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 201800140

RESPONSIVE TESTIMONY OF

DAVID J. GARRETT

PART II – DEPRECIATION

ON BEHALF OF

OKLAHOMA INDUSTRIAL ENERGY CONSUMERS

AND

OKLAHOMA ENERGY RESULTS

APRIL 22, 2019

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I. INTRODUCTION

Q. State your name and occupation.

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

Q. Summarize your educational background and professional experience.

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

Q. Have your qualifications as an expert witness been accepted by the Oklahoma Corporation Commission?

A. Yes. I have testified before the Oklahoma Corporation Commission (the "Commission") many times and my qualifications have been accepted.

Q. Describe the scope and organization of your testimony.

A. In this case I am testifying on the two primary capital recovery mechanisms for regulated utilities – return on equity and depreciation – regarding the present application of Oklahoma Gas & Electric Company ("OG&E" or the "Company"). Collectively, these issues are voluminous, so I have filed two separate responsive testimony documents – Part I and Part II. Part I of my responsive testimony addresses rate of return, cost of capital and related issues, and I respond to the direct testimony of Company witness Dr. Roger A. Morin. Part II of my responsive testimony (this document) addresses depreciation rates and related issues, and I respond to the direct testimony of Company witness John J. Spanos. The exhibits attached to Part I of my testimony have a prefix of "DJG-1," and the exhibits attached to Part II of my testimony have a prefix of "DJG-2."

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of Oklahoma Industrial Energy Consumers ("OIEC") and Oklahoma Energy Results, LLC ("OER").

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[1] Direct Exhibit DJG-1-1.

II. EXECUTIVE SUMMARY

Q. Summarize the key points of your testimony.

A. In this case, OG&E is proposing a substantial increase to its current depreciation rates, resulting in a proposed increase of $54.4 million.[2] As demonstrated by the evidence presented in this testimony, it would not be reasonable to accept OG&E's filed position regarding its proposed increase to depreciation rates. By adopting reasonable adjustments to service life and net salvage estimates, as well as adhering to Commission precedent regarding decommissioning costs, OG&E's increase to depreciation expense should be much less than what is proposed by the Company. The table below summarizes OIEC and OER's adjustments to OG&E's proposed depreciation expense by plant function.[3]

Figure 1:
Summary Depreciation Expense Adjustment

Plant Function	OGE Proposed DD&A Expense	OIEC/OER DD&A Expense	OIEC/OER Adjustment
Intangible	$ 10,065,196	$ 9,736,899	$ (328,297)
Production	159,826,219	133,837,934	(25,988,285)
Transmission	73,879,400	65,686,177	(8,193,223)
Distribution	125,207,568	111,076,889	(14,130,679)
General	24,199,639	24,664,967	465,328
Total	$ 390,677,681	$ 342,502,524	**$ (48,175,157)**

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[2] *See* WP H-2-24.1 – Depreciation Expense (not all of the proposed increase is due to a change in depreciation rates); *see also* Direct Testimony of Donald R. Rowlett, p. 12, lines17-24.

[3] Exhibit DJG-2-1.

Accepting my proposed depreciation rates would result in an adjustment reducing OG&E's proposed depreciation expense by $48.2 million. The primary factors comprising OIEC and OER's adjustments are summarized as follows:

1. <u>Production Net Salvage</u>

> OG&E proposes an increase in depreciation expense of nearly $30 million to its production plant accounts. This increase is largely driven by Mr. Spanos's proposed increases to production net salvage rates. These production net salvage rates include contingency costs and escalation factors – two costs the Commission has consistently and correctly disallowed. OG&E has not presented any new compelling evidence why the Commission should deviate from this precedent. Likewise, the Company has not presented a decommissioning study that is supported by a witness who actually sponsors the study, relying instead on an unsupported "update" to an older depreciation study. The Commission should disregard this unsupported update and rely instead on the currently-approved production net salvage rates.

2. <u>Lifespan of Wind Facilities</u>

> The depreciation study proposes shorter lifespans for the Company's wind facilities (25-26 years) than those that are assumed in OG&E's most recent integrated resource plan (30 years). The Commission should adopt the lifespans used in the integrated resource plan, as the lifespans proposed in the depreciation study are unsupported.

3. <u>Mass Property Service Lives</u>

> The primary evidence the Company presents to support its service life estimates is its own historical retirement data. These data indicate that for several mass property accounts, the Company's estimated service life is unreasonably short, which results in unreasonably high depreciation rates. Thus, the Commission should reject OG&E's proposed service life estimates.

These issues are further discussed in my testimony.

III. LEGAL STANDARDS

Q. Discuss the standard by which regulated utilities are allowed to recover depreciation expense.

A. In *Lindheimer v. Illinois Bell Telephone Co.*, the U.S. Supreme Court stated that "depreciation is the loss, not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy, and obsolescence."[4] The *Lindheimer* Court also recognized that the original cost of plant assets, rather than present value or some other measure, is the proper basis for calculating depreciation expense.[5] Moreover, the *Lindheimer* Court found:

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

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

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

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

[6] *Id*. at 169 (emphasis added).

Q. Should depreciation represent an allocated cost of capital to operation, rather than a mechanism to determine loss of value?

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

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

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

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

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

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

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

IV. ANALYTIC METHODS

Q. Discuss the definition and general purpose of a depreciation system, as well as the specific depreciation system you employed for this project.

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

Q. Has the Commission adopted rates developed under this depreciation system?

A. Yes. The Commission has adopted depreciation rates developed by various parties using the same or substantially similar depreciation system I have employed in this case.

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

Q. Are you and Mr. Spanos essentially using the same depreciation system to conduct your analyses?

A. Yes. Mr. Spanos and I are essentially using the same depreciation system, which is reasonable. Thus, the difference in our positions stems from our different opinions regarding service life and net salvage.

Q. Please describe the actuarial process you used to analyze the Company's depreciable property.

A. The study of retirement patterns of industrial property is derived from the actuarial process used to study human mortality. Just as actuarial scientists study historical human mortality data in order to predict how long a group of people will live, depreciation analysts study historical plant data in order to estimate the average lives of property groups. The most common actuarial method used by depreciation analysts is called the "retirement rate method." In the retirement rate method, original property data, including additions, retirements, transfers, and other transactions, are organized by vintage and transaction year.[12] The retirement rate method is ultimately used to develop an "observed life table," ("OLT") which shows the percentage of property surviving at each age interval. This pattern of property retirement is described as a "survivor curve." The survivor curve derived from the observed life table, however, must be fitted and smoothed with a complete curve in order to determine the ultimate average life of the group.[13] The most widely used survivor curves for this curve-fitting process were developed at Iowa State University in

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

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

the early 1900s and are commonly known as the "Iowa curves."[14] A more detailed explanation of how the Iowa curves are used in the actuarial analysis of depreciable property is set forth in Appendix C.

Q. Please describe the Company's depreciable assets in this case.

A. The Company's depreciable assets can be divided into two main groups: life span property (i.e., production plant) and mass property (i.e., transmission and distribution plant). The analytical process is slightly different for each type of property, as discussed further below.

V. LIFE SPAN PROPERTY ANALYSIS

Q. Describe life span property.

A. "Life span" property accounts usually consist of property within a production plant. The assets within a production plant will be retired concurrently at the time the plant is retired, regardless of their individual ages or remaining economic lives. For example, a production plant will contain property from several accounts, such as structures, fuel holders, and generators. When the plant is ultimately retired, all of the property associated with the plant will be retired together, regardless of the age of each individual unit. Analysts often use the analogy of a car to explain the treatment of life span property. Throughout the life of a car, the owner will retire and replace various components, such as tires, belts, and brakes. When the car reaches the end of its useful life and is finally retired, all of the car's individual components are retired together. Some of the components may still have some useful life remaining, but they are nonetheless retired along with the car. Thus, the various

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

accounts of life span property are scheduled to retire concurrently as of the production unit's probable retirement date.

A. Lifespan of Wind Generation Facilities

Q. Describe the Company's proposed service lives for its wind generation facilities.

A. The Company proposes 25-year service lives for its wind facilities at Centennial and OU Spirit, and it proposes a 26-year service life for its Crossroads facility.[15]

Q. Are these proposed service lives consistent with the Company's most recent integrated resource plan?

A. No. In its 2018 Integrated Resource Plan ("IRP"), the Company used a 30-year service life to calculate their annual cost components.[16]

Q. Is this the first time that the lifespans proposed by Mr. Spanos for OG&E's generating facilities were not consistent with the lifespans assumed in OG&E's IRP?

A. No. In OG&E's last rate case, the service lives proposed by Mr. Spanos for OG&E's Horseshoe Lake and Seminole facilities were shorter than those listed in the Company's 2014 IRP update.[17] In each instance, the lifespans proposed by Mr. Spanos were shorter than the lifespans contained in OG&E's IRP; this results in a higher proposed depreciation expense than if Mr. Spanos's proposed service lives were consistent with the service lives in the IRPs.

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[15] Direct Exhibit JJS-2, p. III-7.

[16] *See* OG&E's 2018 IRP, B-4; *see also* response to Data Request AG-14-3.

[17] See Responsive Testimony of David J. Garrett, p. 16, lines 7-18, filed May 2, 2018 in Cause No. PUD 2017000496.

Q. Consistent with OG&E's 2018 IRP, do you believe a 30-year lifespan for the Company's wind facilities is reasonable?

A. Yes. In fact, in OG&E's 2015 rate case, I testified on behalf of the Public Utility Division ("PUD") and recommended a 30-year lifespan for OG&E's wind facilities.[18] In the same case, then-OIEC witness Jacob Pous also recommended 30-year service lives for OG&E's wind facilities, relying in part on the Company's lack of support for its position, Mr. Spanos's prior recommendation of 30-year lifespans for wind units in other jurisdictions, and the utility industry's "continuous practice" of underestimating lifespans of generating facilities in general.[19]

Q. Has the company met its burden to make a convincing showing that its proposed rates for its wind facilities are not excessive?

A. No, not in my opinion. The depreciation study does not offer much support for OG&E's proposed service lives for its wind facilities. The depreciation study makes general references to considerations of "life spans of similar units" and other factors.[20] It appears, however, that the only specific reference to OG&E's wind facilities is a simple conclusory statement that "[l]ife spans for wind turbines were estimated at 25 years."[21]

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[18] *See* Responsive Testimony of David J. Garrett, pp 20-21, filed March 21, 2016 in Cause No. PUD 201500273.

[19] *See* Responsive Testimony of Jacob Pous, pp. 29-36, filed March 21, 2016 in Cause No. PUD 201500273.

[20] Exhibit JJS-2, p. III-6.

[21] *Id.* at p. III-7.

Q. What is your recommendation in this case regarding the lifespans of OG&E's wind facilities?

A. Consistent with OG&E's 2018 IRP, I recommend a 30-year life span for each of OG&E's wind facilities.[22]

B. Terminal Net Salvage (Decommissioning Costs)

Q. Describe the meaning of terminal net salvage.

A. When a production plant reaches the end of its useful life, a utility may decide to decommission the plant. In that case, the utility may sell some of the remaining assets. The proceeds from this transaction are called "gross salvage." The corresponding expense associated with decommissioning the plant is called "cost of removal." The term "net salvage" equates to gross salvage less the cost of removal. When net salvage refers to production plants, it is often called "terminal net salvage," because the transaction will occur at the end of the plant's life.

Q. Describe how electric utilities typically support terminal net salvage recovery for production assets?

A. Typically, when a utility is requesting the recovery of a substantial amount of terminal net salvage costs, it supports those costs with site-specific decommissioning studies.

[22] *See* Exhibit DJG-2-4. In calculating the remaining life of OG&E's wind units, I added five years to OG&E's proposed remaining lives for Centennial and OU Spirit, and I added four years to the remaining life of Crossroads. To the extent the Commission adopts an adjustment to the lifespans of OG&E's wind facilities, the remaining lives would need to be adjusted if interim retirements are to be accounted for.

Q. Did OG&E provide decommissioning studies in this case to support its proposed net salvage rates for production plant?

A. According to the Company, it provided updated versions ("2018 Studies") of decommissioning studies that were originally conducted in 2017 by Burns & McDonnell ("2017 Studies").[23] However, the Company did not present a witness in this case who actually conducted, or even sponsors the decommissioning studies.[24] Many of the cost estimates in the 2018 Studies are higher than those in the 2017 Studies.

Q. How much have the Company's proposed decommissioning costs increased between the 2017 Studies and the 2018 Studies?

A. The Company's proposed decommissioning costs have increased by more than $11 million between the two sets of decommissioning studies.[25]

Q. Did the Company provide any support for its requested costs in the 2018 Studies?

A. No. As discussed above, the Company did not even present a witness who sponsors the 2018 Studies.

Q. Is the Company offering the 2017 Studies as an alternative proposal to the extent the proposed costs in the 2018 Studies are not adopted?

A. No. The 2017 Studies have not been filed in this case. The Company is simply incorporating the costs proposed in the 2018 Studies into its proposed production net salvage rates and depreciation expense without any support or justification.

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[23] *See* Direct Testimony of Donald R. Rowlett, p. 12, lines 17-24.

[24] *See* Direct Testimony of Donald R. Rowlett, p. 12, lines 17-24.

[25] *See* Exhibit JJS-2, p. VIII-4; *see also* Exhibit JJS-2, p. VIII-4, filed January 16, 2018 in Cause No. PUD 201700496.

Q. Were the issues concerning the 2017 Studies ever litigated?

A. No. The 2017 Studies filed in OG&E's last rate case were never litigated. Instead, the Commission adopted a settlement that maintained the Company's currently-approved depreciation rates.[26]

Q. Describe OG&E's proposed increase to its production plant depreciation expense.

A. OG&E is proposing a substantial increase to its production plant depreciation expense of nearly $25 million – an increase of about 35%. This excessive increase is largely driven by the inclusion of contingency costs and escalation factors in the calculation of OG&E's proposed net salvage rates for its production accounts.

Q. Has the Commission consistently rejected the use of contingency costs and escalation factors in the determination of production net salvage rates?

Yes. For example, in OG&E's 2015 rate case[27] and PSO's 2017 rate case,[28] the Commission adopted proposed net salvage rates that specifically excluded contingency costs and escalation factors. Below I provide my arguments opposing the use of contingency and escalation factors in determining production net salvage rates.

1. <u>Contingency Factor</u>

Q. Describe the contingency factor applied in the 2018 Studies.

A. OG&E's decommissioning studies include direct and indirect cost estimates to dismantle the Company's generating facilities, which include labor, material, and scrap value

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[26] Final Order (No. 679358), Cause No. PUD 201700496.

[27] Final Order (No. 662059), Cause No. PUD 201500273.

[28] Final Order (No. 672846), Cause No. PUD 201700151.

estimates. However, in addition to these cost estimates, the Company applies a 20% contingency factor to all direct costs for each generating unit. This means that the total direct and indirect costs are increased by 20%.[29]

Q. What is the total amount of the contingency costs included in the 2018 Studies and incorporated into the Company's proposed depreciation rates?

A. About $40 million.

Q. Describe all of the testimony and other evidence presented by the OG&E to support and justify nearly $40 million of costs included in its proposed depreciation rates.

A. There is none.

Q. Do the 2018 Studies say anything about the 20% contingency factors?

A. There is one sentence: "A 20 percent contingency is included on the direct costs in the estimates prepared as part of this study to cover unknowns."[30]

Q. Please summarize the Company's position in this case regarding contingency costs.

A. OG&E is asking the Commission to charge current ratepayers nearly $40 million of costs through depreciation rates; these costs are admittedly "unknown;" they could supposedly be incurred up to several decades in the future; and they are not supported by any witness, testimony, or other evidence.

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[29] Exhibit JJS-3.

[30] Exhibit JJS-3, p. 4-5 (Paragraph 34).

Q. Do you agree that contingency factors should be included in the decommissioning cost estimates?

A. No. In a ratemaking context, ratepayers should not be charged for costs that are entirely "unknown" by definition. Furthermore, these contingency factors fail to account for the possibility that OG&E's proposed decommissioning costs might be overestimated. Any argument in support of a positive contingency factor could be used to support a negative contingency factor.

2. Escalation Factor

Q. Describe the cost escalation factor applied by Mr. Spanos.

A. To calculate his proposed net salvage rates for OG&E's production accounts, Mr. Spanos escalated the decommissioning cost estimates provided in the 2017 Studies by 2.5% each year until the estimated retirement year for each generating facility.[31]

Q. How much additional costs would the escalation factor add to OG&E's proposed decommissioning costs if approved?

A. The escalation factor would add nearly $130 million to OG&E's proposed decommissioning costs.[32]

Q. Do you agree with Mr. Spanos's proposal to escalate the proposed decommissioning costs?

A. No. There are two important reasons the Commission should disallow the cost escalation factor applied by Mr. Spanos. First, it is not appropriate to escalate a cost that is already

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[31] *See* Direct Testimony of John J. Spanos, p. 24, lines 1-11.

[32] *See* Exhibit JSS-2 (depreciation study), p. VIII-4.

unknown and uncertain. We do not know the actual retirement dates for the Company's generating facilities, and we also do not know whether each facility will be completely dismantled at those retirement dates under the assumptions inherent in the decommissioning studies. Some plants might be sold, converted, or otherwise reused in such a way that would be less costly and not require a complete brownfield demolition. If we are to assume that OG&E is a going concern (and we should), then complete brownfield demolitions of each one of OG&E's generating facilities at their estimated retirement dates is highly unlikely. The second problem with the Company's cost escalation factor is more technical. In my opinion, it is not proper to charge current ratepayers for a future cost that has not been discounted to present value. The "time value of money" concept is a cornerstone of finance and valuation. For example, the Discounted Cash Flow Model, which is used to estimate the cost of equity, applies a growth rate to a company's dividends many years into the future. However, that dividend stream is then discounted back to the current year by a discount rate in order to arrive at the present value of an asset. Likewise, accounting for AROs involves escalating the present value of an estimated future cost, but then the cost is discounted back to present value by a discount rate in order to calculate the depreciation expense to charge to current ratepayers. In contrast to these calculations, OG&E proposes to escalate the present value of its decommissioning costs decades into the future and expects current ratepayers to pay the future value of these costs with their present-day dollars. This proposal completely disregards the elemental "time value of money" principle. For these reasons, the Commission should exclude the escalation factor applied by Mr. Spanos when determining appropriate net salvage and depreciation rates for OG&E's production accounts.

Q. Has the Commission consistently rejected contingency and escalation factors in production net salvage rates?

A. Yes. For example, in PSO's 2015 rate case, the company proposed the inclusion of escalation and contingency factors in calculating PSO's terminal net salvage. In rejecting PSO's proposed escalation factor, the ALJ found as follows:

> The ALJ adopts Staff witness Garrett's recommendation that the Commission should deny the proposed escalation of demolition costs in this case because (1) the escalated costs do not appear to be calculated in the same manner as other calculations; (2) the Company did not offer any testimony in support of the escalation factor; (3) an escalation factor that does not consider any improvements in technology or economic efficiencies likely overstates future costs; (4) it is inappropriate to apply an escalation factor to demolition costs that are likely overstated; (5) asking ratepayers to pay for future costs that may not occur, are not known and measurable changes within the meaning of 17 O.S. § 284; and (6) the Commission has not approved escalated demolition costs in previous cases.[33]

Likewise, in rejecting PSO's proposed contingency factors, the ALJ found as follows:

> In its demolition cost study, S&L applied a 15% contingency factor to its cost estimates, and a negative 15% contingency factor to its scrap metal value estimates. The Company provides little justification for this contingency factor other than the plants might experience uncertainties and unplanned occurrences. This reasoning fails to consider the fact that certain occurrences could reduce estimated costs.[34]

Likewise, the Commission rejected contingency and escalation factors in OG&E's 2015 rate case[35] and PSO's 2017 rate case.[36]

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[33] Report and Recommendation of the Administrative Law Judge p. 164, filed May 31, 2016 in Cause No. PUD 201500208.

[34] *Id.*

[35] Final Order (No. 662059), Cause No. PUD 201500273.

[36] Final Order (No. 672846), Cause No. PUD 201700151.

Q. What is your recommendation regarding OG&E's proposed production net salvage rates?

A. I recommend the Commission disregard the 2018 Studies filed by the Company. Adoption of the 2018 Studies would have ratepayers paying through current depreciation rates more than $287 million in estimated future costs without any Company witness supporting such costs in testimony. Furthermore, the decommissioning costs proposed by the Company include contingency and escalation factors which have been consistently rejected by the Commission and would increase the costs by more than $160 million than they otherwise would be without those factors. It would not be fair to current customers to suddenly increase the depreciation expense for the Company's production accounts by more than 35% due to the inclusion of these excessive costs. Thus, I am recommending the Commission adopt the net salvage rates that were litigated and approved in OG&E's 2015 rate case. Adopting my proposed net salvage rates would maintain the Commission's precedent regarding contingency and escalation factors; in addition, it would express that it is not appropriate to ask ratepayers to pay for more than $285 million of unknown costs through current depreciation rates without any witness or testimony in support of those proposed costs.

VI. MASS PROPERTY ANALYSIS

Q. Describe mass property.

A. Unlike life span property accounts, "mass" property accounts usually contain a large number of small units that will not be retired concurrently. For example, poles, conductors, transformers, and other transmission and distribution plant are usually classified as mass property. Estimating the service life of any single unit contained in a mass account would not require any actuarial analysis or curve-fitting techniques. Since we must develop a single rate for an entire group of assets, however, actuarial analysis is required to calculate the average remaining life of the group.

Q. How did you determine the depreciation rates for the mass property accounts?

A. To develop depreciation rates for the Company's mass property accounts, I obtained the Company's historical plant data to develop observed life tables for each account. I used Iowa curves to smooth and complete the observed data to calculate the average remaining life of each account. Finally, I analyzed the Company's proposed net salvage rates for each mass account by reviewing the historical salvage data. After estimating the remaining life and salvage rates for each account, I calculated the corresponding depreciation rates. Further details about the actuarial analysis and curve-fitting techniques involved in this process are presented in the attached appendices.

Q. Please describe your approach in estimating the service lives of mass property.

A. I used all of the Company's property data and created an observed life table ("OLT") for each account. The data points on the OLT can be plotted to form a curve (the "OLT curve"). The OLT curve is not a theoretical curve, rather, it is derived from the Company's actual plant data, which indicate the rate of retirement for each property group. An OLT curve by itself, however, is rarely a smooth curve, and is often not a "complete" curve (i.e., it does not end at zero percent surviving). In order to calculate average life (the area under a curve), a complete survivor curve is needed. The Iowa curves are empirically-derived curves based on the extensive studies of the actual mortality patterns of many different types of industrial property. The curve-fitting process involves selecting the best Iowa curve to fit the OLT curve. This can be accomplished through a combination of visual and mathematical curve-fitting techniques, as well as professional judgment. The first step of my approach to curve-fitting involves visually inspecting the OLT curve for any irregularities. For example, if the "tail" end of the curve is erratic and shows a sharp decline over a short period of time, it may indicate that this portion of the data is less reliable, as further discussed below. After inspecting the OLT curve, I use a mathematical curve-fitting technique which essentially involves measuring the distance between the OLT curve and the selected Iowa curve in order to get an objective, mathematical assessment of how well the curve fits. After selecting an Iowa curve, I observe the OLT curve along with the Iowa curve on the same graph to determine how well the curve fits. I may repeat this process several times for any given account to ensure that the most reasonable Iowa curve is selected.

Q. Do you always select the mathematically best-fitting curve?

A. Not necessarily. Mathematical fitting is an important part of the curve-fitting process because it promotes objective, unbiased results. While mathematical curve fitting is important, however, it may not always yield the optimal result; therefore, it should not necessarily be adopted without further analysis. In fact, for some of the accounts in this case I selected Iowa curves that were not the mathematical best fit, and in every such instance, this decision resulted in shorter curves (higher depreciation rates) being chosen, as further illustrated below.

Q. Should every portion of the OLT curve be given equal weight?

A. Not necessarily. Many analysts have observed that the points comprising the "tail end" of the OLT curve may often have less analytical value than other portions of the curve. "Points at the end of the curve are often based on fewer exposures and may be given less weight than points based on larger samples. The weight placed on those points will depend on the size of the exposures."[37] In accordance with this standard, an analyst may decide to truncate the tail end of the OLT curve at a certain percent of initial exposures, such as one percent. Using this approach puts a greater emphasis on the most valuable portions of the curve. For my analysis in this case, I not only considered the entirety of the OLT curve, but also conducted further analyses that involved fitting Iowa curves to the most significant part of the OLT curve for certain accounts. In other words, to verify the accuracy of my curve selection, I narrowed the focus of my additional calculation to consider the top 99% of the "exposures" (i.e., dollars exposed to retirement) and to eliminate the tail end of the curve representing the bottom 1% of exposures.

Q. Discuss the general differences between your service life estimates and the Company's service life estimates for the accounts to which you propose adjustments.

A. While the Company and I used similar curve-fitting approaches in this case, the curves I selected for these accounts provide a better mathematical fit to the observed data and provide a more reasonable and accurate representation of the mortality characteristics for each account in my opinion. In each of the following accounts, the Company has selected a curve that underestimates the average remaining life of the assets in the account, which

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

results in unreasonably high depreciation rates. The analysis of each selected account is presented below.

Q. Please address Mr. Spanos's testimony regarding the reasonableness of OG&E's currently-approved service lives.

A. In his direct testimony, Mr. Spanos describes the Commission's ordered service lives for some of the Company's assets as "inadequate" to provide timely cost recovery, "outside any reasonable expectation" regarding service life cycles, and "well beyond the range of reasonableness" for the property studied, among other criticisms.[38]

Q. What evidence does Mr. Spanos provide to support his criticisms of the Commission's order?

A. In Table 2 on page 8 of his direct testimony, Mr. Spanos provides a series of "Industry Ranges" to support his assertion that the Commission's ordered service lives for OG&E are "well beyond the range of reasonableness" for the property studied. Mr. Spanos was asked in discovery about these "Industry Ranges."[39] In response, Mr. Spanos provided a spreadsheet that appears to simply include his firm's own estimates from various depreciation studies they have conducted for other utility companies.[40] This information does not reference service lives actually ordered by regulatory commissions. In other words, the "Industry Ranges" cited by Mr. Spanos merely include his firm's own estimates of other utility property. The Commission should disregard Mr. Spanos's estimates for other utilities as they are neither binding nor persuasive to the case at hand. Instead, we

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[38] *See* Direct Testimony of John J. Spanos, p. 8, lines 1-17.

[39] *See* Data Request AG-12-5.

[40] *See* response to Data Request AG-7-3, Att.

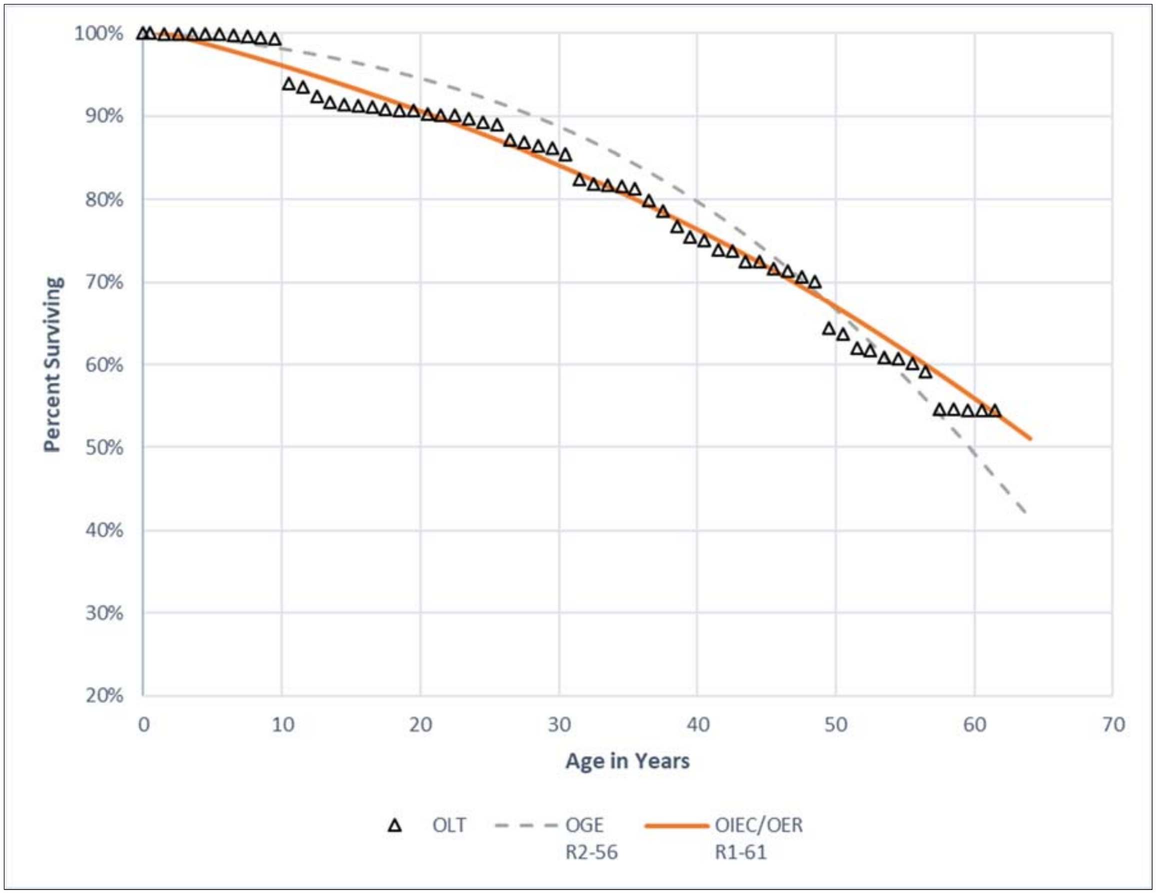
should focus on OG&E's actual service life data presented in this case which demonstrate that Mr. Spanos's service life estimates for many accounts are unreasonably underestimated.

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

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. The OLT curve for this account and other accounts discussed in this section is constructed using the Company's historical property data. The graph below shows the two different Iowa curves selected by Mr. Spanos and me to best represent the average remaining life for the assets in this account. The OLT curve generated for this account is particularly well-suited for conventional Iowa curve techniques because it has adequate retirement history (i.e., it is long enough), is relatively smooth, and follows a typical retirement pattern for utility property. For this account, I selected the R1-61 Iowa curve and Mr. Spanos selected the R2-56 Iowa curve. The average lives are indicated by the number after the dash in each curve (61 and 56). Both Iowa curves are displayed in the graph below along with the OLT curve.

Figure 2:
Account 353 – Transmission Station Equipment



As shown in the graph, the trajectory of the R2-56 curve does not appear to match the OLT curve as well as the R1-61 curve. In their respective frequency curves, the R1 curve has a lower mode than the R2 curve, which means it will have a "flatter" trajectory in the corresponding survivor curve (see Appendix B).

Q. Does your selected curve provide a better mathematical fit to the observed data than the Company's curve?

A. Yes. Selected Iowa curves based on visual curve fitting techniques can be confirmed and bolstered by checking them mathematically. The best mathematically-fitted curve is the one that minimizes the distance between the OLT curve and the Iowa curve, thus providing the closest fit. The "distance" between the curves is calculated using the "sum-of-squared differences" ("SSD") technique. The curve with the lower SSD represents the better mathematical fit. Although for this account it is visually clear that the R1-61 curve provides the better fit to the observed data, we can also confirm this result mathematically. For this account, the SSD for the Company's curve is 0.0750, and the SSD for the R1-61 curve I selected is only 0.0189, which means it provides the better mathematical fit to the observed data.[41]

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $2.6 million.[42]

2. Account 355 – Transmission Poles and Fixtures

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. For this account, I selected the R0.5-64 curve and Mr. Spanos selected the R1.5-57 curve. The graph below shows the two curves along with the OLT curve.

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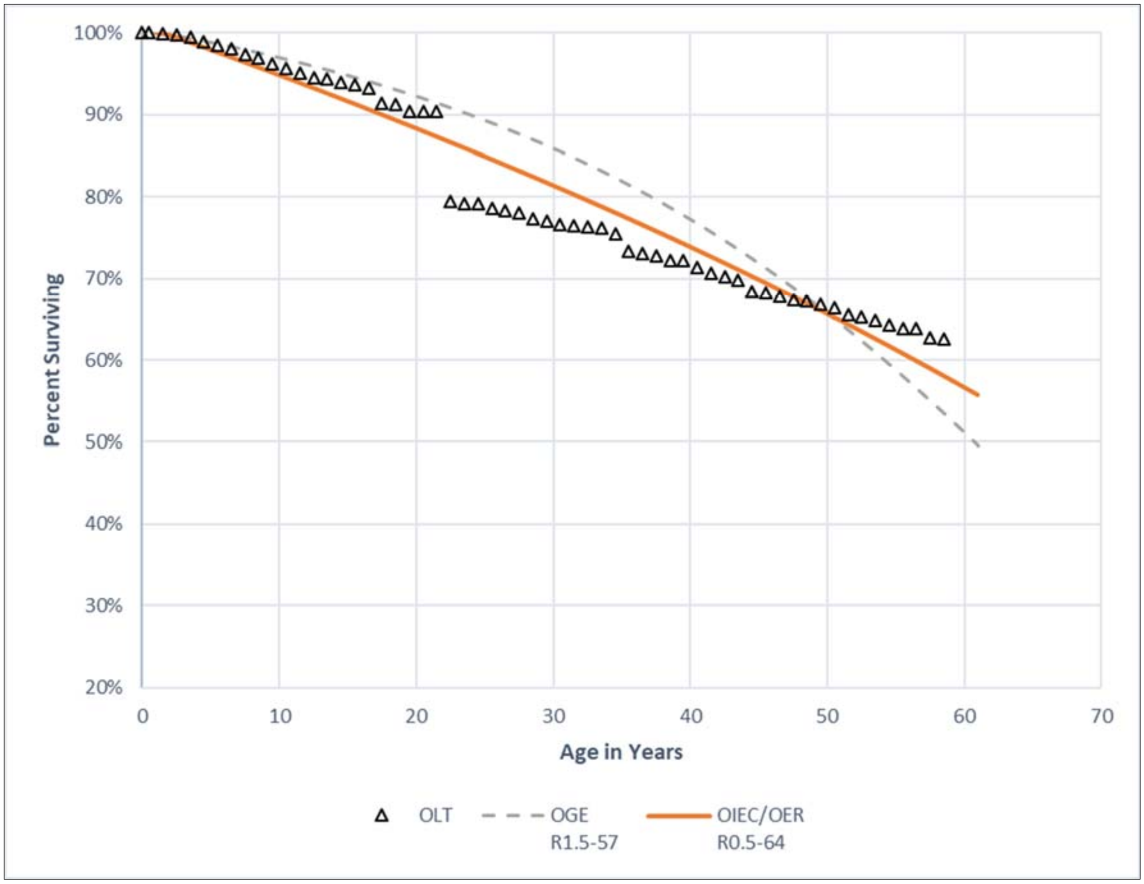
[41] Exhibit DJG-2-5.

[42] Exhibit DJG-2-2.

Figure 3:
Account 355 – Transmission Poles and Fixtures



As shown in the graph, the Iowa curve selected by Mr. Spanos appears to provide a good fit to the OLT curve through age-interval 20, but it also appears to ignore the pattern in the OLT curve occurring thereafter. As with the account discussed above, a lower-modal curve with a flatter trajectory provides a more accurate fit to the observed data, such as that presented in the R0.5-64 curve I selected.

Q. Does your selected curve provide a better mathematical fit to the more statistically relevant portions of the OLT curve?

A. Yes. Specifically, the Company's R2-67 curve has an SSD of 0.1649 and the R0.5-64 curve I selected has an SSD of 0.0532, making it the better mathematical fit.[43]

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $4.9 million.[44]

3. Account 362 – Station Equipment

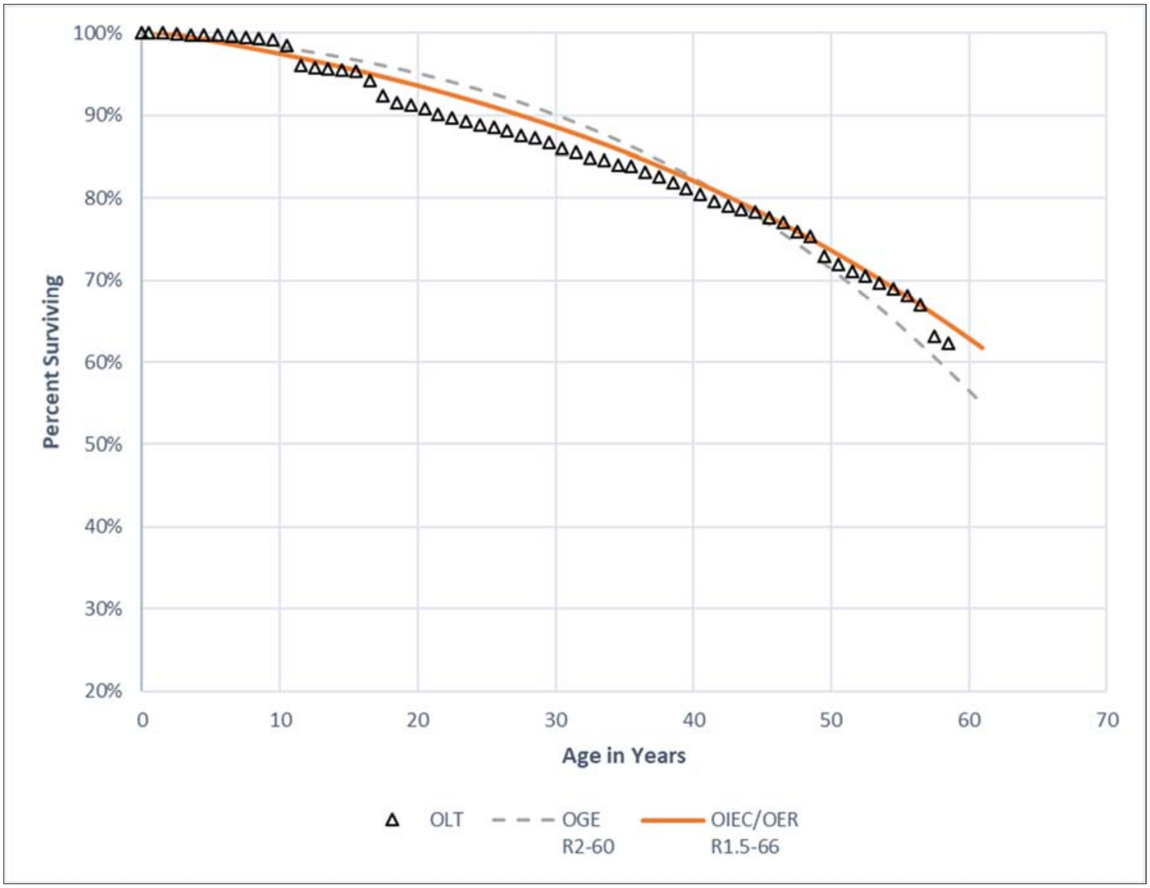
Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. As with the transmission station equipment account discussed above, the OLT curve for Account 362 is well-suited for Iowa curve fitting. For this account, I selected the R1.5-66 curve and Mr. Spanos selected the R2-60 curve. The graph below shows these two curves along with the OLT curve.

[43] Exhibit DJG-2-6.

[44] Exhibit DJG-2-2.

Figure 4:
Account 362 – Station Equipment



As shown in the graph, both curves provide relatively close fits to the OLT curve; however, the flatter trajectory of the R1.5-66 curve I selected provides the better overall fit, particularly during significant portions of the middle portion of the curve, as well as relevant portions toward the tail end of the OLT curve. When visual inspection cannot reveal the better-fitting Iowa curve, mathematical curve fitting techniques can be particularly valuable, and especially when the primary evidence provided for an account is the historical retirement data, as is the case here.

Q. Does your selected curve provide a better mathematical fit to the observed data than the Company's curve?

A. Yes. Specifically, the SSD for the Company's curve is 0.0511, and the SSD for the R1.5-66 curve I selected is only 0.0091,[45] which means it provides a closer fit to the observed data presented in the OLT curve.

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $1.5 million.[46]

4. Account 364 – Poles, Towers and Fixtures

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. I selected the R0.5-66 curve for this account and Mr. Spanos selected the R1-56 curve. The graph below shows these two Iowa curves juxtaposed with the OLT curve.

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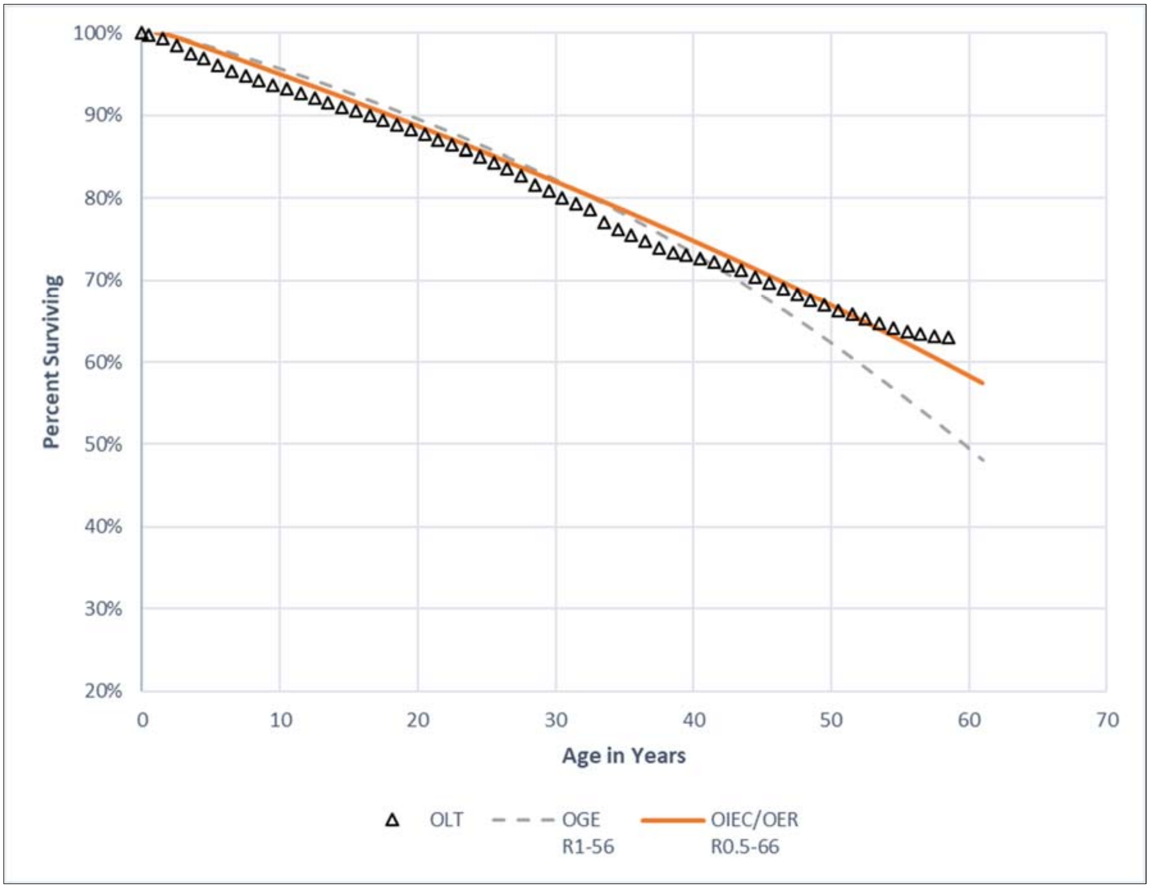
[45] Direct Exhibit DJG-2-7.

[46] Exhibit DJG-2-2.

Figure 5:
Account 364 – Poles, Towers and Fixtures



As with the Iowa curves Mr. Spanos selected for the previous accounts discussed above, the trajectory of the R1-56 curve is not flat enough to provide the best fit to the observed data, and ultimately results in an underestimated average service life. Likewise, the R1-56 curve chosen by Mr. Spanos appears to ignore relevant data towards the end of the OLT curve for this account (between age intervals 45-60).

Q. Does your selected curve provide a better mathematical fit to the observed data than the Company's curve?

A. Yes. The SSD for the Company's curve is 0.1042, and the SSD for the R0.5-66 curve I selected is only 0.0092,[47] which means it provides a closer mathematical fit to the OLT curve for this account.

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $3.1 million.[48]

5. <u>Account 365 – Overhead Conductors and Devices</u>

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. For this account, I selected the O1-66 curve and the Company selected the R0.5-55 curve. The graph below shows these two curves along with the OLT curve.

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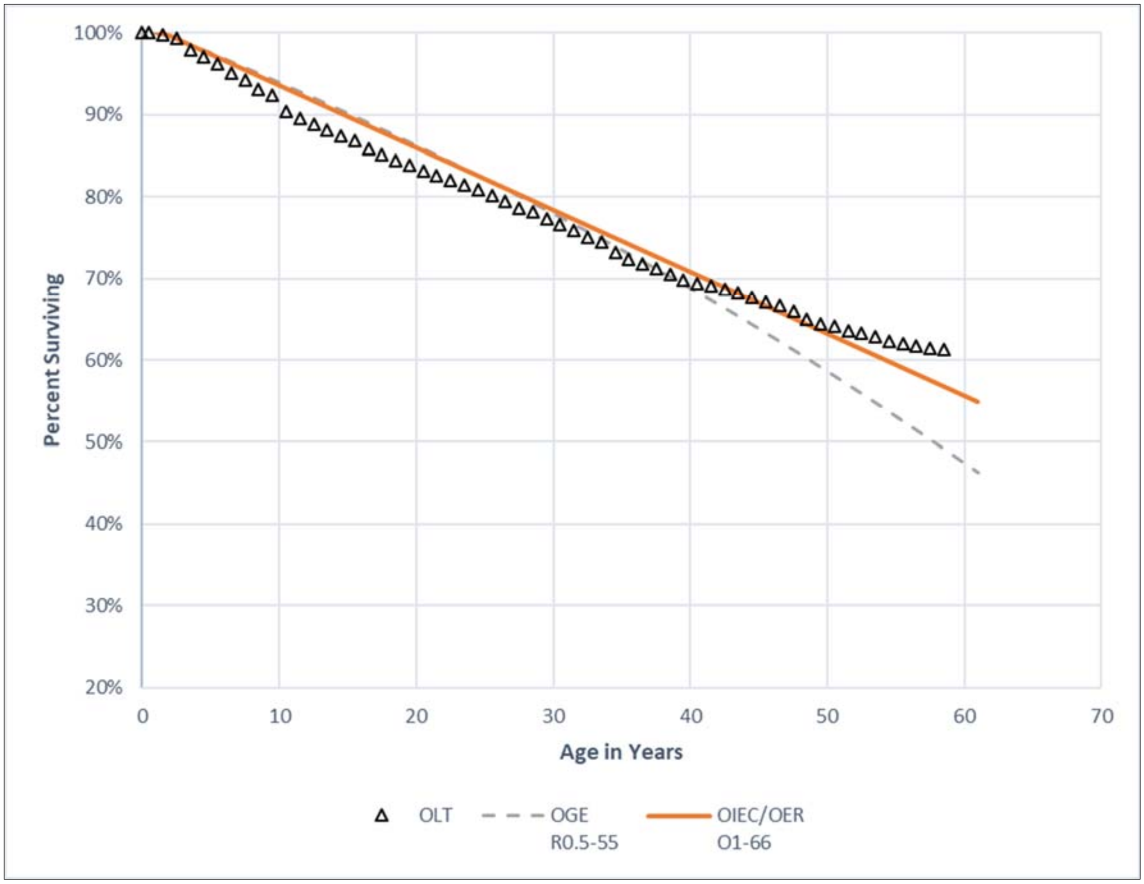
[47] Exhibit DJG-2-8.

[48] Exhibit DJG-2-2.

Figure 6:
Account 365 – Overhead Conductors and Devices



As show in this graph, the OLT curve declines in a near-linear fashion until about age-interval 40, in which the rate of retirement actually decreases. The curve selected by Mr. Spanos appears to ignore relevant data occurring after age-interval 40. The primary purpose of the Iowa curve fitting is to use past information in order to make objective projections of future retirement rates and remaining life. However, in order to make accurate predictions of remaining life it is first necessary to select Iowa curves that accurate describe what we already know occurred in the past. The R0.5-55 curve selected by Mr. Spanos suggests that when the assets in this account become 58 years old, there are only 47% surviving; however, we know that this cannot be the case since we have OG&E's own historical data that shows the percent surviving at this age is 61%, which is much higher. The O1-66 Iowa curve I selected provides a more accurate estimation of remaining life in part because it provides a more accurate depiction of the retirement pattern that has already occurred.

Q. Does your selected curve provide a better mathematical fit to the observed data than the Company's curve?

A. Yes. The SSD for the Company's curve is 0.1347, and the SSD for the O1-66 curve I selected is 0.0193.[49]

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $2.5 million.[50]

6. Account 366 – Underground Conduit

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

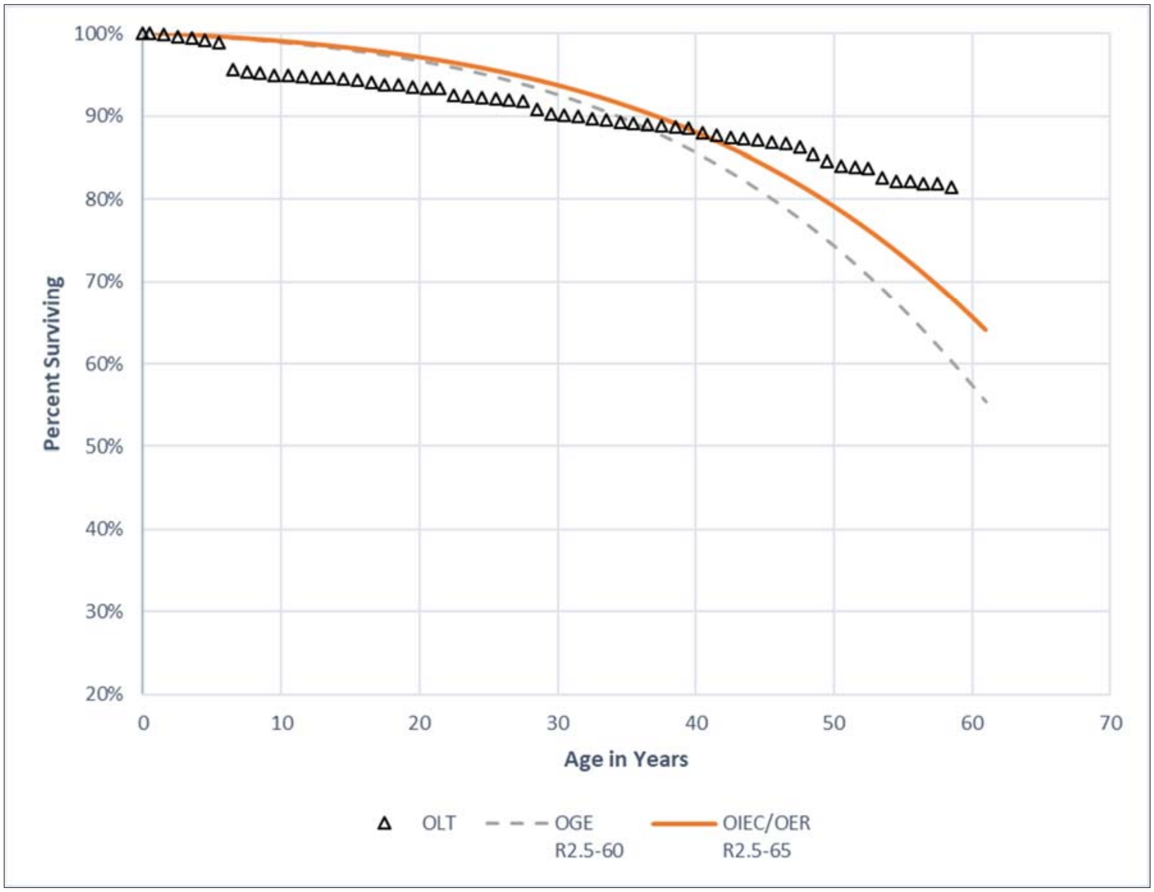
A. Although there are nearly 60 years of placements observed in this account, the OLT curve does not yet decline below 80% surviving. For most accounts, this would be sufficient retirement history for a stricter mathematical analysis, but for this account, it is difficult to use strict mathematical curve fitting to obtain a strong indication of remaining life. Nonetheless, an Iowa curve must ultimately be selected in order to conduct a remaining

[49] Exhibit DJG-2-9.

[50] Exhibit DJG-2-2.

life and depreciation rate calculation for this account. For this account, I selected the R2.5-65 curve, and Mr. Spanos selected the R2.5-60 curve. The graph below shows these two curves along with the OLT curve.

Figure 7:
Account 366 – Underground Conduit



The R2.5-65 curve I selected is the Iowa curve currently approved for this account.[51] The Company has not presented any compelling evidence to deviate from the currently-approved Iowa curve, and as a result has failed to meet its burden to make a convincing showing that its proposed depreciation rate for this account is not excessive. Although the

[51] Final Order (No. 662059), Cause No. PUD 201500273.

OLT curve for this account has limitations regarding an ideal Iowa curve-fitting analysis, it nonetheless indicates that the average remaining life for the assets in this account could be much longer than the 65-year life I am proposing. Under these circumstances, selecting the R2.5-65 curve for this account is conservative and reasonable.

Q. Does your selected curve provide a better mathematical fit to the observed data than the Company's curve?

A. Yes. Despite the acknowledgements made regarding mathematical curve fitting discussed previously, the Iowa curve I selected nonetheless provides the better mathematical fit. Specifically, the SSD for the Company's curve is 0.3981, and the SSD for the R2.5-65 curve I selected is 0.1682.[52]

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $169,863.[53]

7. Account 371 – Installations on Customers' Premises

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. Unlike most of the accounts discussed in this section, the retirement history and OLT curve for Account 371 is insufficient for Iowa curve analysis. Therefore, information outside of

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[52] Exhibit DJG-2-10.

[53] Exhibit DJG-2-2.

the statistical analysis should be considered when determining the most appropriate average life and Iowa curve.

Q. Does Mr. Spanos agree with you that relying on statistical analysis alone could be problematic for this account?

A. Apparently yes. Mr. Spanos specifically states: "[Account 371] is a clear example of why relying only on statistical analyses is flawed."[54] Despite this statement however, Mr. Spanos contradicts himself in the same Q&A by relying upon statistical analyses in support of his 7-year proposed average life for this account. On p. 15 of his direct testimony, he presents an Iowa curve / OLT analysis similar to those presented in my testimony above. However, there is inadequate retirement history for the assets in Account 371 to conduct a meaningful statistical analysis.

Q. Does Mr. Spanos present any other persuasive arguments in his testimony in support of a 7-year service life for this account?

A. No. Mr. Spanos simply makes a conclusory remark that the programmable thermostats in this account "have an expected life of 5-7 years and become obsolete very quickly due to the evolving technology."[55] This falls far short of the Supreme Court standard mandating a "convincing showing" that a utility's proposed depreciation rates are not excessive. The Company is proposing an annual increase to customers of more than $5 million on Account 371 alone based on Mr. Spanos's conclusory remarks and flawed statistical analysis.[56]

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[54] Direct Testimony of John J. Spanos, p. 14, line 3.

[55] *Id*. at lines 7-8.

[56] *See* WP H2.21 Depreciation Expense.

Q. Prior to the addition of programmable thermostats in Account 371, what was the approved service life for this account?

A. Prior to OG&E's 2015 rate case, the average life utilized for Account 371 was 30 years.[57] This means that since that time, the service life utilized for this account has already decreased by half, as the currently-approved average life for this account is only 15 years. To the extent Mr. Spanos's predictions are generally correct in that programmable thermostats should reduce the remaining life of the assets in this account, we have already made a sizeable move in the direction of a decreased average life (going from 30 years to 15 years).

Q. What is your recommendation for this account?

A. The historical data for this account is currently inadequate to conduct a meaningful statistical analysis. Furthermore, the Company has failed to make a convincing showing through other evidence that its proposed depreciation rate for this account is not excessive. Over time, as the Company collects more data on this account, we should be able to observe more reliable trends in the retirement data such that we can obtain more accurate estimates of remaining life based on that data. The approved average life for this account has already decreased by half from 30 years to 15 years. I recommend the Commission maintain the currently-approved service life of 15 years (through the L3-15 Iowa curve) until the Company can present more reliable data on this issue in future cases.

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[57] *See* response to Data Request AG-14-6(b). The 30-S2 survivor curve was used for depreciation rates for Account 371 prior to the Commission Order in Cause No. PUD 201500273.

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $5.6 million.[58]

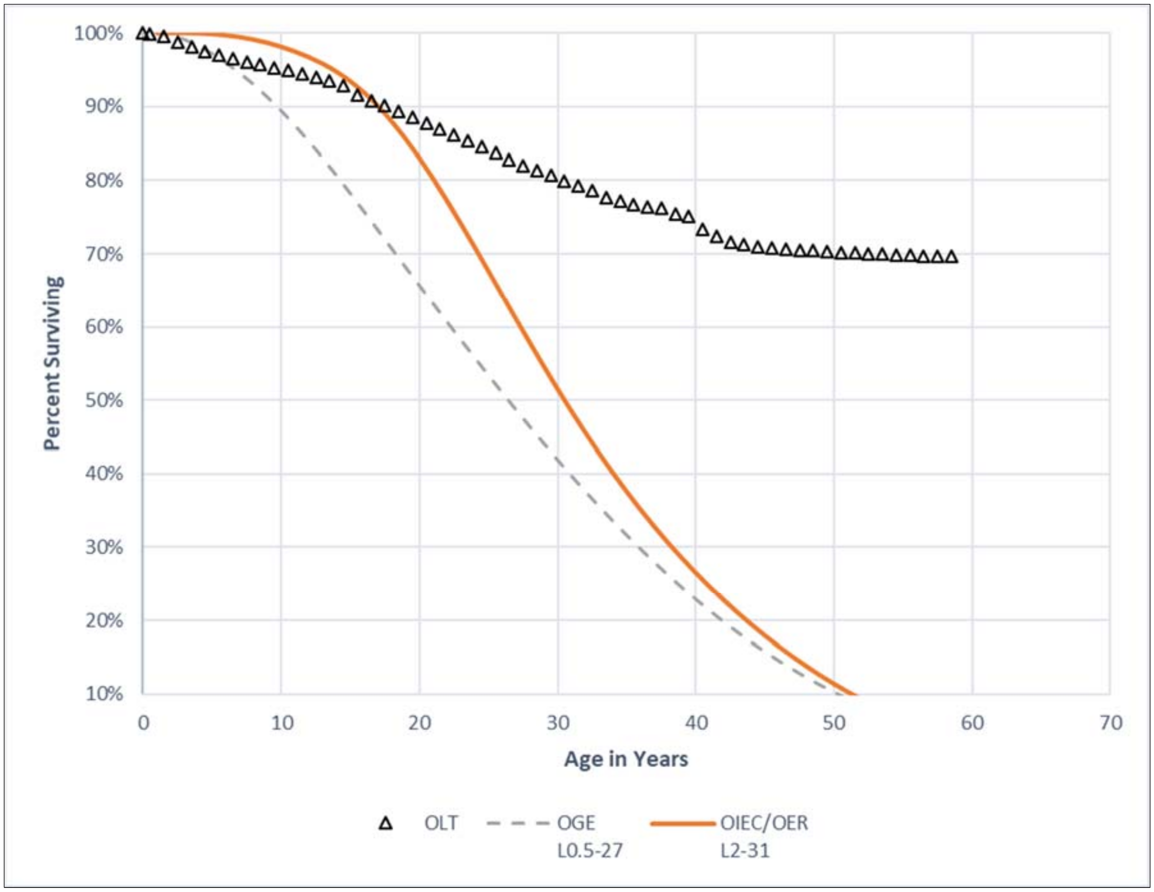
8. <u>Account 373 – Street Lighting and Signal Systems</u>

Q. Describe your service life estimate for this account and compare it with the Company's estimate.

A. While the OLT curve for this account may not be ideal for Iowa curve fitting, it is adequate enough to consider statistical analysis as part of the overall estimate of average life. In addition, the Company presents some limited information outside the statistical analysis for this account. I selected the L2-31 curve for this account and Mr. Spanos selected the L0.5-27 curve. Both curves are shown in the graph below along with the OLT curve.

[58] Exhibit DJG-2-2.

Figure 8:
Account 373 – Street Lighting and Signal Systems



As shown in the graph, neither curve presents a particularly close fit to the OLT curve. This is partially due to the fact that this particular OLT curve displays a relatively flat trajectory toward the tail end of the curve such that if strict mathematical analysis were performed on the OLT curve, it could result in Iowa curves that are unreasonably long (i.e., unreasonably low depreciation rates). Regardless, the OLT curve provides some indication that both Iowa curves selected for this account are possibly too short to describe the most likely remaining life for this account.

Q. Did Mr. Spanos provide some testimony outside the statistical data that could indicate a shorter service life than that indicated by the OLT curve?

A. Yes. According to Mr. Spanos, the Company has planned a conversion to LED lighting in this account, and it is scheduled to take 5-6 years for full implementation.[59] Mr. Spanos then simply concludes that "[t]he 27-L0.5 survivor curve represents the most appropriate life characteristics of past and future expectations for street lighting."[60]

Q. What is your recommendation for Account 373?

A. I do not believe the evidence provided outside of the statistical data for this account is sufficient to make a "convincing showing" that an L0.5-27 curve is the most reasonable selection for this account. However, I recognize that the statistical data is not ideal for a strict mathematical analysis for this account. I considered Mr. Spanos's testimony regarding the Company's LED conversion program when making my service life proposal for this account. To the extent the conversion program has a decreasing effect on remaining life indications going forward, the L2-31 curve I am proposing for this account takes that under consideration. As shown in the graph above, the OLT curve for Account 373 actually indicates a longer average life than 31 years. Thus, selecting an average life of only 31 years for this account gives some consideration to the possibility that the remaining life in this account going forward may decrease as a result of the LED conversion program. We will be able to observe the statistical impact of the conversion program in future depreciation studies, and we can make more accurate recommendations based on the

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[59] Direct Testimony of John J. Spanos, p. 26, lines17-20.

[60] *Id*. at 24-26.

statistical data at that time. For these reasons, it is reasonable to leave the currently-approved L2-31 Iowa curve for this account in place.

Q. Describe the impact to OG&E's proposed depreciation accrual for this account if your recommended service life is adopted.

A. Adopting my proposed service life for this account would result in an adjustment reducing OG&E's proposed depreciation accrual by $281,885.[61]

VII. CONCLUSION AND RECOMMENDATION

Q. Summarize the key points of your testimony.

A. In this case, OG&E is proposing a substantial increase in depreciation expense of $54.4 million.[62] A significant portion of this proposed increase is due to the inclusion of contingency cost and escalation factors in OG&E's proposed decommissioning studies. The Commission has consistently and correctly disallowed these costs, and it should continue to do so. Furthermore, the Company did not offer any testimony or a witness who sponsors the decommissioning studies. Another significant portion of OG&E's proposed increase is due to unreasonably short service life estimates for several of the Company's mass property accounts. For these accounts, the Company failed to make a convincing showing that its proposed depreciation rates are not excessive. The Company primarily relies on its own historical retirement data in support of its service life estimates, and those

[61] Exhibit DJG-2-2.

[62] *See* WP H-2-24.1 – Depreciation Expense (not all of the proposed increase is due to a change in depreciation rates); *see also* Direct Testimony of Donald R. Rowlett, p. 12, lines17-24.

data indicate longer remaining lives than those proposed by the Company for the accounts at issue.

Q. What are OIEC and OER's recommendations to the Commission with regard to OG&E's proposed depreciation rates?

A. OIEC and OER recommend the Commission adopt the proposed depreciation rates presented in Exhibit DJG-2-4. Applying these rates to updated plant balances results in an estimated adjustment reducing OG&E's proposed depreciation expense by $48.2 million.

Q. Does this conclude your testimony?

A. Yes.

Respectfully Submitted,

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APPENDIX A:

THE DEPRECIATION SYSTEM

A depreciation accounting system may be thought of as a dynamic system in which estimates of life and salvage are inputs to the system, and the accumulated depreciation account is a measure of the state of the system at any given time.[63] The primary objective of the depreciation system is the timely recovery of capital. The process for calculating the annual accruals is determined by the factors required to define the system. A depreciation system should be defined by four primary factors: 1) a method of allocation; 2) a procedure for applying the method of allocation to a group of property; 3) a technique for applying the depreciation rate; and 4) a model for analyzing the characteristics of vintage groups comprising a continuous property group.[64] The figure below illustrates the basic concept of a depreciation system and includes some of the available parameters.[65]

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

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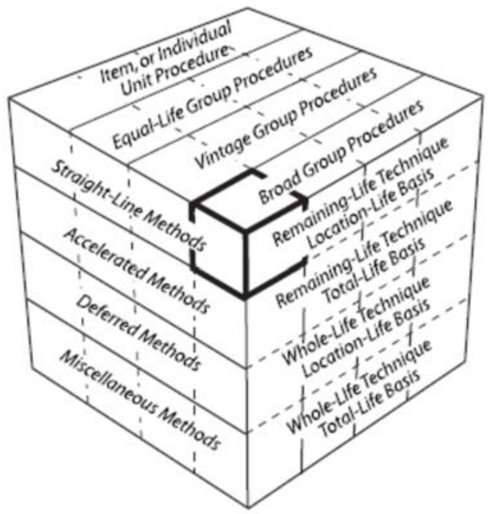
[63] Wolf *supra* n. 7, at 69-70.

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

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

Figure 9:
The Depreciation System Cube



1. <u>Allocation Methods</u>

The "method" refers to the pattern of depreciation in relation to the accounting periods. The method most commonly used in the regulatory context is the "straight-line method" – a type of age-life method in which the depreciable cost of plant is charged in equal amounts to each accounting period over the service life of plant.[66] Because group depreciation rates and plant balances often change, the amount of the annual accrual rarely remains the same, even when the straight-line method is employed.[67] The basic formula for the straight-line method is as follows:[68]

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

[67] *Id*.

[68] *Id*.

Equation 1:
Straight-Line Accrual

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

Gross plant is a known amount from the utility's records, while both net salvage and service life must be estimated in order to calculate the annual accrual. The straight-line method differs from accelerated methods of recovery, such as the "sum-of-the-years-digits" method and the "declining balance" method. Accelerated methods are primarily used for tax purposes and are rarely used in the regulatory context for determining annual accruals.[69] In practice, the annual accrual is expressed as a rate which is applied to the original cost of plant in order to determine the annual accrual in dollars. The formula for determining the straight-line rate is as follows:[70]

Equation 2:
Straight-Line Rate

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

2. Grouping Procedures

The "procedure" refers to the way the allocation method is applied through subdividing the total property into groups.[71] While single units may be analyzed for depreciation, a group plan of depreciation is particularly adaptable to utility property. Employing a grouping procedure allows for a composite application of depreciation rates to groups of similar property, rather than

[69] *Id*. at 57.

[70] *Id*. at 56.

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

excessively conducting calculations for each unit. Whereas an individual unit of property has a single life, a group of property displays a dispersion of lives and the life characteristics of the group must be described statistically.[72] When analyzing mass property categories, it is important that each group contains homogenous units of plant that are used in the same general manner throughout the plant and operated under the same general conditions.[73]

The "average life" and "equal life" grouping procedures are the two most common. In the average life procedure, a constant annual accrual rate based on the average life of all property in the group is applied to the surviving property. While property having shorter lives than the group average will not be fully depreciated, and likewise, property having longer lives than the group average will be over-depreciated, the ultimate result is that the group will be fully depreciated by the time of the final retirement.[74] Thus, the average life procedure treats each unit as though its life is equal to the average life of the group. In contrast, the equal life procedure treats each unit in the group as though its life was known.[75] Under the equal life procedure the property is divided into subgroups that each has a common life.[76]

3. Application Techniques

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

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[72] *Id*. at 74.

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

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

[75] *Id*. at 75.

[76] *Id*.

technique applies the depreciation rate on the estimated average service life of group, while the remaining life technique seeks to recover undepreciated costs over the remaining life of the plant.[77]

In choosing the application technique, consideration should be given to the proper level of the accumulated depreciation account. Depreciation accrual rates are calculated using estimates of service life and salvage. Periodically these estimates must be revised due to changing conditions, which cause the accumulated depreciation account to be higher or lower than necessary. Unless some corrective action is taken, the annual accruals will not equal the original cost of the plant at the time of final retirement.[78] Analysts can calculate the level of imbalance in the accumulated depreciation account by determining the "calculated accumulated depreciation," (a.k.a. "theoretical reserve" and referred to in these appendices as "CAD"). The CAD is the calculated balance that would be in the accumulated depreciation account at a point in time using <u>current</u> depreciation parameters.[79] An imbalance exists when the actual accumulated depreciation account does not equal the CAD. The choice of application technique will affect how the imbalance is dealt with.

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

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

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

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

in the annual accrual.[80] This is one reason that the remaining life technique is popular among practitioners and regulators. The basic formula for the remaining life technique is as follows:[81]

Equation 3:
Remaining Life Accrual

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

The remaining life accrual formula is similar to the basic straight-line accrual formula above with two notable exceptions. First, the numerator has an additional factor in the remaining life formula: the accumulated depreciation. Second, the denominator is "average remaining life" instead of "average life." Essentially, the future accrual of plant (gross plant less accumulated depreciation) is allocated over the remaining life of plant. Thus, the adjustment to accumulated depreciation is "automatic" in the sense that it is built into the remaining life calculation.[82]

4. <u>Analysis Model</u>

The fourth parameter of a depreciation system, the "model," relates to the way of viewing the life and salvage characteristics of the vintage groups that have been combined to form a continuous property group for depreciation purposes.[83] A continuous property group is created when vintage groups are combined to form a common group. Over time, the characteristics of the property may change, but the continuous property group will continue. The two analysis models

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

[81] *Id*. at 64.

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

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

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

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

APPENDIX B:

IOWA CURVES

Early work in the analysis of the service life of industrial property was based on models that described the life characteristics of human populations.[84] This explains why the word "mortality" is often used in the context of depreciation analysis. In fact, a group of property installed during the same accounting period is analogous to a group of humans born during the same calendar year. Each period the group will incur a certain fraction of deaths / retirements until there are no survivors. Describing this pattern of mortality is part of actuarial analysis, and is regularly used by insurance companies to determine life insurance premiums. The pattern of mortality may be described by several mathematical functions, particularly the survivor curve and frequency curve. Each curve may be derived from the other so that if one curve is known, the other may be obtained. A survivor curve is a graph of the percent of units remaining in service expressed as a function of age.[85] A frequency curve is a graph of the frequency of retirements as a function of age. Several types of survivor and frequency curves are illustrated in the figures below.

1. <u>Development</u>

The survivor curves used by analysts today were developed over several decades from extensive analysis of utility and industrial property. In 1931 Edwin Kurtz and Robley Winfrey used extensive data from a range of 65 industrial property groups to create survivor curves representing the life characteristics of each group of property.[86] They generalized the 65 curves

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

[85] *Id*. at 23.

[86] *Id*. at 34.

into 13 survivor curve types and published their results in *Bulletin 103: Life Characteristics of Physical Property*. The 13 type curves were designed to be used as valuable aids in forecasting probable future service lives of industrial property. Over the next few years, Winfrey continued gathering additional data, particularly from public utility property, and expanded the examined property groups from 65 to 176.[87] This resulted in 5 additional survivor curve types for a total of 18 curves. In 1935, Winfrey published *Bulletin 125: Statistical Analysis of Industrial Property Retirements*. According to Winfrey, "[t]he 18 type curves are expected to represent quite well all survivor curves commonly encountered in utility and industrial practices."[88] These curves are known as the "Iowa curves" and are used extensively in depreciation analysis in order to obtain the average service lives of property groups. (Use of Iowa curves in actuarial analysis is further discussed in Appendix C.)

In 1942, Winfrey published *Bulletin 155: Depreciation of Group Properties*. In Bulletin 155, Winfrey made some slight revisions to a few of the 18 curve types, and published the equations, tables of the percent surviving, and probable life of each curve at five-percent intervals.[89] Rather than using the original formulas, analysts typically rely on the published tables containing the percentages surviving. This is because absent knowledge of the integration technique applied to each age interval, it is not possible to recreate the exact original published table values. In the 1970s, John Russo collected data from over 2,000 property accounts reflecting

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[87] *Id*.

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

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

observations during the period 1965 – 1975 as part of his Ph.D. dissertation at Iowa State. Russo essentially repeated Winfrey's data collection, testing, and analysis methods used to develop the original Iowa curves, except that Russo studied industrial property in service several decades after Winfrey published the original Iowa curves. Russo drew three major conclusions from his research:[90]

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

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

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

Prior to Russo's study, some had criticized the Iowa curves as being potentially obsolete because their development was rooted in the study of industrial property in existence during the early 1900s. Russo's research, however, negated this criticism by confirming that the Iowa curves represent a sufficiently wide range of life patterns, and that though technology will change over time, the underlying patterns of retirements remain constant and can be adequately described by the Iowa curves.[91]

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

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

[91] *Id*.

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

2. Classification

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

The classification of the survivor curves was made according to whether the mode of the retirement frequency curves was to the left, to the right, or coincident with average service life. There are three modal "families" of curves: six left modal curves (L0, L1, L2, L3, L4, L5); five right modal curves (R1, R2, R3, R4, R5); and seven symmetrical curves (S0, S1, S2, S3, S4, S5, S6).[92] In the figure below, one curve from each family is shown: L0, S3 and R1, with average life at 100 on the x-axis. It is clear from the graphs that the modes for the L0 and R1 curves appear to the left and right of average life respectively, while the S3 mode is coincident with average life.

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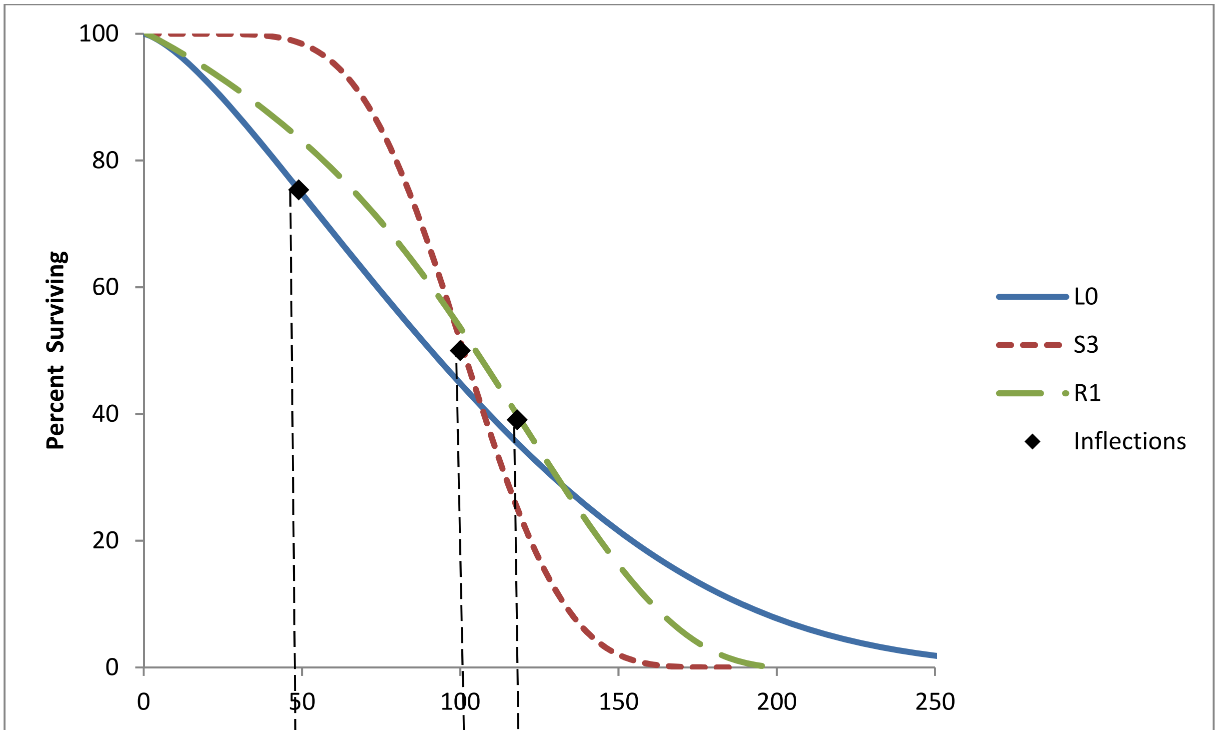
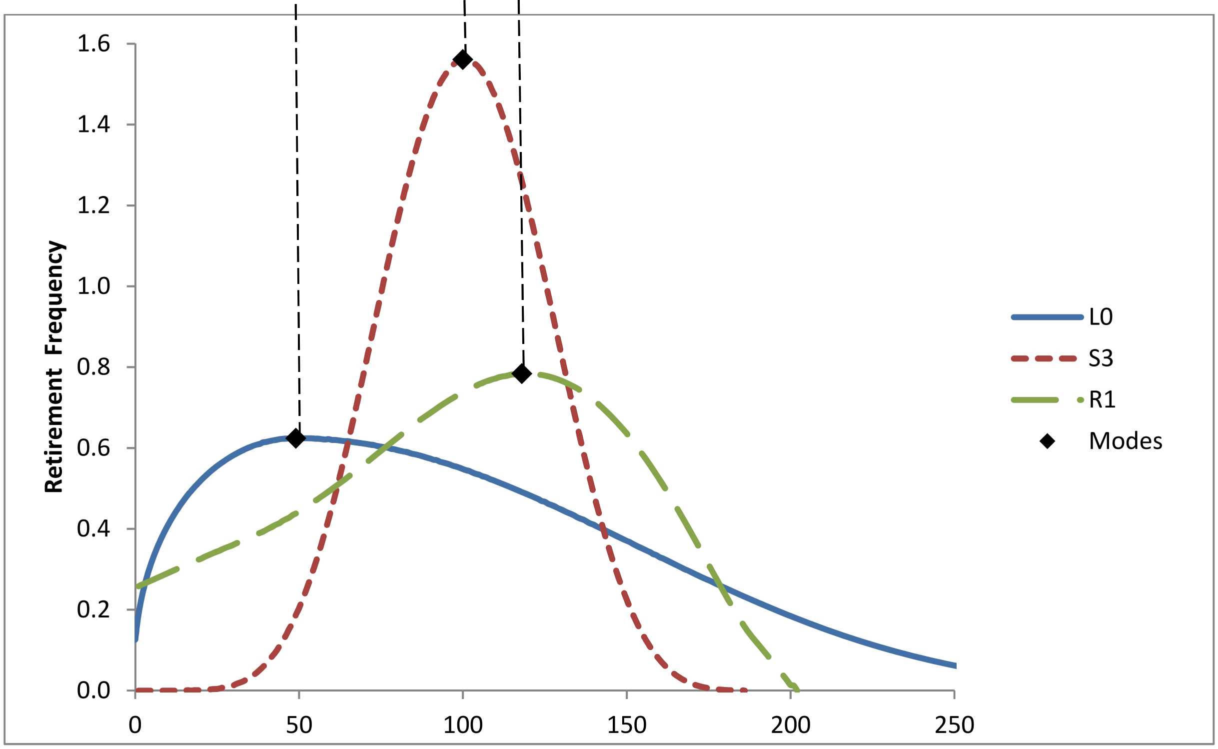
[92] In 1967, Harold A. Cowles added four origin-modal curves known as "O type" curves. There are also several "half" curves and a square curve, so the total amount of survivor curves commonly called "Iowa" curves is about 31 (see NARUC supra n. 8, at 68).

Figure 10:
Modal Age Illustration





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

> Since the location of a particular survivor on a graph is affected by both its span in years and the shape of the curve, it is difficult to classify a group of curves unless one of these variables can be controlled. This is easily done by expressing the age in percent of average life."[93]

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

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

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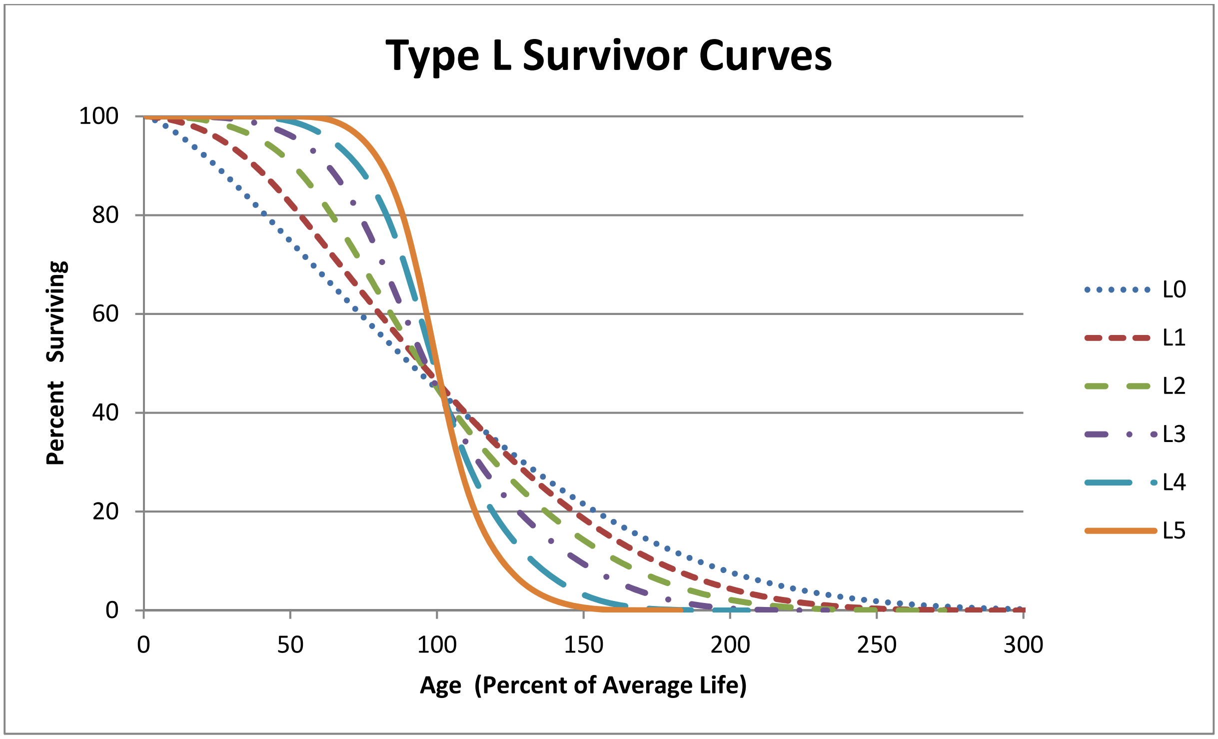
[93] Winfrey, *Bulletin 125: Statistical Analyses of Industrial Property Retirements* 60, Vol. XXXIV, No. 23 (Iowa State College of Agriculture and Mechanic Arts 1935).

Figure 11:
Type L Survivor and Frequency Curves



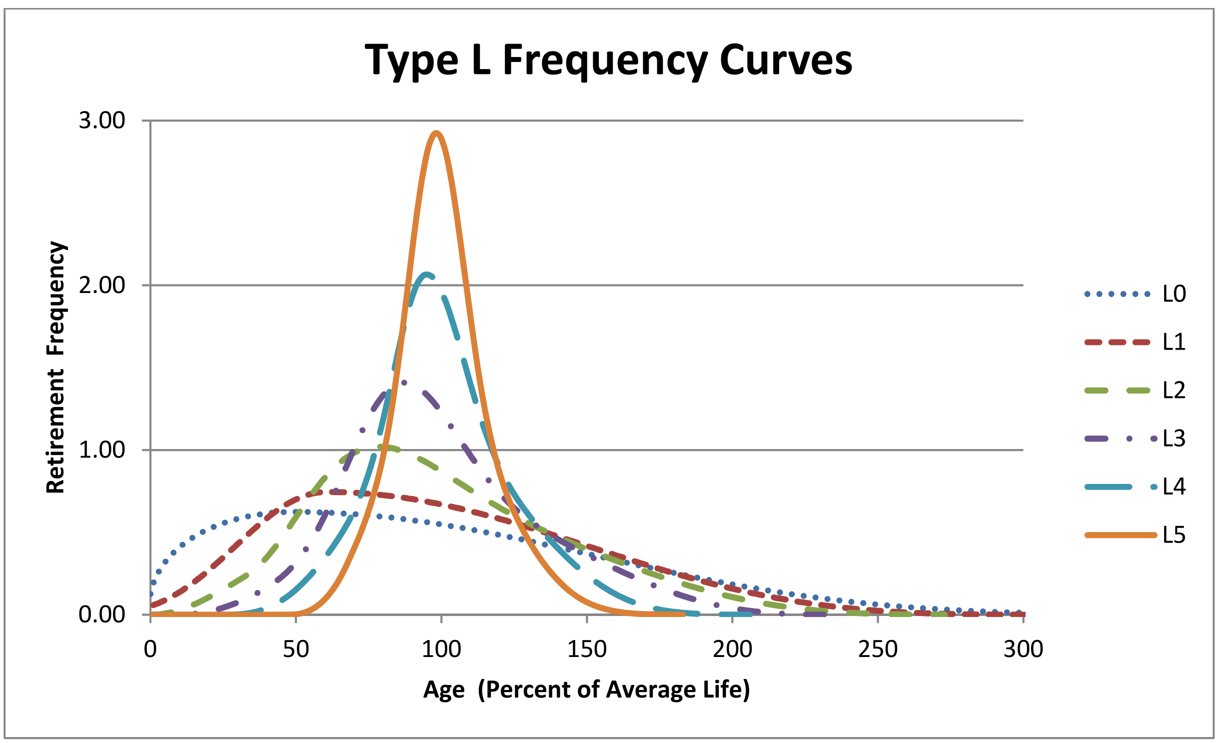
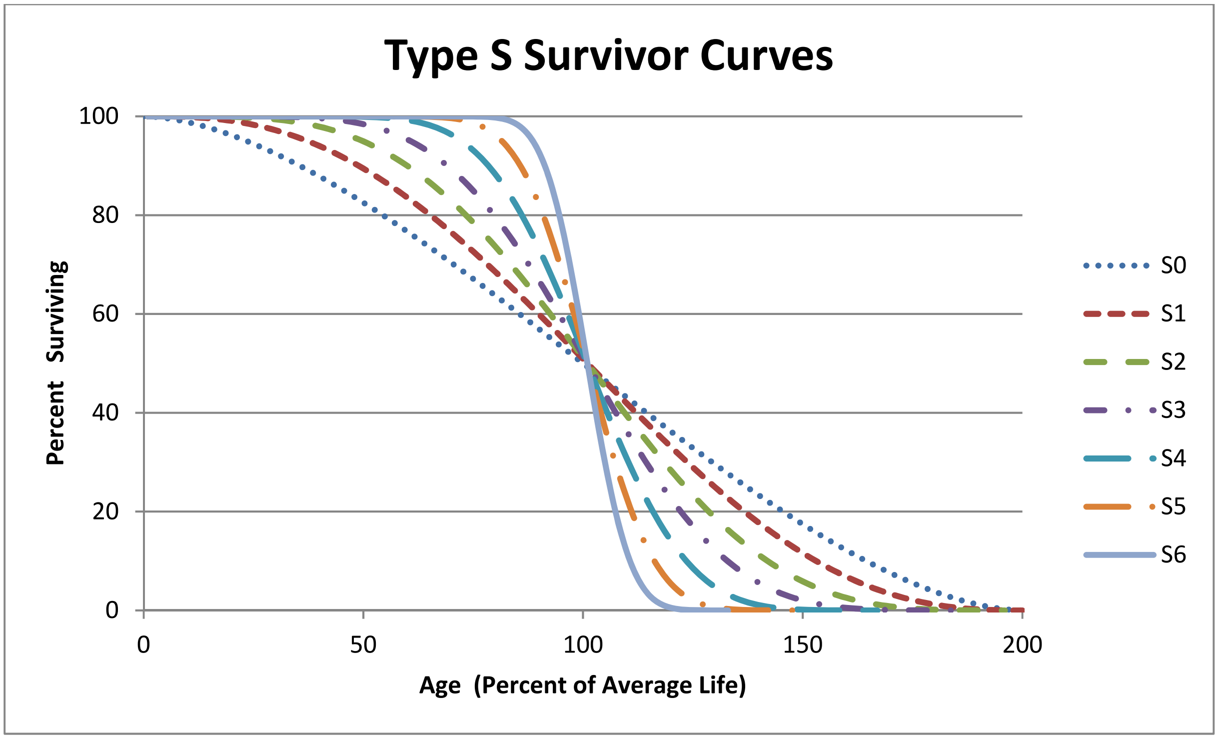


Figure 12:
Type S Survivor and Frequency Curves



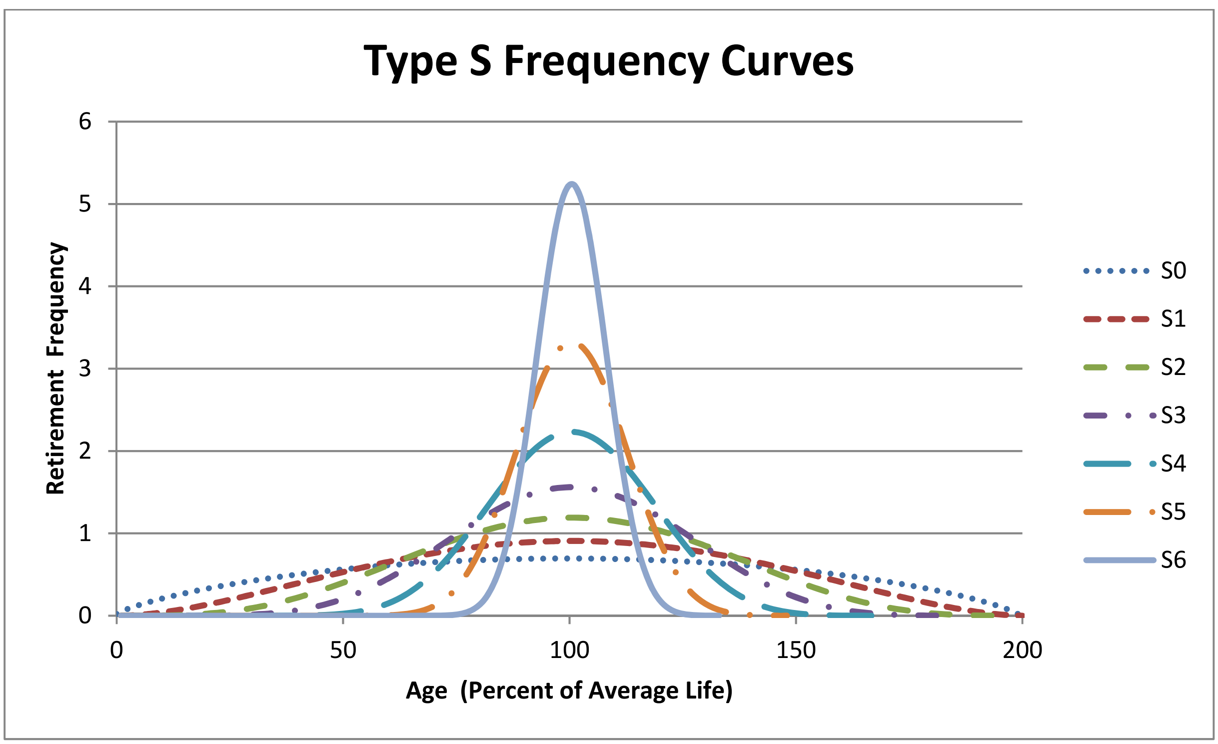
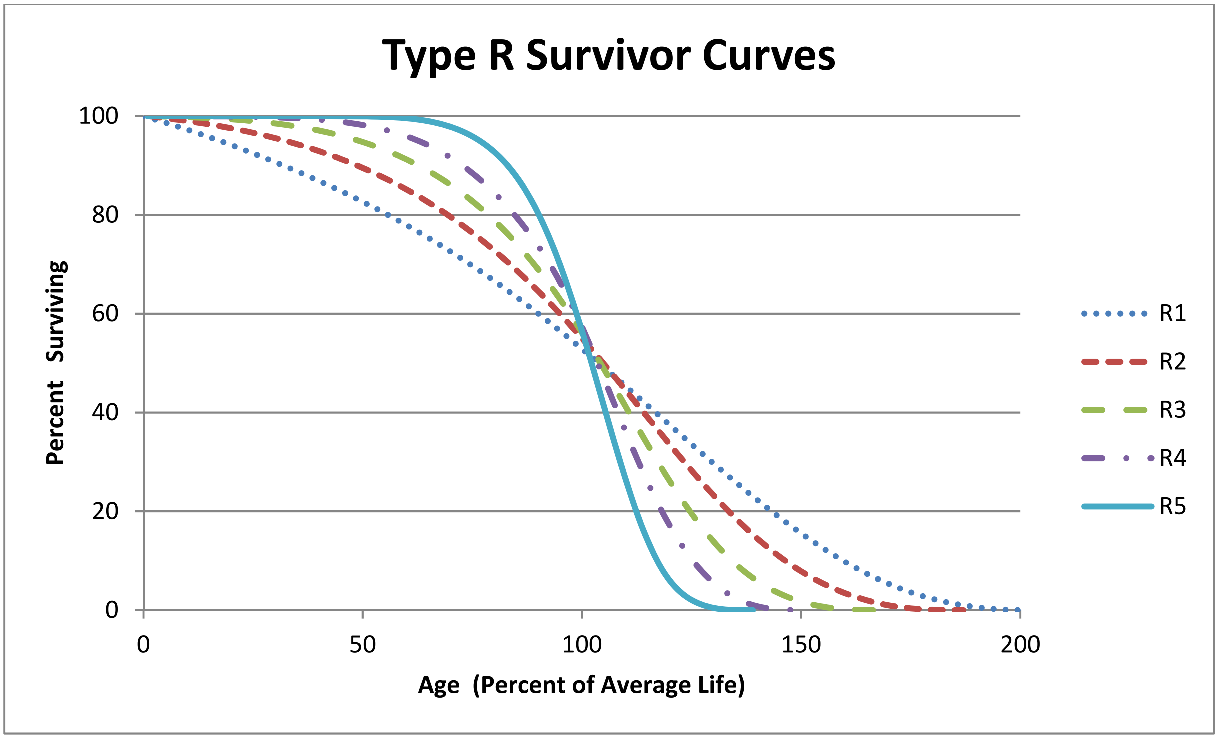
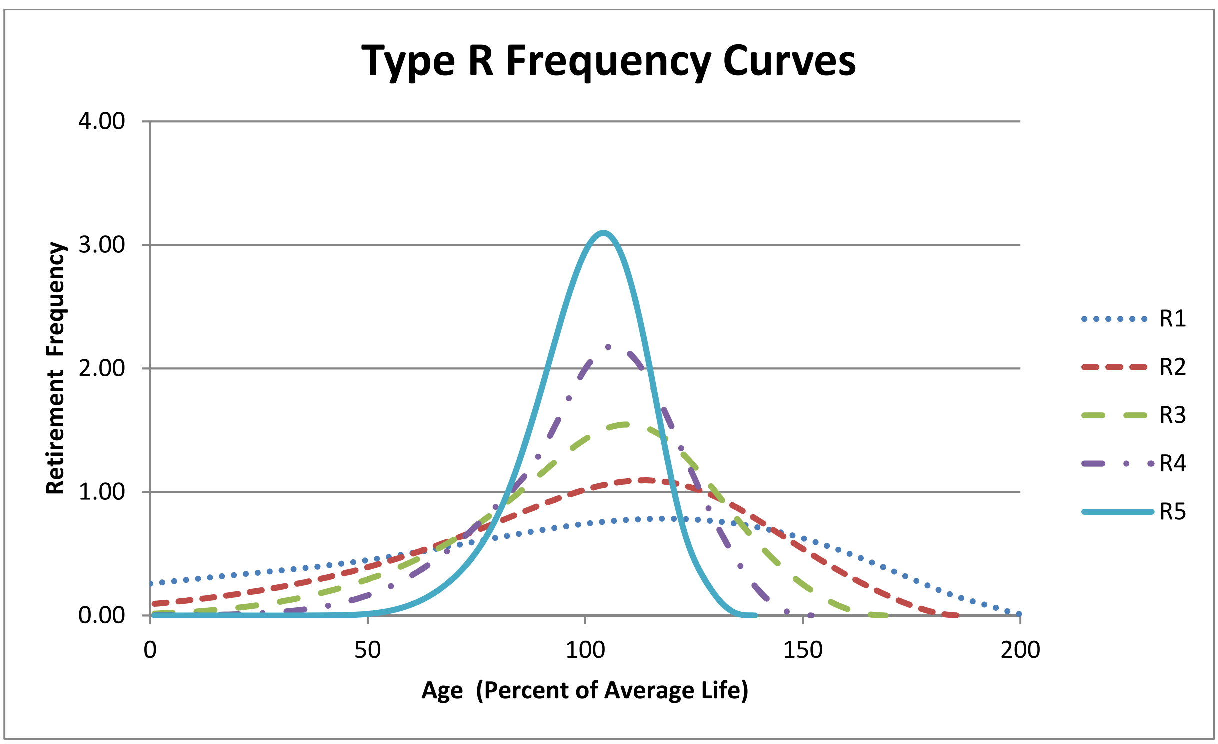


Figure 13:
Type R Survivor and Frequency Curves





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

3. <u>Types of Lives</u>

Several other important statistical analyses and types of lives may be derived from an Iowa curve. These include: 1) average life; 2) realized life; 3) remaining life; and 4) probable life. The figure below illustrates these concepts. It shows the frequency curve, survivor curve, and probable life curve. Age M_x on the x-axis represents the modal age, while age AL_x represents the average age. Thus, this figure illustrates an "L type" Iowa curve since the mode occurs before the average.[94]

First, average life is the area under the survivor curve from age zero to maximum life. Because the survivor curve is measured in percent, the area under the curve must be divided by 100% to convert it from percent-years to years. The formula for average life is as follows:[95]

Equation 4:
Average Life

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

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

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

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

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

Realized life is similar to average life, except that realized life is the average years of service experienced to date from the vintage's original installations.[96] As shown in the figure below, realized life is the area under the survivor curve from zero to age RL_X. Likewise, unrealized life is the area under the survivor curve from age RL_X to maximum life. Thus, it could be said that average life equals realized life plus unrealized life.

Average remaining life represents the future years of service expected from the surviving property.[97] Remaining life is sometimes referred to as "average remaining life" and "life expectancy." To calculate average remaining life at age x, the area under the estimated future potion of the survivor curve is divided by the percent surviving at age x (denoted S_X). Thus, the average remaining life formula is:

Equation 5:
Average Remaining Life

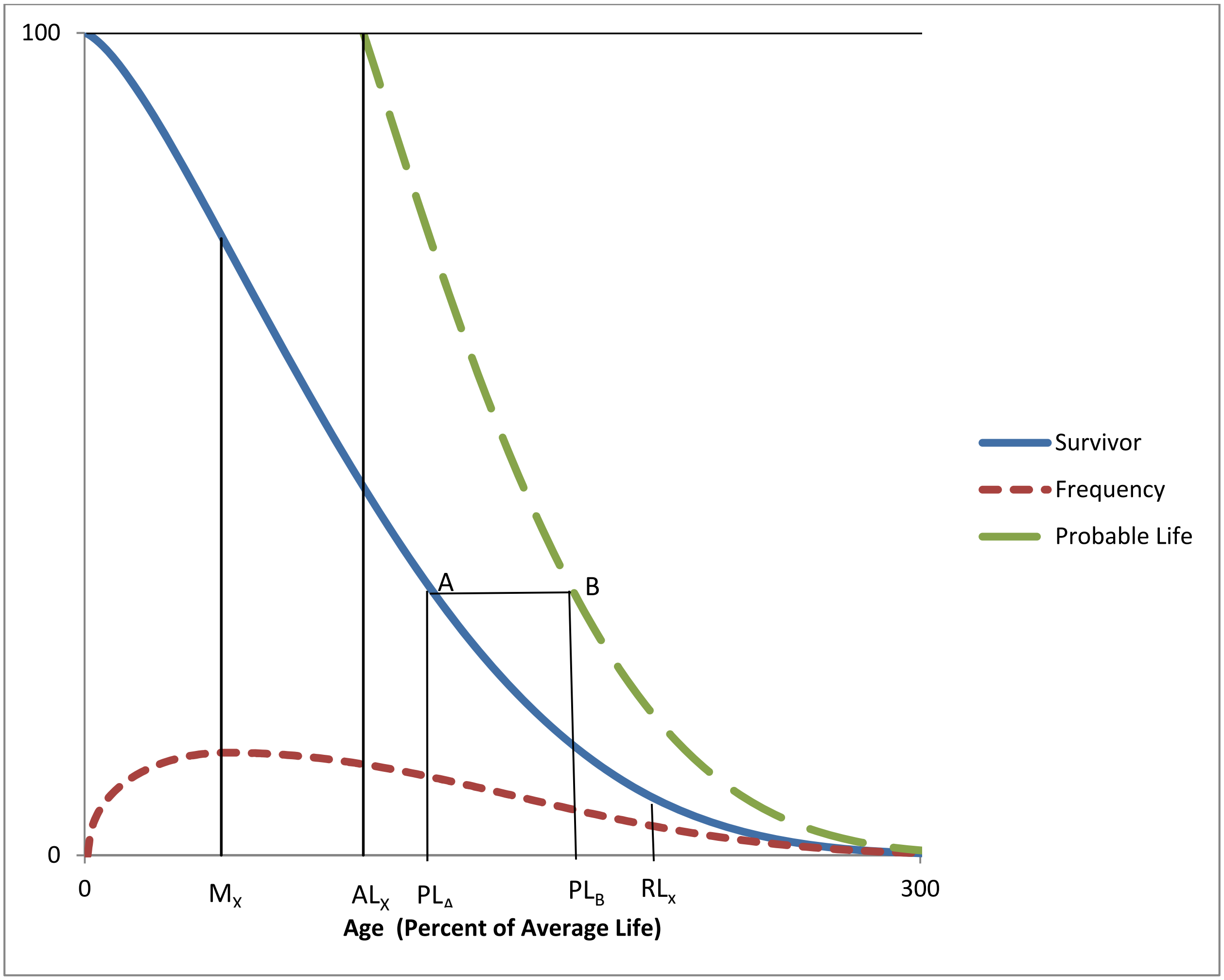
$$Average\ Remaining\ Life = \frac{Area\ Under\ Survivor\ Curve\ from\ Age\ x\ to\ Max\ Life}{S_X}$$

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

[96] *Id*. at 73.

[97] *Id*. at 74.

Figure 14:
Iowa Curve Derivations



Finally, the probable life may also be determined from the Iowa curve. The probable life of a property group is the total life expectancy of the property surviving at any age and is equal to the remaining life plus the current age.[98] The probable life is also illustrated in this figure. The probable life at age PL_A is the age at point PL_B. Thus, to read the probable life at age PL_A, see the

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

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

APPENDIX C:
ACTUARIAL ANALYSIS

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

The study of human mortality is analogous to estimating service lives of industrial property groups. While some humans die solely from chance, most deaths are related to age; that is, death rates generally increase as age increases. Similarly, physical plant is also subject to forces of retirement. These forces include physical, functional, and contingent factors, as shown in the table below.[99]

Figure 15:
Forces of Retirement

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

While actuaries study historical mortality data in order to predict how long a group of people will live, depreciation analysts must look at a utility's historical data in order to estimate the average lives of property groups. A utility's historical data is often contained in the Continuing

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

Property Records ("CPR"). Generally, a CPR should contain 1) an inventory of property record units; 2) the association of costs with such units; and 3) the dates of installation and removal of plant. Since actuarial analysis includes the examination of historical data to forecast future retirements, the historical data used in the analysis should not contain events that are anomalous or unlikely to recur.[100] Historical data is used in the retirement rate actuarial method, which is discussed further below.

<u>The Retirement Rate Method</u>

There are several systematic actuarial methods that use historical data in order to calculating observed survivor curves for property groups. Of these methods, the retirement rate method is superior, and is widely employed by depreciation analysts.[101] The retirement rate method is ultimately used to develop an observed survivor curve, which can be fitted with an Iowa curve discussed in Appendix B in order to forecast average life. The observed survivor curve is calculated by using an observed life table ("OLT"). The figures below illustrate how the OLT is developed. First, historical property data are organized in a matrix format, with placement years on the left forming rows, and experience years on the top forming columns. The placement year (a.k.a. "vintage year" or "installation year") is the year of placement of a group of property. The experience year (a.k.a. "activity year") refers to the accounting data for a particular calendar year. The two matrices below use aged data – that is, data for which the dates of placements, retirements, transfers, and other transactions are known. Without aged data, the retirement rate actuarial method may not be employed. The first matrix is the exposure matrix, which shows the exposures

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

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

at the beginning of each year.[102] An exposure is simply the depreciable property subject to retirement during a period. The second matrix is the retirement matrix, which shows the annual retirements during each year. Each matrix covers placement years 2003–2015, and experience years 2008-2015. In the exposure matrix, the number in the 2009 experience column and the 2003 placement row is $192,000. This means at the beginning of 2012, there was $192,000 still exposed to retirement from the vintage group placed in 2003. Likewise, in the retirement matrix, $19,000 of the dollars invested in 2003 was retired during 2012.

Figure 16:
Exposure Matrix

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

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

Figure 17:
Retirement Matrix

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

These matrices help visualize how exposure and retirement data are calculated for each age interval. An age interval is typically one year. A common convention is to assume that any unit installed during the year is installed in the middle of the calendar year (i.e., July 1st). This convention is called the "half-year convention" and effectively assumes that all units are installed uniformly during the year.[103] Adoption of the half-year convention leads to age intervals of 0-0.5 years, 0.5-1.5 years, etc., as shown in the matrices.

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

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

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

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

Figure 18:
Observed Life Table

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

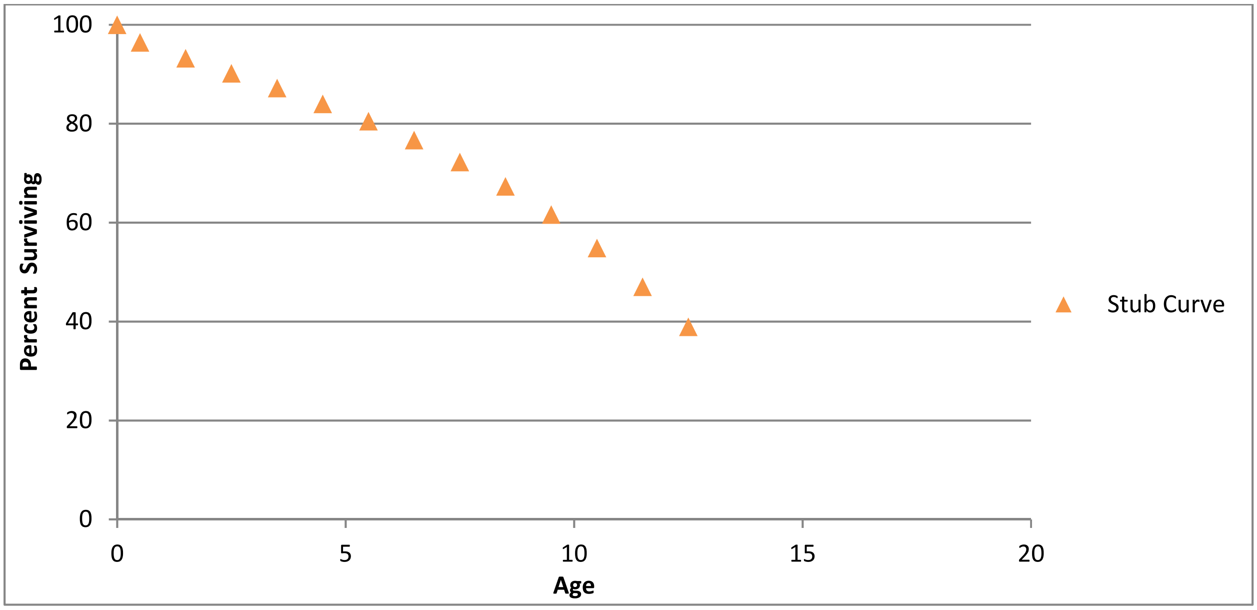
Column F on the right shows the percentages surviving at the beginning of each age interval. This column starts at 100% surviving. Each consecutive number below is calculated by multiplying the percent surviving from the previous age interval by the corresponding survivor ratio for that age interval. For example, the percent surviving at the start of age interval 1.5 is 93.21%, which was calculated by multiplying the percent surviving for age interval 0.5 (96.43%) by the survivor ratio for age interval 0.5 (0.967)[104].

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

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

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

Figure 19:
Original "Stub" Survivor Curve



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

<u>Banding</u>

The forces of retirement and characteristics of industrial property are constantly changing. A depreciation analyst may examine the magnitude of these changes. Analysts often use a technique called "banding" to assist with this process. Banding refers to the merging of several years of data into a single data set for further analysis, and it is a common technique associated with the retirement rate method.[105] There are three primary benefits of using bands in depreciation analysis:

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

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

3. Identify trends. By looking at successive bands, the analyst may identify broad trends in the data that may be useful in projecting the future life characteristics of the property.[106]

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

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

[106] *Id*.

Figure 20:
Placement Bands

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

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

Analysts often use placement bands for comparing the survivor characteristics of properties with different physical characteristics.[107] Placement bands allow analysts to isolate the effects of changes in technology and materials that occur in successive generations of plant. For example, if in 2005 an electric utility began placing transmission poles with a special chemical treatment that extended the service lives of the poles, an analyst could use placement bands to isolate and analyze the effect of that change in the property group's physical characteristics. While placement

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

bands are very useful in depreciation analysis, they also possess an intrinsic dilemma. A fundamental characteristic of placement bands is that they yield fairly complete survivor curves for older vintages. However, with newer vintages, which are arguably more valuable for forecasting, placement bands yield shorter survivor curves. Longer "stub" curves are considered more valuable for forecasting average life. Thus, an analyst must select a band width broad enough to provide confidence in the reliability of the resulting curve fit, yet narrow enough so that an emerging trend may be observed.[108]

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

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

Figure 21:
Experience Bands

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

The shaded cells within the experience band equal the total exposures at the beginning of age interval 4.5–5.5 ($1,237). The same experience band would be used for the retirement matrix covering the same experience years of 2011 – 2013. This of course would result in a different OLT and original stub survivor than if the band had not been used. Analysts often use experience bands to isolate and analyze the effects of an operating environment over time.[109] Likewise, the use of experience bands allows analysis of the effects of an unusual environmental event. For example, if an unusually severe ice storm occurred in 2013, destruction from that storm would affect an electric utility's line transformers of all ages. That is, each of the line transformers from each placement year would be affected, including those recently installed in 2012, as well as those installed in 2003. Using experience bands, an analyst could isolate or even eliminate the 2013 experience year from the analysis. In contrast, a placement band would not effectively isolate the

[109] *Id.*

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

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

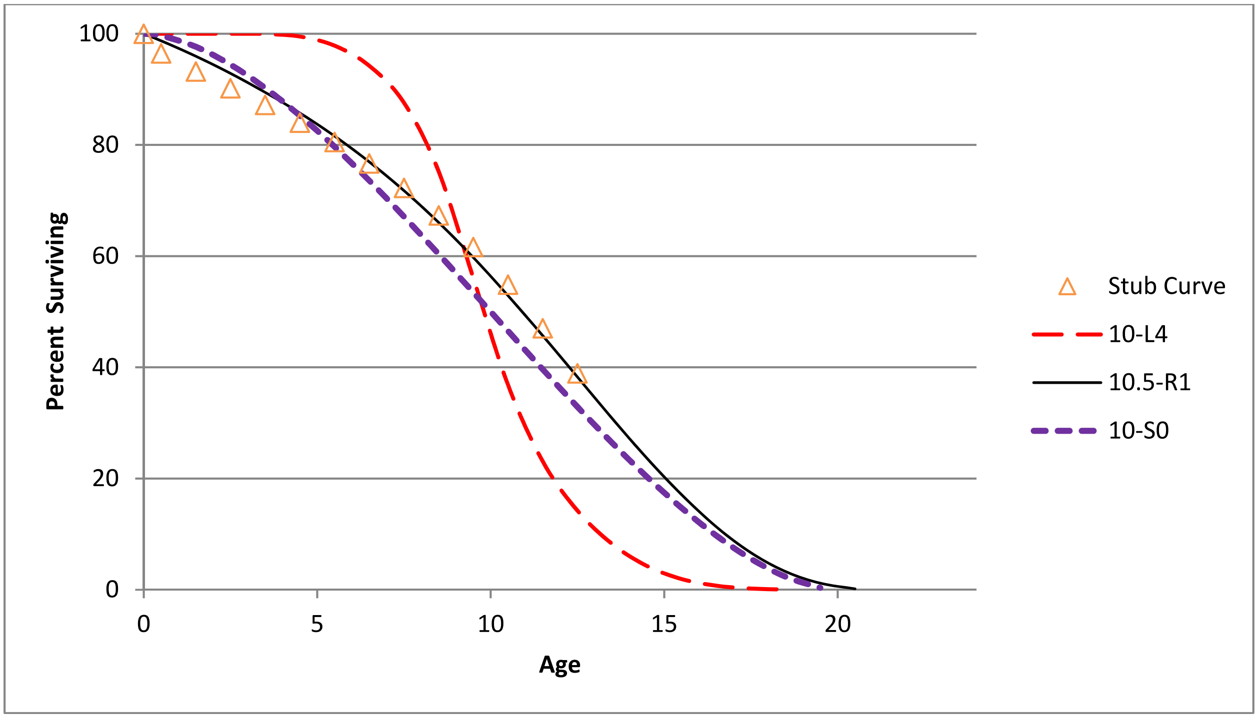
Curve Fitting

Depreciation analysts typically use the survivor curve rather than the frequency curve to fit the observed stub curves. The most commonly used generalized survivor curves used in the curve fitting process are the Iowa curves discussed above. As Wolf notes, if "the Iowa curves are adopted as a model, an underlying assumption is that the process describing the retirement pattern is one of the 22 [or more] processes described by the Iowa curves."[110]

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

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

Figure 22:
Visual Curve Fitting



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

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

repeated for the remaining 21 Iowa type curves. The "best fit" is declared to be the type of curve that minimizes the sum of differences squared.[111]

Mathematical fitting requires less judgment from the analyst, and is thus less subjective. Blind reliance on mathematical fitting, however, may lead to poor estimates. Thus, analysts should employ both mathematical and visual curve fitting in reaching their final estimates. This way, analysts may utilize the objective nature of mathematical fitting while still employing professional judgment. As Wolf notes: "The results of mathematical curve fitting serve as a guide for the analyst and speed the visual fitting process. But the results of the mathematical fitting should be checked visually and the final determination of the best fit be made by the analyst."[112]

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

---

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

[112] *Id*. at 48.

Figure 23:
Mathematical Fitting

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

Summary Expense Adjustment

Plant Function	Plant Balance 3/31/2019	OGE Proposed DD&A Expense	OIEC/OER DD&A Expense	OIEC/OER Adjustment
Intangible	$ 182,468,359	$ 10,065,196	$ 9,736,899	$ (328,297)
Production	4,745,976,260	159,826,219	133,837,934	(25,988,285)
Transmission	2,807,354,014	73,879,400	65,686,177	(8,193,223)
Distribution	4,243,638,702	125,207,568	111,076,889	(14,130,679)
General	420,193,702	24,199,639	24,664,967	465,328
Total	$ 12,399,631,037	$ 390,677,681	$ 342,502,524	**$ (48,175,157)**

* See Exhibit DJG-2-2 for detailed calculations

Detailed Expense Adjustment

Account No.	Description	[1] Pro Forma Plant 3/31/2019	[2] OG&E Proposed Expense	[3] OIEC/OER Proposal Rate	[3] OIEC/OER Proposal Expense	[4] OIEC/OER Adjustment
	INTANGIBLE PLANT					
301.00	Organization		-		-	-
302.00	Franchise and Consents	2,385,468	102,571	4.30%	102,464	(107)
303.00	Miscellaneous Intangible Plant	180,082,891	9,402,376	5.35%	9,634,435	232,059
	Plant - Completed by March 2019		560,249			(560,249)
	TOTAL INTANGIBLE PLANT	182,468,359	10,065,196		9,736,899	(328,297)
	STEAM PRODUCTION					
310.00	Land and Land Rights	940,063	28,202	3.00%	28,226	24
311.00	Structures and Improvements	273,310,211	6,950,033	1.98%	5,420,795	(1,529,238)
312.00	Boiler Plant Equipment	1,133,048,538	33,187,997	2.30%	26,012,783	(7,175,214)
313.00	Engines and Engine-Driven Generators		-		-	-
314.00	Turbogenerator Units	416,128,418	13,850,877	2.62%	10,906,152	(2,944,725)
315.00	Accessory Electric Equipment	144,538,772	3,602,980	1.95%	2,815,529	(787,451)
316.00	Miscellaneous Power Plant Equipment	33,386,647	1,183,025	2.74%	913,879	(269,146)
317.00	ARO Cost - Steam Production	18,372,368	-		-	-
	TOTAL STEAM PRODUCTION	2,019,725,017	58,803,114		46,097,364	(12,705,750)
	OTHER PRODUCTION					
340.00	Land and Land Rights	10,817	-		-	
341.00	Structures and Improvements	113,174,484	3,279,159	2.61%	2,958,709	(320,450)
342.00	Fuel Holders, Producers and Accessories	22,634,319	529,643	2.03%	459,441	(70,202)
343.00	Prime movers	869,188,029	25,221,512	2.72%	23,602,564	(1,618,948)
344.00	Generators	870,154,863	37,684,908	3.28%	28,536,022	(9,148,886)
345.00	Accessory Electric Equipment	140,107,031	4,379,751	2.60%	3,644,623	(735,128)
346.00	Miscellaneous Power Plant Equipment	15,604,447	502,106	2.91%	454,834	(47,272)
347.00	ARO Cost - Other Production	37,060,911	-		-	-
114.00	Acqusition Adjustment - Redbud	148,301,902	5,487,170		5,487,170	-
	CWIP	-			-	-
	TOTAL OTHER PRODUCTION	2,216,236,803	77,084,249		65,143,362	(11,940,887)
	CWIP - Completed by March 2019		1,341,649	3.26%		

Detailed Expense Adjustment

		[1]	[2]	[3]		[4]
				OIEC/OER Proposal		
Account No.	Description	Pro Forma Plant 3/31/2019	OG&E Proposed Expense	Rate	Expense	OIEC/OER Adjustment
311.00	Sooner Scrubbers- Structures & Improvements	44,654,309	1,835,193	4.10%	1,835,193	-
312.00	Sooner Scrubbers- Boiler Plant Equipment	463,687,917	20,630,921	4.26%	20,630,921	-
316.00	Sooner Scrubbers- Misc. Power Plant Equip.	1,672,214	131,093	4.48%	131,093	-
	TOTAL SOONER SCRUBBERS	510,014,441	23,938,856		22,597,207	(1,341,649)
	TOTAL PRODUCTION PLANT	4,745,976,260	159,826,219		133,837,934	(25,988,285)
	TRANSMISSION PLANT					
350.00	Land and Land Rights	126,586,471	1,720,843	1.37%	1,731,899	11,056
352.00	Structures and Improvements	7,204,618	109,083	1.59%	114,515	5,432
353.00	Station Equipment	824,292,769	19,811,828	2.09%	17,219,877	(2,591,951)
354.00	Towers and Fixtures	163,463,222	2,664,434	1.63%	2,663,924	(510)
355.00	Poles and Fixtures	1,033,431,269	32,422,734	2.67%	27,541,037	(4,881,697)
356.00	Overhead Conductors and Devices	647,747,643	16,266,406	2.52%	16,340,402	73,996
358.00	Underground Conductors and Devices	110,494	-		-	-
359.00	ARO Cost - Transmission	1,175,724			-	-
114.00	Acquisition Adjustment - SpringCreek/Edmond	3,341,804	74,522	2.23%	74,522	0
	CWIP - Completed by March 2018	-	809,550	2.61%		(809,550)
	TOTAL TRANSMISSION PLANT	2,807,354,014	73,879,400		65,686,177	(8,193,223)
	DISTRIBUTION PLANT					
360.00	Land and Land Rights	5,780,295	70,535	1.24%	71,430	895
361.00	Structures and Improvements	7,763,691	108,992	1.43%	111,118	2,126
362.00	Station Equipment	673,660,976	14,259,009	1.89%	12,715,230	(1,543,779)
363.00	Storage Battery Equipment	338,964	-		-	-
364.00	Poles, Towers, and Fixtures	678,251,224	17,742,888	2.16%	14,625,107	(3,117,781)
365.00	Overhead Conductors and Devices	533,989,616	13,751,146	2.12%	11,298,024	(2,453,122)
366.00	Underground Conduit	239,306,689	3,808,473	1.52%	3,638,610	(169,863)
367.00	Underground Conductors and Devices	833,871,614	14,878,759	1.82%	15,157,928	279,169
368.00	Line Transformers	504,774,346	18,401,158	3.77%	19,030,425	629,267
369.00	Services	250,309,276	4,446,187	1.78%	4,454,715	8,528
370.00	Meters	199,275,247	13,651,030	7.00%	13,942,384	291,354

Detailed Expense Adjustment

Account No.	Description	[1] Pro Forma Plant 3/31/2019	[2] OG&E Proposed Expense	[3] OIEC/OER Proposal Rate	[3] OIEC/OER Proposal Expense	[4] OIEC/OER Adjustment
371.00	Installation on Customers' Premises	57,432,086	8,104,259	4.33%	2,486,260	(5,617,999)
373.00	Street Lighting and Signal Systems	258,884,678	13,827,543	5.23%	13,545,658	(281,885)
	CWIP - Completed by March 2018	-	2,157,589	5.23%		(2,157,589)
	TOTAL DISTRIBUTION PLANT	4,243,638,702	125,207,568		111,076,889	(14,130,679)
	GENERAL PLANT					
389.00	Land and Land Rights	178,598	3,572	2.00%	3,569	(3)
390.00	Structures and Improvements	193,884,337	3,305,653	1.87%	3,616,736	311,083
391.00	Office Furniture and Equipment	62,155,578	8,933,126	18.04%	11,211,051	2,277,925
392.00	Transportation Equipment	84,755,118	4,070,228	4.52%	3,833,000	(237,228)
393.00	Stores Equipment	779,947	69,040	6.98%	54,454	(14,586)
394.00	Tools, Shop and Garage Equipment	13,541,686	618,034	4.96%	671,599	53,565
395.00	Laboratory Equipment	12,722,487	1,194,002	9.77%	1,242,963	48,961
396.00	Power Operated Equipment	12,996,437	518,723	3.98%	517,818	(905)
397.00	Communication Equipment	32,670,479	2,882,101	10.29%	3,361,199	479,098
398.00	Miscellaneous Equipment	6,509,035	155,682	2.34%	152,578	(3,104)
	CWIP - Completed by March 2018	-	2,449,478			(2,449,478)
	TOTAL GENERAL PLANT	420,193,702	24,199,639		24,664,967	465,328
	Transportation Activity Depreciation		(2,500,341)		(2,500,341)	
	TOTAL	**12,399,631,037**	**390,677,681**		**342,502,524**	**(48,175,157)**

[1] AG 5-1_Att 3, Sch I-1-1
[2] Sch I 1-1 Proposed Depreciation Expense - Proposed DD&A Expense
[3] Rates from Exhibit DJG-2-4; expense = rate * plant
[4] = [3] - [2]

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] OGE Proposal Rate	[2] OGE Proposal Annual Accrual	[3] OIEC/OER Proposal Rate	[3] OIEC/OER Proposal Annual Accrual	[4] OIEC/OER Adjustment Rate	[4] OIEC/OER Adjustment Annual Accrual
	Intangible Plant							
302.00	FRANCHISES AND CONSENTS	2,419,000	4.30%	103,914	4.30%	103,904	0.00%	-10
303.20	MISCELLANEOUS INTANGIBLE PLANT - SOFTWARE							
	FULLY DEPRECIATED - HC	74,517,307						
	10-YEAR	97,282,184	5.35%	5,204,924	5.33%	5,181,520	-0.02%	-23,404
	TOTAL INTANGIBLE PLANT	174,218,491	3.05%	5,308,838	3.03%	5,285,424	-0.01%	-23,414
	Steam Production Plant							
310.20	RIGHTS OF WAY							
	HORSESHOE LAKE 6	28,509	1.12%	320	1.12%	320	0.00%	0
	SEMINOLE 1	78,916	2.10%	1,660	2.10%	1,659	0.00%	-1
	MUSKOGEE 4	18,934	2.67%	506	2.67%	505	0.00%	-1
	SOONER 1	813,704	3.16%	25,746	3.16%	25,742	0.00%	-4
	TOTAL RIGHTS OF WAY	940,064	3.00%	28,232	3.00%	28,226	0.00%	-6
311.00	STRUCTURES AND IMPROVEMENTS							
	HORSESHOE LAKE 6	16,643,969	10.11%	1,682,473	7.53%	1,253,306	-2.58%	-429,167
	HORSESHOE LAKE 7	2,763,852	2.10%	58,010	0.70%	19,292	-1.40%	-38,718
	HORSESHOE LAKE 8	4,972,755	2.35%	116,736	1.07%	53,104	-1.28%	-63,632
	SEMINOLE 1	19,372,148	3.69%	715,221	2.59%	501,234	-1.10%	-213,987
	SEMINOLE 2	2,515,483	3.76%	94,706	2.58%	64,904	-1.18%	-29,802
	SEMINOLE 3	7,193,504	3.00%	215,636	1.81%	130,550	-1.19%	-85,086
	MUSKOGEE 4	44,616,688	3.02%	1,346,054	2.56%	1,141,912	-0.46%	-204,142
	MUSKOGEE 5	7,062,478	2.35%	165,802	1.91%	134,862	-0.44%	-30,940
	MUSKOGEE 6	51,735,018	1.55%	803,466	1.22%	631,213	-0.33%	-172,253
	SOONER 1	92,650,219	1.63%	1,514,644	1.21%	1,120,533	-0.42%	-394,111
	SOONER 2	12,450,122	1.58%	196,929	1.17%	145,088	-0.41%	-51,841
	TOTAL STRUCTURES AND IMPROVEMENTS	261,976,236	2.64%	6,909,677	1.98%	5,195,998	-0.65%	-1,713,679
312.00	BOILER PLANT EQUIPMENT							
	HORSESHOE LAKE 6	17,724,657	5.51%	977,339	2.97%	525,912	-2.54%	-451,427

Detailed Rate Comparison

		[1]	[2]		[3]		[4]	
			OGE Proposal		OIEC/OER Proposal		OIEC/OER Adjustment	
Account No.	Description	Plant 12/31/2017	Rate	Annual Accrual	Rate	Annual Accrual	Rate	Annual Accrual
	HORSESHOE LAKE 7	14,506,629	2.89%	418,850	1.47%	213,533	-1.42%	-205,317
	HORSESHOE LAKE 8	18,967,502	3.57%	677,726	2.27%	431,294	-1.30%	-246,432
	SEMINOLE 1	52,425,255	6.21%	3,253,260	5.08%	2,661,457	-1.13%	-591,803
	SEMINOLE 2	42,885,905	5.85%	2,509,593	4.67%	2,002,626	-1.18%	-506,967
	SEMINOLE 3	62,854,909	5.33%	3,350,202	4.14%	2,603,257	-1.19%	-746,945
	MUSKOGEE 4	156,911,035	2.78%	4,364,747	2.30%	3,615,373	-0.48%	-749,374
	MUSKOGEE 5	127,789,455	2.56%	3,275,060	2.11%	2,694,474	-0.45%	-580,586
	MUSKOGEE 6	252,951,116	1.93%	4,883,391	1.58%	4,005,355	-0.35%	-878,036
	SOONER 1	238,499,076	2.50%	5,971,304	2.06%	4,910,468	-0.44%	-1,060,836
	SOONER 2	158,656,138	2.07%	3,287,557	1.64%	2,604,400	-0.43%	-683,157
	TOTAL BOILER PLANT EQUIPMENT	1,144,171,676	2.88%	32,969,029	2.30%	26,268,151	-0.59%	-6,700,878
314.00	TURBOGENERATOR UNITS							
	HORSESHOE LAKE 6	8,192,148	7.54%	617,824	4.90%	401,501	-2.64%	-216,323
	HORSESHOE LAKE 7	8,564,415	3.77%	323,123	2.23%	191,304	-1.54%	-131,819
	HORSESHOE LAKE 8	18,327,259	3.84%	703,322	2.50%	458,982	-1.34%	-244,340
	SEMINOLE 1	29,625,833	4.69%	1,388,728	3.55%	1,051,053	-1.14%	-337,675
	SEMINOLE 2	30,824,029	4.15%	1,278,637	2.90%	895,166	-1.25%	-383,471
	SEMINOLE 3	30,446,687	4.29%	1,306,605	3.07%	935,962	-1.22%	-370,643
	MUSKOGEE 4	66,596,775	3.70%	2,461,339	3.21%	2,139,279	-0.49%	-322,060
	MUSKOGEE 5	51,699,605	2.70%	1,394,800	2.22%	1,148,055	-0.48%	-246,745
	MUSKOGEE 6	89,827,996	2.80%	2,516,548	2.43%	2,186,795	-0.37%	-329,753
	SOONER 1	39,966,264	2.31%	921,349	1.84%	734,902	-0.47%	-186,447
	SOONER 2	41,801,183	2.26%	946,226	1.81%	756,438	-0.45%	-189,788
	TOTAL TURBOGENERATOR UNITS	415,872,195	3.33%	13,858,501	2.62%	10,899,437	-0.71%	-2,959,064
315.00	ACCESSORY ELECTRIC EQUIPMENT							
	HORSESHOE LAKE 6	3,007,723	9.07%	272,726	6.58%	197,912	-2.49%	-74,814
	HORSESHOE LAKE 7	2,112,461	4.65%	98,178	3.24%	68,507	-1.41%	-29,671
	HORSESHOE LAKE 8	2,565,471	3.73%	95,790	2.44%	62,687	-1.29%	-33,103
	SEMINOLE 1	3,652,325	4.40%	160,535	3.28%	119,802	-1.12%	-40,733
	SEMINOLE 2	2,058,361	3.60%	74,011	2.40%	49,463	-1.20%	-24,548
	SEMINOLE 3	5,154,696	3.23%	166,595	2.04%	105,071	-1.19%	-61,524
	MUSKOGEE 4	34,035,553	3.29%	1,118,285	2.82%	959,759	-0.47%	-158,526
	MUSKOGEE 5	11,587,508	2.11%	244,468	1.64%	190,482	-0.47%	-53,986

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] OGE Proposal Rate	[2] OGE Proposal Annual Accrual	[3] OIEC/OER Proposal Rate	[3] OIEC/OER Proposal Annual Accrual	[4] OIEC/OER Adjustment Rate	[4] OIEC/OER Adjustment Annual Accrual
	MUSKOGEE 6	42,835,435	1.64%	703,008	1.30%	555,424	-0.34%	-147,584
	SOONER 1	24,033,740	1.68%	403,391	1.23%	294,436	-0.45%	-108,955
	SOONER 2	12,766,947	1.99%	253,820	1.55%	197,793	-0.44%	-56,027
	TOTAL ACCESSORY ELECTRIC EQUIPMENT	143,810,221	2.50%	3,590,807	1.95%	2,801,337	-0.55%	-789,470
316.00	MISCELLANEOUS POWER PLANT EQUIPMENT							
	HORSESHOE LAKE 6	1,983,120	8.70%	172,438	6.14%	121,839	-2.56%	-50,599
	HORSESHOE LAKE 7	1,039,114	2.33%	24,202	0.85%	8,877	-1.48%	-15,325
	HORSESHOE LAKE 8	2,190,592	2.76%	60,369	1.40%	30,695	-1.36%	-29,674
	SEMINOLE 1	4,012,595	4.32%	173,319	3.14%	126,058	-1.18%	-47,261
	SEMINOLE 2	39,168	7.56%	2,962	6.28%	2,460	-1.28%	-502
	SEMINOLE 3	401,384	3.89%	15,605	2.65%	10,652	-1.24%	-4,953
	MUSKOGEE 4	9,080,857	4.09%	371,055	3.59%	325,659	-0.50%	-45,396
	MUSKOGEE 5	835,596	1.94%	16,219	1.43%	11,990	-0.51%	-4,229
	MUSKOGEE 6	4,646,447	2.27%	105,291	1.87%	86,694	-0.40%	-18,597
	SOONER 1	5,789,330	2.72%	157,272	2.25%	130,327	-0.47%	-26,945
	SOONER 2	2,039,916	2.39%	48,829	1.89%	38,632	-0.50%	-10,197
	POWER SUPPLY SERVICES	1,453,711	1.79%	26,008	1.61%	23,425	-0.18%	-2,583
	TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT	33,511,829	3.50%	1,173,569	2.74%	917,306	-0.76%	-256,263
	TOTAL STEAM PRODUCTION PLANT	2,000,282,220	2.93%	58,529,815	2.31%	46,110,455	-0.62%	-12,419,360
	Other Production Plant							
340.20	LAND RIGHTS - MUSTANG CTs	10,816	0.00%	0	0.00%	0	0.00%	0
341.00	STRUCTURES AND IMPROVEMENTS							
	REDBUD 1	33,175,968	2.54%	842,190	2.20%	728,317	-0.34%	-113,873
	REDBUD 2	156,822	3.31%	5,191	3.02%	4,731	-0.29%	-460
	REDBUD 3	145,711	3.32%	4,831	3.02%	4,404	-0.30%	-427
	REDBUD 4	174,701	3.25%	5,683	2.96%	5,163	-0.29%	-520
	HORSESHOE LAKE 9 AND 10	986,486	3.17%	31,273	2.93%	28,949	-0.24%	-2,324
	TINKER	972,164	1.52%	14,823	0.89%	8,678	-0.63%	-6,145
	MCCLAIN GAS 1	10,296,156	2.58%	265,440	2.36%	242,853	-0.22%	-22,587

Detailed Rate Comparison

		[1]	[2]		[3]		[4]	
			OGE Proposal		OIEC/OER Proposal		OIEC/OER Adjustment	
Account No.	Description	Plant 12/31/2017	Rate	Annual Accrual	Rate	Annual Accrual	Rate	Annual Accrual
	MCCLAIN GAS 2	1,574,523	1.72%	27,042	1.49%	23,445	-0.23%	-3,597
	MCCLAIN STEAM 1	831,273	1.75%	14,529	1.52%	12,626	-0.23%	-1,903
	MUSTANG CTs	29,017,947	3.09%	896,954	2.92%	846,159	-0.17%	-50,795
	TOTAL STRUCTURES AND IMPROVEMENTS	77,331,752	2.73%	2,107,956	2.46%	1,905,325	-0.26%	-202,631
341.00	STRUCTURES AND IMPROVEMENTS - WIND							
	CENTENNIAL	2,386,090	4.60%	109,782	3.20%	76,392	-1.40%	-33,390
	OU SPIRIT	5,209,833	4.22%	219,705	3.14%	163,666	-1.08%	-56,039
	CROSSROADS	11,586,653	4.08%	472,182	3.26%	377,430	-0.82%	-94,752
	TOTAL STRUCTURES AND IMPROVEMENTS - WIND	19,182,576	4.18%	801,669	3.22%	617,488	-0.96%	-184,181
341.00	STRUCTURES AND IMPROVEMENTS - SOLAR	722,634	2.66%	19,242	2.66%	19,242	0.00%	0
342.00	FUEL HOLDERS, PRODUCERS AND ACCESSORIES							
	REDBUD 1	12,118,339	2.29%	277,666	1.97%	238,339	-0.32%	-39,327
	REDBUD 2	690,650	2.25%	15,553	1.96%	13,521	-0.29%	-2,032
	REDBUD 3	691,291	2.25%	15,573	1.96%	13,540	-0.29%	-2,033
	REDBUD 4	719,785	2.30%	16,553	2.00%	14,428	-0.30%	-2,125
	TINKER	167,150	4.29%	7,166	3.66%	6,114	-0.63%	-1,052
	MCCLAIN GAS 1	348,390	1.78%	6,213	1.57%	5,461	-0.21%	-752
	MCCLAIN GAS 2	259,057	1.87%	4,833	1.65%	4,275	-0.22%	-558
	MUSTANG CTs	1,091,015	2.99%	32,590	2.83%	30,836	-0.16%	-1,754
	TOTAL FUEL HOLDERS, PRODUCERS AND ACCESSORIES	16,085,678	2.34%	376,147	2.03%	326,514	-0.31%	-49,633
343.00	PRIME MOVERS							
	REDBUD 1	87,803,352	3.13%	2,752,053	2.75%	2,412,410	-0.38%	-339,643
	REDBUD 2	66,093,452	3.26%	2,155,184	2.92%	1,926,787	-0.34%	-228,397
	REDBUD 3	66,020,569	3.00%	1,983,152	2.66%	1,754,101	-0.34%	-229,051
	REDBUD 4	60,516,438	3.11%	1,880,904	2.76%	1,671,723	-0.35%	-209,181
	HORSESHOE LAKE 9 AND 10	8,453,388	4.52%	382,495	4.29%	363,055	-0.23%	-19,440
	TINKER	3,909,265	2.17%	84,679	1.51%	59,217	-0.66%	-25,462
	MCCLAIN GAS 1	108,259,624	2.59%	2,800,479	2.34%	2,533,248	-0.25%	-267,231
	MCCLAIN GAS 2	103,570,368	2.42%	2,505,445	2.17%	2,246,630	-0.25%	-258,815
	MCCLAIN STEAM 1	52,527,391	1.99%	1,045,054	1.73%	910,719	-0.26%	-134,335

Detailed Rate Comparison

		[1]	[2]		[3]		[4]	
			OGE Proposal		OIEC/OER Proposal		OIEC/OER Adjustment	
Account No.	Description	Plant 12/31/2017	Rate	Annual Accrual	Rate	Annual Accrual	Rate	Annual Accrual
	MUSTANG CTs	47,689,486	3.39%	1,615,754	3.20%	1,528,125	-0.19%	-87,629
343.10	LTSA 5-YEAR							
	REDBUD 1	2,129,176	17.17%	365,579	17.17%	365,579	0.00%	0
	REDBUD 2	1,786,505	22.13%	395,440	22.13%	395,440	0.00%	0
	REDBUD 3	1,908,402	11.64%	222,175	11.64%	222,176	0.00%	1
	REDBUD 4	2,141,159	16.50%	353,395	16.50%	353,394	0.00%	-1
	MCCLAIN GAS 1	3,881,113	0.00%	0	0.00%	0	0.00%	0
	MCCLAIN GAS 2	3,357,007	0.00%	0	0.00%	0	0.00%	0
343.20	LTSA 20-YEAR							
	REDBUD 1	1,490,678	4.37%	65,146	4.37%	65,146	0.00%	0
	REDBUD 2	1,490,678	5.48%	81,615	5.48%	81,615	0.00%	0
	REDBUD 3	1,490,678	3.14%	46,809	3.14%	46,809	0.00%	0
	REDBUD 4	1,490,678	4.22%	62,940	4.22%	62,940	0.00%	0
	TOTAL ACCOUNT 343	626,009,405	3.00%	18,798,298	2.72%	16,999,115	-0.29%	-1,799,183
344.00	GENERATORS							
	REDBUD 1	717,739	3.32%	23,810	2.97%	21,342	-0.35%	-2,468
	REDBUD 3	23,199	3.25%	753	2.94%	682	-0.31%	-71
	REDBUD 4	23,035	3.24%	746	2.93%	676	-0.31%	-70
	HORSESHOE LAKE 9 AND 10	33,990,716	3.93%	1,336,631	3.69%	1,254,192	-0.24%	-82,439
	TINKER	3,314,013	3.67%	121,468	3.02%	99,928	-0.65%	-21,540
	MUSTANG CTs	4,512,384	3.21%	145,053	3.04%	137,165	-0.17%	-7,888
	TOTAL GENERATORS	42,581,085	3.82%	1,628,461	3.56%	1,513,985	-0.27%	-114,476
344.00	GENERATORS - WIND							
	CENTENNIAL	186,739,314	4.46%	8,324,375	3.08%	5,753,604	-1.38%	-2,570,771
	OU SPIRIT	242,161,638	4.49%	10,883,390	3.34%	8,077,132	-1.15%	-2,806,258
	CROSSROADS	358,022,809	4.20%	15,043,385	3.33%	11,930,636	-0.87%	-3,112,749
	TOTAL GENERATORS - WIND	786,923,761	4.35%	34,251,150	3.27%	25,761,372	-1.08%	-8,489,778
344.00	GENERATORS - SOLAR	4,918,051	3.98%	195,508	4.20%	206,437	0.22%	10,929

Detailed Rate Comparison

Account No.	Description	[1] Plant 12/31/2017	[2] OGE Proposal Rate	[2] OGE Proposal Annual Accrual	[3] OIEC/OER Proposal Rate	[3] OIEC/OER Proposal Annual Accrual	[4] OIEC/OER Adjustment Rate	[4] OIEC/OER Adjustment Annual Accrual
345.00	ACCESSORY ELECTRIC EQUIPMENT							
	REDBUD 1	12,859,566	2.40%	308,512	2.06%	264,313	-0.34%	-44,199
	REDBUD 2	9,297,682	2.27%	211,467	1.97%	182,860	-0.30%	-28,607
	REDBUD 3	9,105,045	2.25%	204,742	1.94%	176,378	-0.31%	-28,364
	REDBUD 4	9,344,182	2.22%	207,739	1.92%	179,612	-0.30%	-28,127
	HORSESHOE LAKE 9 AND 10	4,370,250	3.15%	137,865	2.92%	127,571	-0.23%	-10,294
	TINKER	3,023,751	1.93%	58,485	1.29%	39,126	-0.64%	-19,359
	MCCLAIN GAS 1	6,217,802	2.02%	125,903	1.80%	111,888	-0.22%	-14,015
	MCCLAIN GAS 2	6,004,865	1.84%	110,354	1.62%	96,983	-0.22%	-13,371
	MCCLAIN STEAM 1	3,639,068	1.60%	58,075	1.37%	49,799	-0.23%	-8,276
	MUSTANG CTs	6,898,340	3.11%	214,538	2.94%	202,676	-0.17%	-11,862
	TOTAL ACCESSORY ELECTRIC EQUIPMENT	70,760,550	2.31%	1,637,680	2.02%	1,431,208	-0.29%	-206,472
345.00	ACCESSORY ELECTRIC EQUIPMENT - WIND							
	CENTENNIAL	1,106,369	5.28%	58,377	3.69%	40,826	-1.59%	-17,551
	OU SPIRIT	1,750,768	5.72%	100,153	4.28%	74,998	-1.44%	-25,155
	CROSSROADS	44,132,467	4.35%	1,919,279	3.44%	1,518,785	-0.91%	-400,494
	TOTAL ACCESSORY ELECTRIC EQUIPMENT - WIND	46,989,605	4.42%	2,077,809	3.48%	1,634,609	-0.94%	-443,200
345.00	ACCESSORY ELECTRIC EQUIPMENT - SOLAR	1,361,611	2.40%	32,654	2.40%	32,654	0.00%	0
346.00	MISCELLANEOUS POWER PLANT EQUIPMENT							
	REDBUD 1	2,551,963	3.03%	77,197	2.66%	67,978	-0.37%	-9,219
	REDBUD 2	18,098	3.31%	599	3.00%	542	-0.31%	-57
	REDBUD 3	6,725	3.81%	256	3.50%	235	-0.31%	-21
	REDBUD 4	16,133	3.69%	595	3.38%	545	-0.31%	-50
	HORSESHOE LAKE 9 AND 10	941,452	3.12%	29,341	2.87%	27,036	-0.25%	-2,305
	TINKER	8,664	2.65%	230	2.00%	173	-0.65%	-57
	MCCLAIN GAS 1	4,985,596	2.68%	133,606	2.43%	121,280	-0.25%	-12,326
	MUSTANG CTs	4,994,661	3.30%	164,674	3.11%	155,485	-0.19%	-9,189
	TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT	13,523,293	3.01%	406,498	2.76%	373,275	-0.25%	-33,223
346.00	MISCELLANEOUS POWER PLANT EQUIPMENT - WIND							
	CENTENNIAL	906,757	6.28%	56,928	4.42%	40,089	-1.86%	-16,839

Detailed Rate Comparison

		[1]	[2]		[3]		[4]	
			OGE Proposal		OIEC/OER Proposal		OIEC/OER Adjustment	
Account No.	Description	Plant 12/31/2017	Rate	Annual Accrual	Rate	Annual Accrual	Rate	Annual Accrual
	OU SPIRIT	329,773	5.56%	18,348	4.16%	13,734	-1.40%	-4,614
	CROSSROADS	316,686	4.88%	15,468	3.90%	12,348	-0.98%	-3,120
	TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT - WIND	1,553,216	5.84%	90,744	4.26%	66,171	-1.58%	-24,573
	TOTAL OTHER PRODUCTION PLANT	1,707,954,034	3.65%	62,423,816	2.98%	50,887,394	-0.68%	-11,536,422
	Transmission Plant							
350.20	LAND RIGHTS	122,384,320	1.37%	1,673,878	1.37%	1,674,407	0.00%	529
352.00	STRUCTURES AND IMPROVEMENTS	6,702,508	1.59%	106,610	1.59%	106,534	0.00%	-76
353.00	STATION EQUIPMENT	782,064,327	2.43%	18,987,083	2.09%	16,337,705	-0.34%	-2,649,378
354.00	TOWERS AND FIXTURES	163,390,778	1.63%	2,662,991	1.63%	2,662,743	0.00%	-248
355.00	POLES AND FIXTURES	939,796,506	3.16%	29,658,547	2.67%	25,045,662	-0.49%	-4,612,885
356.00	OVERHEAD CONDUCTORS AND DEVICES	603,934,299	2.52%	15,248,518	2.52%	15,235,145	0.00%	-13,373
358.00	UNDERGROUND CONDUCTORS AND DEVICES	110,494	0.00%	0	0.00%	0	0.00%	0
	TOTAL TRANSMISSION PLANT	2,618,383,232	2.61%	68,337,627	2.33%	61,062,196	-0.28%	-7,275,431
	Distribution Plant							
360.20	LAND RIGHTS	5,430,916	1.24%	67,097	1.24%	67,113	0.00%	16
361.00	STRUCTURES AND IMPROVEMENTS	7,532,538	1.43%	107,732	1.43%	107,810	0.00%	78
362.00	STATION EQUIPMENT	642,240,932	2.16%	13,898,143	1.89%	12,122,183	-0.27%	-1,775,960
364.00	POLES, TOWERS AND FIXTURES	644,578,241	2.66%	17,175,654	2.16%	13,899,018	-0.50%	-3,276,636
365.00	OVERHEAD CONDUCTORS AND DEVICES	502,582,919	2.69%	13,521,989	2.12%	10,633,528	-0.57%	-2,888,461
366.00	UNDERGROUND CONDUIT	227,895,726	1.62%	3,691,401	1.52%	3,465,109	-0.10%	-226,292
367.00	UNDERGROUND CONDUCTORS AND DEVICES	798,862,536	1.82%	14,521,827	1.82%	14,521,541	0.00%	-286
368.00	LINE TRANSFORMERS	474,106,456	3.77%	17,897,357	3.77%	17,874,219	0.00%	-23,138
369.00	SERVICES	246,083,055	1.78%	4,375,610	1.78%	4,379,501	0.00%	3,891
370.00	METERS - SMART METERS	151,089,784	7.02%	10,606,274	7.00%	10,571,066	-0.02%	-35,208
370.10	METERS - METERING EQUIPMENT	38,076,965	6.85%	2,606,995	6.82%	2,596,547	-0.03%	-10,448
371.00	INSTALLATIONS ON CUSTOMERS' PREMISES	55,758,969	14.17%	7,900,910	4.33%	2,413,830	-9.84%	-5,487,080
373.00	STREET LIGHTING AND SIGNAL SYSTEMS	247,969,978	5.47%	13,556,130	5.23%	12,974,567	-0.24%	-581,563

Detailed Rate Comparison

		[1]	[2]		[3]		[4]	
			OGE Proposal		OIEC/OER Proposal		OIEC/OER Adjustment	
Account No.	Description	Plant 12/31/2017	Rate	Annual Accrual	Rate	Annual Accrual	Rate	Annual Accrual
	TOTAL DISTRIBUTION PLANT	4,042,209,016	2.97%	119,927,119	2.61%	105,626,031	-0.35%	-14,301,088
	General Plant							
389.20	LAND RIGHTS	178,598	2.00%	3,573	2.00%	3,569	0.00%	-4
390.00	STRUCTURES AND IMPROVEMENTS	193,359,457	1.86%	3,605,841	1.87%	3,606,945	0.01%	1,104
391.00	OFFICE FURNITURE AND EQUIPMENT	14,473,128	8.56%	1,238,692	8.57%	1,239,944	0.01%	1,252
391.10	COMPUTER EQUIPMENT	38,721,973	21.72%	8,411,373	21.58%	8,354,898	-0.14%	-56,475
392.10	CARS AND TRUCKS	22,837,347	4.23%	966,146	4.23%	966,661	0.00%	515
392.50	HEAVY TRUCKS	59,006,132	4.79%	2,827,745	4.78%	2,819,203	-0.01%	-8,542
392.60	TRAILERS	6,260,836	3.18%	199,017	3.17%	198,602	-0.01%	-415
393.00	STORES EQUIPMENT	1,375,246	6.98%	96,029	6.98%	96,017	0.00%	-12
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT	11,995,958	4.95%	593,208	4.96%	594,938	0.01%	1,730
395.00	LABORATORY EQUIPMENT	12,099,720	9.81%	1,187,586	9.77%	1,182,120	-0.04%	-5,466
396.00	POWER OPERATED EQUIPMENT	12,595,629	3.97%	500,195	3.98%	501,848	0.01%	1,653
397.00	COMMUNICATION EQUIPMENT	27,823,082	10.39%	2,891,547	10.29%	2,862,490	-0.10%	-29,057
398.00	MISCELLANEOUS EQUIPMENT	6,514,175	2.34%	152,226	2.34%	152,699	0.00%	473
	TOTAL GENERAL PLANT	407,241,279	5.57%	22,673,178	5.54%	22,579,934	-0.02%	-93,244
	TOTAL DEPRECIABLE PLANT	**10,950,288,273**	**3.08%**	**337,200,393**	**2.66%**	**291,551,435**	**-0.42%**	**-45,648,958**

[1], [2] Depreciation Study
[3] Exhibit DJG-2-4
[4] = [3] - [2]

Depreciation Rate Development

		[1]	[2]		[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
Account No.	Description	Original Cost	Iowa Curve Type	AL	Net Salvage	Depreciable Base	Book Reserve	Future Accruals	Remaining Life	Service Life Accrual	Service Life Rate	Net Salvage Accrual	Net Salvage Rate	Total Accrual	Total Rate
	Intangible Plant														
302.00	FRANCHISES AND CONSENTS	2,419,000	SQ	25	0%	2,419,000	1,473,472	945,528	9.10	103,904	4.30%	0	0.00%	103,904	**4.30%**
303.20	MISCELLANEOUS INTANGIBLE PLANT - SOFTWARE														
	FULLY DEPRECIATED - HC	74,517,307			0%	74,517,307	74,517,307	0							
	10-YEAR	97,282,184	SQ	10	0%	97,282,184	59,975,242	37,306,942	7.20	5,181,520	5.33%	0	0.00%	5,181,520	**5.33%**
	TOTAL INTANGIBLE PLANT	174,218,491			0.0%	174,218,491	135,966,021	38,252,470	7.24	5,285,424	3.03%	0	0.00%	5,285,424	**3.03%**
	Steam Production Plant														
310.20	RIGHTS OF WAY														
	HORSESHOE LAKE 6	28,509	S4	100	0%	28,509	26,591	1,918	6.00	320	1.12%	0	0.00%	320	**1.12%**
	SEMINOLE 1	78,916	S4	100	0%	78,916	57,348	21,568	13.00	1,659	2.10%	0	0.00%	1,659	**2.10%**
	MUSKOGEE 4	18,934	S4	100	0%	18,934	6,348	12,586	24.90	505	2.67%	0	0.00%	505	**2.67%**
	SOONER 1	813,704	S4	100	0%	813,704	118,677	695,027	27.00	25,742	3.16%	0	0.00%	25,742	**3.16%**
	TOTAL RIGHTS OF WAY	940,064			0.0%	940,064	208,964	731,099	25.90	28,226	3.00%	0	0.00%	28,226	**3.00%**
311.00	STRUCTURES AND IMPROVEMENTS														
	HORSESHOE LAKE 6	16,643,969	R1.5	105	-2%	16,976,849	9,457,012	7,519,836	6.00	1,197,826	7.20%	55,480	0.33%	1,253,306	**7.53%**
	HORSESHOE LAKE 7	2,763,852	R1.5	105	-3%	2,846,768	2,640,342	206,425	10.70	11,543	0.42%	7,749	0.28%	19,292	**0.70%**
	HORSESHOE LAKE 8	4,972,755	R1.5	105	-3%	5,121,937	4,500,616	621,321	11.70	40,354	0.81%	12,751	0.26%	53,104	**1.07%**
	SEMINOLE 1	19,372,148	R1.5	105	-3%	19,953,312	13,537,520	6,415,792	12.80	455,830	2.35%	45,403	0.23%	501,234	**2.59%**
	SEMINOLE 2	2,515,483	R1.5	105	-3%	2,590,947	1,766,665	824,282	12.70	58,962	2.34%	5,942	0.24%	64,904	**2.58%**
	SEMINOLE 3	7,193,504	R1.5	105	-2%	7,337,374	5,679,387	1,657,987	12.70	119,222	1.66%	11,328	0.16%	130,550	**1.81%**
	MUSKOGEE 4	44,616,688	R1.5	105	-3%	45,955,188	18,320,917	27,634,271	24.20	1,086,602	2.44%	55,310	0.12%	1,141,912	**2.56%**
	MUSKOGEE 5	7,062,478	R1.5	105	-4%	7,344,977	3,986,924	3,358,053	24.90	123,516	1.75%	11,345	0.16%	134,862	**1.91%**
	MUSKOGEE 6	51,735,018	R1.5	105	-5%	54,321,769	35,259,149	19,062,621	30.20	545,559	1.05%	85,654	0.17%	631,213	**1.22%**
	SOONER 1	92,650,219	R1.5	105	-4%	96,356,228	67,446,469	28,909,759	25.80	976,890	1.05%	143,644	0.16%	1,120,533	**1.21%**
	SOONER 2	12,450,122	R1.5	105	-4%	12,948,127	9,103,290	3,844,837	26.50	126,296	1.01%	18,793	0.15%	145,088	**1.17%**
	TOTAL STRUCTURES AND IMPROVEMENTS	261,976,236			-3.7%	271,753,477	171,698,292	100,055,185	19.26	4,742,599	1.81%	453,399	0.17%	5,195,998	**1.98%**
312.00	BOILER PLANT EQUIPMENT														
	HORSESHOE LAKE 6	17,724,657	R0.5	85	-2%	18,079,151	14,976,269	3,102,882	5.90	465,829	2.63%	60,084	0.34%	525,912	**2.97%**
	HORSESHOE LAKE 7	14,506,629	R0.5	85	-3%	14,941,828	12,657,022	2,284,806	10.70	172,860	1.19%	40,673	0.28%	213,533	**1.47%**
	HORSESHOE LAKE 8	18,967,502	R0.5	85	-3%	19,536,527	14,533,511	5,003,016	11.60	382,241	2.02%	49,054	0.26%	431,294	**2.27%**
	SEMINOLE 1	52,425,255	R0.5	85	-3%	53,998,013	20,463,654	33,534,359	12.60	2,536,635	4.84%	124,822	0.24%	2,661,457	**5.08%**
	SEMINOLE 2	42,885,905	R0.5	85	-3%	44,172,482	19,139,658	25,032,824	12.50	1,899,700	4.43%	102,926	0.24%	2,002,626	**4.67%**
	SEMINOLE 3	62,854,909	R0.5	85	-2%	64,112,007	31,571,290	32,540,718	12.50	2,502,690	3.98%	100,568	0.16%	2,603,257	**4.14%**
	MUSKOGEE 4	156,911,035	R0.5	85	-3%	161,618,366	77,380,172	84,238,193	23.30	3,413,342	2.18%	202,031	0.13%	3,615,373	**2.30%**
	MUSKOGEE 5	127,789,455	R0.5	85	-4%	132,901,034	67,964,218	64,936,816	24.10	2,482,375	1.94%	212,099	0.17%	2,694,474	**2.11%**
	MUSKOGEE 6	252,951,116	R0.5	85	-5%	265,598,671	149,443,367	116,155,305	29.00	3,569,233	1.41%	436,123	0.17%	4,005,355	**1.58%**
	SOONER 1	238,499,076	R0.5	85	-4%	248,039,039	125,277,329	122,761,710	25.00	4,528,870	1.90%	381,599	0.16%	4,910,468	**2.06%**
	SOONER 2	158,656,138	R0.5	85	-4%	165,002,383	98,069,311	66,933,072	25.70	2,357,464	1.49%	246,936	0.16%	2,604,400	**1.64%**
	TOTAL BOILER PLANT EQUIPMENT	1,144,171,676			-3.8%	1,187,999,499	631,475,799	556,523,700	21.19	24,311,237	2.12%	1,956,913	0.17%	26,268,151	**2.30%**
314.00	TURBOGENERATOR UNITS														
	HORSESHOE LAKE 6	8,192,148	R1	55	-2%	8,355,991	6,067,438	2,288,553	5.70	372,756	4.55%	28,744	0.35%	401,501	**4.90%**
	HORSESHOE LAKE 7	8,564,415	R1	55	-3%	8,821,348	6,946,570	1,874,778	9.80	165,086	1.93%	26,218	0.31%	191,304	**2.23%**
	HORSESHOE LAKE 8	18,327,259	R1	55	-3%	18,877,077	13,736,477	5,140,600	11.20	409,891	2.24%	49,091	0.27%	458,982	**2.50%**
	SEMINOLE 1	29,625,833	R1	55	-3%	30,514,608	17,691,762	12,822,846	12.20	978,203	3.30%	72,850	0.25%	1,051,053	**3.55%**
	SEMINOLE 2	30,824,029	R1	55	-3%	31,748,750	20,917,236	10,831,514	12.10	818,743	2.66%	76,423	0.25%	895,166	**2.90%**
	SEMINOLE 3	30,446,687	R1	55	-2%	31,055,621	19,543,286	11,512,335	12.30	886,455	2.91%	49,507	0.16%	935,962	**3.07%**
	MUSKOGEE 4	66,596,775	R1	55	-3%	68,594,679	20,033,056	48,561,622	22.70	2,051,265	3.08%	88,013	0.13%	2,139,279	**3.21%**
	MUSKOGEE 5	51,699,605	R1	55	-4%	53,767,589	27,362,316	26,405,274	23.00	1,058,143	2.05%	89,912	0.17%	1,148,055	**2.22%**
	MUSKOGEE 6	89,827,996	R1	55	-5%	94,319,396	35,275,941	59,043,455	27.00	2,020,446	2.25%	166,348	0.19%	2,186,795	**2.43%**
	SOONER 1	39,966,264	R1	55	-4%	41,564,914	24,147,725	17,417,189	23.70	667,449	1.67%	67,454	0.17%	734,902	**1.84%**
	SOONER 2	41,801,183	R1	55	-4%	43,473,230	25,318,717	18,154,513	24.00	686,769	1.64%	69,669	0.17%	756,438	**1.81%**
	TOTAL TURBOGENERATOR UNITS	415,872,195			-3.7%	431,093,203	217,040,525	214,052,678	19.64	10,115,208	2.43%	784,229	0.19%	10,899,437	**2.62%**
315.00	ACCESSORY ELECTRIC EQUIPMENT														

Depreciation Rate Development

Account No.	Description	[1] Original Cost	[2] Iowa Curve Type	AL	[3] Net Salvage	[4] Depreciable Base	[5] Book Reserve	[6] Future Accruals	[7] Remaining Life	[8] Service Life Accrual	[9] Rate	[10] Net Salvage Accrual	[11] Rate	[12] Total Accrual	[13] Rate
	HORSESHOE LAKE 6	3,007,723	R2	75	-2%	3,067,877	1,900,194	1,167,683	5.90	187,717	6.24%	10,196	0.34%	197,912	**6.58%**
	HORSESHOE LAKE 7	2,112,461	R2	75	-3%	2,175,835	1,449,659	726,175	10.60	62,528	2.96%	5,979	0.28%	68,507	**3.24%**
	HORSESHOE LAKE 8	2,565,471	R2	75	-3%	2,642,435	1,908,994	733,441	11.70	56,109	2.19%	6,578	0.26%	62,687	**2.44%**
	SEMINOLE 1	3,652,325	R2	75	-3%	3,761,895	2,252,393	1,509,502	12.60	111,106	3.04%	8,696	0.24%	119,802	**3.28%**
	SEMINOLE 2	2,058,361	R2	75	-3%	2,120,112	1,501,820	618,292	12.50	44,523	2.16%	4,940	0.24%	49,463	**2.40%**
	SEMINOLE 3	5,154,696	R2	75	-2%	5,257,790	3,923,393	1,334,397	12.70	96,953	1.88%	8,118	0.16%	105,071	**2.04%**
	MUSKOGEE 4	34,035,553	R2	75	-3%	35,056,620	12,406,307	22,650,313	23.60	916,493	2.69%	43,266	0.13%	959,759	**2.82%**
	MUSKOGEE 5	11,587,508	R2	75	-4%	12,051,008	7,536,578	4,514,430	23.70	170,925	1.48%	19,557	0.17%	190,482	**1.64%**
	MUSKOGEE 6	42,835,435	R2	75	-5%	44,977,207	28,981,004	15,996,203	28.80	481,057	1.12%	74,367	0.17%	555,424	**1.30%**
	SOONER 1	24,033,740	R2	75	-4%	24,995,090	17,810,840	7,184,249	24.40	255,037	1.06%	39,400	0.16%	294,436	**1.23%**
	SOONER 2	12,766,947	R2	75	-4%	13,277,625	8,293,233	4,984,392	25.20	177,528	1.39%	20,265	0.16%	197,793	**1.55%**
	TOTAL ACCESSORY ELECTRIC EQUIPMENT	143,810,221			-3.9%	149,383,494	87,964,417	61,419,077	21.92	2,559,977	1.78%	241,360	0.17%	2,801,337	**1.95%**
316.00	MISCELLANEOUS POWER PLANT EQUIPMENT														
	HORSESHOE LAKE 6	1,983,120	R0.5	50	-2%	2,022,782	1,316,115	706,667	5.80	115,001	5.80%	6,838	0.34%	121,839	**6.14%**
	HORSESHOE LAKE 7	1,039,114	R0.5	50	-3%	1,070,287	980,627	89,660	10.10	5,791	0.56%	3,086	0.30%	8,877	**0.85%**
	HORSESHOE LAKE 8	2,190,592	R0.5	50	-3%	2,256,310	1,915,600	340,709	11.10	24,774	1.13%	5,921	0.27%	30,695	**1.40%**
	SEMINOLE 1	4,012,595	R0.5	50	-3%	4,132,972	2,620,280	1,512,693	12.00	116,026	2.89%	10,031	0.25%	126,058	**3.14%**
	SEMINOLE 2	39,168	R0.5	50	-3%	40,344	11,812	28,532	11.60	2,358	6.02%	101	0.26%	2,460	**6.28%**
	SEMINOLE 3	401,384	R0.5	50	-2%	409,412	280,528	128,884	12.10	9,988	2.49%	663	0.17%	10,652	**2.65%**
	MUSKOGEE 4	9,080,857	R0.5	50	-3%	9,353,283	2,253,922	7,099,361	21.80	313,162	3.45%	12,497	0.14%	325,659	**3.59%**
	MUSKOGEE 5	835,596	R0.5	50	-4%	869,020	610,046	258,974	21.60	10,442	1.25%	1,547	0.19%	11,990	**1.43%**
	MUSKOGEE 6	4,646,447	R0.5	50	-5%	4,878,769	2,694,079	2,184,690	25.20	77,475	1.67%	9,219	0.20%	86,694	**1.87%**
	SOONER 1	5,789,330	R0.5	50	-4%	6,020,903	2,971,242	3,049,661	23.40	120,431	2.08%	9,896	0.17%	130,327	**2.25%**
	SOONER 2	2,039,916	R0.5	50	-4%	2,121,513	1,275,477	846,036	21.90	34,906	1.71%	3,726	0.18%	38,632	**1.89%**
	POWER SUPPLY SERVICES	1,453,711	R0.5	50	-2%	1,482,785	433,357	1,049,428	44.80	22,776	1.57%	649	0.04%	23,425	**1.61%**
	TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT	33,511,829			-3.4%	34,658,379	17,363,087	17,295,292	18.85	853,130	2.55%	64,176	0.19%	917,306	**2.74%**
	TOTAL STEAM PRODUCTION PLANT	2,000,282,220			-3.8%	2,075,828,116	1,125,751,084	950,077,032	20.60	42,610,377	2.13%	3,500,078	0.17%	46,110,455	**2.31%**
	Other Production Plant														
340.20	LAND RIGHTS - MUSTANG CTs	10,816	S4	75	0%	10,816	10,816	0							
341.00	STRUCTURES AND IMPROVEMENTS														
	REDBUD 1	33,175,968	R3	50	-3%	34,171,248	13,195,730	20,975,517	28.80	693,758	2.09%	34,558	0.10%	728,317	**2.20%**
	REDBUD 2	156,822	R3	50	-4%	163,095	18,788	144,307	30.50	4,526	2.89%	206	0.13%	4,731	**3.02%**
	REDBUD 3	145,711	R3	50	-4%	151,540	17,213	134,326	30.50	4,213	2.89%	191	0.13%	4,404	**3.02%**
	REDBUD 4	174,701	R3	50	-4%	181,689	24,219	157,471	30.50	4,934	2.82%	229	0.13%	5,163	**2.96%**
	HORSESHOE LAKE 9 AND 10	986,486	R3	50	-1%	996,351	501,317	495,034	17.10	28,372	2.88%	577	0.06%	28,949	**2.93%**
	TINKER	972,164	R3	50	-1%	981,886	913,330	68,556	7.90	7,447	0.77%	1,231	0.13%	8,678	**0.89%**
	MCCLAIN GAS 1	10,296,156	R3	50	-4%	10,708,002	4,053,838	6,654,164	27.40	227,822	2.21%	15,031	0.15%	242,853	**2.36%**
	MCCLAIN GAS 2	1,574,523	R3	50	-4%	1,637,504	1,018,559	618,944	26.40	21,059	1.34%	2,386	0.15%	23,445	**1.49%**
	MCCLAIN STEAM 1	831,273	R3	50	-4%	864,524	529,937	334,587	26.50	11,371	1.37%	1,255	0.15%	12,626	**1.52%**
	MUSTANG CTs	29,017,947	R3	50	-3%	29,888,485	442,136	29,446,349	34.80	821,144	2.83%	25,015	0.09%	846,159	**2.92%**
	TOTAL STRUCTURES AND IMPROVEMENTS	77,331,752			-3.1%	79,744,324	20,715,067	59,029,256	30.98	1,824,647	2.36%	80,678	0.10%	1,905,325	**2.46%**
341.00	STRUCTURES AND IMPROVEMENTS - WIND														
	CENTENNIAL	2,386,090	R3	45	-1%	2,409,951	981,415	1,428,536	18.70	75,116	3.15%	1,276	0.05%	76,392	**3.20%**
	OU SPIRIT	5,209,833	R3	45	-1%	5,261,931	1,726,746	3,535,185	21.60	161,254	3.10%	2,412	0.05%	163,666	**3.14%**
	CROSSROADS	11,586,653	R3	45	-1%	11,702,520	2,870,660	8,831,860	23.40	372,478	3.21%	4,952	0.04%	377,430	**3.26%**
	TOTAL STRUCTURES AND IMPROVEMENTS - WIND	19,182,576			-1.0%	19,374,402	5,578,821	13,795,581	22.34	608,849	3.17%	8,640	0.05%	617,488	**3.22%**
341.00	STRUCTURES AND IMPROVEMENTS - SOLAR	722,634	S2	35	0%	722,634	97,256	625,378	32.50	19,242	2.66%	0	0.00%	19,242	**2.66%**
342.00	FUEL HOLDERS, PRODUCERS AND ACCESSORIES														
	REDBUD 1	12,118,339	R4	55	-3%	12,481,889	5,212,543	7,269,347	30.50	226,420	1.87%	11,920	0.10%	238,339	**1.97%**
	REDBUD 2	690,650	R4	55	-4%	718,276	305,879	412,397	30.50	12,615	1.83%	906	0.13%	13,521	**1.96%**
	REDBUD 3	691,291	R4	55	-4%	718,943	305,981	412,962	30.50	12,633	1.83%	907	0.13%	13,540	**1.96%**
	REDBUD 4	719,785	R4	55	-4%	748,576	307,095	441,482	30.60	13,487	1.87%	941	0.13%	14,428	**2.00%**
	TINKER	167,150	R4	55	-1%	168,821	119,911	48,910	8.00	5,905	3.53%	209	0.13%	6,114	**3.66%**

Depreciation Rate Development

		[1]	[2]		[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
			Iowa Curve							Service Life		Net Salvage		Total	
Account No.	Description	Original Cost	Type	AL	Net Salvage	Depreciable Base	Book Reserve	Future Accruals	Remaining Life	Accrual	Rate	Accrual	Rate	Accrual	Rate
	MCCLAIN GAS 1	348,390	R4	55	-4%	362,326	209,421	152,905	28.00	4,963	1.42%	498	0.14%	5,461	**1.57%**
	MCCLAIN GAS 2	259,057	R5	56	-4%	269,419	150,137	119,282	27.90	3,904	1.51%	371	0.14%	4,275	**1.65%**
	MUSTANG CTs	1,091,015	R4	55	-3%	1,123,745	1,314	1,122,431	36.40	29,937	2.74%	899	0.08%	30,836	**2.83%**
	TOTAL FUEL HOLDERS, PRODUCERS AND ACCESSORIES	16,085,678			-3.1%	16,591,997	6,612,281	9,979,716	30.56	309,864	1.93%	16,650	0.10%	326,514	**2.03%**
343.00	PRIME MOVERS														
	REDBUD 1	87,803,352	R2	40	-3%	90,437,452	28,438,513	61,998,939	25.70	2,309,916	2.63%	102,494	0.12%	2,412,410	**2.75%**
	REDBUD 2	66,093,452	R2	40	-4%	68,737,190	19,411,430	49,325,760	25.60	1,823,516	2.76%	103,271	0.16%	1,926,787	**2.92%**
	REDBUD 3	66,020,569	R2	40	-4%	68,661,392	23,405,599	45,255,793	25.80	1,651,743	2.50%	102,357	0.16%	1,754,101	**2.66%**
	REDBUD 4	60,516,438	R2	40	-4%	62,937,096	20,140,987	42,796,109	25.60	1,577,166	2.61%	94,557	0.16%	1,671,723	**2.76%**
	HORSESHOE LAKE 9 AND 10	8,453,388	R2	40	-1%	8,537,921	2,474,899	6,063,022	16.70	357,993	4.23%	5,062	0.06%	363,055	**4.29%**
	TINKER	3,909,265	R2	40	-1%	3,948,357	3,486,465	461,892	7.80	54,205	1.39%	5,012	0.13%	59,217	**1.51%**
	MCCLAIN GAS 1	108,259,624	R2	40	-4%	112,590,009	50,525,437	62,064,572	24.50	2,356,497	2.18%	176,750	0.16%	2,533,248	**2.34%**
	MCCLAIN GAS 2	103,570,368	R2	40	-4%	107,713,183	53,794,056	53,919,127	24.00	2,074,013	2.00%	172,617	0.17%	2,246,630	**2.17%**
	MCCLAIN STEAM 1	52,527,391	R3	40	-4%	54,628,487	33,499,805	21,128,682	23.20	820,155	1.56%	90,564	0.17%	910,719	**1.73%**
	MUSTANG CTs	47,689,486	R2	40	-3%	49,120,171	67,361	49,052,810	32.10	1,483,555	3.11%	44,570	0.09%	1,528,125	**3.20%**
343.10	LTSA 5-YEAR														
	REDBUD 1	2,129,176	SQ	5	0%	2,129,176	1,580,807	548,369	1.50	365,579	17.17%	0	0.00%	365,579	**17.17%**
	REDBUD 2	1,786,505	SQ	5	0%	1,786,505	1,193,345	593,160	1.50	395,440	22.13%	0	0.00%	395,440	**22.13%**
	REDBUD 3	1,908,402	SQ	5	0%	1,908,402	1,575,139	333,263	1.50	222,176	11.64%	0	0.00%	222,176	**11.64%**
	REDBUD 4	2,141,159	SQ	5	0%	2,141,159	1,611,067	530,092	1.50	353,394	16.50%	0	0.00%	353,394	**16.50%**
	MCCLAIN GAS 1	3,881,113	SQ	5	0%	3,881,113	3,881,113	0							
	MCCLAIN GAS 2	3,357,007	SQ	5	0%	3,357,007	3,357,007	0							
343.20	LTSA 20-YEAR														
	REDBUD 1	1,490,678	SQ	20	0%	1,490,678	1,067,227	423,451	6.50	65,146	4.37%	0	0.00%	65,146	**4.37%**
	REDBUD 2	1,490,678	SQ	20	0%	1,490,678	960,178	530,500	6.50	81,615	5.48%	0	0.00%	81,615	**5.48%**
	REDBUD 3	1,490,678	SQ	20	0%	1,490,678	1,186,421	304,257	6.50	46,809	3.14%	0	0.00%	46,809	**3.14%**
	REDBUD 4	1,490,678	SQ	20	0%	1,490,678	1,081,570	409,108	6.50	62,940	4.22%	0	0.00%	62,940	**4.22%**
	TOTAL ACCOUNT 343	626,009,405			-3.6%	648,477,331	252,738,426	395,738,904	23.28	16,101,860	2.57%	897,255	0.14%	16,999,115	**2.72%**
344.00	GENERATORS														
	REDBUD 1	717,739	R2	50	-3%	739,271	122,497	616,774	28.90	20,597	2.87%	745	0.10%	21,342	**2.97%**
	REDBUD 3	23,199	R2	50	-4%	24,127	4,218	19,909	29.20	650	2.80%	32	0.14%	682	**2.94%**
	REDBUD 4	23,035	R2	50	-4%	23,956	4,223	19,733	29.20	644	2.80%	32	0.14%	676	**2.93%**
	HORSESHOE LAKE 9 AND 10	33,990,716	R2	50	-1%	34,330,623	13,134,773	21,195,850	16.90	1,234,079	3.63%	20,113	0.06%	1,254,192	**3.69%**
	TINKER	3,314,013	R2	50	-1%	3,347,153	2,557,718	789,435	7.90	95,734	2.89%	4,195	0.13%	99,928	**3.02%**
	MUSTANG CTs	4,512,384	R2	50	-3%	4,647,755	11,582	4,636,174	33.80	133,160	2.95%	4,005	0.09%	137,165	**3.04%**
	TOTAL GENERATORS	42,581,085			-1.2%	43,112,885	15,835,011	27,277,874	18.02	1,484,864	3.49%	29,121	0.07%	1,513,985	**3.56%**
344.00	GENERATORS - WIND														
	CENTENNIAL	186,739,314	R2.5	40	-1%	188,606,707	82,740,400	105,866,307	18.40	5,652,115	3.03%	101,489	0.05%	5,753,604	**3.08%**
	OU SPIRIT	242,161,638	R2.5	40	-1%	244,583,254	73,348,046	171,235,208	21.20	7,962,905	3.29%	114,227	0.05%	8,077,132	**3.34%**
	CROSSROADS	358,022,809	R2.5	40	-1%	361,603,037	87,198,411	274,404,627	23.00	11,774,974	3.29%	155,662	0.04%	11,930,636	**3.33%**
	TOTAL GENERATORS - WIND	786,923,761			-1.0%	794,792,999	243,286,857	551,506,142	21.41	25,389,994	3.23%	371,378	0.05%	25,761,372	**3.27%**
344.00	GENERATORS - SOLAR	4,918,051	S2.5	25	-5%	5,163,954	519,127	4,644,827	22.50	195,508	3.98%	10,929	0.22%	206,437	**4.20%**
345.00	ACCESSORY ELECTRIC EQUIPMENT														
	REDBUD 1	12,859,566	R2.5	55	-3%	13,245,353	5,553,857	7,691,497	29.10	251,055	1.95%	13,257	0.10%	264,313	**2.06%**
	REDBUD 2	9,297,682	R2.5	55	-4%	9,669,589	4,348,350	5,321,239	29.10	170,080	1.83%	12,780	0.14%	182,860	**1.97%**
	REDBUD 3	9,105,045	R2.5	55	-4%	9,469,247	4,336,640	5,132,607	29.10	163,863	1.80%	12,516	0.14%	176,378	**1.94%**
	REDBUD 4	9,344,182	R2.5	55	-4%	9,717,949	4,383,459	5,334,491	29.70	167,028	1.79%	12,585	0.13%	179,612	**1.92%**
	HORSESHOE LAKE 9 AND 10	4,370,250	R2.5	55	-1%	4,413,953	2,219,724	2,194,229	17.20	125,031	2.86%	2,541	0.06%	127,571	**2.92%**
	TINKER	3,023,751	R2.5	55	-1%	3,053,988	2,748,805	305,183	7.80	35,249	1.17%	3,877	0.13%	39,126	**1.29%**
	MCCLAIN GAS 1	6,217,802	R2.5	55	-4%	6,466,514	3,445,536	3,020,978	27.00	102,677	1.65%	9,212	0.15%	111,888	**1.80%**
	MCCLAIN GAS 2	6,004,865	R2.5	55	-4%	6,245,059	3,645,907	2,599,152	26.80	88,021	1.47%	8,962	0.15%	96,983	**1.62%**
	MCCLAIN STEAM 1	3,639,068	R2.5	55	-4%	3,784,630	2,459,965	1,324,666	26.60	44,327	1.22%	5,472	0.15%	49,799	**1.37%**
	MUSTANG CTs	6,898,340	R2.5	55	-3%	7,105,290	11,636	7,093,654	35.00	196,763	2.85%	5,913	0.09%	202,676	**2.94%**
	TOTAL ACCESSORY ELECTRIC EQUIPMENT	70,760,550			-3.4%	73,171,572	33,153,878	40,017,695	27.96	1,344,093	1.90%	87,115	0.12%	1,431,208	**2.02%**

Depreciation Rate Development

		[1]	[2]		[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
			Iowa Curve							Service Life		Net Salvage		Total	
Account No.	Description	Original Cost	Type	AL	Net Salvage	Depreciable Base	Book Reserve	Future Accruals	Remaining Life	Accrual	Rate	Accrual	Rate	Accrual	Rate
345.00	ACCESSORY ELECTRIC EQUIPMENT - WIND														
	CENTENNIAL	1,106,369	R2.5	35	-1%	1,117,433	362,151	755,281	18.50	40,228	3.64%	598	0.05%	40,826	**3.69%**
	OU SPIRIT	1,750,768	R2.5	35	-1%	1,768,276	163,319	1,604,957	21.40	74,180	4.24%	818	0.05%	74,998	**4.28%**
	CROSSROADS	44,132,467	R2.5	35	-1%	44,573,792	10,249,252	34,324,540	22.60	1,499,257	3.40%	19,528	0.04%	1,518,785	**3.44%**
	TOTAL ACCESSORY ELECTRIC EQUIPMENT - WIND	46,989,605			-1.0%	47,459,501	10,774,723	36,684,778	22.44	1,613,665	3.43%	20,944	0.04%	1,634,609	**3.48%**
345.00	ACCESSORY ELECTRIC EQUIPMENT - SOLAR	1,361,611	S2.5	40	0%	1,361,611	137,100	1,224,511	37.50	32,654	2.40%	0	0.00%	32,654	**2.40%**
346.00	MISCELLANEOUS POWER PLANT EQUIPMENT														
	REDBUD 1	2,551,963	R2	45	-3%	2,628,522	745,537	1,882,985	27.70	65,214	2.56%	2,764	0.11%	67,978	**2.66%**
	REDBUD 2	18,098	R2	45	-4%	18,822	3,310	15,512	28.60	517	2.86%	25	0.14%	542	**3.00%**
	REDBUD 3	6,725	R2	45	-4%	6,994	171	6,822	29.00	226	3.36%	9	0.14%	235	**3.50%**
	REDBUD 4	16,133	R2	45	-4%	16,779	797	15,981	29.30	523	3.24%	22	0.14%	545	**3.38%**
	HORSESHOE LAKE 9 AND 10	941,452	R2	45	-1%	950,867	507,474	443,393	16.40	26,462	2.81%	574	0.06%	27,036	**2.87%**
	TINKER	8,664	R2	45	-1%	8,751	7,402	1,349	7.80	162	1.87%	11	0.13%	173	**2.00%**
	MCCLAIN GAS 1	4,985,596	R3	45	-4%	5,185,020	2,177,283	3,007,737	24.80	113,238	2.27%	8,041	0.16%	121,280	**2.43%**
	MUSTANG CTs	4,994,661	R2	45	-3%	5,144,501	13,494	5,131,007	33.00	150,944	3.02%	4,541	0.09%	155,485	**3.11%**
	TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT	13,523,293			-3.2%	13,960,255	3,455,469	10,504,787	28.14	357,287	2.64%	15,988	0.12%	373,275	**2.76%**
346.00	MISCELLANEOUS POWER PLANT EQUIPMENT - WIND														
	CENTENNIAL	906,757	R2.5	35	-1%	915,824	170,164	745,661	18.60	39,602	4.37%	488	0.05%	40,089	**4.42%**
	OU SPIRIT	329,773	R2.5	35	-1%	333,071	39,164	293,906	21.40	13,580	4.12%	154	0.05%	13,734	**4.16%**
	CROSSROADS	316,686	R2.5	35	-1%	319,853	34,619	285,233	23.10	12,211	3.86%	137	0.04%	12,348	**3.90%**
	TOTAL MISCELLANEOUS POWER PLANT EQUIPMENT - WIND	1,553,216			-1.0%	1,568,748	243,948	1,324,800	20.02	65,392	4.21%	779	0.05%	66,171	**4.26%**
	TOTAL OTHER PRODUCTION PLANT	1,707,954,034			-2.2%	1,745,513,030	593,158,780	1,152,354,250	22.65	49,347,918	2.89%	1,539,476	0.09%	50,887,394	**2.98%**
	Transmission Plant														
350.20	LAND RIGHTS	122,384,320	S4	75	0%	122,384,320	19,910,620	102,473,699	61.20	1,674,407	1.37%	0	0.00%	1,674,407	**1.37%**
352.00	STRUCTURES AND IMPROVEMENTS	6,702,508	S4	65	-5%	7,037,634	1,551,111	5,486,523	51.50	100,027	1.49%	6,507	0.10%	106,534	**1.59%**
353.00	STATION EQUIPMENT	782,064,327	R1	61	-30%	1,016,683,625	159,117,509	857,566,117	52.49	11,867,914	1.52%	4,469,790	0.57%	16,337,705	**2.09%**
354.00	TOWERS AND FIXTURES	163,390,778	R4	75	-25%	204,238,472	49,000,537	155,237,935	58.30	1,962,097	1.20%	700,647	0.43%	2,662,743	**1.63%**
355.00	POLES AND FIXTURES	939,796,506	R0.5	64	-75%	1,644,643,886	189,490,912	1,455,152,974	58.10	12,914,038	1.37%	12,131,624	1.29%	25,045,662	**2.67%**
356.00	OVERHEAD CONDUCTORS AND DEVICES	603,934,299	R3	65	-60%	966,294,878	161,879,230	804,415,648	52.80	8,372,255	1.39%	6,862,890	1.14%	15,235,145	**2.52%**
358.00	UNDERGROUND CONDUCTORS AND DEVICES	110,494	S2.5	45	0%	110,494	110,750	-256							
	TOTAL TRANSMISSION PLANT	2,618,383,232			-51.3%	3,961,393,309	581,060,669	3,380,332,640	55.36	36,890,738	1.41%	24,171,458	0.92%	61,062,196	**2.33%**
	Distribution Plant														
360.20	LAND RIGHTS	5,430,916	S4	75	0%	5,430,916	1,551,799	3,879,117	57.80	67,113	1.24%	0	0.00%	67,113	**1.24%**
361.00	STRUCTURES AND IMPROVEMENTS	7,532,538	R2.5	65	-5%	7,909,165	2,109,004	5,800,161	53.80	100,809	1.34%	7,001	0.09%	107,810	**1.43%**
362.00	STATION EQUIPMENT	642,240,932	R1.5	66	-30%	834,913,212	180,194,121	654,719,090	54.01	8,554,838	1.33%	3,567,345	0.56%	12,122,183	**1.89%**
364.00	POLES, TOWERS AND FIXTURES	644,578,241	R0.5	66	-60%	1,031,325,185	252,146,247	779,178,938	56.06	7,000,214	1.09%	6,898,804	1.07%	13,899,018	**2.16%**
365.00	OVERHEAD CONDUCTORS AND DEVICES	502,582,919	O1	66	-55%	779,003,524	171,297,380	607,706,144	57.15	5,796,772	1.15%	4,836,756	0.96%	10,633,528	**2.12%**
366.00	UNDERGROUND CONDUIT	227,895,726	R2.5	65	-10%	250,685,299	68,108,710	182,576,589	52.69	3,032,587	1.33%	432,522	0.19%	3,465,109	**1.52%**
367.00	UNDERGROUND CONDUCTORS AND DEVICES	798,862,536	R2.5	64	-25%	998,578,171	240,553,743	758,024,427	52.20	10,695,571	1.34%	3,825,970	0.48%	14,521,541	**1.82%**
368.00	LINE TRANSFORMERS	474,106,456	O1	44	-50%	711,159,684	94,499,132	616,660,553	34.50	11,003,111	2.32%	6,871,108	1.45%	17,874,219	**3.77%**
369.00	SERVICES	246,083,055	R4	55	-20%	295,299,666	127,564,761	167,734,905	38.30	3,094,472	1.26%	1,285,029	0.52%	4,379,501	**1.78%**
370.00	METERS - SMART METERS	151,089,784	S2.5	15	-10%	166,198,762	60,488,105	105,710,657	10.00	9,060,168	6.00%	1,510,898	1.00%	10,571,066	**7.00%**
370.10	METERS - METERING EQUIPMENT	38,076,965	L0	14	-10%	41,884,662	17,736,776	24,147,886	9.30	2,187,117	5.74%	409,430	1.08%	2,596,547	**6.82%**
371.00	INSTALLATIONS ON CUSTOMERS' PREMISES	55,758,969	L3	15	0%	55,758,969	28,434,411	27,324,558	11.32	2,413,830	4.33%	0	0.00%	2,413,830	**4.33%**
373.00	STREET LIGHTING AND SIGNAL SYSTEMS	247,969,978	L2	31	-50%	371,954,968	114,799,049	257,155,919	19.82	6,719,018	2.71%	6,255,549	2.52%	12,974,567	**5.23%**
	TOTAL DISTRIBUTION PLANT	4,042,209,016			-37.3%	5,550,102,183	1,359,483,238	4,190,618,944	39.67	69,725,620	1.72%	35,900,411	0.89%	105,626,031	**2.61%**
	General Plant														

Depreciation Rate Development

		[1]	[2]		[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
Account No.	**Description**	**Original Cost**	**Iowa Curve Type**	**AL**	**Net Salvage**	**Depreciable Base**	**Book Reserve**	**Future Accruals**	**Remaining Life**	**Service Life Accrual**	**Service Life Rate**	**Net Salvage Accrual**	**Net Salvage Rate**	**Total Accrual**	**Total Rate**
389.20	LAND RIGHTS	178,598	R4	50	0%	178,598	94,019	84,579	23.70	3,569	2.00%	0	0.00%	3,569	**2.00%**
390.00	STRUCTURES AND IMPROVEMENTS	193,359,457	R2	45	-5%	203,027,430	74,259,489	128,767,941	35.70	3,336,134	1.73%	270,812	0.14%	3,606,945	**1.87%**
391.00	OFFICE FURNITURE AND EQUIPMENT	14,473,128	SQ	15	0%	14,473,128	4,553,575	9,919,553	8.00	1,239,944	8.57%	0	0.00%	1,239,944	**8.57%**
391.10	COMPUTER EQUIPMENT	38,721,973	SQ	5	0%	38,721,973	14,492,768	24,229,205	2.90	8,354,898	21.58%	0	0.00%	8,354,898	**21.58%**
392.10	CARS AND TRUCKS	22,837,347	S2.5	10	10%	20,553,613	15,140,311	5,413,302	5.60	1,374,471	6.02%	-407,810	-1.79%	966,661	**4.23%**
392.50	HEAVY TRUCKS	59,006,132	L2.5	13	10%	53,105,519	31,115,737	21,989,781	7.80	3,575,692	6.06%	-756,489	-1.28%	2,819,203	**4.78%**
392.60	TRAILERS	6,260,836	S0.5	24	10%	5,634,752	1,920,892	3,713,860	18.70	232,083	3.71%	-33,480	-0.53%	198,602	**3.17%**
393.00	STORES EQUIPMENT	1,375,246	SQ	25	0%	1,375,246	251,852	1,123,394	11.70	96,017	6.98%	0	0.00%	96,017	**6.98%**
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT	11,995,958	SQ	25	0%	11,995,958	4,023,782	7,972,176	13.40	594,938	4.96%	0	0.00%	594,938	**4.96%**
395.00	LABORATORY EQUIPMENT	12,099,720	SQ	20	0%	12,099,720	4,415,941	7,683,779	6.50	1,182,120	9.77%	0	0.00%	1,182,120	**9.77%**
396.00	POWER OPERATED EQUIPMENT	12,595,629	L2	19	15%	10,706,285	4,734,288	5,971,996	11.90	660,617	5.24%	-158,768	-1.26%	501,848	**3.98%**
397.00	COMMUNICATION EQUIPMENT	27,823,082	SQ	10	0%	27,823,082	14,655,629	13,167,453	4.60	2,862,490	10.29%	0	0.00%	2,862,490	**10.29%**
398.00	MISCELLANEOUS EQUIPMENT	6,514,175	SQ	20	0%	6,514,175	4,238,962	2,275,213	14.90	152,699	2.34%	0	0.00%	152,699	**2.34%**
	TOTAL GENERAL PLANT	407,241,279			0.3%	406,209,476	173,897,245	232,312,231	10.29	23,665,670	5.81%	-1,085,736	-0.27%	22,579,934	**5.54%**
	TOTAL DEPRECIABLE PLANT	**10,950,288,273**			**-27.1%**	**13,913,264,604**	**3,969,317,037**	**9,943,947,567**	**34.11**	**227,525,748**	**2.08%**	**64,025,687**	**0.58%**	**291,551,435**	**2.66%**

[1] Company depreciation study
[2] Average life and Iowa curve shape developed through actuarial analysis and professional judgment
[3] Weighted net salvage for life span accounts from weighted net salvage exhibit; net salvage for mass accounts developed through statistical analysis and professional judgment
[4] = [1]*(1-[3])
[5] Company depreciation study
[6] = [4] - [5]
[7] Composite remaining life based on Iowa cuve in [2]; see remaining life exhibit for detailed calculations
[8] = ([1] - [5]) / [7]
[9] = [8] / [1]
[10] = [12] - [8]
[11] = [13] - [9]
[12] = [6] / [7]
[13] = [12] / [1]

Account 353 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R2-56	[5] OIEC/OER R1-61	[6] OGE SSD	[7] OIEC/OER SSD
0.0	619,468,566	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	567,329,813	99.98%	99.92%	99.79%	0.0000	0.0000
1.5	519,894,187	99.95%	99.74%	99.36%	0.0000	0.0000
2.5	488,120,596	99.91%	99.55%	98.92%	0.0000	0.0001
3.5	401,656,766	99.88%	99.35%	98.47%	0.0000	0.0002
4.5	373,474,509	99.84%	99.14%	98.01%	0.0000	0.0003
5.5	310,463,935	99.83%	98.92%	97.54%	0.0001	0.0005
6.5	259,638,042	99.79%	98.68%	97.06%	0.0001	0.0007
7.5	236,884,005	99.59%	98.43%	96.57%	0.0001	0.0009
8.5	222,490,383	99.52%	98.16%	96.08%	0.0002	0.0012
9.5	262,740,782	99.29%	97.88%	95.57%	0.0002	0.0014
10.5	222,808,403	93.92%	97.59%	95.05%	0.0013	0.0001
11.5	200,345,025	93.48%	97.28%	94.52%	0.0014	0.0001
12.5	88,643,684	92.34%	96.95%	93.99%	0.0021	0.0003
13.5	80,981,797	91.65%	96.60%	93.44%	0.0025	0.0003
14.5	75,312,256	91.35%	96.24%	92.89%	0.0024	0.0002
15.5	75,725,408	91.17%	95.86%	92.32%	0.0022	0.0001
16.5	74,117,928	91.06%	95.45%	91.75%	0.0019	0.0000
17.5	71,852,873	90.80%	95.03%	91.17%	0.0018	0.0000
18.5	73,972,462	90.71%	94.59%	90.57%	0.0015	0.0000
19.5	75,188,405	90.63%	94.12%	89.97%	0.0012	0.0000
20.5	81,368,764	90.27%	93.63%	89.36%	0.0011	0.0001
21.5	77,824,896	90.14%	93.11%	88.74%	0.0009	0.0002
22.5	77,566,759	90.04%	92.57%	88.11%	0.0006	0.0004
23.5	85,417,595	89.66%	92.01%	87.47%	0.0006	0.0005
24.5	88,462,524	89.19%	91.42%	86.82%	0.0005	0.0006
25.5	89,501,894	88.94%	90.80%	86.16%	0.0003	0.0008
26.5	83,785,214	87.11%	90.15%	85.48%	0.0009	0.0003
27.5	84,035,623	86.81%	89.48%	84.80%	0.0007	0.0004
28.5	78,852,323	86.36%	88.77%	84.10%	0.0006	0.0005
29.5	71,919,219	86.10%	88.03%	83.39%	0.0004	0.0007
30.5	73,386,763	85.42%	87.26%	82.67%	0.0003	0.0008
31.5	71,290,523	82.37%	86.45%	81.93%	0.0017	0.0000
32.5	69,918,818	81.81%	85.61%	81.18%	0.0014	0.0000
33.5	66,071,982	81.66%	84.74%	80.41%	0.0009	0.0002
34.5	68,567,702	81.62%	83.82%	79.63%	0.0005	0.0004
35.5	72,879,559	81.25%	82.87%	78.83%	0.0003	0.0006
36.5	71,703,718	79.89%	81.88%	78.02%	0.0004	0.0003
37.5	69,843,119	78.54%	80.85%	77.19%	0.0005	0.0002
38.5	69,590,715	76.73%	79.78%	76.35%	0.0009	0.0000
39.5	66,121,937	75.48%	78.67%	75.48%	0.0010	0.0000
40.5	59,543,958	75.06%	77.52%	74.61%	0.0006	0.0000
41.5	61,355,052	73.88%	76.32%	73.71%	0.0006	0.0000
42.5	58,898,090	73.74%	75.08%	72.80%	0.0002	0.0001
43.5	52,854,061	72.44%	73.79%	71.87%	0.0002	0.0000
44.5	50,101,938	72.42%	72.46%	70.92%	0.0000	0.0002
45.5	40,687,509	71.59%	71.09%	69.96%	0.0000	0.0003
46.5	40,446,235	71.34%	69.67%	68.98%	0.0003	0.0006

Account 353 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R2-56	[5] OIEC/OER R1-61	[6] OGE SSD	[7] OIEC/OER SSD
47.5	37,439,485	70.62%	68.20%	67.98%	0.0006	0.0007
48.5	36,585,717	70.10%	66.69%	66.96%	0.0012	0.0010
49.5	35,274,086	64.37%	65.13%	65.93%	0.0001	0.0002
50.5	30,623,987	63.63%	63.54%	64.88%	0.0000	0.0002
51.5	26,211,187	62.04%	61.90%	63.81%	0.0000	0.0003
52.5	25,527,922	61.71%	60.21%	62.72%	0.0002	0.0001
53.5	21,776,626	60.81%	58.49%	61.62%	0.0005	0.0001
54.5	21,413,322	60.69%	56.73%	60.51%	0.0016	0.0000
55.5	20,606,005	60.19%	54.93%	59.37%	0.0028	0.0001
56.5	19,608,713	59.21%	53.11%	58.23%	0.0037	0.0001
57.5	17,462,159	54.59%	51.25%	57.07%	0.0011	0.0006
58.5	16,449,975	54.54%	49.36%	55.89%	0.0027	0.0002
59.5	590,636	54.48%	47.46%	54.70%	0.0049	0.0000
60.5	312,370	54.48%	45.53%	53.50%	0.0080	0.0001
61.5	312,370	54.48%	43.59%	52.29%	0.0119	0.0005
62.5	0	54.48%	41.64%	51.06%		
Sum of Squared Differences				[8]	0.0750	0.0189
Up to 1% of Beginning Exposures				[9]	0.0502	0.0183

[1] Age in years using half-year convention

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

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

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

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

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

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

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

Account 355 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R1.5-57	[5] OIEC/OER R0.5-64	[6] OGE SSD	[7] OIEC/OER SSD
0.0	873,876,407	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	827,513,578	99.99%	99.85%	99.70%	0.0000	0.0000
1.5	764,881,555	99.89%	99.53%	99.11%	0.0000	0.0001
2.5	738,153,742	99.75%	99.20%	98.51%	0.0000	0.0002
3.5	466,500,221	99.42%	98.86%	97.90%	0.0000	0.0002
4.5	319,639,050	98.90%	98.51%	97.30%	0.0000	0.0003
5.5	186,767,577	98.46%	98.15%	96.68%	0.0000	0.0003
6.5	158,337,895	97.99%	97.77%	96.07%	0.0000	0.0004
7.5	137,719,408	97.27%	97.39%	95.44%	0.0000	0.0003
8.5	114,015,817	96.91%	96.99%	94.82%	0.0000	0.0004
9.5	95,355,953	96.15%	96.58%	94.19%	0.0000	0.0004
10.5	81,769,874	95.68%	96.15%	93.55%	0.0000	0.0005
11.5	72,297,883	95.11%	95.72%	92.91%	0.0000	0.0005
12.5	65,353,453	94.55%	95.27%	92.27%	0.0001	0.0005
13.5	59,457,911	94.37%	94.80%	91.62%	0.0000	0.0008
14.5	53,818,183	93.96%	94.32%	90.97%	0.0000	0.0009
15.5	28,659,657	93.63%	93.83%	90.31%	0.0000	0.0011
16.5	25,804,836	93.16%	93.32%	89.65%	0.0000	0.0012
17.5	21,531,194	91.37%	92.80%	88.99%	0.0002	0.0006
18.5	14,838,888	91.16%	92.26%	88.32%	0.0001	0.0008
19.5	16,088,822	90.40%	91.71%	87.64%	0.0002	0.0008
20.5	14,178,108	90.40%	91.14%	86.97%	0.0001	0.0012
21.5	14,108,112	90.40%	90.55%	86.28%	0.0000	0.0017
22.5	15,907,692	79.46%	89.94%	85.60%	0.0110	0.0038
23.5	16,083,903	79.20%	89.32%	84.91%	0.0102	0.0033
24.5	19,469,826	79.20%	88.68%	84.21%	0.0090	0.0025
25.5	23,491,780	78.65%	88.01%	83.51%	0.0088	0.0024
26.5	26,696,779	78.24%	87.33%	82.81%	0.0083	0.0021
27.5	26,886,156	78.00%	86.62%	82.10%	0.0074	0.0017
28.5	31,571,374	77.30%	85.90%	81.38%	0.0074	0.0017
29.5	36,740,027	77.03%	85.14%	80.66%	0.0066	0.0013
30.5	39,438,808	76.55%	84.37%	79.93%	0.0061	0.0011
31.5	43,371,094	76.46%	83.57%	79.20%	0.0051	0.0008
32.5	43,857,960	76.31%	82.75%	78.46%	0.0041	0.0005
33.5	43,157,501	76.14%	81.90%	77.72%	0.0033	0.0002
34.5	46,159,669	75.54%	81.03%	76.97%	0.0030	0.0002
35.5	51,954,964	73.28%	80.12%	76.21%	0.0047	0.0009
36.5	52,913,068	73.03%	79.19%	75.44%	0.0038	0.0006
37.5	157,367,324	72.75%	78.23%	74.67%	0.0030	0.0004
38.5	159,627,048	72.26%	77.25%	73.89%	0.0025	0.0003
39.5	159,644,932	72.21%	76.23%	73.10%	0.0016	0.0001
40.5	48,436,401	71.30%	75.18%	72.31%	0.0015	0.0001
41.5	101,149,072	70.65%	74.10%	71.51%	0.0012	0.0001
42.5	100,538,503	70.27%	72.99%	70.70%	0.0007	0.0000
43.5	94,333,127	69.83%	71.85%	69.88%	0.0004	0.0000
44.5	72,991,546	68.38%	70.68%	69.06%	0.0005	0.0000
45.5	68,786,844	68.16%	69.48%	68.22%	0.0002	0.0000
46.5	64,788,932	67.83%	68.24%	67.38%	0.0000	0.0000

Account 355 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE R1.5-57**	**OIEC/OER R0.5-64**	**OGE SSD**	**OIEC/OER SSD**
47.5	63,196,776	67.43%	66.97%	66.54%	0.0000	0.0001
48.5	61,424,935	67.18%	65.68%	65.68%	0.0002	0.0002
49.5	57,533,266	66.84%	64.35%	64.81%	0.0006	0.0004
50.5	55,569,148	66.32%	62.99%	63.94%	0.0011	0.0006
51.5	52,824,321	65.55%	61.60%	63.06%	0.0016	0.0006
52.5	50,303,186	65.19%	60.18%	62.17%	0.0025	0.0009
53.5	48,733,514	64.82%	58.73%	61.28%	0.0037	0.0013
54.5	46,666,719	64.24%	57.25%	60.38%	0.0049	0.0015
55.5	44,012,386	63.90%	55.75%	59.46%	0.0066	0.0020
56.5	36,871,736	63.76%	54.23%	58.55%	0.0091	0.0027
57.5	35,579,624	62.74%	52.68%	57.62%	0.0101	0.0026
58.5	35,261,691	62.57%	51.11%	56.69%	0.0131	0.0035
59.5		62.45%	49.53%	55.75%		
Sum of Squared Differences				[8]	0.1649	0.0532

[1] Age in years using half-year convention

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

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

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

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

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

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

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

Account 362 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R2-60	[5] OIEC/OER R1.5-66	[6] OGE SSD	[7] OIEC/OER SSD
0.0	492,094,712	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	461,017,507	100.00%	99.92%	99.87%	0.0000	0.0000
1.5	446,353,167	99.97%	99.76%	99.59%	0.0000	0.0000
2.5	431,301,517	99.95%	99.58%	99.31%	0.0000	0.0000
3.5	407,282,987	99.78%	99.40%	99.02%	0.0000	0.0001
4.5	384,624,621	99.76%	99.20%	98.73%	0.0000	0.0001
5.5	343,543,259	99.71%	99.00%	98.42%	0.0001	0.0002
6.5	317,287,834	99.58%	98.78%	98.11%	0.0001	0.0002
7.5	303,779,114	99.45%	98.56%	97.78%	0.0001	0.0003
8.5	280,127,123	99.29%	98.32%	97.45%	0.0001	0.0003
9.5	252,857,262	99.21%	98.06%	97.11%	0.0001	0.0004
10.5	229,981,833	98.40%	97.80%	96.76%	0.0000	0.0003
11.5	206,268,728	96.08%	97.52%	96.40%	0.0002	0.0000
12.5	183,166,239	95.73%	97.22%	96.03%	0.0002	0.0000
13.5	166,656,601	95.62%	96.92%	95.65%	0.0002	0.0000
14.5	145,082,702	95.43%	96.59%	95.26%	0.0001	0.0000
15.5	137,399,430	95.33%	96.25%	94.86%	0.0001	0.0000
16.5	128,121,357	94.22%	95.90%	94.44%	0.0003	0.0000
17.5	117,820,541	92.38%	95.52%	94.02%	0.0010	0.0003
18.5	108,506,645	91.49%	95.13%	93.59%	0.0013	0.0004
19.5	104,848,611	91.18%	94.72%	93.15%	0.0013	0.0004
20.5	105,896,251	90.75%	94.29%	92.69%	0.0013	0.0004
21.5	103,872,831	90.06%	93.84%	92.22%	0.0014	0.0005
22.5	105,153,936	89.72%	93.37%	91.75%	0.0013	0.0004
23.5	108,448,746	89.18%	92.88%	91.25%	0.0014	0.0004
24.5	107,113,187	88.86%	92.37%	90.75%	0.0012	0.0004
25.5	104,139,932	88.50%	91.83%	90.23%	0.0011	0.0003
26.5	98,863,302	88.11%	91.28%	89.70%	0.0010	0.0003
27.5	91,812,207	87.52%	90.69%	89.16%	0.0010	0.0003
28.5	81,104,597	87.19%	90.09%	88.60%	0.0008	0.0002
29.5	69,270,804	86.68%	89.45%	88.03%	0.0008	0.0002
30.5	72,237,322	85.98%	88.79%	87.44%	0.0008	0.0002
31.5	73,684,483	85.59%	88.10%	86.83%	0.0006	0.0002
32.5	74,422,644	84.80%	87.39%	86.21%	0.0007	0.0002
33.5	75,018,449	84.51%	86.64%	85.57%	0.0005	0.0001
34.5	73,348,274	84.03%	85.87%	84.92%	0.0003	0.0001
35.5	73,519,227	83.88%	85.06%	84.25%	0.0001	0.0000
36.5	72,366,655	83.19%	84.22%	83.55%	0.0001	0.0000
37.5	70,580,005	82.54%	83.35%	82.85%	0.0001	0.0000
38.5	78,402,854	81.86%	82.45%	82.12%	0.0000	0.0000
39.5	73,002,970	81.10%	81.51%	81.37%	0.0000	0.0000
40.5	71,710,375	80.41%	80.54%	80.60%	0.0000	0.0000
41.5	79,500,843	79.55%	79.53%	79.81%	0.0000	0.0000
42.5	75,876,963	78.96%	78.48%	79.00%	0.0000	0.0000
43.5	69,051,335	78.63%	77.40%	78.17%	0.0002	0.0000
44.5	61,555,023	78.24%	76.28%	77.31%	0.0004	0.0001
45.5	56,198,955	77.65%	75.12%	76.44%	0.0006	0.0001
46.5	48,084,037	77.02%	73.92%	75.54%	0.0010	0.0002

Account 362 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE R2-60**	**OIEC/OER R1.5-66**	**OGE SSD**	**OIEC/OER SSD**
47.5	44,095,291	75.94%	72.69%	74.62%	0.0011	0.0002
48.5	40,008,376	75.34%	71.41%	73.68%	0.0015	0.0003
49.5	30,109,713	72.97%	70.10%	72.71%	0.0008	0.0000
50.5	27,230,283	71.87%	68.74%	71.72%	0.0010	0.0000
51.5	24,425,217	71.01%	67.35%	70.71%	0.0013	0.0000
52.5	22,220,484	70.44%	65.92%	69.67%	0.0020	0.0001
53.5	20,584,995	69.59%	64.45%	68.61%	0.0026	0.0001
54.5	18,683,759	68.91%	62.94%	67.52%	0.0036	0.0002
55.5	18,496,793	68.03%	61.39%	66.42%	0.0044	0.0003
56.5	15,483,983	66.91%	59.81%	65.29%	0.0050	0.0003
57.5	13,664,707	63.19%	58.20%	64.13%	0.0025	0.0001
58.5	11,163,402	62.26%	56.55%	62.95%	0.0033	0.0000
59.5	0	60.22%	54.87%	61.76%		
Sum of Squared Differences				[8]	0.0511	0.0091

[1] Age in years using half-year convention

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

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

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

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

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

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

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

Account 364 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R1-56	[5] OIEC/OER R0.5-66	[6] OGE SSD	[7] OIEC/OER SSD
0.0	472,002,593	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	438,314,837	99.73%	99.77%	99.71%	0.0000	0.0000
1.5	409,123,631	99.26%	99.30%	99.14%	0.0000	0.0000
2.5	372,428,805	98.53%	98.82%	98.55%	0.0000	0.0000
3.5	349,332,308	97.54%	98.33%	97.97%	0.0001	0.0000
4.5	321,072,263	96.89%	97.82%	97.38%	0.0001	0.0000
5.5	291,691,347	96.08%	97.31%	96.79%	0.0002	0.0000
6.5	275,489,725	95.39%	96.78%	96.19%	0.0002	0.0001
7.5	266,285,112	94.79%	96.24%	95.59%	0.0002	0.0001
8.5	251,825,941	94.18%	95.69%	94.98%	0.0002	0.0001
9.5	231,856,473	93.62%	95.13%	94.37%	0.0002	0.0001
10.5	216,919,647	93.15%	94.56%	93.75%	0.0002	0.0000
11.5	209,373,886	92.65%	93.97%	93.14%	0.0002	0.0000
12.5	202,592,441	92.13%	93.38%	92.51%	0.0002	0.0000
13.5	199,528,486	91.56%	92.77%	91.89%	0.0001	0.0000
14.5	196,604,468	91.01%	92.15%	91.26%	0.0001	0.0000
15.5	179,500,805	90.50%	91.53%	90.62%	0.0001	0.0000
16.5	172,549,120	89.89%	90.89%	89.98%	0.0001	0.0000
17.5	170,889,366	89.32%	90.24%	89.34%	0.0001	0.0000
18.5	167,841,020	88.79%	89.58%	88.69%	0.0001	0.0000
19.5	167,600,661	88.19%	88.90%	88.04%	0.0001	0.0000
20.5	155,217,700	87.63%	88.22%	87.39%	0.0000	0.0000
21.5	150,231,557	87.04%	87.52%	86.73%	0.0000	0.0000
22.5	144,230,485	86.47%	86.81%	86.07%	0.0000	0.0000
23.5	136,425,744	85.83%	86.09%	85.40%	0.0000	0.0000
24.5	128,281,070	84.96%	85.36%	84.73%	0.0000	0.0000
25.5	121,432,621	84.22%	84.61%	84.05%	0.0000	0.0000
26.5	113,163,416	83.52%	83.84%	83.37%	0.0000	0.0000
27.5	107,579,556	82.77%	83.06%	82.69%	0.0000	0.0000
28.5	100,796,155	81.63%	82.26%	82.00%	0.0000	0.0000
29.5	94,025,134	80.87%	81.45%	81.31%	0.0000	0.0000
30.5	86,267,964	80.01%	80.62%	80.61%	0.0000	0.0000
31.5	79,055,628	79.37%	79.78%	79.90%	0.0000	0.0000
32.5	71,376,286	78.65%	78.91%	79.19%	0.0000	0.0000
33.5	63,000,715	77.03%	78.03%	78.47%	0.0001	0.0002
34.5	56,180,718	76.24%	77.12%	77.75%	0.0001	0.0002
35.5	49,911,595	75.46%	76.20%	77.02%	0.0001	0.0002
36.5	44,694,749	74.70%	75.26%	76.29%	0.0000	0.0003
37.5	117,184,290	73.90%	74.30%	75.55%	0.0000	0.0003
38.5	266,950,238	73.34%	73.31%	74.80%	0.0000	0.0002
39.5	263,883,440	73.06%	72.31%	74.04%	0.0001	0.0001
40.5	258,482,532	72.66%	71.29%	73.28%	0.0002	0.0000
41.5	184,238,591	72.25%	70.24%	72.52%	0.0004	0.0000
42.5	41,397,586	71.82%	69.18%	71.74%	0.0007	0.0000
43.5	38,032,792	71.19%	68.09%	70.96%	0.0010	0.0000
44.5	34,858,544	70.42%	66.99%	70.17%	0.0012	0.0000
45.5	31,706,726	69.61%	65.86%	69.37%	0.0014	0.0000
46.5	29,340,521	68.95%	64.71%	68.57%	0.0018	0.0000

Account 364 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE R1-56**	**OIEC/OER R0.5-66**	**OGE SSD**	**OIEC/OER SSD**
47.5	27,068,631	68.20%	63.55%	67.75%	0.0022	0.0000
48.5	25,887,916	67.56%	62.36%	66.93%	0.0027	0.0000
49.5	24,110,062	67.01%	61.16%	66.11%	0.0034	0.0001
50.5	22,455,333	66.30%	59.93%	65.27%	0.0041	0.0001
51.5	20,792,352	65.78%	58.69%	64.43%	0.0050	0.0002
52.5	19,114,200	65.25%	57.43%	63.58%	0.0061	0.0003
53.5	17,419,654	64.62%	56.15%	62.73%	0.0072	0.0004
54.5	15,563,046	64.14%	54.86%	61.86%	0.0086	0.0005
55.5	14,310,366	63.63%	53.55%	60.99%	0.0102	0.0007
56.5	13,270,879	63.36%	52.23%	60.11%	0.0124	0.0011
57.5	12,452,002	63.12%	50.90%	59.23%	0.0149	0.0015
58.5	11,918,296	62.91%	49.55%	58.34%	0.0179	0.0021
59.5		62.84%	48.19%	57.44%		
Sum of Squared Differences				[8]	0.1042	0.0092

[1] Age in years using half-year convention

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

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

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

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

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

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

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

Account 365 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R0.5-55	[5] OIEC/OER O1-66	[6] OGE SSD	[7] OIEC/OER SSD
0.0	343,970,830	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	322,748,514	100.00%	99.66%	99.62%	0.0000	0.0000
1.5	289,301,257	99.80%	98.96%	98.86%	0.0001	0.0001
2.5	256,399,747	99.32%	98.26%	98.11%	0.0001	0.0001
3.5	228,255,726	97.86%	97.56%	97.35%	0.0000	0.0000
4.5	210,726,853	97.05%	96.85%	96.59%	0.0000	0.0000
5.5	188,478,372	96.21%	96.13%	95.83%	0.0000	0.0000
6.5	180,476,361	95.10%	95.40%	95.08%	0.0000	0.0000
7.5	178,763,069	94.21%	94.67%	94.32%	0.0000	0.0000
8.5	172,367,009	93.12%	93.94%	93.56%	0.0001	0.0000
9.5	159,084,009	92.33%	93.20%	92.80%	0.0001	0.0000
10.5	154,337,015	90.31%	92.45%	92.05%	0.0005	0.0003
11.5	151,236,338	89.58%	91.70%	91.29%	0.0004	0.0003
12.5	146,931,969	88.87%	90.94%	90.53%	0.0004	0.0003
13.5	144,264,003	88.16%	90.17%	89.77%	0.0004	0.0003
14.5	145,716,926	87.41%	89.40%	89.02%	0.0004	0.0003
15.5	142,346,431	86.78%	88.63%	88.26%	0.0003	0.0002
16.5	142,664,402	85.77%	87.85%	87.50%	0.0004	0.0003
17.5	143,244,388	85.07%	87.06%	86.74%	0.0004	0.0003
18.5	141,544,607	84.46%	86.27%	85.98%	0.0003	0.0002
19.5	143,054,451	83.90%	85.47%	85.23%	0.0002	0.0002
20.5	141,355,146	83.14%	84.66%	84.47%	0.0002	0.0002
21.5	135,760,215	82.55%	83.85%	83.71%	0.0002	0.0001
22.5	128,636,196	82.04%	83.03%	82.95%	0.0001	0.0001
23.5	120,626,733	81.50%	82.21%	82.20%	0.0001	0.0000
24.5	110,623,252	80.84%	81.38%	81.44%	0.0000	0.0000
25.5	103,570,446	80.13%	80.54%	80.68%	0.0000	0.0000
26.5	95,379,450	79.51%	79.69%	79.92%	0.0000	0.0000
27.5	89,506,204	78.62%	78.83%	79.17%	0.0000	0.0000
28.5	84,404,939	78.10%	77.97%	78.41%	0.0000	0.0000
29.5	78,803,562	77.38%	77.10%	77.65%	0.0000	0.0000
30.5	72,614,190	76.65%	76.21%	76.89%	0.0000	0.0000
31.5	67,256,122	75.91%	75.32%	76.14%	0.0000	0.0000
32.5	61,375,564	75.10%	74.42%	75.38%	0.0000	0.0000
33.5	53,997,294	74.54%	73.51%	74.62%	0.0001	0.0000
34.5	48,665,663	73.17%	72.59%	73.86%	0.0000	0.0000
35.5	43,781,776	72.40%	71.66%	73.11%	0.0001	0.0000
36.5	38,907,452	71.74%	70.72%	72.35%	0.0001	0.0000
37.5	57,842,168	71.18%	69.77%	71.59%	0.0002	0.0000
38.5	276,063,351	70.55%	68.81%	70.83%	0.0003	0.0000
39.5	272,436,347	69.78%	67.84%	70.08%	0.0004	0.0000
40.5	270,058,839	69.36%	66.85%	69.32%	0.0006	0.0000
41.5	247,275,920	69.11%	65.86%	68.56%	0.0011	0.0000
42.5	44,898,845	68.71%	64.85%	67.80%	0.0015	0.0001
43.5	42,174,527	68.21%	63.84%	67.05%	0.0019	0.0001
44.5	39,548,886	67.61%	62.81%	66.29%	0.0023	0.0002
45.5	37,076,271	67.12%	61.78%	65.53%	0.0029	0.0003
46.5	34,684,536	66.63%	60.73%	64.77%	0.0035	0.0003

Account 365 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE R0.5-55**	**OIEC/OER O1-66**	**OGE SSD**	**OIEC/OER SSD**
47.5	32,141,262	65.95%	59.67%	64.02%	0.0039	0.0004
48.5	30,487,099	64.91%	58.60%	63.26%	0.0040	0.0003
49.5	28,725,041	64.44%	57.53%	62.50%	0.0048	0.0004
50.5	26,960,374	64.05%	56.44%	61.74%	0.0058	0.0005
51.5	25,407,761	63.58%	55.35%	60.98%	0.0068	0.0007
52.5	23,659,365	63.25%	54.24%	60.23%	0.0081	0.0009
53.5	21,895,524	62.79%	53.13%	59.47%	0.0093	0.0011
54.5	20,306,657	62.26%	52.01%	58.71%	0.0105	0.0013
55.5	19,047,463	61.92%	50.88%	57.95%	0.0122	0.0016
56.5	17,916,802	61.64%	49.75%	57.20%	0.0141	0.0020
57.5	17,189,927	61.39%	48.61%	56.44%	0.0163	0.0025
58.5	16,568,174	61.24%	47.46%	55.68%	0.0190	0.0031
59.5		61.16%	46.31%	54.92%		
Sum of Squared Differences				[8]	0.1347	0.0193

[1] Age in years using half-year convention

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

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

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

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

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

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

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

Account 366 Curve Fitting

[1] Age (Years)	[2] Exposures (Dollars)	[3] Observed Life Table (OLT)	[4] OGE R2.5-60	[5] OIEC/OER R2.5-65	[6] OGE SSD	[7] OIEC/OER SSD
0.0	174,541,928	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	165,132,709	99.98%	99.95%	99.96%	0.0000	0.0000
1.5	160,491,771	99.89%	99.86%	99.87%	0.0000	0.0000
2.5	140,962,879	99.65%	99.75%	99.78%	0.0000	0.0000
3.5	128,456,369	99.46%	99.64%	99.67%	0.0000	0.0000
4.5	118,513,478	99.24%	99.53%	99.57%	0.0000	0.0000
5.5	105,871,074	98.87%	99.40%	99.45%	0.0000	0.0000
6.5	93,274,219	95.65%	99.26%	99.33%	0.0013	0.0014
7.5	89,012,984	95.32%	99.12%	99.20%	0.0014	0.0015
8.5	79,735,203	95.16%	98.96%	99.07%	0.0014	0.0015
9.5	69,634,493	94.99%	98.80%	98.92%	0.0015	0.0015
10.5	62,289,274	94.89%	98.62%	98.77%	0.0014	0.0015
11.5	54,095,087	94.77%	98.43%	98.60%	0.0013	0.0015
12.5	47,217,080	94.68%	98.23%	98.43%	0.0013	0.0014
13.5	42,401,731	94.57%	98.02%	98.24%	0.0012	0.0013
14.5	42,520,529	94.47%	97.79%	98.05%	0.0011	0.0013
15.5	40,971,591	94.34%	97.55%	97.84%	0.0010	0.0012
16.5	43,319,438	94.03%	97.29%	97.62%	0.0011	0.0013
17.5	40,582,900	93.84%	97.02%	97.38%	0.0010	0.0013
18.5	40,342,475	93.73%	96.72%	97.13%	0.0009	0.0012
19.5	41,394,761	93.52%	96.41%	96.87%	0.0008	0.0011
20.5	39,855,939	93.39%	96.08%	96.59%	0.0007	0.0010
21.5	36,500,892	93.31%	95.73%	96.30%	0.0006	0.0009
22.5	35,648,153	92.52%	95.36%	95.99%	0.0008	0.0012
23.5	32,766,788	92.34%	94.97%	95.66%	0.0007	0.0011
24.5	31,168,715	92.19%	94.55%	95.32%	0.0006	0.0010
25.5	29,778,636	92.10%	94.11%	94.95%	0.0004	0.0008
26.5	27,938,889	91.87%	93.64%	94.57%	0.0003	0.0007
27.5	26,633,476	91.76%	93.15%	94.16%	0.0002	0.0006
28.5	25,371,335	90.76%	92.63%	93.74%	0.0003	0.0009
29.5	30,369,420	90.17%	92.08%	93.29%	0.0004	0.0010
30.5	29,679,429	90.03%	91.50%	92.81%	0.0002	0.0008
31.5	27,011,103	89.91%	90.89%	92.32%	0.0001	0.0006
32.5	20,610,189	89.66%	90.25%	91.80%	0.0000	0.0005
33.5	20,017,665	89.49%	89.57%	91.25%	0.0000	0.0003
34.5	71,343,305	89.25%	88.86%	90.67%	0.0000	0.0002
35.5	66,863,035	89.15%	88.11%	90.07%	0.0001	0.0001
36.5	66,227,502	89.00%	87.32%	89.44%	0.0003	0.0000
37.5	65,815,460	88.87%	86.50%	88.77%	0.0006	0.0000
38.5	65,997,996	88.64%	85.63%	88.08%	0.0009	0.0000
39.5	13,981,973	88.56%	84.72%	87.35%	0.0015	0.0001
40.5	13,685,561	88.02%	83.77%	86.59%	0.0018	0.0002
41.5	13,641,643	87.73%	82.77%	85.80%	0.0025	0.0004
42.5	13,232,893	87.46%	81.72%	84.97%	0.0033	0.0006
43.5	11,736,656	87.23%	80.62%	84.10%	0.0044	0.0010
44.5	11,235,648	87.06%	79.48%	83.20%	0.0057	0.0015
45.5	4,713,220	86.88%	78.28%	82.25%	0.0074	0.0021
46.5	1,082,033	86.70%	77.02%	81.26%	0.0094	0.0030

Account 366 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE R2.5-60**	**OIEC/OER R2.5-65**	**OGE SSD**	**OIEC/OER SSD**
47.5	1,072,483	86.27%	75.72%	80.23%	0.0111	0.0036
48.5	1,060,916	85.34%	74.35%	79.16%	0.0121	0.0038
49.5	1,051,945	84.62%	72.92%	78.04%	0.0137	0.0043
50.5	1,044,596	84.03%	71.44%	76.88%	0.0158	0.0051
51.5	1,041,767	83.85%	69.90%	75.66%	0.0195	0.0067
52.5	1,039,132	83.64%	68.29%	74.40%	0.0236	0.0085
53.5	1,023,723	82.55%	66.63%	73.09%	0.0254	0.0089
54.5	1,019,394	82.21%	64.90%	71.73%	0.0300	0.0110
55.5	1,018,249	82.11%	63.11%	70.32%	0.0361	0.0139
56.5	1,015,891	81.92%	61.27%	68.85%	0.0427	0.0171
57.5	1,014,601	81.82%	59.36%	67.34%	0.0504	0.0210
58.5	1,010,296	81.47%	57.41%	65.77%	0.0579	0.0246
59.5	0	81.31%	55.40%	64.15%		
Sum of Squared Differences				[8]	0.3981	0.1682
Up to 1% of Beginning Exposures				[9]	0.0506	0.0366

[1] Age in years using half-year convention

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

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

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

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

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

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

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

Account 373 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE L0.5-27**	**OIEC/OER L2-31**	**OGE SSD**	**OIEC/OER SSD**
0.0	195,315,338	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	187,739,777	99.93%	99.80%	100.00%	0.0000	0.0000
1.5	175,776,933	99.57%	99.15%	99.99%	0.0000	0.0000
2.5	169,125,413	98.69%	98.28%	99.94%	0.0000	0.0002
3.5	161,617,482	98.10%	97.21%	99.84%	0.0001	0.0003
4.5	154,645,009	97.47%	95.98%	99.68%	0.0002	0.0005
5.5	147,127,294	96.94%	94.57%	99.43%	0.0006	0.0006
6.5	141,718,774	96.45%	93.01%	99.10%	0.0012	0.0007
7.5	135,494,691	95.98%	91.29%	98.67%	0.0022	0.0007
8.5	126,131,240	95.65%	89.42%	98.13%	0.0039	0.0006
9.5	114,683,056	95.29%	87.41%	97.48%	0.0062	0.0005
10.5	99,771,821	94.89%	85.27%	96.72%	0.0093	0.0003
11.5	91,264,450	94.49%	83.01%	95.82%	0.0132	0.0002
12.5	83,009,856	94.04%	80.66%	94.74%	0.0179	0.0000
13.5	77,239,168	93.44%	78.23%	93.44%	0.0231	0.0000
14.5	73,985,260	92.80%	75.74%	91.90%	0.0291	0.0001
15.5	67,812,902	91.51%	73.23%	90.08%	0.0334	0.0002
16.5	61,192,205	90.72%	70.70%	87.99%	0.0401	0.0007
17.5	57,016,827	90.20%	68.17%	85.64%	0.0485	0.0021
18.5	49,767,460	89.40%	65.66%	83.05%	0.0564	0.0040
19.5	45,364,102	88.61%	63.16%	80.26%	0.0648	0.0070
20.5	38,895,339	87.78%	60.67%	77.28%	0.0735	0.0110
21.5	34,294,894	86.90%	58.21%	74.17%	0.0823	0.0162
22.5	31,149,534	86.08%	55.78%	70.96%	0.0918	0.0228
23.5	27,302,760	85.41%	53.37%	67.70%	0.1026	0.0314
24.5	25,569,467	84.53%	51.00%	64.41%	0.1124	0.0405
25.5	24,122,044	83.72%	48.66%	61.13%	0.1229	0.0510
26.5	22,231,628	82.76%	46.37%	57.88%	0.1325	0.0619
27.5	21,266,800	82.04%	44.11%	54.70%	0.1439	0.0747
28.5	20,155,755	81.40%	41.90%	51.60%	0.1560	0.0888
29.5	19,467,419	80.68%	39.75%	48.59%	0.1676	0.1030
30.5	17,917,460	79.86%	37.64%	45.69%	0.1783	0.1168
31.5	15,857,731	79.29%	35.59%	42.90%	0.1910	0.1325
32.5	11,953,297	78.66%	33.59%	40.22%	0.2031	0.1477
33.5	22,167,264	77.68%	31.65%	37.67%	0.2119	0.1601
34.5	20,521,247	77.23%	29.77%	35.23%	0.2252	0.1764
35.5	18,851,770	76.73%	27.96%	32.91%	0.2379	0.1920
36.5	40,253,970	76.38%	26.21%	30.70%	0.2517	0.2087
37.5	24,449,506	76.18%	24.52%	28.60%	0.2669	0.2264
38.5	38,842,540	75.50%	22.89%	26.60%	0.2767	0.2391
39.5	16,558,799	75.18%	21.34%	24.70%	0.2899	0.2548
40.5	19,529,592	73.33%	19.85%	22.90%	0.2861	0.2544
41.5	19,092,233	72.34%	18.42%	21.18%	0.2907	0.2617
42.5	18,414,565	71.59%	17.06%	19.55%	0.2973	0.2708
43.5	18,014,874	71.32%	15.77%	18.01%	0.3086	0.2842
44.5	17,536,954	71.03%	14.54%	16.55%	0.3191	0.2968
45.5	16,295,089	70.85%	13.38%	15.16%	0.3302	0.3101
46.5	15,579,999	70.68%	12.29%	13.85%	0.3410	0.3229

Account 373 Curve Fitting

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	**Exposures (Dollars)**	**Observed Life Table (OLT)**	**OGE L0.5-27**	**OIEC/OER L2-31**	**OGE SSD**	**OIEC/OER SSD**
47.5	15,463,972	70.55%	11.25%	12.62%	0.3516	0.3356
48.5	15,412,763	70.42%	10.28%	11.46%	0.3616	0.3476
49.5	15,367,661	70.31%	9.37%	10.37%	0.3713	0.3593
50.5	15,313,967	70.18%	8.52%	9.35%	0.3802	0.3700
51.5	15,271,050	70.12%	7.73%	8.40%	0.3893	0.3810
52.5	15,234,133	70.06%	6.99%	7.51%	0.3978	0.3912
53.5	15,178,454	69.97%	6.30%	6.69%	0.4054	0.4004
54.5	15,108,418	69.90%	5.67%	5.94%	0.4126	0.4091
55.5	15,062,866	69.83%	5.09%	5.24%	0.4192	0.4172
56.5	14,990,883	69.73%	4.55%	4.60%	0.4249	0.4242
57.5	14,955,034	69.69%	4.06%	4.02%	0.4308	0.4312
58.5	14,914,192	69.64%	3.61%	3.49%	0.4360	0.4375
59.5			1.27%	0.88%		
Sum of Squared Differences				[8]	10.8218	9.0799

[1] Age in years using half-year convention

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

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

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

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

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

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

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

OGE
Electric Division
353.00 Station Equipment

Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1955 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$616,945,716.08	$118,423.32	0.00019	100.00
0.5 - 1.5	$569,297,869.48	$159,858.51	0.00028	99.98
1.5 - 2.5	$521,846,421.34	$246,809.98	0.00047	99.95
2.5 - 3.5	$495,261,078.82	$145,263.34	0.00029	99.91
3.5 - 4.5	$406,823,642.10	$133,165.99	0.00033	99.88
4.5 - 5.5	$369,647,872.85	$56,939.63	0.00015	99.84
5.5 - 6.5	$305,897,268.10	$117,606.63	0.00038	99.83
6.5 - 7.5	$263,190,028.97	$516,909.39	0.00196	99.79
7.5 - 8.5	$237,002,746.11	$169,546.52	0.00072	99.59
8.5 - 9.5	$291,647,557.31	$516,232.56	0.00177	99.52
9.5 - 10.5	$247,922,982.55	$14,197,715.52	0.05727	99.35
10.5 - 11.5	$130,565,192.57	$1,042,953.95	0.00799	93.66
11.5 - 12.5	$117,317,472.62	$2,460,501.82	0.02097	92.91
12.5 - 13.5	$94,949,556.35	$655,818.50	0.00691	90.96
13.5 - 14.5	$85,706,880.52	$264,186.82	0.00308	90.33
14.5 - 15.5	$77,120,320.26	$152,907.77	0.00198	90.05
15.5 - 16.5	$77,626,887.80	$87,063.64	0.00112	89.88
16.5 - 17.5	$76,214,756.66	$216,169.62	0.00284	89.77
17.5 - 18.5	$75,454,703.71	$65,772.81	0.00087	89.52
18.5 - 19.5	$74,374,284.45	$65,592.86	0.00088	89.44
19.5 - 20.5	$70,241,711.02	$305,033.52	0.00434	89.36
20.5 - 21.5	$86,155,509.14	$110,453.11	0.00128	88.97
21.5 - 22.5	$86,934,041.25	$90,307.73	0.00104	88.86
22.5 - 23.5	$85,580,373.04	$329,028.77	0.00384	88.77
23.5 - 24.5	$85,283,492.11	$441,428.92	0.00518	88.43
24.5 - 25.5	$92,768,942.58	$254,292.55	0.00274	87.97
25.5 - 26.5	$91,295,421.83	$1,841,217.45	0.02017	87.73
26.5 - 27.5	$88,152,249.51	$289,413.46	0.00328	85.96
27.5 - 28.5	$84,349,555.71	$431,345.81	0.00511	85.68
28.5 - 29.5	$75,895,091.23	$242,038.87	0.00319	85.24
29.5 - 30.5	$69,654,802.72	$561,169.44	0.00806	84.97
30.5 - 31.5	$77,779,677.12	$2,624,824.21	0.03375	84.28
31.5 - 32.5	$72,193,108.34	$486,504.37	0.00674	81.44
32.5 - 33.5	$72,621,438.42	$127,037.55	0.00175	80.89
33.5 - 34.5	$71,510,811.57	$29,316.96	0.00041	80.75
34.5 - 35.5	$73,452,868.13	$311,812.00	0.00425	80.71
35.5 - 36.5	$73,529,386.81	$1,222,297.61	0.01662	80.37

OGE
Electric Division
353.00 Station Equipment

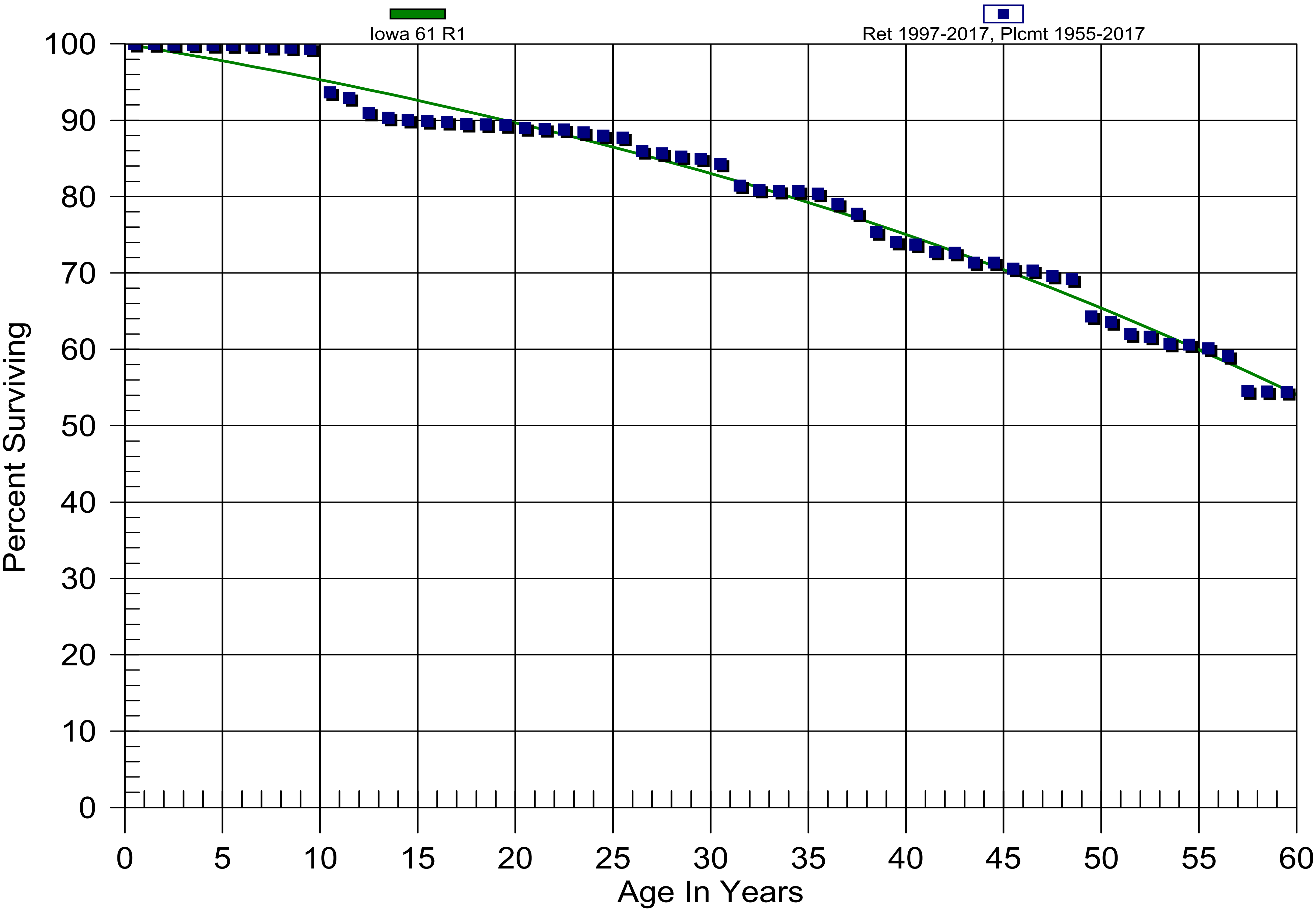
Observed Life Table

Retirement Expr. 1997 TO 2017
Placement Years 1955 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$74,268,019.97	$1,208,085.77	0.01627	79.04
37.5 - 38.5	$52,102,546.14	$1,615,176.86	0.03100	77.75
38.5 - 39.5	$67,042,484.31	$1,131,898.72	0.01688	75.34
39.5 - 40.5	$77,063,104.86	$364,694.39	0.00473	74.07
40.5 - 41.5	$73,218,272.80	$938,965.03	0.01282	73.72
41.5 - 42.5	$62,115,306.20	$118,357.83	0.00191	72.77
42.5 - 43.5	$59,540,018.32	$1,033,160.78	0.01735	72.63
43.5 - 44.5	$53,685,315.08	$14,437.91	0.00027	71.37
44.5 - 45.5	$51,143,357.57	$577,752.81	0.01130	71.35
45.5 - 46.5	$41,842,439.46	$141,195.14	0.00337	70.55
46.5 - 47.5	$41,469,514.32	$409,641.01	0.00988	70.31
47.5 - 48.5	$43,687,495.28	$271,333.74	0.00621	69.62
48.5 - 49.5	$42,345,333.35	$2,992,322.90	0.07066	69.18
49.5 - 50.5	$35,271,842.71	$406,044.72	0.01151	64.29
50.5 - 51.5	$30,621,744.00	$763,881.99	0.02495	63.55
51.5 - 52.5	$26,211,187.19	$140,529.09	0.00536	61.97
52.5 - 53.5	$25,527,921.92	$371,132.07	0.01454	61.64
53.5 - 54.5	$21,825,538.46	$43,732.13	0.00200	60.74
54.5 - 55.5	$21,413,321.77	$175,616.26	0.00820	60.62
55.5 - 56.5	$20,557,092.67	$338,119.51	0.01645	60.12
56.5 - 57.5	$19,608,712.78	$1,527,707.58	0.07791	59.13
57.5 - 58.5	$17,462,158.83	$16,785.58	0.00096	54.53
58.5 - 59.5	$16,449,974.90	$17,062.99	0.00104	54.47
59.5 - 60.5	$590,636.01	$0.00	0.00000	54.42
60.5 - 61.5	$312,369.81	$0.00	0.00000	54.42
61.5 - 62.5	$312,369.81	$0.00	0.00000	54.42

OGE

Electric Division
353.00 Station Equipment
Original And Smooth Survivor Curves



OGE
Electric Division
355.00 Poles and Fixtures

Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$871,974,856.93	$103,558.60	0.00012	100.00
0.5 - 1.5	$832,076,846.78	$771,110.50	0.00093	99.99
1.5 - 2.5	$771,510,590.83	$1,139,129.23	0.00148	99.90
2.5 - 3.5	$747,325,960.63	$2,445,752.96	0.00327	99.75
3.5 - 4.5	$476,672,142.01	$2,423,343.70	0.00508	99.42
4.5 - 5.5	$328,107,267.06	$1,425,857.47	0.00435	98.92
5.5 - 6.5	$195,119,363.12	$881,948.69	0.00452	98.49
6.5 - 7.5	$164,348,257.73	$1,166,034.45	0.00709	98.04
7.5 - 8.5	$143,598,609.99	$507,298.96	0.00353	97.35
8.5 - 9.5	$111,848,333.44	$899,512.20	0.00804	97.00
9.5 - 10.5	$93,231,789.51	$469,515.97	0.00504	96.22
10.5 - 11.5	$83,255,921.83	$480,532.38	0.00577	95.74
11.5 - 12.5	$71,356,723.54	$431,694.95	0.00605	95.18
12.5 - 13.5	$65,960,212.40	$123,017.25	0.00187	94.61
13.5 - 14.5	$59,848,702.67	$254,890.33	0.00426	94.43
14.5 - 15.5	$53,936,031.25	$191,690.53	0.00355	94.03
15.5 - 16.5	$27,585,791.53	$144,065.85	0.00522	93.70
16.5 - 17.5	$26,211,868.54	$495,734.17	0.01891	93.21
17.5 - 18.5	$22,169,220.51	$48,127.32	0.00217	91.44
18.5 - 19.5	$13,774,852.17	$124,757.23	0.00906	91.25
19.5 - 20.5	$15,897,880.15	$0.00	0.00000	90.42
20.5 - 21.5	$13,841,499.03	$0.00	0.00000	90.42
21.5 - 22.5	$11,295,678.91	$1,707,385.48	0.15115	90.42
22.5 - 23.5	$12,082,305.23	$51,202.60	0.00424	76.75
23.5 - 24.5	$16,475,868.67	$0.00	0.00000	76.43
24.5 - 25.5	$21,872,346.93	$134,835.63	0.00616	76.43
25.5 - 26.5	$25,892,604.43	$123,140.79	0.00476	75.96
26.5 - 27.5	$28,445,087.32	$82,739.57	0.00291	75.59
27.5 - 28.5	$31,559,380.40	$241,983.57	0.00767	75.37
28.5 - 29.5	$35,826,409.04	$107,363.01	0.00300	74.80
29.5 - 30.5	$38,807,190.25	$231,421.23	0.00596	74.57
30.5 - 31.5	$41,373,179.49	$47,694.16	0.00115	74.13
31.5 - 32.5	$45,309,308.13	$84,819.40	0.00187	74.04
32.5 - 33.5	$45,917,606.02	$96,402.00	0.00210	73.90
33.5 - 34.5	$43,985,083.77	$339,639.44	0.00772	73.75
34.5 - 35.5	$46,047,967.13	$1,379,488.56	0.02996	73.18
35.5 - 36.5	$51,672,219.12	$175,765.88	0.00340	70.99

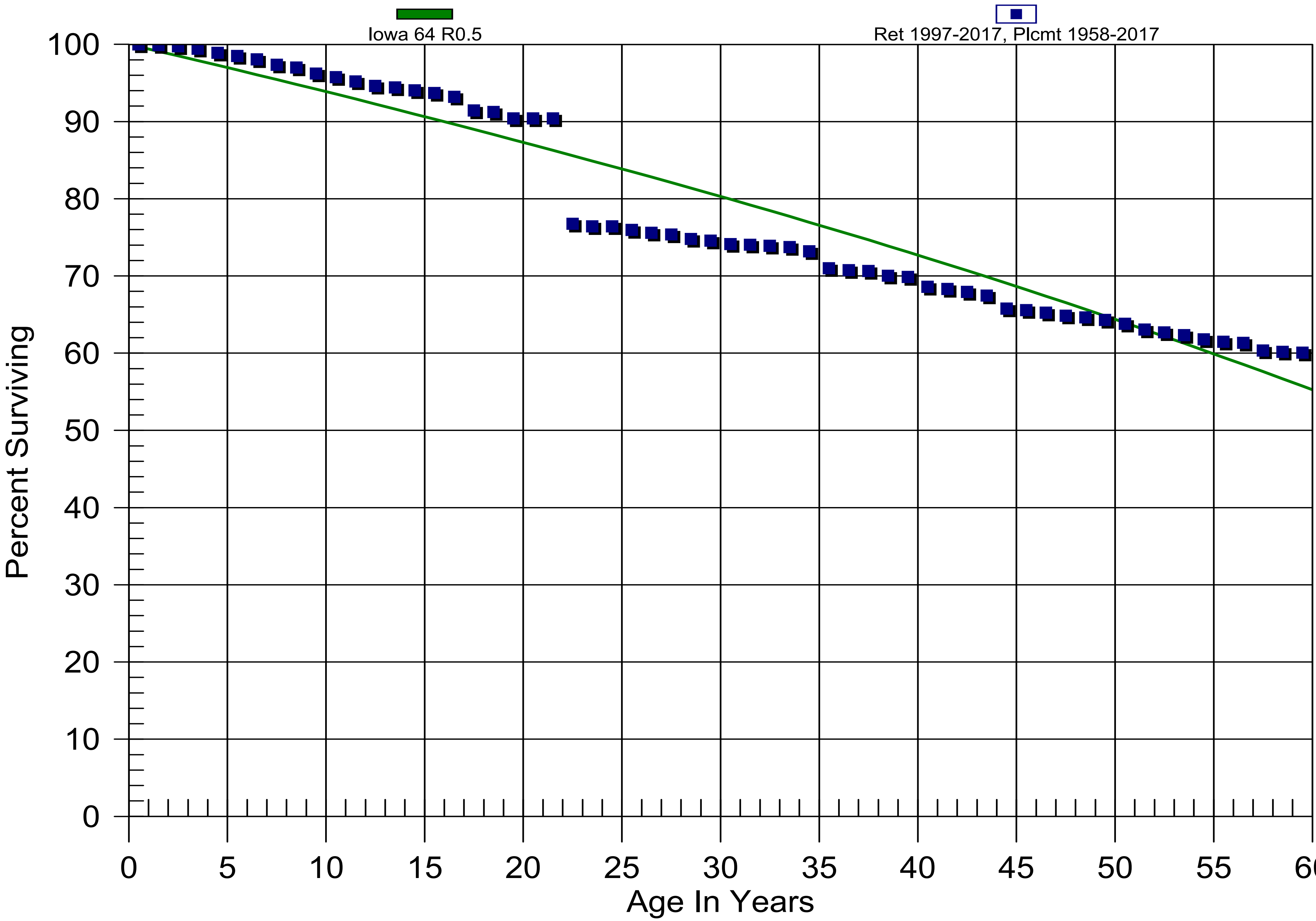
OGE
Electric Division
355.00 Poles and Fixtures

Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$156,448,582.46	$205,405.82	0.00131	70.74
37.5 - 38.5	$119,878,447.39	$1,049,268.41	0.00875	70.65
38.5 - 39.5	$56,958,532.86	$131,127.17	0.00230	70.03
39.5 - 40.5	$109,953,187.26	$2,001,597.19	0.01820	69.87
40.5 - 41.5	$102,601,097.92	$438,897.98	0.00428	68.60
41.5 - 42.5	$101,656,167.97	$555,725.80	0.00547	68.31
42.5 - 43.5	$85,815,220.57	$618,779.39	0.00721	67.93
43.5 - 44.5	$79,334,641.08	$1,968,977.11	0.02482	67.44
44.5 - 45.5	$72,971,498.94	$228,622.46	0.00313	65.77
45.5 - 46.5	$68,766,797.29	$334,892.46	0.00487	65.56
46.5 - 47.5	$64,798,563.44	$379,571.55	0.00586	65.24
47.5 - 48.5	$63,136,304.01	$235,641.13	0.00373	64.86
48.5 - 49.5	$61,354,831.04	$307,697.10	0.00502	64.62
49.5 - 50.5	$57,508,911.41	$451,773.93	0.00786	64.30
50.5 - 51.5	$55,544,793.70	$648,886.77	0.01168	63.79
51.5 - 52.5	$52,835,170.92	$288,523.11	0.00546	63.05
52.5 - 53.5	$50,314,036.04	$284,885.89	0.00566	62.70
53.5 - 54.5	$48,733,514.15	$432,077.96	0.00887	62.35
54.5 - 55.5	$46,706,767.76	$248,597.30	0.00532	61.79
55.5 - 56.5	$44,052,434.21	$94,666.13	0.00215	61.46
56.5 - 57.5	$36,871,736.29	$593,036.55	0.01608	61.33
57.5 - 58.5	$35,579,623.95	$95,244.84	0.00268	60.35
58.5 - 59.5	$35,261,690.85	$66,959.25	0.00190	60.18

OGE

Electric Division
355.00 Poles and Fixtures
Original And Smooth Survivor Curves



OGE

Electric Division

362.00 Station Equipment

Observed Life Table

Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$492,636,602.44	$20,006.50	0.00004	100.00
0.5 - 1.5	$459,482,372.53	$121,786.72	0.00027	100.00
1.5 - 2.5	$443,780,797.60	$86,668.82	0.00020	99.97
2.5 - 3.5	$429,933,205.81	$754,175.56	0.00175	99.95
3.5 - 4.5	$403,480,812.93	$71,658.53	0.00018	99.77
4.5 - 5.5	$383,600,514.27	$188,025.86	0.00049	99.76
5.5 - 6.5	$343,681,343.62	$445,713.70	0.00130	99.71
6.5 - 7.5	$309,525,975.04	$398,346.42	0.00129	99.58
7.5 - 8.5	$302,594,813.67	$504,350.55	0.00167	99.45
8.5 - 9.5	$292,387,558.64	$223,396.88	0.00076	99.28
9.5 - 10.5	$263,369,097.04	$2,078,008.20	0.00789	99.21
10.5 - 11.5	$230,107,269.68	$5,418,436.74	0.02355	98.43
11.5 - 12.5	$202,461,079.61	$754,304.03	0.00373	96.11
12.5 - 13.5	$179,794,927.01	$202,611.53	0.00113	95.75
13.5 - 14.5	$164,230,123.27	$326,723.80	0.00199	95.64
14.5 - 15.5	$142,452,457.70	$161,440.28	0.00113	95.45
15.5 - 16.5	$132,115,879.75	$1,594,876.82	0.01207	95.34
16.5 - 17.5	$123,572,044.94	$2,507,870.24	0.02029	94.19
17.5 - 18.5	$116,579,249.13	$1,131,659.21	0.00971	92.28
18.5 - 19.5	$111,780,674.36	$370,081.83	0.00331	91.39
19.5 - 20.5	$108,338,846.63	$489,034.67	0.00451	91.08
20.5 - 21.5	$107,220,629.85	$808,832.00	0.00754	90.67
21.5 - 22.5	$103,610,815.80	$384,049.46	0.00371	89.99
22.5 - 23.5	$106,818,253.83	$637,344.13	0.00597	89.65
23.5 - 24.5	$110,062,432.60	$394,954.73	0.00359	89.12
24.5 - 25.5	$108,686,859.53	$424,374.19	0.00390	88.80
25.5 - 26.5	$106,739,104.68	$460,545.83	0.00431	88.45
26.5 - 27.5	$100,873,461.88	$669,739.09	0.00664	88.07
27.5 - 28.5	$93,307,879.67	$340,584.76	0.00365	87.49
28.5 - 29.5	$82,832,152.75	$472,161.24	0.00570	87.17
29.5 - 30.5	$71,213,115.93	$562,611.73	0.00790	86.67
30.5 - 31.5	$74,050,314.37	$327,615.28	0.00442	85.99
31.5 - 32.5	$75,998,086.36	$682,400.43	0.00898	85.61
32.5 - 33.5	$75,109,387.92	$251,592.06	0.00335	84.84
33.5 - 34.5	$74,172,805.24	$424,913.06	0.00573	84.55
34.5 - 35.5	$72,349,639.15	$132,261.94	0.00183	84.07
35.5 - 36.5	$73,392,795.84	$603,028.86	0.00822	83.91

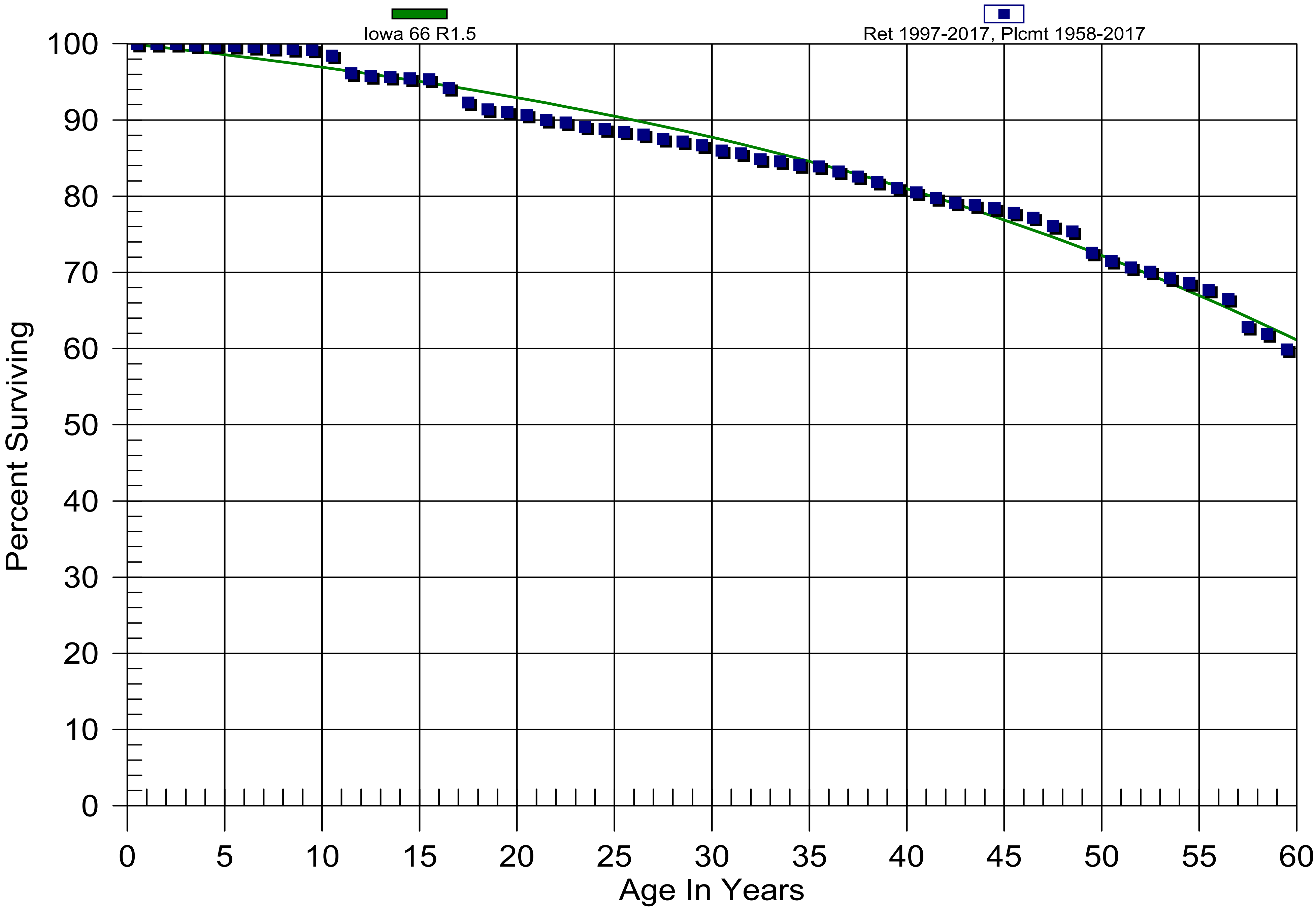
OGE
Electric Division
362.00 Station Equipment

Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$71,785,293.57	$567,481.86	0.00791	83.22
37.5 - 38.5	$67,561,590.12	$581,339.17	0.00860	82.57
38.5 - 39.5	$79,164,183.81	$728,443.69	0.00920	81.86
39.5 - 40.5	$83,340,492.23	$623,742.95	0.00748	81.10
40.5 - 41.5	$81,116,817.19	$761,867.86	0.00939	80.50
41.5 - 42.5	$79,099,683.85	$590,452.70	0.00746	79.74
42.5 - 43.5	$75,547,403.49	$317,402.34	0.00420	79.14
43.5 - 44.5	$68,532,450.42	$343,048.19	0.00501	78.81
44.5 - 45.5	$60,488,357.58	$463,881.64	0.00767	78.42
45.5 - 46.5	$55,018,780.05	$455,306.14	0.00828	77.82
46.5 - 47.5	$47,060,757.80	$676,681.19	0.01438	77.17
47.5 - 48.5	$37,798,368.41	$347,352.43	0.00919	76.06
48.5 - 49.5	$34,199,846.25	$1,259,905.13	0.03684	75.36
49.5 - 50.5	$30,111,955.51	$452,280.30	0.01502	72.59
50.5 - 51.5	$27,232,525.51	$327,124.24	0.01201	71.50
51.5 - 52.5	$24,385,275.67	$194,242.19	0.00797	70.64
52.5 - 53.5	$22,187,295.03	$270,304.67	0.01218	70.08
53.5 - 54.5	$21,650,366.99	$199,976.73	0.00924	69.22
54.5 - 55.5	$18,677,144.23	$237,325.31	0.01271	68.58
55.5 - 56.5	$17,431,559.34	$304,658.73	0.01748	67.71
56.5 - 57.5	$15,483,982.78	$861,010.09	0.05561	66.53
57.5 - 58.5	$13,664,706.88	$202,624.50	0.01483	62.83
58.5 - 59.5	$11,163,402.41	$364,328.18	0.03264	61.90

OGE

Electric Division
362.00 Station Equipment
Original And Smooth Survivor Curves



OGE

Electric Division

364.00 Poles, Towers, and Fixtures

Observed Life Table

Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$462,584,277.82	$1,255,647.63	0.00271	100.00
0.5 - 1.5	$429,555,198.04	$2,096,582.29	0.00488	99.73
1.5 - 2.5	$398,644,992.16	$3,015,181.93	0.00756	99.24
2.5 - 3.5	$371,853,391.58	$3,734,507.63	0.01004	98.49
3.5 - 4.5	$358,926,793.86	$2,311,896.54	0.00644	97.50
4.5 - 5.5	$331,045,445.97	$2,676,261.51	0.00808	96.87
5.5 - 6.5	$305,256,729.18	$2,118,197.28	0.00694	96.09
6.5 - 7.5	$286,319,634.80	$1,732,499.80	0.00605	95.42
7.5 - 8.5	$278,381,289.33	$1,701,657.65	0.00611	94.85
8.5 - 9.5	$261,718,105.67	$1,494,687.57	0.00571	94.27
9.5 - 10.5	$240,656,764.45	$1,169,320.41	0.00486	93.73
10.5 - 11.5	$225,513,857.44	$1,155,633.12	0.00512	93.27
11.5 - 12.5	$219,614,287.03	$1,182,433.47	0.00538	92.80
12.5 - 13.5	$214,075,853.53	$1,262,451.67	0.00590	92.30
13.5 - 14.5	$210,734,598.83	$1,199,080.54	0.00569	91.75
14.5 - 15.5	$209,319,382.54	$1,089,927.12	0.00521	91.23
15.5 - 16.5	$192,534,193.97	$1,214,000.99	0.00631	90.75
16.5 - 17.5	$184,863,629.56	$1,087,163.04	0.00588	90.18
17.5 - 18.5	$182,826,501.72	$1,017,367.94	0.00556	89.65
18.5 - 19.5	$175,902,154.98	$1,130,576.21	0.00643	89.15
19.5 - 20.5	$174,153,530.19	$1,069,200.73	0.00614	88.58
20.5 - 21.5	$160,745,140.29	$1,048,385.14	0.00652	88.04
21.5 - 22.5	$154,611,887.32	$989,418.20	0.00640	87.46
22.5 - 23.5	$147,886,417.24	$1,066,539.69	0.00721	86.90
23.5 - 24.5	$139,520,610.74	$1,373,552.67	0.00984	86.28
24.5 - 25.5	$132,479,011.85	$1,121,525.13	0.00847	85.43
25.5 - 26.5	$125,660,834.81	$1,011,311.79	0.00805	84.70
26.5 - 27.5	$117,728,165.53	$1,018,832.33	0.00865	84.02
27.5 - 28.5	$111,469,403.37	$1,477,118.40	0.01325	83.29
28.5 - 29.5	$103,894,934.55	$940,383.10	0.00905	82.19
29.5 - 30.5	$96,622,992.30	$995,065.48	0.01030	81.45
30.5 - 31.5	$88,230,045.48	$689,335.02	0.00781	80.61
31.5 - 32.5	$80,752,751.98	$715,588.08	0.00886	79.98
32.5 - 33.5	$72,698,741.38	$1,475,787.09	0.02030	79.27
33.5 - 34.5	$65,181,825.44	$646,945.52	0.00993	77.66
34.5 - 35.5	$58,460,218.74	$575,074.42	0.00984	76.89
35.5 - 36.5	$52,743,831.18	$499,669.29	0.00947	76.13

OGE

Electric Division

364.00 Poles, Towers, and Fixtures

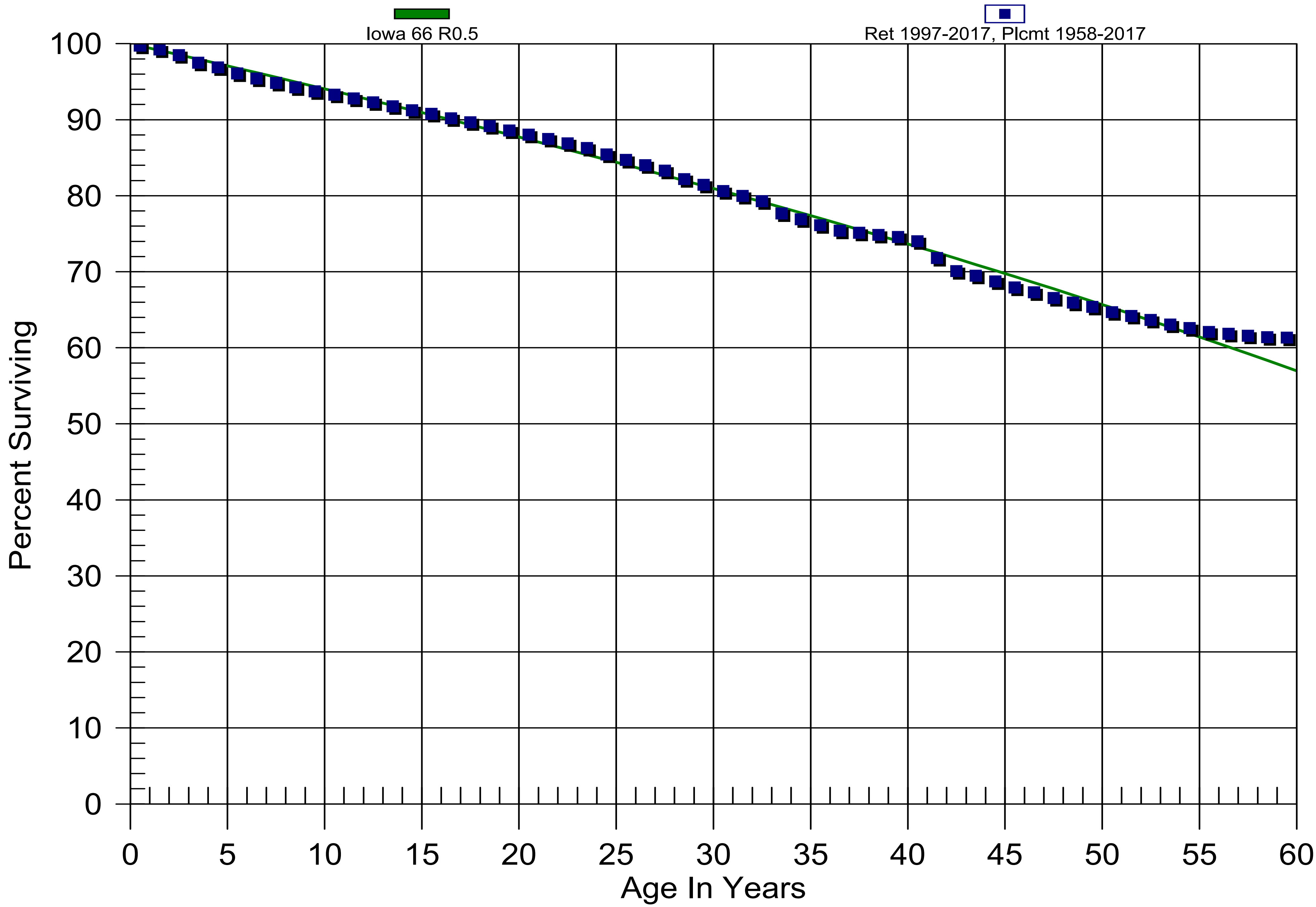
Observed Life Table

Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	*$ Surviving At Beginning of Age Interval*	*$ Retired During The Age Interval*	*Retirement Ratio*	*% Surviving At Beginning of Age Interval*
36.5 - 37.5	$121,600,168.14	$477,377.18	0.00393	75.41
37.5 - 38.5	$257,176,305.62	$885,789.93	0.00344	75.12
38.5 - 39.5	$267,240,293.94	$1,039,368.90	0.00389	74.86
39.5 - 40.5	$192,994,252.74	$1,441,905.61	0.00747	74.57
40.5 - 41.5	$49,357,251.22	$1,467,455.78	0.02973	74.01
41.5 - 42.5	$45,086,264.39	$1,078,906.51	0.02393	71.81
42.5 - 43.5	$41,397,586.49	$367,578.53	0.00888	70.09
43.5 - 44.5	$38,032,792.38	$409,204.09	0.01076	69.47
44.5 - 45.5	$34,858,544.26	$399,157.07	0.01145	68.72
45.5 - 46.5	$31,706,726.31	$304,458.14	0.00960	67.93
46.5 - 47.5	$29,340,520.67	$316,097.19	0.01077	67.28
47.5 - 48.5	$27,068,630.93	$256,014.06	0.00946	66.56
48.5 - 49.5	$25,887,916.04	$210,781.82	0.00814	65.93
49.5 - 50.5	$24,110,061.93	$254,897.05	0.01057	65.39
50.5 - 51.5	$22,455,332.51	$177,377.78	0.00790	64.70
51.5 - 52.5	$20,792,351.95	$166,492.49	0.00801	64.19
52.5 - 53.5	$19,118,380.28	$184,410.42	0.00965	63.67
53.5 - 54.5	$17,423,834.13	$130,536.98	0.00749	63.06
54.5 - 55.5	$15,563,046.40	$122,411.68	0.00787	62.59
55.5 - 56.5	$14,310,365.65	$61,334.00	0.00429	62.09
56.5 - 57.5	$13,270,879.11	$49,706.37	0.00375	61.83
57.5 - 58.5	$12,452,002.12	$41,580.79	0.00334	61.60
58.5 - 59.5	$11,918,296.19	$12,475.76	0.00105	61.39

OGE

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



OGE

Electric Division

365.00 Overhead Conductors and Devices

Observed Life Table

Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$327,497,369.40	$700,115.38	0.00214	100.00
0.5 - 1.5	$304,875,022.83	$1,534,683.41	0.00503	99.79
1.5 - 2.5	$275,853,956.49	$4,267,972.21	0.01547	99.28
2.5 - 3.5	$253,846,070.91	$2,112,885.49	0.00832	97.75
3.5 - 4.5	$239,614,019.94	$1,973,307.42	0.00824	96.93
4.5 - 5.5	$224,144,649.17	$2,439,515.29	0.01088	96.14
5.5 - 6.5	$203,958,351.19	$1,761,551.12	0.00864	95.09
6.5 - 7.5	$193,641,023.43	$2,081,819.54	0.01075	94.27
7.5 - 8.5	$191,571,106.52	$1,512,283.92	0.00789	93.25
8.5 - 9.5	$183,758,439.08	$3,775,804.10	0.02055	92.52
9.5 - 10.5	$169,852,558.46	$1,288,213.19	0.00758	90.62
10.5 - 11.5	$162,472,524.91	$1,224,872.10	0.00754	89.93
11.5 - 12.5	$158,621,380.53	$1,201,416.87	0.00757	89.25
12.5 - 13.5	$155,591,959.44	$1,248,124.20	0.00802	88.58
13.5 - 14.5	$153,140,129.66	$1,054,664.32	0.00689	87.87
14.5 - 15.5	$156,843,764.72	$1,694,781.42	0.01081	87.26
15.5 - 16.5	$154,555,245.78	$1,159,518.75	0.00750	86.32
16.5 - 17.5	$152,867,613.83	$1,021,059.96	0.00668	85.67
17.5 - 18.5	$153,616,883.84	$950,976.03	0.00619	85.10
18.5 - 19.5	$149,893,204.09	$1,272,840.58	0.00849	84.57
19.5 - 20.5	$149,654,430.25	$1,014,896.17	0.00678	83.85
20.5 - 21.5	$147,095,596.62	$885,592.47	0.00602	83.28
21.5 - 22.5	$139,794,013.99	$886,223.46	0.00634	82.78
22.5 - 23.5	$130,635,349.16	$1,044,570.47	0.00800	82.26
23.5 - 24.5	$121,920,964.17	$1,059,877.76	0.00869	81.60
24.5 - 25.5	$113,302,763.56	$847,918.65	0.00748	80.89
25.5 - 26.5	$106,622,491.48	$1,163,633.06	0.01091	80.29
26.5 - 27.5	$99,238,013.68	$634,978.37	0.00640	79.41
27.5 - 28.5	$92,978,255.81	$817,104.41	0.00879	78.90
28.5 - 29.5	$87,314,564.60	$803,103.09	0.00920	78.21
29.5 - 30.5	$81,483,303.65	$761,157.78	0.00934	77.49
30.5 - 31.5	$74,809,191.05	$776,929.30	0.01039	76.76
31.5 - 32.5	$69,211,140.84	$494,389.56	0.00714	75.97
32.5 - 33.5	$63,069,390.71	$1,130,114.41	0.01792	75.42
33.5 - 34.5	$56,105,560.18	$569,326.09	0.01015	74.07
34.5 - 35.5	$50,962,295.02	$446,027.27	0.00875	73.32
35.5 - 36.5	$46,555,551.99	$341,800.08	0.00734	72.68

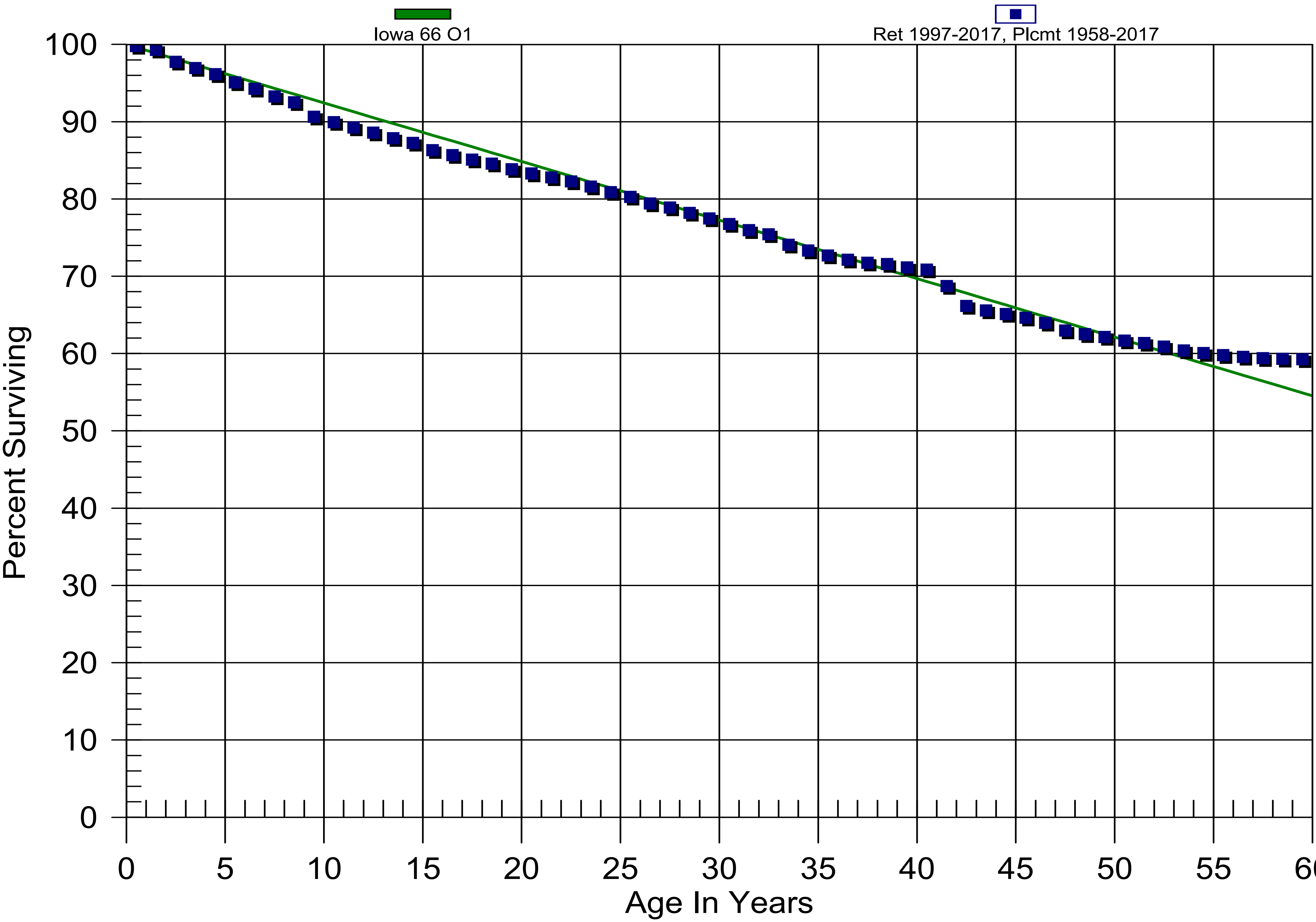
OGE
Electric Division
365.00 Overhead Conductors and Devices

Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$61,630,094.07	$344,769.32	0.00559	72.15
37.5 - 38.5	$259,313,324.92	$627,028.58	0.00242	71.74
38.5 - 39.5	$278,282,153.53	$1,659,728.94	0.00596	71.57
39.5 - 40.5	$253,833,880.78	$985,132.91	0.00388	71.14
40.5 - 41.5	$51,856,103.81	$1,559,240.82	0.03007	70.87
41.5 - 42.5	$48,555,875.75	$1,816,483.57	0.03741	68.74
42.5 - 43.5	$44,898,844.61	$393,153.09	0.00876	66.16
43.5 - 44.5	$42,174,527.03	$306,816.35	0.00727	65.58
44.5 - 45.5	$39,548,885.55	$284,579.00	0.00720	65.11
45.5 - 46.5	$37,076,271.08	$383,554.64	0.01035	64.64
46.5 - 47.5	$34,684,535.68	$544,933.40	0.01571	63.97
47.5 - 48.5	$32,141,262.12	$233,570.96	0.00727	62.97
48.5 - 49.5	$30,487,099.25	$184,482.70	0.00605	62.51
49.5 - 50.5	$28,725,040.61	$208,696.81	0.00727	62.13
50.5 - 51.5	$26,960,374.35	$141,113.84	0.00523	61.68
51.5 - 52.5	$25,407,761.04	$185,560.14	0.00730	61.36
52.5 - 53.5	$23,659,364.62	$198,694.31	0.00840	60.91
53.5 - 54.5	$21,895,524.49	$120,587.03	0.00551	60.40
54.5 - 55.5	$20,306,656.93	$91,904.21	0.00453	60.06
55.5 - 56.5	$19,047,463.30	$75,271.06	0.00395	59.79
56.5 - 57.5	$17,916,802.40	$43,382.78	0.00242	59.56
57.5 - 58.5	$17,189,926.87	$24,996.55	0.00145	59.41
58.5 - 59.5	$16,568,174.44	$20,141.28	0.00122	59.32

OGE

Electric Division
365.00 Overhead Conductors and Devices
Original And Smooth Survivor Curves



OGE
Electric Division
366.00 Underground Conduit
Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

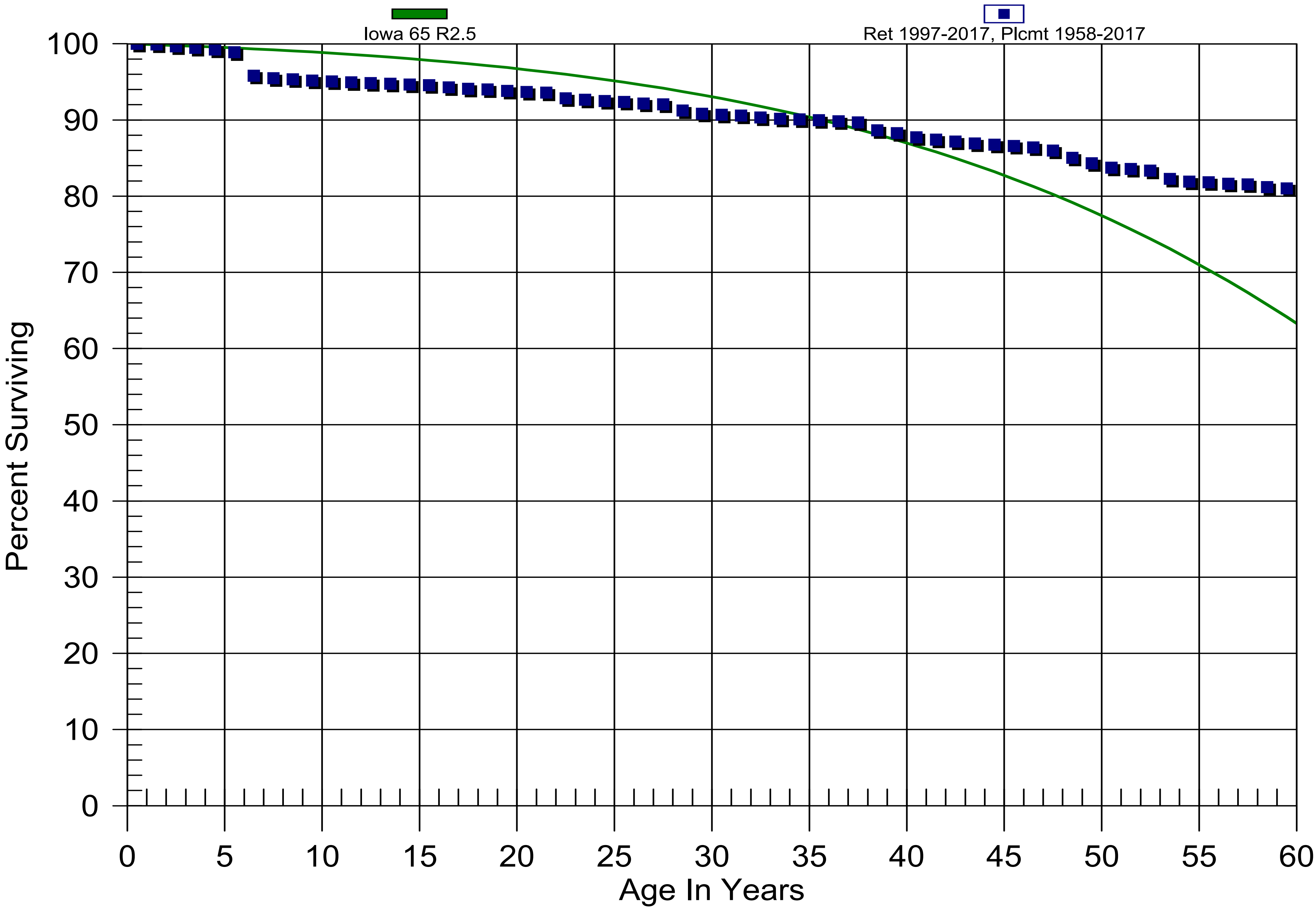
Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$176,807,245.12	$28,931.76	0.00016	100.00
0.5 - 1.5	$168,410,019.22	$157,623.81	0.00094	99.98
1.5 - 2.5	$157,570,374.94	$378,661.78	0.00240	99.89
2.5 - 3.5	$139,457,700.12	$271,104.81	0.00194	99.65
3.5 - 4.5	$130,396,911.20	$287,325.45	0.00220	99.46
4.5 - 5.5	$124,194,028.09	$437,469.07	0.00352	99.24
5.5 - 6.5	$110,717,084.37	$3,450,833.50	0.03117	98.89
6.5 - 7.5	$96,756,216.17	$321,597.38	0.00332	95.81
7.5 - 8.5	$91,261,972.09	$148,405.69	0.00163	95.49
8.5 - 9.5	$78,755,999.92	$141,688.90	0.00180	95.33
9.5 - 10.5	$70,071,437.19	$74,440.27	0.00106	95.16
10.5 - 11.5	$58,737,116.30	$77,420.29	0.00132	95.06
11.5 - 12.5	$56,841,168.85	$53,271.47	0.00094	94.93
12.5 - 13.5	$52,948,465.11	$54,703.50	0.00103	94.84
13.5 - 14.5	$46,077,835.37	$44,319.03	0.00096	94.75
14.5 - 15.5	$51,501,876.74	$59,344.24	0.00115	94.66
15.5 - 16.5	$47,863,452.30	$134,484.46	0.00281	94.55
16.5 - 17.5	$43,175,062.68	$87,388.69	0.00202	94.28
17.5 - 18.5	$44,392,537.88	$45,604.22	0.00103	94.09
18.5 - 19.5	$44,373,376.34	$90,266.55	0.00203	93.99
19.5 - 20.5	$42,430,869.81	$59,097.53	0.00139	93.80
20.5 - 21.5	$41,421,895.34	$35,238.50	0.00085	93.67
21.5 - 22.5	$38,164,784.23	$307,894.71	0.00807	93.59
22.5 - 23.5	$35,630,306.67	$70,359.78	0.00197	92.84
23.5 - 24.5	$26,143,414.47	$51,114.86	0.00196	92.65
24.5 - 25.5	$28,040,585.88	$31,445.45	0.00112	92.47
25.5 - 26.5	$29,850,031.99	$73,160.74	0.00245	92.37
26.5 - 27.5	$28,808,718.47	$34,286.06	0.00119	92.14
27.5 - 28.5	$34,078,476.52	$290,125.97	0.00851	92.03
28.5 - 29.5	$35,029,146.02	$166,631.11	0.00476	91.25
29.5 - 30.5	$34,157,194.42	$44,570.26	0.00130	90.82
30.5 - 31.5	$29,693,651.84	$41,203.16	0.00139	90.70
31.5 - 32.5	$26,995,601.74	$74,213.50	0.00275	90.57
32.5 - 33.5	$20,610,188.95	$40,371.02	0.00196	90.32
33.5 - 34.5	$70,749,914.83	$53,622.56	0.00076	90.14
34.5 - 35.5	$70,439,538.08	$79,770.99	0.00113	90.08
35.5 - 36.5	$66,873,433.37	$113,310.47	0.00169	89.97

OGE
Electric Division
366.00 Underground Conduit
Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$66,319,291.75	$90,884.89	0.00137	89.82
37.5 - 38.5	$14,451,938.52	$169,888.90	0.01176	89.70
38.5 - 39.5	$14,291,888.51	$60,408.80	0.00423	88.64
39.5 - 40.5	$13,908,601.19	$85,977.45	0.00618	88.27
40.5 - 41.5	$13,426,592.51	$45,583.36	0.00340	87.72
41.5 - 42.5	$13,373,836.02	$41,142.15	0.00308	87.43
42.5 - 43.5	$13,225,719.42	$35,327.12	0.00267	87.16
43.5 - 44.5	$11,736,656.47	$22,607.12	0.00193	86.92
44.5 - 45.5	$11,235,647.63	$22,952.26	0.00204	86.76
45.5 - 46.5	$4,713,220.35	$9,996.49	0.00212	86.58
46.5 - 47.5	$1,082,032.97	$5,328.21	0.00492	86.40
47.5 - 48.5	$1,072,483.34	$11,567.39	0.01079	85.97
48.5 - 49.5	$1,060,915.95	$8,970.57	0.00846	85.04
49.5 - 50.5	$1,051,945.38	$7,349.00	0.00699	84.32
50.5 - 51.5	$1,044,596.38	$2,149.75	0.00206	83.74
51.5 - 52.5	$1,041,766.88	$2,635.02	0.00253	83.56
52.5 - 53.5	$1,039,131.86	$13,502.22	0.01299	83.35
53.5 - 54.5	$1,023,722.87	$4,328.44	0.00423	82.27
54.5 - 55.5	$1,019,394.43	$1,145.10	0.00112	81.92
55.5 - 56.5	$1,018,249.33	$2,358.04	0.00232	81.83
56.5 - 57.5	$1,015,891.29	$1,290.15	0.00127	81.64
57.5 - 58.5	$1,014,601.14	$4,305.55	0.00424	81.54
58.5 - 59.5	$1,010,295.59	$2,032.16	0.00201	81.19

OGE

Electric Division
366.00 Underground Conduit
Original And Smooth Survivor Curves



OGE
Electric Division
371.00 Installations on Customer Premises
Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$57,245,711.15	$72,982.44	0.00127	100.00
0.5 - 1.5	$54,678,273.10	$111,248.66	0.00203	99.87
1.5 - 2.5	$49,207,755.66	$391,177.95	0.00795	99.67
2.5 - 3.5	$38,615,249.23	$429,371.78	0.01112	98.88
3.5 - 4.5	$27,272,362.98	$570,308.40	0.02091	97.78
4.5 - 5.5	$14,312,777.17	$83,372.72	0.00583	95.73
5.5 - 6.5	$506,345.52	$92,273.85	0.18223	95.18
6.5 - 7.5	$69,479.81	$34,838.07	0.50141	77.83
7.5 - 8.5	$0.00	$0.00	0.00000	38.81
8.5 - 9.5	$0.00	$0.00	0.00000	38.81
9.5 - 10.5	$0.00	$0.00	0.00000	38.81
10.5 - 11.5	$0.00	$0.00	0.00000	38.81
11.5 - 12.5	$0.00	$0.00	0.00000	38.81
12.5 - 13.5	$0.00	$0.00	0.00000	38.81
13.5 - 14.5	$0.00	$0.00	0.00000	38.81
14.5 - 15.5	$0.00	$0.00	0.00000	38.81
15.5 - 16.5	$0.00	$0.00	0.00000	38.81
16.5 - 17.5	$0.00	$0.00	0.00000	38.81
17.5 - 18.5	$0.00	$0.00	0.00000	38.81
18.5 - 19.5	$0.00	$0.00	0.00000	38.81
19.5 - 20.5	$0.00	$0.00	0.00000	38.81
20.5 - 21.5	$0.00	$0.00	0.00000	38.81
21.5 - 22.5	$0.00	$0.00	0.00000	38.81
22.5 - 23.5	$0.00	$0.00	0.00000	38.81
23.5 - 24.5	$0.00	$0.00	0.00000	38.81
24.5 - 25.5	$0.00	$0.00	0.00000	38.81
25.5 - 26.5	$0.00	$0.00	0.00000	38.81
26.5 - 27.5	$0.00	$0.00	0.00000	38.81
27.5 - 28.5	$0.00	$0.00	0.00000	38.81
28.5 - 29.5	$0.00	$0.00	0.00000	38.81
29.5 - 30.5	$0.00	$0.00	0.00000	38.81
30.5 - 31.5	$0.00	$0.00	0.00000	38.81
31.5 - 32.5	$0.00	$0.00	0.00000	38.81
32.5 - 33.5	$0.00	$0.00	0.00000	38.81
33.5 - 34.5	$0.00	$0.00	0.00000	38.81
34.5 - 35.5	$0.00	$0.00	0.00000	38.81
35.5 - 36.5	$0.00	$0.00	0.00000	38.81

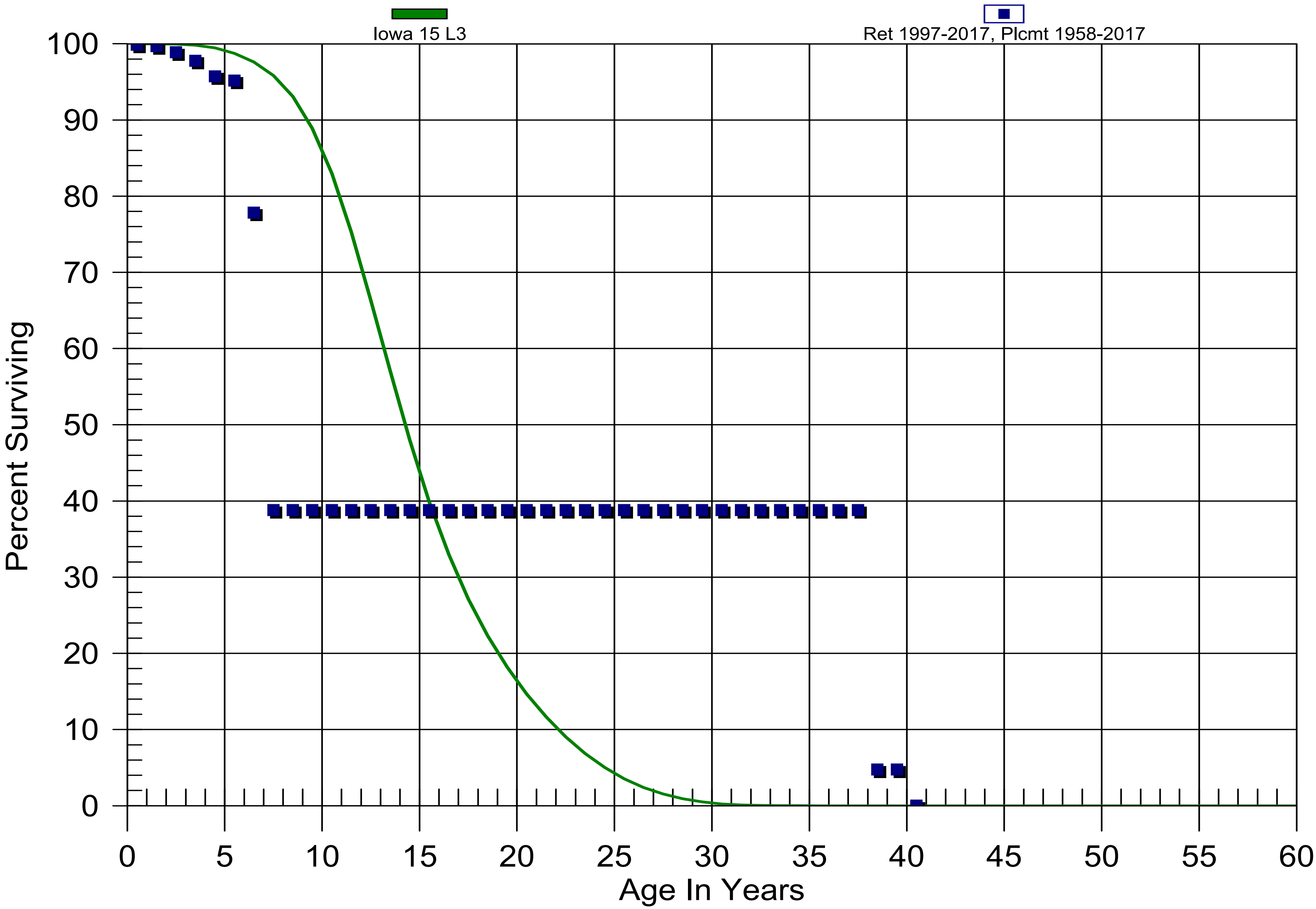
OGE
Electric Division
371.00 Installations on Customer Premises

Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$0.00	$0.00	0.00000	38.81
37.5 - 38.5	$9,611,793.68	$8,436,113.00	0.87768	38.81
38.5 - 39.5	$5,495,262.68	$0.00	0.00000	4.75
39.5 - 40.5	$5,495,262.68	$5,485,640.31	0.99825	4.75

OGE

Electric Division
371.00 Installations on Customer Premises
Original And Smooth Survivor Curves



OGE
Electric Division
373.00 Street Lighting and Signal Systems
Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

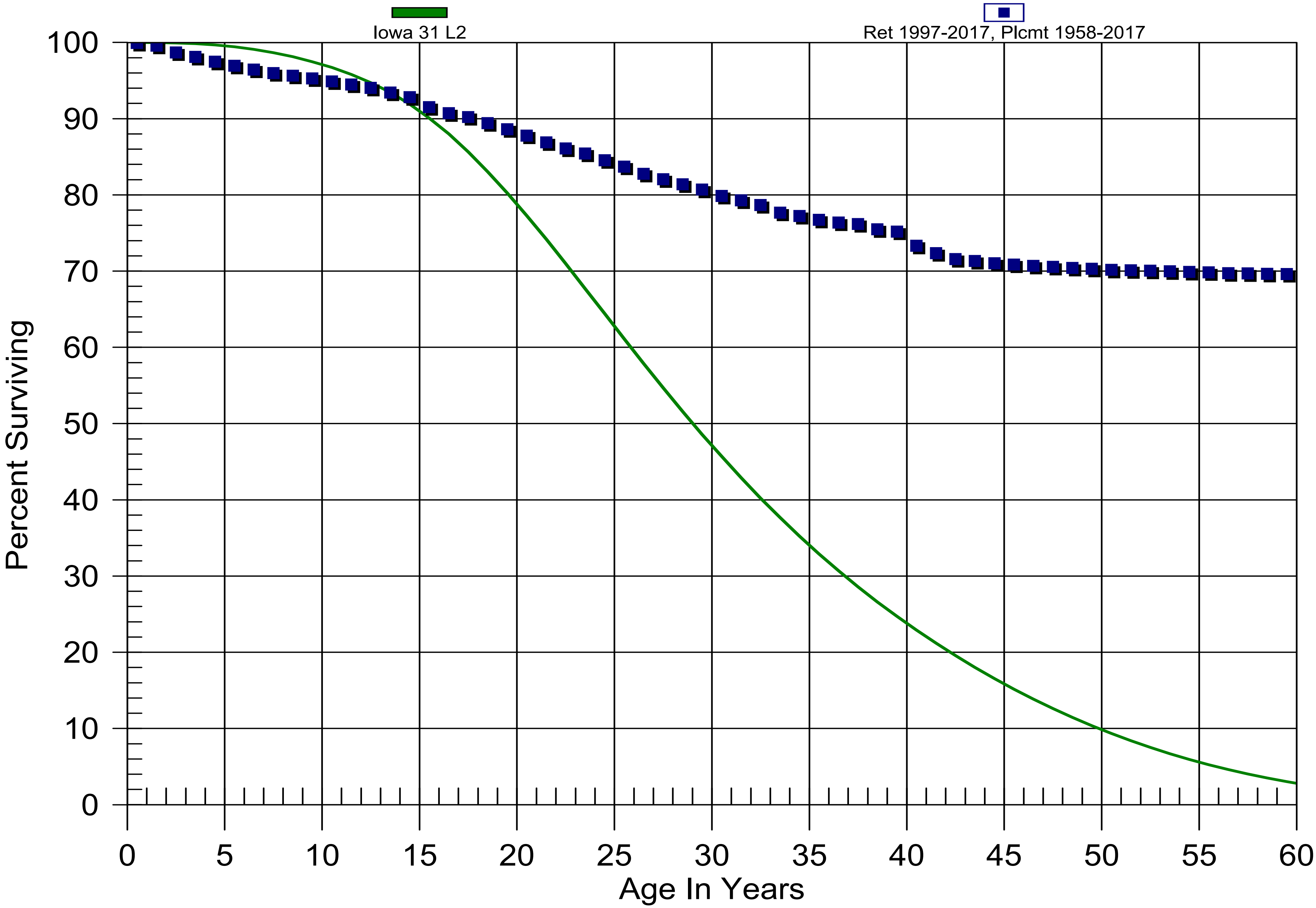
Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
0.0 - 0.5	$195,315,337.71	$136,992.31	0.00070	100.00
0.5 - 1.5	$187,739,776.68	$672,279.52	0.00358	99.93
1.5 - 2.5	$175,776,933.03	$1,556,637.61	0.00886	99.57
2.5 - 3.5	$169,125,412.92	$1,006,249.49	0.00595	98.69
3.5 - 4.5	$161,617,482.23	$1,048,371.66	0.00649	98.10
4.5 - 5.5	$154,645,009.29	$839,481.45	0.00543	97.47
5.5 - 6.5	$147,127,293.88	$737,583.24	0.00501	96.94
6.5 - 7.5	$141,718,773.94	$688,885.45	0.00486	96.45
7.5 - 8.5	$135,494,691.00	$468,089.97	0.00345	95.98
8.5 - 9.5	$126,131,239.82	$474,353.11	0.00376	95.65
9.5 - 10.5	$114,683,056.14	$483,142.40	0.00421	95.29
10.5 - 11.5	$99,771,820.78	$423,946.09	0.00425	94.89
11.5 - 12.5	$91,264,450.44	$433,570.79	0.00475	94.49
12.5 - 13.5	$83,009,855.76	$530,096.61	0.00639	94.04
13.5 - 14.5	$77,239,168.38	$523,396.32	0.00678	93.44
14.5 - 15.5	$73,985,260.19	$1,027,822.17	0.01389	92.80
15.5 - 16.5	$67,812,902.23	$592,351.28	0.00874	91.51
16.5 - 17.5	$61,192,205.08	$345,735.15	0.00565	90.72
17.5 - 18.5	$57,016,827.06	$507,277.62	0.00890	90.20
18.5 - 19.5	$49,767,459.59	$442,767.74	0.00890	89.40
19.5 - 20.5	$45,364,101.98	$424,642.02	0.00936	88.61
20.5 - 21.5	$38,895,339.44	$387,887.89	0.00997	87.78
21.5 - 22.5	$34,294,893.57	$324,716.03	0.00947	86.90
22.5 - 23.5	$31,149,533.82	$241,427.32	0.00775	86.08
23.5 - 24.5	$27,302,759.53	$282,486.54	0.01035	85.41
24.5 - 25.5	$25,569,466.51	$245,327.38	0.00959	84.53
25.5 - 26.5	$24,122,044.32	$275,593.35	0.01142	83.72
26.5 - 27.5	$22,231,628.18	$193,286.33	0.00869	82.76
27.5 - 28.5	$21,266,800.15	$167,082.31	0.00786	82.04
28.5 - 29.5	$20,155,754.52	$176,568.36	0.00876	81.40
29.5 - 30.5	$19,467,418.86	$199,162.75	0.01023	80.68
30.5 - 31.5	$17,917,459.82	$128,081.09	0.00715	79.86
31.5 - 32.5	$15,857,730.79	$124,547.11	0.00785	79.29
32.5 - 33.5	$11,953,296.56	$149,222.39	0.01248	78.66
33.5 - 34.5	$22,167,264.08	$129,750.80	0.00585	77.68
34.5 - 35.5	$20,521,246.72	$131,013.28	0.00638	77.23
35.5 - 36.5	$18,851,769.59	$87,086.30	0.00462	76.73

OGE
Electric Division
373.00 Street Lighting and Signal Systems
Observed Life Table
Retirement Expr. 1997 TO 2017
Placement Years 1958 TO 2017

Age Interval	$ Surviving At Beginning of Age Interval	$ Retired During The Age Interval	Retirement Ratio	% Surviving At Beginning of Age Interval
36.5 - 37.5	$40,253,969.93	$105,769.66	0.00263	76.38
37.5 - 38.5	$24,449,505.68	$218,998.72	0.00896	76.18
38.5 - 39.5	$38,842,539.50	$164,043.63	0.00422	75.50
39.5 - 40.5	$16,558,799.20	$406,592.04	0.02455	75.18
40.5 - 41.5	$19,529,592.04	$262,837.43	0.01346	73.33
41.5 - 42.5	$19,092,233.48	$199,532.32	0.01045	72.34
42.5 - 43.5	$18,414,564.98	$69,282.31	0.00376	71.59
43.5 - 44.5	$18,014,874.27	$72,136.43	0.00400	71.32
44.5 - 45.5	$17,536,953.84	$44,494.00	0.00254	71.03
45.5 - 46.5	$16,295,088.89	$38,931.69	0.00239	70.85
46.5 - 47.5	$15,579,998.57	$30,160.80	0.00194	70.68
47.5 - 48.5	$15,463,971.77	$27,983.34	0.00181	70.55
48.5 - 49.5	$15,412,763.46	$24,387.34	0.00158	70.42
49.5 - 50.5	$15,367,660.93	$27,567.14	0.00179	70.31
50.5 - 51.5	$15,313,967.30	$14,196.70	0.00093	70.18
51.5 - 52.5	$15,271,050.24	$12,378.19	0.00081	70.12
52.5 - 53.5	$15,234,133.26	$18,956.88	0.00124	70.06
53.5 - 54.5	$15,178,453.53	$15,059.30	0.00099	69.97
54.5 - 55.5	$15,108,418.17	$16,187.00	0.00107	69.90
55.5 - 56.5	$15,062,865.99	$21,122.15	0.00140	69.83
56.5 - 57.5	$14,990,883.04	$9,559.36	0.00064	69.73
57.5 - 58.5	$14,955,033.98	$10,421.44	0.00070	69.69
58.5 - 59.5	$14,914,192.19	$5,406.21	0.00036	69.64

OGE

Electric Division
373.00 Street Lighting and Signal Systems
Original And Smooth Survivor Curves



OGE
Electric Division
353.00 Station Equipment

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

Average Service Life: 61 *Survivor Curve:* R1

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1955	312,369.81	61.00	5,120.72	21.68	111,016.88
1957	278,266.20	61.00	4,561.65	22.65	103,305.40
1958	15,842,275.90	61.00	259,704.50	23.14	6,008,869.37
1959	995,398.35	61.00	16,317.70	23.64	385,670.48
1960	618,846.37	61.00	10,144.83	24.14	244,878.81
1961	610,260.38	61.00	10,004.08	24.65	246,560.74
1962	680,612.84	61.00	11,157.38	25.16	280,728.47
1963	319,571.75	61.00	5,238.78	25.68	134,537.16
1964	3,380,164.20	61.00	55,411.47	26.21	1,452,107.07
1965	542,736.18	61.00	8,897.15	26.74	237,890.26
1966	3,646,674.82	61.00	59,780.42	27.28	1,630,520.38
1967	4,244,053.99	61.00	69,573.33	27.82	1,935,344.77
1968	4,078,924.79	61.00	66,866.35	28.37	1,896,758.96
1969	1,070,828.19	61.00	17,554.23	28.92	507,660.21
1970	3,131,994.78	61.00	51,343.20	29.48	1,513,615.10
1971	720,123.21	61.00	11,805.07	30.05	354,700.52
1972	9,258,051.55	61.00	151,768.45	30.62	4,646,643.70
1973	3,147,563.39	61.00	51,598.42	31.19	1,609,576.41
1974	5,242,918.61	61.00	85,947.85	31.78	2,731,171.38
1975	2,866,807.92	61.00	46,995.96	32.36	1,520,978.82
1976	10,708,422.32	61.00	175,544.57	32.96	5,785,598.62
1977	3,695,971.31	61.00	60,588.54	33.56	2,033,165.62
1978	2,588,078.46	61.00	42,426.71	34.16	1,449,298.38
1979	868,591.52	61.00	14,238.93	34.77	495,083.12
1980	4,195,751.14	61.00	68,781.50	35.38	2,433,763.23
1981	1,006,340.06	61.00	16,497.06	36.00	593,934.25
1982	286,880.76	61.00	4,702.87	36.63	172,251.18

OGE

Electric Division

353.00 Station Equipment

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: **61** *Survivor Curve:* **R1**

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1983	320,898.46	61.00	5,260.53	37.25	195,977.48
1984	5,319,464.80	61.00	87,202.68	37.89	3,303,956.44
1985	4,870,824.65	61.00	79,848.07	38.53	3,076,244.20
1986	990,499.93	61.00	16,237.40	39.17	635,973.80
1987	877,080.57	61.00	14,378.10	39.81	572,447.93
1988	9,812,308.21	61.00	160,854.45	40.46	6,508,839.35
1989	8,097,646.95	61.00	132,745.79	41.12	5,458,145.28
1990	5,436,242.81	61.00	89,117.04	41.78	3,722,887.74
1991	4,906,564.63	61.00	80,433.96	42.44	3,413,328.22
1992	4,145,306.56	61.00	67,954.55	43.10	2,928,852.84
1993	2,353,715.90	61.00	38,584.77	43.77	1,688,779.60
1994	2,935,974.28	61.00	48,129.81	44.44	2,138,776.35
1995	6,368,096.20	61.00	104,393.03	45.11	4,709,338.02
1996	7,005,451.66	61.00	114,841.29	45.79	5,258,353.54
1997	581,319.24	61.00	9,529.64	46.47	442,804.68
1998	1,501,771.71	61.00	24,618.74	47.15	1,160,718.45
1999	1,948,826.03	61.00	31,947.36	47.83	1,528,096.15
2000	3,994,724.86	61.00	65,486.05	48.52	3,177,202.18
2001	4,984,319.54	61.00	81,708.60	49.21	4,020,571.79
2002	1,437,817.11	61.00	23,570.32	49.90	1,176,099.87
2003	9,330,845.13	61.00	152,961.77	50.59	7,738,442.55
2004	10,674,120.56	61.00	174,982.26	51.29	8,974,403.29
2005	29,897,066.40	61.00	490,106.52	51.99	25,479,108.59
2006	18,998,991.98	61.00	311,452.96	52.69	16,410,030.79
2007	17,382,466.50	61.00	284,953.05	53.39	15,214,821.05
2008	42,358,610.49	61.00	694,390.25	54.10	37,567,633.13
2009	31,123,827.66	61.00	510,216.98	54.81	27,966,835.28

OGE

Electric Division

353.00 Station Equipment

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

***Average Service Life:* 61** ***Survivor Curve:* R1**

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2010	49,408,156.91	61.00	809,954.39	55.53	44,975,643.52
2011	61,884,473.71	61.00	1,014,480.28	56.25	57,060,442.58
2012	64,143,722.24	61.00	1,051,516.44	56.97	59,902,784.43
2013	41,771,551.35	61.00	684,766.51	57.69	39,506,403.52
2014	91,860,074.05	61.00	1,505,874.22	58.42	87,975,074.26
2015	37,400,625.26	61.00	613,113.35	59.15	36,268,109.71
2016	55,698,775.19	61.00	913,077.31	59.89	54,684,390.19
2017	57,903,686.79	61.00	949,222.72	60.63	57,550,943.39
Total	782,064,327.12	61.00	12,820,482.91	52.49	672,908,089.50

Composite Average Remaining Life ...* 52.49 *Years

OGE

Electric Division

355.00 Poles and Fixtures

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: **64** *Survivor Curve:* **R0.5**

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1958	35,194,731.60	64.00	549,908.33	29.83	16,402,783.81
1959	222,688.26	64.00	3,479.44	30.33	105,518.04
1960	699,075.79	64.00	10,922.87	30.83	336,720.73
1961	7,086,031.79	64.00	110,717.36	31.33	3,469,036.60
1962	2,405,736.25	64.00	37,588.99	31.84	1,196,851.77
1963	1,634,716.74	64.00	25,542.01	32.35	826,362.20
1964	1,295,636.00	64.00	20,243.97	32.87	665,383.43
1965	2,232,611.77	64.00	34,883.97	33.39	1,164,707.25
1966	2,071,585.68	64.00	32,367.98	33.91	1,097,632.49
1967	1,512,343.78	64.00	23,629.97	34.44	813,747.56
1968	3,513,868.12	64.00	54,903.26	34.97	1,919,811.56
1969	1,545,831.84	64.00	24,153.21	35.50	857,437.80
1970	1,212,583.83	64.00	18,946.30	36.04	682,766.48
1971	3,642,973.10	64.00	56,920.49	36.58	2,081,939.50
1972	3,976,079.19	64.00	62,125.18	37.12	2,306,082.37
1973	4,374,117.87	64.00	68,344.43	37.67	2,574,236.31
1974	5,861,800.10	64.00	91,589.07	38.22	3,500,143.64
1975	286,735.78	64.00	4,480.17	38.77	173,689.77
1976	781,235.60	64.00	12,206.60	39.32	480,009.52
1977	5,582,384.06	64.00	87,223.27	39.88	3,478,691.39
1978	807,023.91	64.00	12,609.53	40.44	509,973.29
1979	35,528.51	64.00	555.12	41.01	22,764.50
1980	571,488.71	64.00	8,929.36	41.57	371,230.72
1982	161,716.03	64.00	2,526.77	42.72	107,933.44
1984	3,145,507.95	64.00	49,147.73	43.87	2,155,942.92
1985	1,105,701.33	64.00	17,276.29	44.44	767,842.25
1986	231,036.44	64.00	3,609.88	45.03	162,538.14

OGE
Electric Division
355.00 Poles and Fixtures

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

Average Service Life: 64 **Survivor Curve:** R0.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1987	160,433.11	64.00	2,506.72	45.61	114,326.96
1988	492,179.49	64.00	7,690.17	46.19	355,232.23
1989	773,794.61	64.00	12,090.34	46.78	565,571.12
1990	123,726.68	64.00	1,933.20	47.37	91,570.00
1991	29,460.48	64.00	460.31	47.96	22,075.09
1992	23,442.69	64.00	366.29	48.55	17,782.24
1993	48,700.95	64.00	760.94	49.14	37,392.54
1994	931.00	64.00	14.55	49.73	723.45
1995	86,511.12	64.00	1,351.71	50.33	68,029.32
1996	69,996.23	64.00	1,093.67	50.92	55,693.84
1997	2,651,824.21	64.00	41,434.05	51.52	2,134,720.26
1998	3,124,984.42	64.00	48,827.05	52.12	2,544,813.93
1999	8,103,765.12	64.00	126,619.18	52.72	6,675,063.27
2000	2,807,128.37	64.00	43,860.63	53.32	2,338,545.87
2001	4,901,307.74	64.00	76,581.63	53.92	4,129,145.87
2002	24,963,271.57	64.00	390,044.48	54.52	21,265,344.22
2003	5,568,966.64	64.00	87,013.62	55.12	4,796,441.91
2004	5,818,517.04	64.00	90,912.78	55.73	5,066,312.21
2005	8,312,473.27	64.00	129,880.19	56.33	7,316,392.08
2006	11,823,787.94	64.00	184,743.54	56.94	10,519,017.83
2007	10,855,598.50	64.00	169,615.84	57.55	9,760,725.63
2008	17,964,360.18	64.00	280,688.35	58.15	16,323,288.29
2009	23,664,033.40	64.00	369,744.23	58.76	21,727,864.03
2010	20,195,253.89	64.00	315,545.47	59.38	18,735,635.18
2011	27,431,232.42	64.00	428,605.71	59.99	25,711,231.77
2012	131,452,286.93	64.00	2,053,907.04	60.60	124,469,607.18
2013	147,206,888.21	64.00	2,300,068.50	61.22	140,802,709.25

OGE

Electric Division

355.00 Poles and Fixtures

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 64 **Survivor Curve:** R0.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2014	269,100,194.23	64.00	4,204,619.00	61.83	259,985,141.33
2015	23,255,845.11	64.00	363,366.40	62.45	22,692,497.65
2016	60,045,872.94	64.00	938,200.80	63.07	59,172,326.12
2017	37,548,967.51	64.00	586,692.64	63.69	37,366,562.41
Total	939,796,506.03	64.00	14,684,070.58	58.10	853,093,560.56

Composite Average Remaining Life ... 58.10 Years

OGE
Electric Division
362.00 Station Equipment

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

Average Service Life: 66 **Survivor Curve:** R1.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1958	10,799,074.23	66.00	163,620.66	24.44	3,998,479.05
1959	2,298,679.97	66.00	34,828.13	24.96	869,355.47
1960	958,265.81	66.00	14,519.03	25.50	370,166.08
1961	1,642,917.83	66.00	24,892.44	26.03	648,060.30
1962	1,008,259.58	66.00	15,276.50	26.58	406,108.14
1963	1,708,012.09	66.00	25,878.71	27.14	702,300.62
1964	1,325,242.36	66.00	20,079.22	27.70	556,250.09
1965	2,010,491.45	66.00	30,461.68	28.27	861,210.81
1966	2,480,183.86	66.00	37,578.16	28.85	1,084,182.45
1967	2,427,149.70	66.00	36,774.62	29.44	1,082,464.88
1968	2,830,228.56	66.00	42,881.81	30.03	1,287,700.13
1969	3,251,169.73	66.00	49,259.64	30.63	1,508,776.04
1970	2,777,178.64	66.00	42,078.03	31.23	1,314,303.03
1971	7,014,322.90	66.00	106,276.53	31.85	3,384,778.27
1972	4,470,809.64	66.00	67,738.84	32.47	2,199,358.35
1973	7,055,755.47	66.00	106,904.29	33.10	3,538,057.09
1974	6,276,174.58	66.00	95,092.58	33.73	3,207,293.15
1975	2,864,319.60	66.00	43,398.34	34.37	1,491,535.46
1976	1,023,214.49	66.00	15,503.09	35.01	542,821.31
1977	1,430,823.44	66.00	21,678.92	35.67	773,215.47
1978	4,670,798.62	66.00	70,768.95	36.32	2,570,624.41
1979	2,958,851.38	66.00	44,830.62	36.99	1,658,249.46
1980	2,490,361.62	66.00	37,732.36	37.66	1,420,943.13
1981	1,453,695.38	66.00	22,025.46	38.34	844,348.03
1982	1,038,654.62	66.00	15,737.03	39.02	613,990.00
1983	1,406,184.00	66.00	21,305.60	39.70	845,903.28
1984	2,784,075.15	66.00	42,182.52	40.39	1,703,947.94

OGE
Electric Division
362.00 Station Equipment

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

Average Service Life: 66 **Survivor Curve:** R1.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1985	986,529.10	66.00	14,947.26	41.09	614,226.62
1986	1,740,642.03	66.00	26,373.09	41.79	1,102,250.94
1987	540,929.19	66.00	8,195.81	42.50	348,345.57
1988	13,988,611.78	66.00	211,946.49	43.21	9,159,107.36
1989	14,750,933.62	66.00	223,496.70	43.93	9,818,688.52
1990	10,760,370.48	66.00	163,034.24	44.65	7,279,931.48
1991	9,242,793.04	66.00	140,040.88	45.38	6,355,016.02
1992	10,135,778.20	66.00	153,570.82	46.11	7,081,018.50
1993	5,929,232.29	66.00	89,835.93	46.84	4,208,332.12
1994	4,753,212.26	66.00	72,017.63	47.58	3,426,769.74
1995	4,464,637.99	66.00	67,645.33	48.33	3,269,027.93
1996	5,887,557.46	66.00	89,204.50	49.07	4,377,409.80
1997	1,323,718.38	66.00	20,056.13	49.82	999,256.12
1998	6,300,371.06	66.00	95,459.19	50.58	4,827,958.86
1999	10,298,446.15	66.00	156,035.46	51.33	8,010,069.08
2000	8,651,674.49	66.00	131,084.63	52.10	6,828,908.34
2001	8,060,219.21	66.00	122,123.28	52.86	6,455,617.49
2002	8,230,518.20	66.00	124,703.54	53.63	6,687,916.71
2003	22,180,949.77	66.00	336,071.54	54.40	18,283,130.90
2004	16,875,021.36	66.00	255,679.51	55.18	14,108,084.76
2005	24,998,259.08	66.00	378,757.61	55.96	21,194,482.79
2006	24,394,864.32	66.00	369,615.36	56.74	20,972,490.16
2007	33,429,524.02	66.00	506,502.73	57.53	29,137,900.31
2008	32,340,855.07	66.00	490,007.92	58.32	28,576,415.96
2009	35,183,604.75	66.00	533,079.44	59.11	31,511,171.18
2010	26,629,262.23	66.00	403,469.52	59.91	24,171,596.87
2011	37,016,342.77	66.00	560,847.91	60.71	34,048,907.30

OGE

Electric Division

362.00 Station Equipment

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 66 **Survivor Curve:** R1.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2012	51,030,615.52	66.00	773,183.20	61.51	47,562,007.16
2013	31,157,336.65	66.00	472,076.01	62.32	29,420,669.16
2014	27,217,631.13	66.00	412,384.11	63.13	26,035,356.58
2015	16,568,661.98	66.00	251,037.75	63.95	16,053,378.43
2016	19,412,573.14	66.00	294,126.87	64.77	19,049,691.45
2017	35,304,360.68	66.00	534,909.06	65.59	35,083,694.88
Total	642,240,932.10	66.00	9,730,823.21	54.01	525,543,251.53

Composite Average Remaining Life ... 54.01 Years

OGE
Electric Division
364.00 Poles, Towers, and Fixtures

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

Average Service Life: 66 **Survivor Curve:** R0.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1958	11,905,820.43	66.00	180,388.29	31.69	5,716,227.26
1959	492,125.14	66.00	7,456.32	32.19	240,035.00
1960	769,170.62	66.00	11,653.91	32.70	381,086.77
1961	978,152.54	66.00	14,820.25	33.21	492,195.04
1962	1,130,269.07	66.00	17,125.01	33.73	577,561.38
1963	1,730,250.75	66.00	26,215.49	34.24	897,716.19
1964	1,510,135.73	66.00	22,880.47	34.77	795,459.49
1965	1,511,659.26	66.00	22,903.56	35.29	808,271.08
1966	1,485,602.78	66.00	22,508.77	35.82	806,244.92
1967	1,399,832.37	66.00	21,209.24	36.35	770,959.11
1968	1,567,072.29	66.00	23,743.13	36.89	875,783.85
1969	924,700.83	66.00	14,010.39	37.42	524,327.66
1970	1,955,792.55	66.00	29,632.74	37.97	1,125,016.94
1971	2,061,747.50	66.00	31,238.09	38.51	1,202,982.74
1972	2,752,660.88	66.00	41,706.31	39.06	1,628,942.43
1973	2,765,044.03	66.00	41,893.93	39.61	1,659,350.67
1974	2,997,215.58	66.00	45,411.62	40.16	1,823,806.43
1975	2,609,771.39	66.00	39,541.35	40.72	1,610,062.08
1976	2,803,531.05	66.00	42,477.05	41.28	1,753,342.25
1977	3,042,769.62	66.00	46,101.82	41.84	1,928,888.02
1978	3,233,718.25	66.00	48,994.94	42.40	2,077,583.65
1979	4,178,832.69	66.00	63,314.62	42.97	2,720,732.06
1980	4,572,164.72	66.00	69,274.10	43.54	3,016,261.55
1981	6,451,773.85	66.00	97,752.56	44.11	4,312,200.06
1982	7,464,477.04	66.00	113,096.30	44.69	5,053,984.49
1983	7,930,666.44	66.00	120,159.66	45.26	5,438,954.41
1984	8,561,172.68	66.00	129,712.63	45.84	5,946,379.62

OGE

Electric Division

364.00 Poles, Towers, and Fixtures

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 66 **Survivor Curve:** R0.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1985	8,778,285.97	66.00	133,002.17	46.42	6,174,463.75
1986	8,524,358.91	66.00	129,154.86	47.01	6,071,054.73
1987	9,149,907.35	66.00	138,632.71	47.59	6,597,640.12
1988	8,224,984.21	66.00	124,618.95	48.18	6,003,708.98
1989	8,711,764.78	66.00	131,994.29	48.76	6,436,653.49
1990	7,862,147.39	66.00	119,121.51	49.35	5,879,063.64
1991	10,597,473.26	66.00	160,565.17	49.94	8,019,353.62
1992	9,059,263.06	66.00	137,259.33	50.54	6,936,560.62
1993	10,049,173.97	66.00	152,257.74	51.13	7,784,906.44
1994	10,629,747.18	66.00	161,054.16	51.72	8,330,339.28
1995	9,159,690.18	66.00	138,780.93	52.32	7,260,979.38
1996	8,829,915.58	66.00	133,784.43	52.92	7,079,324.50
1997	16,248,987.16	66.00	246,192.78	53.51	13,174,714.85
1998	6,481,239.34	66.00	98,199.00	54.11	5,313,739.48
1999	10,927,204.21	66.00	165,561.01	54.71	9,058,132.36
2000	9,037,791.92	66.00	136,934.02	55.31	7,574,057.29
2001	15,694,384.45	66.00	237,789.84	55.91	13,295,655.40
2002	26,741,340.18	66.00	405,165.24	56.52	22,898,303.72
2003	11,471,479.94	66.00	173,807.48	57.12	9,927,745.12
2004	12,841,182.59	66.00	194,560.21	57.72	11,230,759.86
2005	15,508,048.68	66.00	234,966.62	58.33	13,705,420.65
2006	16,270,604.05	66.00	246,520.30	58.94	14,528,938.61
2007	22,628,978.12	66.00	342,857.74	59.54	20,415,025.61
2008	30,196,425.01	66.00	457,514.16	60.15	27,520,818.56
2009	22,765,181.00	66.00	344,921.39	60.76	20,958,434.62
2010	18,432,460.62	66.00	279,275.17	61.37	17,140,396.58
2011	25,806,553.70	66.00	391,002.04	61.99	24,237,051.83

OGE
Electric Division
364.00 Poles, Towers, and Fixtures

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

Average Service Life: 66 *Survivor Curve:* R0.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2012	36,900,223.73	66.00	559,085.22	62.60	34,999,400.52
2013	35,604,454.34	66.00	539,452.67	63.22	34,102,128.23
2014	19,389,215.80	66.00	293,771.23	63.83	18,752,277.74
2015	34,211,329.67	66.00	518,345.07	64.45	33,407,592.51
2016	27,306,546.68	66.00	413,728.84	65.07	26,921,303.75
2017	31,751,767.39	66.00	481,079.58	65.69	31,602,183.03
Total	644,578,240.50	66.00	9,766,178.45	56.06	547,522,484.01

Composite Average Remaining Life ... 56.06 Years

OGE

Electric Division

365.00 Overhead Conductors and Devices

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 66 **Survivor Curve:** O1

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1958	16,548,033.16	66.00	250,724.20	36.25	9,089,183.82
1959	596,755.88	66.00	9,041.63	36.75	332,295.24
1960	683,492.75	66.00	10,355.80	37.25	385,771.10
1961	1,055,389.84	66.00	15,990.53	37.75	603,668.97
1962	1,167,289.42	66.00	17,685.95	38.25	676,516.57
1963	1,468,280.53	66.00	22,246.36	38.75	862,082.29
1964	1,565,145.82	66.00	23,713.99	39.25	930,812.04
1965	1,562,836.28	66.00	23,679.00	39.75	941,277.56
1966	1,411,499.47	66.00	21,386.05	40.25	860,821.83
1967	1,555,969.45	66.00	23,574.96	40.75	960,715.81
1968	1,577,575.94	66.00	23,902.32	41.25	986,007.04
1969	1,420,591.91	66.00	21,523.81	41.75	898,651.35
1970	1,998,340.16	66.00	30,277.45	42.25	1,279,266.95
1971	2,008,180.76	66.00	30,426.55	42.75	1,300,779.32
1972	2,188,035.47	66.00	33,151.58	43.25	1,433,853.68
1973	2,318,825.13	66.00	35,133.21	43.75	1,537,128.09
1974	2,331,164.49	66.00	35,320.17	44.25	1,562,967.27
1975	1,840,547.57	66.00	27,886.69	44.75	1,247,968.20
1976	1,740,987.24	66.00	26,378.22	45.25	1,193,650.93
1977	2,272,599.34	66.00	34,432.83	45.75	1,575,349.28
1978	3,305,853.40	66.00	50,087.97	46.25	2,316,636.49
1979	3,775,786.60	66.00	57,208.07	46.75	2,674,553.93
1980	3,429,701.94	66.00	51,964.44	47.25	2,455,388.61
1981	6,365,188.21	66.00	96,440.87	47.75	4,605,178.00
1982	6,245,912.41	66.00	94,633.69	48.25	4,566,198.22
1983	6,475,052.51	66.00	98,105.46	48.75	4,782,767.10
1984	8,056,364.25	66.00	122,064.38	49.25	6,011,826.23

OGE

Electric Division

365.00 Overhead Conductors and Devices

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 66 **Survivor Curve:** O1

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1985	7,419,154.98	66.00	112,409.83	49.75	5,592,530.09
1986	6,610,619.13	66.00	100,159.47	50.25	5,033,137.45
1987	7,791,617.84	66.00	118,053.13	50.75	5,991,341.47
1988	7,152,704.37	66.00	108,372.76	51.25	5,554,235.98
1989	7,441,847.85	66.00	112,753.66	51.75	5,835,137.60
1990	8,034,327.96	66.00	121,730.50	52.25	6,360,563.85
1991	9,646,752.05	66.00	146,160.82	52.75	7,710,155.97
1992	8,619,440.39	66.00	130,595.72	53.25	6,954,376.12
1993	10,922,917.07	66.00	165,496.38	53.75	8,895,623.62
1994	9,788,622.79	66.00	148,310.35	54.25	8,046,008.00
1995	10,067,253.21	66.00	152,531.96	54.75	8,351,299.21
1996	9,034,884.69	66.00	136,890.24	55.25	7,563,340.71
1997	4,930,110.01	66.00	74,697.57	55.75	4,164,473.42
1998	4,144,048.62	66.00	62,787.72	56.25	3,531,879.11
1999	8,024,025.31	66.00	121,574.41	56.75	6,899,481.73
2000	5,652,490.29	66.00	85,642.57	57.25	4,903,130.88
2001	7,725,006.35	66.00	117,043.88	57.75	6,759,410.23
2002	10,511,482.79	66.00	159,262.62	58.25	9,277,217.73
2003	4,905,422.18	66.00	74,323.52	58.75	4,366,585.47
2004	10,017,790.91	66.00	151,782.54	59.25	8,993,275.41
2005	11,189,973.69	66.00	169,542.64	59.75	10,130,349.42
2006	10,827,819.87	66.00	164,055.53	60.25	9,884,515.21
2007	12,756,104.26	66.00	193,271.55	60.75	11,741,444.36
2008	20,267,030.18	66.00	307,071.83	61.25	18,808,463.00
2009	15,089,011.83	66.00	228,618.13	61.75	14,117,401.59
2010	11,612,936.76	66.00	175,951.08	62.25	10,953,131.79
2011	19,104,089.00	66.00	289,451.76	62.75	18,163,386.29

OGE

Electric Division

365.00 Overhead Conductors and Devices

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 66 **Survivor Curve:** O1

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2012	31,190,746.20	66.00	472,580.32	63.25	29,891,172.43
2013	25,802,861.46	66.00	390,946.86	63.75	24,923,246.43
2014	25,713,008.95	66.00	389,585.48	64.25	25,031,246.91
2015	28,891,402.43	66.00	437,742.27	64.75	28,344,235.59
2016	25,686,406.66	66.00	389,182.42	65.25	25,394,526.90
2017	21,045,608.96	66.00	318,868.31	65.75	20,965,895.47
Total	502,582,918.97	66.00	7,614,783.99	57.15	435,203,535.34

Composite Average Remaining Life ... 57.15 Years

OGE
Electric Division
366.00 Underground Conduit

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

Average Service Life: 65 *Survivor Curve:* R2.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1958	1,008,263.43	65.00	15,511.72	18.26	283,193.44
1964	1,906.77	65.00	29.33	21.67	635.71
1966	679.75	65.00	10.46	22.90	239.49
1970	4,221.42	65.00	64.94	25.49	1,655.14
1971	3,621,190.89	65.00	55,710.56	26.15	1,457,049.42
1972	6,499,475.02	65.00	99,991.79	26.84	2,683,384.62
1973	478,401.72	65.00	7,360.02	27.53	202,591.29
1974	1,453,735.83	65.00	22,365.14	28.22	631,212.61
1975	106,974.45	65.00	1,645.76	28.93	47,612.83
1977	135,397.01	65.00	2,083.03	30.37	63,259.81
1978	324,544.25	65.00	4,992.98	31.10	155,278.95
1979	986,876.46	65.00	15,182.69	31.84	483,418.73
1980	424,823.18	65.00	6,535.73	32.59	212,973.29
1981	517,276.22	65.00	7,958.09	33.34	265,340.41
1982	3,501,678.87	65.00	53,871.91	34.10	1,837,201.71
1983	468,532.69	65.00	7,208.19	34.87	251,381.30
1984	552,153.08	65.00	8,494.65	35.65	302,832.92
1985	6,328,623.54	65.00	97,363.31	36.44	3,547,492.49
1986	2,645,041.87	65.00	40,692.90	37.23	1,514,890.08
1987	4,473,610.15	65.00	68,824.68	38.02	2,617,044.54
1988	1,622,060.09	65.00	24,954.74	38.83	969,001.19
1989	1,630,368.76	65.00	25,082.56	39.64	994,299.12
1990	1,486,570.58	65.00	22,870.29	40.46	925,329.46
1991	1,640,638.04	65.00	25,240.55	41.28	1,042,016.26
1992	2,154,088.08	65.00	33,139.77	42.12	1,395,683.69
1993	1,702,536.14	65.00	26,192.83	42.95	1,125,006.27
1994	3,153,757.71	65.00	48,519.28	43.79	2,124,894.78

OGE
Electric Division
366.00 Underground Conduit

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

Average Service Life: 65 *Survivor Curve:* R2.5

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1995	3,399,952.36	65.00	52,306.89	44.64	2,335,112.43
1996	3,815,502.64	65.00	58,699.96	45.50	2,670,743.30
1997	2,020,351.47	65.00	31,082.29	46.36	1,440,889.11
1998	2,503,555.49	65.00	38,516.19	47.22	1,818,891.65
1999	707,596.94	65.00	10,886.09	48.10	523,572.49
2000	3,242,940.31	65.00	49,891.32	48.97	2,443,244.45
2001	4,226,503.13	65.00	65,023.04	49.85	3,241,603.59
2002	4,215,073.86	65.00	64,847.20	50.74	3,290,273.20
2003	4,402,268.55	65.00	67,727.12	51.63	3,496,782.09
2004	6,408,109.85	65.00	98,586.17	52.53	5,178,288.69
2005	8,486,047.19	65.00	130,554.40	53.43	6,975,037.86
2006	9,635,826.07	65.00	148,243.28	54.33	8,054,079.58
2007	8,937,944.12	65.00	137,506.65	55.24	7,595,802.79
2008	11,901,945.26	65.00	183,106.61	56.15	10,281,728.84
2009	11,107,974.73	65.00	170,891.69	57.07	9,752,617.58
2010	7,126,619.13	65.00	109,640.15	57.99	6,357,894.42
2011	12,347,807.39	65.00	189,966.02	58.91	11,191,579.30
2012	16,375,309.26	65.00	251,927.50	59.84	15,075,709.57
2013	9,652,383.86	65.00	148,498.02	60.77	9,024,547.39
2014	11,858,001.40	65.00	182,430.55	61.71	11,257,188.46
2015	19,197,403.59	65.00	295,344.28	62.64	18,501,465.46
2016	10,618,895.70	65.00	163,367.41	63.58	10,387,617.53
2017	8,784,287.90	65.00	135,142.71	64.53	8,720,385.20
Total	227,895,726.20	65.00	3,506,083.44	52.69	184,749,974.50

Composite Average Remaining Life ... 52.69 Years

OGE

Electric Division

371.00 Installations on Customer Premises

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 15 **Survivor Curve:** L3

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2010	34,641.74	15.00	2,309.49	7.89	18,230.85
2011	344,591.86	15.00	22,973.15	8.74	200,833.68
2012	13,723,058.93	15.00	914,884.96	9.63	8,814,621.94
2013	12,389,277.41	15.00	825,964.80	10.56	8,724,505.18
2014	11,382,963.52	15.00	758,876.15	11.52	8,743,112.56
2015	10,178,447.07	15.00	678,573.79	12.50	8,484,417.93
2016	5,359,268.78	15.00	357,290.20	13.50	4,823,349.59
2017	2,346,719.50	15.00	156,450.42	14.50	2,268,494.29
Total	55,758,968.81	15.00	3,717,322.96	11.32	42,077,566.01

Composite Average Remaining Life ... 11.32 Years

OGE
Electric Division
373.00 Street Lighting and Signal Systems

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

Average Service Life: 31 *Survivor Curve:* L2

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1958	14,908,785.98	31.00	480,928.48	5.32	2,560,158.63
1959	30,420.35	31.00	981.30	5.53	5,427.98
1960	26,289.70	31.00	848.05	5.74	4,866.69
1961	50,860.80	31.00	1,640.67	5.95	9,764.26
1962	29,365.18	31.00	947.26	6.17	5,841.92
1963	54,976.06	31.00	1,773.42	6.39	11,325.09
1964	36,722.85	31.00	1,184.61	6.61	7,827.87
1965	24,538.79	31.00	791.57	6.83	5,406.25
1966	28,720.36	31.00	926.46	7.06	6,538.62
1967	26,126.49	31.00	842.79	7.29	6,142.98
1968	20,715.19	31.00	668.23	7.52	5,027.41
1969	23,224.97	31.00	749.19	7.76	5,812.92
1970	85,866.00	31.00	2,769.87	8.00	22,157.05
1971	676,158.63	31.00	21,811.56	8.24	179,786.96
1972	1,197,370.95	31.00	38,624.86	8.49	327,882.17
1973	405,784.00	31.00	13,089.80	8.74	114,370.98
1974	330,408.40	31.00	10,658.33	8.99	95,769.20
1975	478,136.18	31.00	15,423.74	9.24	142,465.48
1976	174,303.09	31.00	5,622.68	9.49	53,354.07
1977	441,914.31	31.00	14,255.30	9.74	138,871.34
1978	507,788.23	31.00	16,380.26	9.99	163,673.41
1979	927,975.73	31.00	29,934.69	10.24	306,623.37
1980	567,250.55	31.00	18,298.40	10.49	192,000.15
1981	707,869.50	31.00	22,834.50	10.74	245,257.31
1982	1,670,287.00	31.00	53,880.21	10.99	591,959.41
1983	1,583,650.41	31.00	51,085.49	11.23	573,591.66
1984	1,282,914.53	31.00	41,384.33	11.47	474,661.81

OGE
Electric Division
373.00 Street Lighting and Signal Systems

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

Average Service Life: 31 **Survivor Curve:** L2

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
1985	3,841,424.26	31.00	123,916.89	11.71	1,451,044.85
1986	1,972,959.68	31.00	63,643.85	11.95	760,514.82
1987	1,433,791.91	31.00	46,251.34	12.19	563,719.13
1988	565,610.79	31.00	18,245.51	12.43	226,797.85
1989	1,707,554.60	31.00	55,082.40	12.68	698,261.06
1990	1,956,481.05	31.00	63,112.28	12.93	816,000.80
1991	2,056,079.27	31.00	66,325.12	13.19	874,845.30
1992	2,284,041.76	31.00	73,678.75	13.46	991,991.87
1993	2,446,588.59	31.00	78,922.20	13.75	1,085,371.68
1994	3,375,512.85	31.00	108,887.49	14.06	1,530,927.46
1995	3,071,746.43	31.00	99,088.57	14.39	1,425,810.82
1996	4,936,237.87	31.00	159,233.45	14.75	2,348,041.15
1997	6,510,810.36	31.00	210,026.10	15.13	3,178,177.47
1998	5,108,232.26	31.00	164,781.65	15.55	2,562,817.46
1999	7,633,286.97	31.00	246,235.01	16.01	3,942,529.74
2000	5,976,285.85	31.00	192,783.37	16.51	3,183,528.39
2001	6,792,046.95	31.00	219,098.24	17.06	3,737,629.67
2002	7,178,067.19	31.00	231,550.51	17.65	4,087,256.17
2003	7,514,422.01	31.00	242,400.66	18.29	4,434,026.27
2004	7,961,793.36	31.00	256,831.99	18.98	4,874,654.81
2005	10,229,611.99	31.00	329,987.42	19.72	6,505,853.60
2006	11,958,086.97	31.00	385,744.66	20.49	7,903,136.11
2007	13,570,872.93	31.00	437,770.00	21.29	9,321,322.89
2008	12,744,820.43	31.00	411,123.16	22.12	9,094,893.69
2009	10,769,275.07	31.00	347,395.90	22.97	7,980,895.64
2010	8,811,495.27	31.00	284,241.72	23.85	6,777,776.37
2011	7,640,230.19	31.00	246,458.99	24.74	6,096,963.22

OGE

Electric Division

373.00 Street Lighting and Signal Systems

Original Cost Of Utility Plant In Service

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

Based Upon Broad Group/Remaining Life Procedure and Technique

Average Service Life: 31 **Survivor Curve:** L2

Year (1)	Original Cost (2)	Avg. Service Life (3)	Avg. Annual Accrual (4)	Avg. Remaining Life (5)	Future Annual Accruals (6)
2012	9,507,694.98	31.00	306,699.77	25.65	7,867,721.94
2013	10,078,992.38	31.00	325,128.72	26.59	8,644,623.76
2014	9,985,890.16	31.00	322,125.42	27.54	8,872,837.98
2015	11,214,327.10	31.00	361,752.41	28.52	10,316,181.30
2016	11,328,137.85	31.00	365,423.73	29.50	10,781,404.99
2017	9,509,144.89	31.00	306,746.55	30.50	9,355,779.40
Total	247,969,978.45	31.00	7,999,029.92	19.82	158,549,902.64

Composite Average Remaining Life ... 19.82 Years

CERTIFICATE OF MAILING

This is to certify that on this 22nd day of April, 2019, a true and correct copy of the above and foregoing was emailed, addressed to:

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