.5 *	252,184,491.95	147,921,300	129,481,641	4,345,022	1.89	29.8
	SOONER 1	85-R0.5 *	230,629,199.14	127,532,675	126,159,444	4,889,901	2.31	25.8
	SOONER 2	85-R0.5 *	158,475,670.74	95,242,564	79,080,674	2,984,176	2.07	26.5
	TOTAL BOILER PLANT EQUIPMENT		1,141,573,440.76	650,011,001	606,531,486	28,499,513	2.50	21.3

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ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)	
314.0 TURBOGENERATOR UNITS								
HORSESHOE LAKE 6	55-R1 *	(11)	8,449,621.32	5,697,207	3,681,873	557,859	7.35	6.6
HORSESHOE LAKE 7	55-R1 *	(12)	16,213,968.58	14,494,884	3,664,761	339,330	2.45	10.8
HORSESHOE LAKE 8	55-R1 *	(11)	18,046,357.78	14,225,179	5,806,278	479,858	3.07	12.1
MUSTANG 3	55-R1 *	(17)	9,011,273.41	10,074,192	468,998	468,998	10.20	1.0
MUSTANG 4	55-R1 *	(17)	15,181,308.57	16,254,835	1,507,296	1,507,296	14.93	1.0
SEMINOLE 1	55-R1 *	(12)	29,538,189.88	16,934,138	16,148,635	1,232,720	4.62	13.1
SEMINOLE 2	55-R1 *	(12)	30,810,875.49	20,019,208	14,488,973	1,114,536	4.09	13.0
SEMINOLE 3	55-R1 *	(12)	30,342,323.60	18,701,111	15,282,291	1,157,749	4.27	13.2
MUSKOGEE 4	55-R1 *	(8)	65,638,796.73	15,657,396	55,232,504	2,350,319	3.83	23.5
MUSKOGEE 5	55-R1 *	(9)	51,024,149.64	27,979,579	27,636,744	1,156,349	2.48	23.9
MUSKOGEE 6	55-R1 *	(10)	89,914,589.60	35,105,304	63,800,745	2,286,765	2.72	27.9
SOONER 1	55-R1 *	(10)	37,211,499.29	23,807,349	17,125,300	707,657	2.10	24.2
SOONER 2	55-R1 *	(10)	41,787,367.53	26,088,367	19,877,737	795,109	2.11	25.0
TOTAL TURBOGENERATOR UNITS			443,170,321.42	245,038,749	244,722,135	14,154,547	3.19	17.3
315.0 ACCESSORY ELECTRIC EQUIPMENT								
HORSESHOE LAKE 6	75-R2 *	(11)	3,007,723.03	1,807,495	1,531,078	221,895	8.07	6.9
HORSESHOE LAKE 7	75-R2 *	(12)	2,213,598.32	1,673,604	805,626	69,451	3.48	11.6
HORSESHOE LAKE 8	75-R2 *	(11)	2,542,690.07	1,848,836	973,550	77,266	3.43	12.6
MUSTANG 3	75-R2 *	(17)	1,134,098.23	1,255,716	71,179	71,179	11.28	1.0
MUSTANG 4	75-R2 *	(17)	3,011,442.03	3,399,909	123,478	123,478	9.10	1.0
SEMINOLE 1	75-R2 *	(12)	3,652,325.35	2,119,306	1,971,298	146,022	4.43	13.5
SEMINOLE 2	75-R2 *	(12)	2,058,360.88	1,451,621	853,743	63,240	3.53	13.5
SEMINOLE 3	75-R2 *	(12)	5,153,153.99	3,819,574	1,951,958	143,526	3.23	13.6
MUSKOGEE 4	75-R2 *	(8)	34,025,649.76	11,936,372	24,811,330	1,012,707	3.22	24.5
MUSKOGEE 5	75-R2 *	(9)	11,579,335.55	7,348,814	5,272,662	214,336	2.06	24.6
MUSKOGEE 6	75-R2 *	(10)	42,835,434.94	28,726,824	18,392,154	619,264	1.61	29.7
SOONER 1	75-R2 *	(10)	23,980,814.81	16,848,495	9,530,401	378,191	1.78	25.2
SOONER 2	75-R2 *	(10)	12,766,947.14	8,416,117	5,627,525	215,614	1.88	26.1
TOTAL ACCESSORY ELECTRIC EQUIPMENT			147,961,574.10	90,652,683	71,915,983	3,356,170	2.27	21.4
316.0 MISCELLANEOUS POWER PLANT EQUIPMENT								
HORSESHOE LAKE 6	50-R0.5 *	(11)	1,929,002.26	1,232,226	908,967	133,672	7.70	6.8
HORSESHOE LAKE 7	50-R0.5 *	(12)	1,039,113.77	974,318	189,489	17,226	2.02	11.0
HORSESHOE LAKE 8	50-R0.5 *	(11)	2,197,414.64	1,894,288	544,842	45,404	2.49	12.0
MUSTANG 3	50-R0.5 *	(17)	453,217.60	503,239	27,026	27,026	10.96	1.0
MUSTANG 4	50-R0.5 *	(17)	1,953,391.23	2,222,103	63,365	63,365	8.24	1.0
SEMINOLE 1	50-R0.5 *	(12)	3,832,690.14	2,535,838	1,756,775	137,248	4.06	12.8
SEMINOLE 2	50-R0.5 *	(12)	39,168.48	9,047	34,822	2,808	7.63	12.4
SEMINOLE 3	50-R0.5 *	(12)	401,384.18	269,886	179,664	13,820	3.91	13.0
MUSKOGEE 4	50-R0.5 *	(8)	8,788,219.61	2,180,836	7,310,441	323,471	3.95	22.6
MUSKOGEE 5	50-R0.5 *	(9)	835,595.90	604,694	306,106	13,605	1.85	22.5
MUSKOGEE 6	50-R0.5 *	(10)	4,646,446.78	2,677,241	2,433,850	93,971	2.22	25.9
SOONER 1	50-R0.5 *	(10)	5,614,582.99	2,521,464	3,654,577	151,642	2.91	24.1
SOONER 2	50-R0.5 *	(10)	2,023,739.76	1,132,737	1,093,377	48,595	2.62	22.5
POWER SUPPLY SERVICES	50-R0.5	(5)	1,448,197.57	407,685	1,112,922	24,491	1.69	45.4
TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT			35,202,164.91	19,165,602	19,616,223	1,096,343	3.11	17.9
TOTAL STEAM PRODUCTION PLANT			2,050,619,232.28	1,185,925,108	1,061,802,974	52,895,343	2.58	20.1

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ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)	
OTHER PRODUCTION PLANT								
340.0	LAND							
	REDBUD 1	NONDEPRECIABLE	326,889.60					
	MCCLAIN GAS 1	NONDEPRECIABLE	527,699.29					
	TOTAL LAND		854,588.89					
341.0	STRUCTURES AND IMPROVEMENTS							
	REDBUD 1	45-R4 *	32,437,692.05	12,744,773	21,639,181	736,027	2.40	29.4
	REDBUD 2	45-R4 *	154,022.73	15,180	148,084	4,642	3.14	31.9
	REDBUD 3	45-R4 *	137,828.33	13,918	132,180	4,157	3.13	31.8
	REDBUD 4	45-R4 *	169,811.28	20,412	159,588	5,018	3.07	31.8
	HORSESHOE LAKE 9 AND 10	45-R4 *	987,208.14	486,971	529,853	29,274	3.02	18.1
	TINKER	45-R4 *	972,163.95	908,421	92,908	10,439	1.40	8.9
	MCCLAIN GAS 1	45-R4 *	8,326,702.03	2,127,680	6,698,624	234,218	2.90	28.6
	MCCLAIN GAS 2	45-R4 *	959,632.02	429,409	587,801	22,181	2.40	26.5
	MCCLAIN STEAM 1	45-R4 *	528,863.87	231,920	328,676	12,264	2.39	26.8
	MUSTANG	40-S3 *	700,769.00	43,435	671,349	28,813	4.20	23.3
	TOTAL STRUCTURES AND IMPROVEMENTS		45,374,693.40	17,022,119	30,988,244	1,087,033	2.40	28.5
341.0	STRUCTURES AND IMPROVEMENTS - WIND							
	CENTENNIAL	45-S3 *	2,382,899.46	898,101	1,484,798	99,651	4.32	14.9
	OU SPIRIT	45-S3 *	5,209,833.16	1,517,760	3,744,171	209,172	4.08	17.9
	CROSSROADS	45-S3 *	11,586,653.31	2,436,409	9,381,977	451,057	3.94	20.8
	TOTAL STRUCTURES AND IMPROVEMENTS - WIND		19,179,385.93	4,852,270	14,610,947	759,879	3.96	19.2
342.0	FUEL HOLDERS, PRODUCERS AND ACCESSORIES							
	REDBUD 1	55-R4 *	12,118,339.32	5,022,892	7,822,548	269,743	2.39	29.0
	REDBUD 2	55-R4 *	690,650.06	295,311	436,778	15,061	2.35	29.0
	REDBUD 3	55-R4 *	691,291.31	295,404	437,365	15,082	2.35	29.0
	REDBUD 4	55-R4 *	718,677.29	295,892	465,906	16,066	2.40	29.0
	TINKER	55-R4 *	167,149.95	113,509	58,655	6,517	4.30	9.0
	MCCLAIN GAS 1	55-R4 *	249,233.47	106,662	157,525	5,432	2.30	29.0
	MCCLAIN GAS 2	55-R4 *	166,187.43	60,151	116,008	4,028	2.39	28.8
	TOTAL FUEL HOLDERS, PRODUCERS AND ACCESSORIES		14,801,528.83	6,189,821	9,494,785	331,929	2.24	28.6
343.0	PRIME MOVERS							
	REDBUD 1	35-R2 *	87,228,318.90	27,034,084	65,427,934	2,703,634	3.31	24.2
	REDBUD 2	35-R2 *	66,095,042.09	17,516,902	52,543,843	2,180,242	3.53	24.1
	REDBUD 3	35-R2 *	66,000,280.58	21,899,581	48,060,716	1,969,701	3.23	24.4
	REDBUD 4	35-R2 *	60,507,530.90	18,573,923	45,564,060	1,890,625	3.36	24.1
	HORSESHOE LAKE 9 AND 10	35-R2 *	5,529,836.60	2,261,014	3,434,718	209,434	3.85	16.4
	TINKER	35-R2 *	3,909,264.77	3,426,848	599,695	69,732	2.13	8.6
	MCCLAIN GAS 1	35-R2 *	81,288,521.13	21,364,293	64,801,539	2,769,297	3.80	23.4
	MCCLAIN GAS 2	35-R2 *	72,644,774.08	21,598,347	55,405,114	2,430,049	3.53	22.8
	MCCLAIN STEAM 1	35-R2 *	32,684,810.23	12,879,902	21,765,997	1,021,878	3.18	21.3
	TOTAL PRIME MOVERS		475,888,379.28	146,554,894	357,603,615	15,244,592	3.20	23.5

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ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)	
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)		
LTSA									
343.1	5-YEAR								
	REDBUD 1	5-SQ	0	2,129,175.84	1,131,686	997,490	403,647	18.96	2.5
	REDBUD 2	5-SQ	0	1,786,505.49	814,851	971,654	402,200	22.51	2.5
	REDBUD 3	5-SQ	0	1,908,402.25	1,119,889	788,513	328,250	17.20	2.5
	REDBUD 4	5-SQ	0	2,141,158.66	1,123,655	1,017,504	421,898	19.70	2.5
	MCCLAIN GAS 1	5-SQ	0	8,126,359.85	6,770,874	1,355,486	1,255,893	15.45	2.2
	MCCLAIN GAS 2	5-SQ	0	7,601,182.66	5,946,925	1,654,258	693,722	9.13	2.5
343.2	20-YEAR								
	REDBUD 1	20-SQ	0	1,490,677.83	990,395	500,283	68,061	4.57	7.5
	REDBUD 2	20-SQ	0	1,490,677.83	849,899	640,779	90,144	6.05	7.5
	REDBUD 3	20-SQ	0	1,490,677.83	1,093,451	397,227	57,144	3.83	7.5
	REDBUD 4	20-SQ	0	1,490,677.83	977,864	512,814	72,697	4.88	7.5
	TOTAL LTSA			29,655,496.07	20,819,489	8,836,007	3,793,656		
	TOTAL ACCOUNT 343			505,543,875.35	167,374,383	366,439,622	19,038,248	3.77	19.2
344.0	GENERATORS								
	REDBUD 1	50-R2 *	(6)	717,739.32	109,183	651,621	21,866	2.91	29.8
	REDBUD 3	50-R2 *	(6)	23,198.65	3,787	20,804	689	3.10	30.2
	REDBUD 4	50-R2 *	(6)	23,034.59	3,795	20,622	683	3.10	30.2
	HORSESHOE LAKE 9 AND 10	50-R2 *	(3)	34,611,185.27	13,202,403	22,447,118	1,261,074	3.70	17.8
	TINKER	50-R2 *	(3)	3,314,013.04	2,484,146	929,287	105,601	3.51	8.8
	MUSTANG	30-S2.5 *	(2)	4,750,812.33	324,265	4,521,564	204,596	4.42	22.1
	TOTAL GENERATORS			43,439,983.20	16,127,579	28,591,015	1,594,509	3.67	17.9
344.0	GENERATORS - WIND								
	CENTENNIAL	40-R2.5 *	0	186,823,660.22	75,435,982	111,387,678	7,789,348	4.34	14.3
	OU SPIRIT	40-R2.5 *	(1)	243,118,183.90	65,448,147	180,101,219	10,532,235	4.40	17.1
	CROSSROADS	40-R2.5 *	(2)	359,048,688.93	76,080,872	290,148,791	14,580,341	4.14	19.9
	TOTAL GENERATORS - WIND			788,990,533.05	216,965,001	581,637,688	32,901,924	4.17	17.7
345.0	ACCESSORY ELECTRIC EQUIPMENT								
	REDBUD 1	50-R2.5 *	(6)	12,859,566.05	5,862,856	7,768,284	266,037	2.20	29.2
	REDBUD 2	50-R2.5 *	(6)	9,277,991.42	4,291,428	5,543,243	189,837	2.18	29.2
	REDBUD 3	50-R2.5 *	(6)	9,105,044.92	4,261,535	5,389,813	185,217	2.16	29.1
	REDBUD 4	50-R2.5 *	(6)	9,344,182.17	4,316,192	5,588,641	185,669	2.12	30.1
	HORSESHOE LAKE 9 AND 10	50-R2.5 *	(3)	4,302,451.14	2,138,515	2,293,010	128,101	3.04	17.9
	TINKER	50-R2.5 *	(3)	3,023,750.52	2,721,440	393,023	45,175	1.84	8.7
	MCCLAIN GAS 1	50-R2.5 *	(6)	4,116,839.47	1,418,175	2,945,675	108,297	2.72	27.2
	MCCLAIN GAS 2	50-R2.5 *	(6)	3,955,059.49	1,554,078	2,638,285	97,714	2.57	27.0
	MCCLAIN STEAM 1	50-R2.5 *	(6)	2,217,820.99	1,015,431	1,335,459	50,395	2.34	26.5
	MUSTANG	45-S2.5 *	(2)	1,319,569.16	82,022	1,263,939	54,480	4.21	23.2
	TOTAL ACCESSORY ELECTRIC EQUIPMENT			59,522,275.33	27,661,672	35,159,371	1,310,922	2.20	26.8
345.0	ACCESSORY ELECTRIC EQUIPMENT - WIND								
	CENTENNIAL	35-R3 *	0	1,036,193.50	312,894	723,300	49,541	4.91	14.6
	OU SPIRIT	35-R3 *	(1)	1,294,503.96	110,123	1,197,326	68,419	5.33	17.5
	CROSSROADS	35-R3 *	(2)	43,987,182.00	8,879,698	35,987,228	1,817,537	4.17	19.8
	TOTAL ACCESSORY ELECTRIC EQUIPMENT - WIND			46,317,879.46	9,302,715	37,907,853	1,935,496	4.18	19.6

BCA RECOMMENDED DEPRECIATION RATES
OKLAHOMA GAS AND ELECTRIC COMPANY

SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK RESERVE AND CALCULATED
ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2016

ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)	
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)		
346.0 MISCELLANEOUS POWER PLANT EQUIPMENT									
REDBUD 1	40-R2 *	(6)	2,527,995.70	697,566	1,982,109	72,872	3.02	27.2	
REDBUD 2	40-R2 *	(6)	15,972.51	2,769	14,162	499	3.26	28.4	
REDBUD 3	40-R2 *	(6)	4,913.59	467	4,741	165	3.48	28.8	
REDBUD 4	40-R2 *	(6)	4,913.58	473	4,735	164	3.48	28.8	
HORSESHOE LAKE 9 AND 10	40-R2 *	(3)	941,452.30	482,705	486,991	29,161	3.15	16.7	
TINKER	40-R2 *	(3)	8,664.46	7,227	1,697	197	2.63	8.6	
MCCLAIN GAS 1	40-R2 *	(6)	4,254,964.96	1,518,439	2,991,824	124,659	3.05	24.0	
TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT			7,758,877.10	2,709,646	5,486,260	227,717	2.93	24.1	
346.0 MISCELLANEOUS POWER PLANT EQUIPMENT - WIND									
CENTENNIAL	35-R2.5 *	0	871,839.57	121,250	750,590	51,765	6.06	14.5	
OU SPIRIT	35-R2.5 *	(1)	307,017.65	23,423	286,665	16,570	5.44	17.3	
CROSSROADS	35-R2.5 *	(2)	316,685.85	22,468	300,552	15,028	4.79	20.0	
TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT - WIND			1,495,543.07	167,141	1,337,806	83,363	5.57	16.0	
TOTAL OTHER PRODUCTION PLANT			1,533,279,163.61	468,372,347	1,111,653,591	59,271,020	3.87	18.8	
TRANSMISSION PLANT									
350.1 LAND	NONDEPRECIABLE		3,737,687.05						
350.2 LAND RIGHTS	75-S4	0	113,308,499.61	19,080,992	94,227,508	1,403,165	1.24	67.2	
352.0 STRUCTURES AND IMPROVEMENTS	65-S4	(5)	6,702,508.26	1,435,089	5,602,545	106,993	1.60	52.4	
STATION EQUIPMENT									
353.0 STATION EQUIPMENT	57-R2	(30)	667,860,981.58	138,901,014	729,318,262	14,886,729	2.23	49.0	
353.1 STATION EQUIPMENT - STEP UP TRANSFORMERS	50-R1.5	(10)	53,026,203.07	12,207,041	46,121,782	1,203,074	2.27	38.3	
TOTAL STATION EQUIPMENT			720,887,184.65	151,108,055	775,440,044	16,089,803	2.23	48.2	
354.0 TOWERS AND FIXTURES	75-R4	(25)	161,794,746.77	46,703,265	155,540,168	2,630,663	1.63	59.1	
355.0 POLES AND FIXTURES	60-R1	(70)	903,252,385.68	176,718,113	1,358,810,943	23,346,181	2.58	58.2	
356.0 OVERHEAD CONDUCTORS AND DEVICES	65-R2.5	(60)	589,353,754.74	147,835,617	795,130,391	13,827,558	2.35	57.5	
358.0 UNDERGROUND CONDUCTORS AND DEVICES	45-S2.5	0	110,494.18	110,976	(482)	0	-	#DIV/0!	
TOTAL TRANSMISSION PLANT			2,499,147,260.94	542,992,107	3,184,751,117	57,404,364	2.30	55.5	

BCA RECOMMENDED DEPRECIATION RATES
OKLAHOMA GAS AND ELECTRIC COMPANY

SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2016

ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)	
DISTRIBUTION PLANT								
360.1	LAND	NONDEPRECIABLE	8,067,504.90					
360.2	LAND RIGHTS	70-S4	5,107,131.03	1,518,013	3,589,118	61,885	1.21	58.0
361.0	STRUCTURES AND IMPROVEMENTS	65-R2.5	7,281,947.18	2,011,103	5,634,942	94,369	1.30	59.7
362.0	STATION EQUIPMENT	60-R2.5	615,608,480.64	180,346,440	619,944,585	11,511,162	1.87	53.9
364.0	POLES, TOWERS AND FIXTURES	55-R1	616,505,090.71	239,324,082	777,909,318	15,733,443	2.55	49.4
365.0	OVERHEAD CONDUCTORS AND DEVICES	55-R0.5	484,430,647.56	163,299,262	587,568,242	12,198,670	2.52	48.2
366.0	UNDERGROUND CONDUIT	60-R2	218,229,722.40	65,340,052	196,535,615	3,561,123	1.63	55.2
367.0	UNDERGROUND CONDUCTORS AND DEVICES	62-R2.5	764,422,263.69	232,605,300	761,143,643	14,512,600	1.90	52.4
368.0	LINE TRANSFORMERS	42-O1	455,509,839.49	90,898,800	501,263,991	12,438,327	2.73	40.3
369.0	SERVICES	55-R4	244,430,623.56	124,565,148	168,751,600	3,784,960	1.55	44.6
METERS								
370.0	METERS - SMART METERS	15-S2.5	143,337,369.96	49,678,301	107,992,806	10,189,577	7.11	10.6
370.1	METERS - METERING EQUIPMENT	13-L0	37,150,057.31	17,330,311	23,534,752	2,715,071	7.31	8.7
	TOTAL METERS		180,487,427.27	67,008,612	131,527,558	12,904,648	7.15	10.2
371.0	INSTALLATIONS ON CUSTOMERS' PREMISES	7-R4	53,726,325.65	29,720,800	24,005,526	3,092,987	5.76	7.8
373.0	STREET LIGHTING AND SIGNAL SYSTEMS	27-L1	239,244,991.07	104,671,973	230,271,014	10,394,603	4.34	22.2
	TOTAL DISTRIBUTION PLANT		3,893,051,995.15	1,301,309,585	4,008,145,151	100,288,775	2.58	40.0
GENERAL PLANT								
389.1	LAND	NONDEPRECIABLE	3,002,965.30					
389.2	LAND RIGHTS	50-R4	147,825.62	89,798	58,028	3,038	2.06	19.1
390.0	STRUCTURES AND IMPROVEMENTS	40-R2.5	178,876,849.97	66,104,741	121,715,951	3,668,705	2.05	33.2
OFFICE FURNITURE AND EQUIPMENT								
391.0	OFFICE FURNITURE AND EQUIPMENT	15-SQ	13,996,151.05	4,995,620	9,000,531	933,878	6.67	9.6
391.1	COMPUTER EQUIPMENT	5-SQ	16,150,015.44	2,638,683	13,511,332	3,230,541	20.00	4.2
	TOTAL OFFICE AND FURNITURE EQUIPMENT		30,146,166.49	7,634,303	22,511,863	4,164,419	13.81	5.4
TRANSPORTATION EQUIPMENT								
392.1	CARS AND TRUCKS	10-S2.5	22,222,368.82	12,803,387	7,196,745	1,351,045	6.08	5.3
392.5	HEAVY TRUCKS	13-L2.5	59,365,922.01	28,321,338	25,107,992	3,415,947	5.75	7.4
392.6	TRAILERS	23-S0.5	6,184,111.35	1,673,874	3,891,826	209,098	3.38	18.6
	TOTAL TRANSPORTATION EQUIPMENT		87,772,402.18	42,798,599	36,196,563	4,976,090	5.67	7.3
393.0	STORES EQUIPMENT	25-SQ	1,386,201.85	440,380	945,822	55,408	4.00	17.1
394.0	TOOLS, SHOP AND GARAGE EQUIPMENT	25-SQ	11,609,251.18	4,580,487	7,028,764	464,079	4.00	15.1
395.0	LABORATORY EQUIPMENT	20-SQ	12,071,163.04	5,835,115	6,236,048	603,434	5.00	10.3
396.0	POWER OPERATED EQUIPMENT	18-L2	12,650,956.11	4,147,380	6,605,933	545,963	4.32	12.1
397.0	COMMUNICATION EQUIPMENT	10-SQ	26,562,652.65	12,033,427	14,529,226	2,656,107	10.00	5.5
398.0	MISCELLANEOUS EQUIPMENT	20-SQ	6,239,361.99	2,737,383	3,501,979	312,247	5.00	11.2
	TOTAL GENERAL PLANT		370,465,796.38	146,401,613	219,330,177	17,449,491	4.71	12.6
UNRECOVERED RESERVE FOR AMORTIZATION								
391.0	OFFICE FURNITURE AND EQUIPMENT			(4,218,000)		843,600		
393.0	STORES EQUIPMENT			(33,000)		6,600		
394.0	TOOLS, SHOP AND GARAGE EQUIPMENT			(585,000)		117,000		
395.0	LABORATORY EQUIPMENT			(1,693,000)		338,600		
397.0	COMMUNICATION EQUIPMENT			(510,000)		102,000		
398.0	MISCELLANEOUS EQUIPMENT			1,283,000		(256,600)		
	TOTAL UNRECOVERED RESERVE FOR AMORTIZATION			(5,756,000)		1,151,200		

BCA RECOMMENDED DEPRECIATION RATES
OKLAHOMA GAS AND ELECTRIC COMPANY

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ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2016

ACCOUNT (1)	SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK RESERVE (5)	FUTURE ACCRUALS (6)=(4)x(1-(3))-(5)	TOTAL ANNUAL ACCRUAL		COMPOSITE REMAINING LIFE (9)
						AMOUNT (7)=(6)/(9)	RATE (8)=(7)/(4)	
ACCOUNTS NOT STUDIED								
314.0	SEMINOLE GT TURBOGENERATOR UNITS		0.00	79,097				
	ARO							
317.0	ARO FOR STEAM PRODUCTION		9,103,934.39	(5,034,744)				
347.0	ARO FOR OTHER PRODUCTION		43,620,335.30	9,850,989				
359.0	ARO FOR TRANSMISSION		585,056.78	(155,183)				
	TOTAL ACCOUNTS NOT STUDIED		53,309,326.47	4,740,159				
	TOTAL ELECTRIC PLANT		10,481,359,092.36	3,687,872,450	9,623,200,897	293,497,694	2.80	32.8

* INDICATES LIFE SPAN PROCEDURE WAS USED. CURVE SHOWN IS INTERIM SURVIVOR CURVE.

**COMPARISON OF OG&E'S and BCA'S
PROPOSED DEPRECIATION EXPENSE
TEST YEAR ENDING 3/31/2018
CAUSE NO. PUD 201700496**

Exhibit BCA-2
Page 1 of 2

Line	No.	Account	Plant	Pro Forma Adjusted Depreciable Plant In Service	Adjustment Add back Transmission LSE WP B 3-12	Adjustment For Non- Depreciable Plant In Service	Pro Forma Adjusted Depreciable Plant In Service	OG&E Proposed Annual Rate	OG&E Proposed Expense	BCA Proposed Rate	BCA Proposed Expense	Delta BCA vs. OG&E Expense	Delta BCA vs. OG&E Rates
INTANGIBLE PLANT													
1	301		Organization	80,900	-	80,900	-	-	-	-	-	-	0.00%
2	302		Franchise and Consents	2,420,073	-	-	2,420,073	4.43%	107,209	4.43%	107,209	-	0.00%
3	303		Miscellaneous Intangible Plant	173,593,981	-	74,517,307	99,076,674	6.24%	6,182,384	6.24%	6,182,384	-	0.00%
4			Plant - Completed by March 2018	-	-	-	-	6.18%	-	6.18%	-	-	0.00%
5			TOTAL INTANGIBLE PLANT	\$ 176,094,955	\$ -	74,598,207	\$ 101,496,748		\$ 6,289,594		\$ 6,289,594	\$ -	
PRODUCTION PLANT													
STEAM PRODUCTION													
6	310		Land and Land Rights	11,420,830	-	10,480,767	940,063	2.94%	27,638	2.94%	27,638	-	0.00%
7	311		Structures and Improvements	262,126,816	-	-	262,126,816	2.60%	6,815,297	2.12%	5,557,088	(1,258,209)	-0.48%
8	312		Boiler Plant Equipment	1,146,152,545	-	-	1,146,152,545	2.84%	32,550,732	2.50%	28,653,814	(3,896,919)	-0.34%
9	314		Turbogenerator Units	416,050,714	-	-	416,050,714	3.74%	15,560,297	3.19%	13,272,018	(2,288,279)	-0.55%
10	315		Accessory Electric Equipment	143,830,592	-	-	143,830,592	2.64%	3,797,128	2.27%	3,264,954	(532,173)	-0.37%
11	316		Miscellaneous Power Plant Equipment	34,046,372	-	-	34,046,372	3.74%	1,273,334	3.11%	1,058,842	(214,492)	-0.63%
12	317		ARO Cost - Steam Production	11,527,007	-	-	11,527,007	0.00%	0	0.00%	0	-	0.00%
13			TOTAL STEAM PRODUCTION	\$ 2,025,154,875	\$ -	10,480,767	\$ 2,014,674,108		\$ 60,024,426		\$ 51,834,354	\$ (8,190,072)	
OTHER PRODUCTION													
14	340		Land and Land Rights	2,187,473	-	2,176,658	10,816	0.00%	-	0.00%	-	-	0.00%
15	341		Structures and Improvements	100,389,256	-	2,753,418	97,635,838	2.97%	2,899,784	2.86%	2,793,391	(106,394)	-0.11%
16	342		Fuel Holders, Producers and Accessories	22,634,319	-	192,026	22,442,293	2.38%	534,127	2.24%	502,707	(31,419)	-0.14%
17	343		Prime movers	838,216,347	-	77,186,138	761,030,209	3.74%	28,462,530	3.77%	28,690,839	228,309	0.03%
18	344		Generators	876,277,499	-	-	876,277,499	4.21%	36,891,283	4.14%	36,313,479	(577,804)	-0.07%
19	345		Accessory Electric Equipment	139,008,174	-	5,479,772	133,528,401	3.16%	4,219,497	3.07%	4,095,696	(123,801)	-0.09%
20	346		Miscellaneous Power Plant Equipment	15,233,285	-	590,269	14,643,016	3.47%	508,113	3.36%	492,213	(15,900)	-0.11%
21	347		ARO Cost - Other Production	43,620,335	-	-	43,620,335	0.00%	0	0.00%	0	-	0.00%
22	114		Acquisition Adjustment - Redbud	148,301,899	-	-	148,301,899	3.70%	5,487,170	3.70%	5,487,170	-	0.00%
23			TOTAL OTHER PRODUCTION	\$ 2,185,868,587	\$ -	88,378,281	\$ 2,097,490,306		\$ 79,002,504		\$ 78,375,496	\$ (627,008)	
24			Plant - Completed by March 2018	-	-	-	-	3.38%	-	3.13%	-	-	-0.25%
25			TOTAL PRODUCTION PLANT	\$ 4,211,023,462	\$ -	98,859,048	\$ 4,112,164,414		\$ 139,026,930		\$ 130,209,850	\$ (8,817,080)	
TRANSMISSION PLANT													
26	350		Land and Land Rights	127,479,630	-	3,737,687	123,741,943	1.35%	1,670,516	1.24%	1,532,369	(138,147)	-0.11%
27	352		Structures and Improvements	6,707,757	-	-	6,707,757	1.60%	107,324	1.60%	107,077	(247)	0.00%
28	353		Station Equipment	481,823,002	321,461,928	2,666,214	800,618,716	2.33%	18,654,416	2.23%	17,869,367	(785,049)	-0.10%
29	354		Towers and Fixtures	100,659,017	62,751,999	-	163,411,017	1.63%	2,663,600	1.63%	2,656,942	(6,657)	0.00%
30	355		Poles and Fixtures	610,746,728	399,764,177	-	1,010,510,905	2.79%	28,193,254	2.58%	26,118,470	(2,074,784)	-0.21%
31	356		Overhead Conductors and Devices	399,973,962	239,179,446	-	639,153,408	2.49%	15,914,920	2.35%	14,995,969	(918,951)	-0.14%
32	358		Underground Conductors and Devices	110,494	-	-	110,494	0.00%	-	0.00%	-	-	0.00%
33	359		ARO Cost - Transmission	585,057	-	-	585,057	0.00%	-	0.00%	-	-	0.00%
34	114		Acquisition Adjustment - Edmond Substations	3,341,804	-	-	3,341,804	2.23%	74,522	2.23%	74,522	-	0.00%
35			Plant - Completed by March 2018	-	-	-	-	2.44%	-	2.30%	-	-	-0.14%
36			TOTAL TRANSMISSION PLANT	\$ 1,731,427,451	\$ 1,023,157,550	6,403,901	\$ 2,748,181,101		\$ 67,278,552		\$ 63,354,716	\$ (3,923,836)	

**COMPARISON OF OG&E'S and BCA'S
PROPOSED DEPRECIATION EXPENSE
TEST YEAR ENDING 3/31/2018
CAUSE NO. PUD 201700496**

Line			Pro Forma Adjusted Depreciable Plant In Service	Adjustment Add back Transmission LSE WP B 3-12	Adjustment For Non- Depreciable Plant In Service	Pro Forma Adjusted Depreciable Plant In Service	OG&E Proposed Annual Rate	OG&E Proposed Expense	BCA Proposed Rate	BCA Proposed Expense	Delta BCA vs. OG&E Expense	Delta BCA vs. OG&E Rates
No.	Account	Plant										
DISTRIBUTION PLANT												
37	360	Land and Land Rights	13,282,695	-	7,797,841	5,484,854	1.34%	73,497	1.21%	66,462	(7,035)	-0.13%
38	361	Structures and Improvements	7,429,586	-	-	7,429,586	1.42%	105,500	1.30%	96,282	(9,218)	-0.12%
39	362	Station Equipment	641,824,278	-	-	641,824,278	2.16%	13,863,404	1.87%	12,001,367	(1,862,038)	-0.29%
40	364	Poles, Towers, and Fixtures	650,248,197	-	-	650,248,197	2.85%	18,532,074	2.55%	16,594,580	(1,937,494)	-0.30%
41	365	Overhead Conductors and Devices	504,919,802	-	-	504,919,802	2.69%	13,582,343	2.52%	12,714,617	(867,726)	-0.17%
42	366	Underground Conduit	230,159,779	-	-	230,159,779	1.80%	4,142,876	1.63%	3,755,801	(387,075)	-0.17%
43	367	Underground Conductors and Devices	805,121,709	-	-	805,121,709	1.98%	15,941,410	1.90%	15,285,281	(656,129)	-0.08%
44	368	Line Transformers	477,227,420	-	-	477,227,420	3.37%	16,082,564	2.73%	13,031,355	(3,051,209)	-0.64%
45	369	Services	247,138,448	-	-	247,138,448	1.76%	4,349,637	1.55%	3,826,890	(522,747)	-0.21%
46	370	Meters	191,461,749	-	-	191,461,749	7.15%	13,689,515	7.15%	13,689,300	(215)	0.00%
47	371	Installation on Customers' Premises	56,366,476	-	-	56,366,476	9.75%	5,495,731	5.76%	3,244,978	(2,250,753)	-3.99%
48	372	Leased Property on Customer's Premises	-	-	-	-	-	0.00%	-	-	-	0.00%
49	373	Street Lighting and Signal Systems	249,610,034	-	-	249,610,034	5.43%	13,553,825	4.34%	10,844,938	(2,708,887)	-1.09%
50		Plant - Completed by March 2018	-	-	-	-	2.93%	-	2.58%	-	-	-0.35%
51		TOTAL DISTRIBUTION PLANT	<u>\$ 4,074,790,172</u>	<u>\$ -</u>	<u>7,797,841</u>	<u>\$ 4,066,992,331</u>		<u>\$ 119,412,376</u>		<u>\$ 105,151,850</u>	<u>\$ (14,260,526)</u>	
GENERAL PLANT												
52	389	Land and Land Rights	3,181,563	-	3,002,965	178,598	2.06%	3,679	2.06%	3,679	-	0.00%
53	390	Structures and Improvements	193,728,277	-	-	193,728,277	2.33%	4,513,869	2.05%	3,973,303	(540,566)	-0.28%
54	391	Office Furniture and Equipment	45,868,166	-	-	45,868,166	13.81%	6,334,394	13.81%	6,334,394	-	0.00%
55	392	Transportation Equipment	89,313,602	-	-	89,313,602	5.49%	4,903,317	5.67%	5,063,465	160,148	0.18%
56	393	Stores Equipment	1,710,402	-	-	1,710,402	4.00%	68,416	4.00%	68,416	-	0.00%
57	394	Tools, Shop and Garage Equipment	11,813,177	-	-	11,813,177	4.00%	472,527	4.00%	472,527	-	0.00%
58	395	Laboratory Equipment	11,930,620	-	-	11,930,620	5.00%	596,531	5.00%	596,531	-	0.00%
59	396	Power Operated Equipment	12,751,042	-	-	12,751,042	4.58%	583,998	4.32%	550,282	(33,715)	-0.26%
60	397	Communication Equipment	27,642,167	-	-	27,642,167	10.00%	2,764,217	10.00%	2,764,217	-	0.00%
61	398	Miscellaneous Equipment	6,485,483	-	-	6,485,483	5.00%	324,274	5.00%	324,274	-	0.00%
62		Plant - Completed by March 2018	-	-	-	-	4.81%	-	4.71%	-	-	-0.10%
63												
64		TOTAL GENERAL PLANT	<u>\$ 404,424,499</u>	<u>\$ -</u>	<u>3,002,965</u>	<u>\$ 401,421,534</u>		<u>\$ 20,565,221</u>		<u>\$ 20,151,089</u>	<u>\$ (414,132)</u>	
65		TOTAL ELECTRIC PLANT IN SERVICE	<u>\$ 10,597,760,540</u>	<u>\$ 1,023,157,550</u>	<u>190,661,962</u>	<u>\$ 11,430,256,128</u>		<u>\$ 352,572,673</u>		<u>\$ 325,157,099</u>	<u>\$ (27,415,574)</u>	
66		Remove Transportation Activity Depreciation					61.52%	(3,016,521)	61.52%	(3,115,044)	(98,523)	0.00%
67		Holding Company	-	-	-	-	3.57%	-	3.57%	-	-	0.00%
68		Estimated Plant	-	-	-	-	3.57%	-	3.57%	-	-	0.00%
69		TOTAL HOLDING COMPANY	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>		<u>\$ -</u>		<u>\$ -</u>	<u>\$ -</u>	
70		TOTAL COMPANY	<u>\$ 10,597,760,540</u>	<u>\$ 1,023,157,550</u>	<u>\$ 190,661,962</u>	<u>\$ 11,430,256,128</u>		<u>\$ 349,556,152</u>		<u>\$ 322,042,055</u>	<u>\$ (27,514,097)</u>	

Note: Many rates are composite since multiple rates can exist within each FERC account.

BCA Depreciation Study
Oklahoma Gas & Electric Company
Transmission, Distribution, and General Plant Accounts

Prepared by

Brian C. Andrews

for

Federal Executive Agencies (“FEA”)

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Executive Summary

The contents herein contain the results of the BCA Depreciation Study conducted on behalf of Federal Executive Agencies (“FEA”) on the Oklahoma Gas & Electric Company (“OG&E”) Transmission, Distribution, and General plant accounts. This study was conducted by performing an actuarial analysis (retirement rate method) on OG&E’s actual property data. This is the National Association of Regulatory Utility Commissioners (“NARUC”) preferred method of utility property life analysis and is the same method used by Mr. John J. Spanos on behalf of OG&E. Using my Excel based model I am recommending increasing the lives of 18 of the 26 accounts studied. This results in a \$17.5 million reduction to the 2016 study year depreciation expense.

**BCA Proposed Adjustments
for Transmission and Distribution Accounts**

OG&E Model				BCA Model			Delta			
Account	Survivor Curve	Annual Accrual	Depreciation Rate	Survivor Curve	Annual Accrual	Depreciation Rate	Annual Accrual	Depreciation Rate		
350.2	75-S4	1,526,876	1.35%	80-S5	1,403,165	1.24%	(123,711)	-0.11%		
352	65-S4	106,993	1.60%	NO ADJUSTMENT PROPOSED						
353	57-R2	15,619,120	2.34%	58-R1.5	14,886,729	2.23%	(732,391)	-0.11%		
353.1	50-R1.5	1,203,074	2.27%	NO ADJUSTMENT PROPOSED						
354	75-R4	2,630,663	1.63%	NO ADJUSTMENT PROPOSED						
355	60-R1	25,185,996	2.79%	63-R0.5	23,346,181	2.58%	(1,839,815)	-0.21%		
356	65-R2.5	14,650,645	2.49%	68-R2.5	13,827,558	2.35%	(823,087)	-0.14%		
358	45-S2.5	0	0.00%	NO ADJUSTMENT PROPOSED						
360.2	70-S4	68,501	1.34%	75-S5	61,885	1.21%	(6,616)	-0.13%		
361	65-R2.5	103,572	1.42%	70-R2.5	94,369	1.30%	(9,203)	-0.12%		
362	60-R2.5	13,310,342	2.16%	66-R2	11,511,162	1.87%	(1,799,180)	-0.29%		
364	55-R1	17,569,271	2.85%	60-R1	15,733,443	2.55%	(1,835,828)	-0.30%		
365	55-R0.5	13,040,215	2.69%	58-R0.5	12,198,670	2.52%	(841,545)	-0.17%		
366	60-R2	3,927,259	1.80%	65-R2	3,561,123	1.63%	(366,136)	-0.17%		
367	62-R2.5	15,107,139	1.98%	64-R2.5	14,512,600	1.90%	(594,539)	-0.08%		
368	42-O1	15,337,358	3.37%	47-O2	12,438,327	2.73%	(2,899,031)	-0.64%		
369	55-R4	4,298,910	1.76%	60-R4	3,784,960	1.55%	(513,950)	-0.21%		
370.0	15-S2.5	10,189,577	7.11%	NO ADJUSTMENT PROPOSED						
370.1	13-L0	2,715,071	7.31%	NO ADJUSTMENT PROPOSED						
371	7-R4	5,236,668	9.75%	10-L2.5	3,092,987	5.76%	(2,143,681)	-3.99%		
373	27-L1	12,981,879	5.43%	30-L0.5	10,394,603	4.34%	(2,587,276)	-1.09%		
390	40-R2.5	4,174,936	2.33%	43-R2	3,668,705	2.05%	(506,231)	-0.28%		
392.1	10-S2.5	1,351,045	6.08%	NO ADJUSTMENT PROPOSED						
392.5	13-L2.5	3,256,893	5.49%	13-L3	3,415,947	5.75%	159,054	0.26%		
392.6	23-S0.5	214,760	3.47%	23-S0	209,098	3.38%	(5,662)	-0.09%		
396	18-L2	579,926	4.58%	18-L1.5	545,963	4.32%	(33,963)	-0.26%		
Total		\$ 184,386,689			\$ 166,883,897		\$ (17,502,792)			

Actuarial Life Analysis

I created an Excel-based model (“BCA Model”) that utilizes accepted methodologies to test the fit of the various Iowa Curves to the actual retirement data contained in the observed life tables for the OG&E Transmission, Distribution, and General (“TD&G”) plant accounts. The data for the Iowa Curves has been generated utilizing the formulas containing in Iowa State Bulletin 125, and the observed life tables were contained within Mr. Spanos’ depreciation study.

In the fitting process, the model determines for each curve type, the average service life that minimizes the sum of squared differences (“SSD”) between the Iowa curves and the significant¹ data points from the observed life tables. The Iowa Curve and corresponding average service life that minimizes the SSD produces the “best fit” to OG&E’s actual retirement of history.

The analysis provides for each Iowa Curve, the average service life that best fits the data minimizing SSD. The results of this analysis are provided for each account. After the fitting analysis was performed, I created graphs that contain OG&E’s retirement data, the best fit line from the fitting analysis, the survivor curve being proposed by OG&E, and my proposed survivor curve (“BCA Proposed”), as well as the currently approved curve. The BCA Proposed survivor curve for each account is typically the curve that lies between the recommendation of OG&E (Spanos) and the best fit curve. In some instances the best fit produces an unreasonable average service life; however the historical retirement pattern should not be ignored in determining the appropriate average service life and

¹ Significant data points were determined by dividing the exposures for each vintage by the Age 0 vintage exposures. If that ratio was greater than 1%, the data point was determined to be significant.

retirement dispersion because these are key inputs in developing a fair and equitable depreciation rate. In each instance the proposed average service life and retirement dispersion that I am recommending results in a better statistical fit, (lower SSD) compared to the OG&E proposed survivor curve.

For any Iowa Curve and average service life combination, the model calculates the remaining life for each vintage, which is later used to determine the composite remaining life of all property in the account and thus the depreciation rate. The vintage group remaining lives are calculated in the same manner as described in the OG&E Depreciation Study for the straight line method using the average service life procedure and the remaining life basis.

This depreciation study focuses on all transmission, distribution, and general accounts.

The first step in my analysis was a thorough review of the OG&E depreciation study and of Mr. Spanos' workpapers. I conducted my own actuarial analysis based on the observed life tables created by Mr. Spanos for his actuarial analysis. I utilized the BCA Model to determine the Iowa Curve and average service life that best fit the significant points of the observed life table created by Mr. Spanos. I then used a statistical and visual analysis to select an Iowa Curve and average service life that results in a better statistical fit (lower SSD) than the survivor curves being recommended by Mr. Spanos.

For each account studied, I present five sections of information. The first section contains a description of the plant account per the Federal Energy Regulatory Commission ("FERC") Uniform System of Accounts. The second section contains a discussion of my proposed adjustment. The third section contains the results of the fitting

analysis. This table shows for each Iowa Curve type, the average service life that minimizes the SSD. Additionally the table contains the SSD of the OG&E and BCA proposals, as well as the currently approved curve. For each account to which I recommended a change, the BCA proposal has a lower SSD which indicates a better statistical fit.

The next section contains a graph that shows the actual OG&E retirement data (blue triangles), the OG&E proposed curve (green dashed line), the BCA proposed curve (purple dotted line), and the best fit curve (orange short dash-dotted line), and the currently approved curve (red long dash-dotted line). The best fit shown on the graph is the curve determined by the fitting analysis which had the lowest SSD. This curve will match the survivor curve at the top of the table in the fitting analysis section.

The last section for each account shows the calculation of the annual accrual and depreciation rate. This procedure is the same performed by Mr. Spanos and is shown in part IX of his depreciation study.

Account 350.2 - Land Rights

Account Description

This account is for Land Rights. Per the FERC Uniform System of Accounts of Account 350, "This account shall include the cost of land and land rights used in connection with transmission operations."

Discussion

I recommend moving to the 80-S5 curve. This curve produces a much better fit for the data. Both the currently approved curve of 100-R4 and OG&E's proposal of the 75-R4, diverge from the significant data points near 50 years. The 80-S5 significantly decreases the SSD, while maintaining a similar maximum life to OG&E's proposal.

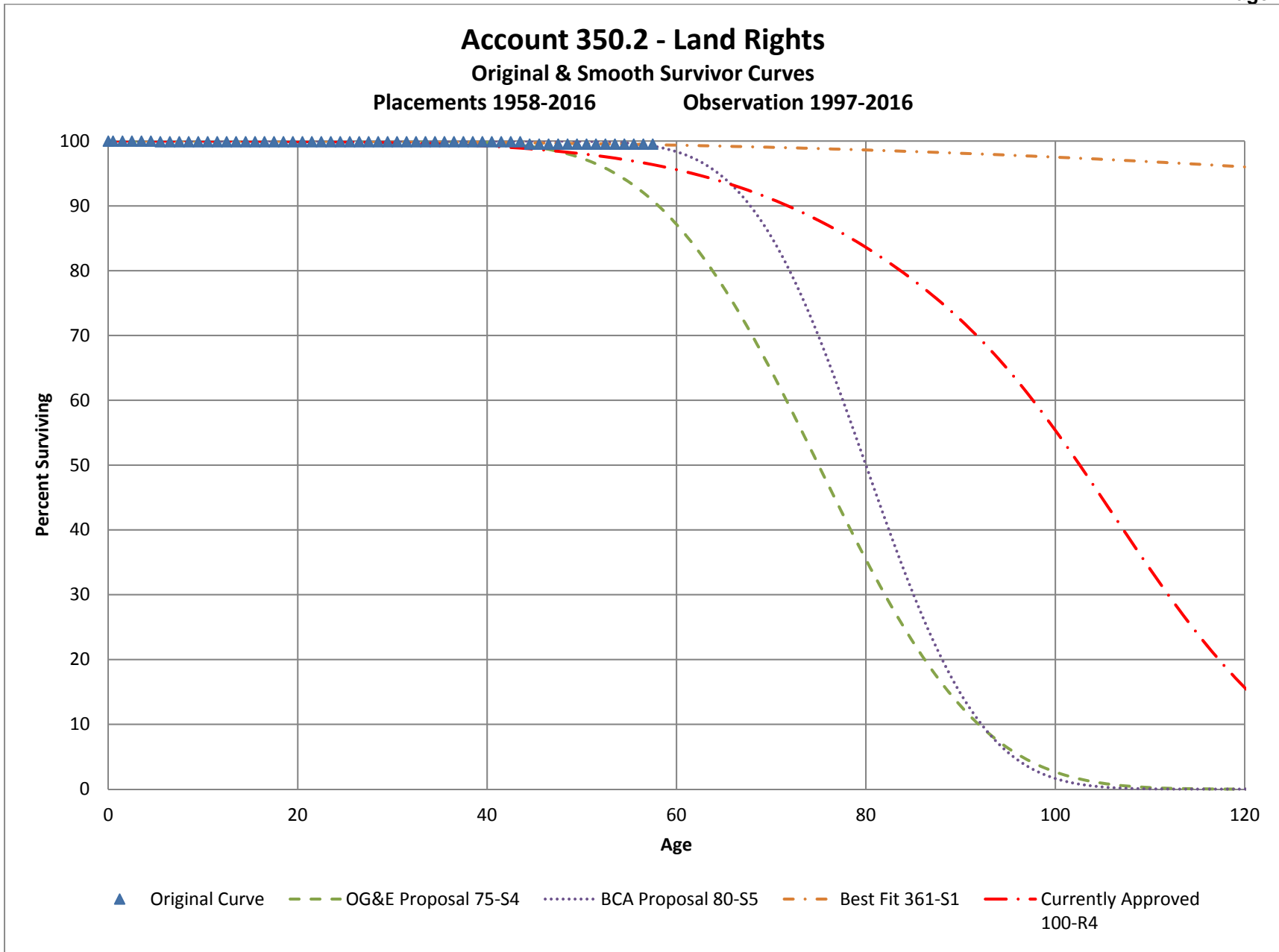
Account 350.2 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
S1	361	0.40
S1.5	289	0.40
L2	322	0.40
L2.5	260	0.40
R4	152	0.41
S0.5	683	0.45
S0	965	0.46
R3	369	0.50
S2	195	0.51
L1.5	639	0.51
S2.5	169	0.53
L3	183	0.54
L0	2,357	0.56
L0.5	1,779	0.57
L1	1,045	0.59
R2.5	909	0.63
R2	1,501	0.65
R1.5	2,735	0.67
R1	3,974	0.67
O1	7,711	0.67
R0.5	5,843	0.67
O3	12,634	0.67
O2	7,642	0.67
O4	16,535	0.67
S3	133	0.83
L4	121	1.17
S4	97	1.55
R5	92	1.60
L5	91	2.02
S5	80	2.21
S6	70	2.68
SQ	16,535	3.41

Currently Approved 100-R4 56.95

OG&E Proposal 75-S4 260.52

BCA Proposal 80-S5 2.21



Calculation of Annual Accrual and Depreciation Rate

Account	350.2	Total Annual Accrual	1,403,165
Survivor Curve	80-S5	Composite Remaining Life	67.2
Net Salvage	0%	Depreciation Rate	1.24%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 6,299,021	0.7280	\$ 4,585,579	\$ 4,694,200	\$ 1,604,821	21.8	\$ 73,746
1960	\$ 33,768	0.7044	\$ 23,786	\$ 24,350	\$ 9,419	23.6	\$ 398
1961	\$ 1,165,702	0.6924	\$ 807,112	\$ 826,231	\$ 339,471	24.6	\$ 13,794
1962	\$ 720,444	0.6803	\$ 490,093	\$ 501,702	\$ 218,742	25.6	\$ 8,552
1963	\$ 160,140	0.6681	\$ 106,981	\$ 109,516	\$ 50,624	26.6	\$ 1,906
1964	\$ 174,892	0.6558	\$ 114,687	\$ 117,404	\$ 57,488	27.5	\$ 2,087
1965	\$ 503,919	0.6434	\$ 324,229	\$ 331,909	\$ 172,010	28.5	\$ 6,030
1966	\$ 4,195,996	0.6310	\$ 2,647,784	\$ 2,710,503	\$ 1,485,493	29.5	\$ 50,325
1967	\$ 541,017	0.6186	\$ 334,675	\$ 342,603	\$ 198,415	30.5	\$ 6,503
1968	\$ 471,636	0.6062	\$ 285,885	\$ 292,657	\$ 178,980	31.5	\$ 5,681
1969	\$ 2,513	0.5937	\$ 1,492	\$ 1,527	\$ 986	32.5	\$ 30
1970	\$ 172,427	0.5812	\$ 100,217	\$ 102,591	\$ 69,836	33.5	\$ 2,084
1971	\$ 1,513,641	0.5687	\$ 860,851	\$ 881,242	\$ 632,399	34.5	\$ 18,329
1972	\$ 525,431	0.5562	\$ 292,265	\$ 299,188	\$ 226,244	35.5	\$ 6,373
1973	\$ 414,473	0.5437	\$ 225,367	\$ 230,705	\$ 183,768	36.5	\$ 5,035
1974	\$ 544,497	0.5312	\$ 289,262	\$ 296,114	\$ 248,383	37.5	\$ 6,623
1976	\$ 417,046	0.5062	\$ 211,129	\$ 216,131	\$ 200,915	39.5	\$ 5,086
1977	\$ 10,788	0.4937	\$ 5,326	\$ 5,453	\$ 5,335	40.5	\$ 132
1978	\$ 1,025	0.4812	\$ 493	\$ 505	\$ 520	41.5	\$ 13
1980	\$ 1,512,564	0.4562	\$ 690,107	\$ 706,454	\$ 806,110	43.5	\$ 18,531
1984	\$ 764,737	0.4062	\$ 310,674	\$ 318,033	\$ 446,704	47.5	\$ 9,404
1986	\$ 2,030,734	0.3812	\$ 774,217	\$ 792,556	\$ 1,238,178	49.5	\$ 25,014
1988	\$ 186,408	0.3562	\$ 66,408	\$ 67,981	\$ 118,427	51.5	\$ 2,300
1989	\$ 1,562	0.3437	\$ 537	\$ 550	\$ 1,012	52.5	\$ 19
1997	\$ 128,718	0.2437	\$ 31,375	\$ 32,118	\$ 96,600	60.5	\$ 1,597
1998	\$ 43,629	0.2312	\$ 10,089	\$ 10,328	\$ 33,301	61.5	\$ 541
2000	\$ 79,273	0.2062	\$ 16,350	\$ 16,737	\$ 62,536	63.5	\$ 985
2001	\$ 37,397	0.1937	\$ 7,246	\$ 7,417	\$ 29,980	64.5	\$ 465
2002	\$ 675,284	0.1812	\$ 122,395	\$ 125,294	\$ 549,990	65.5	\$ 8,397
2003	\$ 565,430	0.1687	\$ 95,416	\$ 97,676	\$ 467,753	66.5	\$ 7,034
2004	\$ 1,156,828	0.1562	\$ 180,754	\$ 185,036	\$ 971,792	67.5	\$ 14,397
2005	\$ 1,574,749	0.1437	\$ 226,370	\$ 231,732	\$ 1,343,017	68.5	\$ 19,606
2006	\$ 770,938	0.1312	\$ 101,185	\$ 103,582	\$ 667,356	69.5	\$ 9,602
2007	\$ 116,068	0.1187	\$ 13,783	\$ 14,109	\$ 101,958	70.5	\$ 1,446
2008	\$ 138,080	0.1062	\$ 14,671	\$ 15,018	\$ 123,061	71.5	\$ 1,721
2009	\$ 1,213,569	0.0937	\$ 113,772	\$ 116,467	\$ 1,097,102	72.5	\$ 15,132
2010	\$ 18,391,538	0.0812	\$ 1,494,307	\$ 1,529,704	\$ 16,861,834	73.5	\$ 229,413
2011	\$ 3,114,276	0.0687	\$ 214,106	\$ 219,177	\$ 2,895,099	74.5	\$ 38,860
2012	\$ 14,340,372	0.0562	\$ 806,642	\$ 825,749	\$ 13,514,623	75.5	\$ 179,002
2013	\$ 14,464,000	0.0437	\$ 632,796	\$ 647,785	\$ 13,816,215	76.5	\$ 180,604
2014	\$ 31,133,161	0.0312	\$ 972,902	\$ 995,948	\$ 30,137,213	77.5	\$ 388,867
2015	\$ 1,391,909	0.0187	\$ 26,098	\$ 26,716	\$ 1,365,193	78.5	\$ 17,391
2016	\$ 1,608,900	0.0062	\$ 10,055	\$ 10,293	\$ 1,598,606	79.5	\$ 20,108
Total	\$ 113,308,500		\$ 18,639,466	\$ 19,080,992	\$ 94,227,508	67.2	\$ 1,403,165

Account 352 - Structures and Improvements

Account Description

This account is for Transmission Structures and Improvements. Per the FERC Uniform System of Accounts, "This account shall include the cost in place of structures and improvements used in connection with transmission operations." This includes the cost of all buildings and facilities to house, support, or safeguard property or persons, including all fixtures permanently attached to and made a part of buildings, and improvements of a permanent character on or to land, in connection with transmission operations.

Discussion

The currently approved curve of 65-R4 no longer produces an acceptable fit. The best fit curve is 120-S1.5; however OG&E's proposal to move to the 65-S4 is reasonable.

Account 352 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
S1.5	120	39.63
S1	139	40.96
L2	128	41.83
L2.5	112	42.10
S2	103	45.87
R3	105	47.70
L3	97	50.49
L1.5	162	53.84
S2.5	94	55.47
S0.5	177	60.16
R4	83	62.11
L1	198	65.91
S0	225	70.52
R2.5	134	75.63
L0.5	282	88.32
S3	86	88.52
L0	375	93.19
L4	81	94.77
R2	173	95.28
R1.5	256	116.76
R1	351	124.27
O2	705	128.99
O4	1,419	130.11
R0.5	493	130.14
O3	1,059	132.04
O1	642	132.21
R5	70	183.21
S4	74	186.25
L5	71	202.01
S5	68	291.87
S6	64	379.42
SQ	1,419	526.99

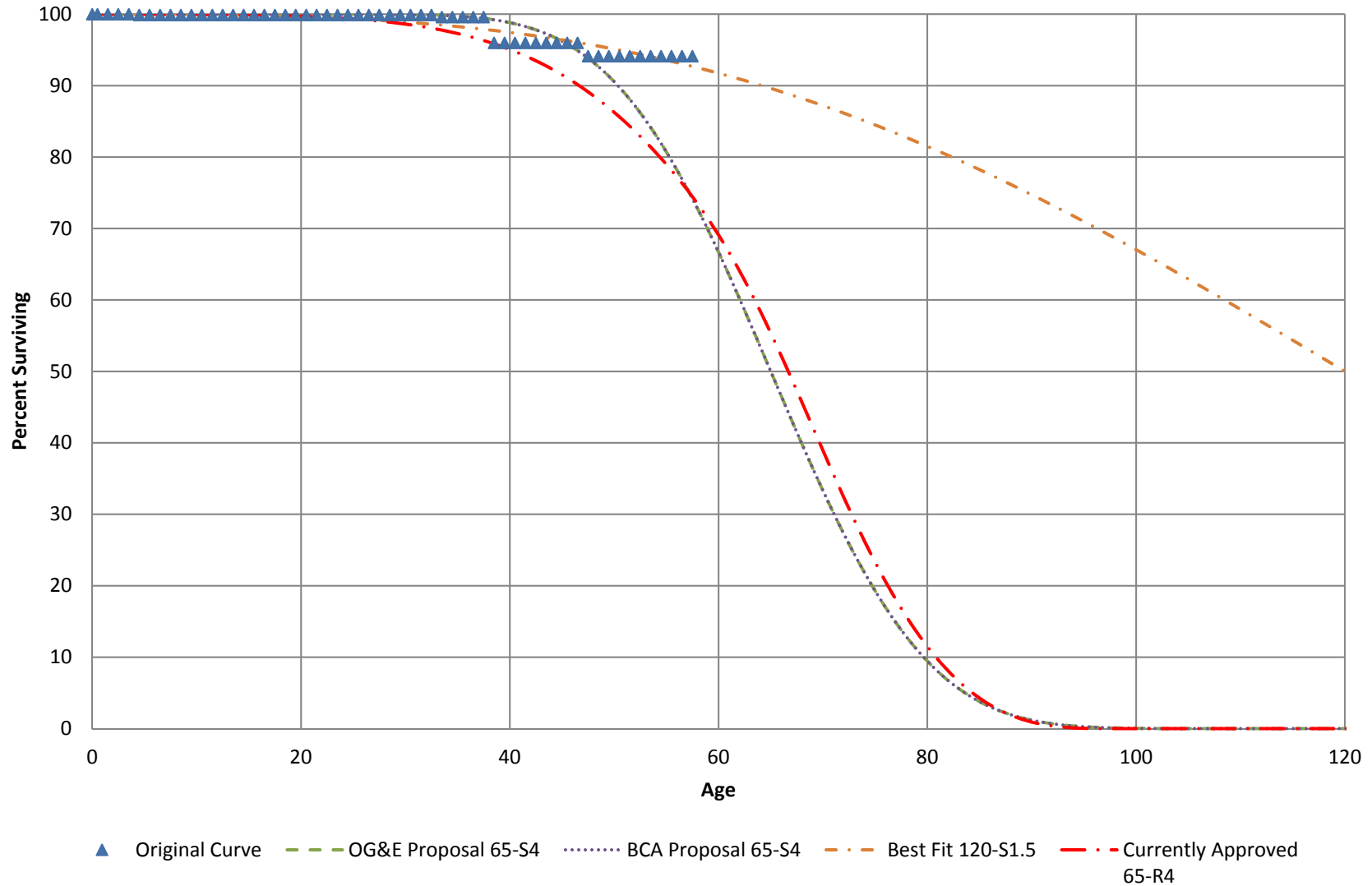
Currently Approved 65-R4	1877.62
OG&E Proposal 65-S4	1325.30
BCA Proposal 65-S4	1325.30

Account 352.0 - Structures and Improvements

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 352
Survivor Curve 65-S4
Net Salvage -5%

Total Annual Accrual 106,994
Composite Remaining Life 52.4
Depreciation Rate 1.60%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 121,877	0.8164	\$ 104,477	\$ 107,224	\$ 20,747	11.9	\$ 1,739
1959	\$ 8,156	0.8085	\$ 6,923	\$ 7,105	\$ 1,458	12.4	\$ 117
1963	\$ 22,045	0.7731	\$ 17,896	\$ 18,366	\$ 4,781	14.7	\$ 324
1964	\$ 46,013	0.7633	\$ 36,880	\$ 37,849	\$ 10,465	15.4	\$ 680
1967	\$ 5,148	0.7316	\$ 3,955	\$ 4,059	\$ 1,347	17.4	\$ 77
1968	\$ 12,397	0.7203	\$ 9,376	\$ 9,623	\$ 3,394	18.2	\$ 187
1969	\$ 45,627	0.7086	\$ 33,948	\$ 34,840	\$ 13,068	18.9	\$ 690
1972	\$ 211,193	0.6713	\$ 148,862	\$ 152,776	\$ 68,977	21.4	\$ 3,228
1973	\$ 5,073	0.6582	\$ 3,506	\$ 3,598	\$ 1,728	22.2	\$ 78
1974	\$ 79,521	0.6448	\$ 53,840	\$ 55,256	\$ 28,242	23.1	\$ 1,223
1976	\$ 332,236	0.6172	\$ 215,314	\$ 220,975	\$ 127,873	24.9	\$ 5,139
1977	\$ 58,495	0.6031	\$ 37,039	\$ 38,013	\$ 23,406	25.8	\$ 907
1978	\$ 1,141	0.5887	\$ 705	\$ 724	\$ 474	26.7	\$ 18
1982	\$ 14,850	0.5296	\$ 8,258	\$ 8,475	\$ 7,117	30.6	\$ 233
1984	\$ 9,965	0.4994	\$ 5,226	\$ 5,363	\$ 5,101	32.5	\$ 157
1987	\$ 48,131	0.4537	\$ 22,927	\$ 23,530	\$ 27,008	35.5	\$ 761
1990	\$ 40,823	0.4076	\$ 17,474	\$ 17,933	\$ 24,931	38.5	\$ 648
1993	\$ 20,089	0.3615	\$ 7,626	\$ 7,827	\$ 13,267	41.5	\$ 320
1996	\$ 13,181	0.3154	\$ 4,365	\$ 4,480	\$ 9,360	44.5	\$ 210
1998	\$ 1,840	0.2846	\$ 550	\$ 564	\$ 1,368	46.5	\$ 29
2001	\$ 4,816	0.2385	\$ 1,206	\$ 1,238	\$ 3,819	49.5	\$ 77
2004	\$ 6,226	0.1923	\$ 1,257	\$ 1,290	\$ 5,247	52.5	\$ 100
2005	\$ 34,508	0.1769	\$ 6,411	\$ 6,579	\$ 29,655	53.5	\$ 554
2006	\$ 2,320,254	0.1615	\$ 393,551	\$ 403,898	\$ 2,032,369	54.5	\$ 37,291
2008	\$ 65,539	0.1308	\$ 8,999	\$ 9,236	\$ 59,580	56.5	\$ 1,055
2009	\$ 293,271	0.1154	\$ 35,531	\$ 36,465	\$ 271,469	57.5	\$ 4,721
2010	\$ 966,527	0.1000	\$ 101,485	\$ 104,153	\$ 910,699	58.5	\$ 15,568
2011	\$ 625,105	0.0846	\$ 55,538	\$ 56,998	\$ 599,362	59.5	\$ 10,073
2012	\$ 209,862	0.0692	\$ 15,255	\$ 15,656	\$ 204,698	60.5	\$ 3,383
2013	\$ 135,717	0.0538	\$ 7,673	\$ 7,875	\$ 134,628	61.5	\$ 2,189
2014	\$ 740,055	0.0385	\$ 29,887	\$ 30,673	\$ 746,385	62.5	\$ 11,942
2015	\$ 46,281	0.0231	\$ 1,121	\$ 1,151	\$ 47,444	63.5	\$ 747
2016	\$ 156,547	0.0077	\$ 1,264	\$ 1,298	\$ 163,076	64.5	\$ 2,528
Total	\$ 6,702,508		\$ 1,398,326	\$ 1,435,089	\$ 5,602,545	52.4	\$ 106,994

Account 353 - Station Equipment

Account Description

This account is for Station Equipment. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of transforming, conversion, and switching equipment used for the purpose of changing the characteristics of electricity in connection with its transmission or for controlling transmission circuits." This includes much of the equipment located within the fence at a transmission substation, including busses, conduit, control equipment, transformers, switching equipment, insulators, general station equipment, etc.

Discussion

The currently approved curve of 63-R2 no longer produces an acceptable fit to the data. The best fit curve is 59-R1.5. OG&E's proposal is for the 57-R2. The R1.5 shape provides a better fit to the data compared to the R2 between approximately 10-30 years. I recommend moving to the 58-R1.5, which produces nearly the same SSD as the best fit and produces a superior fit to OG&E's proposal.

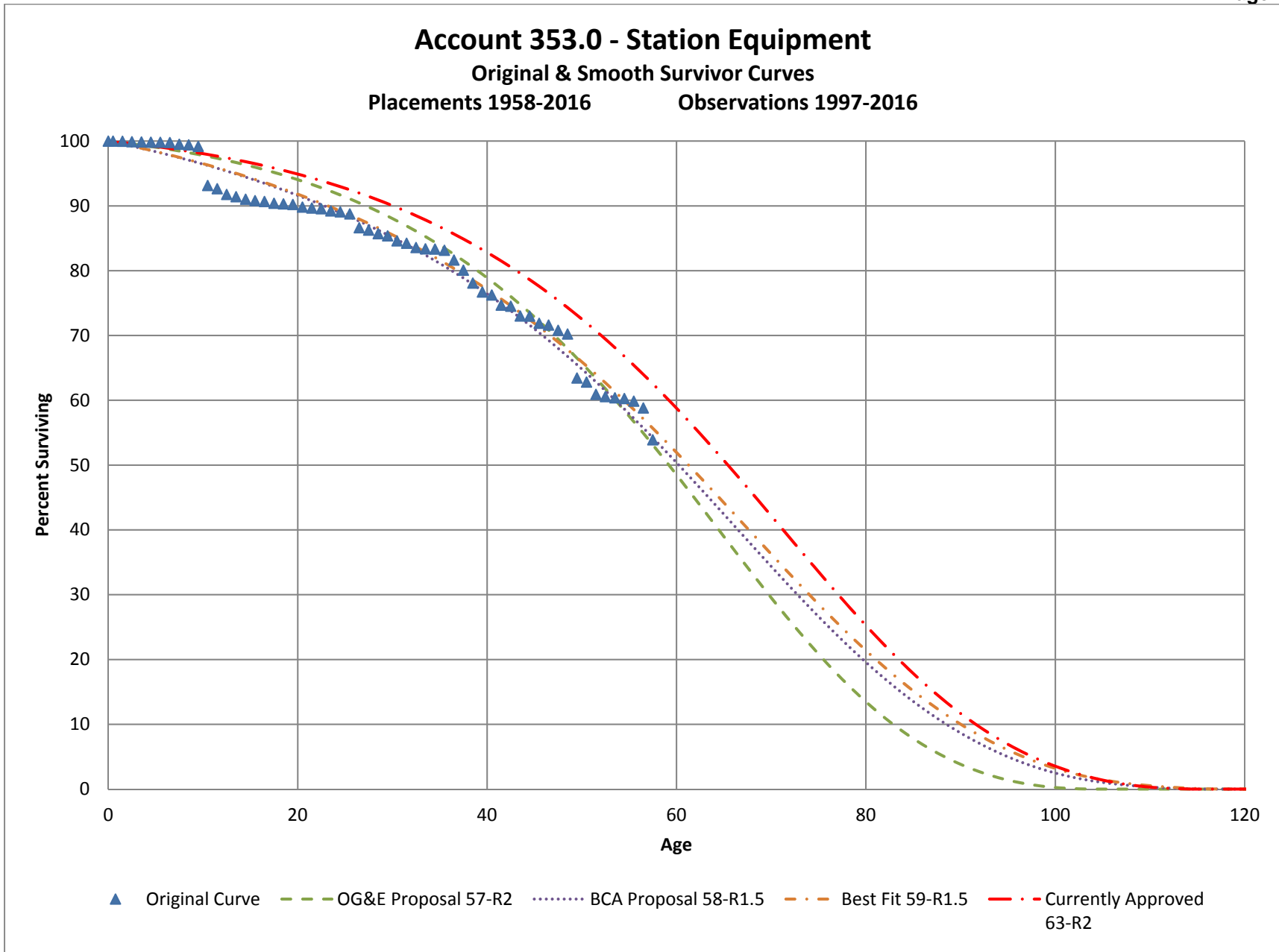
Account 353 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
R1.5	59	186.59
R1	62	245.17
S0	65	278.65
L0.5	73	293.92
S0.5	62	390.87
L1	69	408.47
L0	80	418.55
R2	56	456.85
R0.5	69	522.96
L1.5	65	638.28
S1	59	783.28
O2	89	794.66
O1	79	803.98
O3	127	931.31
O4	170	995.10
R2.5	55	1,006.47
S1.5	58	1,263.07
L2	62	1,290.18
L2.5	60	1,904.90
R3	54	1,968.89
S2	56	2,061.94
S2.5	56	2,836.47
L3	58	3,007.83
S3	55	3,921.41
R4	54	4,367.16
L4	56	5,404.05
S4	54	7,003.13
L5	55	8,679.41
R5	54	8,695.39
S5	54	10,693.50
S6	55	14,768.04
SQ	170	26,615.41

Currently Approved 63-R2 1621.99

OG&E Proposal 57-R2 469.25

BCA Proposal 58-R1.5 196.15



Calculation of Annual Accrual and Depreciation Rate

Account	353	Total Annual Accrual	14,886,729
Survivor Curve	58-R1.5	Composite Remaining Life	49.0
Net Salvage	-30%	Depreciation Rate	2.23%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 15,706,864	0.6825	\$ 13,936,513	\$ 14,208,830	\$ 6,210,092	18.4	\$ 337,261
1959	\$ 995,398	0.6744	\$ 872,730	\$ 889,783	\$ 404,234	18.9	\$ 21,408
1960	\$ 619,901	0.6662	\$ 536,856	\$ 547,346	\$ 258,525	19.4	\$ 13,353
1961	\$ 610,260	0.6578	\$ 521,837	\$ 532,034	\$ 261,305	19.8	\$ 13,165
1962	\$ 356,967	0.6492	\$ 301,273	\$ 307,160	\$ 156,897	20.3	\$ 7,712
1963	\$ 319,572	0.6405	\$ 266,088	\$ 271,287	\$ 144,156	20.9	\$ 6,913
1964	\$ 3,380,164	0.6316	\$ 2,775,457	\$ 2,829,689	\$ 1,564,524	21.4	\$ 73,224
1965	\$ 424,333	0.6226	\$ 343,442	\$ 350,153	\$ 201,480	21.9	\$ 9,204
1966	\$ 3,646,675	0.6134	\$ 2,907,997	\$ 2,964,819	\$ 1,775,858	22.4	\$ 79,202
1967	\$ 4,349,793	0.6041	\$ 3,415,894	\$ 3,482,640	\$ 2,172,090	23.0	\$ 94,589
1968	\$ 3,703,824	0.5946	\$ 2,862,959	\$ 2,918,901	\$ 1,896,070	23.5	\$ 80,638
1969	\$ 1,070,828	0.5850	\$ 814,323	\$ 830,234	\$ 561,842	24.1	\$ 23,340
1970	\$ 2,383,842	0.5752	\$ 1,782,515	\$ 1,817,345	\$ 1,281,649	24.6	\$ 52,017
1971	\$ 720,123	0.5653	\$ 529,180	\$ 539,520	\$ 396,640	25.2	\$ 15,731
1972	\$ 8,529,319	0.5552	\$ 6,156,165	\$ 6,276,456	\$ 4,811,658	25.8	\$ 186,512
1973	\$ 3,147,563	0.5450	\$ 2,230,070	\$ 2,273,645	\$ 1,818,187	26.4	\$ 68,898
1974	\$ 4,427,263	0.5347	\$ 3,077,175	\$ 3,137,303	\$ 2,618,138	27.0	\$ 97,004
1975	\$ 2,866,808	0.5242	\$ 1,953,516	\$ 1,991,687	\$ 1,735,163	27.6	\$ 62,873
1976	\$ 10,708,422	0.5136	\$ 7,149,276	\$ 7,288,972	\$ 6,631,977	28.2	\$ 235,065
1977	\$ 3,317,330	0.5028	\$ 2,168,416	\$ 2,210,787	\$ 2,101,742	28.8	\$ 72,885
1978	\$ 1,389,021	0.4919	\$ 888,305	\$ 905,663	\$ 900,064	29.5	\$ 30,544
1979	\$ 868,592	0.4809	\$ 543,058	\$ 553,669	\$ 575,500	30.1	\$ 19,116
1980	\$ 2,543,064	0.4698	\$ 1,553,198	\$ 1,583,547	\$ 1,722,436	30.8	\$ 56,013
1981	\$ 1,006,340	0.4586	\$ 599,911	\$ 611,633	\$ 696,609	31.4	\$ 22,183
1982	\$ 286,881	0.4472	\$ 166,778	\$ 170,037	\$ 202,908	32.1	\$ 6,328
1983	\$ 320,898	0.4357	\$ 181,765	\$ 185,316	\$ 231,852	32.7	\$ 7,084
1984	\$ 4,221,152	0.4241	\$ 2,327,345	\$ 2,372,821	\$ 3,114,677	33.4	\$ 93,251
1985	\$ 4,889,062	0.4124	\$ 2,621,150	\$ 2,672,367	\$ 3,683,414	34.1	\$ 108,080
1986	\$ 990,500	0.4006	\$ 515,816	\$ 525,895	\$ 761,755	34.8	\$ 21,911
1987	\$ 877,081	0.3887	\$ 443,162	\$ 451,821	\$ 688,384	35.5	\$ 19,414
1988	\$ 8,872,142	0.3766	\$ 4,344,132	\$ 4,429,016	\$ 7,104,769	36.2	\$ 196,511
1989	\$ 8,098,836	0.3645	\$ 3,837,813	\$ 3,912,803	\$ 6,615,684	36.9	\$ 179,491
1990	\$ 5,437,623	0.3523	\$ 2,490,357	\$ 2,539,019	\$ 4,529,891	37.6	\$ 120,582
1991	\$ 1,543,688	0.3400	\$ 682,284	\$ 695,616	\$ 1,311,178	38.3	\$ 34,252
1992	\$ 4,146,289	0.3276	\$ 1,765,702	\$ 1,800,204	\$ 3,589,972	39.0	\$ 92,049
1993	\$ 2,667,410	0.3151	\$ 1,092,590	\$ 1,113,939	\$ 2,353,694	39.7	\$ 59,249
1994	\$ 2,941,893	0.3025	\$ 1,156,918	\$ 1,179,524	\$ 2,644,937	40.5	\$ 65,380
1995	\$ 6,368,096	0.2898	\$ 2,399,485	\$ 2,446,370	\$ 5,832,155	41.2	\$ 141,595
1996	\$ 7,007,488	0.2771	\$ 2,524,288	\$ 2,573,612	\$ 6,536,123	41.9	\$ 155,888
1997	\$ 581,319	0.2643	\$ 199,718	\$ 203,620	\$ 552,095	42.7	\$ 12,938
1998	\$ 1,501,772	0.2514	\$ 490,774	\$ 500,364	\$ 1,451,939	43.4	\$ 33,440
1999	\$ 1,948,826	0.2384	\$ 604,005	\$ 615,807	\$ 1,917,667	44.2	\$ 43,413
2000	\$ 2,243,970	0.2254	\$ 657,422	\$ 670,268	\$ 2,246,893	44.9	\$ 50,010
2001	\$ 1,032,814	0.2122	\$ 284,978	\$ 290,546	\$ 1,052,112	45.7	\$ 23,027
2002	\$ 1,437,817	0.1991	\$ 372,086	\$ 379,357	\$ 1,489,806	46.5	\$ 32,070
2003	\$ 9,330,845	0.1858	\$ 2,253,817	\$ 2,297,856	\$ 9,832,242	47.2	\$ 208,207
2004	\$ 8,007,907	0.1725	\$ 1,795,502	\$ 1,830,586	\$ 8,579,693	48.0	\$ 178,757
2005	\$ 29,909,072	0.1591	\$ 6,185,183	\$ 6,306,041	\$ 32,575,752	48.8	\$ 667,898
2006	\$ 15,302,813	0.1456	\$ 2,896,671	\$ 2,953,271	\$ 16,940,386	49.6	\$ 341,852
2007	\$ 15,625,357	0.1321	\$ 2,682,636	\$ 2,735,055	\$ 17,577,909	50.3	\$ 349,182
2008	\$ 37,328,324	0.1185	\$ 5,748,280	\$ 5,860,601	\$ 42,666,220	51.1	\$ 834,473
2009	\$ 26,459,310	0.1048	\$ 3,604,106	\$ 3,674,530	\$ 30,722,573	51.9	\$ 591,697
2010	\$ 42,555,529	0.0910	\$ 5,035,906	\$ 5,134,307	\$ 50,187,880	52.7	\$ 951,964
2011	\$ 50,932,439	0.0772	\$ 5,112,186	\$ 5,212,077	\$ 61,000,094	53.5	\$ 1,139,723
2012	\$ 62,977,313	0.0633	\$ 5,184,320	\$ 5,285,621	\$ 76,584,886	54.3	\$ 1,409,696
2013	\$ 41,694,213	0.0494	\$ 2,675,993	\$ 2,728,282	\$ 51,474,195	55.1	\$ 933,577
2014	\$ 91,382,414	0.0353	\$ 4,198,632	\$ 4,280,672	\$ 114,516,466	56.0	\$ 2,046,760
2015	\$ 36,632,118	0.0212	\$ 1,011,957	\$ 1,031,730	\$ 46,590,023	56.8	\$ 820,716
2016	\$ 55,215,506	0.0071	\$ 509,013	\$ 518,959	\$ 71,261,199	57.6	\$ 1,237,416
Total	\$ 667,860,982		\$ 136,238,925	\$ 138,901,014	\$ 729,318,262	49.0	\$ 14,886,729

Account 353.1 - Station Equipment - Step Up Transformers

Account Description

This account is for Step Up Transformers for Transmission. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of transforming, conversion, and switching equipment used for the purpose of changing the characteristics of electricity in connection with its transmission or for controlling transmission circuits."

Discussion

The currently approved curve of 45-R2 no longer produces an acceptable fit, with an SSD of 6,198. The best fit curve is 61-L0; however OG&E's proposal to move to the 50-R1.5 is reasonable.

Account 353.1 Fitting Analysis Results

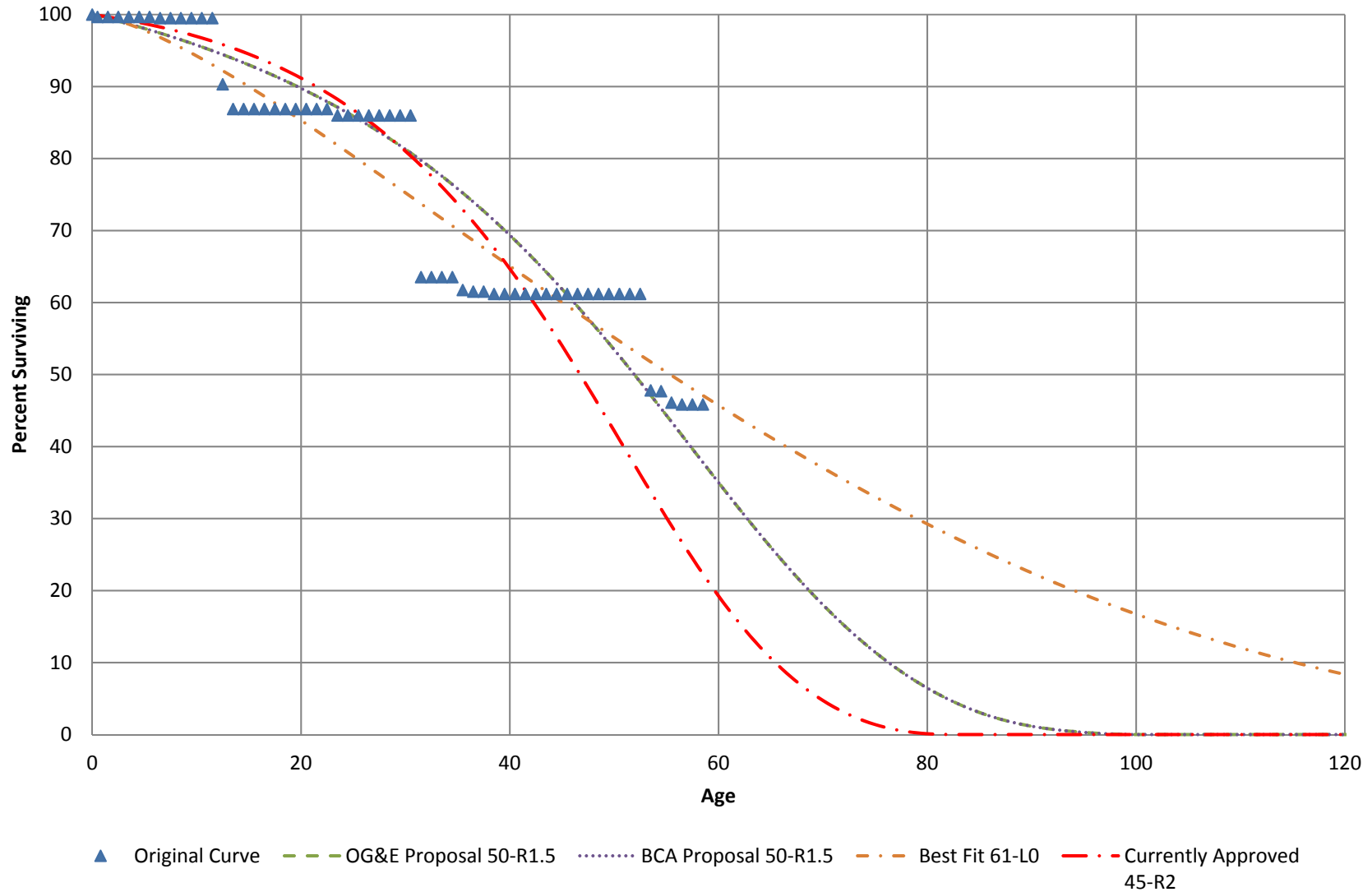
Iowa Curve	Average Service Life	SSD
L0	61	1,553.51
L0.5	58	1,560.66
R0.5	54	1,741.23
S0	53	1,782.54
R1	51	1,871.26
L1	56	1,901.18
O2	65	1,983.46
O1	58	1,993.84
O3	90	2,252.14
O4	118	2,410.64
S0.5	52	2,420.56
R1.5	50	2,537.90
L1.5	54	2,828.96
S1	51	3,482.80
R2	50	3,767.49
L2	53	4,333.66
S1.5	51	4,920.74
R2.5	50	5,613.66
L2.5	52	6,216.10
S2	50	6,794.73
R3	50	8,019.68
L3	52	8,773.60
S2.5	50	8,853.39
S3	50	11,301.67
R4	51	13,523.51
L4	52	14,717.98
S4	51	18,205.37
L5	52	21,389.99
R5	52	22,041.56
S5	53	25,215.80
S6	54	31,532.32
SQ	118	52,870.27

Currently Approved 45-R2 6,197.51

OG&E Proposal 50-R1.5 2,542.17

BCA Proposal 50-R1.5 2,542.17

Account 353.1 - Station Equipment - Step Up Transformers
Original & Smooth Survivor Curves
Placements 1955-2014 Observations 1999-2016



Calculation of Annual Accrual and Depreciation Rate

Account 353.1
Survivor Curve 50-R1.5
Net Salvage -10%

Total Annual Accrual 1,203,038
Composite Remaining Life 38.3
Depreciation Rate 2.27%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1955	\$ 312,370	0.7731	\$ 265,641	\$ 245,899	\$ 97,707	11.3	\$ 8,612
1957	\$ 278,266	0.7585	\$ 232,159	\$ 214,906	\$ 91,187	12.1	\$ 7,551
1958	\$ 152,475	0.7509	\$ 125,939	\$ 116,580	\$ 51,143	12.5	\$ 4,106
1962	\$ 340,000	0.7186	\$ 268,772	\$ 248,797	\$ 125,203	14.1	\$ 8,900
1965	\$ 118,403	0.6924	\$ 90,174	\$ 83,473	\$ 46,771	15.4	\$ 3,041
1968	\$ 375,101	0.6642	\$ 274,049	\$ 253,682	\$ 158,929	16.8	\$ 9,465
1970	\$ 753,439	0.6444	\$ 534,028	\$ 494,340	\$ 334,443	17.8	\$ 18,808
1972	\$ 728,733	0.6237	\$ 499,951	\$ 462,796	\$ 338,810	18.8	\$ 18,007
1974	\$ 824,216	0.6022	\$ 545,977	\$ 505,401	\$ 401,237	19.9	\$ 20,173
1977	\$ 383,447	0.5685	\$ 239,774	\$ 221,954	\$ 199,838	21.6	\$ 9,262
1978	\$ 1,199,058	0.5568	\$ 734,438	\$ 679,856	\$ 639,108	22.2	\$ 28,843
1980	\$ 1,652,687	0.5330	\$ 968,958	\$ 896,947	\$ 921,008	23.4	\$ 39,443
1984	\$ 1,098,313	0.4832	\$ 583,719	\$ 540,338	\$ 667,807	25.8	\$ 25,842
1988	\$ 940,166	0.4306	\$ 445,347	\$ 412,249	\$ 621,933	28.5	\$ 21,846
1991	\$ 3,362,877	0.3896	\$ 1,441,302	\$ 1,334,187	\$ 2,364,978	30.5	\$ 77,493
2000	\$ 1,750,755	0.2596	\$ 500,036	\$ 462,874	\$ 1,462,956	37.0	\$ 39,520
2001	\$ 3,951,505	0.2446	\$ 1,063,401	\$ 984,371	\$ 3,362,285	37.8	\$ 89,026
2006	\$ 3,696,179	0.1682	\$ 683,861	\$ 633,038	\$ 3,432,759	41.6	\$ 82,538
2007	\$ 1,757,110	0.1526	\$ 294,992	\$ 273,069	\$ 1,659,752	42.4	\$ 39,174
2008	\$ 5,142,958	0.1370	\$ 774,772	\$ 717,193	\$ 4,940,062	43.2	\$ 114,479
2009	\$ 4,664,518	0.1212	\$ 621,809	\$ 575,597	\$ 4,555,373	43.9	\$ 103,671
2010	\$ 6,873,503	0.1053	\$ 796,377	\$ 737,191	\$ 6,823,662	44.7	\$ 152,540
2011	\$ 10,952,034	0.0894	\$ 1,076,747	\$ 996,725	\$ 11,050,513	45.5	\$ 242,702
2012	\$ 1,172,589	0.0733	\$ 94,587	\$ 87,558	\$ 1,202,290	46.3	\$ 25,949
2013	\$ 318,720	0.0572	\$ 20,052	\$ 18,562	\$ 332,030	47.1	\$ 7,043
2014	\$ 226,779	0.0410	\$ 10,219	\$ 9,459	\$ 239,998	48.0	\$ 5,005
Total	\$ 53,026,203		\$ 13,187,084	\$ 12,207,041	\$ 46,121,782	38.3	\$ 1,203,038

Account 354 - Towers And Fixtures

Account Description

This account is for transmission towers and fixtures. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of towers and appurtenant fixtures used for supporting overhead transmission conductors." This includes anchors, guys, braces, brackets, crossarms, foundations, insulator pins and suspension bolts, railings, towers, etc.

Discussion

The currently approved curve is 75-R4. OG&E proposes no change. The best fit is the 151-L2. Although the data suggests that the life should be longer, keeping the currently approved curve is recommended as there is too little retirement history to recommend a change.

Account 354 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L2	151	17.12
S1	166	17.33
S1.5	140	17.41
L2.5	130	17.67
L3	108	21.06
S2	116	21.58
R3	126	21.77
L1.5	201	23.50
S0.5	226	24.34
S2.5	104	25.20
R4	91	26.46
S0	296	27.34
L1	256	29.00
R2.5	178	34.21
L0.5	393	35.28
L0	529	35.98
R2	249	40.58
S3	93	40.70
L4	87	45.79
R1.5	395	46.56
O2	1,129	48.31
R1	557	48.35
O4	2,277	49.02
R0.5	796	49.75
O3	1,718	50.01
O1	1,042	50.21
R5	73	78.24
S4	78	80.51
L5	75	90.49
S5	69	118.61
S6	64	146.70
SQ	2,277	192.21

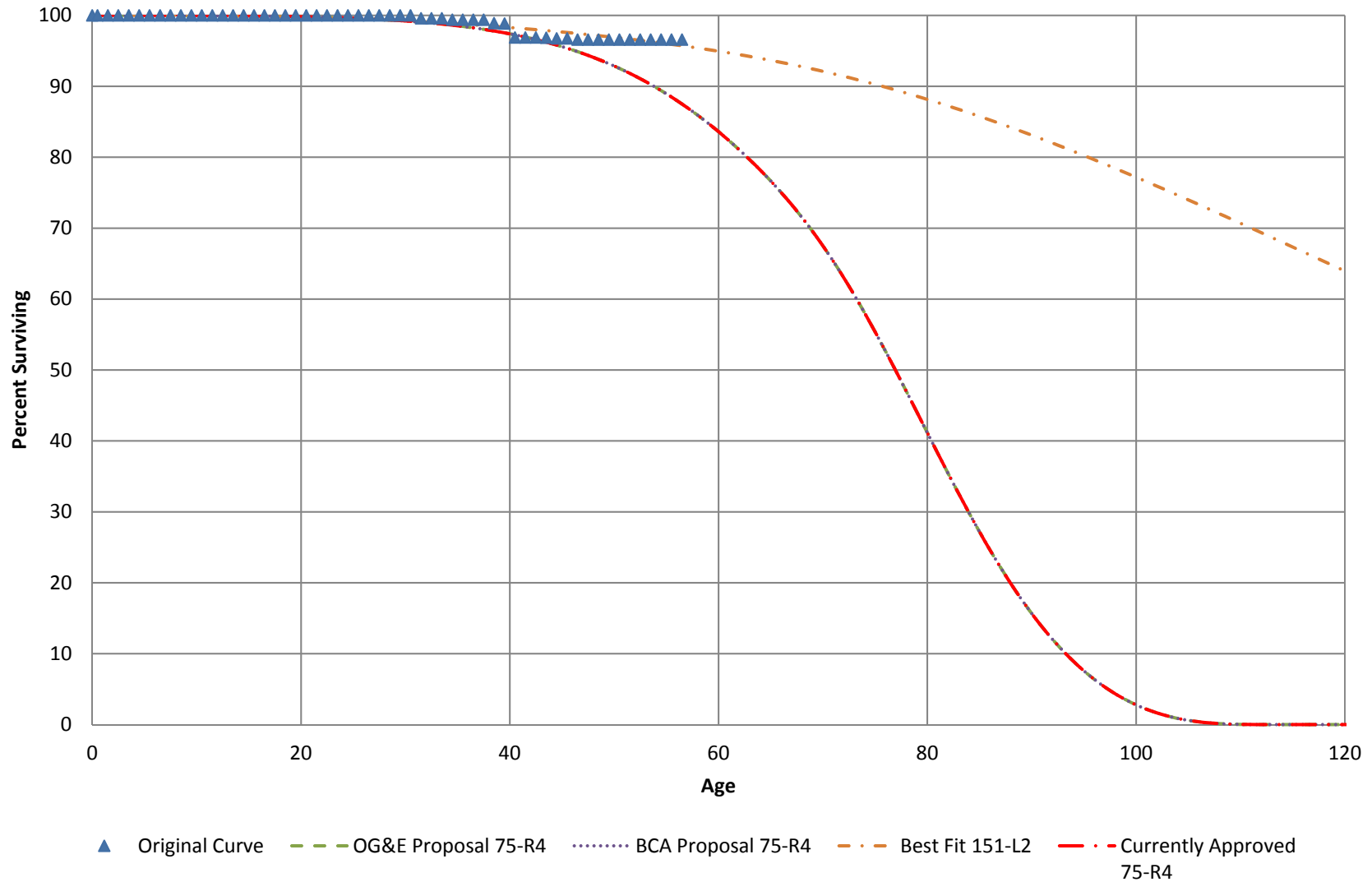
Currently Approved 75-R4	351.97
OG&E Proposal 75-R4	351.97
BCA Proposal 75-R4	351.97

Account 354 - Towers And Fixtures

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	354	Total Annual Accrual	2,630,680
Survivor Curve	75-R4	Composite Remaining Life	59.1
Net Salvage	-25%	Depreciation Rate	1.63%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 998,613	0.7180	\$ 896,196	\$ 946,178	\$ 302,088	21.2	\$ 14,281
1959	\$ 682,216	0.7083	\$ 603,996	\$ 637,682	\$ 215,087	21.9	\$ 9,831
1960	\$ 164,769	0.6985	\$ 143,860	\$ 151,884	\$ 54,078	22.6	\$ 2,391
1961	\$ 133,768	0.6886	\$ 115,135	\$ 121,556	\$ 45,653	23.4	\$ 1,955
1966	\$ 15,199,726	0.6369	\$ 12,100,877	\$ 12,775,769	\$ 6,223,889	27.2	\$ 228,546
1967	\$ 7,877	0.6262	\$ 6,165	\$ 6,509	\$ 3,337	28.0	\$ 119
1969	\$ 6,688	0.6043	\$ 5,052	\$ 5,334	\$ 3,026	29.7	\$ 102
1971	\$ 3,057,715	0.5820	\$ 2,224,316	\$ 2,348,371	\$ 1,473,773	31.4	\$ 47,005
1972	\$ 3,126,383	0.5706	\$ 2,229,865	\$ 2,354,230	\$ 1,553,749	32.2	\$ 48,245
1973	\$ 1,405,457	0.5591	\$ 982,279	\$ 1,037,063	\$ 719,759	33.1	\$ 21,767
1974	\$ 208,733	0.5475	\$ 142,857	\$ 150,824	\$ 110,092	33.9	\$ 3,244
1976	\$ 4,032,490	0.5240	\$ 2,641,343	\$ 2,788,656	\$ 2,251,957	35.7	\$ 63,082
1980	\$ 7,744,570	0.4758	\$ 4,605,829	\$ 4,862,706	\$ 4,818,007	39.3	\$ 122,543
1986	\$ 8,050,819	0.4009	\$ 4,034,839	\$ 4,259,870	\$ 5,803,653	44.9	\$ 129,172
1997	\$ 311,803	0.2586	\$ 100,797	\$ 106,418	\$ 283,336	55.6	\$ 5,096
2000	\$ 319,501	0.2191	\$ 87,512	\$ 92,393	\$ 306,983	58.6	\$ 5,242
2001	\$ 455	0.2059	\$ 117	\$ 124	\$ 445	59.6	\$ 7
2002	\$ 4,198,054	0.1927	\$ 1,011,194	\$ 1,067,590	\$ 4,179,977	60.5	\$ 69,036
2003	\$ 506,748	0.1795	\$ 113,679	\$ 120,019	\$ 513,416	61.5	\$ 8,343
2004	\$ 1,281,008	0.1662	\$ 266,156	\$ 281,000	\$ 1,320,261	62.5	\$ 21,113
2005	\$ 1,398,190	0.1530	\$ 267,330	\$ 282,240	\$ 1,465,498	63.5	\$ 23,068
2006	\$ 3,587	0.1397	\$ 626	\$ 661	\$ 3,823	64.5	\$ 59
2007	\$ 272,301	0.1264	\$ 43,028	\$ 45,427	\$ 294,949	65.5	\$ 4,502
2008	\$ 1,188,098	0.1131	\$ 168,006	\$ 177,376	\$ 1,307,746	66.5	\$ 19,661
2009	\$ 433,177	0.0998	\$ 54,057	\$ 57,072	\$ 484,399	67.5	\$ 7,175
2010	\$ 104,383,754	0.0865	\$ 11,291,111	\$ 11,920,841	\$ 118,558,851	68.5	\$ 1,730,537
2011	\$ 592,511	0.0732	\$ 54,238	\$ 57,263	\$ 683,375	69.5	\$ 9,832
2012	\$ 291,331	0.0599	\$ 21,822	\$ 23,039	\$ 341,124	70.5	\$ 4,838
2013	\$ 178,334	0.0466	\$ 10,390	\$ 10,970	\$ 211,948	71.5	\$ 2,964
2016	\$ 1,616,067	0.0067	\$ 13,446	\$ 14,196	\$ 2,005,888	74.5	\$ 26,924
Total	\$ 161,794,747		\$ 44,236,119	\$ 46,703,265	\$ 155,540,168	59.1	\$ 2,630,680

Account 355 - Poles and Fixtures

Account Description

This account is for Poles and Fixtures. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of transmission line poles, wood, steel, concrete, or other material, together with appurtenant fixtures used for supporting overhead transmission conductors." This includes the poles, brackets, cross arms, foundations, pole steps, anchors, etc. required to create a pole structure capable of supporting overhead transmission lines.

Discussion

The currently approved curve is 65-S0.5, which is no longer a good fit to the data. OG&E's proposal is for the 60-R1. This is too large a decrease. A better fitting curve is the 63-R0.5.

Account 355 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O4	147	361.77
O3	111	367.58
O2	79	394.16
O1	71	396.35
R0.5	63	547.12
L0	73	558.82
R1	59	1,005.27
L0.5	68	1,033.16
S0	61	1,326.01
R1.5	56	1,820.20
L1	64	1,826.87
S0.5	58	2,208.19
L1.5	61	3,020.10
R2	55	3,104.70
S1	57	3,469.59
R2.5	54	4,692.58
L2	60	4,801.98
S1.5	56	4,857.37
L2.5	58	6,369.53
S2	55	6,645.54
R3	54	6,769.93
S2.5	55	8,297.80
L3	57	8,606.45
S3	55	10,311.35
R4	54	11,051.64
L4	56	12,759.16
S4	55	15,191.91
R5	55	17,299.62
L5	55	17,370.96
S5	55	19,855.61
S6	56	24,022.98
SQ	147	33,049.29

Currently Approved 65-S0.5 3,130.03

OG&E Proposal 60-R1 1,039.47

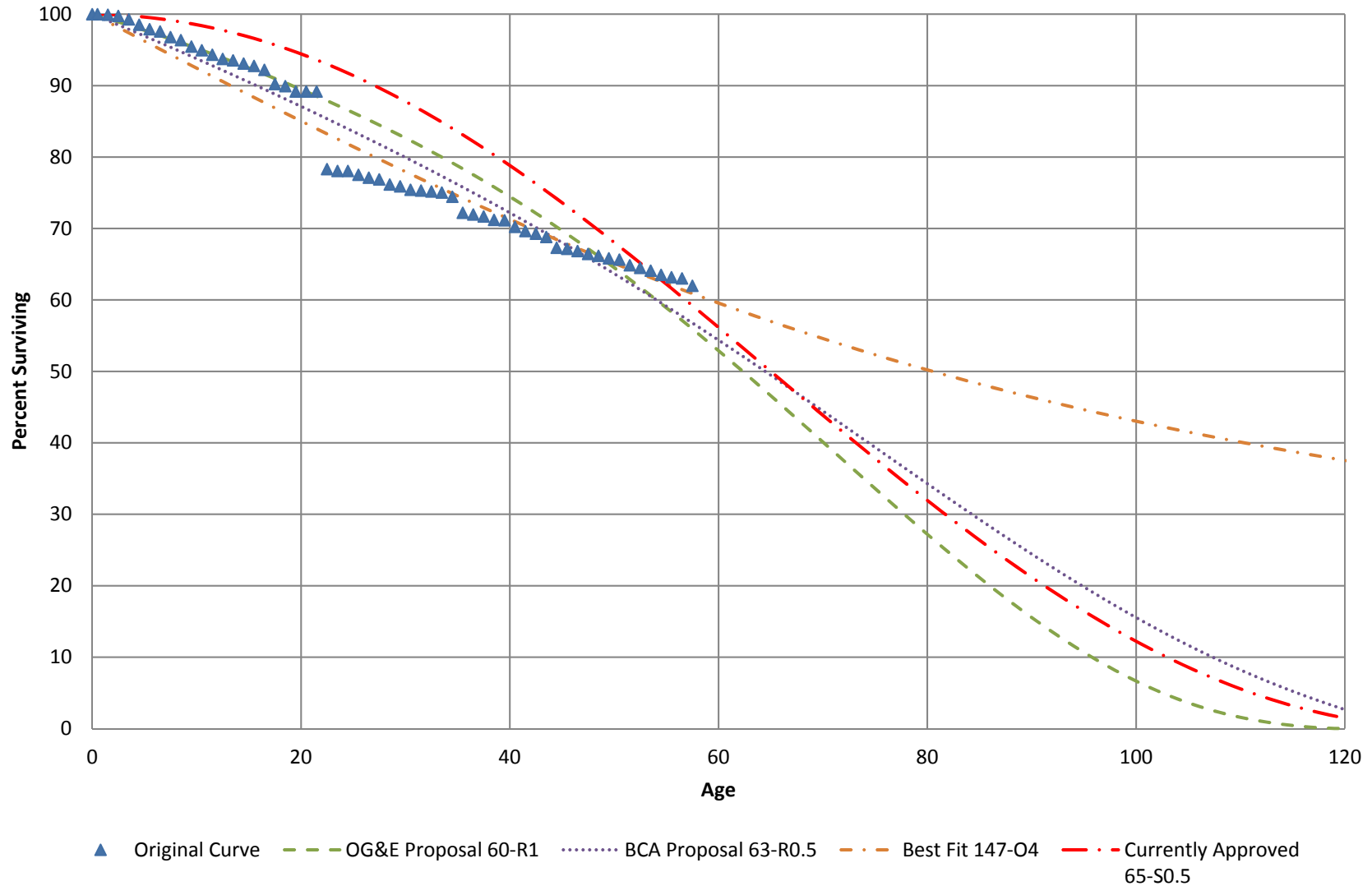
BCA Proposal 63-R0.5 548.47

Account 355 - Poles And Fixtures

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	355	Total Annual Accrual	23,346,181
Survivor Curve	63-R0.5	Composite Remaining Life	58.2
Net Salvage	-70%	Depreciation Rate	2.58%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 35,261,691	0.5334	\$ 31,972,964	\$ 41,844,246	\$ 18,100,628	29.4	\$ 615,720
1959	\$ 222,688	0.5255	\$ 198,926	\$ 260,342	\$ 118,228	29.9	\$ 3,955
1960	\$ 699,076	0.5175	\$ 615,017	\$ 804,897	\$ 383,532	30.4	\$ 12,617
1961	\$ 7,087,890	0.5095	\$ 6,138,991	\$ 8,034,333	\$ 4,015,079	30.9	\$ 129,927
1962	\$ 2,412,421	0.5014	\$ 2,056,312	\$ 2,691,174	\$ 1,409,942	31.4	\$ 44,886
1963	\$ 1,634,717	0.4933	\$ 1,370,800	\$ 1,794,018	\$ 985,000	31.9	\$ 30,854
1964	\$ 1,295,636	0.4851	\$ 1,068,407	\$ 1,398,265	\$ 804,317	32.4	\$ 24,794
1965	\$ 2,232,612	0.4768	\$ 1,809,734	\$ 2,368,468	\$ 1,426,972	33.0	\$ 43,293
1966	\$ 2,074,197	0.4685	\$ 1,652,027	\$ 2,162,071	\$ 1,364,065	33.5	\$ 40,738
1967	\$ 1,804,301	0.4601	\$ 1,411,398	\$ 1,847,151	\$ 1,220,160	34.0	\$ 35,875
1968	\$ 3,513,868	0.4517	\$ 2,698,405	\$ 3,531,506	\$ 2,442,070	34.5	\$ 70,700
1969	\$ 1,549,405	0.4432	\$ 1,167,500	\$ 1,527,952	\$ 1,106,037	35.1	\$ 31,533
1970	\$ 1,212,584	0.4347	\$ 896,117	\$ 1,172,783	\$ 888,609	35.6	\$ 24,952
1971	\$ 3,674,374	0.4261	\$ 2,661,796	\$ 3,483,595	\$ 2,762,840	36.2	\$ 76,419
1972	\$ 4,045,621	0.4175	\$ 2,871,334	\$ 3,757,825	\$ 3,119,730	36.7	\$ 85,011
1973	\$ 4,374,118	0.4088	\$ 3,039,898	\$ 3,978,432	\$ 3,457,569	37.2	\$ 92,833
1974	\$ 5,861,800	0.4001	\$ 3,986,697	\$ 5,217,543	\$ 4,747,517	37.8	\$ 125,610
1975	\$ 286,736	0.3913	\$ 190,731	\$ 249,617	\$ 237,834	38.3	\$ 6,202
1976	\$ 825,884	0.3824	\$ 536,955	\$ 702,734	\$ 701,269	38.9	\$ 18,025
1977	\$ 5,594,439	0.3736	\$ 3,552,800	\$ 4,649,686	\$ 4,860,860	39.5	\$ 123,167
1978	\$ 807,024	0.3646	\$ 500,263	\$ 654,713	\$ 717,228	40.0	\$ 17,918
1979	\$ 35,529	0.3557	\$ 21,482	\$ 28,114	\$ 32,285	40.6	\$ 795
1980	\$ 571,489	0.3467	\$ 336,786	\$ 440,765	\$ 530,765	41.2	\$ 12,895
1982	\$ 161,716	0.3285	\$ 90,312	\$ 118,195	\$ 156,722	42.3	\$ 3,705
1984	\$ 3,163,528	0.3102	\$ 1,668,301	\$ 2,183,370	\$ 3,194,627	43.5	\$ 73,513
1985	\$ 1,110,418	0.3010	\$ 568,220	\$ 743,652	\$ 1,144,058	44.0	\$ 25,980
1986	\$ 231,036	0.2918	\$ 114,598	\$ 149,979	\$ 242,783	44.6	\$ 5,441
1987	\$ 160,433	0.2825	\$ 77,051	\$ 100,840	\$ 171,897	45.2	\$ 3,803
1988	\$ 492,179	0.2732	\$ 228,602	\$ 299,181	\$ 537,524	45.8	\$ 11,740
1989	\$ 773,795	0.2639	\$ 347,143	\$ 454,319	\$ 861,132	46.4	\$ 18,569
1990	\$ 123,727	0.2546	\$ 53,541	\$ 70,071	\$ 140,264	47.0	\$ 2,987
1991	\$ 29,460	0.2452	\$ 12,279	\$ 16,070	\$ 34,012	47.6	\$ 715
1992	\$ 23,443	0.2358	\$ 9,397	\$ 12,298	\$ 27,555	48.1	\$ 572
1993	\$ 48,701	0.2264	\$ 18,742	\$ 24,528	\$ 58,264	48.7	\$ 1,195
1994	\$ 931	0.2169	\$ 343	\$ 449	\$ 1,133	49.3	\$ 23
1995	\$ 86,511	0.2075	\$ 30,515	\$ 39,936	\$ 107,133	49.9	\$ 2,146
1996	\$ 69,996	0.1980	\$ 23,563	\$ 30,838	\$ 88,156	50.5	\$ 1,745
1997	\$ 2,651,824	0.1885	\$ 849,932	\$ 1,112,338	\$ 3,395,763	51.1	\$ 66,424
1998	\$ 3,150,680	0.1790	\$ 958,920	\$ 1,254,976	\$ 4,101,180	51.7	\$ 79,294
1999	\$ 8,109,359	0.1695	\$ 2,336,918	\$ 3,058,414	\$ 10,727,496	52.3	\$ 205,034
2000	\$ 2,807,128	0.1600	\$ 763,455	\$ 999,163	\$ 3,772,955	52.9	\$ 71,294
2001	\$ 4,901,308	0.1504	\$ 1,253,439	\$ 1,640,424	\$ 6,691,799	53.5	\$ 125,027
2002	\$ 25,054,425	0.1409	\$ 5,999,951	\$ 7,852,366	\$ 34,740,156	54.1	\$ 641,847
2003	\$ 5,568,967	0.1313	\$ 1,242,892	\$ 1,626,621	\$ 7,840,623	54.7	\$ 143,262
2004	\$ 5,818,517	0.1217	\$ 1,203,626	\$ 1,575,231	\$ 8,316,248	55.3	\$ 150,292
2005	\$ 8,346,643	0.1121	\$ 1,590,094	\$ 2,081,017	\$ 12,108,277	55.9	\$ 216,451
2006	\$ 11,838,177	0.1024	\$ 2,061,274	\$ 2,697,668	\$ 17,427,233	56.5	\$ 308,189
2007	\$ 10,863,885	0.0928	\$ 1,713,284	\$ 2,242,240	\$ 16,226,364	57.2	\$ 283,898
2008	\$ 17,964,360	0.0831	\$ 2,537,462	\$ 3,320,874	\$ 27,218,538	57.8	\$ 471,191
2009	\$ 23,664,033	0.0734	\$ 2,952,463	\$ 3,864,002	\$ 36,364,855	58.4	\$ 622,938
2010	\$ 20,256,188	0.0637	\$ 2,192,582	\$ 2,869,516	\$ 31,566,003	59.0	\$ 535,120
2011	\$ 27,821,640	0.0539	\$ 2,550,856	\$ 3,338,404	\$ 43,958,384	59.6	\$ 737,529
2012	\$ 131,648,676	0.0442	\$ 9,886,062	\$ 12,938,270	\$ 210,864,480	60.2	\$ 3,501,738
2013	\$ 147,225,693	0.0344	\$ 8,607,239	\$ 11,264,625	\$ 239,019,053	60.8	\$ 3,929,074
2014	\$ 269,146,675	0.0246	\$ 11,250,224	\$ 14,723,600	\$ 442,825,747	61.5	\$ 7,206,165
2015	\$ 23,223,100	0.0148	\$ 582,722	\$ 762,630	\$ 38,716,640	62.1	\$ 623,757
2016	\$ 59,637,135	0.0049	\$ 498,020	\$ 651,778	\$ 100,731,352	62.7	\$ 1,606,803
Total	\$ 903,252,386		\$ 135,029,362	\$ 176,718,113	\$ 1,358,810,943	58.2	\$ 23,346,181

Account 356 - Overhead Conductors And Devices

Account Description

This account is for Overhead Conductors and Devices. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of overhead conductors and devices used for transmission purposes." The items contained within this account include circuit breakers, conductors, ground wires, insulators, lightning arresters, switches, and other line devices.

Discussion

The currently approved curve is 65-R3; OG&E's proposal is to keep the same life, but change the dispersion to a 65-R2.5. Both of these curves produce SSDs in excess of 1,000. The best fit is the 156-L0. The fitting analysis results show that a flatter dispersion is warranted. I agree that the move to an R2.5 is reasonable; however the data supports a greater life than 65 years. The best fitting R2.5 curve is 78 years. I recommend a slight increase from 65 years to 68 years.

Account 356 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L0	156	56.91
R1.5	99	73.78
L0.5	130	73.85
R1	119	81.05
S0	111	85.64
R0.5	150	104.34
O2	207	115.36
O1	186	119.24
O4	411	121.34
O3	305	122.09
R2	86	124.10
S0.5	98	152.92
L1	111	169.58
R2.5	78	237.98
L1.5	98	261.25
S1	88	326.97
S1.5	81	482.38
R3	72	498.76
L2	88	526.62
L2.5	81	677.25
S2	76	789.11
S2.5	72	996.84
L3	76	1,030.17
R4	66	1,160.09
S3	70	1,369.94
L4	68	1,542.92
S4	65	2,179.94
R5	62	2,294.77
L5	64	2,357.15
S5	62	2,933.38
S6	60	3,569.29
SQ	411	4,832.12

Currently Approved 65-R3 1,060.50

OG&E Proposal 65-R2.5 1,586.99

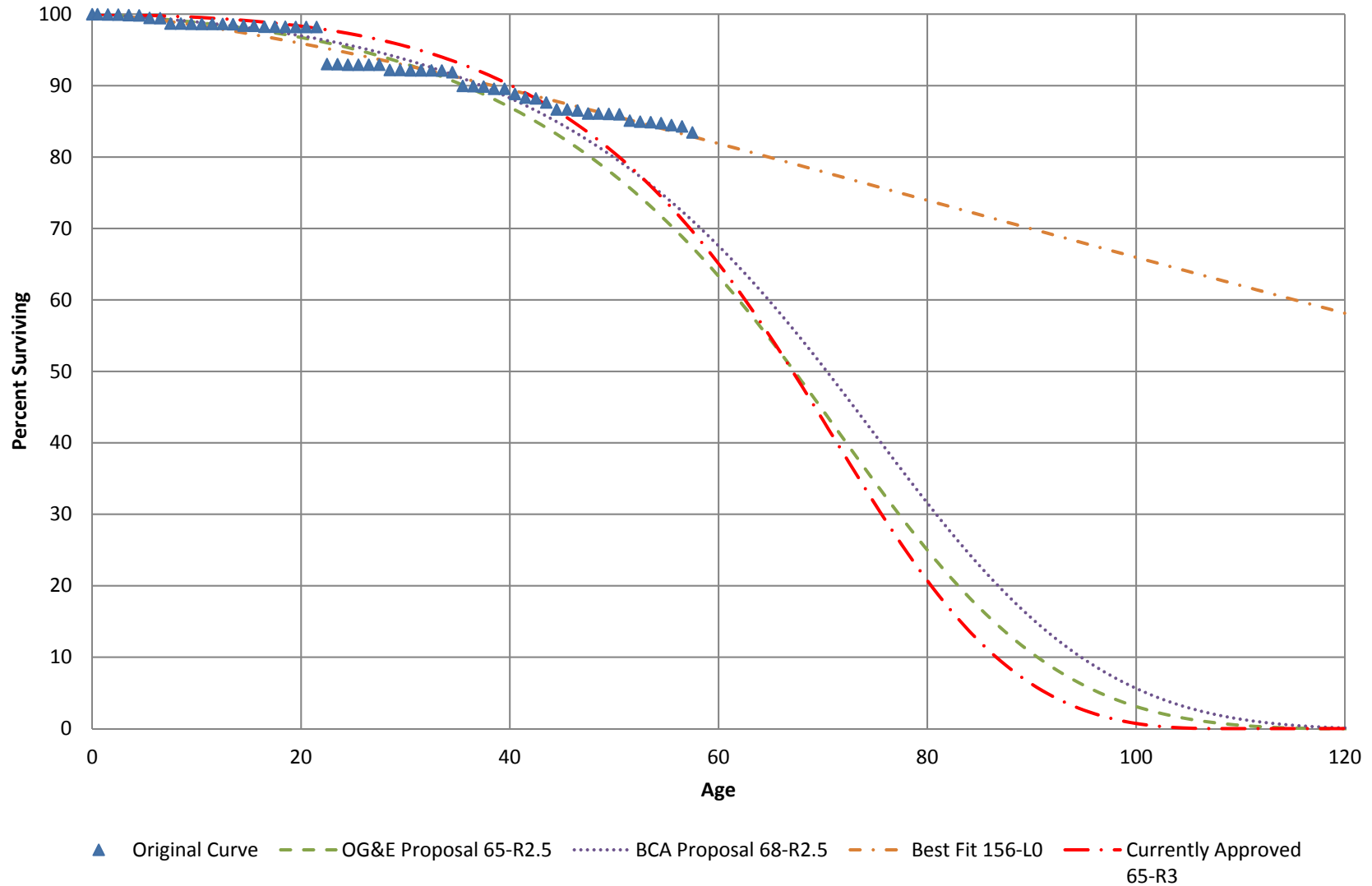
BCA Proposal 68-R2.5 890.27

Account 356.0 - Overhead Conductors And Devices

Original & Smooth Survivor Curves

Placements 1956-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 356
Survivor Curve 68-R2.5
Net Salvage -60%

Total Annual Accrual 13,827,558
Composite Remaining Life 57.5
Depreciation Rate 2.35%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 21,812,566	0.6886	\$ 24,031,070	\$ 24,254,928	\$ 10,645,177	21.2	\$ 502,666
1959	\$ 387,412	0.6800	\$ 421,507	\$ 425,433	\$ 194,425	21.8	\$ 8,935
1960	\$ 480,397	0.6713	\$ 515,982	\$ 520,789	\$ 247,846	22.4	\$ 11,088
1961	\$ 4,536,071	0.6624	\$ 4,807,611	\$ 4,852,396	\$ 2,405,318	23.0	\$ 104,780
1962	\$ 1,957,846	0.6534	\$ 2,046,773	\$ 2,065,840	\$ 1,066,713	23.6	\$ 45,258
1963	\$ 999,666	0.6442	\$ 1,030,377	\$ 1,039,975	\$ 559,491	24.2	\$ 23,125
1964	\$ 859,862	0.6349	\$ 873,444	\$ 881,580	\$ 494,199	24.8	\$ 19,904
1965	\$ 770,180	0.6254	\$ 770,667	\$ 777,846	\$ 454,442	25.5	\$ 17,840
1966	\$ 8,167,555	0.6158	\$ 8,047,051	\$ 8,122,012	\$ 4,946,075	26.1	\$ 189,309
1967	\$ 1,950,002	0.6060	\$ 1,890,805	\$ 1,908,419	\$ 1,211,583	26.8	\$ 45,225
1968	\$ 1,272,192	0.5961	\$ 1,213,442	\$ 1,224,746	\$ 810,762	27.5	\$ 29,522
1969	\$ 1,160,934	0.5861	\$ 1,088,722	\$ 1,098,864	\$ 758,631	28.1	\$ 26,956
1970	\$ 1,349,841	0.5760	\$ 1,243,959	\$ 1,255,547	\$ 904,200	28.8	\$ 31,359
1971	\$ 7,736,732	0.5657	\$ 7,002,818	\$ 7,068,052	\$ 5,310,720	29.5	\$ 179,832
1972	\$ 5,097,575	0.5553	\$ 4,529,209	\$ 4,571,400	\$ 3,584,720	30.2	\$ 118,548
1973	\$ 4,414,294	0.5448	\$ 3,847,945	\$ 3,883,790	\$ 3,179,081	31.0	\$ 102,708
1974	\$ 4,324,378	0.5342	\$ 3,695,979	\$ 3,730,408	\$ 3,188,597	31.7	\$ 100,663
1975	\$ 193,063	0.5234	\$ 161,693	\$ 163,199	\$ 145,702	32.4	\$ 4,496
1976	\$ 2,873,725	0.5126	\$ 2,356,843	\$ 2,378,798	\$ 2,219,161	33.1	\$ 66,955
1977	\$ 6,771,911	0.5016	\$ 5,435,171	\$ 5,485,801	\$ 5,349,257	33.9	\$ 157,845
1978	\$ 500,642	0.4906	\$ 392,945	\$ 396,606	\$ 404,421	34.6	\$ 11,674
1979	\$ 203,886	0.4794	\$ 156,381	\$ 157,838	\$ 168,379	35.4	\$ 4,756
1980	\$ 5,626,446	0.4681	\$ 4,213,930	\$ 4,253,184	\$ 4,749,130	36.2	\$ 131,302
1984	\$ 5,284,419	0.4220	\$ 3,567,706	\$ 3,600,940	\$ 4,854,130	39.3	\$ 123,494
1985	\$ 1,856,569	0.4102	\$ 1,218,445	\$ 1,229,796	\$ 1,740,715	40.1	\$ 43,401
1986	\$ 1,512,231	0.3983	\$ 963,740	\$ 972,718	\$ 1,446,851	40.9	\$ 35,362
1987	\$ 194,506	0.3863	\$ 120,233	\$ 121,353	\$ 189,856	41.7	\$ 4,550
1988	\$ 641,339	0.3743	\$ 384,074	\$ 387,652	\$ 638,491	42.5	\$ 15,006
1989	\$ 719,816	0.3621	\$ 417,076	\$ 420,962	\$ 730,745	43.4	\$ 16,847
1990	\$ 879,376	0.3499	\$ 492,324	\$ 496,910	\$ 910,092	44.2	\$ 20,587
1991	\$ 3,937	0.3376	\$ 2,126	\$ 2,146	\$ 4,152	45.0	\$ 92
1992	\$ 7,274	0.3252	\$ 3,785	\$ 3,820	\$ 7,818	45.9	\$ 170
1995	\$ 79,538	0.2875	\$ 36,584	\$ 36,925	\$ 90,336	48.5	\$ 1,864
1996	\$ 6,684	0.2748	\$ 2,938	\$ 2,966	\$ 7,729	49.3	\$ 157
1997	\$ 2,041,048	0.2619	\$ 855,435	\$ 863,404	\$ 2,402,273	50.2	\$ 47,866
1998	\$ 556,145	0.2491	\$ 221,634	\$ 223,699	\$ 666,133	51.1	\$ 13,045
1999	\$ 1,752,780	0.2361	\$ 662,207	\$ 668,376	\$ 2,136,072	51.9	\$ 41,123
2000	\$ 1,074,349	0.2231	\$ 383,520	\$ 387,093	\$ 1,331,866	52.8	\$ 25,211
2001	\$ 1,871,302	0.2100	\$ 628,845	\$ 634,703	\$ 2,359,381	53.7	\$ 43,922
2002	\$ 36,700,481	0.1969	\$ 11,560,869	\$ 11,668,563	\$ 47,052,207	54.6	\$ 861,569
2003	\$ 2,244,012	0.1837	\$ 659,443	\$ 665,586	\$ 2,924,833	55.5	\$ 52,690
2004	\$ 3,148,407	0.1704	\$ 858,333	\$ 866,328	\$ 4,171,122	56.4	\$ 73,938
2005	\$ 4,418,245	0.1571	\$ 1,110,274	\$ 1,120,616	\$ 5,948,576	57.3	\$ 103,778
2006	\$ 9,563,754	0.1437	\$ 2,198,317	\$ 2,218,795	\$ 13,083,211	58.2	\$ 224,678
2007	\$ 8,875,921	0.1302	\$ 1,849,265	\$ 1,866,491	\$ 12,334,983	59.1	\$ 208,554
2008	\$ 12,500,177	0.1167	\$ 2,334,218	\$ 2,355,962	\$ 17,644,322	60.1	\$ 293,760
2009	\$ 14,717,165	0.1032	\$ 2,429,080	\$ 2,451,708	\$ 21,095,756	61.0	\$ 345,915
2010	\$ 74,620,305	0.0895	\$ 10,691,245	\$ 10,790,838	\$ 108,601,650	61.9	\$ 1,754,163
2011	\$ 18,400,901	0.0759	\$ 2,234,437	\$ 2,255,251	\$ 27,186,191	62.8	\$ 432,631
2012	\$ 76,453,698	0.0622	\$ 7,607,456	\$ 7,678,322	\$ 114,647,594	63.8	\$ 1,797,799
2013	\$ 78,295,653	0.0484	\$ 6,068,761	\$ 6,125,294	\$ 119,147,750	64.7	\$ 1,841,377
2014	\$ 121,788,101	0.0347	\$ 6,752,405	\$ 6,815,306	\$ 188,045,655	65.6	\$ 2,864,644
2015	\$ 4,343,344	0.0208	\$ 144,690	\$ 146,038	\$ 6,803,313	66.6	\$ 102,176
2016	\$ 21,355,100	0.0069	\$ 237,392	\$ 239,604	\$ 33,928,557	67.5	\$ 502,440
Total	\$ 589,353,755		\$ 146,471,181	\$ 147,835,617	\$ 795,130,391	57.5	\$ 13,827,558

Account 358 - Underground Conductors and Devices

Account Description

This account is for Underground Conductors and Devices. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of underground conductors and devices used for transmission purposes. The items contained within this account include, circuit breakers, armored conductors, insulators, insulating materials, splicing, fireproofing, inspections, permits, cable racking, lightning arresters, switches, and other line devices.

Discussion

The currently approved curve is 40-S2.5. OG&E recommends increasing the average service life to 45 years. There is very little retirement history; however, OG&E's proposal is reasonable.

Account 358 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L2	2,147,483,688	0.00
L4	2,147,483,688	0.00
S5	2,147,483,688	0.00
S6	2,147,483,688	0.00
SQ	2,147,483,688	0.00
L5	2,147,483,688	0.00
S2	2,147,483,688	0.00
S2.5	2,147,483,688	0.00
R5	2,147,483,688	0.00
S3	2,147,483,688	0.00
S4	2,147,483,688	0.00
S1.5	2,147,483,688	0.00
S1	2,147,483,688	0.00
L2.5	2,147,483,688	0.00
L3	2,147,483,688	0.00
R4	2,147,483,688	0.00
S0.5	2,147,483,688	0.00
S0	2,147,483,688	0.00
R3	2,147,483,688	0.00
L1.5	2,147,483,688	0.00
R2.5	2,147,483,688	0.00
L1	2,147,483,688	0.00
L0.5	2,147,483,688	0.00
R2	2,147,483,688	0.00
L0	2,147,483,688	0.00
R1.5	2,147,483,688	0.00
R1	2,147,483,688	0.00
R0.5	2,147,483,688	0.00
O2	2,147,483,688	0.00
O1	2,147,483,688	0.00
O3	2,147,483,688	0.00
O4	2,147,483,688	0.00

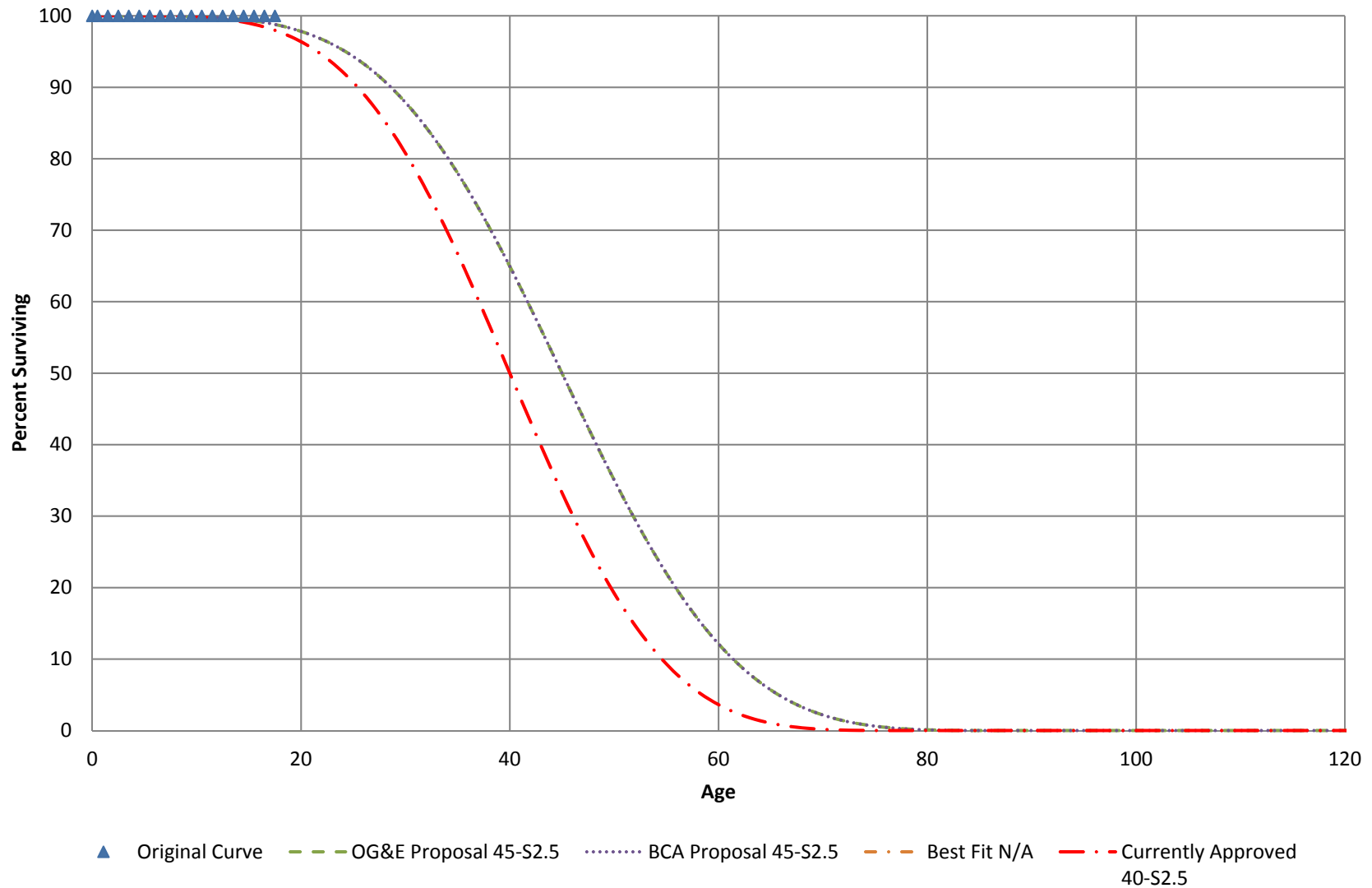
Currently Approved 40-S2.5	9.59
OG&E Proposal 45-S2.5	3.41
BCA Proposal 45-S2.5	3.41

Account 358 - Underground Conductors And Devices

Original & Smooth Survivor Curves

Placements 1959-2013

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 358
Survivor Curve 45-S2.5
Net Salvage 0%

Total Annual Accrual -18
Composite Remaining Life 27.0
Depreciation Rate -0.02%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1966	\$ 109,352	0.8162	\$ 89,249	\$ 109,352	\$ -	8.3	\$ -
1998	\$ 1,142	0.4007	\$ 458	\$ 1,624	\$ (482)	27.0	\$ (18)
Total	\$ 110,494		\$ 89,707	\$ 110,976	\$ (482)	27.0	\$ (18)

Account 360.2 - Land Rights

Account Description

This account is for Land Rights. Per the FERC Uniform System of Accounts, "This account shall include the cost of land and land rights used in connection with distribution operations."

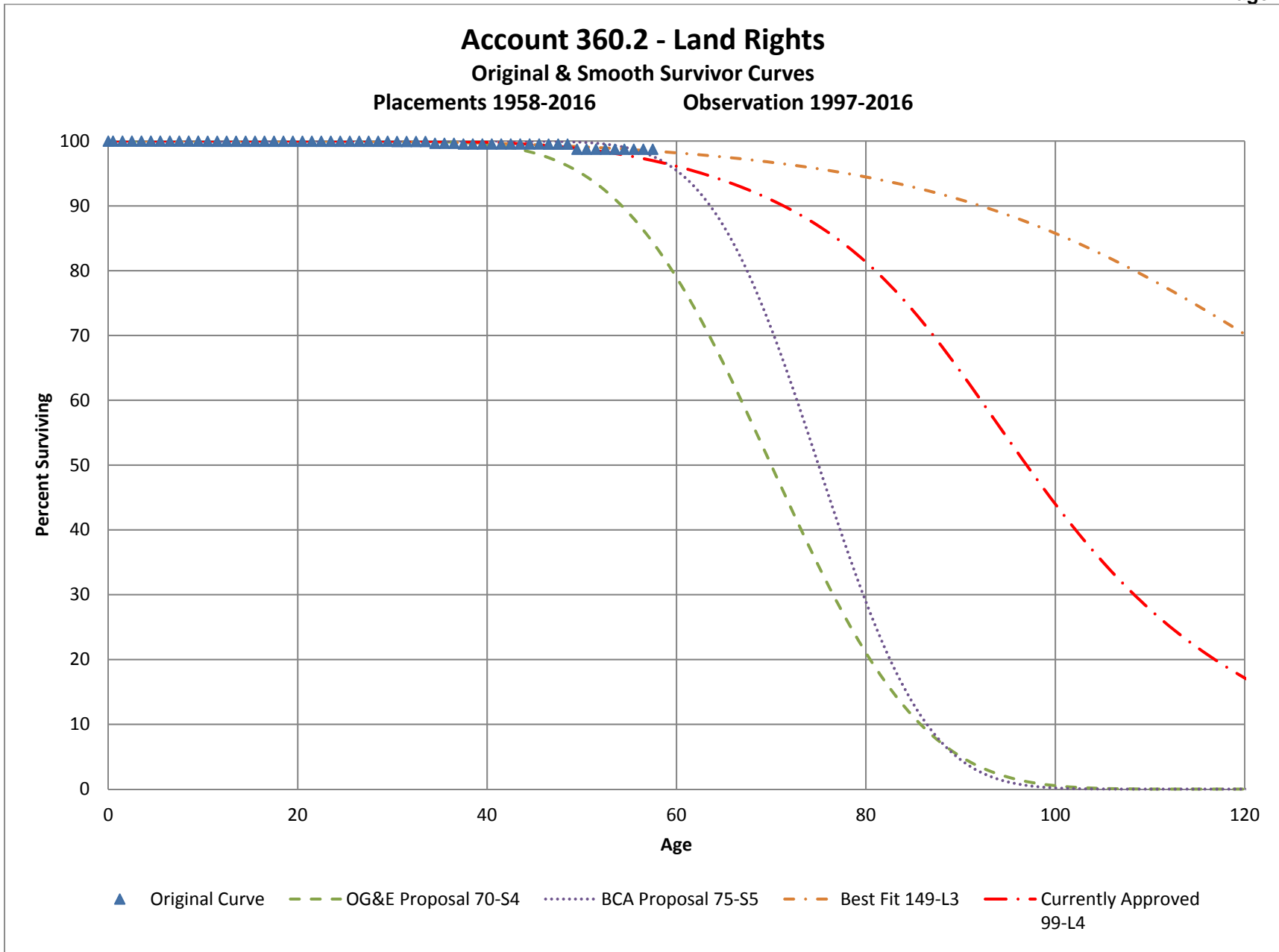
Discussion

I recommend moving to the 75-S5 curve. This curve produces a much better fit for the data relative to the currently approved 99-L4 and OG&E's proposal of 70-S4 . The 75-S5 significantly decreases the SSD, while maintaining a similar maximum life to OG&E's proposal.

Account 360.2 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L3	149	0.92
S2	159	0.93
R4	122	0.95
S2.5	139	0.99
L2.5	197	1.05
S1.5	217	1.12
L2	240	1.16
S1	266	1.22
S3	115	1.84
S0.5	442	2.29
S0	612	2.49
R3	228	2.51
L4	107	2.65
L1.5	387	2.69
L1	572	3.46
L0	1,322	3.51
L0.5	979	3.56
R2.5	461	4.03
R2	735	4.35
O2	3,623	4.45
R1.5	1,306	4.57
R5	84	4.58
S4	89	4.62
R1	1,893	4.63
R0.5	2,766	4.67
O3	5,976	4.68
O1	3,648	4.68
O4	7,822	4.68
L5	85	6.11
S5	76	8.08
S6	68	11.34
SQ	7,822	16.90

Currently Approved 99-L4	9.24
OG&E Proposal 70-S4	748.56
BCA Proposal 75-S5	8.26



Calculation of Annual Accrual and Depreciation Rate

Account 360.2
Survivor Curve 75-S5
Net Salvage 0%

Total Annual Accrual 61,885
Composite Remaining Life 58.0
Depreciation Rate 1.21%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 335,198	0.7716	\$ 258,647	\$ 298,244	\$ 36,954	17.1	\$ 2,158
1959	\$ 16,009	0.7600	\$ 12,167	\$ 14,030	\$ 1,979	18.0	\$ 110
1960	\$ 16,331	0.7482	\$ 12,219	\$ 14,089	\$ 2,242	18.9	\$ 119
1961	\$ 17,110	0.7361	\$ 12,594	\$ 14,522	\$ 2,588	19.8	\$ 131
1962	\$ 18,011	0.7237	\$ 13,035	\$ 15,030	\$ 2,981	20.7	\$ 144
1963	\$ 19,640	0.7111	\$ 13,966	\$ 16,105	\$ 3,535	21.7	\$ 163
1964	\$ 21,527	0.6984	\$ 15,035	\$ 17,337	\$ 4,191	22.6	\$ 185
1965	\$ 21,130	0.6855	\$ 14,485	\$ 16,703	\$ 4,427	23.6	\$ 188
1966	\$ 21,798	0.6725	\$ 14,660	\$ 16,904	\$ 4,894	24.6	\$ 199
1967	\$ 21,491	0.6595	\$ 14,172	\$ 16,342	\$ 5,149	25.5	\$ 202
1968	\$ 27,325	0.6463	\$ 17,660	\$ 20,364	\$ 6,961	26.5	\$ 262
1969	\$ 23,244	0.6331	\$ 14,716	\$ 16,969	\$ 6,276	27.5	\$ 228
1970	\$ 32,305	0.6198	\$ 20,024	\$ 23,090	\$ 9,215	28.5	\$ 323
1971	\$ 28,697	0.6066	\$ 17,407	\$ 20,072	\$ 8,625	29.5	\$ 292
1972	\$ 29,105	0.5933	\$ 17,267	\$ 19,911	\$ 9,194	30.5	\$ 301
1973	\$ 27,346	0.5800	\$ 15,860	\$ 18,288	\$ 9,058	31.5	\$ 288
1974	\$ 29,274	0.5666	\$ 16,588	\$ 19,128	\$ 10,147	32.5	\$ 312
1975	\$ 29,411	0.5533	\$ 16,274	\$ 18,765	\$ 10,646	33.5	\$ 318
1976	\$ 30,588	0.5400	\$ 16,517	\$ 19,046	\$ 11,542	34.5	\$ 335
1977	\$ 31,811	0.5267	\$ 16,754	\$ 19,319	\$ 12,493	35.5	\$ 352
1978	\$ 33,169	0.5133	\$ 17,027	\$ 19,634	\$ 13,536	36.5	\$ 371
1979	\$ 34,407	0.5000	\$ 17,204	\$ 19,837	\$ 14,570	37.5	\$ 389
1980	\$ 35,784	0.4867	\$ 17,415	\$ 20,081	\$ 15,703	38.5	\$ 408
1981	\$ 37,215	0.4733	\$ 17,615	\$ 20,312	\$ 16,903	39.5	\$ 428
1982	\$ 38,703	0.4600	\$ 17,804	\$ 20,529	\$ 18,174	40.5	\$ 449
1983	\$ 40,252	0.4467	\$ 17,979	\$ 20,731	\$ 19,520	41.5	\$ 470
1984	\$ 41,862	0.4333	\$ 18,140	\$ 20,917	\$ 20,945	42.5	\$ 493
1985	\$ 43,536	0.4200	\$ 18,285	\$ 21,084	\$ 22,452	43.5	\$ 516
1986	\$ 45,278	0.4067	\$ 18,413	\$ 21,232	\$ 24,046	44.5	\$ 540
1987	\$ 47,185	0.3933	\$ 18,559	\$ 21,401	\$ 25,784	45.5	\$ 567
1988	\$ 54,823	0.3800	\$ 20,833	\$ 24,022	\$ 30,801	46.5	\$ 662
1989	\$ 50,931	0.3667	\$ 18,675	\$ 21,534	\$ 29,397	47.5	\$ 619
1990	\$ 52,968	0.3533	\$ 18,715	\$ 21,581	\$ 31,388	48.5	\$ 647
1991	\$ 55,595	0.3400	\$ 18,902	\$ 21,796	\$ 33,799	49.5	\$ 683
1992	\$ 57,291	0.3267	\$ 18,715	\$ 21,580	\$ 35,711	50.5	\$ 707
1993	\$ 59,582	0.3133	\$ 18,669	\$ 21,527	\$ 38,055	51.5	\$ 739
1994	\$ 61,966	0.3000	\$ 18,590	\$ 21,436	\$ 40,530	52.5	\$ 772
1995	\$ 64,444	0.2867	\$ 18,474	\$ 21,302	\$ 43,142	53.5	\$ 806
1996	\$ 67,022	0.2733	\$ 18,319	\$ 21,124	\$ 45,898	54.5	\$ 842
1997	\$ 36,143	0.2600	\$ 9,397	\$ 10,836	\$ 25,307	55.5	\$ 456
1998	\$ 39,538	0.2467	\$ 9,753	\$ 11,246	\$ 28,292	56.5	\$ 501
1999	\$ 16,065	0.2333	\$ 3,748	\$ 4,322	\$ 11,742	57.5	\$ 204
2000	\$ 30,102	0.2200	\$ 6,623	\$ 7,636	\$ 22,466	58.5	\$ 384
2001	\$ 112,079	0.2067	\$ 23,163	\$ 26,709	\$ 85,370	59.5	\$ 1,435
2002	\$ 93,877	0.1933	\$ 18,149	\$ 20,928	\$ 72,949	60.5	\$ 1,206
2003	\$ 152,382	0.1800	\$ 27,429	\$ 31,628	\$ 120,754	61.5	\$ 1,963
2004	\$ 479,275	0.1667	\$ 79,879	\$ 92,108	\$ 387,167	62.5	\$ 6,195
2005	\$ 133,410	0.1533	\$ 20,456	\$ 23,588	\$ 109,822	63.5	\$ 1,729
2006	\$ 160,285	0.1400	\$ 22,440	\$ 25,875	\$ 134,410	64.5	\$ 2,084
2007	\$ 759,415	0.1267	\$ 96,192	\$ 110,919	\$ 648,496	65.5	\$ 9,901
2008	\$ 332,897	0.1133	\$ 37,728	\$ 43,504	\$ 289,393	66.5	\$ 4,352
2009	\$ 115,286	0.1000	\$ 11,529	\$ 13,293	\$ 101,992	67.5	\$ 1,511
2010	\$ 62,204	0.0867	\$ 5,391	\$ 6,216	\$ 55,987	68.5	\$ 817
2011	\$ 415,742	0.0733	\$ 30,488	\$ 35,155	\$ 380,587	69.5	\$ 5,476
2012	\$ 92,826	0.0600	\$ 5,570	\$ 6,422	\$ 86,404	70.5	\$ 1,226
2013	\$ 103,325	0.0467	\$ 4,822	\$ 5,560	\$ 97,765	71.5	\$ 1,367
2014	\$ 38,135	0.0333	\$ 1,271	\$ 1,466	\$ 36,669	72.5	\$ 506
2015	\$ 197,388	0.0200	\$ 3,948	\$ 4,552	\$ 192,836	73.5	\$ 2,624
2016	\$ 17,395	0.0067	\$ 116	\$ 134	\$ 17,261	74.5	\$ 232
Total	\$ 5,107,131		\$ 1,316,472	\$ 1,518,013	\$ 3,589,118	58.0	\$ 61,885

Account 361 - Structures and Improvements

Account Description

This account is for structures and improvements. Per the FERC Uniform System of Accounts, “This account shall include the cost in place of structures and improvements used in connection with distribution operations.” This includes building station control, fencing, yard improvements and other structures for distribution plant.

Discussion

The currently approved curve is 70-R2.5. OG&E’s proposal is to reduce the average life by 5 years to a 65-R2.5. The data does not support a reduction in the service life. The best fitting R2.5 curve has an average service life of 93 years. I recommend no change to the currently approved curve.

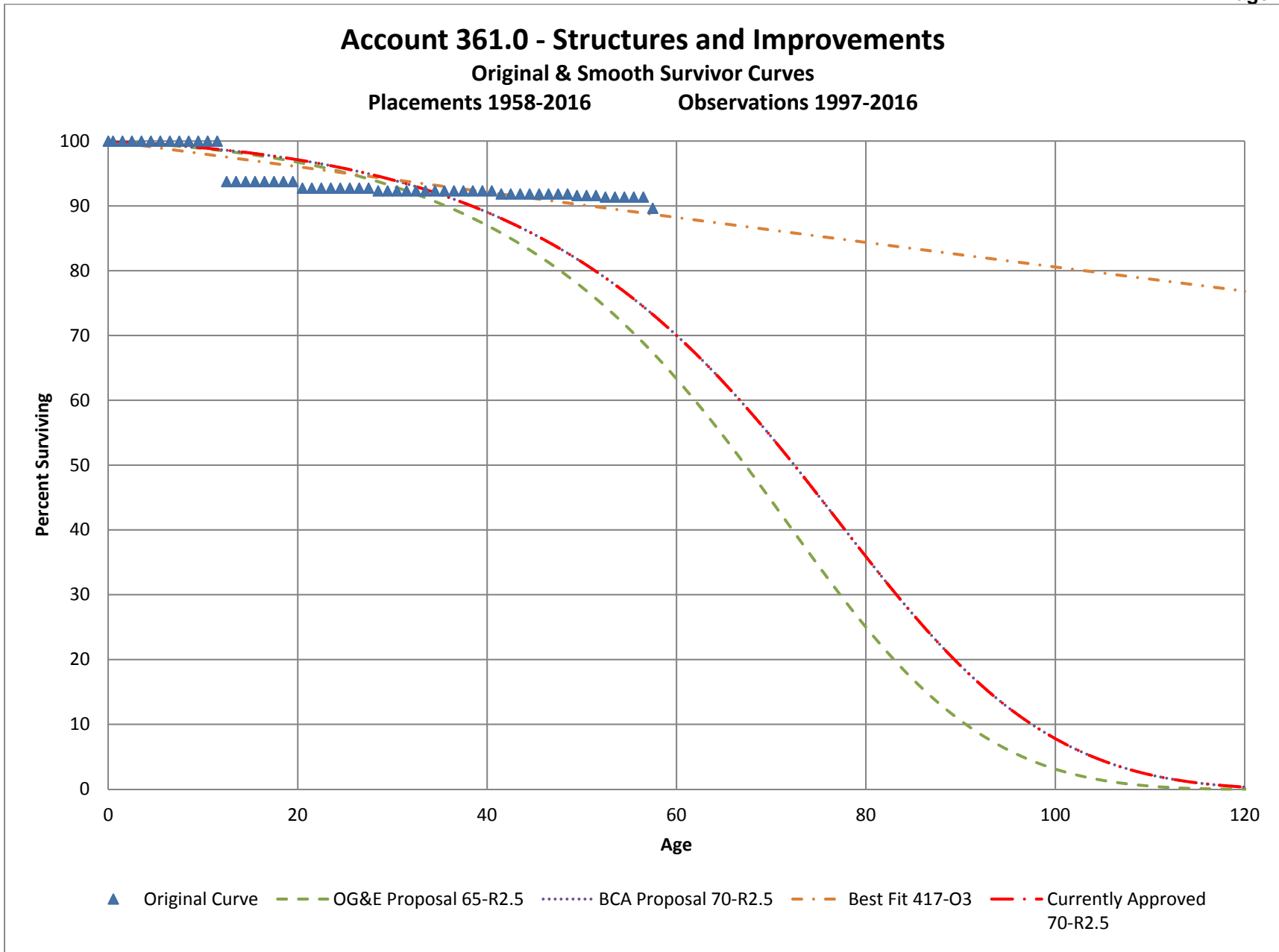
Account 361 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O3	417	205.24
O4	562	205.96
O1	254	207.26
O2	283	210.34
R0.5	203	220.88
R1	158	255.13
R1.5	128	307.34
L0	201	348.08
L0.5	164	407.98
R2	106	441.56
S0	139	479.93
R2.5	93	583.09
S0.5	120	586.42
L1	136	589.34
L1.5	117	688.14
S1	105	818.29
R3	83	853.63
L2	103	925.39
S1.5	95	935.65
L2.5	93	1,032.72
S2	87	1,186.93
L3	85	1,258.70
S2.5	82	1,291.58
R4	73	1,334.93
S3	78	1,515.58
L4	74	1,565.23
S4	70	1,871.55
R5	67	1,878.90
L5	68	1,918.07
S5	65	2,138.66
S6	62	2,338.65
SQ	562	2,727.87

Currently Approved 70-R2.5 2334.74

OG&E Proposal 65-R2.5 4130.48

BCA Proposal 70-R2.5 2334.74



Calculation of Annual Accrual and Depreciation Rate

Account 361
Survivor Curve 70-R2.5
Net Salvage -5%

Total Annual Accrual 94,369
Composite Remaining Life 59.7
Depreciation Rate 1.30%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 455,927	0.6742	\$ 322,742	\$ 439,230	\$ 39,493	22.8	\$ 1,732
1959	\$ 44,979	0.6656	\$ 31,435	\$ 42,781	\$ 4,446	23.4	\$ 190
1960	\$ 40,572	0.6569	\$ 27,984	\$ 38,084	\$ 4,517	24.0	\$ 188
1961	\$ 10,221	0.6480	\$ 6,955	\$ 9,465	\$ 1,267	24.6	\$ 51
1962	\$ 5,994	0.6390	\$ 4,022	\$ 5,473	\$ 820	25.3	\$ 32
1963	\$ 4,516	0.6299	\$ 2,987	\$ 4,065	\$ 677	25.9	\$ 26
1964	\$ 5,518	0.6206	\$ 3,595	\$ 4,893	\$ 900	26.6	\$ 34
1965	\$ 13,889	0.6112	\$ 8,913	\$ 12,130	\$ 2,453	27.2	\$ 90
1966	\$ 58,219	0.6017	\$ 36,780	\$ 50,055	\$ 11,075	27.9	\$ 397
1967	\$ 36,132	0.5920	\$ 22,460	\$ 30,567	\$ 7,372	28.6	\$ 258
1968	\$ 81,823	0.5822	\$ 50,021	\$ 68,075	\$ 17,838	29.2	\$ 610
1969	\$ 45,430	0.5723	\$ 27,301	\$ 37,154	\$ 10,547	29.9	\$ 352
1970	\$ 7,771	0.5623	\$ 4,588	\$ 6,244	\$ 1,915	30.6	\$ 63
1971	\$ 79,902	0.5522	\$ 46,327	\$ 63,048	\$ 20,850	31.3	\$ 665
1972	\$ 37,139	0.5419	\$ 21,133	\$ 28,761	\$ 10,235	32.1	\$ 319
1973	\$ 138,010	0.5316	\$ 77,032	\$ 104,836	\$ 40,074	32.8	\$ 1,222
1974	\$ 36,078	0.5211	\$ 19,741	\$ 26,866	\$ 11,016	33.5	\$ 329
1977	\$ 23,067	0.4891	\$ 11,847	\$ 16,122	\$ 8,098	35.8	\$ 226
1978	\$ 22,789	0.4783	\$ 11,444	\$ 15,575	\$ 8,354	36.5	\$ 229
1979	\$ 69,275	0.4673	\$ 33,990	\$ 46,258	\$ 26,481	37.3	\$ 710
1981	\$ 3,653	0.4451	\$ 1,707	\$ 2,323	\$ 1,512	38.8	\$ 39
1985	\$ 27,762	0.3995	\$ 11,646	\$ 15,849	\$ 13,301	42.0	\$ 316
1988	\$ 39,752	0.3644	\$ 15,210	\$ 20,700	\$ 21,040	44.5	\$ 473
1989	\$ 15,965	0.3525	\$ 5,910	\$ 8,043	\$ 8,721	45.3	\$ 192
1990	\$ 18,733	0.3406	\$ 6,699	\$ 9,117	\$ 10,552	46.2	\$ 229
1992	\$ 10,005	0.3165	\$ 3,324	\$ 4,524	\$ 5,981	47.8	\$ 125
1994	\$ 25,764	0.2920	\$ 7,899	\$ 10,750	\$ 16,302	49.6	\$ 329
1995	\$ 134,653	0.2797	\$ 39,541	\$ 53,812	\$ 87,573	50.4	\$ 1,737
1998	\$ 36,980	0.2422	\$ 9,406	\$ 12,801	\$ 26,028	53.0	\$ 491
1999	\$ 50,264	0.2296	\$ 12,119	\$ 16,494	\$ 36,283	53.9	\$ 673
2000	\$ 42,866	0.2170	\$ 9,765	\$ 13,289	\$ 31,720	54.8	\$ 579
2001	\$ 7,739	0.2042	\$ 1,660	\$ 2,258	\$ 5,868	55.7	\$ 105
2002	\$ 13,443	0.1914	\$ 2,702	\$ 3,677	\$ 10,438	56.6	\$ 184
2003	\$ 101,717	0.1786	\$ 19,070	\$ 25,953	\$ 80,850	57.5	\$ 1,406
2004	\$ 54,239	0.1656	\$ 9,433	\$ 12,838	\$ 44,113	58.4	\$ 755
2005	\$ 131,793	0.1527	\$ 21,126	\$ 28,751	\$ 109,632	59.3	\$ 1,848
2006	\$ 1,266,223	0.1396	\$ 185,653	\$ 252,661	\$ 1,076,874	60.2	\$ 17,881
2007	\$ 544,730	0.1266	\$ 72,384	\$ 98,510	\$ 473,457	61.1	\$ 7,744
2008	\$ 931,106	0.1134	\$ 110,890	\$ 150,914	\$ 826,747	62.1	\$ 13,322
2009	\$ 368,921	0.1002	\$ 38,831	\$ 52,846	\$ 334,521	63.0	\$ 5,311
2010	\$ 451,484	0.0870	\$ 41,250	\$ 56,139	\$ 417,919	63.9	\$ 6,539
2011	\$ 342,610	0.0737	\$ 26,529	\$ 36,104	\$ 323,637	64.8	\$ 4,991
2012	\$ 312,294	0.0604	\$ 19,814	\$ 26,965	\$ 300,943	65.8	\$ 4,576
2013	\$ 187,030	0.0471	\$ 9,243	\$ 12,580	\$ 183,802	66.7	\$ 2,755
2014	\$ 437,681	0.0337	\$ 15,471	\$ 21,056	\$ 438,509	67.6	\$ 6,483
2015	\$ 393,165	0.0202	\$ 8,350	\$ 11,364	\$ 401,459	68.6	\$ 5,854
2016	\$ 114,122	0.0067	\$ 809	\$ 1,101	\$ 118,728	69.5	\$ 1,708
Total	\$ 7,281,947		\$ 1,477,738	\$ 2,011,103	\$ 5,634,942	59.7	\$ 94,369

Account 362 - Station Equipment

Account Description

This account is for Station Equipment. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of station equipment, including transformer banks, etc., which are used for the purpose of changing the characteristics of electricity in connection with its distribution." This includes much of the equipment located within the fence at a distribution substation, including busses, conduit, control equipment, transformers, switching equipment, insulators, general station equipment, platforms, foundations, etc.

Discussion

The currently approved curve is 68-R2 and the best fit curve is the 71-R1.5. OG&E proposed to change both the dispersion and the average service life to the 60-R2.5. The best fit curve suggests that any change in dispersion should be to a flatter curve, not to a higher dispersion. The fitting analysis does indicate that the best fitting R2 has an average service life of 66 years. I recommend keeping the R2 dispersion and decreasing the average service life to 66 years.

Account 362 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
R1.5	71	46.88
S0	80	62.86
L0.5	92	69.81
R2	66	75.36
S0.5	74	92.71
L1	84	106.65
L0	105	162.13
R1	79	168.89
L1.5	77	219.76
R2.5	62	274.47
S1	69	292.86
R0.5	93	348.56
O2	125	459.64
O1	111	467.95
O3	181	506.37
O4	244	522.35
S1.5	66	538.40
L2	72	602.88
R3	60	740.20
L2.5	68	909.16
S2	64	1,007.70
S2.5	62	1,420.91
L3	65	1,557.70
R4	58	1,976.48
S3	61	2,071.12
L4	60	2,760.21
S4	58	3,802.13
R5	57	4,453.15
L5	58	4,571.36
S5	57	5,774.86
S6	57	7,837.92
SQ	244	13,547.26

Currently Approved 68-R2 135.05

OG&E Proposal 60-R2.5 437.42

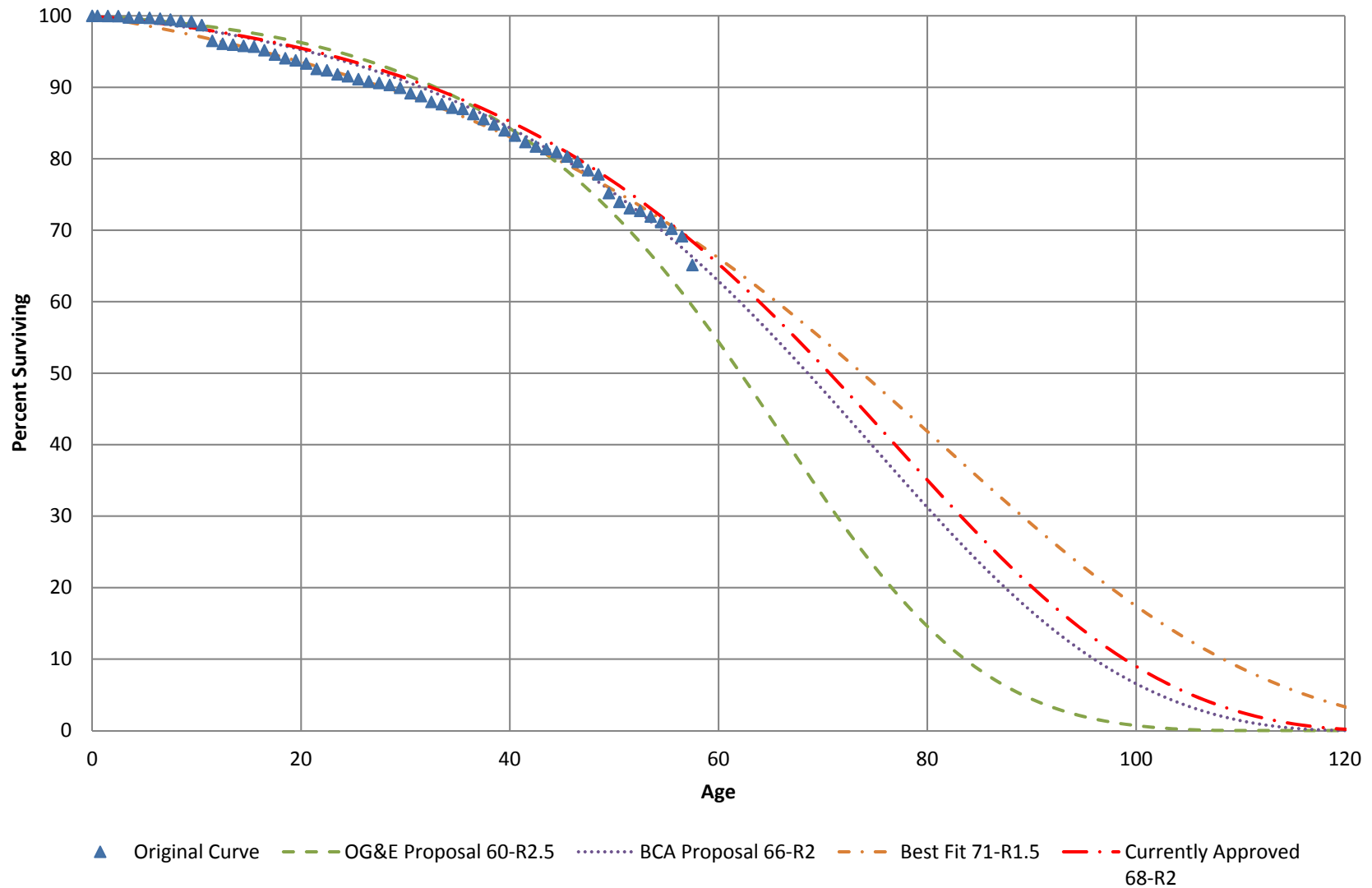
BCA Proposal 66-R2 75.91

Account 362 - Station Equipment

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	362	Total Annual Accrual	11,511,162
Survivor Curve	66-R2	Composite Remaining Life	53.9
Net Salvage	-30%	Depreciation Rate	1.87%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 11,163,402	0.6654	\$ 9,657,137	\$ 11,135,756	\$ 3,376,667	22.1	\$ 152,922
1959	\$ 2,339,614	0.6571	\$ 1,998,714	\$ 2,304,741	\$ 736,757	22.6	\$ 32,559
1960	\$ 975,643	0.6487	\$ 822,787	\$ 948,765	\$ 319,571	23.2	\$ 13,784
1961	\$ 1,697,266	0.6402	\$ 1,412,473	\$ 1,628,739	\$ 577,707	23.7	\$ 24,325
1962	\$ 1,010,305	0.6315	\$ 829,355	\$ 956,338	\$ 357,058	24.3	\$ 14,679
1963	\$ 1,708,012	0.6226	\$ 1,382,523	\$ 1,594,203	\$ 626,213	24.9	\$ 25,143
1964	\$ 1,369,893	0.6137	\$ 1,092,881	\$ 1,260,214	\$ 520,647	25.5	\$ 20,420
1965	\$ 2,088,274	0.6046	\$ 1,641,367	\$ 1,892,680	\$ 822,077	26.1	\$ 31,502
1966	\$ 2,511,335	0.5954	\$ 1,943,805	\$ 2,241,424	\$ 1,023,311	26.7	\$ 38,321
1967	\$ 2,429,077	0.5861	\$ 1,850,699	\$ 2,134,063	\$ 1,023,737	27.3	\$ 37,473
1968	\$ 2,843,939	0.5766	\$ 2,131,790	\$ 2,458,191	\$ 1,238,929	27.9	\$ 44,336
1969	\$ 3,289,856	0.5670	\$ 2,425,124	\$ 2,796,439	\$ 1,480,374	28.6	\$ 51,806
1970	\$ 2,778,872	0.5573	\$ 2,013,392	\$ 2,321,666	\$ 1,290,868	29.2	\$ 44,184
1971	\$ 7,019,698	0.5475	\$ 4,996,516	\$ 5,761,540	\$ 3,364,067	29.9	\$ 112,649
1972	\$ 4,486,261	0.5376	\$ 3,135,286	\$ 3,615,335	\$ 2,216,805	30.5	\$ 72,636
1973	\$ 7,102,054	0.5275	\$ 4,870,657	\$ 5,616,411	\$ 3,616,259	31.2	\$ 115,973
1974	\$ 6,276,175	0.5174	\$ 4,221,306	\$ 4,867,637	\$ 3,291,390	31.9	\$ 103,331
1975	\$ 2,864,320	0.5071	\$ 1,888,281	\$ 2,177,399	\$ 1,546,217	32.5	\$ 47,531
1976	\$ 1,023,214	0.4967	\$ 660,727	\$ 761,892	\$ 568,287	33.2	\$ 17,109
1977	\$ 1,430,823	0.4862	\$ 904,424	\$ 1,042,901	\$ 817,169	33.9	\$ 24,099
1978	\$ 4,670,799	0.4756	\$ 2,888,023	\$ 3,330,212	\$ 2,741,826	34.6	\$ 79,224
1979	\$ 2,958,851	0.4649	\$ 1,788,327	\$ 2,062,140	\$ 1,784,367	35.3	\$ 50,527
1980	\$ 2,490,362	0.4541	\$ 1,470,164	\$ 1,695,263	\$ 1,542,207	36.0	\$ 42,805
1981	\$ 1,453,695	0.4432	\$ 837,554	\$ 965,793	\$ 924,011	36.7	\$ 25,144
1982	\$ 1,038,655	0.4322	\$ 583,551	\$ 672,899	\$ 677,352	37.5	\$ 18,074
1983	\$ 1,415,756	0.4211	\$ 774,962	\$ 893,618	\$ 946,865	38.2	\$ 24,781
1984	\$ 2,784,075	0.4099	\$ 1,483,372	\$ 1,710,493	\$ 1,908,805	38.9	\$ 49,007
1985	\$ 994,672	0.3985	\$ 515,341	\$ 594,245	\$ 698,828	39.7	\$ 17,604
1986	\$ 1,740,642	0.3871	\$ 876,020	\$ 1,010,148	\$ 1,252,686	40.4	\$ 30,969
1987	\$ 540,929	0.3756	\$ 264,147	\$ 304,591	\$ 398,617	41.2	\$ 9,673
1988	\$ 14,150,989	0.3640	\$ 6,696,980	\$ 7,722,365	\$ 10,673,920	42.0	\$ 254,302
1989	\$ 14,873,312	0.3524	\$ 6,812,842	\$ 7,855,967	\$ 11,479,338	42.7	\$ 268,556
1990	\$ 10,770,610	0.3406	\$ 4,768,727	\$ 5,498,874	\$ 8,502,920	43.5	\$ 195,372
1991	\$ 9,374,064	0.3287	\$ 4,005,783	\$ 4,619,115	\$ 7,567,168	44.3	\$ 170,797
1992	\$ 10,150,850	0.3168	\$ 4,180,050	\$ 4,820,064	\$ 8,376,040	45.1	\$ 185,748
1993	\$ 6,016,041	0.3047	\$ 2,383,186	\$ 2,748,080	\$ 5,072,773	45.9	\$ 110,546
1994	\$ 4,782,252	0.2926	\$ 1,819,091	\$ 2,097,614	\$ 4,119,314	46.7	\$ 88,230
1995	\$ 4,631,795	0.2804	\$ 1,688,330	\$ 1,946,832	\$ 4,074,501	47.5	\$ 85,789
1996	\$ 5,888,286	0.2681	\$ 2,052,293	\$ 2,366,523	\$ 5,288,249	48.3	\$ 109,476
1997	\$ 1,323,718	0.2557	\$ 440,069	\$ 507,449	\$ 1,213,385	49.1	\$ 24,702
1998	\$ 6,367,273	0.2433	\$ 2,013,776	\$ 2,322,109	\$ 5,955,347	49.9	\$ 119,242
1999	\$ 10,298,446	0.2307	\$ 3,089,261	\$ 3,562,263	\$ 9,825,717	50.8	\$ 193,532
2000	\$ 8,651,674	0.2181	\$ 2,453,537	\$ 2,829,202	\$ 8,417,974	51.6	\$ 163,132
2001	\$ 8,128,556	0.2055	\$ 2,171,087	\$ 2,503,505	\$ 8,063,618	52.4	\$ 153,769
2002	\$ 8,230,518	0.1927	\$ 2,061,851	\$ 2,377,544	\$ 8,322,129	53.3	\$ 156,191
2003	\$ 22,262,162	0.1799	\$ 5,205,402	\$ 6,002,409	\$ 22,938,401	54.1	\$ 423,773
2004	\$ 16,875,918	0.1670	\$ 3,662,919	\$ 4,223,754	\$ 17,714,939	55.0	\$ 322,204
2005	\$ 25,015,718	0.1540	\$ 5,007,484	\$ 5,774,187	\$ 26,746,246	55.8	\$ 479,003
2006	\$ 24,394,864	0.1409	\$ 4,469,511	\$ 5,153,845	\$ 26,559,479	56.7	\$ 468,435
2007	\$ 33,467,378	0.1278	\$ 5,560,889	\$ 6,412,326	\$ 37,095,266	57.6	\$ 644,415
2008	\$ 32,404,637	0.1146	\$ 4,828,980	\$ 5,568,353	\$ 36,557,675	58.4	\$ 625,620
2009	\$ 35,183,605	0.1014	\$ 4,636,874	\$ 5,346,833	\$ 40,391,853	59.3	\$ 681,040
2010	\$ 26,629,262	0.0881	\$ 3,048,548	\$ 3,515,316	\$ 31,102,725	60.2	\$ 516,761
2011	\$ 37,099,528	0.0747	\$ 3,601,744	\$ 4,153,213	\$ 44,076,174	61.1	\$ 721,718
2012	\$ 58,087,088	0.0612	\$ 4,624,190	\$ 5,332,207	\$ 70,181,007	62.0	\$ 1,132,712
2013	\$ 31,172,277	0.0477	\$ 1,934,216	\$ 2,230,367	\$ 38,293,593	62.8	\$ 609,287
2014	\$ 27,225,451	0.0342	\$ 1,209,212	\$ 1,394,357	\$ 33,998,729	63.7	\$ 533,354
2015	\$ 16,551,889	0.0205	\$ 441,967	\$ 509,638	\$ 21,007,819	64.6	\$ 324,975
2016	\$ 19,103,852	0.0069	\$ 170,316	\$ 196,394	\$ 24,638,614	65.5	\$ 375,890
Total	\$ 615,608,481		\$ 156,399,820	\$ 180,346,440	\$ 619,944,585	53.9	\$ 11,511,162

Account 364 - Poles, Towers And Fixtures

Account Description

This account is for Poles, Towers, and Fixtures. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of poles, towers, and appurtenant fixtures used for supporting overhead distribution conductors and service wires." This includes the poles, towers, brackets, cross arms, foundations, pole steps, ladders, anchors, etc. required to create a pole or tower structure capable of supporting overhead distribution lines.

Discussion

The currently approved curve is 55-R1. OG&E recommends no change. The best fit is an 84-O2. The fitting analysis shows that the average service life that best fits the R1 dispersion is 61 years. I recommend an increase to 60-R1.

Account 364 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O2	84	29.99
O1	75	30.63
O3	118	42.73
O4	157	55.19
R0.5	66	73.47
L0	76	165.73
R1	61	341.37
L0.5	71	493.36
S0	63	703.60
R1.5	58	911.62
L1	66	1,127.24
S0.5	60	1,359.53
R2	56	1,909.58
L1.5	63	2,009.87
S1	58	2,366.71
R2.5	55	3,168.53
L2	61	3,432.32
S1.5	57	3,442.78
L2.5	59	4,672.02
R3	54	4,892.86
S2	56	4,894.26
S2.5	56	6,236.99
L3	58	6,531.58
S3	55	7,926.89
R4	54	8,512.76
L4	56	10,037.42
S4	55	12,192.18
R5	55	14,082.88
L5	56	14,161.23
S5	55	16,461.36
S6	56	20,418.46
SQ	157	29,269.00

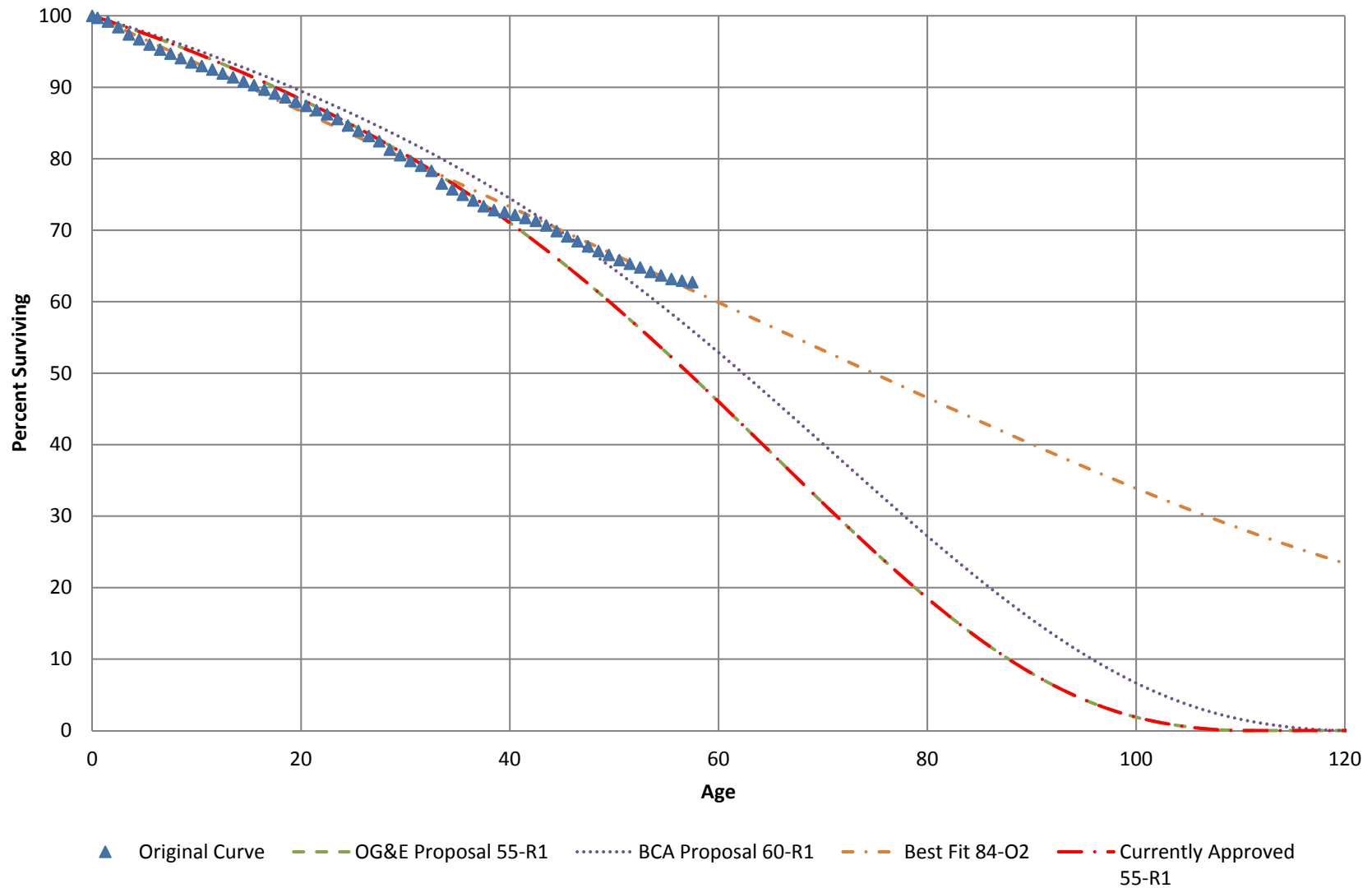
Currently Approved 55-R1 1,031.62

OG&E Proposal 55-R1 1,031.62

BCA Proposal 60-R1 347.91

Account 364 - Poles, Towers And Fixtures

Original & Smooth Survivor Curves
Placements 1958-2016 Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 364
Survivor Curve 60-R1
Net Salvage -65%

Total Annual Accrual 15,733,443
Composite Remaining Life 49.4
Depreciation Rate 2.55%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 11,918,296	0.6205	\$ 12,201,620	\$ 15,189,077	\$ 4,476,111	22.8	\$ 196,563
1959	\$ 525,416	0.6122	\$ 530,721	\$ 660,664	\$ 206,273	23.3	\$ 8,865
1960	\$ 778,444	0.6038	\$ 775,533	\$ 965,415	\$ 319,017	23.8	\$ 13,420
1961	\$ 989,480	0.5953	\$ 971,930	\$ 1,209,898	\$ 422,743	24.3	\$ 17,410
1962	\$ 1,140,783	0.5867	\$ 1,104,408	\$ 1,374,812	\$ 507,480	24.8	\$ 20,466
1963	\$ 1,742,309	0.5781	\$ 1,661,816	\$ 2,068,696	\$ 806,113	25.3	\$ 31,842
1964	\$ 1,521,475	0.5693	\$ 1,429,158	\$ 1,779,075	\$ 731,359	25.8	\$ 28,300
1965	\$ 1,526,358	0.5604	\$ 1,411,415	\$ 1,756,988	\$ 761,503	26.4	\$ 28,872
1966	\$ 1,496,826	0.5515	\$ 1,361,964	\$ 1,695,429	\$ 774,335	26.9	\$ 28,772
1967	\$ 1,408,415	0.5424	\$ 1,260,451	\$ 1,569,061	\$ 754,823	27.5	\$ 27,491
1968	\$ 1,579,037	0.5332	\$ 1,389,289	\$ 1,729,444	\$ 875,967	28.0	\$ 31,278
1969	\$ 937,264	0.5240	\$ 810,320	\$ 1,008,720	\$ 537,766	28.6	\$ 18,828
1970	\$ 1,982,983	0.5146	\$ 1,683,795	\$ 2,096,057	\$ 1,175,865	29.1	\$ 40,376
1971	\$ 2,079,887	0.5052	\$ 1,733,659	\$ 2,158,130	\$ 1,273,684	29.7	\$ 42,900
1972	\$ 2,804,405	0.4956	\$ 2,293,406	\$ 2,854,925	\$ 1,772,343	30.3	\$ 58,566
1973	\$ 2,786,189	0.4860	\$ 2,234,185	\$ 2,781,205	\$ 1,816,008	30.8	\$ 58,883
1974	\$ 3,018,920	0.4763	\$ 2,372,340	\$ 2,953,186	\$ 2,028,033	31.4	\$ 64,536
1975	\$ 2,635,585	0.4664	\$ 2,028,379	\$ 2,525,009	\$ 1,823,706	32.0	\$ 56,966
1976	\$ 2,823,001	0.4565	\$ 2,126,415	\$ 2,647,048	\$ 2,010,904	32.6	\$ 61,667
1977	\$ 3,066,552	0.4465	\$ 2,259,251	\$ 2,812,409	\$ 2,247,402	33.2	\$ 67,674
1978	\$ 3,255,742	0.4364	\$ 2,344,405	\$ 2,918,412	\$ 2,453,562	33.8	\$ 72,558
1979	\$ 4,228,485	0.4262	\$ 2,973,805	\$ 3,701,915	\$ 3,275,085	34.4	\$ 95,133
1980	\$ 4,610,764	0.4160	\$ 3,164,567	\$ 3,939,382	\$ 3,668,378	35.0	\$ 104,685
1981	\$ 6,494,951	0.4056	\$ 4,346,849	\$ 5,411,136	\$ 5,305,533	35.7	\$ 148,768
1982	\$ 7,541,477	0.3952	\$ 4,917,426	\$ 6,121,414	\$ 6,322,023	36.3	\$ 174,213
1983	\$ 7,991,212	0.3847	\$ 5,072,133	\$ 6,313,999	\$ 6,871,501	36.9	\$ 186,121
1984	\$ 8,628,874	0.3741	\$ 5,326,143	\$ 6,630,201	\$ 7,607,441	37.6	\$ 202,570
1985	\$ 8,852,431	0.3634	\$ 5,308,391	\$ 6,608,103	\$ 7,998,408	38.2	\$ 209,413
1986	\$ 8,568,037	0.3527	\$ 4,986,170	\$ 6,206,989	\$ 7,930,271	38.8	\$ 204,188
1987	\$ 9,293,587	0.3419	\$ 5,242,786	\$ 6,526,435	\$ 8,807,983	39.5	\$ 223,065
1988	\$ 8,284,285	0.3310	\$ 4,524,847	\$ 5,632,715	\$ 8,036,356	40.1	\$ 200,217
1989	\$ 8,764,416	0.3201	\$ 4,629,067	\$ 5,762,452	\$ 8,698,834	40.8	\$ 213,238
1990	\$ 7,954,080	0.3091	\$ 4,056,838	\$ 5,050,118	\$ 8,074,113	41.5	\$ 194,776
1991	\$ 10,647,645	0.2981	\$ 5,236,516	\$ 6,518,630	\$ 11,049,985	42.1	\$ 262,368
1992	\$ 9,140,864	0.2870	\$ 4,328,057	\$ 5,387,742	\$ 9,694,683	42.8	\$ 226,605
1993	\$ 10,092,375	0.2758	\$ 4,592,829	\$ 5,717,341	\$ 10,935,078	43.5	\$ 251,661
1994	\$ 10,676,894	0.2646	\$ 4,661,414	\$ 5,802,719	\$ 11,814,156	44.1	\$ 267,749
1995	\$ 9,190,913	0.2533	\$ 3,842,048	\$ 4,782,739	\$ 10,382,267	44.8	\$ 231,752
1996	\$ 8,871,284	0.2421	\$ 3,543,078	\$ 4,410,568	\$ 10,227,051	45.5	\$ 224,885
1997	\$ 16,282,282	0.2307	\$ 6,198,233	\$ 7,715,814	\$ 19,149,951	46.2	\$ 414,884
1998	\$ 6,527,596	0.2193	\$ 2,362,311	\$ 2,940,701	\$ 7,829,832	46.8	\$ 167,161
1999	\$ 10,992,029	0.2079	\$ 3,770,790	\$ 4,694,034	\$ 13,442,814	47.5	\$ 282,855
2000	\$ 9,123,826	0.1964	\$ 2,957,294	\$ 3,681,361	\$ 11,372,952	48.2	\$ 235,887
2001	\$ 15,802,720	0.1849	\$ 4,822,129	\$ 6,002,784	\$ 20,071,704	48.9	\$ 410,432
2002	\$ 26,837,148	0.1734	\$ 7,677,757	\$ 9,557,587	\$ 34,723,708	49.6	\$ 700,119
2003	\$ 11,531,214	0.1618	\$ 3,078,258	\$ 3,831,942	\$ 15,194,561	50.3	\$ 302,122
2004	\$ 12,955,054	0.1501	\$ 3,209,494	\$ 3,995,310	\$ 17,380,530	51.0	\$ 340,853
2005	\$ 15,550,515	0.1385	\$ 3,552,477	\$ 4,422,270	\$ 21,236,080	51.7	\$ 410,813
2006	\$ 16,338,954	0.1267	\$ 3,415,951	\$ 4,252,316	\$ 22,706,958	52.4	\$ 433,359
2007	\$ 22,704,800	0.1149	\$ 4,305,016	\$ 5,359,060	\$ 32,103,860	53.1	\$ 604,534
2008	\$ 30,253,721	0.1031	\$ 5,144,850	\$ 6,404,520	\$ 43,514,120	53.8	\$ 808,570
2009	\$ 22,845,154	0.0912	\$ 3,436,166	\$ 4,277,481	\$ 33,417,023	54.5	\$ 612,813
2010	\$ 18,618,060	0.0792	\$ 2,432,976	\$ 3,028,669	\$ 27,691,129	55.2	\$ 501,214
2011	\$ 25,985,771	0.0672	\$ 2,880,431	\$ 3,585,679	\$ 39,290,842	56.0	\$ 702,008
2012	\$ 37,462,458	0.0551	\$ 3,405,838	\$ 4,239,727	\$ 57,573,329	56.7	\$ 1,015,509
2013	\$ 36,102,182	0.0430	\$ 2,559,152	\$ 3,185,737	\$ 56,382,864	57.4	\$ 981,898
2014	\$ 19,492,196	0.0308	\$ 989,299	\$ 1,231,520	\$ 30,930,603	58.2	\$ 531,870
2015	\$ 34,111,976	0.0185	\$ 1,040,857	\$ 1,295,702	\$ 54,989,059	58.9	\$ 933,752
2016	\$ 27,137,494	0.0062	\$ 276,027	\$ 343,609	\$ 44,433,255	59.6	\$ 745,148
Total	\$ 616,505,091		\$ 192,252,728	\$ 239,324,082	\$ 777,909,318	49.4	\$ 15,733,443

Account 365 - Overhead Conductors And Devices

Account Description

This account is for Overhead Conductors and Devices. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of overhead conductors and devices used for distribution purposes." The items contained within this account include circuit breakers, conductors, ground wires, insulators, lightning arresters, railroad and highway crossing guards, switches, the initial cost of tree trimming including permits, and other line devices.

Discussion

The currently approved curve is the 54-R0.5. OG&E proposes to keep the R0.5 dispersion and increase the average service life to 55 years. The fitting analysis shows that the R0.5 is the best fitting dispersion of the R-type curves and that the 60-R0.5 is the best fit for the R0.5 dispersion. The data shows that an increase to the average service life greater than 1 year is needed. I recommend increasing to 58 years.

Account 365 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O4	136	69.92
O3	103	104.82
O1	66	203.62
O2	74	209.42
R0.5	60	545.41
L0	69	777.48
R1	56	1,297.91
L0.5	65	1,491.65
S0	58	1,929.32
R1.5	55	2,426.02
L1	62	2,581.91
S0.5	57	3,063.54
L1.5	59	3,990.77
R2	54	4,066.31
S1	55	4,609.15
R2.5	53	5,962.38
L2	58	6,014.14
S1.5	55	6,181.89
L2.5	57	7,775.79
S2	54	8,169.02
R3	53	8,363.71
S2.5	54	9,968.13
L3	56	10,218.02
S3	54	12,132.03
R4	53	13,128.76
L4	55	14,821.04
S4	54	17,438.22
L5	55	19,878.26
R5	54	19,891.32
S5	54	22,599.92
S6	55	27,292.09
SQ	136	37,458.73

Currently Approved 54-R0.5 1274.95

OG&E Proposal 55-R0.5 1035.83

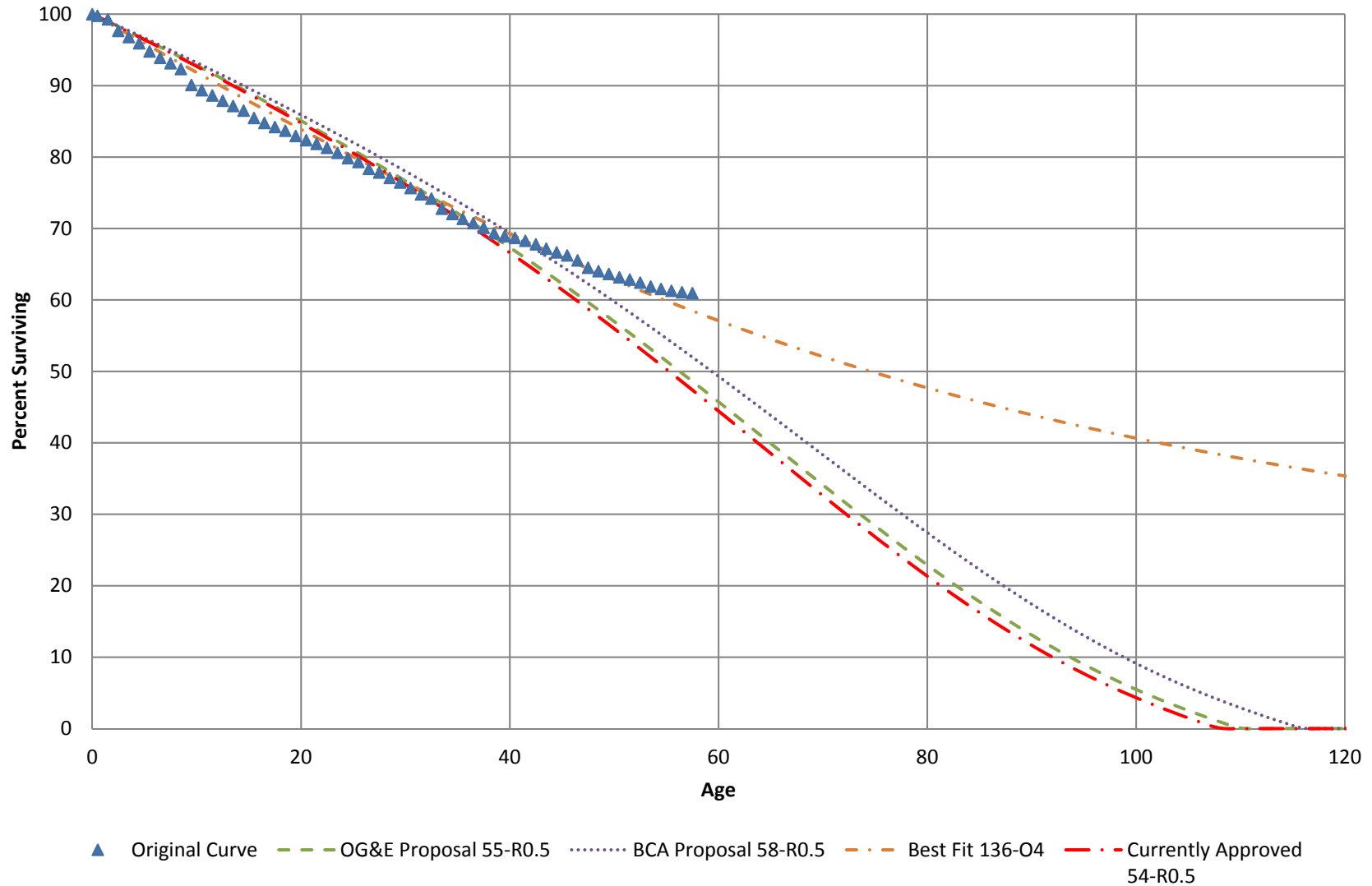
BCA Proposal 58-R0.5 621.67

Account 365 - Overhead Conductors And Devices

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	365	Total Annual Accrual	12,198,670
Survivor Curve	58-R0.5	Composite Remaining Life	48.2
Net Salvage	-55%	Depreciation Rate	2.52%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 16,568,174	0.5723	\$ 14,698,024	\$ 17,756,067	\$ 7,924,603	24.8	\$ 319,484
1959	\$ 616,876	0.5641	\$ 539,340	\$ 651,554	\$ 304,604	25.3	\$ 12,047
1960	\$ 692,427	0.5557	\$ 596,446	\$ 720,541	\$ 352,721	25.8	\$ 13,689
1961	\$ 1,073,541	0.5473	\$ 910,745	\$ 1,100,233	\$ 563,756	26.3	\$ 21,472
1962	\$ 1,175,114	0.5389	\$ 981,482	\$ 1,185,687	\$ 635,739	26.7	\$ 23,769
1963	\$ 1,479,468	0.5303	\$ 1,216,089	\$ 1,469,106	\$ 824,069	27.2	\$ 30,250
1964	\$ 1,570,493	0.5217	\$ 1,269,941	\$ 1,534,163	\$ 900,102	27.7	\$ 32,446
1965	\$ 1,588,035	0.5130	\$ 1,262,757	\$ 1,525,484	\$ 935,969	28.2	\$ 33,137
1966	\$ 1,422,805	0.5043	\$ 1,112,075	\$ 1,343,452	\$ 861,896	28.8	\$ 29,976
1967	\$ 1,563,244	0.4954	\$ 1,200,469	\$ 1,450,236	\$ 972,792	29.3	\$ 33,241
1968	\$ 1,587,288	0.4866	\$ 1,197,066	\$ 1,446,126	\$ 1,014,171	29.8	\$ 34,056
1969	\$ 1,429,526	0.4776	\$ 1,058,250	\$ 1,278,427	\$ 937,338	30.3	\$ 30,936
1970	\$ 2,027,005	0.4686	\$ 1,472,201	\$ 1,778,505	\$ 1,363,352	30.8	\$ 44,232
1971	\$ 2,028,148	0.4595	\$ 1,444,455	\$ 1,744,985	\$ 1,398,644	31.3	\$ 44,614
1972	\$ 2,227,088	0.4503	\$ 1,554,541	\$ 1,877,976	\$ 1,574,010	31.9	\$ 49,372
1973	\$ 2,326,988	0.4411	\$ 1,591,031	\$ 1,922,058	\$ 1,684,774	32.4	\$ 51,975
1974	\$ 2,344,548	0.4318	\$ 1,569,292	\$ 1,895,796	\$ 1,738,253	33.0	\$ 52,748
1975	\$ 1,851,258	0.4225	\$ 1,212,297	\$ 1,464,525	\$ 1,404,925	33.5	\$ 41,943
1976	\$ 1,746,432	0.4131	\$ 1,118,191	\$ 1,350,840	\$ 1,356,129	34.0	\$ 39,838
1977	\$ 2,279,079	0.4036	\$ 1,425,790	\$ 1,722,437	\$ 1,810,135	34.6	\$ 52,330
1978	\$ 3,319,908	0.3941	\$ 2,027,906	\$ 2,449,828	\$ 2,696,029	35.1	\$ 76,716
1979	\$ 3,815,458	0.3845	\$ 2,273,935	\$ 2,747,046	\$ 3,166,914	35.7	\$ 88,712
1980	\$ 3,452,830	0.3749	\$ 2,006,248	\$ 2,423,664	\$ 2,928,223	36.3	\$ 80,761
1981	\$ 6,389,650	0.3652	\$ 3,616,674	\$ 4,369,153	\$ 5,534,805	36.8	\$ 150,321
1982	\$ 6,295,230	0.3554	\$ 3,468,149	\$ 4,189,726	\$ 5,567,880	37.4	\$ 148,933
1983	\$ 6,553,240	0.3456	\$ 3,510,826	\$ 4,241,282	\$ 5,916,239	38.0	\$ 155,883
1984	\$ 8,172,600	0.3358	\$ 4,253,742	\$ 5,138,767	\$ 7,528,763	38.5	\$ 195,432
1985	\$ 7,441,789	0.3259	\$ 3,759,293	\$ 4,541,444	\$ 6,993,328	39.1	\$ 178,870
1986	\$ 6,628,454	0.3160	\$ 3,246,396	\$ 3,921,835	\$ 6,352,269	39.7	\$ 160,115
1987	\$ 7,834,834	0.3060	\$ 3,716,153	\$ 4,489,328	\$ 7,654,665	40.3	\$ 190,171
1988	\$ 7,300,234	0.2960	\$ 3,349,296	\$ 4,046,144	\$ 7,269,218	40.8	\$ 178,026
1989	\$ 7,469,966	0.2859	\$ 3,310,798	\$ 3,999,636	\$ 7,578,810	41.4	\$ 182,996
1990	\$ 8,089,165	0.2759	\$ 3,458,802	\$ 4,178,434	\$ 8,359,771	42.0	\$ 199,042
1991	\$ 9,686,181	0.2657	\$ 3,989,795	\$ 4,819,904	\$ 10,193,677	42.6	\$ 239,363
1992	\$ 8,787,816	0.2556	\$ 3,481,507	\$ 4,205,863	\$ 9,415,251	43.2	\$ 218,070
1993	\$ 10,954,622	0.2454	\$ 4,167,138	\$ 5,034,145	\$ 11,945,519	43.8	\$ 272,943
1994	\$ 9,813,045	0.2352	\$ 3,577,705	\$ 4,322,076	\$ 10,888,144	44.4	\$ 245,464
1995	\$ 10,111,202	0.2250	\$ 3,526,131	\$ 4,259,771	\$ 11,412,591	45.0	\$ 253,892
1996	\$ 9,076,263	0.2147	\$ 3,020,985	\$ 3,649,525	\$ 10,418,682	45.5	\$ 228,755
1997	\$ 4,974,038	0.2045	\$ 1,576,387	\$ 1,904,367	\$ 5,805,391	46.1	\$ 125,819
1998	\$ 4,217,944	0.1942	\$ 1,269,485	\$ 1,533,611	\$ 5,004,203	46.7	\$ 107,070
1999	\$ 8,117,346	0.1839	\$ 2,313,359	\$ 2,794,672	\$ 9,787,214	47.3	\$ 206,761
2000	\$ 5,757,825	0.1735	\$ 1,548,726	\$ 1,870,951	\$ 7,053,677	47.9	\$ 147,151
2001	\$ 7,799,759	0.1632	\$ 1,972,864	\$ 2,383,334	\$ 9,706,292	48.5	\$ 199,985
2002	\$ 10,589,924	0.1528	\$ 2,508,465	\$ 3,030,372	\$ 13,384,011	49.1	\$ 272,385
2003	\$ 4,945,869	0.1424	\$ 1,091,904	\$ 1,319,084	\$ 6,347,013	49.7	\$ 127,607
2004	\$ 10,100,212	0.1320	\$ 2,066,900	\$ 2,496,936	\$ 13,158,393	50.3	\$ 261,377
2005	\$ 11,229,623	0.1216	\$ 2,116,524	\$ 2,556,884	\$ 14,849,031	50.9	\$ 291,459
2006	\$ 10,878,781	0.1111	\$ 1,874,196	\$ 2,264,138	\$ 14,597,972	51.6	\$ 283,162
2007	\$ 12,846,393	0.1007	\$ 2,004,628	\$ 2,421,707	\$ 17,490,203	52.2	\$ 335,313
2008	\$ 20,371,682	0.0902	\$ 2,847,521	\$ 3,439,971	\$ 28,136,137	52.8	\$ 533,189
2009	\$ 15,200,683	0.0797	\$ 1,876,928	\$ 2,267,438	\$ 21,293,621	53.4	\$ 398,909
2010	\$ 12,327,840	0.0691	\$ 1,320,731	\$ 1,595,520	\$ 17,512,631	54.0	\$ 324,361
2011	\$ 19,239,925	0.0586	\$ 1,746,097	\$ 2,109,387	\$ 27,712,497	54.6	\$ 507,517
2012	\$ 31,503,878	0.0480	\$ 2,341,912	\$ 2,829,165	\$ 46,001,846	55.2	\$ 833,090
2013	\$ 26,201,515	0.0373	\$ 1,516,613	\$ 1,832,156	\$ 38,780,192	55.8	\$ 694,561
2014	\$ 25,819,003	0.0267	\$ 1,068,485	\$ 1,290,793	\$ 38,728,662	56.5	\$ 686,053
2015	\$ 28,878,614	0.0160	\$ 717,535	\$ 866,824	\$ 43,895,027	57.1	\$ 769,140
2016	\$ 24,639,772	0.0053	\$ 203,784	\$ 246,183	\$ 37,945,464	57.7	\$ 657,742
Total	\$ 484,430,648		\$ 135,175,009	\$ 163,299,262	\$ 587,568,242	48.2	\$ 12,198,670

Account 366 - Underground Conduit

Account Description

This account is for Underground Conduit. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of underground conduit and tunnels used for housing distribution cables or wires." The items contained within this account include conduit, duct banks, excavation, foundations, lighting systems, manholes, inspections, permits, sewer connections, sumps, ventilation equipment, etc.

Discussion

The currently approved curve is the 65-R2.5. OG&E proposes to change both the dispersion and the average service life to the 60-R2. The fitting analysis shows that the better fitting curves have lower, flatter dispersions. I agree that the dispersion should change, but not the average service life. For the R2 dispersion, the best fit is 71 years; therefore, a reduction is not supported by the data. I recommend the 65-R2 survivor curve.

Account 366 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O3	252	48.59
O4	340	48.99
O1	154	50.05
O2	172	52.09
R0.5	124	59.45
R1	99	85.25
R1.5	82	132.07
L0	129	149.52
L0.5	107	205.29
R2	71	255.53
S0	92	258.15
S0.5	80	356.89
L1	91	365.11
R2.5	64	395.44
L1.5	80	465.92
S1	72	563.84
R3	58	657.89
S1.5	66	693.45
L2	72	713.40
L2.5	66	829.15
S2	62	947.09
S2.5	59	1,085.51
L3	61	1,087.44
R4	53	1,173.94
S3	56	1,345.23
L4	54	1,431.67
S4	52	1,841.35
R5	49	1,885.56
L5	50	1,927.14
S5	49	2,261.24
S6	47	2,598.00
SQ	340	3,252.47

Currently Approved 65-R2.5 402.38

OG&E Proposal 60-R2 651.48

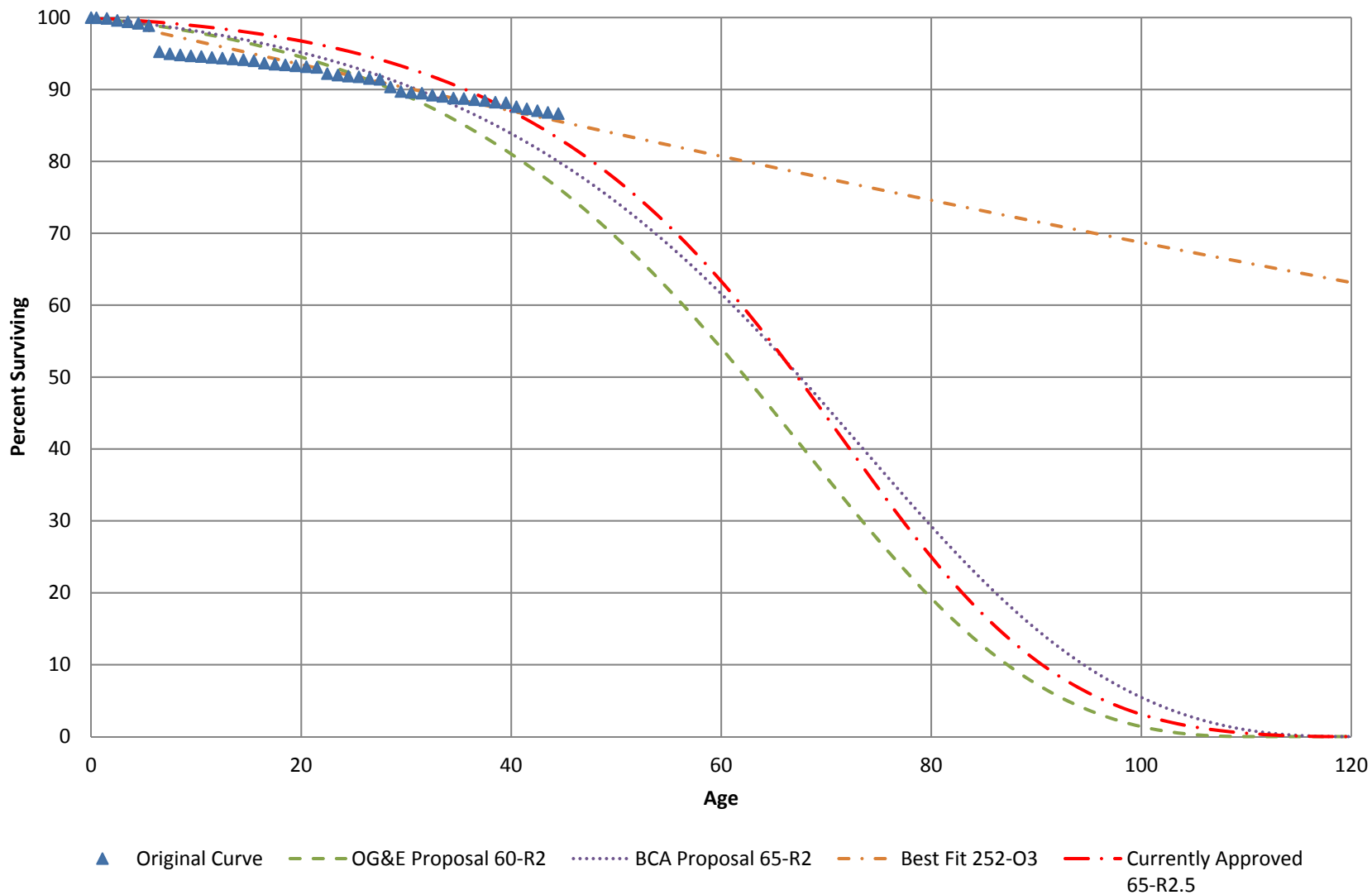
BCA Proposal 65-R2 340.43

Account 366 - Underground Conduit

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 366
Survivor Curve 65-R2
Net Salvage -20%

Total Annual Accrual 3,561,123
Composite Remaining Life 55.2
Depreciation Rate 1.63%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 1,010,296	0.6728	\$ 815,669	\$ 1,165,645	\$ 46,710	21.3	\$ 2,196
1964	\$ 2,843	0.6209	\$ 2,119	\$ 3,028	\$ 384	24.6	\$ 16
1966	\$ 1,630	0.6026	\$ 1,179	\$ 1,684	\$ 272	25.8	\$ 11
1970	\$ 4,221	0.5643	\$ 2,858	\$ 4,085	\$ 981	28.3	\$ 35
1971	\$ 3,625,134	0.5544	\$ 2,411,780	\$ 3,446,593	\$ 903,567	29.0	\$ 31,197
1972	\$ 6,513,292	0.5444	\$ 4,254,999	\$ 6,080,676	\$ 1,735,275	29.6	\$ 58,596
1973	\$ 480,142	0.5343	\$ 307,838	\$ 439,921	\$ 136,250	30.3	\$ 4,501
1974	\$ 1,455,749	0.5240	\$ 915,437	\$ 1,308,220	\$ 438,680	30.9	\$ 14,179
1975	\$ 107,212	0.5137	\$ 66,087	\$ 94,443	\$ 34,211	31.6	\$ 1,082
1977	\$ 135,934	0.4926	\$ 80,356	\$ 114,835	\$ 48,286	33.0	\$ 1,464
1978	\$ 325,083	0.4819	\$ 187,997	\$ 268,660	\$ 121,440	33.7	\$ 3,606
1979	\$ 988,897	0.4711	\$ 559,055	\$ 798,926	\$ 387,750	34.4	\$ 11,279
1980	\$ 425,657	0.4602	\$ 235,062	\$ 335,919	\$ 174,869	35.1	\$ 4,984
1981	\$ 519,868	0.4492	\$ 280,209	\$ 400,437	\$ 223,404	35.8	\$ 6,240
1982	\$ 3,535,899	0.4380	\$ 1,858,650	\$ 2,656,134	\$ 1,586,945	36.5	\$ 43,446
1983	\$ 468,845	0.4268	\$ 240,126	\$ 343,156	\$ 219,459	37.3	\$ 5,890
1984	\$ 552,854	0.4155	\$ 275,636	\$ 393,903	\$ 269,521	38.0	\$ 7,094
1985	\$ 6,338,672	0.4040	\$ 3,073,223	\$ 4,391,839	\$ 3,214,567	38.7	\$ 82,982
1986	\$ 2,653,895	0.3925	\$ 1,249,986	\$ 1,786,313	\$ 1,398,361	39.5	\$ 35,413
1987	\$ 4,483,582	0.3809	\$ 2,049,149	\$ 2,928,370	\$ 2,451,929	40.2	\$ 60,927
1988	\$ 1,622,462	0.3691	\$ 718,689	\$ 1,027,054	\$ 919,901	41.0	\$ 22,433
1989	\$ 1,631,693	0.3573	\$ 699,619	\$ 999,801	\$ 958,230	41.8	\$ 22,938
1990	\$ 1,487,426	0.3454	\$ 616,490	\$ 881,005	\$ 903,907	42.5	\$ 21,244
1991	\$ 1,641,010	0.3334	\$ 656,493	\$ 938,172	\$ 1,031,040	43.3	\$ 23,795
1992	\$ 2,154,430	0.3213	\$ 830,600	\$ 1,186,982	\$ 1,398,334	44.1	\$ 31,696
1993	\$ 1,702,714	0.3091	\$ 631,544	\$ 902,518	\$ 1,140,739	44.9	\$ 25,401
1994	\$ 3,155,830	0.2968	\$ 1,123,997	\$ 1,606,267	\$ 2,180,729	45.7	\$ 47,710
1995	\$ 3,400,708	0.2844	\$ 1,160,767	\$ 1,658,813	\$ 2,422,036	46.5	\$ 52,074
1996	\$ 3,816,601	0.2720	\$ 1,245,674	\$ 1,780,151	\$ 2,799,770	47.3	\$ 59,166
1997	\$ 2,022,253	0.2595	\$ 629,623	\$ 899,773	\$ 1,526,930	48.1	\$ 31,722
1998	\$ 2,542,886	0.2468	\$ 753,195	\$ 1,076,365	\$ 1,975,098	49.0	\$ 40,344
1999	\$ 707,754	0.2341	\$ 198,851	\$ 284,172	\$ 565,133	49.8	\$ 11,352
2000	\$ 3,269,488	0.2213	\$ 868,437	\$ 1,241,054	\$ 2,682,332	50.6	\$ 52,998
2001	\$ 4,229,431	0.2085	\$ 1,058,158	\$ 1,512,177	\$ 3,563,140	51.4	\$ 69,257
2002	\$ 4,216,920	0.1956	\$ 989,546	\$ 1,414,127	\$ 3,646,178	52.3	\$ 69,731
2003	\$ 4,404,466	0.1825	\$ 964,772	\$ 1,378,723	\$ 3,906,637	53.1	\$ 73,523
2004	\$ 6,415,765	0.1694	\$ 1,304,554	\$ 1,864,294	\$ 5,834,624	54.0	\$ 108,077
2005	\$ 8,488,174	0.1563	\$ 1,591,853	\$ 2,274,863	\$ 7,910,946	54.8	\$ 144,251
2006	\$ 9,650,268	0.1430	\$ 1,656,521	\$ 2,367,278	\$ 9,213,044	55.7	\$ 165,399
2007	\$ 8,944,569	0.1297	\$ 1,392,515	\$ 1,989,996	\$ 8,743,487	56.6	\$ 154,568
2008	\$ 11,956,746	0.1164	\$ 1,669,550	\$ 2,385,897	\$ 11,962,198	57.4	\$ 208,268
2009	\$ 11,122,032	0.1029	\$ 1,373,475	\$ 1,962,787	\$ 11,383,651	58.3	\$ 195,223
2010	\$ 7,201,510	0.0894	\$ 772,572	\$ 1,104,057	\$ 7,537,755	59.2	\$ 127,351
2011	\$ 12,366,936	0.0758	\$ 1,125,098	\$ 1,607,839	\$ 13,232,485	60.1	\$ 220,277
2012	\$ 16,470,160	0.0622	\$ 1,228,756	\$ 1,755,974	\$ 18,008,218	61.0	\$ 295,416
2013	\$ 9,675,221	0.0485	\$ 562,615	\$ 804,013	\$ 10,806,251	61.9	\$ 174,716
2014	\$ 11,885,457	0.0347	\$ 494,747	\$ 707,027	\$ 13,555,522	62.7	\$ 216,041
2015	\$ 17,914,175	0.0209	\$ 448,312	\$ 640,668	\$ 20,856,342	63.6	\$ 327,701
2016	\$ 10,502,929	0.0070	\$ 87,763	\$ 125,419	\$ 12,478,096	64.5	\$ 193,317
Total	\$ 218,229,722		\$ 45,722,201	\$ 65,340,052	\$ 196,535,615	55.2	\$ 3,561,123

Account 367 - Underground Conductors And Devices

Account Description

This account is for Underground Conductors and Devices. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of underground conductors and devices used for distribution purposes." The items contained within this account include, circuit breakers, armored conductors, insulators, insulating materials, splicing, fireproofing, inspections, permits, cable racking, lightning arresters, switches, and other line devices.

Discussion

The currently approved curve is the 64-R2.5. 64 years is the average service life that results in the best fit for the R2.5 dispersion. OG&E proposes the 62-R2.5. The best fit curve is the 103-R1. The data does not support a reduction to the average service life. I recommend that the currently approved curve be maintained.

Account 367 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
R1	103	27.50
R1.5	84	27.68
R0.5	131	32.79
O2	182	36.93
O1	163	37.12
O3	267	38.23
O4	361	38.71
L0	133	43.64
L0.5	109	54.58
R2	71	62.55
S0	94	79.81
L1	92	120.38
S0.5	81	120.41
R2.5	64	125.23
L1.5	80	170.71
S1	72	232.82
R3	58	277.46
S1.5	66	307.19
L2	71	315.12
L2.5	65	389.66
S2	61	473.53
S2.5	58	568.56
L3	60	568.78
R4	52	632.37
S3	55	760.73
L4	53	832.09
S4	51	1,168.66
R5	49	1,217.65
L5	50	1,253.72
S5	48	1,571.23
S6	47	1,950.23
SQ	361	2,897.30

Currently Approved 64-R2.5 125.86

OG&E Proposal 62-R2.5 134.89

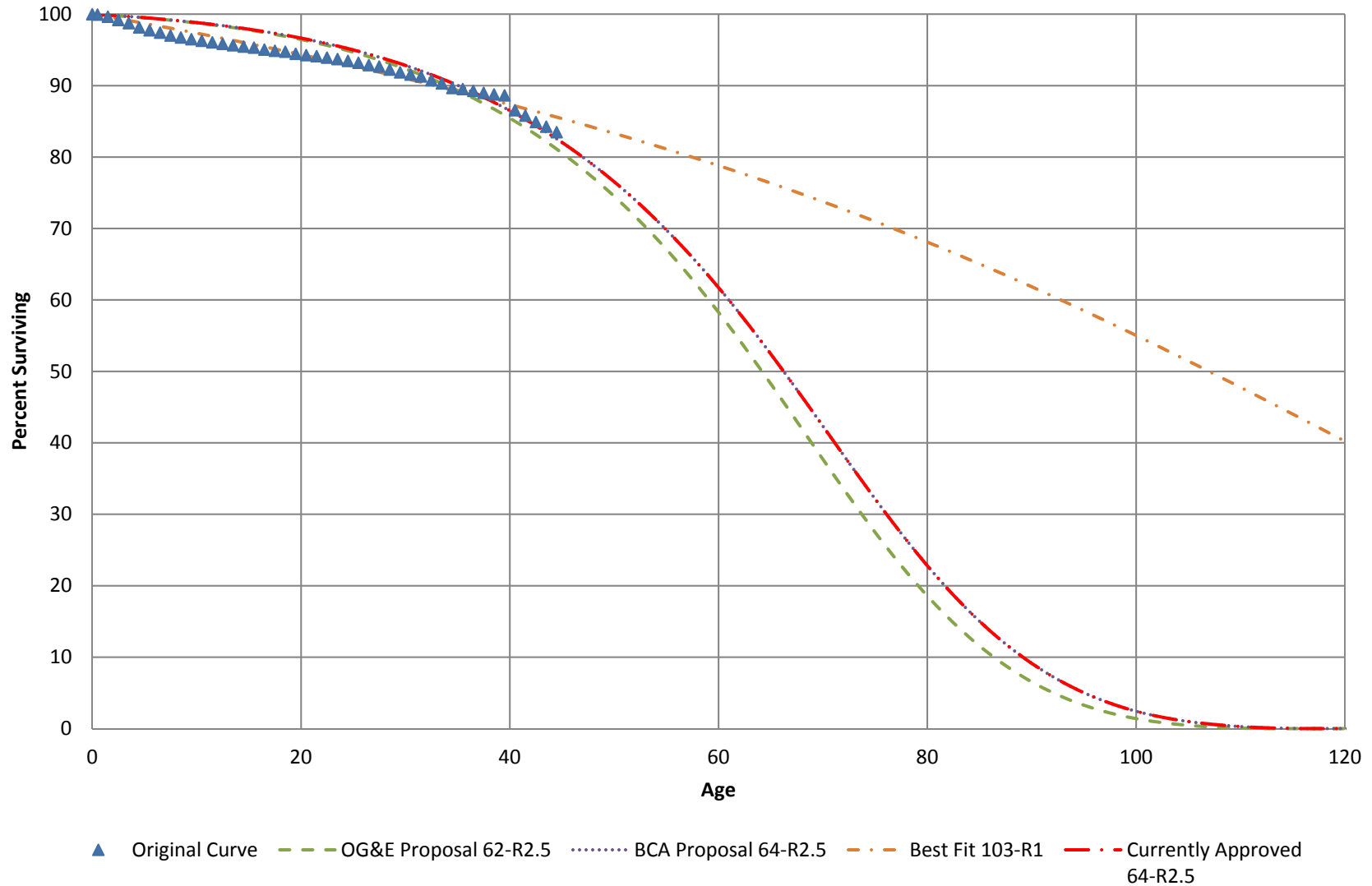
BCA Proposal 64-R2.5 125.86

Account 367 - Underground Conductors And Devices

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	367	Total Annual Accrual	14,512,600
Survivor Curve	64-R2.5	Composite Remaining Life	52.4
Net Salvage	-30%	Depreciation Rate	1.90%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 2,052,333	0.7184	\$ 1,916,636	\$ 2,337,063	\$ 330,969	18.0	\$ 18,362
1959	\$ 27,001	0.7100	\$ 24,921	\$ 30,387	\$ 4,715	18.6	\$ 254
1960	\$ 30,520	0.7013	\$ 27,826	\$ 33,930	\$ 5,747	19.1	\$ 301
1961	\$ 31,292	0.6925	\$ 28,171	\$ 34,350	\$ 6,329	19.7	\$ 322
1962	\$ 29,098	0.6835	\$ 25,855	\$ 31,526	\$ 6,301	20.3	\$ 311
1963	\$ 35,955	0.6743	\$ 31,518	\$ 38,432	\$ 8,310	20.8	\$ 399
1964	\$ 35,951	0.6649	\$ 31,077	\$ 37,894	\$ 8,843	21.4	\$ 412
1965	\$ 28,985	0.6554	\$ 24,695	\$ 30,112	\$ 7,569	22.1	\$ 343
1966	\$ 39,638	0.6456	\$ 33,270	\$ 40,568	\$ 10,961	22.7	\$ 483
1967	\$ 45,422	0.6357	\$ 37,540	\$ 45,775	\$ 13,274	23.3	\$ 569
1968	\$ 41,696	0.6257	\$ 33,916	\$ 41,356	\$ 12,850	24.0	\$ 536
1969	\$ 35,638	0.6155	\$ 28,515	\$ 34,769	\$ 11,560	24.6	\$ 470
1970	\$ 43,862	0.6051	\$ 34,503	\$ 42,072	\$ 14,949	25.3	\$ 591
1971	\$ 10,480,921	0.5946	\$ 8,101,334	\$ 9,878,419	\$ 3,746,778	25.9	\$ 144,404
1972	\$ 16,550,601	0.5839	\$ 12,563,248	\$ 15,319,085	\$ 6,196,696	26.6	\$ 232,697
1973	\$ 1,090,071	0.5731	\$ 812,144	\$ 990,294	\$ 426,799	27.3	\$ 15,622
1974	\$ 1,593,980	0.5621	\$ 1,164,862	\$ 1,420,383	\$ 651,790	28.0	\$ 23,259
1975	\$ 202,981	0.5511	\$ 145,412	\$ 177,309	\$ 86,567	28.7	\$ 3,013
1976	\$ 45,511	0.5398	\$ 31,939	\$ 38,945	\$ 20,219	29.5	\$ 687
1977	\$ 335,277	0.5285	\$ 230,346	\$ 280,874	\$ 154,986	30.2	\$ 5,136
1978	\$ 585,067	0.5170	\$ 393,231	\$ 479,489	\$ 281,098	30.9	\$ 9,094
1979	\$ 2,143,150	0.5054	\$ 1,408,098	\$ 1,716,974	\$ 1,069,121	31.7	\$ 33,775
1980	\$ 835,051	0.4937	\$ 535,925	\$ 653,484	\$ 432,082	32.4	\$ 13,334
1981	\$ 1,020,767	0.4818	\$ 639,383	\$ 779,636	\$ 547,360	33.2	\$ 16,505
1982	\$ 5,999,534	0.4699	\$ 3,664,681	\$ 4,468,555	\$ 3,330,839	33.9	\$ 98,172
1983	\$ 1,346,360	0.4578	\$ 801,238	\$ 976,996	\$ 773,272	34.7	\$ 22,283
1984	\$ 2,014,219	0.4456	\$ 1,166,761	\$ 1,422,698	\$ 1,195,787	35.5	\$ 33,701
1985	\$ 19,921,565	0.4333	\$ 11,221,046	\$ 13,682,461	\$ 12,215,573	36.3	\$ 336,793
1986	\$ 9,991,811	0.4209	\$ 5,466,668	\$ 6,665,820	\$ 6,323,534	37.1	\$ 170,606
1987	\$ 15,364,732	0.4083	\$ 8,156,146	\$ 9,945,254	\$ 10,028,898	37.9	\$ 264,848
1988	\$ 7,126,020	0.3957	\$ 3,665,663	\$ 4,469,752	\$ 4,794,073	38.7	\$ 123,957
1989	\$ 9,449,947	0.3830	\$ 4,704,702	\$ 5,736,712	\$ 6,548,219	39.5	\$ 165,819
1990	\$ 9,412,196	0.3701	\$ 4,528,716	\$ 5,522,122	\$ 6,713,733	40.3	\$ 166,543
1991	\$ 9,808,605	0.3572	\$ 4,554,480	\$ 5,553,537	\$ 7,197,650	41.1	\$ 174,953
1992	\$ 9,846,976	0.3441	\$ 4,405,352	\$ 5,371,697	\$ 7,429,372	42.0	\$ 176,995
1993	\$ 10,335,674	0.3310	\$ 4,447,489	\$ 5,423,077	\$ 8,013,299	42.8	\$ 187,158
1994	\$ 18,496,407	0.3178	\$ 7,641,010	\$ 9,317,120	\$ 14,728,209	43.7	\$ 337,320
1995	\$ 16,908,324	0.3044	\$ 6,692,061	\$ 8,160,012	\$ 13,820,809	44.5	\$ 310,474
1996	\$ 19,478,724	0.2910	\$ 7,369,885	\$ 8,986,522	\$ 16,335,819	45.4	\$ 360,032
1997	\$ 8,180,709	0.2775	\$ 2,951,584	\$ 3,599,035	\$ 7,035,886	46.2	\$ 152,168
1998	\$ 6,863,122	0.2640	\$ 2,355,022	\$ 2,871,613	\$ 6,050,446	47.1	\$ 128,441
1999	\$ 11,237,441	0.2503	\$ 3,656,294	\$ 4,458,328	\$ 10,150,346	48.0	\$ 211,545
2000	\$ 15,615,092	0.2365	\$ 4,801,537	\$ 5,854,788	\$ 14,444,831	48.9	\$ 295,626
2001	\$ 18,838,634	0.2227	\$ 5,454,075	\$ 6,650,465	\$ 17,839,759	49.7	\$ 358,610
2002	\$ 17,959,002	0.2088	\$ 4,874,734	\$ 5,944,042	\$ 17,402,660	50.6	\$ 343,675
2003	\$ 18,809,419	0.1948	\$ 4,763,803	\$ 5,808,777	\$ 18,643,467	51.5	\$ 361,788
2004	\$ 29,795,248	0.1808	\$ 7,001,762	\$ 8,537,648	\$ 30,196,174	52.4	\$ 575,922
2005	\$ 29,856,876	0.1666	\$ 6,468,316	\$ 7,887,187	\$ 30,926,751	53.3	\$ 579,865
2006	\$ 35,413,041	0.1525	\$ 7,018,679	\$ 8,558,276	\$ 37,478,678	54.2	\$ 690,944
2007	\$ 34,833,475	0.1382	\$ 6,258,484	\$ 7,631,327	\$ 37,652,190	55.2	\$ 682,664
2008	\$ 44,090,509	0.1239	\$ 7,101,095	\$ 8,658,770	\$ 48,658,892	56.1	\$ 867,808
2009	\$ 37,452,620	0.1095	\$ 5,332,096	\$ 6,501,729	\$ 42,186,677	57.0	\$ 740,233
2010	\$ 26,500,733	0.0951	\$ 3,275,671	\$ 3,994,213	\$ 30,456,740	57.9	\$ 525,889
2011	\$ 32,088,572	0.0806	\$ 3,361,874	\$ 4,099,325	\$ 37,615,818	58.8	\$ 639,266
2012	\$ 46,564,871	0.0661	\$ 3,998,358	\$ 4,875,426	\$ 55,658,907	59.8	\$ 931,176
2013	\$ 29,564,880	0.0515	\$ 1,977,583	\$ 2,411,379	\$ 36,022,965	60.7	\$ 593,391
2014	\$ 38,096,131	0.0368	\$ 1,823,092	\$ 2,223,000	\$ 47,301,970	61.6	\$ 767,340
2015	\$ 38,130,807	0.0221	\$ 1,096,405	\$ 1,336,909	\$ 48,233,140	62.6	\$ 770,689
2016	\$ 41,669,222	0.0074	\$ 399,885	\$ 487,602	\$ 53,682,386	63.5	\$ 845,025
Total	\$ 764,422,264		\$ 190,760,610	\$ 232,605,300	\$ 761,143,643	52.4	\$ 14,512,600

Account 368 - Line Transformers

Account Description

This Account is for Line Transformers. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of overhead and underground distribution line transformers and pole-type and underground voltage regulators owned by the utility, for use in transforming electricity to the voltage at which it is to be used by the customer, whether actually in service or held in reserve." This includes labor of first installation, transformer cut-out boxes, transformer lightning arresters, transformers, lines and network, capacitors, network protectors, etc.

Discussion

The currently approved curve is the 44-O2. OG&E proposes the 42-O1. The fitting analysis shows that the O2 curve is a better fit to the data than the O1; therefore, I do not recommend a change to the dispersion. The O2 is best fit with a 47-year average service life. I recommend the 47-O2.

Account 368 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O3	61	417.58
O4	77	469.40
O2	47	675.53
O1	42	692.26
L0	46	1,453.02
R0.5	42	1,778.03
L0.5	45	2,629.52
R1	42	3,710.58
S0	42	3,891.39
L1	44	4,267.28
S0.5	42	5,988.48
R1.5	42	6,215.85
L1.5	44	6,551.76
S1	43	8,602.19
R2	43	9,409.55
L2	44	9,502.64
S1.5	43	11,425.40
L2.5	44	12,477.22
R2.5	43	13,119.30
S2	43	14,740.40
L3	44	16,170.00
R3	44	17,495.08
S2.5	44	17,924.17
S3	44	21,541.48
L4	44	24,729.43
R4	45	26,275.49
S4	45	30,822.40
L5	44	33,789.29
R5	45	37,623.49
S5	45	40,314.78
S6	44	48,831.86
SQ	77	90,835.50

Currently Approved 44-O2 1182.21

OG&E Proposal 42-O1 703.49

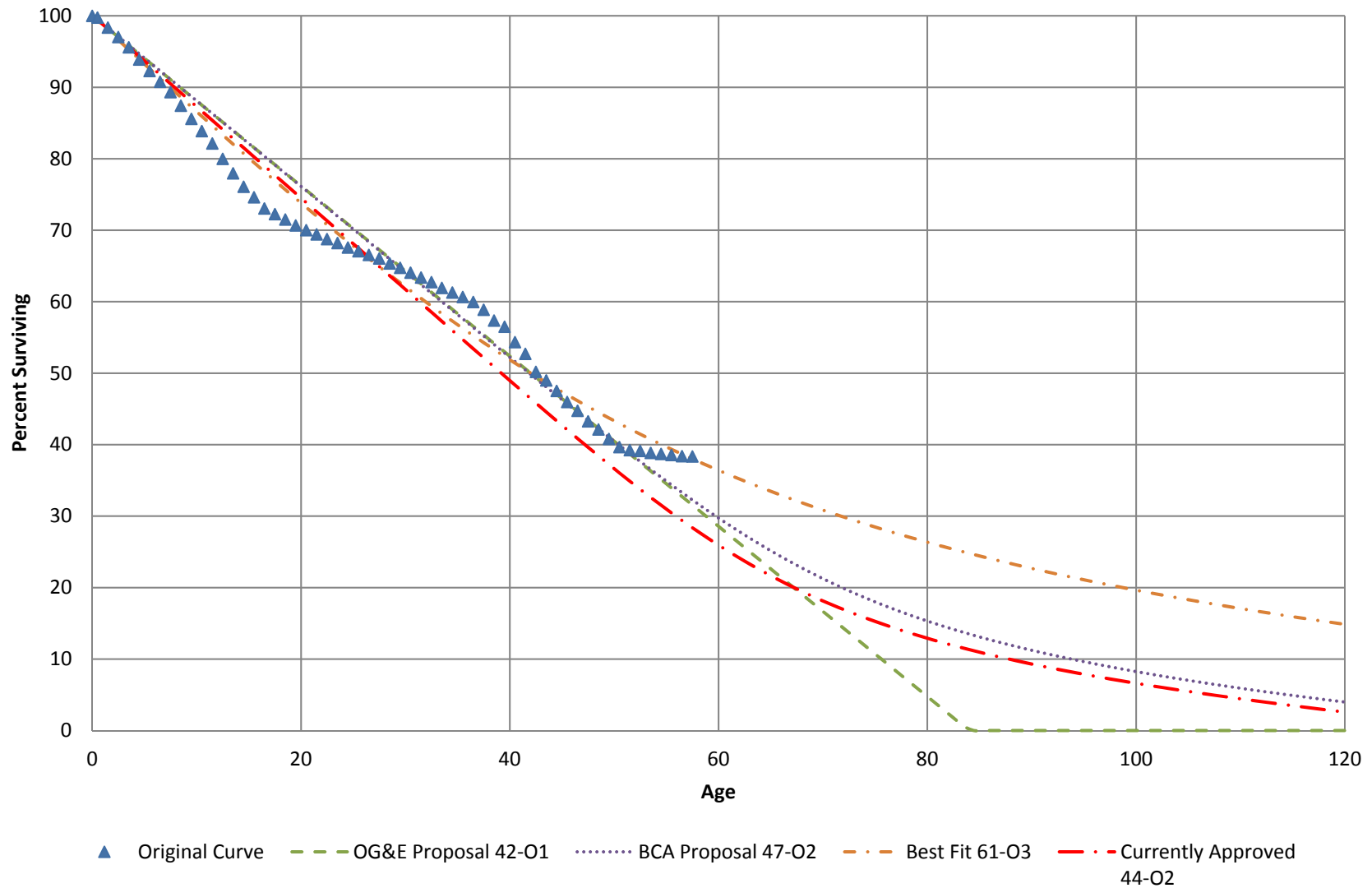
BCA Proposal 47-O2 683.74

Account 368 - Line Transformers

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 368
Survivor Curve 47-O2
Net Salvage -30%

Total Annual Accrual 12,438,327
Composite Remaining Life 40.3
Depreciation Rate 2.73%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 14,759,375	0.4032	\$ 7,736,447	\$ 8,235,445	\$ 10,951,742	28.0	\$ 390,448
1959	\$ 53,420	0.4012	\$ 27,862	\$ 29,659	\$ 39,787	28.1	\$ 1,414
1960	\$ 181,836	0.3990	\$ 94,324	\$ 100,408	\$ 135,979	28.2	\$ 4,814
1961	\$ 103,304	0.3967	\$ 53,269	\$ 56,705	\$ 77,590	28.4	\$ 2,736
1962	\$ 507,909	0.3941	\$ 260,211	\$ 276,995	\$ 383,287	28.5	\$ 13,459
1963	\$ 159,844	0.3913	\$ 81,313	\$ 86,558	\$ 121,239	28.6	\$ 4,238
1964	\$ 387,239	0.3883	\$ 195,474	\$ 208,082	\$ 295,329	28.7	\$ 10,272
1965	\$ 1,274,862	0.3850	\$ 638,151	\$ 679,311	\$ 978,009	28.9	\$ 33,838
1966	\$ 407,860	0.3816	\$ 202,309	\$ 215,358	\$ 314,860	29.1	\$ 10,832
1967	\$ 199,908	0.3778	\$ 98,188	\$ 104,521	\$ 155,359	29.2	\$ 5,313
1968	\$ 3,556,808	0.3738	\$ 1,728,564	\$ 1,840,056	\$ 2,783,794	29.4	\$ 94,591
1969	\$ 736,012	0.3696	\$ 353,646	\$ 376,456	\$ 580,360	29.6	\$ 19,588
1970	\$ 185,483	0.3651	\$ 88,044	\$ 93,723	\$ 147,404	29.8	\$ 4,940
1971	\$ 2,401,270	0.3604	\$ 1,125,125	\$ 1,197,696	\$ 1,923,956	30.1	\$ 64,004
1972	\$ 4,678,887	0.3555	\$ 2,162,244	\$ 2,301,708	\$ 3,780,845	30.3	\$ 124,812
1973	\$ 3,006,507	0.3503	\$ 1,369,181	\$ 1,457,492	\$ 2,450,966	30.5	\$ 80,267
1974	\$ 12,188,997	0.3449	\$ 5,465,515	\$ 5,818,040	\$ 10,027,656	30.8	\$ 325,693
1975	\$ 390,278	0.3393	\$ 172,156	\$ 183,261	\$ 324,100	31.1	\$ 10,437
1976	\$ 7,324,470	0.3335	\$ 3,175,616	\$ 3,380,442	\$ 6,141,368	31.3	\$ 196,053
1977	\$ 13,626,493	0.3275	\$ 5,801,582	\$ 6,175,782	\$ 11,538,659	31.6	\$ 365,064
1978	\$ 6,356,954	0.3213	\$ 2,655,357	\$ 2,826,627	\$ 5,437,414	31.9	\$ 170,461
1979	\$ 384,204	0.3149	\$ 157,304	\$ 167,450	\$ 332,015	32.2	\$ 10,312
1980	\$ 23,500,276	0.3084	\$ 9,421,835	\$ 10,029,541	\$ 20,520,818	32.5	\$ 631,312
1981	\$ 8,231,655	0.3017	\$ 3,228,537	\$ 3,436,777	\$ 7,264,375	32.8	\$ 221,339
1982	\$ 147,296	0.2948	\$ 56,458	\$ 60,099	\$ 131,385	33.1	\$ 3,964
1983	\$ 15,546,622	0.2878	\$ 5,817,371	\$ 6,192,590	\$ 14,018,018	33.5	\$ 418,803
1984	\$ 12,048,768	0.2807	\$ 4,396,618	\$ 4,680,199	\$ 10,983,199	33.8	\$ 324,876
1985	\$ 61,015	0.2734	\$ 21,688	\$ 23,086	\$ 56,234	34.1	\$ 1,647
1986	\$ 112,645	0.2660	\$ 38,955	\$ 41,468	\$ 104,971	34.5	\$ 3,043
1987	\$ 126,849	0.2585	\$ 42,627	\$ 45,377	\$ 119,527	34.9	\$ 3,430
1988	\$ 126,982	0.2509	\$ 41,412	\$ 44,083	\$ 120,993	35.2	\$ 3,436
1989	\$ 84,203	0.2431	\$ 26,614	\$ 28,330	\$ 81,134	35.6	\$ 2,281
1990	\$ 96,039	0.2353	\$ 29,376	\$ 31,270	\$ 93,581	35.9	\$ 2,604
1991	\$ 131,777	0.2273	\$ 38,947	\$ 41,459	\$ 129,850	36.3	\$ 3,576
1992	\$ 137,984	0.2193	\$ 39,342	\$ 41,879	\$ 137,500	36.7	\$ 3,747
1993	\$ 83,980	0.2112	\$ 23,058	\$ 24,546	\$ 84,628	37.1	\$ 2,283
1994	\$ 135,337	0.2030	\$ 35,717	\$ 38,021	\$ 137,917	37.5	\$ 3,682
1995	\$ 100,023	0.1947	\$ 25,321	\$ 26,955	\$ 103,076	37.8	\$ 2,723
1996	\$ 187,586	0.1864	\$ 45,452	\$ 48,384	\$ 195,479	38.2	\$ 5,112
1997	\$ 5,971,927	0.1780	\$ 1,381,608	\$ 1,470,721	\$ 6,292,784	38.6	\$ 162,874
1998	\$ 6,166,951	0.1695	\$ 1,358,662	\$ 1,446,295	\$ 6,570,741	39.0	\$ 168,330
1999	\$ 7,763,519	0.1609	\$ 1,624,065	\$ 1,728,817	\$ 8,363,758	39.4	\$ 212,079
2000	\$ 5,408,842	0.1523	\$ 1,070,895	\$ 1,139,967	\$ 5,891,527	39.8	\$ 147,873
2001	\$ 8,126,547	0.1436	\$ 1,517,310	\$ 1,615,176	\$ 8,949,335	40.2	\$ 222,345
2002	\$ 7,615,592	0.1349	\$ 1,335,449	\$ 1,421,585	\$ 8,478,685	40.7	\$ 208,526
2003	\$ 5,644,687	0.1261	\$ 925,353	\$ 985,038	\$ 6,353,055	41.1	\$ 154,676
2004	\$ 10,129,900	0.1173	\$ 1,544,221	\$ 1,643,823	\$ 11,525,047	41.5	\$ 277,788
2005	\$ 11,828,241	0.1084	\$ 1,666,428	\$ 1,773,912	\$ 13,602,802	41.9	\$ 324,599
2006	\$ 14,722,688	0.0994	\$ 1,903,156	\$ 2,025,909	\$ 17,113,585	42.3	\$ 404,323
2007	\$ 18,178,663	0.0905	\$ 2,137,599	\$ 2,275,474	\$ 21,356,788	42.7	\$ 499,589
2008	\$ 16,733,398	0.0814	\$ 1,771,267	\$ 1,885,514	\$ 19,867,904	43.2	\$ 460,192
2009	\$ 20,392,996	0.0724	\$ 1,918,176	\$ 2,041,898	\$ 24,468,997	43.6	\$ 561,224
2010	\$ 16,078,146	0.0632	\$ 1,321,867	\$ 1,407,127	\$ 19,494,463	44.0	\$ 442,778
2011	\$ 32,373,147	0.0541	\$ 2,276,400	\$ 2,423,227	\$ 39,661,864	44.5	\$ 892,125
2012	\$ 28,294,346	0.0449	\$ 1,651,517	\$ 1,758,039	\$ 35,024,611	44.9	\$ 780,237
2013	\$ 25,954,214	0.0357	\$ 1,203,523	\$ 1,281,150	\$ 32,459,328	45.3	\$ 716,170
2014	\$ 27,925,896	0.0264	\$ 958,523	\$ 1,020,347	\$ 35,283,317	45.8	\$ 771,067
2015	\$ 26,745,401	0.0171	\$ 594,493	\$ 632,837	\$ 34,136,184	46.2	\$ 738,936
2016	\$ 25,723,782	0.0078	\$ 259,375	\$ 276,104	\$ 33,164,812	46.6	\$ 711,150
Total	\$ 455,509,839		\$ 85,391,096	\$ 90,898,800	\$ 501,263,991	40.3	\$ 12,438,327

Account 369 - Services

Account Description

This account is for Services. Per the FERC Uniform System of Accounts for Account 369, "This account shall include the cost installed of overhead and underground conductors leading from a point where wires leave the last pole of the overhead system or the distribution box or manhole, or the top of the pole of the distribution line, to the point of connection with the customer's outlet or wiring. Conduit used for underground service conductors shall be included herein." The items contained within this account include brackets, cables and wires, conduit, insulators, inspection, overhead to underground connections, permits, pavement, suspension wire, service switch, and protection of street openings.

Discussion

The currently approved curve is the 53-R5. The data no longer supports this curve. The best fitting R5 curve is the 56-R5. OG&E proposes the 55-R4. I agree that the R4 is the proper dispersion, as the best fitting curve is the 66-R4. I recommend the 60-R4.

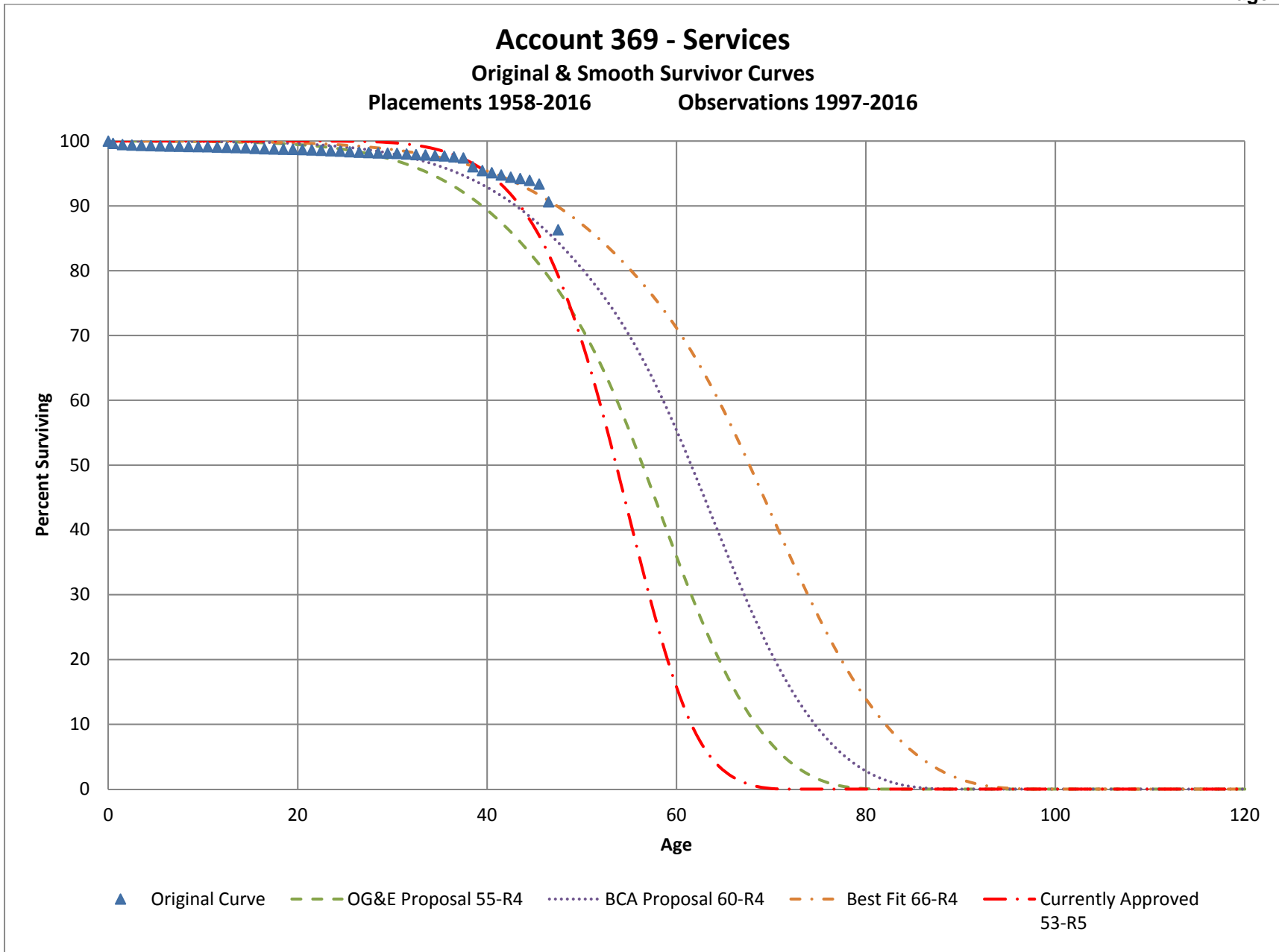
Account 369 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
R4	66	43.02
L3	77	45.09
S2.5	75	47.31
L2.5	89	48.45
S2	82	49.71
R3	82	53.48
S3	69	54.06
L2	100	54.34
S1.5	94	54.51
L4	65	57.97
S1	109	61.55
L1.5	125	67.64
L1	152	75.40
S0.5	136	77.26
R2.5	102	78.01
R5	56	82.97
S4	60	84.58
S0	171	87.75
L5	57	91.30
R2	129	96.89
L0.5	211	97.69
L0	278	104.04
R1.5	184	117.15
R1	250	124.67
R0.5	346	130.36
O2	495	130.87
O4	994	131.56
O1	449	132.47
O3	740	132.54
S5	54	138.42
S6	51	207.31
SQ	994	590.37

Currently Approved 53-R5 294.75

OG&E Proposal 55-R4 919.44

BCA Proposal 60-R4 197.40



Calculation of Annual Accrual and Depreciation Rate

Account	369	Total Annual Accrual	3,784,960
Survivor Curve	60-R4	Composite Remaining Life	44.6
Net Salvage	-20%	Depreciation Rate	1.55%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1964	\$ 48,777	0.7831	\$ 45,839	\$ 58,533	\$ -	13.0	\$ -
1965	\$ 137,948	0.7722	\$ 127,826	\$ 165,538	\$ -	13.7	\$ -
1966	\$ 266,740	0.7610	\$ 243,587	\$ 320,088	\$ -	14.3	\$ -
1967	\$ 372,828	0.7496	\$ 335,370	\$ 447,394	\$ -	15.0	\$ -
1968	\$ 468,536	0.7380	\$ 414,961	\$ 562,244	\$ -	15.7	\$ -
1969	\$ 640,262	0.7263	\$ 558,015	\$ 768,315	\$ -	16.4	\$ -
1970	\$ 810,936	0.7143	\$ 695,121	\$ 965,806	\$ 7,318	17.1	\$ 427
1971	\$ 1,031,295	0.7022	\$ 868,969	\$ 1,207,350	\$ 30,204	17.9	\$ 1,690
1972	\$ 1,486,119	0.6898	\$ 1,230,148	\$ 1,709,175	\$ 74,168	18.6	\$ 3,985
1973	\$ 1,502,204	0.6772	\$ 1,220,781	\$ 1,696,160	\$ 106,485	19.4	\$ 5,498
1974	\$ 942,778	0.6644	\$ 751,698	\$ 1,044,414	\$ 86,919	20.1	\$ 4,317
1975	\$ 1,649,897	0.6514	\$ 1,289,766	\$ 1,792,009	\$ 187,867	20.9	\$ 8,983
1976	\$ 2,319,493	0.6382	\$ 1,776,430	\$ 2,468,183	\$ 315,209	21.7	\$ 14,521
1977	\$ 2,735,451	0.6248	\$ 2,050,987	\$ 2,849,654	\$ 432,887	22.5	\$ 19,230
1978	\$ 3,228,542	0.6112	\$ 2,367,935	\$ 3,290,024	\$ 584,226	23.3	\$ 25,044
1979	\$ 3,537,919	0.5974	\$ 2,536,157	\$ 3,523,753	\$ 721,751	24.2	\$ 29,877
1980	\$ 3,658,383	0.5834	\$ 2,561,018	\$ 3,558,293	\$ 831,766	25.0	\$ 33,273
1981	\$ 4,660,163	0.5692	\$ 3,182,881	\$ 4,422,314	\$ 1,169,882	25.9	\$ 45,256
1982	\$ 4,774,144	0.5548	\$ 3,178,289	\$ 4,415,934	\$ 1,313,040	26.7	\$ 49,153
1983	\$ 5,732,688	0.5402	\$ 3,716,279	\$ 5,163,420	\$ 1,715,805	27.6	\$ 62,196
1984	\$ 6,347,909	0.5255	\$ 4,002,890	\$ 5,561,640	\$ 2,055,851	28.5	\$ 72,209
1985	\$ 5,523,891	0.5106	\$ 3,384,537	\$ 4,702,496	\$ 1,926,173	29.4	\$ 65,595
1986	\$ 4,491,622	0.4955	\$ 2,670,985	\$ 3,711,083	\$ 1,678,863	30.3	\$ 55,468
1987	\$ 3,963,654	0.4804	\$ 2,284,771	\$ 3,174,475	\$ 1,581,909	31.2	\$ 50,737
1988	\$ 3,129,374	0.4650	\$ 1,746,297	\$ 2,426,316	\$ 1,328,932	32.1	\$ 41,402
1989	\$ 2,885,154	0.4496	\$ 1,556,516	\$ 2,162,632	\$ 1,299,553	33.0	\$ 39,350
1990	\$ 3,364,623	0.4340	\$ 1,752,297	\$ 2,434,652	\$ 1,602,895	34.0	\$ 47,200
1991	\$ 3,319,523	0.4183	\$ 1,666,310	\$ 2,315,181	\$ 1,668,246	34.9	\$ 47,799
1992	\$ 3,799,864	0.4025	\$ 1,835,436	\$ 2,550,166	\$ 2,009,670	35.8	\$ 56,060
1993	\$ 3,967,418	0.3866	\$ 1,840,736	\$ 2,557,530	\$ 2,203,372	36.8	\$ 59,871
1994	\$ 6,712,872	0.3707	\$ 2,985,833	\$ 4,148,535	\$ 3,906,912	37.8	\$ 103,466
1995	\$ 6,127,416	0.3546	\$ 2,607,396	\$ 3,622,733	\$ 3,730,167	38.7	\$ 96,328
1996	\$ 6,187,057	0.3385	\$ 2,513,038	\$ 3,491,630	\$ 3,932,838	39.7	\$ 99,086
1997	\$ 6,882,666	0.3223	\$ 2,661,821	\$ 3,698,350	\$ 4,560,849	40.7	\$ 112,163
1998	\$ 4,975,621	0.3060	\$ 1,827,249	\$ 2,538,791	\$ 3,431,955	41.6	\$ 82,424
1999	\$ 1,481,101	0.2897	\$ 514,937	\$ 715,456	\$ 1,061,864	42.6	\$ 24,917
2000	\$ 7,302,469	0.2734	\$ 2,395,533	\$ 3,328,369	\$ 5,434,594	43.6	\$ 124,653
2001	\$ 7,701,091	0.2570	\$ 2,374,769	\$ 3,299,519	\$ 5,941,790	44.6	\$ 133,279
2002	\$ 7,628,433	0.2405	\$ 2,201,906	\$ 3,059,342	\$ 6,094,777	45.6	\$ 133,752
2003	\$ 6,782,332	0.2241	\$ 1,823,637	\$ 2,533,772	\$ 5,605,026	46.6	\$ 120,393
2004	\$ 6,937,700	0.2076	\$ 1,728,061	\$ 2,400,979	\$ 5,924,261	47.5	\$ 124,601
2005	\$ 9,871,197	0.1910	\$ 2,263,004	\$ 3,144,232	\$ 8,701,205	48.5	\$ 179,268
2006	\$ 10,333,186	0.1745	\$ 2,163,733	\$ 3,006,305	\$ 9,393,518	49.5	\$ 189,652
2007	\$ 11,991,008	0.1579	\$ 2,272,508	\$ 3,157,437	\$ 11,231,773	50.5	\$ 222,305
2008	\$ 15,288,506	0.1413	\$ 2,593,211	\$ 3,603,023	\$ 14,743,185	51.5	\$ 286,169
2009	\$ 12,705,003	0.1248	\$ 1,901,959	\$ 2,642,594	\$ 12,603,410	52.5	\$ 239,997
2010	\$ 3,878,278	0.1081	\$ 503,288	\$ 699,271	\$ 3,954,662	53.5	\$ 73,903
2011	\$ 7,221,010	0.0915	\$ 793,067	\$ 1,101,892	\$ 7,563,320	54.5	\$ 138,755
2012	\$ 17,262,805	0.0749	\$ 1,551,474	\$ 2,155,628	\$ 18,559,739	55.5	\$ 334,372
2013	\$ 32,462	0.0583	\$ 2,269	\$ 3,153	\$ 35,801	56.5	\$ 634
2014	\$ 25,331	0.0416	\$ 1,265	\$ 1,758	\$ 28,639	57.5	\$ 498
2015	\$ 3,606,786	0.0250	\$ 108,082	\$ 150,170	\$ 4,177,973	58.5	\$ 71,416
2016	\$ 2,698,156	0.0083	\$ 26,943	\$ 37,435	\$ 3,200,351	59.5	\$ 53,787
Total	\$ 244,430,624		\$ 89,707,818	\$ 124,565,148	\$ 168,751,600	44.6	\$ 3,784,960

Account 370 - Meters - Smart Meters

Account Description

This account is for smart meters. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of meters or devices and appurtenances thereto, for use in measuring the electricity delivered to its users, whether actually in service or held in reserve." This subaccount is for smart meters.

Discussion

The currently approved curve is the 15-S2.5. OG&E recommends no change. I agree that no change is required.

Account 370 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
S0.5	33	1.00
L1.5	30	1.05
S0	43	1.07
R3	18	1.12
S1	24	1.17
L2	22	1.20
L1	38	1.22
S1.5	20	1.40
L2.5	19	1.48
L0.5	58	1.48
R2.5	26	1.50
L0	78	1.51
R2	37	1.85
R1.5	58	2.24
O2	165	2.33
R1	82	2.36
O4	334	2.39
R0.5	117	2.45
O3	252	2.47
O1	153	2.49
L3	16	2.54
S2	17	2.70
R4	13	3.06
S2.5	15	3.16
S3	13	5.26
L4	12	6.09
R5	10	8.96
S4	11	9.12
L5	11	10.24
S5	10	11.81
S6	9	12.89
SQ	334	20.69

Currently Approved 15-S2.5 3.16

OG&E Proposal 15-S2.5 3.16

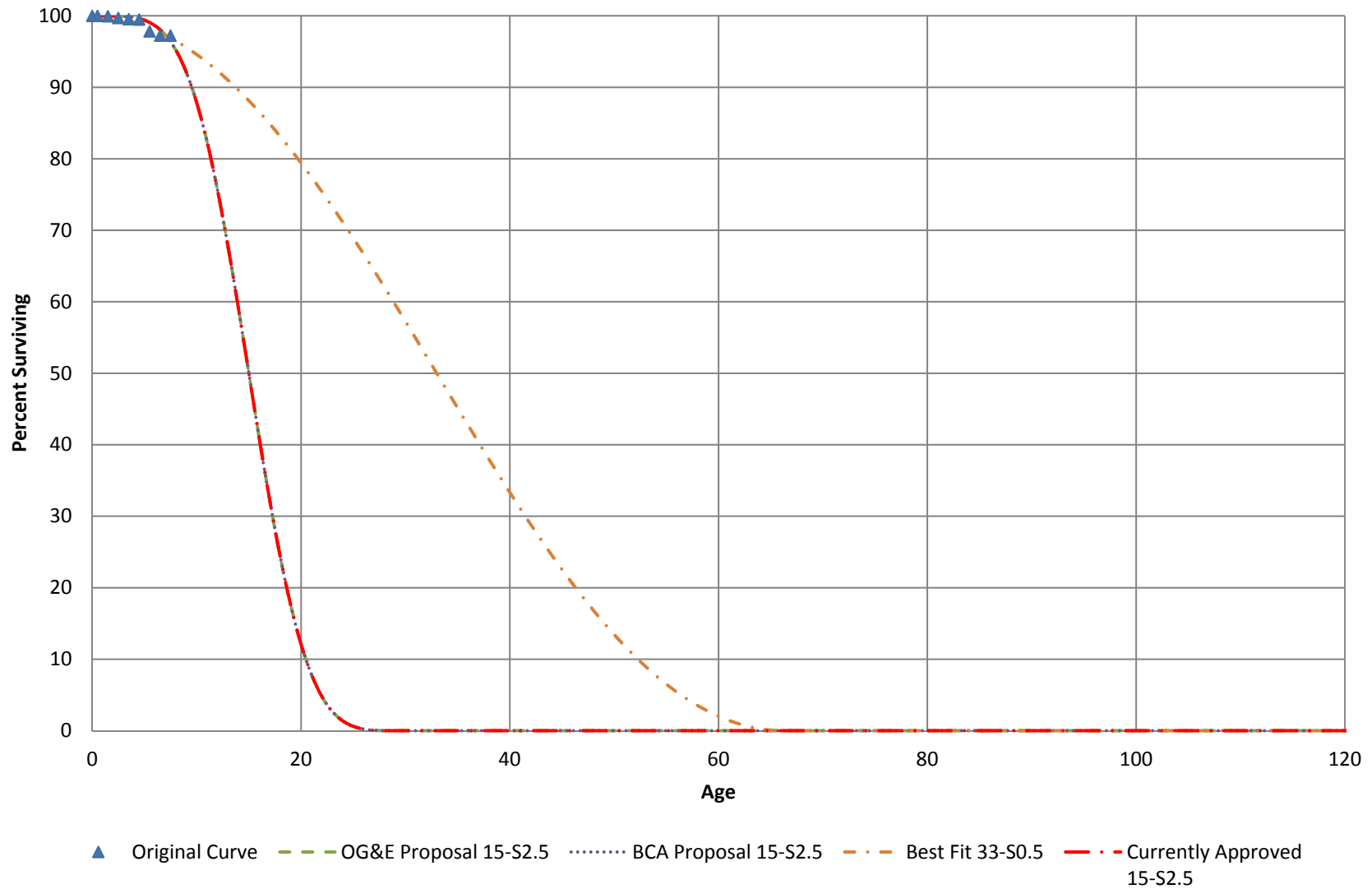
BCA Proposal 15-S2.5 3.16

Account 370.0 - Meters - Smart Meters

Original & Smooth Survivor Curves

Placements 2008-2016

Observations 2010-2016



Calculation of Annual Accrual and Depreciation Rate

Account	370	Total Annual Accrual	10,187,700
Survivor Curve	15-S2.5	Composite Remaining Life	10.6
Net Salvage	-10%	Depreciation Rate	7.11%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
2008	\$ 2,110,804	0.5309	\$ 1,232,663	\$ 1,316,546	\$ 1,005,339	7.0	\$ 142,872
2010	\$ 23,350,061	0.4204	\$ 10,798,674	\$ 11,533,525	\$ 14,151,542	8.7	\$ 1,627,810
2011	\$ 40,598,319	0.3600	\$ 16,077,216	\$ 17,171,272	\$ 27,486,879	9.6	\$ 2,863,245
2012	\$ 38,112,597	0.2971	\$ 12,453,602	\$ 13,301,070	\$ 28,622,787	10.5	\$ 2,714,551
2013	\$ 9,695,310	0.2323	\$ 2,477,362	\$ 2,645,947	\$ 8,018,894	11.5	\$ 696,350
2014	\$ 12,014,226	0.1664	\$ 2,199,320	\$ 2,348,984	\$ 10,866,664	12.5	\$ 869,074
2015	\$ 8,651,455	0.1000	\$ 951,411	\$ 1,016,154	\$ 8,500,446	13.5	\$ 629,644
2016	\$ 8,804,598	0.0333	\$ 322,833	\$ 344,802	\$ 9,340,255	14.5	\$ 644,155
Total	\$ 143,337,370		\$ 46,513,082	\$ 49,678,301	\$ 107,992,806	10.6	\$ 10,187,700

Account 370.1 - Meters - Metering Equipment

Account Description

This account is for meters. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of meters or devices and appurtenances thereto, for use in measuring the electricity delivered to its users, whether actually in service or held in reserve." This includes labor of first installation, alternating current, watt-hour meters, current limiting device, demand indicators, demand meters, maximum demand meters, meter fittings, connections, and shelves, meter switches and cut-outs, instrument transformers, etc.

Discussion

The currently approved curve is the 14-L0.5. OG&E recommends the 13-L0, which is the second best fitting curve. I agree with OG&E that the data supports the move to the 13-L0. The best fit is the 13-O2.

Account 370.1 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
O2	13	429.17
L0	13	701.55
O3	14	834.88
L0.5	13	1249.51
O1	13	1772.34
L1	13	2031.50
R0.5	13	2564.62
L1.5	13	3018.86
S0	13	3204.96
O4	14	3263.83
R1	12	3868.10
S0.5	12	4154.35
L2	13	4255.69
R1.5	12	5076.99
S1	12	5337.38
L2.5	12	5718.72
S1.5	12	6579.71
R2	12	6610.29
L3	12	7432.53
S2	12	8017.27
R2.5	12	8114.05
S2.5	12	9329.06
R3	12	9886.95
S3	12	10787.46
L4	12	11506.00
R4	12	12921.94
S4	11	14113.73
L5	11	14831.89
R5	11	16207.60
S5	11	16946.18
S6	11	19228.85
SQ	14	28470.32

Currently Approved 14-L0.5 1662.73

OG&E Proposal 13-L0 708.12

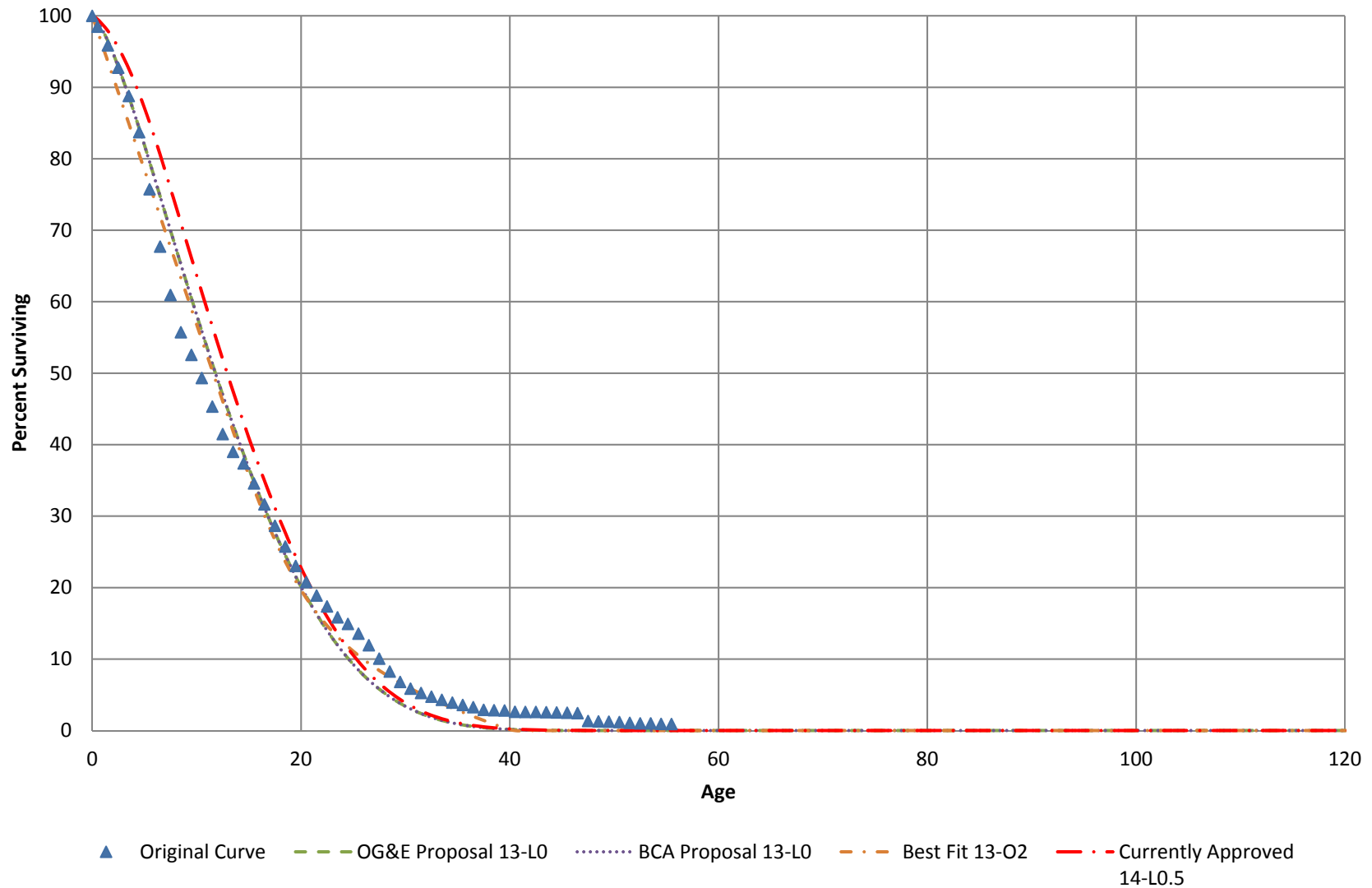
BCA Proposal 13-L0 708.12

Account 370.1 - Meters - Metering Equipment

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 370.1
Survivor Curve 13-L0
Net Salvage -10%

Total Annual Accrual 2,714,598
Composite Remaining Life 8.7
Depreciation Rate 7.31%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 483,186	-29.7387	\$ (15,806,222)	\$ 531,504	\$ -	399.6	\$ -
1959	\$ 101,272	-30.3508	\$ (3,381,059)	\$ 111,399	\$ -	407.6	\$ -
1960	\$ 180,661	0.8868	\$ 176,227	\$ 198,727	\$ -	1.5	\$ -
1961	\$ 185,824	0.9599	\$ 196,220	\$ 204,407	\$ -	0.5	\$ -
1962	\$ 176,306	0.9575	\$ 185,693	\$ 193,937	\$ -	0.6	\$ -
1963	\$ 179,923	0.9524	\$ 188,488	\$ 197,916	\$ -	0.6	\$ -
1964	\$ 197,185	0.9460	\$ 205,193	\$ 216,903	\$ -	0.7	\$ -
1965	\$ 192,140	0.9390	\$ 198,465	\$ 211,355	\$ -	0.8	\$ -
1966	\$ 214,160	0.9315	\$ 219,442	\$ 235,576	\$ -	0.9	\$ -
1967	\$ 250,539	0.9235	\$ 254,519	\$ 274,214	\$ 1,379	1.0	\$ 1,387
1968	\$ 249,025	0.9153	\$ 250,713	\$ 270,114	\$ 3,813	1.1	\$ 3,461
1969	\$ 224,010	0.9068	\$ 223,443	\$ 240,733	\$ 5,677	1.2	\$ 4,685
1970	\$ 203,889	0.8980	\$ 201,399	\$ 216,984	\$ 7,294	1.3	\$ 5,500
1971	\$ 208,756	0.8889	\$ 204,126	\$ 219,922	\$ 9,710	1.4	\$ 6,724
1972	\$ 203,971	0.8798	\$ 197,391	\$ 212,665	\$ 11,703	1.6	\$ 7,487
1973	\$ 185,683	0.8703	\$ 177,760	\$ 191,515	\$ 12,736	1.7	\$ 7,553
1974	\$ 194,387	0.8606	\$ 184,016	\$ 198,256	\$ 15,570	1.8	\$ 8,591
1975	\$ 207,702	0.8507	\$ 194,366	\$ 209,407	\$ 19,065	1.9	\$ 9,824
1976	\$ 218,584	0.8406	\$ 202,118	\$ 217,759	\$ 22,683	2.1	\$ 10,947
1977	\$ 106,816	0.8302	\$ 97,551	\$ 105,100	\$ 12,398	2.2	\$ 5,618
1978	\$ 199,706	0.8197	\$ 180,059	\$ 193,992	\$ 25,684	2.3	\$ 10,955
1979	\$ 218,033	0.8088	\$ 193,989	\$ 209,000	\$ 30,835	2.5	\$ 12,408
1980	\$ 210,579	0.7977	\$ 184,787	\$ 199,086	\$ 32,551	2.6	\$ 12,380
1981	\$ 175,232	0.7864	\$ 151,580	\$ 163,309	\$ 29,446	2.8	\$ 10,604
1982	\$ 188,296	0.7748	\$ 160,477	\$ 172,895	\$ 34,230	2.9	\$ 11,691
1983	\$ 184,291	0.7629	\$ 154,648	\$ 166,615	\$ 36,105	3.1	\$ 11,712
1984	\$ 191,555	0.7506	\$ 158,166	\$ 170,406	\$ 40,305	3.2	\$ 12,433
1985	\$ 182,508	0.7381	\$ 148,186	\$ 159,654	\$ 41,105	3.4	\$ 12,075
1986	\$ 204,053	0.7253	\$ 162,795	\$ 175,392	\$ 49,065	3.6	\$ 13,739
1987	\$ 198,262	0.7121	\$ 155,294	\$ 167,311	\$ 50,778	3.7	\$ 13,566
1988	\$ 219,794	0.6985	\$ 168,884	\$ 181,952	\$ 59,822	3.9	\$ 15,264
1989	\$ 225,501	0.6846	\$ 169,812	\$ 182,953	\$ 65,099	4.1	\$ 15,876
1990	\$ 215,984	0.6702	\$ 159,237	\$ 171,559	\$ 66,024	4.3	\$ 15,401
1991	\$ 201,027	0.6555	\$ 144,947	\$ 156,163	\$ 64,967	4.5	\$ 14,506
1992	\$ 212,042	0.6403	\$ 149,345	\$ 160,902	\$ 72,344	4.7	\$ 15,471
1993	\$ 211,511	0.6246	\$ 145,326	\$ 156,572	\$ 76,090	4.9	\$ 15,593
1994	\$ 282,874	0.6085	\$ 189,332	\$ 203,983	\$ 107,179	5.1	\$ 21,057
1995	\$ 236,250	0.5918	\$ 153,797	\$ 165,698	\$ 94,177	5.3	\$ 17,748
1996	\$ 219,005	0.5746	\$ 138,425	\$ 149,137	\$ 91,769	5.5	\$ 16,594
1997	\$ 217,398	0.5568	\$ 133,156	\$ 143,460	\$ 95,678	5.8	\$ 16,607
1998	\$ 220,031	0.5384	\$ 130,323	\$ 140,407	\$ 101,627	6.0	\$ 16,937
1999	\$ 205,504	0.5194	\$ 117,421	\$ 126,507	\$ 99,548	6.2	\$ 15,934
2000	\$ 8,636	0.4997	\$ 4,748	\$ 5,115	\$ 4,385	6.5	\$ 674
2001	\$ 829,315	0.4794	\$ 437,303	\$ 471,143	\$ 441,104	6.8	\$ 65,173
2002	\$ 634,078	0.4582	\$ 319,620	\$ 344,353	\$ 353,132	7.0	\$ 50,141
2003	\$ 1,813,366	0.4363	\$ 870,366	\$ 937,717	\$ 1,056,985	7.3	\$ 144,247
2004	\$ 1,282,158	0.4136	\$ 583,347	\$ 628,488	\$ 781,886	7.6	\$ 102,569
2005	\$ 1,370,818	0.3900	\$ 588,111	\$ 633,620	\$ 874,279	7.9	\$ 110,253
2006	\$ 1,810,476	0.3655	\$ 727,930	\$ 784,260	\$ 1,207,264	8.2	\$ 146,365
2007	\$ 1,658,488	0.3401	\$ 620,367	\$ 668,373	\$ 1,155,964	8.6	\$ 134,738
2008	\$ 2,881,421	0.3136	\$ 993,916	\$ 1,070,828	\$ 2,098,735	8.9	\$ 235,193
2009	\$ 2,356,769	0.2861	\$ 741,576	\$ 798,961	\$ 1,793,485	9.3	\$ 193,236
2010	\$ 1,539,695	0.2574	\$ 435,972	\$ 469,708	\$ 1,223,956	9.7	\$ 126,787
2011	\$ 2,381,170	0.2275	\$ 595,939	\$ 642,055	\$ 1,977,233	10.0	\$ 196,892
2012	\$ 3,293,565	0.1958	\$ 709,306	\$ 764,194	\$ 2,858,728	10.5	\$ 273,436
2013	\$ 2,635,051	0.1615	\$ 468,027	\$ 504,244	\$ 2,394,312	10.9	\$ 219,643
2014	\$ 2,016,714	0.1237	\$ 274,352	\$ 295,582	\$ 1,922,803	11.4	\$ 168,781
2015	\$ 1,153,099	0.0810	\$ 102,786	\$ 110,740	\$ 1,157,669	11.9	\$ 96,904
2016	\$ 701,784	0.0308	\$ 23,748	\$ 25,586	\$ 746,377	12.6	\$ 59,236
Total	\$ 37,150,057		\$ (3,682,753)	\$ 17,330,311	\$ 23,534,752	8.7	\$ 2,714,598

Account 371 - Installation on Customers' Premises

Account Description

This account is for Installation on Customers' Premises. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of equipment on the customer's side of a meter when the utility incurs such cost and when the utility retains title to and assumes full responsibility for maintenance and replacement of such property." This includes the cost of cable vaults, commercial lamp equipment, foundations, frequency changer sets, motor generator sets, motors, switchboards panels, and wire and cable connections.

Discussion

The currently approved curve is the 15-L3. The data supports a shorter life. OG&E's proposal is to reduce the life by over 50% to a 7-R4. OG&E's proposed reduction is too drastic and there is minimal data. I recommend the 10-L2.5.

Account 371 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
S1.5	10	0.04
L2.5	10	0.06
L2	11	0.07
S1	12	0.11
R3	9	0.16
L1.5	14	0.59
S2	9	0.64
L3	8	0.64
S0.5	15	0.97
S2.5	8	1.02
R4	7	1.05
L1	17	1.20
S0	19	1.56
R2.5	11	1.71
L0.5	24	2.56
S3	7	2.70
L0	32	2.87
R2	15	2.93
L4	7	3.24
R1.5	22	4.33
R1	29	4.83
O2	59	5.16
R0.5	41	5.23
O4	118	5.24
O3	88	5.36
O1	54	5.37
R5	6	6.06
S4	6	6.20
L5	6	7.06
S5	6	8.18
S6	5	8.49
SQ	118	41.32

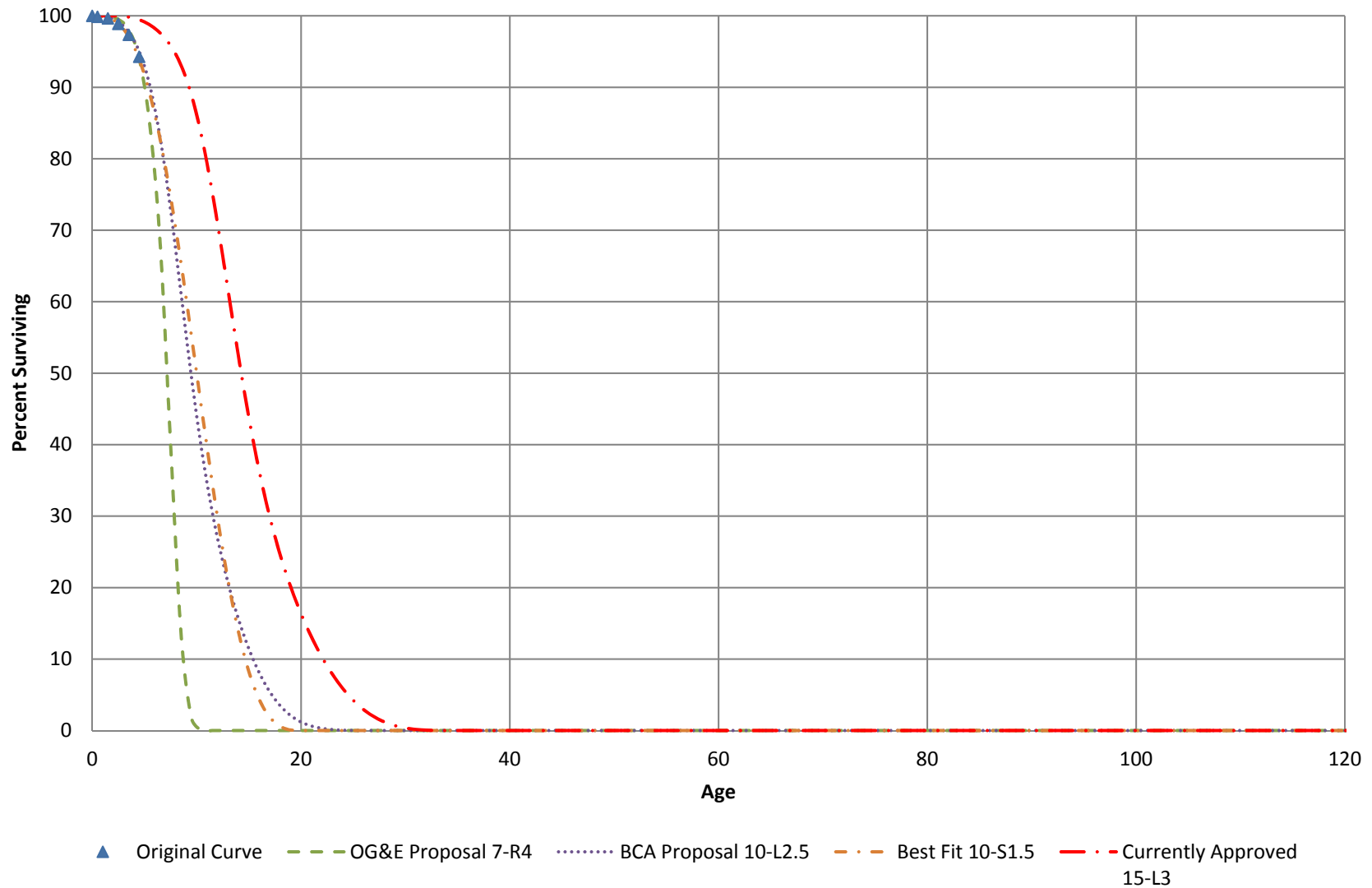
Currently Approved 15-L3 34.34

OG&E Proposal 7-R4 1.06

BCA Proposal 10-L2.5 0.78

Account 371.0 - Installations on Customers' Premises

Original & Smooth Survivor Curves
Placements 1958-2016 Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	371	Total Annual Accrual	3,092,987
Survivor Curve	10-L2.5	Composite Remaining Life	7.8
Net Salvage	0%	Depreciation Rate	5.76%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
2010	\$ 69,480	0.5462	\$ 37,948	\$ 69,480	\$ -	4.5	\$ -
2011	\$ 436,866	0.4871	\$ 212,811	\$ 431,776	\$ 5,090	5.1	\$ 992
2012	\$ 13,723,059	0.4149	\$ 5,694,007	\$ 11,552,647	\$ 2,170,412	5.9	\$ 370,962
2013	\$ 12,491,818	0.3324	\$ 4,151,916	\$ 8,423,878	\$ 4,067,939	6.7	\$ 609,311
2014	\$ 11,382,964	0.2430	\$ 2,765,503	\$ 5,610,965	\$ 5,771,998	7.6	\$ 762,434
2015	\$ 10,262,871	0.1484	\$ 1,522,529	\$ 3,089,079	\$ 7,173,793	8.5	\$ 842,344
2016	\$ 5,359,269	0.0499	\$ 267,619	\$ 542,976	\$ 4,816,293	9.5	\$ 506,944
Total	\$ 53,726,326		\$ 14,652,333	\$ 29,720,800	\$ 24,005,526	7.8	\$ 3,092,987

Account 373 - Street Lighting And Signal Systems

Account Description

This account is for street lighting and signal systems. Per the FERC Uniform System of Accounts, "This account shall include the cost installed of equipment used wholly for public street and highway lighting or traffic, fire alarm, police, and other signal systems." This includes automatic control equipment, conductors, lamps, municipal inspection, lamp posts, permits, series contactors, switches, etc.

Discussion

The currently approved curve is the 31-L2. The fitting analysis shows that the 35-O3 is the best fit and that lower moded L-type curves fit the data better. OG&E proposed the 27-L1. The fitting analysis shows that the best fitting L1 curve has an average life of 29 years. I recommend the 30-L0.5.

Account 373 Fitting Analysis Results

Iowa Curve	Average Service Life	Lowest SSD
O3	35	2,885.77
L0	30	2,968.56
O2	30	3,029.30
L0.5	30	3,574.08
O4	43	4,300.47
L1	29	4,662.78
O1	30	5,845.51
L1.5	29	6,149.21
R0.5	30	7,507.52
S0	29	8,099.10
L2	29	8,176.06
S0.5	29	9,651.60
R1	28	10,116.74
L2.5	28	10,926.58
S1	28	11,639.26
R1.5	28	12,037.43
S1.5	27	13,678.96
L3	27	14,145.31
R2	27	14,570.34
S2	27	16,083.48
R2.5	26	16,932.08
S2.5	26	18,296.62
R3	26	19,837.93
S3	26	20,797.99
L4	26	21,904.06
R4	25	24,977.91
S4	25	26,794.20
L5	25	28,120.90
R5	24	30,937.37
S5	24	32,268.60
S6	24	36,892.08
SQ	43	110,385.28

Currently Approved 31-L2 8,924.16

OG&E Proposal 27-L1 5,549.71

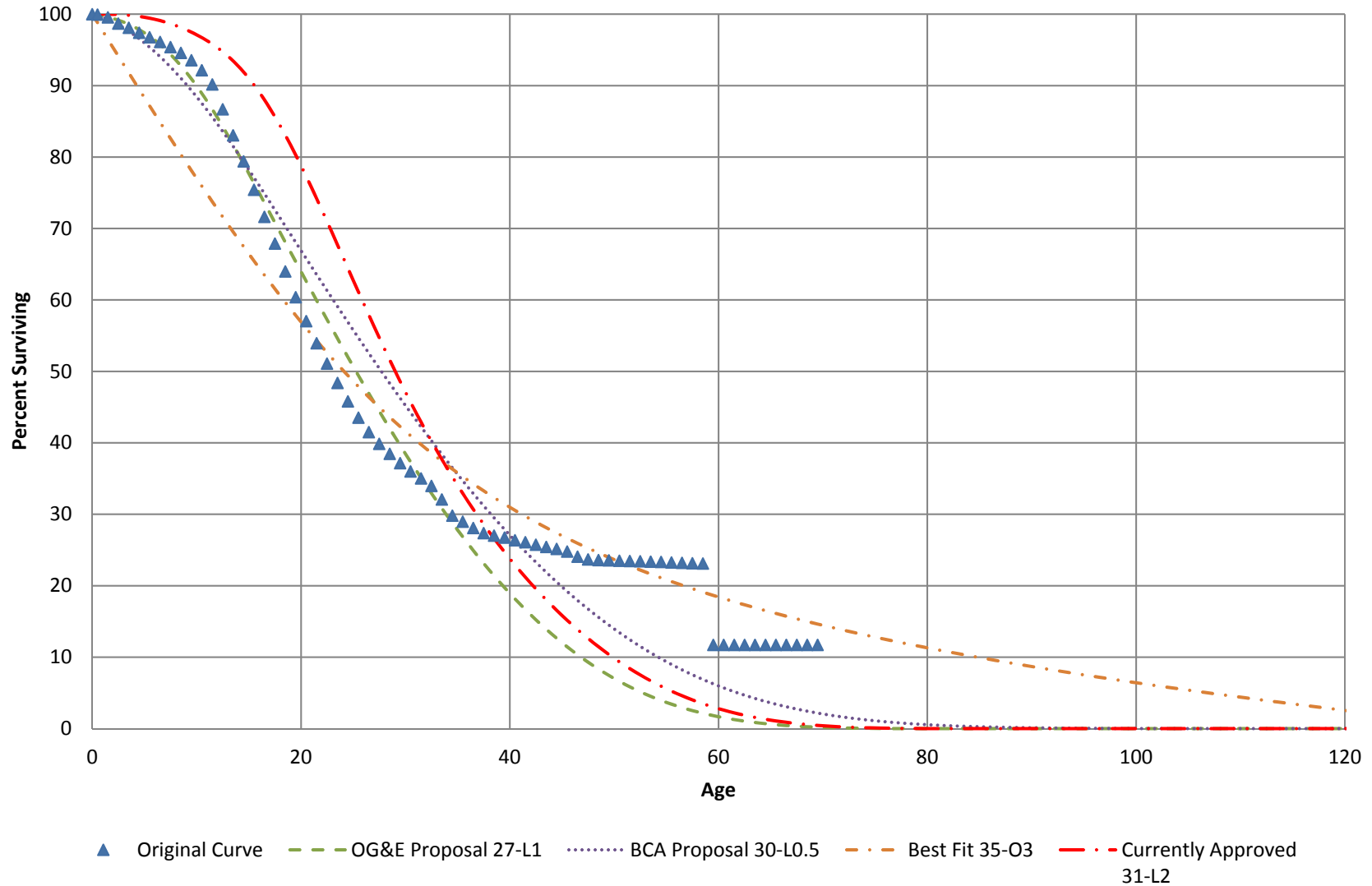
BCA Proposal 30-L0.5 3,585.22

Account 373 - Street Lighting And Signal Systems

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2028



Calculation of Annual Accrual and Depreciation Rate

Account	373	Total Annual Accrual	10,394,603
Survivor Curve	30-L0.5	Composite Remaining Life	22.2
Net Salvage	-40%	Depreciation Rate	4.34%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 14,914,192	0.6983	\$ 14,581,333	\$ 16,579,148	\$ 4,300,721	9.0	\$ 475,235
1959	\$ 34,554	0.6927	\$ 33,510	\$ 38,101	\$ 10,275	9.2	\$ 1,115
1960	\$ 28,341	0.6869	\$ 27,254	\$ 30,988	\$ 8,690	9.4	\$ 925
1961	\$ 52,785	0.6809	\$ 50,318	\$ 57,212	\$ 16,687	9.6	\$ 1,743
1962	\$ 29,365	0.6748	\$ 27,743	\$ 31,544	\$ 9,568	9.8	\$ 981
1963	\$ 55,783	0.6686	\$ 52,213	\$ 59,367	\$ 18,729	9.9	\$ 1,884
1964	\$ 37,583	0.6622	\$ 34,841	\$ 39,614	\$ 13,001	10.1	\$ 1,283
1965	\$ 24,539	0.6557	\$ 22,525	\$ 25,611	\$ 8,743	10.3	\$ 846
1966	\$ 29,022	0.6490	\$ 26,369	\$ 29,982	\$ 10,649	10.5	\$ 1,011
1967	\$ 26,126	0.6422	\$ 23,489	\$ 26,707	\$ 9,870	10.7	\$ 919
1968	\$ 20,858	0.6352	\$ 18,549	\$ 21,091	\$ 8,110	10.9	\$ 741
1969	\$ 23,302	0.6281	\$ 20,491	\$ 23,299	\$ 9,324	11.2	\$ 836
1970	\$ 90,185	0.6209	\$ 78,389	\$ 89,130	\$ 37,129	11.4	\$ 3,264
1971	\$ 681,288	0.6135	\$ 585,142	\$ 665,314	\$ 288,489	11.6	\$ 24,879
1972	\$ 1,205,583	0.6059	\$ 1,022,725	\$ 1,162,851	\$ 524,966	11.8	\$ 44,407
1973	\$ 409,252	0.5983	\$ 342,769	\$ 389,733	\$ 183,220	12.1	\$ 15,202
1974	\$ 336,571	0.5904	\$ 278,208	\$ 316,325	\$ 154,874	12.3	\$ 12,604
1975	\$ 482,097	0.5824	\$ 393,108	\$ 446,969	\$ 227,967	12.5	\$ 18,198
1976	\$ 176,251	0.5743	\$ 141,707	\$ 161,123	\$ 85,629	12.8	\$ 6,705
1977	\$ 444,861	0.5660	\$ 352,511	\$ 400,810	\$ 221,995	13.0	\$ 17,051
1978	\$ 511,600	0.5576	\$ 399,344	\$ 454,058	\$ 262,181	13.3	\$ 19,752
1979	\$ 934,840	0.5489	\$ 718,439	\$ 816,874	\$ 491,901	13.5	\$ 36,352
1980	\$ 581,635	0.5402	\$ 439,860	\$ 500,126	\$ 314,162	13.8	\$ 22,774
1981	\$ 714,056	0.5312	\$ 531,073	\$ 603,836	\$ 395,843	14.1	\$ 28,148
1982	\$ 1,693,613	0.5221	\$ 1,238,018	\$ 1,407,641	\$ 963,417	14.3	\$ 67,203
1983	\$ 1,606,183	0.5129	\$ 1,153,278	\$ 1,311,290	\$ 937,366	14.6	\$ 64,143
1984	\$ 1,296,232	0.5034	\$ 913,592	\$ 1,038,765	\$ 775,960	14.9	\$ 52,088
1985	\$ 3,854,133	0.4938	\$ 2,664,502	\$ 3,029,570	\$ 2,366,216	15.2	\$ 155,819
1986	\$ 1,992,538	0.4840	\$ 1,350,204	\$ 1,535,197	\$ 1,254,355	15.5	\$ 81,034
1987	\$ 1,453,035	0.4740	\$ 964,325	\$ 1,096,450	\$ 937,800	15.8	\$ 59,435
1988	\$ 573,224	0.4639	\$ 372,269	\$ 423,275	\$ 379,239	16.1	\$ 23,579
1989	\$ 1,714,259	0.4535	\$ 1,088,461	\$ 1,237,593	\$ 1,162,369	16.4	\$ 70,902
1990	\$ 1,980,719	0.4430	\$ 1,228,412	\$ 1,396,719	\$ 1,376,288	16.7	\$ 82,362
1991	\$ 2,068,579	0.4322	\$ 1,251,792	\$ 1,423,302	\$ 1,472,709	17.0	\$ 86,464
1992	\$ 2,311,008	0.4213	\$ 1,363,109	\$ 1,549,871	\$ 1,685,541	17.4	\$ 97,089
1993	\$ 2,452,079	0.4102	\$ 1,408,057	\$ 1,600,978	\$ 1,831,933	17.7	\$ 103,528
1994	\$ 3,400,576	0.3988	\$ 1,898,651	\$ 2,158,788	\$ 2,602,018	18.0	\$ 144,270
1995	\$ 3,082,121	0.3872	\$ 1,670,942	\$ 1,899,881	\$ 2,415,088	18.4	\$ 131,378
1996	\$ 4,954,502	0.3755	\$ 2,604,291	\$ 2,961,110	\$ 3,975,192	18.7	\$ 212,166
1997	\$ 6,551,221	0.3634	\$ 3,333,457	\$ 3,790,180	\$ 5,381,529	19.1	\$ 281,807
1998	\$ 5,136,949	0.3512	\$ 2,525,851	\$ 2,871,923	\$ 4,319,806	19.5	\$ 221,944
1999	\$ 7,658,253	0.3387	\$ 3,631,893	\$ 4,129,505	\$ 6,592,050	19.8	\$ 332,301
2000	\$ 5,992,136	0.3260	\$ 2,734,648	\$ 3,109,327	\$ 5,279,664	20.2	\$ 261,103
2001	\$ 6,834,412	0.3128	\$ 2,992,919	\$ 3,402,985	\$ 6,165,193	20.6	\$ 299,049
2002	\$ 7,192,783	0.2991	\$ 3,011,981	\$ 3,424,658	\$ 6,645,238	21.0	\$ 316,037
2003	\$ 7,537,436	0.2848	\$ 3,005,462	\$ 3,417,246	\$ 7,135,164	21.5	\$ 332,555
2004	\$ 7,971,955	0.2698	\$ 3,011,204	\$ 3,423,775	\$ 7,736,963	21.9	\$ 353,191
2005	\$ 10,235,404	0.2540	\$ 3,639,949	\$ 4,138,666	\$ 10,190,900	22.4	\$ 455,368
2006	\$ 11,993,420	0.2374	\$ 3,985,966	\$ 4,532,091	\$ 12,258,697	22.9	\$ 535,822
2007	\$ 13,587,422	0.2198	\$ 4,181,946	\$ 4,754,922	\$ 14,267,468	23.4	\$ 609,598
2008	\$ 12,781,303	0.2014	\$ 3,603,153	\$ 4,096,827	\$ 13,796,997	24.0	\$ 575,856
2009	\$ 10,775,828	0.1819	\$ 2,744,435	\$ 3,120,456	\$ 11,965,704	24.5	\$ 487,551
2010	\$ 8,907,208	0.1614	\$ 2,013,258	\$ 2,289,098	\$ 10,180,993	25.2	\$ 404,705
2011	\$ 7,657,455	0.1400	\$ 1,500,429	\$ 1,706,006	\$ 9,014,431	25.8	\$ 349,380
2012	\$ 9,569,799	0.1174	\$ 1,573,248	\$ 1,788,801	\$ 11,608,917	26.5	\$ 438,450
2013	\$ 10,093,618	0.0938	\$ 1,325,003	\$ 1,506,544	\$ 12,624,522	27.2	\$ 464,358
2014	\$ 10,018,313	0.0689	\$ 966,857	\$ 1,099,328	\$ 12,926,311	27.9	\$ 462,779
2015	\$ 11,184,041	0.0428	\$ 669,927	\$ 761,715	\$ 14,895,942	28.7	\$ 518,726
2016	\$ 11,288,565	0.0149	\$ 235,424	\$ 267,680	\$ 15,536,311	29.6	\$ 525,708
Total	\$ 239,244,991		\$ 92,058,824	\$ 104,671,973	\$ 230,271,014	22.2	\$ 10,394,603

Account 390 - Structures and Improvements

Account Description

This account is for Structures and Improvements. Per the FERC Uniform System of Accounts, “This account shall include the cost in place of structures and improvements used for utility purposes, the cost of which is not properly includible in other structures and improvements accounts.” This account includes the Company’s office buildings, service centers, and other buildings.

Discussion

The currently approved curve is the 40-R2.5. The fitting analysis shows that the data supports a longer life; the best fit is the 51-L1. OG&E proposed no change. The best fitting R2.5 curve has an average service life of 46 years, six years longer than the currently approved curve. The R2 dispersion is a better fit of the data. I recommend moving to the 43-R2.

Account 390 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L1	51	734.15
S0	48	884.00
L1.5	50	921.58
L0.5	53	939.02
S0.5	47	992.38
R1	46	1,214.85
R1.5	46	1,416.61
L0	55	1,468.10
S1	47	1,524.24
R0.5	48	1,633.09
L2	49	1,652.34
R2	46	2,200.68
O2	58	2,404.72
O1	52	2,421.08
S1.5	46	2,507.85
L2.5	48	2,903.50
O3	80	3,042.55
O4	106	3,396.21
R2.5	46	3,776.12
S2	46	3,930.10
L3	47	4,745.60
S2.5	46	5,701.69
R3	46	5,955.10
S3	46	7,881.46
L4	46	10,648.92
R4	47	11,706.05
S4	47	14,962.89
L5	46	18,245.32
R5	48	21,187.40
S5	47	23,982.94
S6	46	33,688.95
SQ	106	60,029.38

Currently Approved 40-R2.5 9058.97

OG&E Proposal 40-R2.5 9058.97

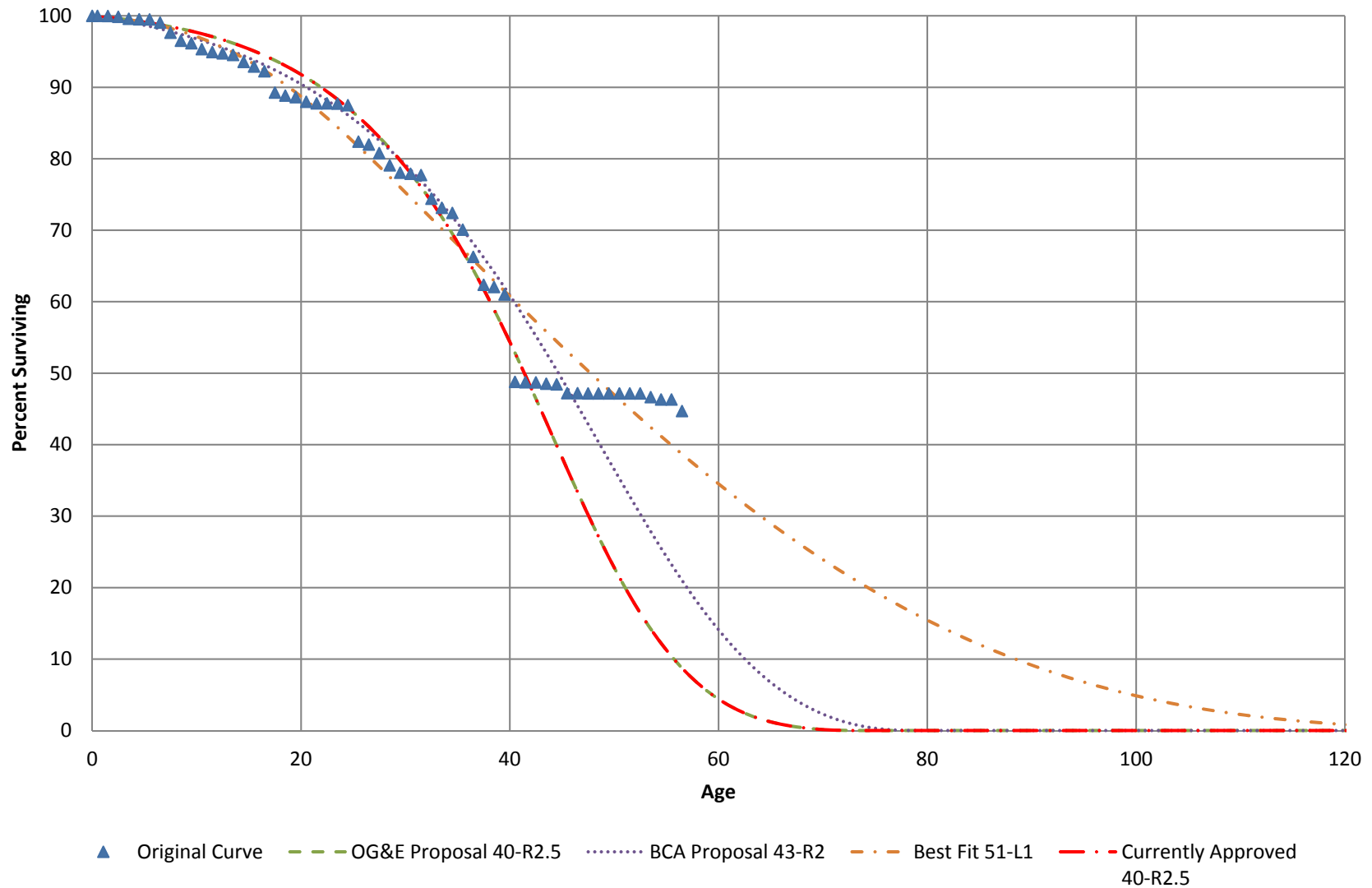
BCA Proposal 43-R2 3024.15

Account 390.0 - Structures and Improvements

Original & Smooth Survivor Curves

Placements 1956-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 390
Survivor Curve 43-R2
Net Salvage -5%

Total Annual Accrual 3,668,705
Composite Remaining Life 33.2
Depreciation Rate 2.05%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1959	\$ 4,643,833	0.8529	\$ 4,158,649	\$ 4,876,025	\$ -	6.3	\$ -
1960	\$ 13,421	0.8456	\$ 11,916	\$ 14,092	\$ -	6.6	\$ -
1961	\$ 459,123	0.8381	\$ 404,011	\$ 482,079	\$ -	7.0	\$ -
1962	\$ 95,028	0.8304	\$ 82,856	\$ 99,780	\$ -	7.3	\$ -
1963	\$ 22,871	0.8225	\$ 19,752	\$ 24,014	\$ -	7.6	\$ -
1964	\$ 45,645	0.8144	\$ 39,031	\$ 47,927	\$ -	8.0	\$ -
1965	\$ 21,934	0.8060	\$ 18,563	\$ 23,031	\$ -	8.3	\$ -
1966	\$ 301,765	0.7974	\$ 252,654	\$ 316,853	\$ -	8.7	\$ -
1967	\$ 49,502	0.7885	\$ 40,983	\$ 51,977	\$ -	9.1	\$ -
1968	\$ 27,830	0.7793	\$ 22,772	\$ 28,923	\$ 299	9.5	\$ 31
1969	\$ 135,923	0.7698	\$ 109,867	\$ 139,541	\$ 3,178	9.9	\$ 321
1970	\$ 82,582	0.7600	\$ 65,902	\$ 83,702	\$ 3,009	10.3	\$ 292
1971	\$ 164,149	0.7499	\$ 129,254	\$ 164,165	\$ 8,192	10.8	\$ 762
1972	\$ 348,794	0.7395	\$ 270,831	\$ 343,981	\$ 22,252	11.2	\$ 1,987
1973	\$ 118,443	0.7288	\$ 90,633	\$ 115,113	\$ 9,252	11.7	\$ 793
1974	\$ 696,649	0.7177	\$ 524,995	\$ 666,794	\$ 64,688	12.1	\$ 5,329
1975	\$ 643,175	0.7063	\$ 477,010	\$ 605,848	\$ 69,486	12.6	\$ 5,503
1976	\$ 49,303	0.6946	\$ 35,960	\$ 45,673	\$ 6,096	13.1	\$ 464
1977	\$ 177,023	0.6826	\$ 126,879	\$ 161,149	\$ 24,725	13.6	\$ 1,812
1978	\$ 251,844	0.6703	\$ 177,240	\$ 225,112	\$ 39,323	14.2	\$ 2,773
1979	\$ 236,053	0.6576	\$ 162,989	\$ 207,012	\$ 40,843	14.7	\$ 2,774
1980	\$ 649,118	0.6446	\$ 439,358	\$ 558,027	\$ 123,548	15.3	\$ 8,085
1981	\$ 129,019	0.6313	\$ 85,526	\$ 108,626	\$ 26,844	15.9	\$ 1,693
1982	\$ 216,696	0.6177	\$ 140,553	\$ 178,516	\$ 49,015	16.4	\$ 2,982
1983	\$ 803,599	0.6038	\$ 509,505	\$ 647,120	\$ 196,659	17.0	\$ 11,544
1984	\$ 577,060	0.5896	\$ 357,267	\$ 453,764	\$ 152,149	17.6	\$ 8,622
1985	\$ 548,995	0.5751	\$ 331,541	\$ 421,090	\$ 155,355	18.3	\$ 8,504
1986	\$ 14,790,126	0.5604	\$ 8,702,473	\$ 11,052,977	\$ 4,476,655	18.9	\$ 236,813
1987	\$ 5,360,676	0.5453	\$ 3,069,429	\$ 3,898,470	\$ 1,730,240	19.6	\$ 88,497
1988	\$ 5,979,184	0.5300	\$ 3,327,339	\$ 4,226,041	\$ 2,052,103	20.2	\$ 101,536
1989	\$ 20,882	0.5144	\$ 11,279	\$ 14,325	\$ 7,601	20.9	\$ 364
1990	\$ 5,308,526	0.4985	\$ 2,778,750	\$ 3,529,279	\$ 2,044,673	21.6	\$ 94,821
1991	\$ 2,352,196	0.4824	\$ 1,191,445	\$ 1,513,250	\$ 956,556	22.3	\$ 42,979
1992	\$ 770,359	0.4660	\$ 376,968	\$ 478,785	\$ 330,092	23.0	\$ 14,377
1993	\$ 8,253,151	0.4494	\$ 3,894,522	\$ 4,946,417	\$ 3,719,392	23.7	\$ 157,100
1994	\$ 1,513,386	0.4326	\$ 687,351	\$ 873,001	\$ 716,054	24.4	\$ 29,346
1995	\$ 2,015,138	0.4155	\$ 879,080	\$ 1,116,515	\$ 999,380	25.1	\$ 39,760
1996	\$ 2,206,046	0.3981	\$ 922,212	\$ 1,171,298	\$ 1,145,050	25.9	\$ 44,244
1997	\$ 13,979,158	0.3806	\$ 5,586,210	\$ 7,095,023	\$ 7,583,093	26.6	\$ 284,704
1998	\$ 1,693,320	0.3628	\$ 645,081	\$ 819,315	\$ 958,671	27.4	\$ 34,989
1999	\$ 494,528	0.3448	\$ 179,051	\$ 227,412	\$ 291,842	28.2	\$ 10,359
2000	\$ 645,507	0.3266	\$ 221,381	\$ 281,176	\$ 396,607	29.0	\$ 13,697
2001	\$ 723,167	0.3082	\$ 234,045	\$ 297,260	\$ 462,065	29.7	\$ 15,534
2002	\$ 28,926	0.2896	\$ 8,797	\$ 11,172	\$ 19,200	30.5	\$ 629
2003	\$ 1,656,738	0.2708	\$ 471,107	\$ 598,352	\$ 1,141,224	31.4	\$ 36,397
2004	\$ 290,302	0.2518	\$ 76,762	\$ 97,495	\$ 207,322	32.2	\$ 6,444
2005	\$ 2,073,232	0.2326	\$ 506,441	\$ 643,229	\$ 1,533,665	33.0	\$ 46,480
2006	\$ 4,363,638	0.2133	\$ 977,200	\$ 1,241,138	\$ 3,340,682	33.8	\$ 98,752
2007	\$ 4,243,077	0.1937	\$ 863,146	\$ 1,096,278	\$ 3,358,953	34.7	\$ 96,886
2008	\$ 791,101	0.1740	\$ 144,548	\$ 183,590	\$ 647,066	35.5	\$ 18,218
2009	\$ 4,085,958	0.1541	\$ 661,244	\$ 839,843	\$ 3,450,413	36.4	\$ 94,863
2010	\$ 2,367,182	0.1341	\$ 333,250	\$ 423,259	\$ 2,062,281	37.2	\$ 55,386
2011	\$ 25,525,398	0.1139	\$ 3,051,598	\$ 3,875,822	\$ 22,925,846	38.1	\$ 601,664
2012	\$ 20,617,722	0.0935	\$ 2,023,809	\$ 2,570,432	\$ 19,078,176	39.0	\$ 489,433
2013	\$ 5,739,605	0.0730	\$ 439,714	\$ 558,479	\$ 5,468,106	39.9	\$ 137,174
2014	\$ 5,030,158	0.0523	\$ 276,176	\$ 350,770	\$ 4,930,896	40.8	\$ 120,999
2015	\$ 22,953,938	0.0315	\$ 758,544	\$ 963,424	\$ 23,138,211	41.6	\$ 555,584
2016	\$ 1,495,145	0.0105	\$ 16,517	\$ 20,978	\$ 1,548,924	42.5	\$ 36,405
Total	\$ 178,876,850		\$ 52,401,966	\$ 66,104,741	\$ 121,715,951	33.2	\$ 3,668,705

Account 392.1 - Transportation Equipment – Cars and Trucks

Account Description

This account is for Transportation Equipment. Per the FERC Uniform System of Accounts, “This account includes the cost of automobiles used in utility operations.” This subaccount is for cars and trucks.

Discussion

The currently approved curve is the 9.5-S2.5. The best fit curve is the 10-S2.5, which is OG&E’s recommendation. I agree that the move to the 10-S2.5 is appropriate.

Account 392.1 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
S2.5	9.6	59.43
L3	9.8	120.82
S2	9.6	122.98
S3	9.7	124.69
R3	9.5	158.99
R2.5	9.4	184.12
L4	9.7	195.50
S1.5	9.5	304.62
L2.5	9.8	383.11
R2	9.3	416.42
R4	9.6	508.66
S1	9.5	638.27
S4	9.7	697.00
R1.5	9.2	826.10
L2	9.8	853.99
L5	9.7	943.62
S0.5	9.4	1,100.02
L1.5	9.7	1,420.45
R5	9.6	1,435.39
R1	9.1	1,458.27
S5	9.7	1,704.50
S0	9.2	1,719.40
L1	9.6	2,163.76
R0.5	9.0	2,446.14
L0.5	9.6	2,918.59
S6	9.6	2,919.96
O1	8.8	3,770.62
L0	9.6	3,824.21
O2	9.8	4,432.99
O3	12.2	7,211.69
O4	15.6	8,804.33
SQ	15.6	47,325.10

Currently Approved 9.5-S2.5 76.59

OG&E Proposal 10-S2.5 200.40

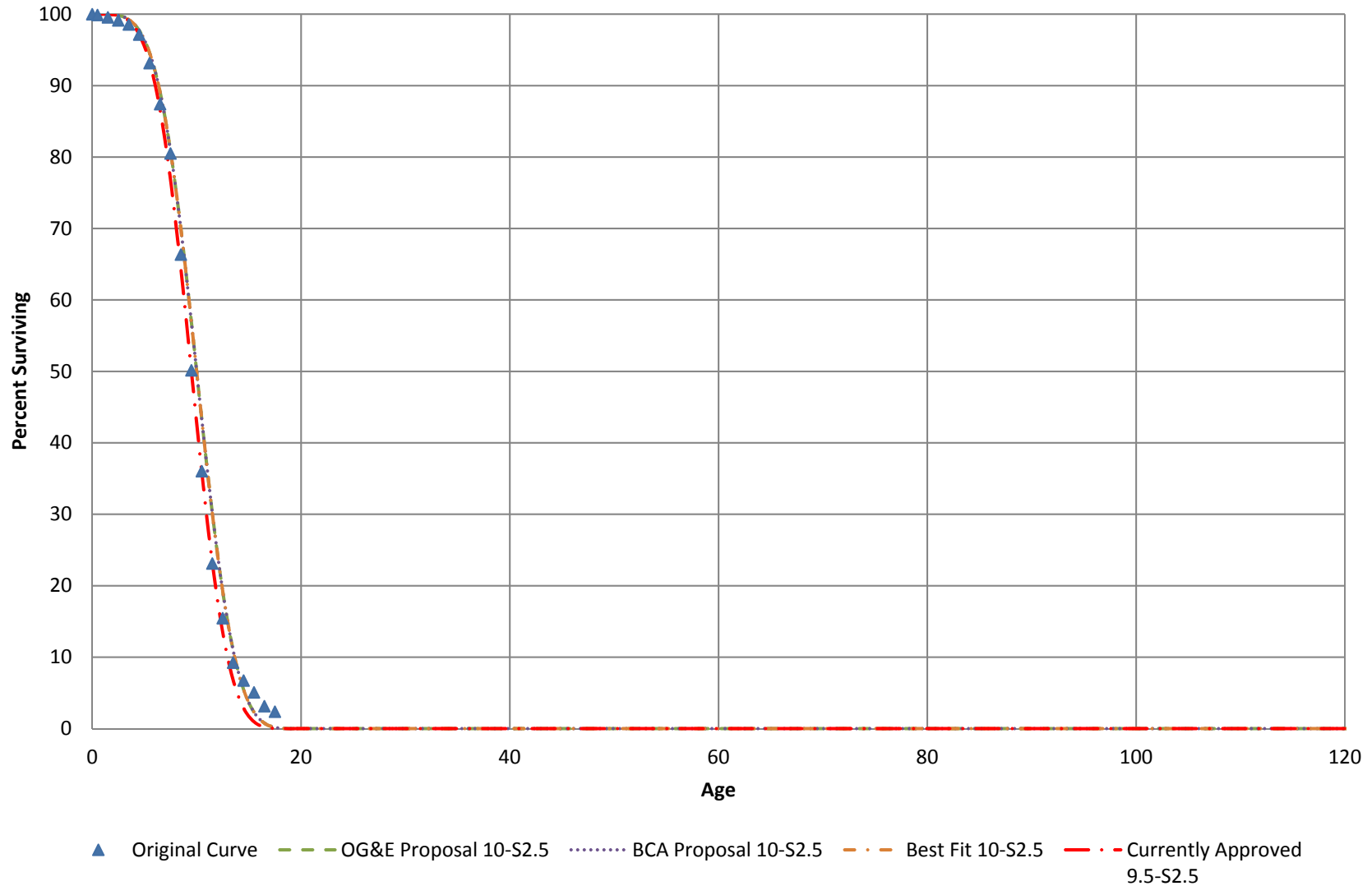
BCA Proposal 10-S2.5 200.40

Account 392.1 - Transportation Equipment - Cars and Trucks

Original & Smooth Survivor Curves

Placements 1973-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	392.1	Total Annual Accrual	1,356,296
Survivor Curve	10-S2.5	Composite Remaining Life	5.3
Net Salvage	10%	Depreciation Rate	6.10%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1985	\$ 0	1.0000	\$ 0	\$ 0	\$ -	0.0	\$ -
1995	\$ 4,618	1.0000	\$ 4,156	\$ 4,156	\$ -	0.0	\$ -
1997	\$ 31,032	1.0000	\$ 27,929	\$ 27,929	\$ -	0.0	\$ -
1999	\$ 17,638	0.9397	\$ 14,917	\$ 15,874	\$ -	0.6	\$ -
2000	\$ 27,627	0.9250	\$ 23,000	\$ 24,864	\$ -	0.7	\$ -
2001	\$ 127,104	0.9085	\$ 103,924	\$ 114,394	\$ -	0.9	\$ -
2002	\$ 15,894	0.8905	\$ 12,738	\$ 14,305	\$ -	1.1	\$ -
2003	\$ 65,774	0.8705	\$ 51,532	\$ 59,196	\$ -	1.3	\$ -
2004	\$ 200,967	0.8478	\$ 153,344	\$ 180,871	\$ -	1.5	\$ -
2005	\$ 456,457	0.8214	\$ 337,422	\$ 407,572	\$ 3,238	1.8	\$ 1,813
2006	\$ 413,320	0.7901	\$ 293,895	\$ 354,311	\$ 17,678	2.1	\$ 8,420
2007	\$ 2,169,765	0.7527	\$ 1,469,859	\$ 1,772,021	\$ 180,767	2.5	\$ 73,096
2008	\$ 1,839,409	0.7079	\$ 1,171,931	\$ 1,412,847	\$ 242,621	2.9	\$ 83,065
2009	\$ 3,266,044	0.6544	\$ 1,923,572	\$ 2,319,004	\$ 620,436	3.5	\$ 179,525
2010	\$ 3,976,599	0.5911	\$ 2,115,628	\$ 2,550,542	\$ 1,028,397	4.1	\$ 251,524
2011	\$ 2,484,383	0.5178	\$ 1,157,690	\$ 1,395,679	\$ 840,266	4.8	\$ 174,244
2012	\$ 2,259,077	0.4350	\$ 884,340	\$ 1,066,136	\$ 967,033	5.7	\$ 171,143
2013	\$ 1,073,744	0.3444	\$ 332,855	\$ 401,281	\$ 565,089	6.6	\$ 86,199
2014	\$ 1,380,265	0.2486	\$ 308,822	\$ 372,307	\$ 869,932	7.5	\$ 115,775
2015	\$ 1,441,465	0.1498	\$ 194,392	\$ 234,353	\$ 1,062,965	8.5	\$ 125,031
2016	\$ 971,188	0.0500	\$ 43,702	\$ 52,686	\$ 821,383	9.5	\$ 86,461
Total	\$ 22,222,369		\$ 10,625,650	\$ 12,803,387	\$ 7,219,804	5.3	\$ 1,356,296

Account 392.5 - Transportation Equipment – Heavy Trucks

Account Description

This account is for Transportation Equipment. Per the FERC Uniform System of Accounts, “This account includes the cost of automobiles used in utility operations.” This subaccount is for heavy trucks.

Discussion

The currently approved curve is the 13-L2.5. OG&E proposes no change. The 13-L2.5 is the second best fitting curve. The best fitting curve is the 13-L3. I recommend moving to the 13-L3.

Account 392.5 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L3	13	100.78
L2.5	13	115.39
S1.5	13	286.00
S2	13	333.29
L2	13	414.43
S1	13	453.10
S2.5	13	495.45
R2.5	13	520.81
R2	13	533.95
R1.5	13	732.50
S0.5	13	785.39
R3	13	803.15
S3	13	834.19
L1.5	13	900.43
L4	13	971.14
R1	12	1,253.47
S0	13	1,346.47
L1	13	1,635.75
R4	13	1,703.28
S4	13	2,074.18
R0.5	12	2,145.51
L5	13	2,428.70
L0.5	13	2,429.15
R5	13	3,265.98
L0	13	3,431.30
O1	12	3,517.35
S5	13	3,677.08
O2	13	4,175.67
S6	13	5,391.64
O3	16	7,456.56
O4	21	9,492.39
SQ	21	55,375.78

Currently Approved 13-L2.5 153.35

OG&E Proposal 13-L2.5 153.35

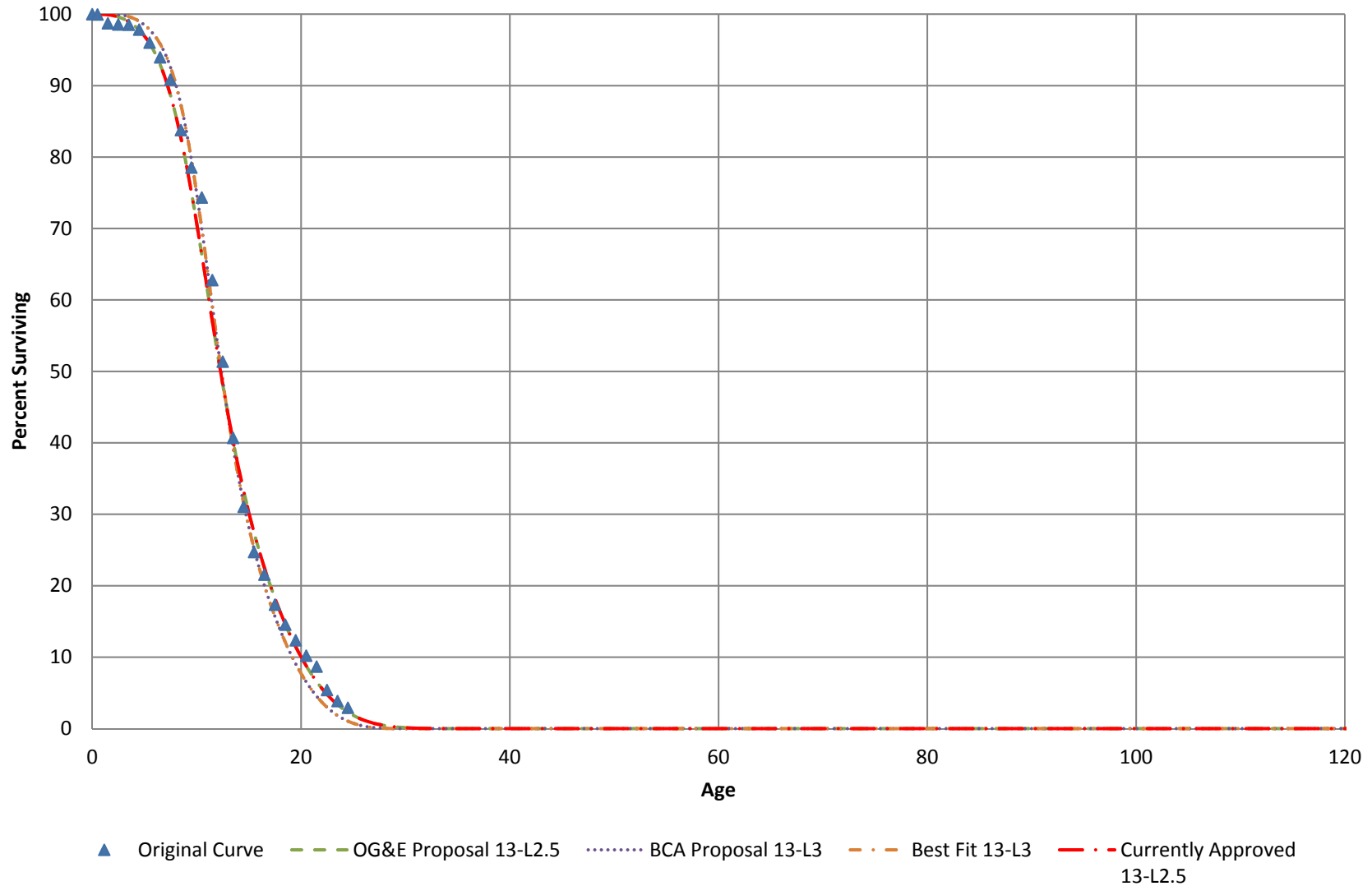
BCA Proposal 13-L3 138.62

Account 392.5 - Transportation Equipment - Heavy Trucks

Original & Smooth Survivor Curves

Placements 1971-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	392.5	Total Annual Accrual	3,415,947
Survivor Curve	13-L3	Composite Remaining Life	7.4
Net Salvage	10%	Depreciation Rate	5.75%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1987	\$ 44,782	0.9598	\$ 38,685	\$ 40,304	\$ -	0.5	\$ -
1993	\$ 162,298	0.8812	\$ 128,721	\$ 146,068	\$ -	1.5	\$ -
1996	\$ 93,725	0.8293	\$ 69,950	\$ 79,802	\$ 4,550	2.2	\$ 2,050
1997	\$ 763,304	0.8103	\$ 556,665	\$ 635,072	\$ 51,901	2.5	\$ 21,047
1998	\$ 911,988	0.7908	\$ 649,043	\$ 740,463	\$ 80,327	2.7	\$ 29,530
1999	\$ 140,963	0.7709	\$ 97,802	\$ 111,578	\$ 15,289	3.0	\$ 5,134
2000	\$ 722,364	0.7515	\$ 488,584	\$ 557,402	\$ 92,725	3.2	\$ 28,705
2001	\$ 1,384,904	0.7337	\$ 914,450	\$ 1,043,253	\$ 203,161	3.5	\$ 58,677
2002	\$ 713,553	0.7181	\$ 461,185	\$ 526,144	\$ 116,054	3.7	\$ 31,672
2003	\$ 1,152,064	0.7048	\$ 730,726	\$ 833,651	\$ 203,207	3.8	\$ 52,943
2004	\$ 1,354,356	0.6918	\$ 843,303	\$ 962,084	\$ 256,837	4.0	\$ 64,112
2005	\$ 4,692,241	0.6764	\$ 2,856,537	\$ 3,258,888	\$ 964,129	4.2	\$ 229,198
2006	\$ 587,632	0.6551	\$ 346,459	\$ 395,259	\$ 133,610	4.5	\$ 29,799
2007	\$ 1,574,991	0.6250	\$ 885,924	\$ 1,010,709	\$ 406,783	4.9	\$ 83,441
2008	\$ 7,653,724	0.5844	\$ 4,025,438	\$ 4,592,432	\$ 2,295,920	5.4	\$ 424,933
2009	\$ 10,211,523	0.5333	\$ 4,901,542	\$ 5,591,937	\$ 3,598,434	6.1	\$ 593,150
2010	\$ 7,881,790	0.4737	\$ 3,360,253	\$ 3,833,553	\$ 3,260,058	6.8	\$ 476,485
2011	\$ 1,309,625	0.4082	\$ 481,109	\$ 548,874	\$ 629,788	7.7	\$ 81,858
2012	\$ 3,664,729	0.3389	\$ 1,117,620	\$ 1,275,040	\$ 2,023,217	8.6	\$ 235,397
2013	\$ 3,466,897	0.2666	\$ 831,699	\$ 948,846	\$ 2,171,361	9.5	\$ 227,730
2014	\$ 1,849,762	0.1918	\$ 319,266	\$ 364,236	\$ 1,300,550	10.5	\$ 123,780
2015	\$ 5,939,966	0.1154	\$ 616,837	\$ 703,721	\$ 4,642,249	11.5	\$ 403,673
2016	\$ 3,088,740	0.0385	\$ 106,960	\$ 122,025	\$ 2,657,841	12.5	\$ 212,631
Total	\$ 59,365,922		\$ 24,828,758	\$ 28,321,338	\$ 25,107,992	7.4	\$ 3,415,947

Account 392.6 - Transportation Equipment – Trailers

Account Description

This account is for Transportation Equipment. Per the FERC Uniform System of Accounts, “This account includes the cost of automobiles used in utility operations.” This subaccount is for trailers.

Discussion

The currently approved curve is the 23-S0.5; OG&E recommends no change. The best fitting curve is the 23-S0. I recommend moving to the 23-S0.

Account 392.6 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
S0	23	312.55
L1	24	322.04
L1.5	24	446.52
R0.5	23	544.62
L0.5	24	556.14
S0.5	24	558.68
R1	23	567.80
L2	24	1,019.85
R1.5	24	1,051.45
L0	24	1,141.79
S1	24	1,223.09
O1	23	1,372.44
O2	25	1,714.99
L2.5	24	1,896.60
R2	24	2,132.13
S1.5	24	2,157.63
L3	24	3,276.32
R2.5	24	3,474.79
S2	24	3,486.91
O3	31	4,530.17
S2.5	24	4,844.47
R3	24	5,371.72
O4	38	6,412.32
S3	24	6,529.94
L4	24	7,541.86
R4	24	9,222.53
S4	24	10,937.65
L5	24	12,142.89
R5	24	14,216.91
S5	24	15,436.46
S6	24	19,653.90
SQ	22	26,144.67

Currently Approved 23-S0.5 679.59

OG&E Proposal 23-S0.5 679.59

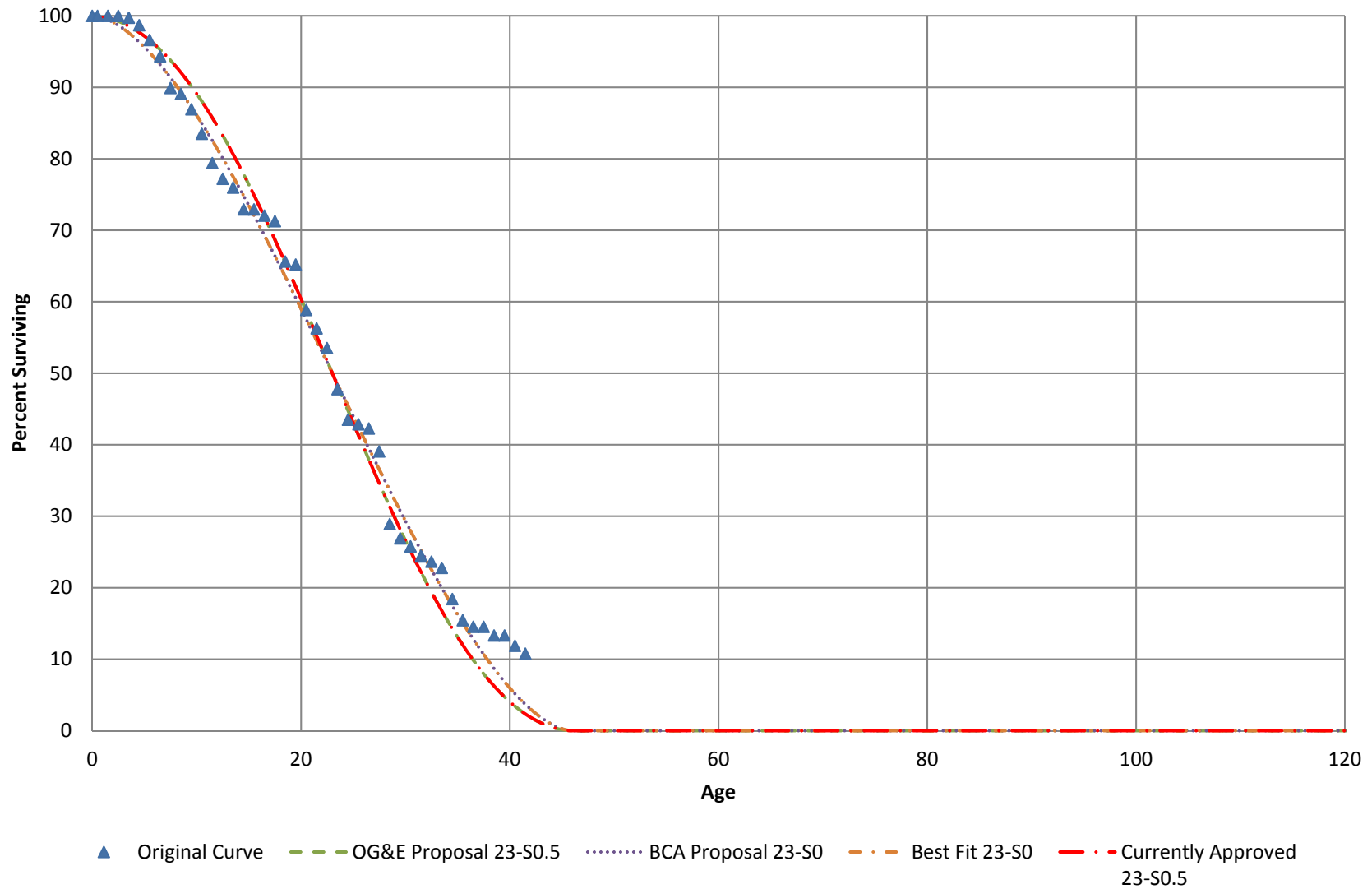
BCA Proposal 23-S0 361.74

Account 392.6 - Transportation Equipment - Trailers

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account	392.6	Total Annual Accrual	209,098
Survivor Curve	23-S0	Composite Remaining Life	18.6
Net Salvage	10%	Depreciation Rate	3.38%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 900	1.0000	\$ 810	\$ 810	\$ -	0.0	\$ -
1965	\$ 12,522	1.0000	\$ 11,270	\$ 11,270	\$ -	0.0	\$ -
1970	\$ 7,115	1.0000	\$ 6,404	\$ 6,404	\$ -	0.0	\$ -
1973	\$ 11,136	1.0000	\$ 10,022	\$ 10,022	\$ -	0.0	\$ -
1975	\$ 19,611	1.0000	\$ 17,650	\$ 17,650	\$ -	0.0	\$ -
1976	\$ 3,375	1.0000	\$ 3,038	\$ 3,038	\$ -	0.0	\$ -
1977	\$ 2,989	1.0000	\$ 2,691	\$ 2,691	\$ -	0.0	\$ -
1978	\$ 2,101	1.0000	\$ 1,891	\$ 1,891	\$ -	0.0	\$ -
1979	\$ 5,644	1.0000	\$ 5,079	\$ 5,079	\$ -	0.0	\$ -
1982	\$ 37,943	0.8107	\$ 27,684	\$ 34,149	\$ -	4.4	\$ -
1983	\$ 51,525	0.7935	\$ 36,798	\$ 46,372	\$ -	4.7	\$ -
1985	\$ 60,529	0.7588	\$ 41,334	\$ 53,744	\$ 732	5.5	\$ 132
1987	\$ 22,149	0.7233	\$ 14,417	\$ 18,746	\$ 1,187	6.4	\$ 187
1989	\$ 154,749	0.6870	\$ 95,685	\$ 124,414	\$ 14,861	7.2	\$ 2,064
1990	\$ 1,959	0.6686	\$ 1,179	\$ 1,533	\$ 230	7.6	\$ 30
1991	\$ 61,149	0.6499	\$ 35,768	\$ 46,507	\$ 8,528	8.1	\$ 1,059
1992	\$ 51,620	0.6310	\$ 29,315	\$ 38,117	\$ 8,341	8.5	\$ 983
1993	\$ 7,893	0.6118	\$ 4,346	\$ 5,651	\$ 1,452	8.9	\$ 163
1997	\$ 122,247	0.5323	\$ 58,567	\$ 76,152	\$ 33,870	10.8	\$ 3,149
1998	\$ 86,914	0.5116	\$ 40,020	\$ 52,036	\$ 26,187	11.2	\$ 2,331
2000	\$ 21,029	0.4690	\$ 8,877	\$ 11,543	\$ 7,384	12.2	\$ 605
2001	\$ 8,190	0.4471	\$ 3,296	\$ 4,285	\$ 3,086	12.7	\$ 243
2002	\$ 63,355	0.4247	\$ 24,218	\$ 31,489	\$ 25,531	13.2	\$ 1,930
2003	\$ 86,642	0.4018	\$ 31,332	\$ 40,739	\$ 37,239	13.8	\$ 2,707
2004	\$ 44,679	0.3783	\$ 15,213	\$ 19,780	\$ 20,430	14.3	\$ 1,429
2005	\$ 130,258	0.3542	\$ 41,529	\$ 53,998	\$ 63,234	14.9	\$ 4,258
2006	\$ 103,841	0.3295	\$ 30,793	\$ 40,038	\$ 53,419	15.4	\$ 3,464
2007	\$ 95,554	0.3040	\$ 26,143	\$ 33,993	\$ 52,006	16.0	\$ 3,249
2008	\$ 111,956	0.2777	\$ 27,980	\$ 36,381	\$ 64,379	16.6	\$ 3,875
2009	\$ 686,862	0.2505	\$ 154,833	\$ 201,321	\$ 416,855	17.2	\$ 24,181
2010	\$ 309,832	0.2222	\$ 61,970	\$ 80,576	\$ 198,273	17.9	\$ 11,084
2011	\$ 236,518	0.1929	\$ 41,052	\$ 53,378	\$ 159,488	18.6	\$ 8,591
2012	\$ 1,664,838	0.1622	\$ 242,964	\$ 315,914	\$ 1,182,440	19.3	\$ 61,360
2013	\$ 788,578	0.1299	\$ 92,228	\$ 119,919	\$ 589,801	20.0	\$ 29,474
2014	\$ 182,613	0.0960	\$ 15,772	\$ 20,507	\$ 143,845	20.8	\$ 6,918
2015	\$ 683,343	0.0598	\$ 36,780	\$ 47,823	\$ 567,186	21.6	\$ 26,229
2016	\$ 241,953	0.0209	\$ 4,549	\$ 5,915	\$ 211,843	22.5	\$ 9,407
Total	\$ 6,184,111		\$ 1,303,495	\$ 1,673,874	\$ 3,891,826	18.6	\$ 209,098

Account 396 - Power Operated Equipment

Account Description

This account is for Power Operated Equipment. Per the FERC Uniform System of Accounts, "This account shall include the cost of power operated equipment used in construction or repair work exclusive of equipment includible in other accounts. Include, also, the tools and accessories acquired for use with such equipment and the vehicle on which such equipment is mounted." This includes back filling machines, boring machines, bulldozers, cranes and hoists, diggers, engines, pile drivers, pipe cleaning machines, tractors, trenchers, and other power operated equipment.

Discussion

The currently approved curve is the 18-L2; OG&E recommends no change. The best fitting curve is the 18-L1.5. I recommend moving to the 18-L1.5.

Account 396 Fitting Analysis Results

Iowa Curve	Average Service Life	SSD
L1.5	18	319.37
L2	18	492.43
L1	18	516.37
S0.5	18	916.21
L0.5	18	939.04
S0	18	982.55
L2.5	18	1,052.41
S1	18	1,184.21
R1	17	1,380.83
R1.5	18	1,506.06
R0.5	17	1,589.41
L0	18	1,693.31
S1.5	18	1,704.54
L3	18	2,005.09
R2	18	2,096.19
O2	18	2,487.74
O1	17	2,497.91
S2	18	2,525.64
R2.5	18	2,916.74
S2.5	18	3,446.85
R3	18	4,153.16
S3	18	4,608.90
L4	18	5,217.90
O3	21	6,637.92
R4	18	6,791.87
S4	18	7,812.32
L5	18	8,596.50
R5	17	10,259.21
O4	25	10,522.71
S5	17	11,068.30
S6	17	14,005.64
SQ	25	46,666.92

Currently Approved 18-L2 519.88

OG&E Proposal 18-L2 519.88

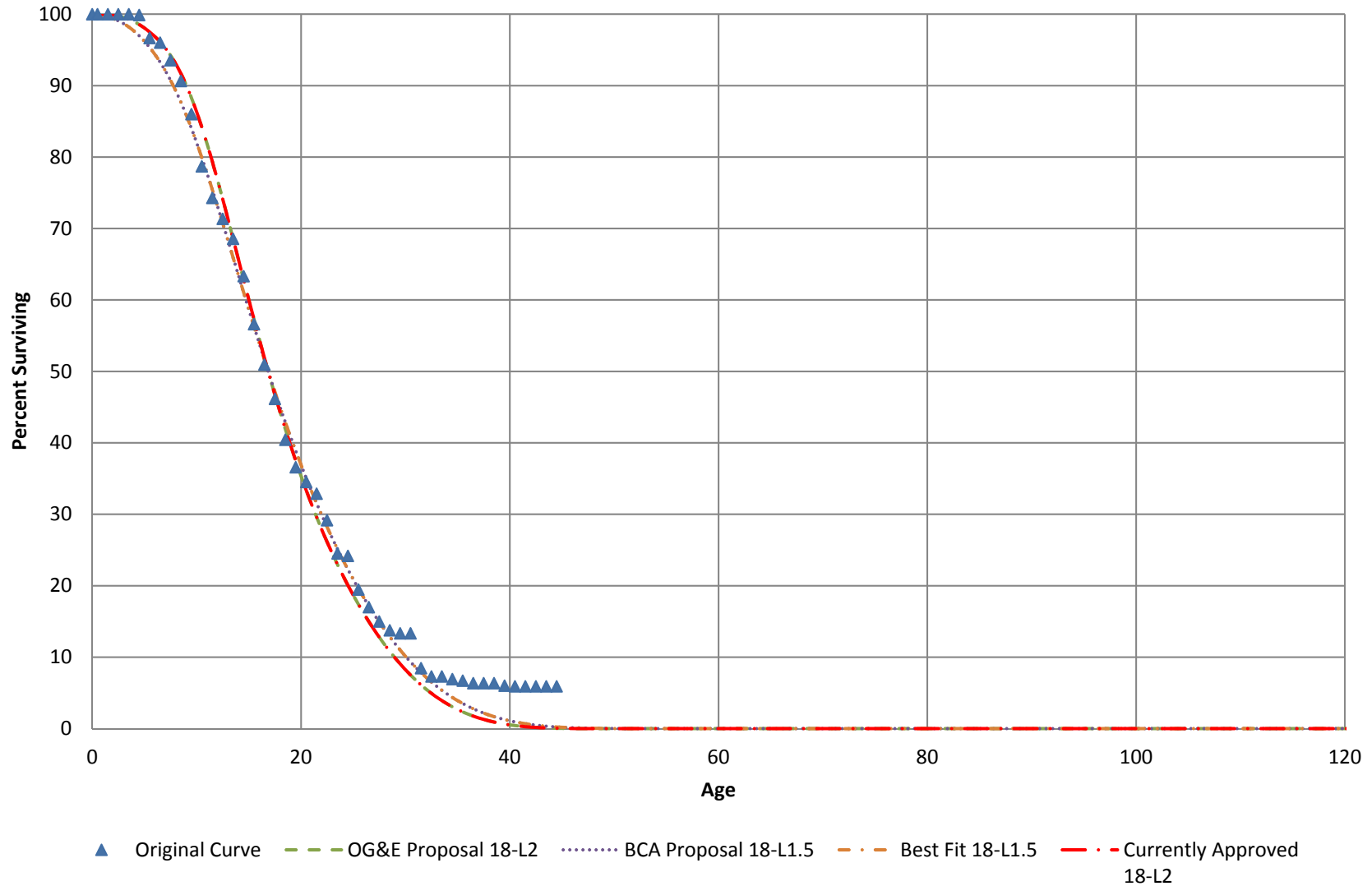
BCA Proposal 18-L1.5 342.38

Account 396.0 - Power Operated Equipment

Original & Smooth Survivor Curves

Placements 1958-2016

Observations 1997-2016



Calculation of Annual Accrual and Depreciation Rate

Account 396
Survivor Curve 18-L1.5
Net Salvage 15%

Total Annual Accrual 545,963
Composite Remaining Life 12.1
Depreciation Rate 4.32%

Year Installed	Original Cost	Accrued Factor	Calculated Accrued Depreciation	Allocated Book Reserve	Future Accruals	Remaining Life	Annual Accrual
1958	\$ 2	1.0000	\$ 2	\$ 2	\$ -	0.0	\$ -
1959	\$ 39,835	1.0000	\$ 33,860	\$ 33,860	\$ -	0.0	\$ -
1960	\$ 2,711	1.0000	\$ 2,305	\$ 2,305	\$ -	0.0	\$ -
1961	\$ 2,518	1.0000	\$ 2,141	\$ 2,141	\$ -	0.0	\$ -
1962	\$ 1,953	1.0000	\$ 1,660	\$ 1,660	\$ -	0.0	\$ -
1963	\$ 2,855	1.0000	\$ 2,427	\$ 2,427	\$ -	0.0	\$ -
1964	\$ 364	1.0000	\$ 309	\$ 309	\$ -	0.0	\$ -
1965	\$ 5,560	0.9375	\$ 4,431	\$ 4,726	\$ -	1.1	\$ -
1966	\$ 452	0.9291	\$ 357	\$ 384	\$ -	1.3	\$ -
1968	\$ 17,743	0.9120	\$ 13,754	\$ 15,081	\$ -	1.6	\$ -
1971	\$ 4,278	0.8878	\$ 3,228	\$ 3,570	\$ 66	2.0	\$ 33
1972	\$ 42,745	0.8798	\$ 31,967	\$ 35,356	\$ 978	2.2	\$ 452
1973	\$ 70,756	0.8718	\$ 52,432	\$ 57,991	\$ 2,152	2.3	\$ 933
1974	\$ 16,933	0.8636	\$ 12,429	\$ 13,747	\$ 646	2.5	\$ 263
1975	\$ 12,802	0.8551	\$ 9,306	\$ 10,292	\$ 590	2.6	\$ 226
1976	\$ 26,447	0.8464	\$ 19,027	\$ 21,044	\$ 1,436	2.8	\$ 519
1977	\$ 1,786	0.8374	\$ 1,271	\$ 1,406	\$ 112	2.9	\$ 38
1978	\$ 14,929	0.8281	\$ 10,509	\$ 11,623	\$ 1,067	3.1	\$ 345
1979	\$ 1,275	0.8185	\$ 887	\$ 981	\$ 103	3.3	\$ 31
1980	\$ 19,478	0.8086	\$ 13,388	\$ 14,807	\$ 1,749	3.4	\$ 508
1981	\$ 7,821	0.7984	\$ 5,308	\$ 5,870	\$ 778	3.6	\$ 214
1982	\$ 49,120	0.7879	\$ 32,896	\$ 36,383	\$ 5,369	3.8	\$ 1,406
1983	\$ 36,017	0.7770	\$ 23,788	\$ 26,310	\$ 4,305	4.0	\$ 1,073
1984	\$ 11,036	0.7659	\$ 7,184	\$ 7,946	\$ 1,435	4.2	\$ 340
1985	\$ 21,860	0.7543	\$ 14,016	\$ 15,502	\$ 3,079	4.4	\$ 696
1987	\$ 119,405	0.7303	\$ 74,120	\$ 81,977	\$ 19,517	4.9	\$ 4,020
1988	\$ 75,271	0.7177	\$ 45,921	\$ 50,789	\$ 13,191	5.1	\$ 2,596
1989	\$ 14,888	0.7048	\$ 8,919	\$ 9,865	\$ 2,790	5.3	\$ 525
1990	\$ 25,061	0.6916	\$ 14,732	\$ 16,294	\$ 5,008	5.6	\$ 902
1991	\$ 297,990	0.6780	\$ 171,738	\$ 189,944	\$ 63,348	5.8	\$ 10,930
1992	\$ 48,708	0.6642	\$ 27,498	\$ 30,413	\$ 10,989	6.0	\$ 1,818
1993	\$ 312,347	0.6501	\$ 172,600	\$ 190,898	\$ 74,598	6.3	\$ 11,844
1994	\$ 190,598	0.6358	\$ 103,010	\$ 113,930	\$ 48,078	6.6	\$ 7,335
1995	\$ 4,793	0.6214	\$ 2,532	\$ 2,800	\$ 1,274	6.8	\$ 187
1997	\$ 51,902	0.5924	\$ 26,133	\$ 28,903	\$ 15,214	7.3	\$ 2,073
1998	\$ 100,471	0.5776	\$ 49,331	\$ 54,561	\$ 30,839	7.6	\$ 4,057
1999	\$ 119,168	0.5627	\$ 57,002	\$ 63,045	\$ 38,248	7.9	\$ 4,860
2000	\$ 447,371	0.5475	\$ 208,199	\$ 230,271	\$ 149,995	8.1	\$ 18,416
2001	\$ 115,233	0.5317	\$ 52,081	\$ 57,603	\$ 40,346	8.4	\$ 4,787
2002	\$ 13,573	0.5151	\$ 5,943	\$ 6,573	\$ 4,964	8.7	\$ 569
2004	\$ 155,351	0.4780	\$ 63,121	\$ 69,813	\$ 62,236	9.4	\$ 6,624
2005	\$ 25,188	0.4567	\$ 9,779	\$ 10,815	\$ 10,595	9.8	\$ 1,083
2006	\$ 1,530,294	0.4331	\$ 563,356	\$ 623,079	\$ 677,671	10.2	\$ 66,411
2007	\$ 1,445,259	0.4067	\$ 499,569	\$ 552,529	\$ 675,941	10.7	\$ 63,290
2008	\$ 595,936	0.3769	\$ 190,900	\$ 211,137	\$ 295,409	11.2	\$ 26,337
2009	\$ 1,195,531	0.3435	\$ 349,016	\$ 386,016	\$ 630,185	11.8	\$ 53,325
2010	\$ 911,260	0.3065	\$ 237,441	\$ 262,613	\$ 511,958	12.5	\$ 41,015
2011	\$ 1,278,325	0.2666	\$ 289,647	\$ 320,353	\$ 766,223	13.2	\$ 58,039
2012	\$ 663,092	0.2239	\$ 126,181	\$ 139,558	\$ 424,070	14.0	\$ 30,355
2013	\$ 166,741	0.1784	\$ 25,281	\$ 27,961	\$ 113,769	14.8	\$ 7,693
2014	\$ 188,678	0.1302	\$ 20,878	\$ 23,092	\$ 137,285	15.7	\$ 8,768
2015	\$ 255,228	0.0795	\$ 17,250	\$ 19,079	\$ 197,865	16.6	\$ 11,942
2016	\$ 1,892,014	0.0268	\$ 43,171	\$ 47,747	\$ 1,560,465	17.5	\$ 89,084
Total	\$ 12,650,956		\$ 3,754,229	\$ 4,147,380	\$ 6,605,933	12.1	\$ 545,963

Benchmarking

This section contains the results of a benchmarking exercise that was performed to ensure that the resulting depreciation rates for each account calculated by the BCA Model match the rates calculated by the Gannett Fleming software used by Mr. John Spanos on behalf of OG&E. As is shown below the two models only differ by \$9,592 (0.00%) out of \$184,386,689 of depreciation expense for these accounts. This benchmarking exercise proves that the BCA Model is an accurate and acceptable tool for calculating depreciation expense and depreciation rates.

**Comparison of OG&E and BCA Depreciation Models
with OG&E Proposed Survivor Curves**

Account	OG&E Model		BCA Model		Delta	
	Annual Accrual	Depreciation Rate	Annual Accrual	Depreciation Rate	Annual Accrual	Depreciation Rate
350.2	1,526,876	1.35%	1,526,855	1.35%	(21)	0.00%
352	106,993	1.60%	106,994	1.60%	1	0.00%
353	15,619,120	2.34%	15,618,800	2.34%	(320)	0.00%
353.1	1,203,074	2.27%	1,203,038	2.27%	(36)	0.00%
354	2,630,663	1.63%	2,630,680	1.63%	17	0.00%
355	25,185,996	2.79%	25,184,005	2.79%	(1,991)	0.00%
356	14,650,645	2.49%	14,650,144	2.49%	(501)	0.00%
358	-	0.00%	(18)	-0.02%	(18)	-0.02%
360.2	68,501	1.34%	68,503	1.34%	2	0.00%
361	103,572	1.42%	103,566	1.42%	(6)	0.00%
362	13,310,342	2.16%	13,310,488	2.16%	146	0.00%
364	17,569,271	2.85%	17,568,845	2.85%	(426)	0.00%
365	13,040,215	2.69%	13,039,395	2.69%	(820)	0.00%
366	3,927,259	1.80%	3,927,190	1.80%	(69)	0.00%
367	15,107,139	1.98%	15,106,473	1.98%	(666)	0.00%
368	15,337,358	3.37%	15,335,941	3.37%	(1,417)	0.00%
369	4,298,910	1.76%	4,298,922	1.76%	12	0.00%
370	10,189,577	7.11%	10,187,700	7.11%	(1,877)	0.00%
370.1	2,715,071	7.31%	2,714,598	7.31%	(473)	0.00%
371	5,236,668	9.75%	5,236,729	9.75%	61	0.00%
373	12,981,879	5.43%	12,977,592	5.42%	(4,287)	-0.01%
390	4,174,936	2.33%	4,174,887	2.33%	(49)	0.00%
392.1	1,351,045	6.08%	1,356,296	6.10%	5,251	0.02%
392.5	3,256,893	5.49%	3,254,797	5.48%	(2,096)	-0.01%
392.6	214,760	3.47%	214,749	3.47%	(11)	0.00%
396	579,926	4.58%	579,929	4.58%	(3)	0.00%
Total	\$ 184,386,689		\$ 184,377,068		\$ (9,592)	

BCA RECOMMENDED
OKLAHOMA GAS AND ELECTRIC COMPANY
CALCULATION OF TERMINAL NET SALVAGE

Line	PLANT	ESTIMATED	CONTINGENCY	DECOMMISSIONING	PROBABLE	YEARS	ESCALATED	SINKING	DECOMMISSIONING	ESTIMATED	TERMINAL
		DECOMMISSIONING	COST	COSTS	RETIREMENT	TO	DECOMMISSIONING	FUND	COST FOR	TERMINAL	NET
		COSTS	(CURRENT \$)	CONTINGENCY	DATE	RETIREMENT	COSTS	ANNUITY	NET SALVAGE RATE	RETIREMENTS	SALVAGE (%)
		(CURRENT \$)	(CURRENT \$)	REMOVED		RETIREMENT					
		(a)	(b)	(c) = (a) + (b)	(d)	(e) = (d) - 2016	(f) = (c) * (1+i)^(e)	(g) = (f) * $\frac{i}{(1+i)^e - 1}$	(h) = (g) * (e)	(i)	(j) = (h) / (i) * 100
STEAM PRODUCTION											
1	HORSESHOE LAKE	13,415,800	3,738,000	9,677,800	2029	13	13,340,954	881,147	11,454,910	(116,789,690)	(10)
2	MUSTANG ¹	14,291,250	3,253,000	11,038,250	2017	1	11,314,206	11,314,206	11,314,206	(67,813,105)	(17)
3	SEMINOLE	29,507,000	6,786,000	22,721,000	2030	14	32,104,178	1,943,475	27,208,655	(250,065,255)	(11)
4	MUSKOGEE	41,412,000	9,691,000	31,721,000	2049	33	71,653,008	1,422,984	46,958,487	(755,705,020)	(6)
5	SOONER	32,584,750	8,043,000	24,541,750	2045	29	50,222,419	1,199,877	34,796,441	(501,567,471)	(7)
6	TOTAL STEAM PRODUCTION	131,210,800	31,511,000	99,699,800			178,634,765	16,761,690	131,732,700	(1,691,940,539)	
OTHER PRODUCTION											
7	REDBUD	10,391,000	2,990,000	7,401,000	2049	33	16,717,755	332,004	10,956,141	(155,875,406)	(7)
8	HORSESHOE LAKE 9 AND 10	820,200	114,000	706,200	2035	19	1,128,967	47,146	895,781	(38,619,883)	(2)
9	TINKER	473,000	158,000	315,000	2025	9	393,392	39,519	355,670	(10,624,050)	(3)
10	MCCLAIN	5,641,000	1,430,000	4,211,000	2046	30	8,832,857	201,192	6,035,749	(94,688,097)	(6)
11	TOTAL OTHER PRODUCTION	17,325,200	4,692,000	12,633,200			27,072,971	619,861	18,243,342	(299,807,436)	
WIND PRODUCTION											
12	OU SPIRIT	975,000	823,000	152,000	2034	18	237,068	10,590	190,617	(221,773,284)	0
13	CROSSROADS	2,317,000	1,833,000	484,000	2037	21	812,918	29,905	628,006	(360,390,566)	0
14	CENTENNIAL	2,270,000	1,331,000	939,000	2031	15	1,359,952	75,840	1,137,596	(172,390,417)	(1)
15	TOTAL WIND PRODUCTION	5,562,000	3,987,000	1,575,000			2,409,938	116,335	1,956,219	(754,554,267)	
SOLAR PRODUCTION											
16	MUSTANG	121,000	45,036	75,964	2040	24	137,397	4,247	101,936	(5,414,679)	(2)
17	TOTAL SOLAR PRODUCTION	121,000	45,036	75,964			137,397	4,247	101,936	(5,414,679)	

Notes:

¹ Excludes Decommissioning Cost for Units 1 and 2 Which no Longer have Plant Dollars.

- i = interest rate = 2.5%

BCA RECOMMENDED

OKLAHOMA GAS AND ELECTRIC COMPANY

CALCULATION OF WEIGHTED NET SALVAGE PERCENT

LOCATION	TERMINAL RETIREMENTS		INTERIM RETIREMENTS		WEIGHTED AVERAGE NET SALVAGE % (6)=(2)*(3)+(4)*(5)
	RETIREMENTS (%) (2)	NET SALVAGE (%) (3)	RETIREMENTS (%) (4)	NET SALVAGE (%) (5)	
STEAM PRODUCTION					
HORSESHOE LAKE 6	94.94	(10)	5.06	(21)	(11)
HORSESHOE LAKE 7	86.11	(10)	13.89	(21)	(12)
HORSESHOE LAKE 8	88.20	(10)	11.80	(21)	(11)
MUSTANG 3	100.00	(17)	0.00	(21)	(17)
MUSTANG 4	100.00	(17)	0.00	(21)	(17)
SEMINOLE 1	90.72	(11)	9.28	(21)	(12)
SEMINOLE 2	88.44	(11)	11.56	(21)	(12)
SEMINOLE 3	90.63	(11)	9.37	(21)	(12)
MUSKOGEE 4	84.19	(6)	15.81	(21)	(8)
MUSKOGEE 5	80.52	(6)	19.48	(21)	(9)
MUSKOGEE 6	76.71	(6)	23.29	(21)	(10)
SOONER 1	82.61	(7)	17.39	(21)	(10)
SOONER 2	78.71	(7)	21.29	(21)	(10)
OTHER PRODUCTION					
REDBUD 1	46.77	(7)	53.23	(6)	(6)
REDBUD 2	38.28	(7)	61.72	(6)	(6)
REDBUD 3	38.99	(7)	61.01	(6)	(6)
REDBUD 4	39.44	(7)	60.56	(6)	(6)
HORSESHOE LAKE 9 AND 10	83.28	(2)	16.72	(6)	(3)
TINKER	93.23	(3)	6.77	(6)	(3)
MCCLAIN GAS 1	50.09	(6)	49.91	(6)	(6)
MCCLAIN GAS 2	42.78	(6)	57.22	(6)	(6)
MCCLAIN STEAM 1	34.52	(6)	65.48	(6)	(6)
WIND PRODUCTION					
CENTENNIAL	90.20	0	9.80	(5)	0
OU SPIRIT	88.73	0	11.27	(5)	(1)
CROSSROADS	86.85	(1)	13.15	(5)	(2)
SOLAR PRODUCTION					
MUSTANG	79.97	(2)	20.03	(4)	(2)

Escalation Methodology Comparison to Recover a Hypothetical \$20 Million Decommissioning Cost

Year	Remaining Life at BOY	OG&E's Method				BCA Proposed Method				Delta	
		Annual Depreciation Study	Annual Accrual	EOY Accumulated Decommissioning Costs	Present Value of Annual Accruals	Annual Depreciation Study	Annual Accrual	EOY Accumulated Decommissioning Costs	Present Value of Annual Accruals	Annual Accrual	Present Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
2018	20	1,598,650	1,598,650	1,598,650	1,598,650	1,251,651	1,251,651	1,251,651	1,251,651	(346,999)	(346,999)
2019	19		1,598,650	3,197,300	1,559,659		1,251,651	2,503,303	1,221,123	(346,999)	(338,536)
2020	18		1,598,650	4,795,951	1,521,618		1,251,651	3,754,954	1,191,340	(346,999)	(330,279)
2021	17		1,598,650	6,394,601	1,484,506		1,251,651	5,006,605	1,162,283	(346,999)	(322,223)
2022	16		1,598,650	7,993,251	1,448,298		1,251,651	6,258,256	1,133,934	(346,999)	(314,364)
2023	15	1,598,650	1,598,650	9,591,901	1,412,974	1,434,020	1,434,020	7,692,277	1,267,465	(164,630)	(145,509)
2024	14		1,598,650	11,190,551	1,378,511		1,434,020	9,126,297	1,236,551	(164,630)	(141,960)
2025	13		1,598,650	12,789,201	1,344,889		1,434,020	10,560,317	1,206,391	(164,630)	(138,497)
2026	12		1,598,650	14,387,852	1,312,087		1,434,020	11,994,338	1,176,967	(164,630)	(135,119)
2027	11		1,598,650	15,986,502	1,280,085		1,434,020	13,428,358	1,148,261	(164,630)	(131,824)
2028	10	1,598,650	1,598,650	17,585,152	1,248,863	1,655,272	1,655,272	15,083,630	1,293,096	56,622	44,233
2029	9		1,598,650	19,183,802	1,218,403		1,655,272	16,738,902	1,261,557	56,622	43,154
2030	8		1,598,650	20,782,452	1,188,686		1,655,272	18,394,174	1,230,787	56,622	42,102
2031	7		1,598,650	22,381,103	1,159,693		1,655,272	20,049,447	1,200,768	56,622	41,075
2032	6		1,598,650	23,979,753	1,131,408		1,655,272	21,704,719	1,171,481	56,622	40,073
2033	5	1,598,650	1,598,650	25,578,403	1,103,813	2,053,657	2,053,657	23,758,376	1,417,979	455,007	314,167
2034	4		1,598,650	27,177,053	1,076,891		2,053,657	25,812,033	1,383,395	455,007	306,504
2035	3		1,598,650	28,775,703	1,050,625		2,053,657	27,865,690	1,349,653	455,007	299,028
2036	2		1,598,650	30,374,354	1,025,000		2,053,657	29,919,347	1,316,735	455,007	291,735
2037	1		<u>1,598,650</u>	31,973,004	1,000,000		<u>2,053,657</u>	31,973,004	1,284,619	455,007	284,619
Total			31,973,004				31,973,004				

Notes:

2018 Estimated Decommissioning Cost = \$20,000,000

Escalated Decommissioning Cost at end of 2037 = \$31,973,004; assumes inflation of 2.5%

Hypothetical Depreciation Study Calculations for annual accrual:

OG&E: Estimated Cost in 2037 less Accumulated Decommissioning Costs) ÷ Remaining Life

OG&E 2023 example - (31,973,004 - 7,993,251) ÷ 15 = 1,598,650

BCA: (Estimated Cost in 2037 less Accumulated Decommissioning Costs) x (inflation rate)ⁿ ÷ [(1+inflation rate)ⁿ - 1]; where n = remaining life at beginning of year; inflation rate = 2.5%

BCA 2023 example: (31,973,004 - 6,258,277) x (0.025)⁵ ÷ (1.025⁵ - 1)

