



2022 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION ACCRUAL RATES
APPLICABLE TO GAS PLANT IN SERVICE
as of December 31, 2021

Prepared for Montana-Dakota Utilities Co.
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SECTION 1

1 STUDY HIGHLIGHTS

Pursuant to Montana-Dakota Utilities Co.'s ("MDU" or the "Company") request, Concentric Advisors, ULC ("Concentric") conducted a depreciation study related to the natural gas distribution and general plant accounts, as of December 31, 2021. The purpose of the study is to determine the annual depreciation accrual rates and amounts applicable to the original cost of utility plant, as of December 31, 2021.

The depreciation rates are based on the broad group Straight-Line method using the Average Life Group ("ALG") procedure and were applied on a Remaining Life basis. The calculations were based on attained ages and estimated average service life and forecasted net salvage characteristics for each depreciable group of assets. Variances between the calculated accrued depreciation and the book accumulated depreciation, as at December 31, 2021, are amortized over the composite remaining life of assets.

MDU's accounting policy has not changed since the last depreciation study.

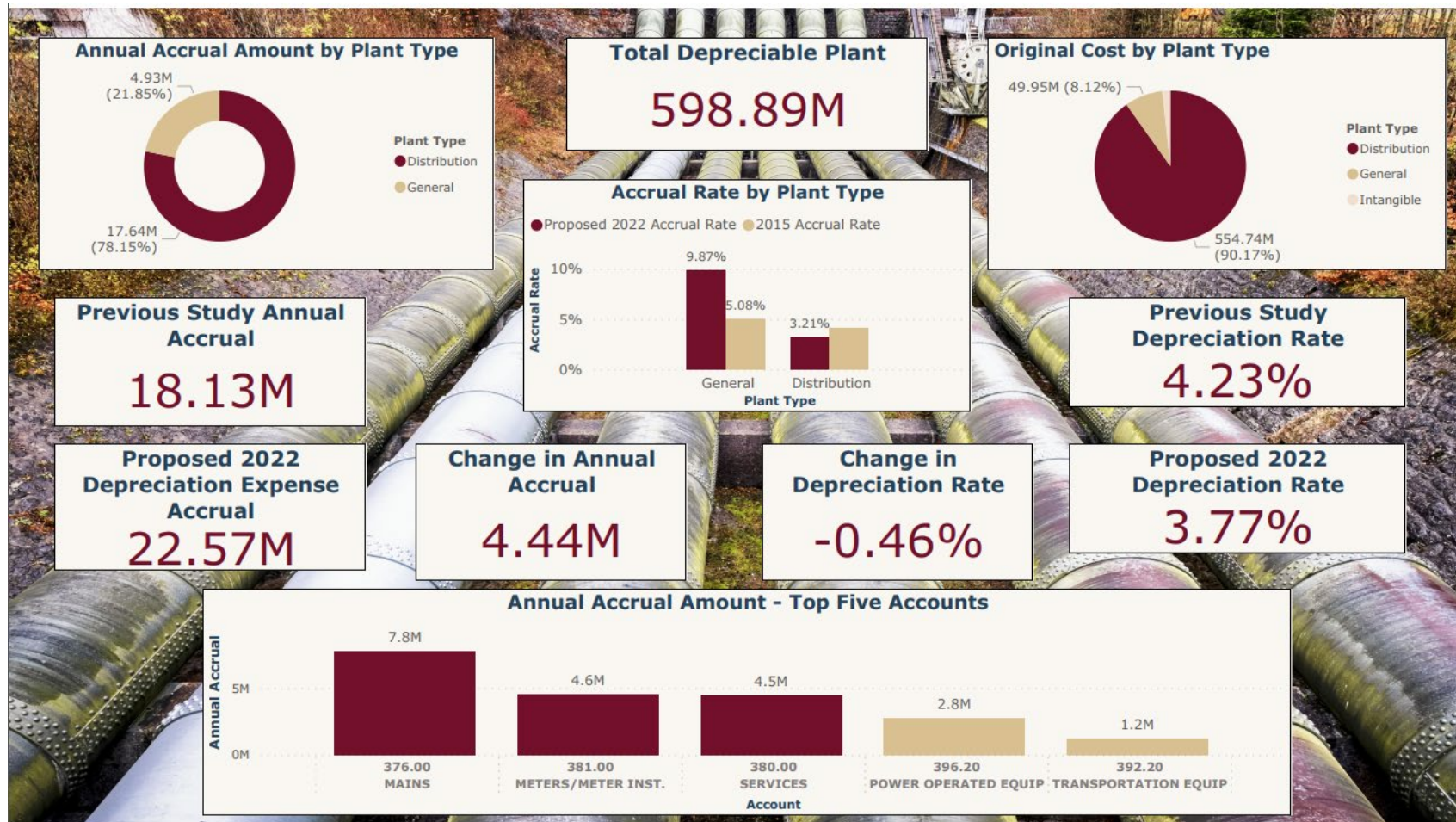
Concentric recommends the calculated annual depreciation accrual rates set forth herein apply specifically to gas plant in service, as of December 31, 2021. The annual depreciation accrual rates are summarized by tables related to:

- the total required annual accrual amounts;
- the annual accrual requirements related to the recovery of the original cost of the investment; and
- the annual accrual amount related to the recovery of the expected net salvage requirements at the time of retirement.

Finally, this study results in an annual depreciation expense accrual related to the recovery of original cost and net salvage requirement of \$22.6 million, when applied to depreciable plant study balances, as of December 31, 2021, of \$598 million. The study results are summarized at an aggregate functional group level as follows:

SUMMARY OF ORIGINAL COST, ACCRUAL PERCENTAGES AND AMOUNTS

Plant Group / Accounts	Original Cost	Previous Study Annual Accrual		Recommended Annual Accrual	
Distribution Plant	\$548,934,689	4.15%	\$16,423,189	3.21%	\$17,637,857
General Plant	\$49,954,953	5.08%	\$1,709,320	9.87%	\$4,931,463
TOTAL	\$598,889,642	4.23%	\$18,132,509	3.77%	\$22,569,320





SECTION 2

2 BASIS OF THE STUDY

2.1 Scope

This study sets forth the results of the depreciation study for the natural gas distribution and general plant assets of MDU, to determine the annual depreciation accrual rates and amounts for book purposes applicable to the original cost of investment as of December 31, 2021. The rates and amounts are based on the Straight-Line Method, incorporating the ALG Procedure applied on a Remaining Life Basis. This study also describes the concepts, methods and judgments which underlie the recommended annual depreciation accrual rates related to the MDU assets in service, as of December 31, 2021.

The service life estimates resulting from the study were based on:

- informed professional judgment which incorporated analyses of historical plant retirement data recorded through December 31, 2021;
- a review of MDU company practice and outlook, as they relate to plant operation and retirement; and
- consideration of current practice in the gas system industry, including knowledge of service life estimates used for other gas system companies.

The depreciation accrual rates presented herein are based on generally-accepted methods and procedures for calculating depreciation. The estimated survivor curves used in this study are based on studies incorporating actual data through 2021 for most accounts.

2.2 Plan of Study

This study is presented in the following order:

Section 1:	Study Highlights, presents a brief summary of the depreciation study and results
Section 2:	Contains statements with respect to the plan and the basis of the study
Section 3:	Development of the Required Depreciation Rates, presents descriptions of the methods used and factors considered in the service life study
Section 4:	Calculation of Annual and Accrued Depreciation, presents the methods and procedures used in the calculation of depreciation
Section 5:	Results of Study, presents summaries by depreciable group of annual and accrued depreciation in Tables 1, 1A, and 1B.
Section 6:	Presents the results of the Retirement Rate Analysis
Section 7:	Presents the results of the Net Salvage Study
Section 8:	Presents the results of the Detailed Depreciation Calculations
Section 9:	Estimation of Survivor Curves, is an overview of Iowa curves and the Retirement Rate Analysis
Section 10:	Estimation of Net Salvage discusses the methodology used in calculating net salvages



2.3 Depreciation

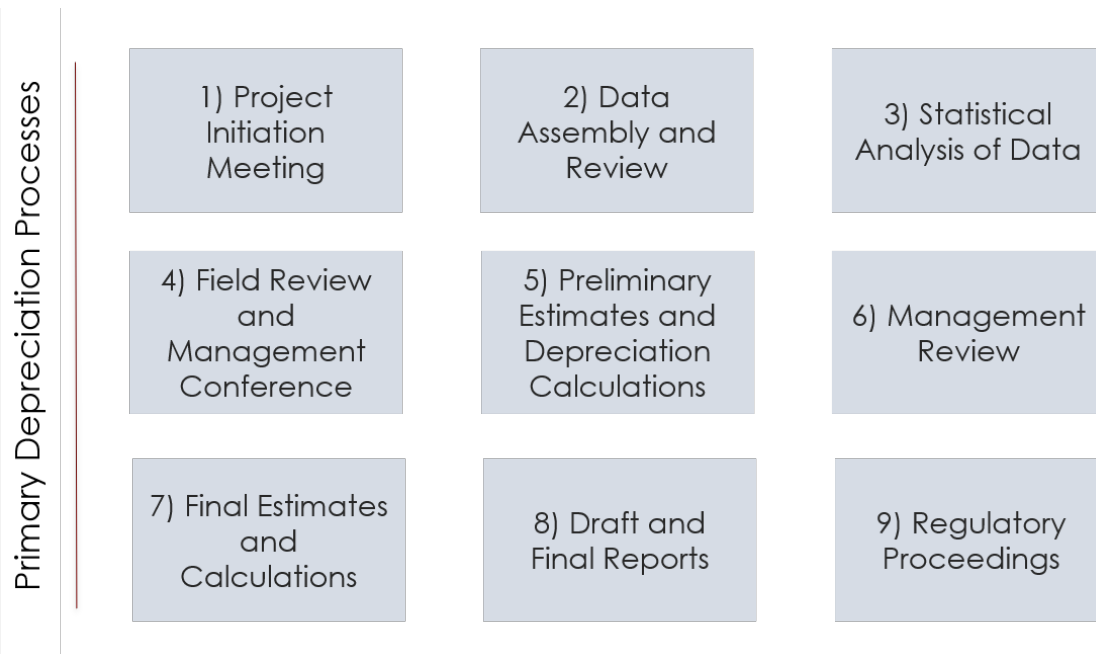
A full and comprehensive depreciation study includes the following components:

1. supported recommendations regarding Average Service Life estimates for each account;
2. supported recommendations regarding estimated Net Salvage requirements for each account;
3. selection of an appropriate grouping procedure;
4. detailed calculation of the depreciation rate utilizing the estimated Average Service Life and Net Salvage requirements; and
5. a document explaining the procedures followed and justifying the results in a format suitable for submission to senior management and regulatory authorities.

A diagram of the nine primary processes followed by Concentric in the development of the depreciation study is provided below. Each of the steps is undertaken by Concentric using proprietary software.

For most accounts, the annual and accrued depreciation were calculated by the Straight-Line Method using the ALG Procedure. For certain general plant accounts, the annual and accrued depreciation are based on amortization accounting. Both types of calculations were based on original cost, attained ages and an estimate of service lives.

Consistent with the current MDU practice, amortization accounting continues to be recommended for certain general plant accounts because of the disproportionate plant accounting effort required in these accounts. Many regulated utilities in North America have received approval to adopt amortization accounting for these accounts.





2.4 Information Provided by MDU

MDU has provided Concentric with the required information, as of December 31, 2021 for all accounts being studied in this study. This information includes the following:

- Current balances by vintage year for each account (aged balances) through December 31, 2021. The balances provide the amount of investment sorted by installation year. This file is only inclusive of plant in service and does not include any retirement information;
- retirement transactions for all accounts through December 31, 2021. The transactions include information regarding the transaction year of the retirement, the installation year of the asset being retired, and the original cost of the asset being retired; and
- cost of removal and gross salvage transactions for all accounts requiring the recovery of net salvage through December 31, 2021. The transactions include information regarding the transaction year of the retirement, the costs associated with the retirement, and any gross salvage proceeds from the sale or reuse of the property.

2.5 Data Reconciliation

The above data was reviewed and reconciled to Company control schedules to ensure accuracy and reasonableness in use of the calculations developed in this study. These checks include:

- that the surviving investment by account equals (or can be reconciled to) the Company's gross plant in service and accumulated depreciation ledger balances;
- that the surviving investment in each vintage is not negative. In other words, this check confirms that the sum of retirements from any given vintage have not exceeded the amount of plant additions to the vintage; and
- that any adjusting transactions are properly accounted for within the databases.



SECTION 3

3 DEVELOPMENT OF THE REQUIRED DEPRECIATION RATES

3.1 Depreciation

The development of the depreciation calculations requires the input of an average service life, a retirement dispersion curve (i.e. Iowa curve) and net salvage recommendations (i.e. the depreciation parameters). Additionally, to complete the depreciation calculations, the calculation methods must be established. Specifically, the selection of the depreciation method must establish three types of additional input:

1. the choice of a depreciation method;
2. a basis upon which to apply the method, and
3. in the case of group assets, a procedure to use in grouping the assets.

In this study, the depreciation rates for MDU have been calculated in accordance with the Straight-Line method, the ALG procedure and applied using the Remaining Life technique where any accumulated depreciation variances are trued-up within the depreciation rate calculations over the composite remaining life of each account.

Depreciation, as applied to depreciable plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of gas plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art and changes in demand and requirements of public authorities.¹

When considering the action of the elements, the average service life and net salvage calculations have considered large catastrophic events that have occurred and impacted the life estimates of utilities across North America. The average service life of utilities has been influenced by events including:

- forest fires;
- earthquakes;
- tornadoes;
- ice storms;
- wind-storms;
- large scale flooding;
- fires;
- lightning;
- intentional actions of third parties;
- hoar frost; and
- other natural forces of nature.

¹ The National Association of Railroad and Utilities Commissioners, Uniform System of Accounts for Gas Utilities.



Depreciation, as used in accounting, is a method of distributing fixed capital costs, less net salvage, over a period of time by allocating annual amounts to expense. Each annual amount of such depreciation expense is part of that year's total cost of providing gas utility service. Normally, the period of time over which the fixed capital cost is allocated to the cost of service is equal to the period of time over which an item renders service - that is, the item's service life. The most prevalent method of allocation is to distribute an equal amount of cost to each year of service life. This method is known as the Straight-Line method of depreciation.

The calculation of annual and accrued depreciation based on the Straight-Line method requires the estimation of survivor curves and is described in the following sections of this report. The development of the proposed depreciation rates also requires the selection of group depreciation procedures, as discussed below.

3.1.1 Study Depreciation Methods and Procedures

When more than a single item of property is under consideration, a group procedure for depreciation is appropriate because normally all of the items within a group do not have identical service lives but have lives that are dispersed over a range of time. There are two primary group procedures, namely, the Average Life Group (ALG) and Equal Life Group (ELG) procedures.

In the ALG Procedure, the rate of annual depreciation is based on the average service life of the group. This rate is applied to the surviving balances of the group's cost. A characteristic of this procedure is that the cost of plant retired prior to average life is not fully recouped at the time of retirement, whereas the cost of plant retired subsequent to the average life is more than fully recouped. Over the entire life cycle, the portion of cost not recouped prior to average life is balanced by the cost recouped subsequent to average life.

In the Equal Life Group Procedure, also known as the Unit Summation Procedure, the property group is subdivided according to service life. That is, each equal life group includes that portion of the property which experiences the life of that specific group. The relative size of each equal life group is determined from the property's life dispersion curve. The calculated depreciation for the property group is the summation of the calculated depreciation based on the service life of each equal life unit.

For most accounts, the annual and accrued depreciation were calculated by the Straight-Line Method using the ALG Procedure. For certain general plant accounts, the annual and accrued depreciation are based on amortization accounting. Both types of calculations were based on original cost, attained ages and an estimate of service lives.

While the Equal Life Group Procedure provides an enhanced matching of depreciation expense to the consumption of service value, the Straight-Line Method, Average Life Group Procedure is a commonly used depreciation calculation that has been widely accepted in jurisdictions throughout North America including MDU in prior studies. Concentric recommends its continued use.

Amortization accounting is used for certain general plant accounts because of the disproportionate plant accounting effort required in these accounts. Many regulated utilities in North America have received approval to adopt amortization accounting for these accounts. This study calculates the annual and accrued depreciation using the Straight-Line Method and ALG Procedure for most



accounts. For certain general plant accounts, the annual and accrued depreciation are based on amortization accounting. Both types of calculations were based on original cost, attained ages and estimates of service lives. Variances between the calculated accrued depreciation and the book accumulated depreciation are amortized over the composite remaining life of each account within the remaining life calculations.

Continued monitoring and maintenance of the accumulated depreciation reserve at the account level is recommended. Concentric has determined an amortization amount to correct the present variance with the calculated accrued depreciation (theoretical reserve) over the composite remaining life of each account.

3.1.2 Changes Since Last MDU Full Depreciation Study

The depreciation rates calculated in this study were calculated on the same manner as used in the prior full depreciation study – i.e. using the straight-line method, the ALG Procedure applied on a remaining life basis. However, Concentric notes that in the application of the remaining life basis, the prior study calculated the remaining life on a broad average basis, whereas Concentric incorporates a refinement into the remaining life calculations based on a weighted investment by vintage approach. The vintaged remaining life approach weighs the calculations of remaining life on an allocation of the actual book accumulated depreciation account by the Calculated Accumulated Depreciation (CAD) factor determined for each vintage of plant in service. This method is described as a CAD weighted calculation in the textbook *Depreciation Systems* by Frank K. Wolf and W. Chester Fitch, published by the Iowa State University in 1994 under the title “Adjustments” within the Broad Group Model.

In contrast, the remaining life calculations in prior studies was based on a broad averaging of the composite remaining life. The method is also discussed as the Amortization Method (AM) in *Depreciation Systems* under the title “Adjustments” within the Broad Group Model.

When depreciation rates are calculated utilizing a remaining life technique, the depreciation rate is established by dividing the undepreciated value of each group of assets (after consideration to the net salvage requirements) by the composite remaining life of the group of assets. This calculation is made for each vintage surviving investment as of the date of the study (December 31, 2021), and then composited into a calculation for the account or group as a whole. This calculation requires two estimates:

1. The actual booked accumulated depreciation for each vintage within each account.

MDU does not track the booked accumulated depreciation reserve by vintage within each account. Rather the depreciation expense is calculated at an account level and booked to accumulated depreciation at the same account level. Concentric notes that this is the practice employed by virtually all regulated utilities. As such, the accumulated depreciation by account is allocated within the account to each vintage, on the basis of the calculated accumulated depreciation by vintage. The calculated accumulated depreciation is a function of the estimated survivor curve, the average service life estimate, the net salvage estimates and the achieved age of each vintage.



2. The estimated remaining life of each vintage with each account. The estimated remaining life of each vintage is a direct function of the achieved age of each vintage, the estimated survivor curve and the average service life estimate.

Once the above two estimates are determined (the allocated booked reserve by vintage and the average remaining life of each vintage), an annual accrual requirement for each vintage is determined by dividing the net book value for each vintage (considering the estimated future salvage requirements) by the average remaining life of the vintage. The annual requirement for each vintage is summed at the account level and divided into the sum of the accounts original cost surviving as of December 31, 2021.

This process results in each vintage's calculated net book value to be depreciated over an appropriate remaining life. This vintage weighting on CAD approach to the remaining life calculations is widely considered to be the most accurate. Concentric agrees and views this methodology as the correct and most appropriate calculation.

3.1.3 Energy Transition

Long life assets such as those comprising MDU's system can be restricted not only by physical forces of retirement such as wear and tear and physical deterioration, but also, and to a much greater extent, by economic forces of retirement. Specifically, the changing North American marketplace for natural gas demand and the rapidly emerging trend of decarbonization legislation may have a significant impact on the estimated service lives of the MDU system.

There are several factors affecting the economic viability of the MDU system. Long life assets, such as natural gas distribution systems, are subject to a number of different forces of economic retirement, including changes in legislation constricting the use of carbon-based fuels.

While there is strong evidence that the future of natural gas may be impacted by climate change legislation, it is still unknown to what extent this change will impact MDU's system. The introduction of hydrogen, for example, may have a life lengthening impact on the system if it is determined that hydrogen is a sustainable replacement fuel. The same may be true of renewable natural gas or other low carbon fuels. However, it may also be true that the move from carbon-based fuels necessitates a greater electrification of the grid, in which case there may be a life shortening impact on the MDU system.

The future growth and retirement programs of the MDU gas system may be significantly different than the retirement patterns witnessed in the past. While future retirements that are caused by physical forces of retirement such as wear and tear and changes in technology of the assets will continue, it is reasonable to anticipate that the utilization of large groups of assets may change due to the implementation of climate change legislation. Consistent with the reduction in the utilization of the assets, it could be assumed that large scale retirement of assets may be required in the periods between now and 2050.

Common depreciation practice is to deal with the anticipated large-scale retirements through the introduction of an economic planning horizon within the depreciation rate calculations. However, at this time the future impacts of the relevant climate change legislation have not been sufficiently



studied, nor have specific programs been put into place that would provide the indications of the changes in the utilization levels. Concentric views that additional study of the changes is required before the introduction of a Life Span date, for the MDU gas system, into the depreciation rate calculations. This will cause a significant increase in the depreciation rate. However, Concentric notes that future depreciation studies of the MDU gas system may require the introduction of an economic planning horizon into the depreciation rate calculations.

3.1.4 Survivor Curves

The use of an average service life or a property group implies that the various units in the group have different lives. Thus, the average life may be obtained by determining the separate lives of each of the units, or by constructing a survivor curve plotting the number of units which survive at successive ages using the retirement rate method of analysis.

The range of survivor characteristics usually experienced by utility and industrial properties is encompassed by a system of generalized survivor curves known as the Iowa type curves. The Iowa curves *"...were sorted into three groups according to whether the mode was to the left, approximately coincident with, or to the right of the average-life ordinate. The curves in each of these three groups were then sub-classified in accordance with the height of the mode, taking also into consideration the distance of the mode to the left or right of the average life."*² The Iowa curves are described as L-type (i.e. left-moded), R-type (i.e. right-moded), and S-type (i.e. symmetrical). Further development resulted in the introduction of O-type (i.e. origin-moded curves) where the greatest frequency of retirement occurs at the origin, or immediately after age zero. Individual type curves are further depicted with numerical subscripts which represent the relative heights of the modes of the frequency curves within each family.

The program that is used by Concentric for statistical smooth curve fitting utilizes an internal "goodness-of-fit" criterion known as the Residual Measure. This Residual Measure is based on a least squares solution of the differences between the stub curve (or original data points) and smooth survivor curve which also requires a balancing of the differences above and below the stub curve.

The criterion of goodness-of-fit is the mean square of the differences between the points on the stub and fitted smooth survivor curves. The residual measure, or standard error of estimate, shown in the output format is the square root of this mean square. As such, the lower the Residual Measure the better the statistical fit between the analyzed Iowa curve and the observed data points. Concentric follows the widely used practice of fitting Iowa curves up to one percent of the maximum exposures. This standard practice is utilized to minimize the influence of typically small retirements applied to similarly small exposures which may unduly affect the Iowa curve fitting process. However, Concentric will recognize the observed data points beyond the one percent of maximum exposures if it is determined that the additional data is a valid consideration for life recommendation.

A discussion of the general concept of survivor curves and retirement rate method is presented in Section 9.

² Robley Winfrey, Statistical Analyses of Industrial Property Retirements, Bulletin 125 revised (Engineering Research Institute, Iowa State University, 1935) 65



3.1.5 Survivor Curve and Net Salvage Judgments

The service life and net salvage estimates used in the depreciation and amortization calculations were based on informed professional judgment which incorporated a review of management's plans, policies and outlook, a general knowledge of the gas utility industry, and comparisons of the service life and net salvage estimates from Concentric's studies of other gas utilities. The use of survivor curves, to reflect the expected dispersion of retirement, provides a consistent method of estimating depreciation for gas plant. Iowa type survivor curves were used to depict the estimated survivor curves for the plant accounts not subject to amortization accounting.

The procedure for estimating service lives consisted of compiling historical data for the plant accounts or depreciable groups, analyzing this history through the use of widely accepted techniques, and forecasting the survivor characteristics for each depreciable group on the basis of interpretations of the historical data and the probable future. The forecasting of a probable future included management and operational staff interviews. The combination of the historical experience and the probable future yielded estimated survivor curves from which the average service lives were derived.

The resultant depreciation rates are summarized in the applicable tables of this study (Section 5). The depreciation rates should be reviewed periodically to reflect the changes that result from plant and reserve account activity. A depreciation reserve deficiency or surplus will develop if future capital expenditures vary significantly from those anticipated in this study.

The estimates of net salvage for the mass property accounts were based mostly in part on historical data related to actual retirement activity for the years 1995 through 2021, for most accounts. Gross salvage and cost of removal as recorded to the depreciation reserve account and related to experienced retirements were used. Concentric notes the data from the previous depreciation consultant was used and considered in the historic net salvage analysis, but more relevancy was placed on the more recent data from 2009 through 2021 provided directly to Concentric by MDU. Percentages of the cost of plant retired were calculated for each component of net salvage on an annual, three-year, five-year, and on a cumulative moving average basis.

The following discussion, dealing with a number of accounts which comprise the majority of the investment analyzed, presents an overview of the factors considered by Concentric in the determination of the average service life and net salvage estimates. The survivor curve estimates for the remainder of the accounts not discussed in the following sections were based on similar considerations.

ACCOUNT 376 – DISTRIBUTION – MAINS

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$278,503,430	46.50%	47-R4	55-R3	-50%	-55%

The investment in Distribution Mains is approximately \$278 million, representing 47 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1916 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$11,076,857.16 were recorded for this period. The currently approved life



parameter is an Iowa 47-R4 that produced a fit with a related residual measure of 4.918. An Iowa 55-R3 produced a better fit with a residual measure of 4.0696, as depicted on page 6-10. Discussions with MDU operational and management staff indicated that the Iowa 55-R3 is a good representation of the historical life and future expectations. Based on the above discussion and considerations, and on Concentric's experience, an Iowa 55-R3 is a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 55-R3 to represent the future expectations for the investment in this account.

This account currently has a previously approved net salvage of negative 50 percent. This account has shown a wide range in historical net salvage activity since 1995. The range has been from negative eight percent to negative 69 percent. A three-year band produces results that range from negative eight percent to over negative 100 percent. The five-year band ranges from negative eight percent to over negative 100 percent. The full depth band averages negative 69 percent. At this time, Concentric recommends that a slight increase to a negative 55 percent net salvage estimate be used in the depreciation calculations within this study.

ACCOUNT 379 – MEAS. & REG STATION EQUIP – CITY GATE

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$11,726,166	1.96%	45-R2.5	45-R2.5	-15%	-5%

The investment in this account relates to Measuring and Regulating Station Equipment – City Gate. The investment in this account is approximately \$11.7 million, representing 2 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1951 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$193,535.46 were recorded for this period. The currently approved and recommended life parameter is an Iowa 45-R2.5 that produced a fit with a related residual measure of 3.22, as depicted on page 6-20. Discussions with MDU operational and management staff indicated that the Iowa 45-R2.5 will continue to be a good representation of the historical life and future expectations. Based on the above discussion and considerations, and on Concentric's experience, an Iowa 45-R2.5 is a reasonable expectation for the investment in this account. As such, Concentric recommends the Iowa 45-R2.5 to continue to represent the future expectations for the investment in this account.

This account currently has a previously approved net salvage of negative 15 percent. This account has shown a wide range in historical net salvage activity since 1995. The range has been from negative three percent to positive 15 percent. A three-year band produces results that range from negative 56 percent to positive 20 percent. The five-year band ranges from negative eight to positive 14 percent. The full depth band averages negative two percent. At this time, Concentric recommends that a slight step down to a negative five percent net salvage estimate be used in the depreciation calculations within this study.

ACCOUNT 380 – DISTRIBUTION – SERVICES



Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$148,582,913	24.81%	47-R4	50-R2.5	-200%	-100%

The investment in Distribution Services is approximately \$149 million, representing 25 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1901 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$6,905,599.88 were recorded for this period. The currently approved life parameter is an Iowa 47-R4 that produced a fit with a related residual measure of 4.1875. An Iowa 50-R2.5 produced a better fit with a residual measure of 3.6545, as depicted on page 6-24. Discussions with MDU operational and management staff indicated that the Iowa 50-R2.5 is a good representation of the historical life and future expectations. Based on the above discussion and considerations, and on Concentric's experience, an Iowa 50-R2.5 is a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 50-R2.5 to represent the future expectations for the investment in this account.

This account currently has a previously approved net salvage of negative 200 percent. This account has shown a wide range in historical net salvage activity since 1995. The range has been from negative 117 percent to negative 194 percent. A three-year band produces results that range from negative 117 percent to over negative 200 percent. The five-year band ranges from negative 117 percent to over negative 200 percent. The full depth band averages negative 167 percent. At this time, Concentric recommends that a step down to a negative 100 percent net salvage estimate be used in the depreciation calculations within this study.

ACCOUNT 381 – METERS & METER INSTALLATIONS

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$84,646,197	14.13%	31-R3	31-R3	-20%	-20%

The investment in this account is approximately \$85 million, representing 14 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1921 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$15,071,767.65 were recorded for this period. The currently approved and recommended life parameter is an Iowa 31-R3 that produced a fit with a related residual measure of 0.4746, as depicted on page 6-29. Discussions with MDU operational and management staff indicated that the Iowa 31-R3 is a good representation of the historical life and future expectations. Based on the above discussion and considerations, and on Concentric's experience, an Iowa 31-R3 continues to be a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 31-R3 to represent the future expectations for the investment in this account.

This account currently has a previously approved net salvage of negative 20 percent. This account has shown a wide range in historical net salvage activity since 1995. The range has been from negative 20 percent to positive three percent. A three-year band produces results that range from negative 27 percent to positive 39 percent. The five-year band ranges from negative 25 percent to



positive four percent. The full depth band averages positive 17 percent. At this time, Concentric recommends the continued use of a negative 20 percent net salvage estimate be used in the depreciation calculations within this study.

ACCOUNT 383 – DISTRIBUTION – HOUSE REGULATORS

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$12,799,915	2.14%	60-R3	58-R2.5	0%	-5%

The investment in this account relates to Distribution – House Regulators. The investment in this account is approximately \$13 million, representing 2 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1952 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$906,585 were recorded for this period. The currently approved life parameter is an Iowa 60-R3 that produced a fit with a related residual measure of 2.3347. An Iowa 58-R2.5 produced a fit with a residual measure of 2.3719, as depicted on page 6-33. Discussions with MDU operational and management staff indicated that the Iowa 58-R2.5 is a good representation of the historical life and future expectations. Based on the above discussion and considerations, and on Concentric’s experience, an Iowa 58-R2.5 is a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 58-R2.5 to represent the future expectations for the investment in this account.

This account currently has a previously approved net salvage of zero percent. This account has shown a small range in historical net salvage activity since 1995. The range has been from negative two percent to positive 46 percent. A three-year band produces results that range from negative 29 percent to over positive 200 percent. The five-year band ranges from negative 25 percent to over positive 200 percent. The full depth band averages negative two percent. At this time, Concentric recommends that a change to a negative five percent net salvage estimate be used in the depreciation calculations within this study.

ACCOUNT 390 – STRUCTURES AND IMPROVEMENTS

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$15,766,936	2.63%	40-R2	45-R2	-10%	0%

The investment in this account is approximately \$16 million, representing 2.6 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1928 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$1,720,951.70 were recorded for this period. The currently approved life parameter is an Iowa 40-R2 which produced a fit with a related residual measure of 2.6961. An Iowa 45-R2 produced a fit with a related residual measure of 2.296, as depicted on page 6-47. Discussions with MDU operational and management staff indicated that the Iowa 45-R2 is a good representation of the



historical life and future expectations. Based on the above and considerations, and on Concentric's experience, an Iowa 45-R2 is a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 45-R2 to represent the future expectations for the investment in this account.

This account currently has a previously approved net salvage of negative 10 percent. This account has shown a small range in historical net salvage activity since 1995. The range has been from positive 68 percent to positive 140 percent. A three-year band produces results that range from negative 17 percent to over positive 300 percent. The five-year band ranges from negative 16 percent to over positive 200 percent. The full depth band averages positive 68 percent. At this time, Concentric recommends that a change to a zero percent net salvage estimate be used in the depreciation calculations within this study.

ACCOUNT 392.2 – TRANSPORTATION EQUIPMENT – VEHICLES

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$12,856,198	2.15%	9-R3	10-L2	20%	20%

The investment in Transportation Equipment - Vehicles is approximately \$13 million, representing 2.15 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1953 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$4,086,583.85 were recorded for this period. The currently approved life parameter for the MDU account is an Iowa 9-R3 that produced a fit with a related residual measure of 0.566. Data analysis and discussion with MDU personnel indicated that a slight adjustment to a 10-L2, with a residual measure of 0.2731, produced a better visual and mathematical fit, and is a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 10-L2 going forward to represent the future expectations for the investment in this account.

This account currently has an approved net salvage of positive 20 percent. This account has shown a close range in historical net salvage activity since 1995. The range has been from positive 11 percent to positive 23 percent. A three-year band produces results that range from positive 17 percent to positive 32 percent. The five-year band ranges from positive 17 percent to positive 31 percent. The full depth band averages positive 23 percent. At this time, Concentric recommends that a positive 20 percent net salvage estimate continue to be used in the depreciation calculations within this study.

ACCOUNT 396.2 – POWER OPERATED EQUIPMENT

Investment \$	Investment %	Previously Approved Curves	Concentric Recommended Curve	Previously Approved Salvage	Concentric Recommended Salvage
\$9,040,554	1.51%	3-L1	3-L1	85%	85%

The investment in this account relates to Power Operated Equipment.



The investment in Power Operated Equipment is approximately \$9 million, representing 1.51 percent of the total depreciable plant studied. The retirements, additions and other plant transactions, for the period 1953 through 2021, were analyzed by the retirement rate method. Retirements, for the period 1995 through 2021, of \$55,635,279.87 were recorded for this period. The currently approved and recommended life parameter for the MDU account is an Iowa 3-L1 that produced a fit with a related residual measure of 0.6294. This is still a reasonable expectation for the investment in this account. As such, Concentric recommends an Iowa 3-L1 going forward to represent the future expectations for the investment in this account.

This account currently has an approved net salvage of positive 85 percent. This account has shown a close range in historical net salvage activity since 2009. The range has been from positive 81 percent to positive 102 percent. A three-year band produces results that range from positive 70 percent to positive 111 percent. The five-year band ranges from positive 75 percent to positive 104 percent. The full depth band averages positive 87 percent. At this time, Concentric recommends the continued use of a positive 85 percent net salvage estimate be used in the depreciation calculations within this study.



SECTION 4

4 CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

4.1 Calculation of Annual and Accrued Amortization

Amortization is the gradual extinguishment of an amount in an account by distributing such amount over a fixed period, over the life of the asset or liability to which it applies, or over the period during which it is anticipated the benefit will be realized. Normally, the distribution of the amount is in equal amounts to each year of the amortization period.

The calculation of annual and accrued amortization requires the selection of an amortization period. The amortization periods used in this report were based on judgment which incorporated a consideration of the period during which the assets will render most of their service, the amortization period and service lives used by other utilities, and the service life estimates previously used for the asset under depreciation accounting.

Amortization accounting is proposed for a number of accounts that represent numerous units of property, but a very small portion of depreciable gas plant in service. The accounts and their amortization periods are as follows:

Account	Title	Investment	Recommended Amortization Period in Years
391.1	Office Furniture & Equipment	\$307,608	15
391.3	Computer Equipment – PC	\$18,699	5
393.0	Stores Equipment	\$103,298	30
394.1	Tools, Shop, & Garage Equipment	\$7,859,822	20
394.3	Vehicle Maintenance Equipment	\$36,373	20
395	Laboratory Equipment	\$316,786	20
397.1	Communication Equipment – Fixed Radios	\$1,190,544	15
397.2	Communication Equipment – Mobile Radios	\$461,355	15
397.3	General Telephone Communication Equipment	\$128,459	10
397.8	Network Equipment	\$40,306	5
398.0	Miscellaneous Equipment	\$71,705	25

For the purpose of calculating annual amortization amounts, as of December 31, 2021, the book depreciation reserve for each plant account (or sub-account) is assigned or allocated to vintages. The book reserve assigned to vintages with an age greater than the amortization period is equal to the vintage's original cost. The remaining book reserve is allocated among vintages with an age less than the amortization period in proportion to the calculated accrued amortization. The calculated accrued amortization is equal to the original cost multiplied by the ratio of the vintage's age to its amortization



period. The annual amortization amount is determined by dividing the future amortizations (original cost less allocated book reserve) by the remaining period of amortization for the vintage.

4.2 Monitoring of Book Accumulated Depreciation

The calculated accrued depreciation or amortization represents that portion of the depreciable cost which will not be allocated to expense through future depreciation accruals, if current forecasts of service life characteristics materialize and are used as a basis for depreciation accounting. Thus, the calculated accrued depreciation provides a measure of the book accumulated depreciation. The use of this measure is recommended in the amortization of book accumulated depreciation variances to insure complete recovery of capital over the life of the property.

The recommended amortization of the variance between the book accumulated depreciation and the calculated accrued depreciation is based on an amortization period equal to the composite remaining life for each property group where the variance exceeds five percent of the calculated accrued depreciation.

The composite remaining life for use in the calculation of accumulated depreciation variances is derived by developing the composite sum of the individual vintage remaining lives.



SECTION 5

5 RESULTS OF THE STUDY

5.1 Qualification of Results

The calculated annual and accrued depreciation are the principal results of the study and are shown in Tables 1, 1A, and 1B, related to investment as of December 31, 2021. Continued surveillance and periodic revisions are normally required to maintain continued use of appropriate annual depreciation accrual rates. An assumption that accrual rates can remain unchanged over a long period of time implies a disregard for the inherent variability in service lives and salvage and for the change of the composition of property in service. The annual accrual rates and the accrued depreciation were calculated in accordance with the Straight-Line method, using the ALG procedure, based on estimates which reflect considerations of current historical evidence and expected future conditions.

5.2 Description of Detailed Tabulations

The following tables provide summaries by account of the original cost of investment, calculated and booked accumulated depreciation amounts, the required amount of annual depreciation expense, the required depreciation rate to be applied against the original cost of the account and the estimated composite remaining life of the surviving plant in service.

The detailed calculations of annual depreciation applicable to depreciable assets, as of December 31, 2021, are presented in account sequence starting in Section 5 – Page 5-2. The tables indicate the estimated average survivor curves used in the calculations. The tables set forth (for each installation year) the original cost, calculated accrued depreciation and the calculated annual accrual.

MONTANA-DAKOTA UTILITIES CO. - GAS PLANT

**TABLE 1. REVISED SUMMARY OF SERVICE LIFE AND NET SALVAGE ESTIMATES AND CALCULATED ANNUAL AND
ACCRUED DEPRECIATION RELATED TO THE RECOVERY OF AVERAGE ORIGINAL COST IN GAS PLANT AS OF DECEMBER 31, 2021
- TOTAL -**

ACCOUNT	DESCRIPTION	ESTIMATED SURVIVOR CURVE	NET SALVAGE PERCENT	SURVIVING ORIGINAL COST AS OF 12/31/2021	CALCULATED ACCRUED DEPRECIATION	BOOK RESERVE	ANNUAL AMOUNT	RATE	REMAINING LIFE
DISTRIBUTION PLANT									
374.2	RIGHTS OF WAY	65-R3	0	1,286,382	162,420	208,959	18,723	1.46%	56.8
375.0	DISTR. MEAS & REG STATION STRUCTURES	55-R3	0	1,707,340	472,570	673,425	21,947	1.29%	39.8
376.0	MAINS	55-R3	-55	278,503,430	106,782,375	107,127,614	7,797,758	2.80%	41.4
378.0	MEAS & REG STATION EQUIP-GENERAL	50-R2	-30	5,144,890	1,577,772	1,784,120	120,684	2.35%	38.2
379.0	MEAS & REG STATION EQUIP-CITY GATE	45-R2.5	-5	11,726,166	2,022,513	2,545,424	250,406	2.14%	37.6
380.0	SERVICES	50-R2.5	-100	148,582,913	64,977,739	102,882,033	4,501,152	3.03%	39.1
381.0	METERS & METER INSTALLATIONS	31-R3	-20	84,646,197	39,354,497	30,642,661	4,596,439	5.43%	19.0
383.0	HOUSE REGULATORS	58-R2.5	-5	12,799,915	3,259,696	3,576,574	218,114	1.70%	43.9
385.0	INDUSTRIAL MEAS. & REG. STATION EQUIPMENT	40-R2	-10	2,750,416	689,019	784,042	68,220	2.48%	30.9
386.1	MISC. PROPERTY ON CUSTOMER'S PREMISES	15-R3	0	1,680	1,680	1,680	-	0.00%	-
387.2	OTHER EQUIPMENT	30-R3	0	1,785,360	493,740	562,854	44,414	2.49%	21.7
TOTAL DISTRIBUTION PLANT				548,934,689	219,794,021	250,789,386	17,637,857	3.21%	
GENERAL PLANT									
390.0	STRUCTURES & IMPROVEMENTS	45-R2	0	15,766,936	4,479,705	6,201,672	277,543	1.76%	32.2
391.1	OFFICE FURNITURE & EQUIPMENT	15-SQ	0	307,608	184,956	127,853	60,397	19.63%	6.0
391.3	COMPUTER EQUIPMENT - PC	5-SQ	0	18,699	2,488	2,828	3,620	19.36%	4.3
392.1	TRANSPORTATION EQUIPMENT - TRAILERS	20-R1	10	450,168	189,548	371,635	2,224	0.49%	10.6
392.2	TRANSPORTATION EQUIPMENT	10-L2	20	12,856,198	3,940,863	2,982,809	1,245,756	9.69%	6.2
393.0	STORES EQUIPMENT	30-SQ	0	103,298	39,829	32,134	4,184	4.05%	18.4
394.1	TOOLS, SHOP, & GARAGE EQUIPMENT	20-SQ	0	7,859,822	2,022,141	2,229,659	363,050	4.62%	14.9
394.3	VEHICLE MAINTENANCE EQUIPMENT	20-SQ	0	36,373	26,667	26,707	1,811	4.98%	5.3
395.0	LABORATORY EQUIPMENT	20-SQ	0	316,786	116,700	59,620	43,180	13.63%	12.6
396.1	POWER OPERATED EQUIPMENT - TRAILERS	25-L2	30	1,306,142	242,246	555,146	16,911	1.29%	18.4
396.2	POWER OPERATED EQUIPMENT	3-L1	85	9,040,554	687,840	(2,072,744)	2,755,719	30.48%	1.5
397.1	COMMUNICATION EQUIPMENT - FIXED RADIOS	15-SQ	0	1,190,544	661,093	620,243	89,145	7.49%	6.7
397.2	COMMUNICATION EQUIPMENT - MOBILE RADIOS	15-SQ	0	461,355	331,382	318,207	36,061	7.82%	4.2
397.3	GENERAL TELEPHONE COMMUNICATION EQUIPMENT	10-SQ	0	128,459	60,170	43,271	16,317	12.70%	5.3
397.8	NETWORK EQUIPMENT	5-SQ	0	40,306	13,469	10,267	9,534	23.65%	3.3
398.0	MISCELLANEOUS EQUIPMENT	25-SQ	0	71,705	26,324	(26,865)	6,011	8.38%	15.8
TOTAL GENERAL PLANT				49,954,953	13,025,422	11,482,441	4,931,463	9.87%	
TOTAL GAS PLANT STUDIED				598,889,642	232,819,442	262,271,827	22,569,320	3.77%	
PLANT NOT STUDIED									
303.0	MISCELLANEOUS INTANGIBLE PLANT			10,496,877					
374.1	LAND			1,202,798					
386.2	CNG REFUELING STATION			-					
387.1	CATHODIC PROTECTION EQUIPMENT			-					
389.0	LAND & LAND RIGHTS GENERAL			2,603,081					
TOTAL PLANT				613,192,398					

MONTANA-DAKOTA UTILITIES CO. - GAS PLANT

TABLE 1A. REVISED SUMMARY OF SERVICE LIFE AND NET SALVAGE ESTIMATES AND CALCULATED ANNUAL AND ACCRUED DEPRECIATION RELATED TO THE RECOVERY OF AVERAGE ORIGINAL COST IN GAS PLANT AS OF DECEMBER 31, 2021
- LIFE -

ACCOUNT	DESCRIPTION	ESTIMATED SURVIVOR CURVE	NET SALVAGE PERCENT	SURVIVING ORIGINAL COST AS OF 12/31/2021	CALCULATED ACCRUED DEPRECIATION	BOOK RESERVE	ANNUAL ACCRUAL AMOUNT	RATE	REMAINING LIFE
DISTRIBUTION PLANT									
374.2	RIGHTS OF WAY	65-R3	0	1,286,382	162,420	195,205	19,037	1.48%	56.8
375.0	DISTR. MEAS & REG STATION STRUCTURES	55-R3	0	1,707,340	472,570	466,229	31,494	1.84%	39.8
376.0	MAINS	55-R3	0	278,503,430	68,891,855	80,337,693	4,487,628	1.61%	41.4
378.0	MEAS & REG STATION EQUIP-GENERAL	50-R2	0	5,144,890	1,213,671	1,440,095	89,583	1.74%	38.2
379.0	MEAS & REG STATION EQUIP-CITY GATE	45-R2.5	0	11,726,166	1,926,203	2,329,465	241,658	2.06%	37.6
380.0	SERVICES	50-R2.5	0	148,582,913	32,488,870	37,379,806	2,742,792	1.85%	39.1
381.0	METERS & METER INSTALLATIONS	31-R3	0	84,646,197	32,795,414	30,156,432	3,127,783	3.70%	19.0
383.0	HOUSE REGULATORS	58-R2.5	0	12,799,915	3,104,473	3,562,907	201,008	1.57%	43.9
385.0	INDUSTRIAL MEAS. & REG. STATION EQUIPMENT	40-R2	0	2,750,416	626,381	705,890	62,416	2.27%	30.9
386.1	MISC. PROPERTY ON CUSTOMER'S PREMISES	15-R3	0	1,680	1,680	1,680	-	0.00%	-
387.2	OTHER EQUIPMENT	30-R3	0	1,785,360	493,740	562,854	44,414	2.49%	21.7
TOTAL DISTRIBUTION PLANT				548,934,689	142,177,275	157,138,254	11,047,813	2.01%	
GENERAL PLANT									
390.0	STRUCTURES & IMPROVEMENTS	45-R2	0	15,766,936	4,479,705	5,478,822	302,626	1.92%	32.2
391.1	OFFICE FURNITURE & EQUIPMENT	15-SQ	0	307,608	184,956	127,853	60,397	19.63%	6.0
391.3	COMPUTER EQUIPMENT - PC	5-SQ	0	18,699	2,488	2,828	3,620	19.36%	4.3
392.1	TRANSPORTATION EQUIPMENT - TRAILERS	20-R1	10	450,168	189,548	371,635	2,224	0.49%	10.6
392.2	TRANSPORTATION EQUIPMENT	10-L2	20	12,856,198	3,940,863	2,982,809	1,245,756	9.69%	6.2
393.0	STORES EQUIPMENT	30-SQ	0	103,298	39,829	32,134	4,184	4.05%	18.4
394.1	TOOLS, SHOP, & GARAGE EQUIPMENT	20-SQ	0	7,859,822	2,022,141	2,229,659	363,050	4.62%	14.9
394.3	VEHICLE MAINTENANCE EQUIPMENT	20-SQ	0	36,373	26,667	26,707	1,811	4.98%	5.3
395.0	LABORATORY EQUIPMENT	20-SQ	0	316,786	116,700	59,620	43,180	13.63%	12.6
396.1	POWER OPERATED EQUIPMENT - TRAILERS	25-L2	30	1,306,142	242,246	555,146	16,911	1.29%	18.4
396.2	POWER OPERATED EQUIPMENT	3-L1	85	9,040,554	687,840	(2,072,744)	2,755,719	30.48%	1.5
397.1	COMMUNICATION EQUIPMENT - FIXED RADIOS	15-SQ	0	1,190,544	661,093	620,243	89,145	7.49%	6.7
397.2	COMMUNICATION EQUIPMENT - MOBILE RADIOS	15-SQ	0	461,355	331,382	318,207	36,061	7.82%	4.2
397.3	GENERAL TELEPHONE COMMUNICATION EQUIPMENT	10-SQ	0	128,459	60,170	43,271	16,317	12.70%	5.3
397.8	NETWORK EQUIPMENT	5-SQ	0	40,306	13,469	10,267	9,534	23.65%	3.3
398.0	MISCELLANEOUS EQUIPMENT	25-SQ	0	71,705	26,324	(26,865)	6,011	8.38%	15.8
TOTAL GENERAL PLANT				49,954,953	13,025,422	10,759,592	4,956,546	9.92%	
TOTAL GAS PLANT STUDIED				598,889,642	155,202,697	167,897,846	16,004,359	2.67%	
PLANT NOT STUDIED									
303.0	MISCELLANEOUS INTANGIBLE PLANT			10,496,877					
374.1	LAND			1,202,798					
386.2	CNG REFUELING STATION			-					
387.1	CATHODIC PROTECTION EQUIPMENT			-					
389.0	LAND & LAND RIGHTS GENERAL			2,603,081					
TOTAL PLANT				613,192,398					

MONTANA-DAKOTA UTILITIES CO. - GAS PLANT

TABLE 1B. REVISED SUMMARY OF SERVICE LIFE AND NET SALVAGE ESTIMATES AND CALCULATED ANNUAL AND ACCRUED DEPRECIATION RELATED TO THE RECOVERY OF AVERAGE ORIGINAL COST IN GAS PLANT AS OF DECEMBER 31, 2021
- COST OF REMOVAL -

ACCOUNT	DESCRIPTION	ESTIMATED SURVIVOR CURVE	NET SALVAGE PERCENT	SURVIVING ORIGINAL COST AS OF 12/31/2021	CALCULATED ACCRUED DEPRECIATION	BOOK RESERVE	ACCRUAL AMOUNT	RATE
DISTRIBUTION PLANT								
374.2	RIGHTS OF WAY	65-R3	0	1,286,382	-	13,754	(314)	-0.02%
375.0	DISTR. MEAS & REG STATION STRUCTURES	55-R3	0	1,707,340	-	207,196	(9,547)	-0.56%
376.0	MAINS	55-R3	-55	278,503,430	37,890,520	26,789,922	3,310,130	1.19%
378.0	MEAS & REG STATION EQUIP-GENERAL	50-R2	-30	5,144,890	364,101	344,025	31,101	0.60%
379.0	MEAS & REG STATION EQUIP-CITY GATE	45-R2.5	-5	11,726,166	96,310	215,959	8,748	0.07%
380.0	SERVICES	50-R2.5	-100	148,582,913	32,488,870	65,502,227	1,758,360	1.18%
381.0	METERS & METER INSTALLATIONS	31-R3	-20	84,646,197	6,559,083	486,229	1,468,656	1.74%
383.0	HOUSE REGULATORS	58-R2.5	-5	12,799,915	155,224	13,667	17,106	0.13%
385.0	INDUSTRIAL MEAS. & REG. STATION EQUIPMENT	40-R2	-10	2,750,416	62,638	78,152	5,804	0.21%
386.1	MISC. PROPERTY ON CUSTOMER'S PREMISES	15-R3	0	1,680	-	-	-	0.00%
387.2	OTHER EQUIPMENT	30-R3	0	1,785,360	-	-	-	0.00%
TOTAL DISTRIBUTION PLANT				548,934,689	77,616,746	93,651,132	6,590,044	1.20%
GENERAL PLANT								
390.0	STRUCTURES & IMPROVEMENTS	45-R2	0	15,766,936	-	722,850	(25,083)	-0.16%
391.1	OFFICE FURNITURE & EQUIPMENT	15-SQ	0	307,608	-	-	-	0.00%
391.3	COMPUTER EQUIPMENT - PC	5-SQ	0	18,699	-	-	-	0.00%
392.1	TRANSPORTATION EQUIPMENT - TRAILERS	20-R1	0	450,168	-	-	-	0.00%
392.2	TRANSPORTATION EQUIPMENT	10-L2	0	12,856,198	-	-	-	0.00%
393.0	STORES EQUIPMENT	30-SQ	0	103,298	-	-	-	0.00%
394.1	TOOLS, SHOP, & GARAGE EQUIPMENT	20-SQ	0	7,859,822	-	-	-	0.00%
394.3	VEHICLE MAINTENANCE EQUIPMENT	20-SQ	0	36,373	-	-	-	0.00%
395.0	LABORATORY EQUIPMENT	20-SQ	0	316,786	-	-	-	0.00%
396.1	POWER OPERATED EQUIPMENT - TRAILERS	25-L2	0	1,306,142	-	-	-	0.00%
396.2	POWER OPERATED EQUIPMENT	3-L1	0	9,040,554	-	-	-	0.00%
397.1	COMMUNICATION EQUIPMENT - FIXED RADIOS	15-SQ	0	1,190,544	-	-	-	0.00%
397.2	COMMUNICATION EQUIPMENT - MOBILE RADIOS	15-SQ	0	461,355	-	-	-	0.00%
397.3	GENERAL TELEPHONE COMMUNICATION EQUIPMENT	10-SQ	0	128,459	-	-	-	0.00%
397.8	NETWORK EQUIPMENT	5-SQ	0	40,306	-	-	-	0.00%
398.0	MISCELLANEOUS EQUIPMENT	25-SQ	0	71,705	-	-	-	0.00%
TOTAL GENERAL PLANT				49,954,953	0	722,850	(25,083)	-0.05%
TOTAL GAS PLANT STUDIED				598,889,642	77,616,746	94,373,981	6,564,961	1.10%
PLANT NOT STUDIED								
303.0	MISCELLANEOUS INTANGIBLE PLANT			10,496,877				
374.1	LAND			1,202,798				
386.2	CNG REFUELING STATION			-				
387.1	CATHODIC PROTECTION EQUIPMENT			-				
389.0	LAND & LAND RIGHTS GENERAL			2,603,081				
TOTAL PLANT				613,192,398				



SECTION 6

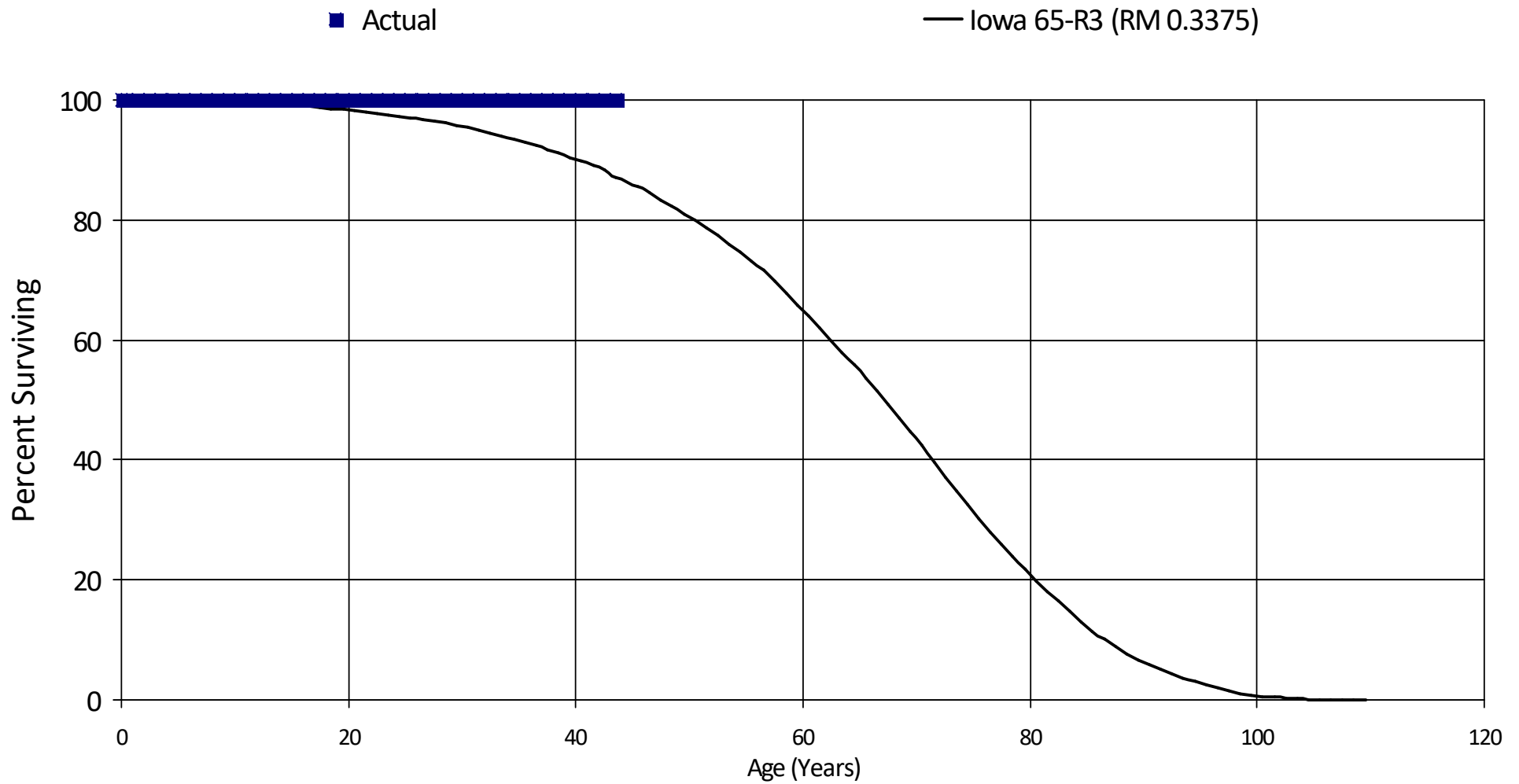
6 RETIREMENT RATE ANALYSIS

MDU Gas

Account 374.20 - Distribution Plant - Land Rights

Placement Band - 1977 - 2021 Experience Band - 2003 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 374.20 - Distribution Plant - Land Rights

Placement Band - 1977 - 2021 Experience Band - 2003 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,286,447	0	0.00000	1.00000	100.00
0.5	1,286,447	0	0.00000	1.00000	100.00
1.5	1,286,447	0	0.00000	1.00000	100.00
2.5	1,286,447	0	0.00000	1.00000	100.00
3.5	502,241	65	0.00013	0.99987	100.00
4.5	502,175	0	0.00000	1.00000	99.99
5.5	501,306	0	0.00000	1.00000	99.99
6.5	431,148	0	0.00000	1.00000	99.99
7.5	427,193	0	0.00000	1.00000	99.99
8.5	427,193	0	0.00000	1.00000	99.99
9.5	377,467	0	0.00000	1.00000	99.99
10.5	299,784	0	0.00000	1.00000	99.99
11.5	294,868	0	0.00000	1.00000	99.99
12.5	286,272	0	0.00000	1.00000	99.99
13.5	271,218	0	0.00000	1.00000	99.99
14.5	166,016	0	0.00000	1.00000	99.99
15.5	133,535	0	0.00000	1.00000	99.99
16.5	121,788	0	0.00000	1.00000	99.99
17.5	96,888	0	0.00000	1.00000	99.99
18.5	95,392	0	0.00000	1.00000	99.99
19.5	89,445	0	0.00000	1.00000	99.99
20.5	88,027	0	0.00000	1.00000	99.99
21.5	80,906	0	0.00000	1.00000	99.99
22.5	80,803	0	0.00000	1.00000	99.99
23.5	80,379	0	0.00000	1.00000	99.99
24.5	80,369	0	0.00000	1.00000	99.99
25.5	77,552	0	0.00000	1.00000	99.99
26.5	76,281	0	0.00000	1.00000	99.99

MDU Gas

Account 374.20 - Distribution Plant - Land Rights

Placement Band - 1977 - 2021 Experience Band - 2003 - 2021

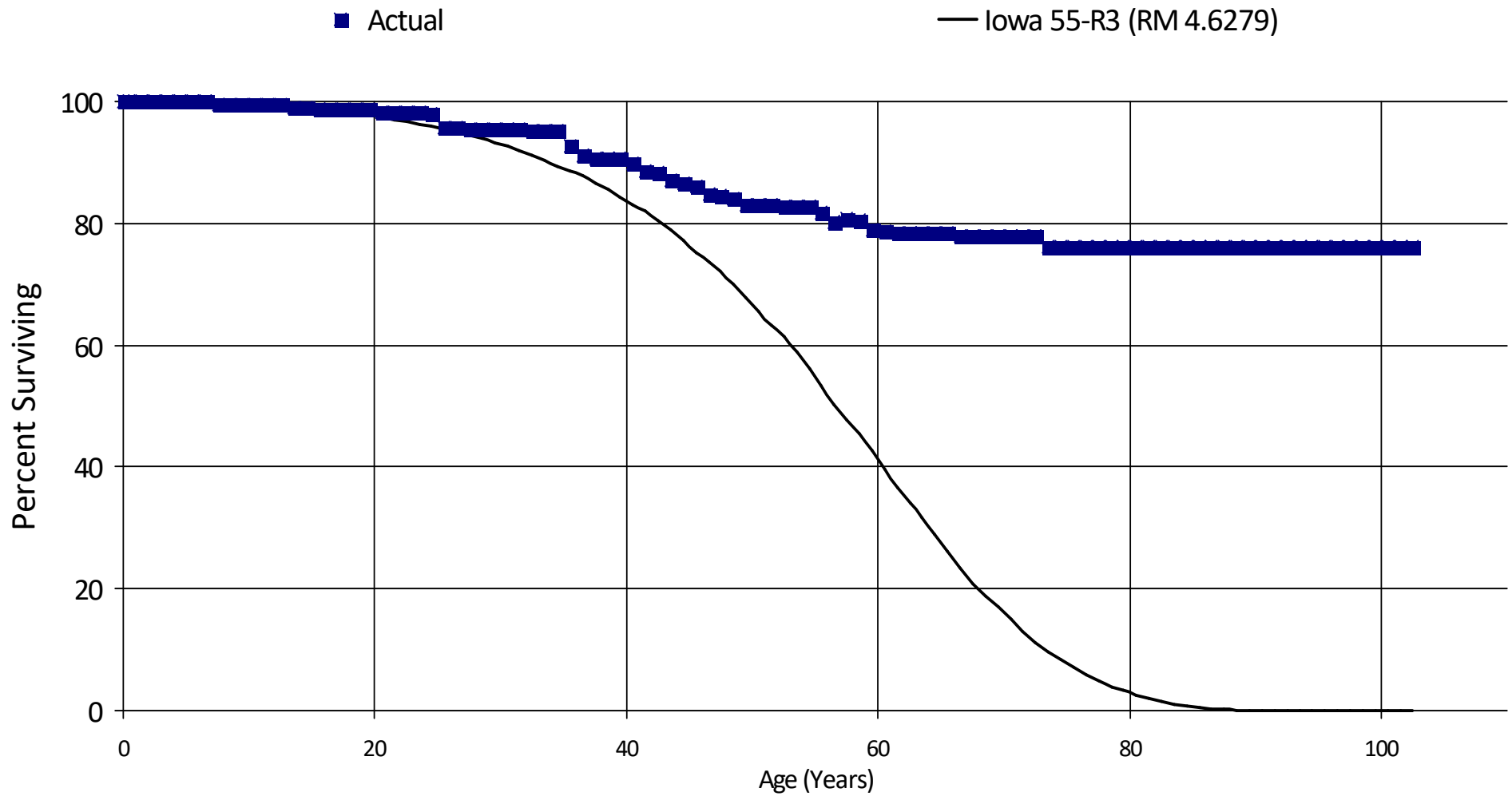
27.5	73,803	0	0.00000	1.00000	99.99
28.5	73,803	0	0.00000	1.00000	99.99
29.5	72,910	0	0.00000	1.00000	99.99
30.5	72,702	0	0.00000	1.00000	99.99
31.5	71,335	0	0.00000	1.00000	99.99
32.5	71,282	0	0.00000	1.00000	99.99
33.5	71,177	0	0.00000	1.00000	99.99
34.5	68,452	0	0.00000	1.00000	99.99
35.5	63,631	0	0.00000	1.00000	99.99
36.5	62,111	0	0.00000	1.00000	99.99
37.5	58,329	0	0.00000	1.00000	99.99
38.5	56,573	0	0.00000	1.00000	99.99
39.5	47,180	0	0.00000	1.00000	99.99
40.5	45,923	0	0.00000	1.00000	99.99
41.5	44,727	0	0.00000	1.00000	99.99
42.5	44,023	0	0.00000	1.00000	99.99
43.5	11,087	0	0.00000	1.00000	99.99
Totals:		65			

MDU Gas

Account 375.00 - Distribution Plant - Structures & Improvements

Placement Band - 1918 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 375.00 - Distribution Plant - Structures & Improvements

Placement Band - 1918 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,787,999	0	0.00000	1.00000	100.00
0.5	1,677,048	0	0.00000	1.00000	100.00
1.5	1,654,250	0	0.00000	1.00000	100.00
2.5	1,629,790	771	0.00047	0.99953	100.00
3.5	1,603,017	0	0.00000	1.00000	99.95
4.5	1,522,696	0	0.00000	1.00000	99.95
5.5	1,500,252	0	0.00000	1.00000	99.95
6.5	1,103,280	4,564	0.00414	0.99586	99.95
7.5	859,012	0	0.00000	1.00000	99.54
8.5	821,600	0	0.00000	1.00000	99.54
9.5	763,783	0	0.00000	1.00000	99.54
10.5	632,686	956	0.00151	0.99849	99.54
11.5	621,050	0	0.00000	1.00000	99.39
12.5	621,050	1,856	0.00299	0.99701	99.39
13.5	584,214	0	0.00000	1.00000	99.09
14.5	581,746	1,970	0.00339	0.99661	99.09
15.5	569,847	0	0.00000	1.00000	98.75
16.5	555,897	0	0.00000	1.00000	98.75
17.5	551,787	0	0.00000	1.00000	98.75
18.5	529,637	0	0.00000	1.00000	98.75
19.5	529,637	3,370	0.00636	0.99364	98.75
20.5	526,267	0	0.00000	1.00000	98.12
21.5	525,587	0	0.00000	1.00000	98.12
22.5	525,587	0	0.00000	1.00000	98.12
23.5	523,413	1,079	0.00206	0.99794	98.12
24.5	509,850	11,887	0.02331	0.97669	97.92
25.5	495,549	0	0.00000	1.00000	95.64
26.5	509,332	1,213	0.00238	0.99762	95.64

MDU Gas

Account 375.00 - Distribution Plant - Structures & Improvements

Placement Band - 1918 - 2021 Experience Band - 1995 - 2021

27.5	439,926	0	0.00000	1.00000	95.41
28.5	396,850	0	0.00000	1.00000	95.41
29.5	383,303	284	0.00074	0.99926	95.41
30.5	369,601	0	0.00000	1.00000	95.34
31.5	368,148	721	0.00196	0.99804	95.34
32.5	359,773	0	0.00000	1.00000	95.15
33.5	358,760	0	0.00000	1.00000	95.15
34.5	358,333	9,653	0.02694	0.97306	95.15
35.5	335,017	5,125	0.01530	0.98470	92.59
36.5	303,346	1,613	0.00532	0.99468	91.17
37.5	295,287	0	0.00000	1.00000	90.68
38.5	299,029	350	0.00117	0.99883	90.68
39.5	289,132	2,494	0.00863	0.99137	90.57
40.5	286,127	3,523	0.01231	0.98769	89.79
41.5	281,786	779	0.00276	0.99724	88.68
42.5	278,117	4,669	0.01679	0.98321	88.44
43.5	273,448	1,630	0.00596	0.99404	86.96
44.5	271,818	950	0.00349	0.99651	86.44
45.5	270,868	3,929	0.01451	0.98549	86.14
46.5	265,314	938	0.00354	0.99646	84.89
47.5	261,133	1,757	0.00673	0.99327	84.59
48.5	256,426	3,423	0.01335	0.98665	84.02
49.5	249,857	0	0.00000	1.00000	82.90
50.5	244,705	0	0.00000	1.00000	82.90
51.5	234,097	344	0.00147	0.99853	82.90
52.5	227,561	0	0.00000	1.00000	82.78
53.5	221,054	0	0.00000	1.00000	82.78
54.5	214,950	2,483	0.01155	0.98845	82.78
55.5	207,086	3,839	0.01854	0.98146	81.82
56.5	195,887	-1,237	-0.00631	1.00631	80.30
57.5	191,242	670	0.00350	0.99650	80.81

MDU Gas

Account 375.00 - Distribution Plant - Structures & Improvements

Placement Band - 1918 - 2021 Experience Band - 1995 - 2021

58.5	173,780	3,253	0.01872	0.98128	80.53
59.5	147,943	664	0.00449	0.99551	79.02
60.5	136,071	315	0.00231	0.99769	78.67
61.5	123,078	0	0.00000	1.00000	78.49
62.5	113,432	0	0.00000	1.00000	78.49
63.5	99,794	0	0.00000	1.00000	78.49
64.5	88,718	0	0.00000	1.00000	78.49
65.5	59,502	373	0.00627	0.99373	78.49
66.5	51,463	0	0.00000	1.00000	78.00
67.5	32,329	0	0.00000	1.00000	78.00
68.5	29,194	0	0.00000	1.00000	78.00
69.5	24,377	0	0.00000	1.00000	78.00
70.5	20,333	0	0.00000	1.00000	78.00
71.5	19,374	0	0.00000	1.00000	78.00
72.5	18,821	450	0.02391	0.97609	78.00
73.5	17,487	0	0.00000	1.00000	76.14
74.5	16,602	0	0.00000	1.00000	76.14
75.5	15,717	0	0.00000	1.00000	76.14
76.5	15,717	0	0.00000	1.00000	76.14
77.5	15,717	0	0.00000	1.00000	76.14
78.5	15,717	0	0.00000	1.00000	76.14
79.5	15,717	0	0.00000	1.00000	76.14
80.5	15,717	0	0.00000	1.00000	76.14
81.5	14,832	0	0.00000	1.00000	76.14
82.5	13,969	0	0.00000	1.00000	76.14
83.5	13,127	0	0.00000	1.00000	76.14
84.5	12,306	0	0.00000	1.00000	76.14
85.5	11,504	0	0.00000	1.00000	76.14
86.5	10,722	0	0.00000	1.00000	76.14
87.5	9,959	0	0.00000	1.00000	76.14
88.5	9,215	0	0.00000	1.00000	76.14

MDU Gas

Account 375.00 - Distribution Plant - Structures & Improvements

Placement Band - 1918 - 2021 Experience Band - 1995 - 2021

89.5	8,489	0	0.00000	1.00000	76.14
90.5	7,781	0	0.00000	1.00000	76.14
91.5	7,089	0	0.00000	1.00000	76.14
92.5	6,415	0	0.00000	1.00000	76.14
93.5	5,757	0	0.00000	1.00000	76.14
94.5	5,116	0	0.00000	1.00000	76.14
95.5	4,489	0	0.00000	1.00000	76.14
96.5	3,879	0	0.00000	1.00000	76.14
97.5	3,283	0	0.00000	1.00000	76.14
98.5	2,701	0	0.00000	1.00000	76.14
99.5	2,134	0	0.00000	1.00000	76.14
100.5	1,581	0	0.00000	1.00000	76.14
101.5	1,041	0	0.00000	1.00000	76.14
102.5	514	0	0.00000	1.00000	76.14

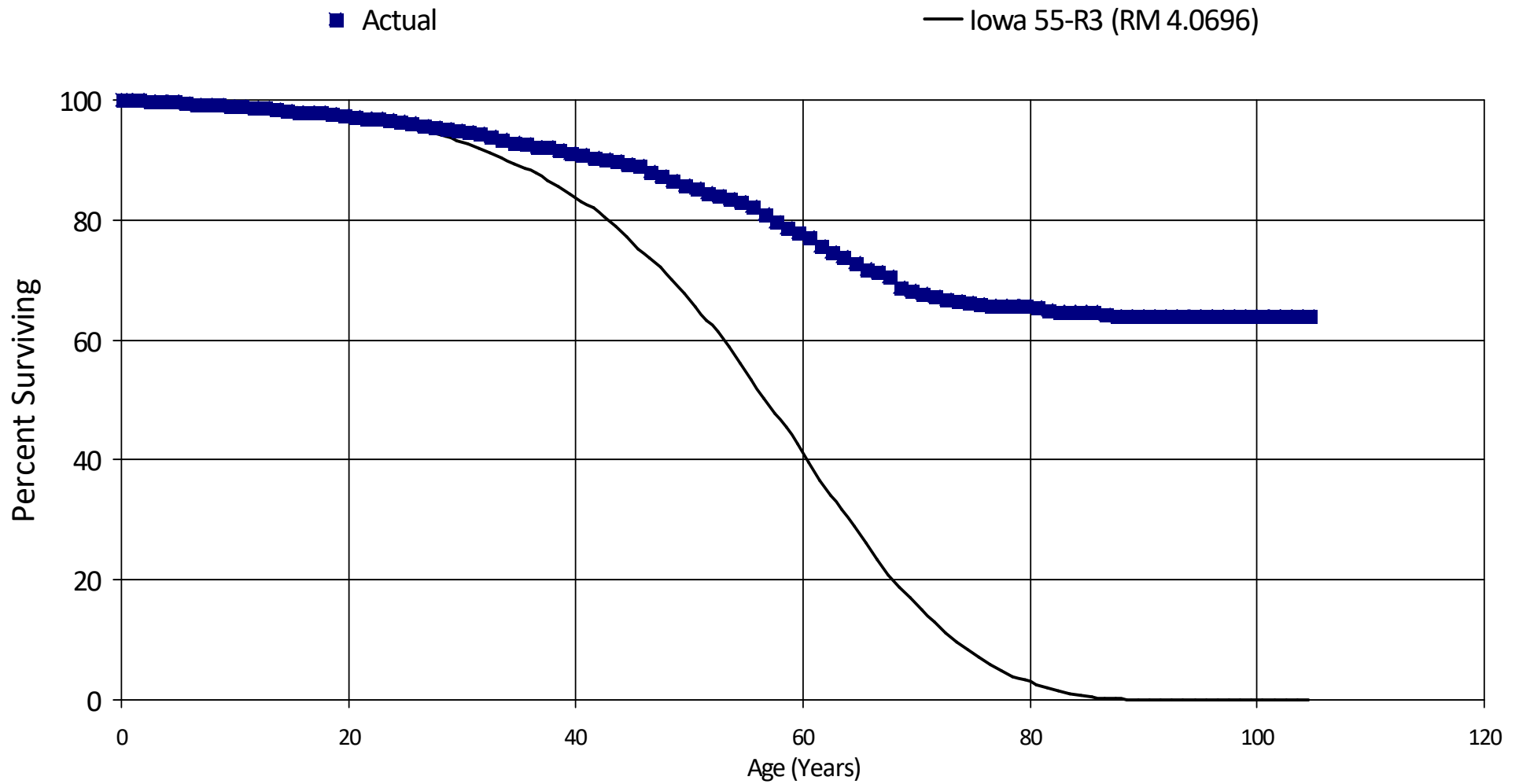
Totals: 80,658

MDU Gas

Account 376.00 - Distribution Plant - Mains

Placement Band - 1916 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 376.00 - Distribution Plant - Mains

Placement Band - 1916 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	289,580,288	9,329	0.00003	0.99997	100.00
0.5	272,772,142	184,249	0.00068	0.99932	100.00
1.5	259,644,406	318,620	0.00123	0.99877	99.93
2.5	240,324,991	122,861	0.00051	0.99949	99.81
3.5	217,955,116	304,585	0.00140	0.99860	99.76
4.5	207,520,882	260,382	0.00125	0.99875	99.62
5.5	199,479,931	319,717	0.00160	0.99840	99.50
6.5	187,285,551	144,451	0.00077	0.99923	99.34
7.5	150,985,622	160,437	0.00106	0.99894	99.26
8.5	138,229,932	111,208	0.00080	0.99920	99.15
9.5	122,045,581	168,728	0.00138	0.99862	99.07
10.5	115,922,529	97,897	0.00084	0.99916	98.93
11.5	111,773,589	192,489	0.00172	0.99828	98.85
12.5	108,488,813	148,228	0.00137	0.99863	98.68
13.5	101,073,136	300,208	0.00297	0.99703	98.54
14.5	97,472,114	161,824	0.00166	0.99834	98.25
15.5	93,709,593	99,915	0.00107	0.99893	98.09
16.5	88,852,345	111,404	0.00125	0.99875	97.99
17.5	85,109,519	171,385	0.00201	0.99799	97.87
18.5	81,645,835	180,129	0.00221	0.99779	97.67
19.5	78,711,762	169,556	0.00215	0.99785	97.45
20.5	76,573,961	222,491	0.00291	0.99709	97.24
21.5	74,577,253	100,933	0.00135	0.99865	96.96
22.5	72,916,691	100,698	0.00138	0.99862	96.83
23.5	71,233,735	195,145	0.00274	0.99726	96.70
24.5	69,245,048	175,058	0.00253	0.99747	96.44
25.5	67,072,117	278,632	0.00415	0.99585	96.20
26.5	65,484,029	227,397	0.00347	0.99653	95.80

MDU Gas

Account 376.00 - Distribution Plant - Mains

Placement Band - 1916 - 2021 Experience Band - 1995 - 2021

27.5	60,456,636	111,560	0.00185	0.99815	95.47
28.5	52,988,318	136,709	0.00258	0.99742	95.29
29.5	50,546,823	157,091	0.00311	0.99689	95.04
30.5	48,804,608	229,766	0.00471	0.99529	94.74
31.5	47,409,404	169,576	0.00358	0.99642	94.29
32.5	46,302,317	209,607	0.00453	0.99547	93.95
33.5	44,898,389	308,402	0.00687	0.99313	93.52
34.5	43,087,484	166,398	0.00386	0.99614	92.88
35.5	40,837,871	138,551	0.00339	0.99661	92.52
36.5	38,960,846	83,961	0.00216	0.99784	92.21
37.5	37,548,214	205,970	0.00549	0.99451	92.01
38.5	35,659,460	149,563	0.00419	0.99581	91.50
39.5	33,579,259	131,135	0.00391	0.99609	91.12
40.5	31,614,223	105,772	0.00335	0.99665	90.76
41.5	29,456,452	76,781	0.00261	0.99739	90.46
42.5	27,838,418	98,825	0.00355	0.99645	90.22
43.5	26,989,048	133,512	0.00495	0.99505	89.90
44.5	26,270,798	140,021	0.00533	0.99467	89.45
45.5	24,998,189	218,209	0.00873	0.99127	88.97
46.5	23,972,924	239,467	0.00999	0.99001	88.19
47.5	23,264,420	217,274	0.00934	0.99066	87.31
48.5	22,161,993	172,373	0.00778	0.99222	86.49
49.5	20,206,712	154,124	0.00763	0.99237	85.82
50.5	19,364,661	175,922	0.00908	0.99092	85.17
51.5	16,476,537	98,171	0.00596	0.99404	84.40
52.5	15,705,183	83,295	0.00530	0.99470	83.90
53.5	14,867,205	91,816	0.00618	0.99382	83.46
54.5	14,173,174	134,631	0.00950	0.99050	82.94
55.5	13,545,597	207,034	0.01528	0.98472	82.15
56.5	12,674,524	194,106	0.01531	0.98469	80.89
57.5	11,752,677	128,954	0.01097	0.98903	79.65

MDU Gas

Account 376.00 - Distribution Plant - Mains

Placement Band - 1916 - 2021 Experience Band - 1995 - 2021

58.5	10,894,550	108,041	0.00992	0.99008	78.78
59.5	9,905,979	119,865	0.01210	0.98790	78.00
60.5	9,175,527	162,002	0.01766	0.98234	77.06
61.5	8,303,434	105,570	0.01271	0.98729	75.70
62.5	7,606,875	94,707	0.01245	0.98755	74.74
63.5	7,046,449	85,019	0.01207	0.98793	73.81
64.5	6,597,867	99,792	0.01512	0.98488	72.92
65.5	5,825,400	37,586	0.00645	0.99355	71.82
66.5	5,003,754	61,209	0.01223	0.98777	71.36
67.5	4,476,247	102,002	0.02279	0.97721	70.49
68.5	3,986,815	37,358	0.00937	0.99063	68.88
69.5	3,439,344	29,581	0.00860	0.99140	68.23
70.5	3,088,189	22,755	0.00737	0.99263	67.64
71.5	2,683,238	19,760	0.00736	0.99264	67.14
72.5	2,552,456	5,248	0.00206	0.99794	66.65
73.5	2,433,018	10,182	0.00418	0.99582	66.51
74.5	2,320,647	8,954	0.00386	0.99614	66.23
75.5	2,200,311	5,439	0.00247	0.99753	65.97
76.5	2,196,484	3,026	0.00138	0.99862	65.81
77.5	2,193,570	2,224	0.00101	0.99899	65.72
78.5	2,191,394	1,023	0.00047	0.99953	65.65
79.5	2,190,393	6,198	0.00283	0.99717	65.62
80.5	2,191,494	15,785	0.00720	0.99280	65.43
81.5	2,062,108	4,112	0.00199	0.99801	64.96
82.5	1,954,843	4,735	0.00242	0.99758	64.83
83.5	1,845,046	8	0.00000	1.00000	64.67
84.5	1,736,468	473	0.00027	0.99973	64.67
85.5	1,630,009	14,161	0.00869	0.99131	64.65
86.5	1,525,962	542	0.00036	0.99964	64.09
87.5	1,424,216	2,496	0.00175	0.99825	64.07
88.5	1,322,985	475	0.00036	0.99964	63.96

MDU Gas

Account 376.00 - Distribution Plant - Mains

Placement Band - 1916 - 2021 Experience Band - 1995 - 2021

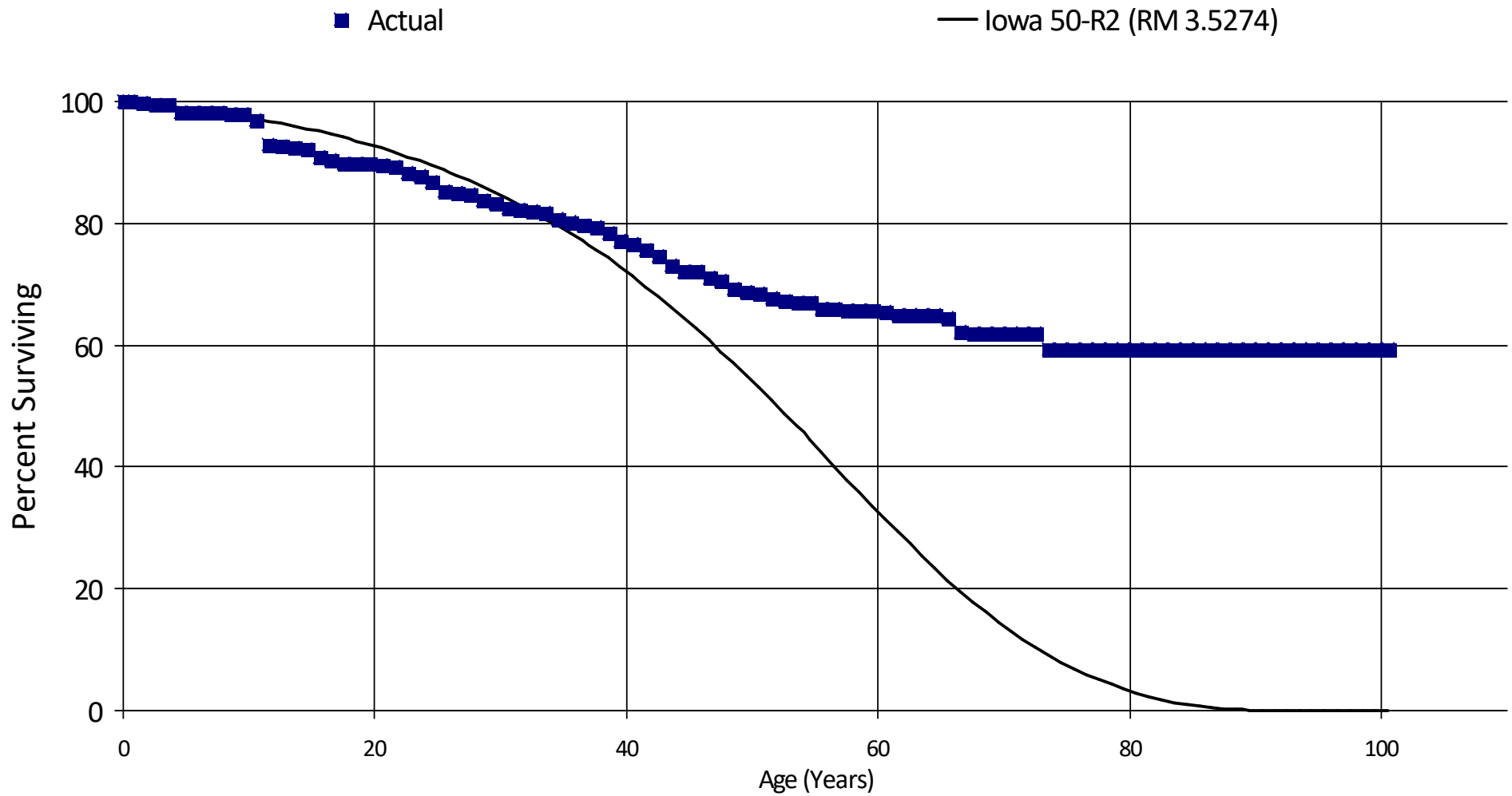
89.5	1,226,634	0	0.00000	1.00000	63.94
90.5	1,135,377	0	0.00000	1.00000	63.94
91.5	1,044,758	0	0.00000	1.00000	63.94
92.5	955,309	0	0.00000	1.00000	63.94
93.5	868,041	0	0.00000	1.00000	63.94
94.5	783,152	0	0.00000	1.00000	63.94
95.5	700,089	0	0.00000	1.00000	63.94
96.5	619,052	0	0.00000	1.00000	63.94
97.5	539,992	0	0.00000	1.00000	63.94
98.5	462,859	0	0.00000	1.00000	63.94
99.5	387,609	0	0.00000	1.00000	63.94
100.5	314,193	0	0.00000	1.00000	63.94
101.5	242,568	0	0.00000	1.00000	63.94
102.5	172,690	0	0.00000	1.00000	63.94
103.5	104,517	0	0.00000	1.00000	63.94
104.5	38,006	0	0.00000	1.00000	63.94
Totals:		11,076,860			

MDU Gas

Account 378.00 - Distribution Plant - Meas. & Reg. Station Equip - General

Placement Band - 1920 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 378.00 - Distribution Plant - Meas. & Reg. Station Equip - General

Placement Band - 1920 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	5,680,886	0	0.00000	1.00000	100.00
0.5	4,944,399	14,586	0.00295	0.99705	100.00
1.5	4,526,773	9,904	0.00219	0.99781	99.70
2.5	4,386,714	1,371	0.00031	0.99969	99.48
3.5	3,989,578	50,519	0.01266	0.98734	99.45
4.5	3,769,378	510	0.00014	0.99986	98.19
5.5	3,651,958	2,696	0.00074	0.99926	98.18
6.5	3,362,399	0	0.00000	1.00000	98.11
7.5	3,234,556	2,995	0.00093	0.99907	98.11
8.5	3,078,485	0	0.00000	1.00000	98.02
9.5	2,845,218	28,020	0.00985	0.99015	98.02
10.5	2,331,395	97,010	0.04161	0.95839	97.05
11.5	2,165,927	7,900	0.00365	0.99635	93.01
12.5	2,142,112	5,265	0.00246	0.99754	92.67
13.5	1,952,374	5,427	0.00278	0.99722	92.44
14.5	1,875,623	28,891	0.01540	0.98460	92.18
15.5	1,762,044	9,744	0.00553	0.99447	90.76
16.5	1,632,884	5,674	0.00347	0.99653	90.26
17.5	1,482,964	1,347	0.00091	0.99909	89.95
18.5	1,447,995	0	0.00000	1.00000	89.87
19.5	1,391,434	4,798	0.00345	0.99655	89.87
20.5	1,361,981	3,139	0.00230	0.99770	89.56
21.5	1,335,076	16,922	0.01267	0.98733	89.35
22.5	1,288,531	4,545	0.00353	0.99647	88.22
23.5	1,258,120	16,700	0.01327	0.98673	87.91
24.5	1,183,998	18,740	0.01583	0.98417	86.74
25.5	1,161,592	5,005	0.00431	0.99569	85.37
26.5	1,167,696	4,233	0.00363	0.99637	85.00

MDU Gas

Account 378.00 - Distribution Plant - Meas. & Reg. Station Equip - General

Placement Band - 1920 - 2021 Experience Band - 1995 - 2021

27.5	1,117,548	12,114	0.01084	0.98916	84.69
28.5	1,037,777	5,416	0.00522	0.99478	83.77
29.5	1,005,446	11,327	0.01127	0.98873	83.33
30.5	980,950	2,265	0.00231	0.99769	82.39
31.5	975,020	3,644	0.00374	0.99626	82.20
32.5	949,462	2,142	0.00226	0.99774	81.89
33.5	924,319	10,317	0.01116	0.98884	81.70
34.5	899,459	5,771	0.00642	0.99358	80.79
35.5	877,512	5,880	0.00670	0.99330	80.27
36.5	858,157	4,189	0.00488	0.99512	79.73
37.5	834,348	9,632	0.01154	0.98846	79.34
38.5	797,372	13,391	0.01679	0.98321	78.42
39.5	747,647	4,581	0.00613	0.99387	77.10
40.5	740,400	10,492	0.01417	0.98583	76.63
41.5	698,181	7,469	0.01070	0.98930	75.54
42.5	684,156	15,542	0.02272	0.97728	74.73
43.5	655,473	7,887	0.01203	0.98797	73.03
44.5	620,870	1,614	0.00260	0.99740	72.15
45.5	575,419	6,944	0.01207	0.98793	71.96
46.5	545,191	4,261	0.00782	0.99218	71.09
47.5	494,589	8,821	0.01783	0.98217	70.53
48.5	472,511	4,143	0.00877	0.99123	69.27
49.5	452,289	189	0.00042	0.99958	68.66
50.5	430,511	6,079	0.01412	0.98588	68.63
51.5	400,329	2,697	0.00674	0.99326	67.66
52.5	377,519	908	0.00241	0.99759	67.20
53.5	362,290	143	0.00039	0.99961	67.04
54.5	352,978	4,992	0.01414	0.98586	67.01
55.5	336,484	983	0.00292	0.99708	66.06
56.5	309,915	350	0.00113	0.99887	65.87
57.5	298,507	-253	-0.00085	1.00085	65.80

MDU Gas

Account 378.00 - Distribution Plant - Meas. & Reg. Station Equip - General

Placement Band - 1920 - 2021 Experience Band - 1995 - 2021

58.5	285,330	1,081	0.00379	0.99621	65.86
59.5	269,338	613	0.00228	0.99772	65.61
60.5	250,678	1,782	0.00711	0.99289	65.46
61.5	223,744	0	0.00000	1.00000	64.99
62.5	207,099	0	0.00000	1.00000	64.99
63.5	196,249	170	0.00087	0.99913	64.99
64.5	190,926	1,314	0.00688	0.99312	64.93
65.5	175,570	6,291	0.03583	0.96417	64.48
66.5	149,121	319	0.00214	0.99786	62.17
67.5	135,535	0	0.00000	1.00000	62.04
68.5	130,258	0	0.00000	1.00000	62.04
69.5	122,803	0	0.00000	1.00000	62.04
70.5	129,094	0	0.00000	1.00000	62.04
71.5	113,355	0	0.00000	1.00000	62.04
72.5	108,163	4,560	0.04216	0.95784	62.04
73.5	96,521	0	0.00000	1.00000	59.42
74.5	91,328	0	0.00000	1.00000	59.42
75.5	86,136	0	0.00000	1.00000	59.42
76.5	86,136	0	0.00000	1.00000	59.42
77.5	86,136	0	0.00000	1.00000	59.42
78.5	86,136	0	0.00000	1.00000	59.42
79.5	86,136	0	0.00000	1.00000	59.42
80.5	86,136	0	0.00000	1.00000	59.42
81.5	80,944	0	0.00000	1.00000	59.42
82.5	75,878	0	0.00000	1.00000	59.42
83.5	70,936	0	0.00000	1.00000	59.42
84.5	66,114	0	0.00000	1.00000	59.42
85.5	61,410	0	0.00000	1.00000	59.42
86.5	56,821	0	0.00000	1.00000	59.42
87.5	52,344	0	0.00000	1.00000	59.42
88.5	47,976	0	0.00000	1.00000	59.42

MDU Gas

Account 378.00 - Distribution Plant - Meas. & Reg. Station Equip - General

Placement Band - 1920 - 2021 Experience Band - 1995 - 2021

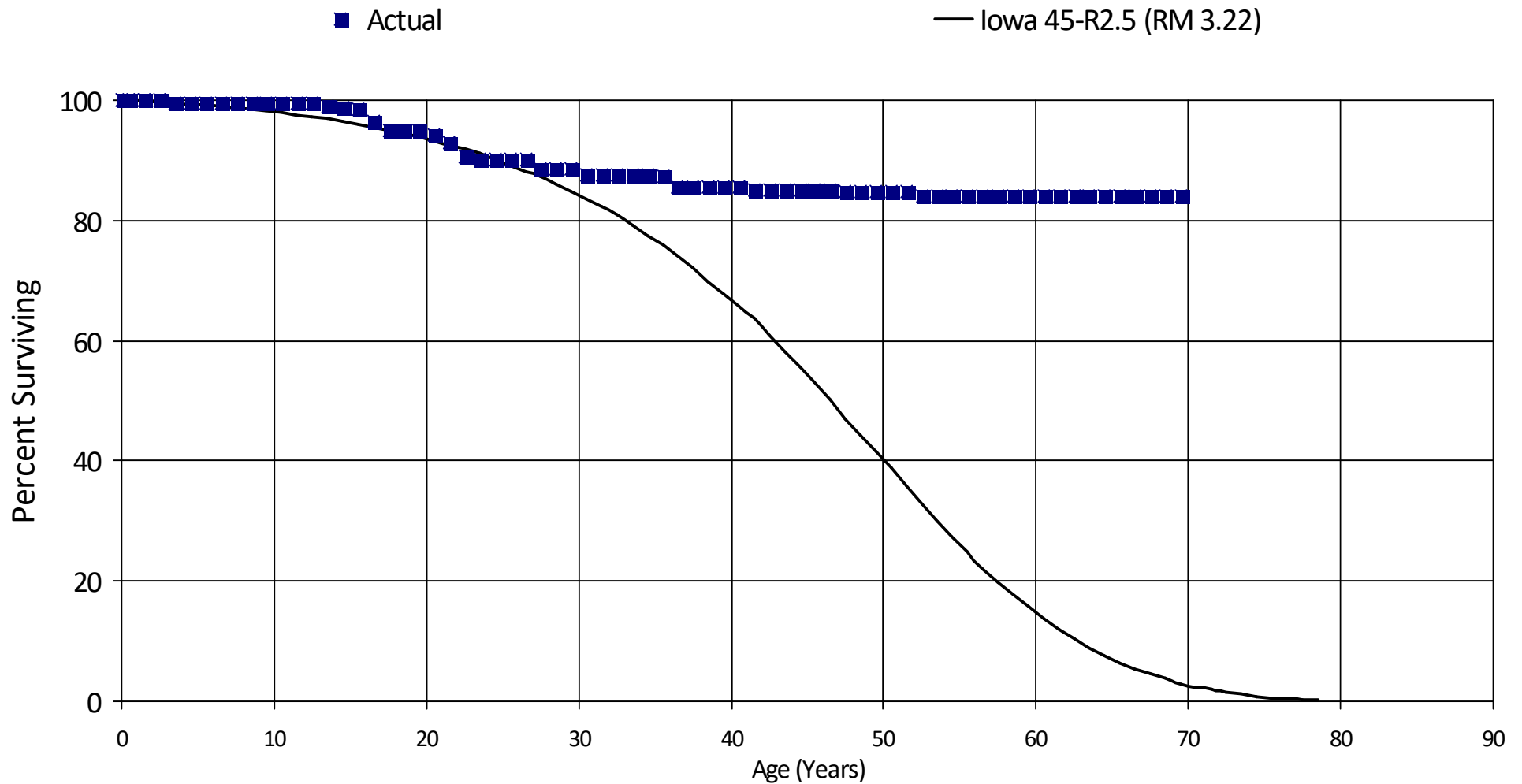
89.5	43,714	0	0.00000	1.00000	59.42
90.5	39,557	0	0.00000	1.00000	59.42
91.5	35,500	0	0.00000	1.00000	59.42
92.5	31,543	0	0.00000	1.00000	59.42
93.5	27,682	0	0.00000	1.00000	59.42
94.5	23,916	0	0.00000	1.00000	59.42
95.5	20,241	0	0.00000	1.00000	59.42
96.5	16,656	0	0.00000	1.00000	59.42
97.5	13,158	0	0.00000	1.00000	59.42
98.5	9,746	0	0.00000	1.00000	59.42
99.5	6,417	0	0.00000	1.00000	59.42
100.5	3,169	0	0.00000	1.00000	59.42
Totals:		536,001			

MDU Gas

Account 379.00 - Distribution Plant - Meas. & Reg. Station Equip - City Gate

Placement Band - 1951 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 379.00 - Distribution Plant - Meas. & Reg. Station Equip - City Gate

Placement Band - 1951 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	11,919,701	0	0.00000	1.00000	100.00
0.5	11,366,755	0	0.00000	1.00000	100.00
1.5	11,362,728	1,429	0.00013	0.99987	100.00
2.5	10,132,563	39,578	0.00391	0.99609	99.99
3.5	7,847,033	8,268	0.00105	0.99895	99.60
4.5	6,977,354	0	0.00000	1.00000	99.50
5.5	6,283,271	0	0.00000	1.00000	99.50
6.5	5,072,334	0	0.00000	1.00000	99.50
7.5	4,449,044	0	0.00000	1.00000	99.50
8.5	2,409,770	2,446	0.00102	0.99898	99.50
9.5	1,726,715	0	0.00000	1.00000	99.40
10.5	1,299,745	0	0.00000	1.00000	99.40
11.5	1,169,143	0	0.00000	1.00000	99.40
12.5	1,163,218	4,756	0.00409	0.99591	99.40
13.5	1,135,018	3,340	0.00294	0.99706	98.99
14.5	1,131,677	2,594	0.00229	0.99771	98.70
15.5	1,123,564	23,768	0.02115	0.97885	98.47
16.5	1,099,797	15,454	0.01405	0.98595	96.39
17.5	1,079,157	0	0.00000	1.00000	95.04
18.5	1,055,985	0	0.00000	1.00000	95.04
19.5	1,055,985	9,848	0.00933	0.99067	95.04
20.5	1,046,136	14,000	0.01338	0.98662	94.15
21.5	1,032,136	26,327	0.02551	0.97449	92.89
22.5	1,005,810	3,713	0.00369	0.99631	90.52
23.5	996,896	80	0.00008	0.99992	90.19
24.5	954,544	0	0.00000	1.00000	90.18
25.5	954,544	0	0.00000	1.00000	90.18
26.5	934,115	15,278	0.01636	0.98364	90.18

MDU Gas

Account 379.00 - Distribution Plant - Meas. & Reg. Station Equip - City Gate

Placement Band - 1951 - 2021 Experience Band - 1995 - 2021

27.5	685,023	0	0.00000	1.00000	88.70
28.5	463,609	0	0.00000	1.00000	88.70
29.5	463,609	6,280	0.01355	0.98645	88.70
30.5	456,779	0	0.00000	1.00000	87.50
31.5	455,735	0	0.00000	1.00000	87.50
32.5	455,735	0	0.00000	1.00000	87.50
33.5	455,735	0	0.00000	1.00000	87.50
34.5	455,713	1,470	0.00323	0.99677	87.50
35.5	453,802	8,335	0.01837	0.98163	87.22
36.5	445,467	0	0.00000	1.00000	85.62
37.5	442,127	903	0.00204	0.99796	85.62
38.5	428,732	0	0.00000	1.00000	85.45
39.5	417,889	0	0.00000	1.00000	85.45
40.5	407,343	1,664	0.00409	0.99591	85.45
41.5	386,959	500	0.00129	0.99871	85.10
42.5	383,465	0	0.00000	1.00000	84.99
43.5	372,522	0	0.00000	1.00000	84.99
44.5	370,078	0	0.00000	1.00000	84.99
45.5	360,513	0	0.00000	1.00000	84.99
46.5	356,429	1,039	0.00292	0.99708	84.99
47.5	335,100	0	0.00000	1.00000	84.74
48.5	319,906	0	0.00000	1.00000	84.74
49.5	298,275	0	0.00000	1.00000	84.74
50.5	286,344	0	0.00000	1.00000	84.74
51.5	261,488	2,391	0.00914	0.99086	84.74
52.5	248,058	0	0.00000	1.00000	83.97
53.5	237,986	0	0.00000	1.00000	83.97
54.5	221,778	0	0.00000	1.00000	83.97
55.5	218,653	75	0.00034	0.99966	83.97
56.5	196,667	0	0.00000	1.00000	83.94
57.5	152,999	0	0.00000	1.00000	83.94

MDU Gas

Account 379.00 - Distribution Plant - Meas. & Reg. Station Equip - City Gate

Placement Band - 1951 - 2021 Experience Band - 1995 - 2021

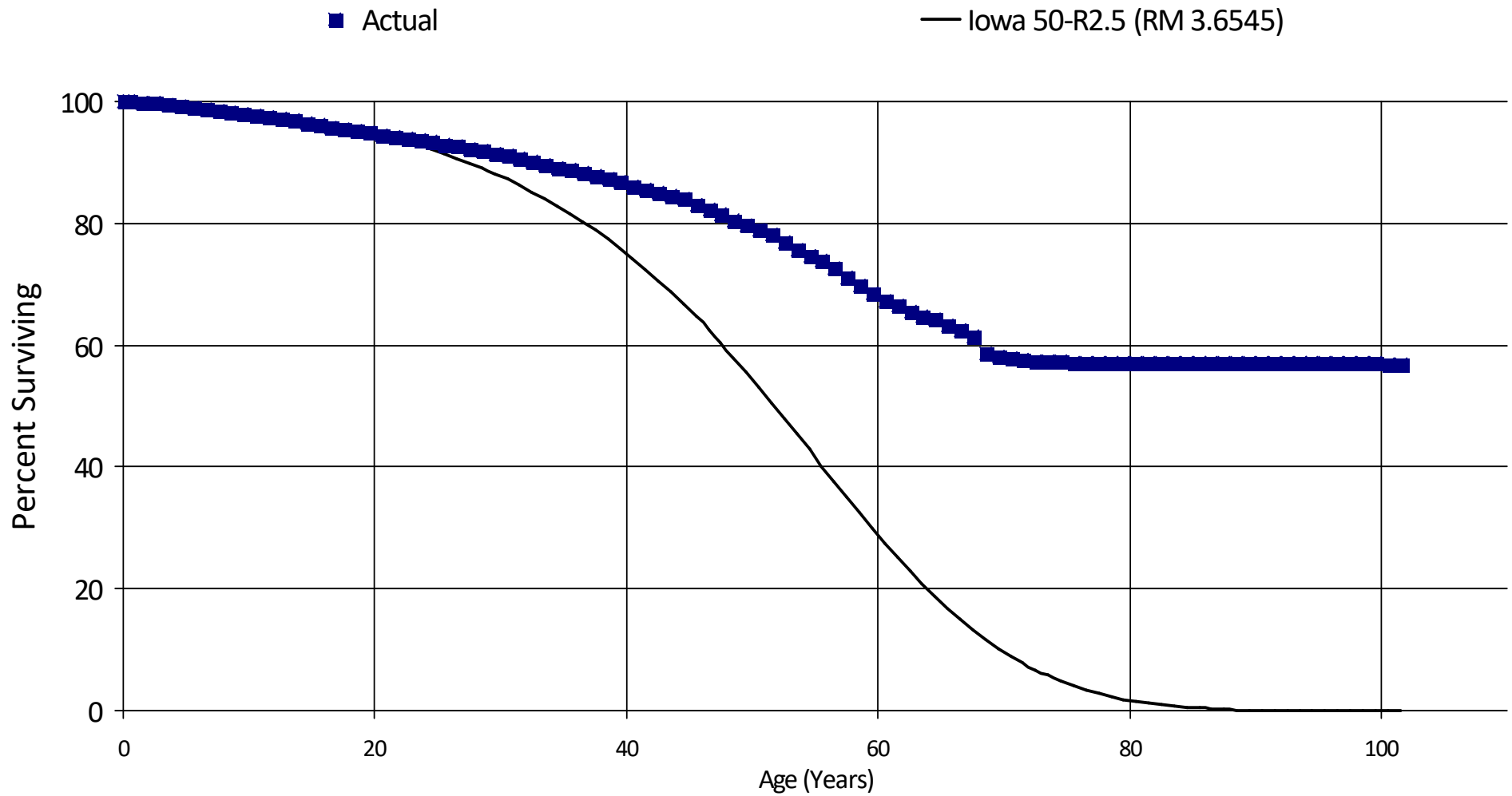
58.5	135,909	0	0.00000	1.00000	83.94
59.5	114,833	0	0.00000	1.00000	83.94
60.5	94,839	0	0.00000	1.00000	83.94
61.5	94,839	0	0.00000	1.00000	83.94
62.5	94,839	0	0.00000	1.00000	83.94
63.5	92,449	0	0.00000	1.00000	83.94
64.5	86,007	0	0.00000	1.00000	83.94
65.5	83,366	0	0.00000	1.00000	83.94
66.5	72,277	0	0.00000	1.00000	83.94
67.5	55,767	0	0.00000	1.00000	83.94
68.5	42,976	0	0.00000	1.00000	83.94
69.5	32,046	0	0.00000	1.00000	83.94
Totals:		193,536			

MDU Gas

Account 380.00 - Distribution Plant - Services

Placement Band - 1901 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 380.00 - Distribution Plant - Services

Placement Band - 1901 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	155,488,513	14,244	0.00009	0.99991	100.00
0.5	143,151,275	235,022	0.00164	0.99836	99.99
1.5	133,652,563	267,940	0.00200	0.99800	99.83
2.5	120,390,523	262,094	0.00218	0.99782	99.63
3.5	110,612,597	260,661	0.00236	0.99764	99.41
4.5	102,642,555	246,846	0.00240	0.99760	99.18
5.5	96,165,359	202,463	0.00211	0.99789	98.94
6.5	88,560,869	209,180	0.00236	0.99764	98.73
7.5	80,409,231	219,338	0.00273	0.99727	98.50
8.5	72,207,946	142,943	0.00198	0.99802	98.23
9.5	64,323,175	237,091	0.00369	0.99631	98.04
10.5	58,905,028	125,460	0.00213	0.99787	97.68
11.5	55,065,125	152,798	0.00277	0.99723	97.47
12.5	51,669,963	169,527	0.00328	0.99672	97.20
13.5	47,813,156	221,401	0.00463	0.99537	96.88
14.5	44,627,393	162,747	0.00365	0.99635	96.43
15.5	41,609,925	130,109	0.00313	0.99687	96.08
16.5	38,746,414	127,557	0.00329	0.99671	95.78
17.5	36,102,731	132,966	0.00368	0.99632	95.46
18.5	33,854,035	107,557	0.00318	0.99682	95.11
19.5	32,364,961	107,817	0.00333	0.99667	94.81
20.5	31,075,619	93,390	0.00301	0.99699	94.49
21.5	29,914,404	86,108	0.00288	0.99712	94.21
22.5	28,829,650	100,537	0.00349	0.99651	93.94
23.5	27,521,303	81,764	0.00297	0.99703	93.61
24.5	26,010,929	99,470	0.00382	0.99618	93.33
25.5	24,414,965	89,388	0.00366	0.99634	92.97
26.5	23,674,525	101,537	0.00429	0.99571	92.63

MDU Gas

Account 380.00 - Distribution Plant - Services

Placement Band - 1901 - 2021 Experience Band - 1995 - 2021

27.5	21,578,782	90,138	0.00418	0.99582	92.23
28.5	20,519,452	88,017	0.00429	0.99571	91.84
29.5	19,597,198	96,523	0.00493	0.99507	91.45
30.5	18,802,391	83,471	0.00444	0.99556	91.00
31.5	18,206,097	81,656	0.00449	0.99551	90.60
32.5	17,643,868	102,203	0.00579	0.99421	90.19
33.5	16,968,712	90,774	0.00535	0.99465	89.67
34.5	16,307,337	67,673	0.00415	0.99585	89.19
35.5	15,553,021	82,258	0.00529	0.99471	88.82
36.5	14,599,201	70,862	0.00485	0.99515	88.35
37.5	13,741,541	97,115	0.00707	0.99293	87.92
38.5	12,728,617	82,171	0.00646	0.99354	87.30
39.5	11,859,763	80,542	0.00679	0.99321	86.74
40.5	11,063,861	69,136	0.00625	0.99375	86.15
41.5	10,184,474	65,342	0.00642	0.99358	85.61
42.5	9,411,942	57,144	0.00607	0.99393	85.06
43.5	8,849,420	57,456	0.00649	0.99351	84.54
44.5	8,299,903	89,291	0.01076	0.98924	83.99
45.5	7,530,777	83,716	0.01112	0.98888	83.09
46.5	6,920,341	60,355	0.00872	0.99128	82.17
47.5	6,265,361	67,849	0.01083	0.98917	81.45
48.5	5,738,910	56,822	0.00990	0.99010	80.57
49.5	5,163,023	59,102	0.01145	0.98855	79.77
50.5	4,840,113	44,436	0.00918	0.99082	78.86
51.5	4,038,787	57,812	0.01431	0.98569	78.14
52.5	3,813,396	70,054	0.01837	0.98163	77.02
53.5	3,600,432	41,947	0.01165	0.98835	75.61
54.5	3,405,631	40,242	0.01182	0.98818	74.73
55.5	3,225,593	54,775	0.01698	0.98302	73.85
56.5	3,012,139	60,872	0.02021	0.97979	72.60
57.5	2,765,502	53,983	0.01952	0.98048	71.13

MDU Gas

Account 380.00 - Distribution Plant - Services

Placement Band - 1901 - 2021 Experience Band - 1995 - 2021

58.5	2,561,815	45,974	0.01795	0.98205	69.74
59.5	2,330,462	41,325	0.01773	0.98227	68.49
60.5	2,160,677	27,480	0.01272	0.98728	67.28
61.5	2,021,575	24,815	0.01228	0.98772	66.42
62.5	1,854,859	24,124	0.01301	0.98699	65.60
63.5	1,708,210	15,651	0.00916	0.99084	64.75
64.5	1,567,332	23,868	0.01523	0.98477	64.16
65.5	1,364,687	14,505	0.01063	0.98937	63.18
66.5	1,263,980	21,159	0.01674	0.98326	62.51
67.5	1,131,966	51,280	0.04530	0.95470	61.46
68.5	997,906	10,699	0.01072	0.98928	58.68
69.5	875,708	2,745	0.00313	0.99687	58.05
70.5	782,198	1,925	0.00246	0.99754	57.87
71.5	724,106	4,031	0.00557	0.99443	57.73
72.5	685,683	892	0.00130	0.99870	57.41
73.5	651,336	1,077	0.00165	0.99835	57.34
74.5	616,594	549	0.00089	0.99911	57.25
75.5	582,539	301	0.00052	0.99948	57.20
76.5	582,578	291	0.00050	0.99950	57.17
77.5	582,421	54	0.00009	0.99991	57.14
78.5	582,507	324	0.00056	0.99944	57.13
79.5	582,268	251	0.00043	0.99957	57.10
80.5	582,352	88	0.00015	0.99985	57.08
81.5	547,839	0	0.00000	1.00000	57.07
82.5	513,715	0	0.00000	1.00000	57.07
83.5	480,238	23	0.00005	0.99995	57.07
84.5	447,612	33	0.00007	0.99993	57.07
85.5	415,695	96	0.00023	0.99977	57.07
86.5	384,592	95	0.00025	0.99975	57.06
87.5	354,181	54	0.00015	0.99985	57.05
88.5	324,572	88	0.00027	0.99973	57.04

MDU Gas

Account 380.00 - Distribution Plant - Services

Placement Band - 1901 - 2021 Experience Band - 1995 - 2021

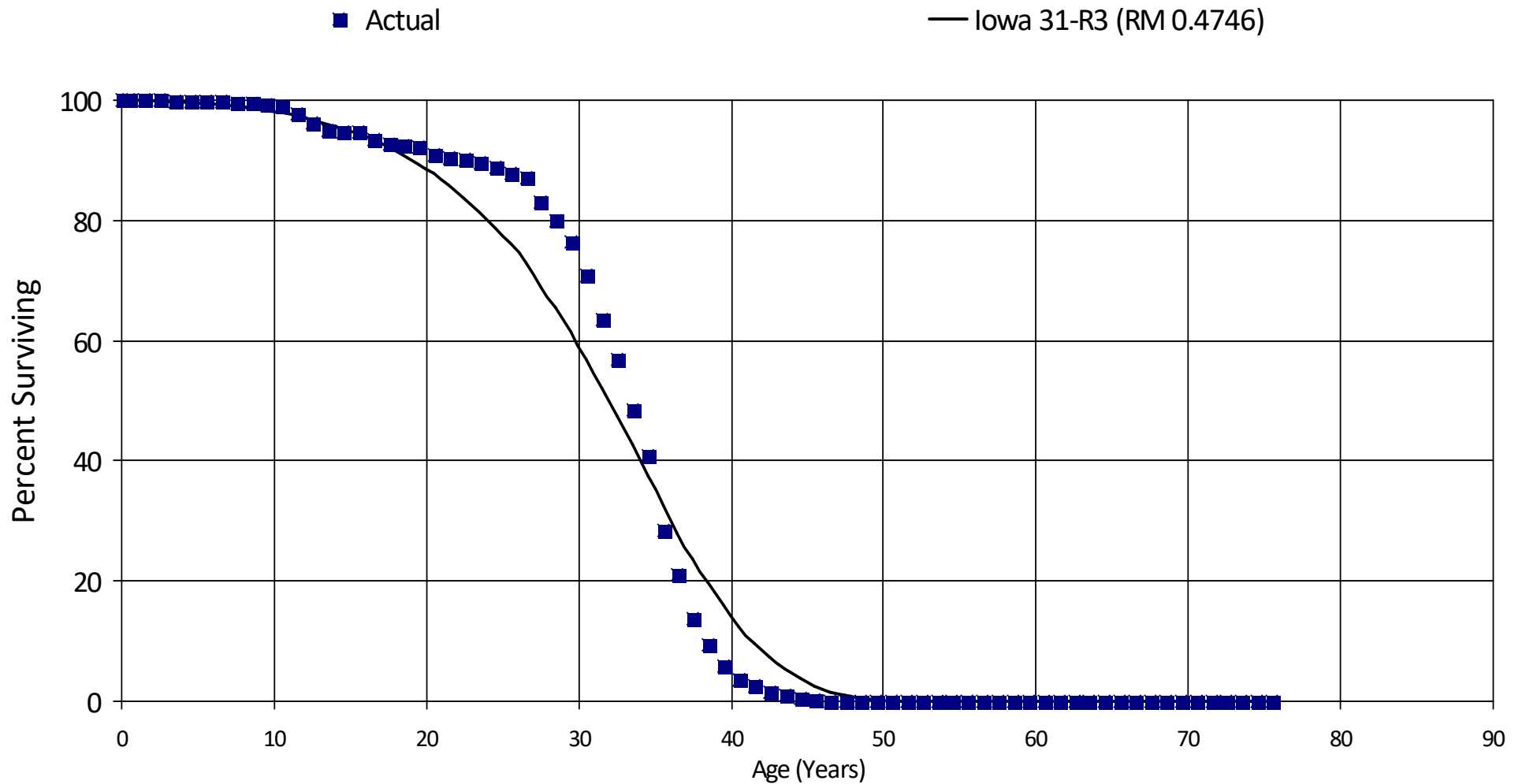
89.5	295,633	0	0.00000	1.00000	57.02
90.5	267,505	0	0.00000	1.00000	57.02
91.5	240,589	0	0.00000	1.00000	57.02
92.5	213,767	0	0.00000	1.00000	57.02
93.5	187,631	0	0.00000	1.00000	57.02
94.5	162,101	0	0.00000	1.00000	57.02
95.5	137,194	0	0.00000	1.00000	57.02
96.5	112,894	0	0.00000	1.00000	57.02
97.5	89,186	0	0.00000	1.00000	57.02
98.5	66,057	32	0.00048	0.99952	57.02
99.5	43,461	33	0.00076	0.99924	56.99
100.5	21,413	0	0.00000	1.00000	56.95
101.5	0	21	0.00000	0.00000	56.95
Totals:		6,905,575			

MDU Gas

Account 381.00 - Distribution Plant - Meters

Placement Band - 1921 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 381.00 - Distribution Plant - Meters

Placement Band - 1921 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	99,717,965	10,408	0.00010	0.99990	100.00
0.5	97,580,262	23,967	0.00025	0.99975	99.99
1.5	92,165,197	47,067	0.00051	0.99949	99.97
2.5	86,358,984	63,560	0.00074	0.99926	99.92
3.5	82,028,690	40,779	0.00050	0.99950	99.85
4.5	79,534,421	33,732	0.00042	0.99958	99.80
5.5	77,331,091	54,355	0.00070	0.99930	99.76
6.5	73,692,508	59,415	0.00081	0.99919	99.69
7.5	70,264,716	121,400	0.00173	0.99827	99.61
8.5	67,517,916	123,686	0.00183	0.99817	99.44
9.5	64,021,617	148,674	0.00232	0.99768	99.26
10.5	60,994,879	869,477	0.01425	0.98575	99.03
11.5	59,122,852	912,311	0.01543	0.98457	97.62
12.5	57,576,030	674,160	0.01171	0.98829	96.11
13.5	47,254,010	104,582	0.00221	0.99779	94.98
14.5	39,028,293	67,907	0.00174	0.99826	94.77
15.5	36,981,835	471,206	0.01274	0.98726	94.61
16.5	34,154,519	254,099	0.00744	0.99256	93.40
17.5	32,582,993	98,462	0.00302	0.99698	92.71
18.5	31,175,818	98,957	0.00317	0.99683	92.43
19.5	29,584,880	390,287	0.01319	0.98681	92.14
20.5	27,569,670	137,187	0.00498	0.99502	90.92
21.5	25,732,501	124,412	0.00483	0.99517	90.47
22.5	23,960,107	138,921	0.00580	0.99420	90.03
23.5	22,609,141	179,299	0.00793	0.99207	89.51
24.5	21,435,915	209,655	0.00978	0.99022	88.80
25.5	20,105,476	203,233	0.01011	0.98989	87.93
26.5	5,215,481	249,934	0.04792	0.95208	87.04

MDU Gas

Account 381.00 - Distribution Plant - Meters

Placement Band - 1921 - 2021 Experience Band - 1995 - 2021

27.5	5,115,403	187,702	0.03669	0.96331	82.87
28.5	5,042,462	215,488	0.04273	0.95727	79.83
29.5	4,912,085	355,812	0.07244	0.92756	76.42
30.5	4,639,987	491,726	0.10598	0.89402	70.88
31.5	4,284,585	442,007	0.10316	0.89684	63.37
32.5	3,864,720	561,260	0.14523	0.85477	56.83
33.5	3,330,652	532,326	0.15983	0.84017	48.58
34.5	2,837,957	855,766	0.30154	0.69846	40.82
35.5	2,314,704	611,546	0.26420	0.73580	28.51
36.5	1,974,454	689,197	0.34906	0.65094	20.98
37.5	1,617,821	517,790	0.32005	0.67995	13.66
38.5	1,464,501	540,506	0.36907	0.63093	9.29
39.5	1,095,770	434,664	0.39667	0.60333	5.86
40.5	1,043,729	321,475	0.30801	0.69199	3.54
41.5	905,748	326,440	0.36041	0.63959	2.45
42.5	717,124	287,397	0.40076	0.59924	1.57
43.5	537,200	267,374	0.49772	0.50228	0.94
44.5	360,211	214,809	0.59634	0.40366	0.47
45.5	258,136	214,460	0.83080	0.16920	0.19
46.5	188,134	205,770	1.09374	-0.09374	0.03
47.5	131,845	166,591	1.26354	-0.26354	0.00
48.5	46,444	129,298	2.78397	-1.78397	0.00
49.5	19,456	106,627	5.48038	-4.48038	0.00
50.5	-23,594	86,210	-3.65389	4.65389	0.00
51.5	-15,171	62,161	-4.09745	5.09745	0.00
52.5	-31,917	71,074	-2.22686	3.22686	0.00
53.5	-62,639	56,919	-0.90868	1.90868	0.00
54.5	-71,373	43,855	-0.61445	1.61445	0.00
55.5	-76,425	46,479	-0.60816	1.60816	0.00
56.5	-60,568	33,998	-0.56132	1.56132	0.00
57.5	-43,879	23,930	-0.54536	1.54536	0.00

MDU Gas

Account 381.00 - Distribution Plant - Meters

Placement Band - 1921 - 2021 Experience Band - 1995 - 2021

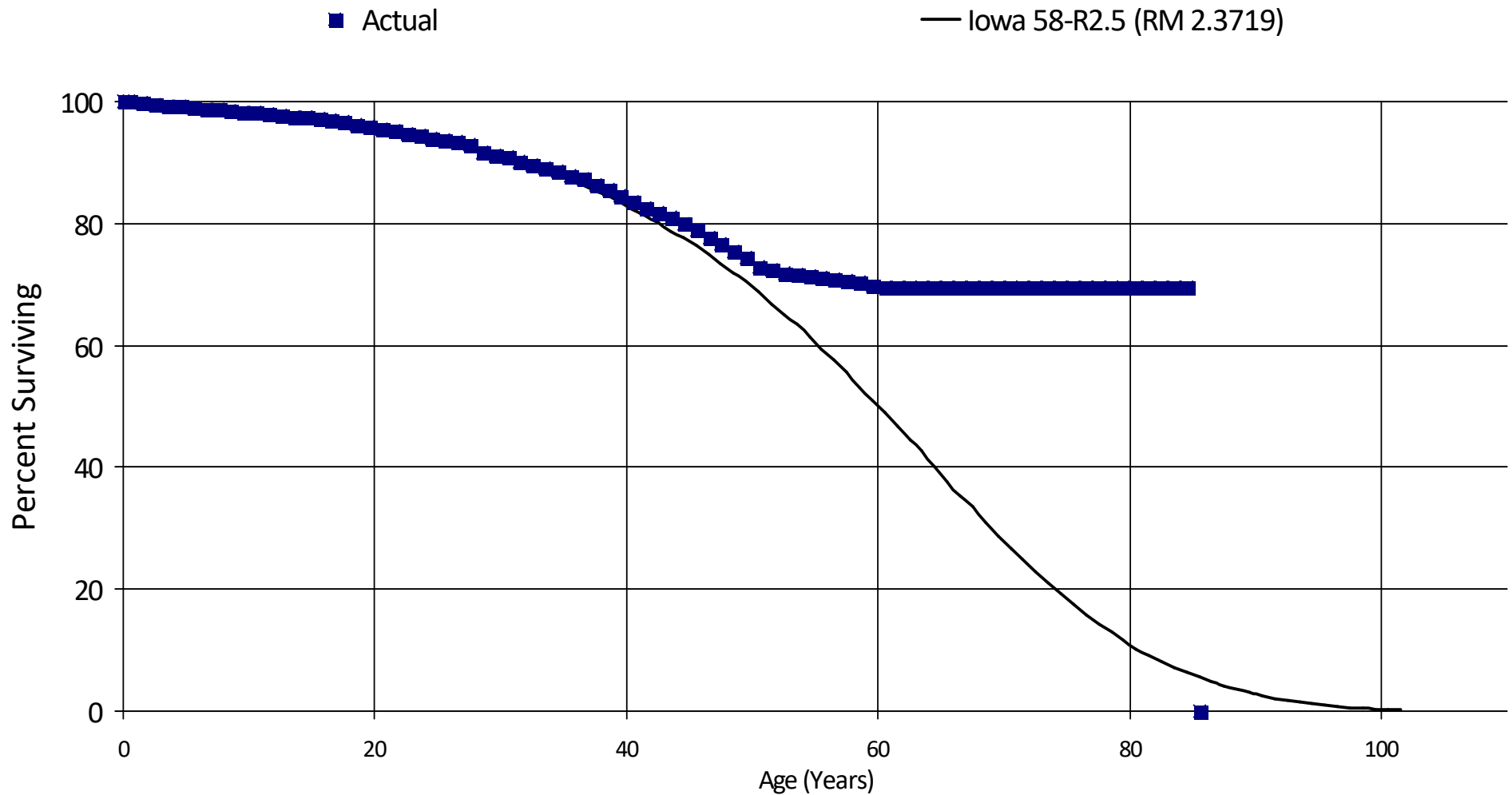
58.5	-33,382	26,138	-0.78299	1.78299	0.00
59.5	-12,473	24,221	-1.94182	2.94182	0.00
60.5	-4,629	3,769	-0.81429	1.81429	0.00
61.5	5,849	1,135	0.19406	0.80594	0.00
62.5	4,714	595	0.12622	0.87378	0.00
63.5	4,119	335	0.08134	0.91866	0.00
64.5	3,783	674	0.17816	0.82184	0.00
65.5	3,109	234	0.07527	0.92473	0.00
66.5	2,875	403	0.14018	0.85982	0.00
67.5	2,472	267	0.10801	0.89199	0.00
68.5	2,205	786	0.35647	0.64353	0.00
69.5	1,419	496	0.34964	0.65036	0.00
70.5	922	241	0.26135	0.73865	0.00
71.5	681	69	0.10128	0.89872	0.00
72.5	612	234	0.38220	0.61780	0.00
73.5	378	314	0.82968	0.17032	0.00
74.5	64	64	1.00063	-0.00063	0.00
75.5	0	0	0.00000	0.00000	0.00
Totals:		15,071,764			

MDU Gas

Account 383.00 - Distribution Plant - Service Regulators

Placement Band - 1933 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 383.00 - Distribution Plant - Service Regulators

Placement Band - 1933 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	13,706,497	8,069	0.00059	0.99941	100.00
0.5	13,228,434	41,792	0.00316	0.99684	99.94
1.5	12,395,179	19,217	0.00155	0.99845	99.62
2.5	11,072,244	12,893	0.00116	0.99884	99.47
3.5	10,322,900	22,206	0.00215	0.99785	99.35
4.5	9,860,083	17,502	0.00178	0.99822	99.14
5.5	9,496,607	14,453	0.00152	0.99848	98.96
6.5	8,619,959	10,411	0.00121	0.99879	98.81
7.5	7,934,644	16,807	0.00212	0.99788	98.69
8.5	7,412,305	15,313	0.00207	0.99793	98.48
9.5	6,717,762	11,763	0.00175	0.99825	98.28
10.5	6,130,384	9,853	0.00161	0.99839	98.11
11.5	5,806,378	10,056	0.00173	0.99827	97.95
12.5	5,690,658	12,035	0.00211	0.99789	97.78
13.5	5,375,135	12,384	0.00230	0.99770	97.57
14.5	5,211,721	10,782	0.00207	0.99793	97.35
15.5	4,979,493	14,318	0.00288	0.99712	97.15
16.5	4,763,003	13,805	0.00290	0.99710	96.87
17.5	4,637,648	19,250	0.00415	0.99585	96.59
18.5	4,437,090	15,289	0.00345	0.99655	96.19
19.5	4,307,029	18,985	0.00441	0.99559	95.86
20.5	4,188,421	15,271	0.00365	0.99635	95.44
21.5	4,030,192	12,967	0.00322	0.99678	95.09
22.5	3,883,426	14,595	0.00376	0.99624	94.78
23.5	3,683,861	16,487	0.00448	0.99552	94.42
24.5	3,510,873	13,521	0.00385	0.99615	94.00
25.5	3,367,739	11,564	0.00343	0.99657	93.64
26.5	3,316,370	11,478	0.00346	0.99654	93.32

MDU Gas

Account 383.00 - Distribution Plant - Service Regulators

Placement Band - 1933 - 2021 Experience Band - 1995 - 2021

27.5	3,174,571	46,437	0.01463	0.98537	93.00
28.5	2,990,366	14,496	0.00485	0.99515	91.64
29.5	2,877,977	12,226	0.00425	0.99575	91.20
30.5	2,784,645	19,143	0.00687	0.99313	90.81
31.5	2,717,338	16,878	0.00621	0.99379	90.19
32.5	2,659,975	17,236	0.00648	0.99352	89.63
33.5	2,596,058	15,656	0.00603	0.99397	89.05
34.5	2,540,547	18,123	0.00713	0.99287	88.51
35.5	2,466,932	16,527	0.00670	0.99330	87.88
36.5	2,349,442	26,806	0.01141	0.98859	87.29
37.5	2,204,616	17,795	0.00807	0.99193	86.29
38.5	2,094,586	24,379	0.01164	0.98836	85.59
39.5	2,006,390	24,067	0.01200	0.98800	84.59
40.5	1,854,951	21,409	0.01154	0.98846	83.57
41.5	1,704,455	17,224	0.01011	0.98989	82.61
42.5	1,601,918	17,405	0.01087	0.98913	81.77
43.5	1,521,306	18,197	0.01196	0.98804	80.88
44.5	1,421,031	16,892	0.01189	0.98811	79.91
45.5	1,324,092	23,732	0.01792	0.98208	78.96
46.5	1,208,999	15,841	0.01310	0.98690	77.55
47.5	1,097,787	16,013	0.01459	0.98541	76.53
48.5	1,010,384	13,233	0.01310	0.98690	75.41
49.5	915,044	19,047	0.02082	0.97918	74.42
50.5	859,484	5,718	0.00665	0.99335	72.87
51.5	819,753	7,464	0.00911	0.99089	72.39
52.5	793,017	3,029	0.00382	0.99618	71.73
53.5	761,627	2,463	0.00323	0.99677	71.46
54.5	734,458	2,338	0.00318	0.99682	71.23
55.5	715,290	1,967	0.00275	0.99725	71.00
56.5	687,343	2,034	0.00296	0.99704	70.80
57.5	657,889	3,434	0.00522	0.99478	70.59

MDU Gas

Account 383.00 - Distribution Plant - Service Regulators

Placement Band - 1933 - 2021 Experience Band - 1995 - 2021

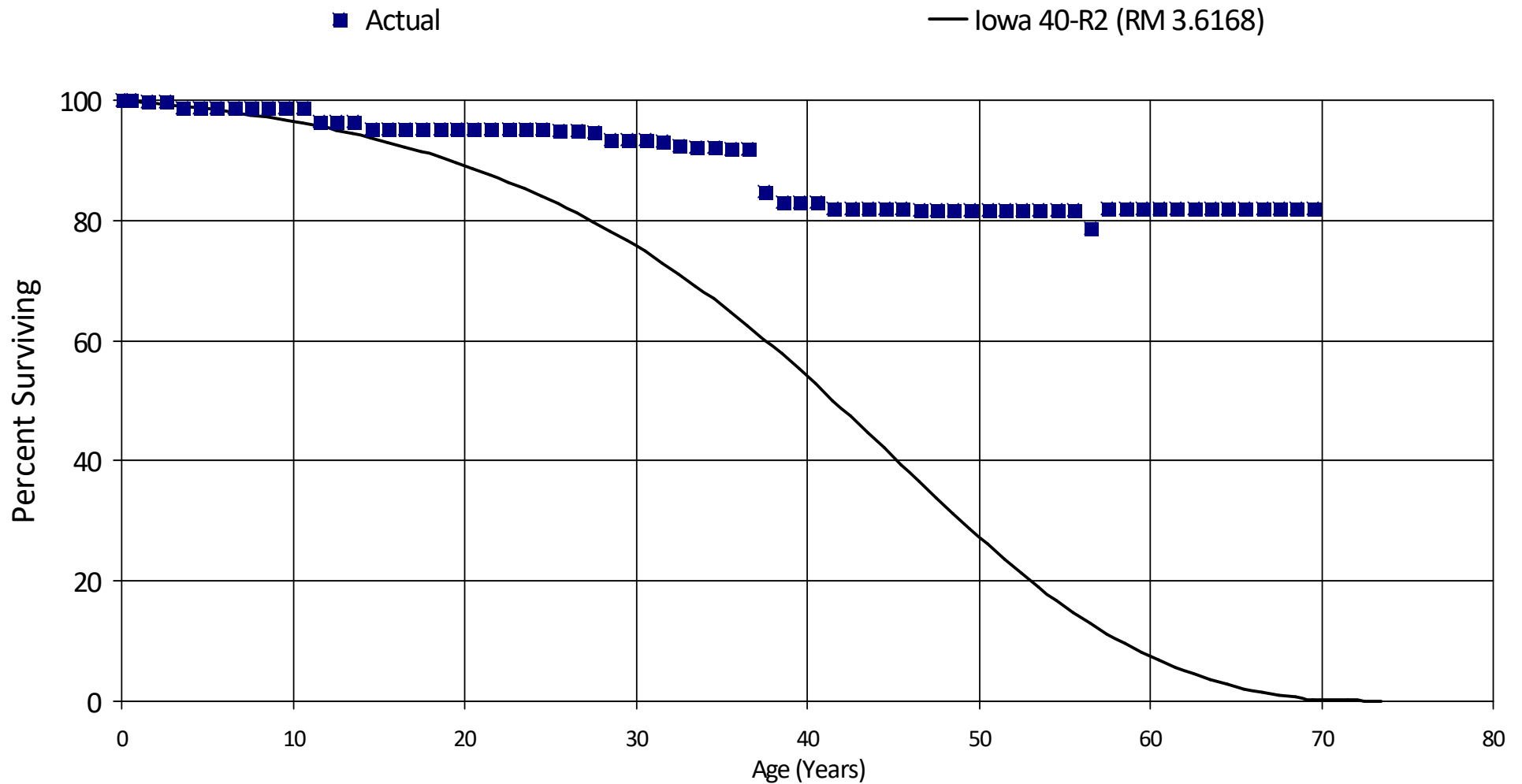
58.5	619,706	3,691	0.00596	0.99404	70.22
59.5	571,427	1,339	0.00234	0.99766	69.80
60.5	527,044	303	0.00057	0.99943	69.64
61.5	459,087	201	0.00044	0.99956	69.60
62.5	413,273	151	0.00037	0.99963	69.57
63.5	383,912	0	0.00000	1.00000	69.54
64.5	346,491	0	0.00000	1.00000	69.54
65.5	261,724	0	0.00000	1.00000	69.54
66.5	216,483	0	0.00000	1.00000	69.54
67.5	187,710	0	0.00000	1.00000	69.54
68.5	153,154	0	0.00000	1.00000	69.54
69.5	126,119	0	0.00000	1.00000	69.54
70.5	100,310	0	0.00000	1.00000	69.54
71.5	79,503	0	0.00000	1.00000	69.54
72.5	58,373	0	0.00000	1.00000	69.54
73.5	37,243	0	0.00000	1.00000	69.54
74.5	16,112	0	0.00000	1.00000	69.54
75.5	625	0	0.00000	1.00000	69.54
76.5	625	0	0.00000	1.00000	69.54
77.5	625	0	0.00000	1.00000	69.54
78.5	625	0	0.00000	1.00000	69.54
79.5	625	0	0.00000	1.00000	69.54
80.5	625	0	0.00000	1.00000	69.54
81.5	625	0	0.00000	1.00000	69.54
82.5	625	0	0.00000	1.00000	69.54
83.5	625	0	0.00000	1.00000	69.54
84.5	625	625	1.00054	-0.00054	69.54
85.5	0	0	0.00000	0.00000	-0.04
Totals:		906,585			

MDU Gas

Account 385.00 - Distribution Plant - Industrial Meas. & Reg. Station Equipment

Placement Band - 1951 - 2021 Experience Band - 1996 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 385.00 - Distribution Plant - Industrial Meas. & Reg. Station Equipment

Placement Band - 1951 - 2021 Experience Band - 1996 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	2,840,306	0	0.00000	1.00000	100.00
0.5	2,646,886	3,440	0.00130	0.99870	100.00
1.5	2,366,298	3,256	0.00138	0.99862	99.87
2.5	1,993,723	20,478	0.01027	0.98973	99.73
3.5	1,878,585	0	0.00000	1.00000	98.71
4.5	1,772,552	0	0.00000	1.00000	98.71
5.5	1,752,593	0	0.00000	1.00000	98.71
6.5	1,679,690	0	0.00000	1.00000	98.71
7.5	932,838	0	0.00000	1.00000	98.71
8.5	806,733	0	0.00000	1.00000	98.71
9.5	806,733	0	0.00000	1.00000	98.71
10.5	806,733	18,176	0.02253	0.97747	98.71
11.5	788,557	0	0.00000	1.00000	96.49
12.5	788,557	0	0.00000	1.00000	96.49
13.5	635,518	7,894	0.01242	0.98758	96.49
14.5	627,623	0	0.00000	1.00000	95.29
15.5	579,562	0	0.00000	1.00000	95.29
16.5	579,562	0	0.00000	1.00000	95.29
17.5	571,101	0	0.00000	1.00000	95.29
18.5	515,662	0	0.00000	1.00000	95.29
19.5	514,156	0	0.00000	1.00000	95.29
20.5	507,405	0	0.00000	1.00000	95.29
21.5	504,220	0	0.00000	1.00000	95.29
22.5	494,466	0	0.00000	1.00000	95.29
23.5	478,529	0	0.00000	1.00000	95.29
24.5	466,141	1,778	0.00381	0.99619	95.29
25.5	436,250	0	0.00000	1.00000	94.93
26.5	409,950	1,530	0.00373	0.99627	94.93

MDU Gas

Account 385.00 - Distribution Plant - Industrial Meas. & Reg. Station Equipment

Placement Band - 1951 - 2021 Experience Band - 1996 - 2021

27.5	399,710	4,644	0.01162	0.98838	94.58
28.5	382,452	15	0.00004	0.99996	93.48
29.5	370,758	0	0.00000	1.00000	93.48
30.5	352,858	1,207	0.00342	0.99658	93.48
31.5	336,502	3,206	0.00953	0.99047	93.16
32.5	333,192	561	0.00168	0.99832	92.27
33.5	312,700	25	0.00008	0.99992	92.11
34.5	295,710	465	0.00157	0.99843	92.10
35.5	290,821	0	0.00000	1.00000	91.96
36.5	211,827	16,590	0.07832	0.92168	91.96
37.5	176,153	3,438	0.01952	0.98048	84.76
38.5	172,542	0	0.00000	1.00000	83.11
39.5	185,934	0	0.00000	1.00000	83.11
40.5	185,691	2,527	0.01361	0.98639	83.11
41.5	176,621	0	0.00000	1.00000	81.98
42.5	176,621	0	0.00000	1.00000	81.98
43.5	176,621	0	0.00000	1.00000	81.98
44.5	176,621	0	0.00000	1.00000	81.98
45.5	176,621	286	0.00162	0.99838	81.98
46.5	163,240	0	0.00000	1.00000	81.85
47.5	161,584	375	0.00232	0.99768	81.85
48.5	154,689	0	0.00000	1.00000	81.66
49.5	146,862	0	0.00000	1.00000	81.66
50.5	141,338	0	0.00000	1.00000	81.66
51.5	129,921	0	0.00000	1.00000	81.66
52.5	115,916	0	0.00000	1.00000	81.66
53.5	106,005	0	0.00000	1.00000	81.66
54.5	101,513	0	0.00000	1.00000	81.66
55.5	96,120	3,406	0.03543	0.96457	81.66
56.5	81,541	-3,406	-0.04177	1.04177	78.77
57.5	67,112	0	0.00000	1.00000	82.06

MDU Gas

Account 385.00 - Distribution Plant - Industrial Meas. & Reg. Station Equipment

Placement Band - 1951 - 2021 Experience Band - 1996 - 2021

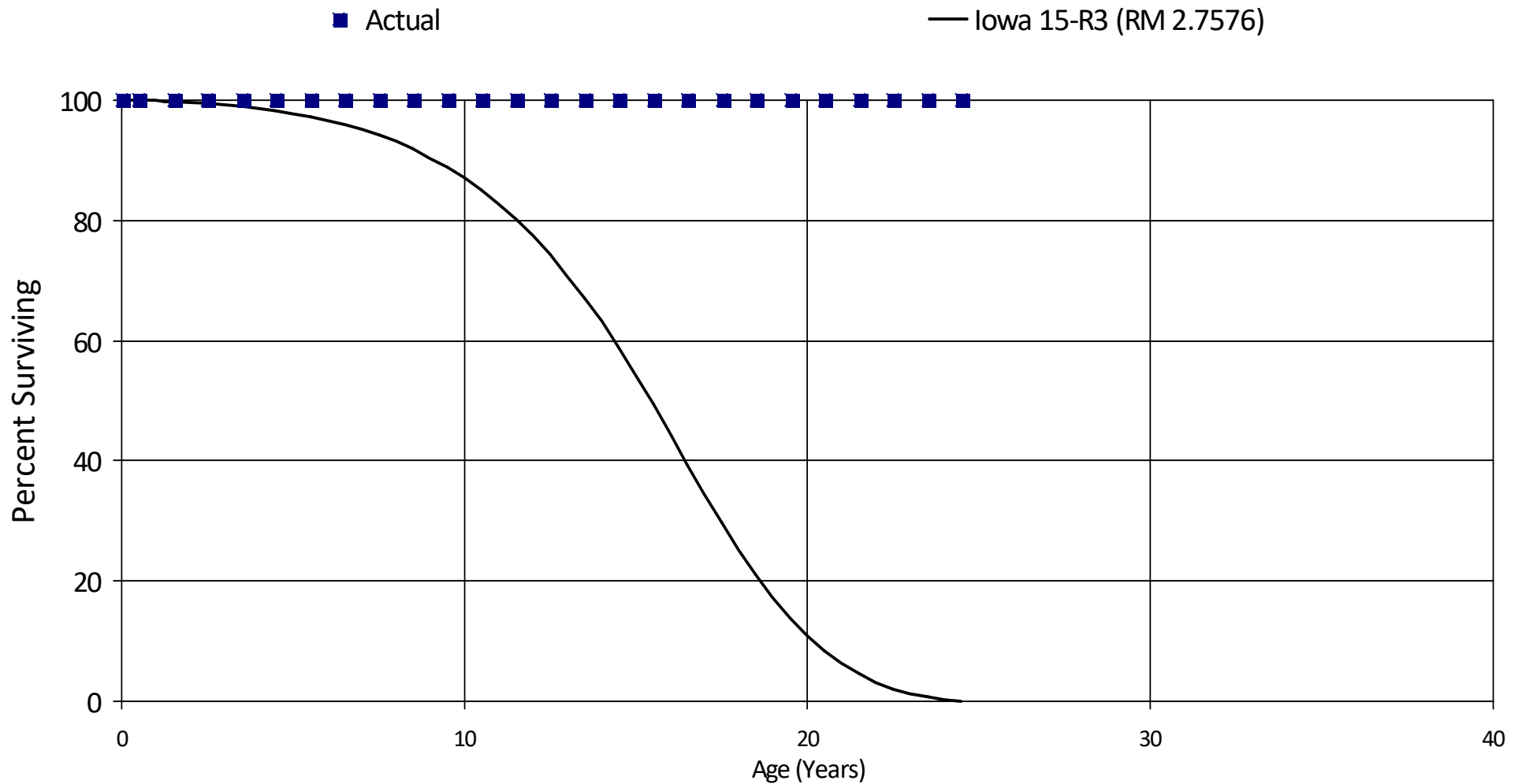
58.5	56,529	0	0.00000	1.00000	82.06
59.5	54,765	0	0.00000	1.00000	82.06
60.5	46,569	0	0.00000	1.00000	82.06
61.5	34,108	0	0.00000	1.00000	82.06
62.5	29,534	0	0.00000	1.00000	82.06
63.5	25,480	0	0.00000	1.00000	82.06
64.5	19,419	0	0.00000	1.00000	82.06
65.5	12,822	0	0.00000	1.00000	82.06
66.5	10,459	0	0.00000	1.00000	82.06
67.5	9,713	0	0.00000	1.00000	82.06
68.5	7,549	0	0.00000	1.00000	82.06
69.5	2,681	0	0.00000	1.00000	82.06
Totals:		89,891			

MDU Gas

Account 386.10 - Distribution Plant - Misc. Property on Customers' Premises

Placement Band - 1996 - 2021 Experience Band - 2021 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 386.10 - Distribution Plant - Misc. Property on Customers' Premises

Placement Band - 1996 - 2021 Experience Band - 2021 - 2021

RETIREMENT RATE ANALYSIS

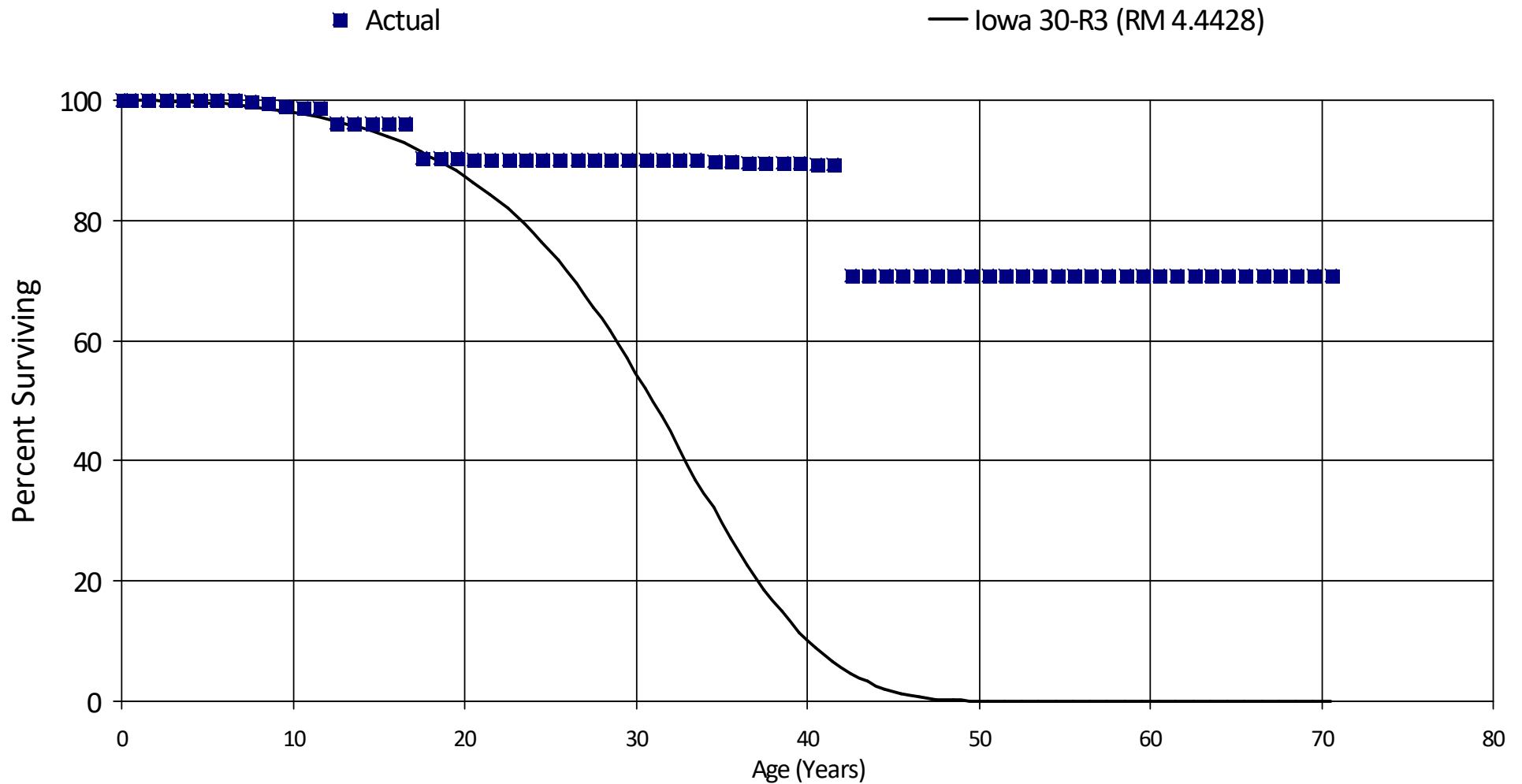
Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,680	0	0.00000	1.00000	100.00
0.5	1,680	0	0.00000	1.00000	100.00
1.5	1,680	0	0.00000	1.00000	100.00
2.5	1,680	0	0.00000	1.00000	100.00
3.5	1,680	0	0.00000	1.00000	100.00
4.5	1,680	0	0.00000	1.00000	100.00
5.5	1,680	0	0.00000	1.00000	100.00
6.5	1,680	0	0.00000	1.00000	100.00
7.5	1,680	0	0.00000	1.00000	100.00
8.5	1,680	0	0.00000	1.00000	100.00
9.5	1,680	0	0.00000	1.00000	100.00
10.5	1,680	0	0.00000	1.00000	100.00
11.5	1,680	0	0.00000	1.00000	100.00
12.5	1,680	0	0.00000	1.00000	100.00
13.5	1,680	0	0.00000	1.00000	100.00
14.5	1,680	0	0.00000	1.00000	100.00
15.5	1,680	0	0.00000	1.00000	100.00
16.5	1,680	0	0.00000	1.00000	100.00
17.5	1,680	0	0.00000	1.00000	100.00
18.5	1,680	0	0.00000	1.00000	100.00
19.5	1,680	0	0.00000	1.00000	100.00
20.5	1,680	0	0.00000	1.00000	100.00
21.5	1,680	0	0.00000	1.00000	100.00
22.5	1,680	0	0.00000	1.00000	100.00
23.5	1,680	0	0.00000	1.00000	100.00
24.5	1,680	0	0.00000	1.00000	100.00
Totals:		0			

MDU Gas

Account 387.20 - Distribution Plant - Other Distribution Equipment

Placement Band - 1950 - 2021 Experience Band - 1996 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 387.20 - Distribution Plant - Other Distribution Equipment

Placement Band - 1950 - 2021 Experience Band - 1996 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,860,775	0	0.00000	1.00000	100.00
0.5	753,053	0	0.00000	1.00000	100.00
1.5	753,053	0	0.00000	1.00000	100.00
2.5	753,053	782	0.00104	0.99896	100.00
3.5	752,270	0	0.00000	1.00000	99.90
4.5	751,571	0	0.00000	1.00000	99.90
5.5	690,091	0	0.00000	1.00000	99.90
6.5	611,632	1,504	0.00246	0.99754	99.90
7.5	610,127	921	0.00151	0.99849	99.65
8.5	609,207	3,481	0.00571	0.99429	99.50
9.5	605,726	950	0.00157	0.99843	98.93
10.5	604,776	0	0.00000	1.00000	98.77
11.5	604,776	16,214	0.02681	0.97319	98.77
12.5	588,562	0	0.00000	1.00000	96.12
13.5	588,562	0	0.00000	1.00000	96.12
14.5	588,562	0	0.00000	1.00000	96.12
15.5	586,813	0	0.00000	1.00000	96.12
16.5	576,911	35,061	0.06077	0.93923	96.12
17.5	541,850	0	0.00000	1.00000	90.28
18.5	541,850	0	0.00000	1.00000	90.28
19.5	540,434	1,681	0.00311	0.99689	90.28
20.5	538,754	0	0.00000	1.00000	90.00
21.5	531,299	0	0.00000	1.00000	90.00
22.5	531,299	0	0.00000	1.00000	90.00
23.5	526,348	0	0.00000	1.00000	90.00
24.5	488,036	0	0.00000	1.00000	90.00
25.5	436,734	0	0.00000	1.00000	90.00
26.5	420,697	0	0.00000	1.00000	90.00

MDU Gas

Account 387.20 - Distribution Plant - Other Distribution Equipment

Placement Band - 1950 - 2021 Experience Band - 1996 - 2021

27.5	387,017	0	0.00000	1.00000	90.00
28.5	378,689	0	0.00000	1.00000	90.00
29.5	370,413	0	0.00000	1.00000	90.00
30.5	367,395	0	0.00000	1.00000	90.00
31.5	353,707	0	0.00000	1.00000	90.00
32.5	344,560	0	0.00000	1.00000	90.00
33.5	333,038	419	0.00126	0.99874	90.00
34.5	330,157	183	0.00055	0.99945	89.89
35.5	258,629	360	0.00139	0.99861	89.84
36.5	206,502	0	0.00000	1.00000	89.72
37.5	163,701	0	0.00000	1.00000	89.72
38.5	129,358	0	0.00000	1.00000	89.72
39.5	104,959	447	0.00426	0.99574	89.72
40.5	86,007	0	0.00000	1.00000	89.34
41.5	64,527	13,410	0.20782	0.79218	89.34
42.5	39,848	0	0.00000	1.00000	70.77
43.5	39,654	0	0.00000	1.00000	70.77
44.5	39,654	0	0.00000	1.00000	70.77
45.5	39,654	0	0.00000	1.00000	70.77
46.5	39,654	0	0.00000	1.00000	70.77
47.5	52,934	0	0.00000	1.00000	70.77
48.5	52,934	0	0.00000	1.00000	70.77
49.5	52,934	0	0.00000	1.00000	70.77
50.5	52,851	0	0.00000	1.00000	70.77
51.5	50,989	0	0.00000	1.00000	70.77
52.5	50,783	0	0.00000	1.00000	70.77
53.5	50,308	0	0.00000	1.00000	70.77
54.5	48,936	0	0.00000	1.00000	70.77
55.5	48,581	0	0.00000	1.00000	70.77
56.5	46,247	0	0.00000	1.00000	70.77
57.5	44,845	0	0.00000	1.00000	70.77

MDU Gas

Account 387.20 - Distribution Plant - Other Distribution Equipment

Placement Band - 1950 - 2021 Experience Band - 1996 - 2021

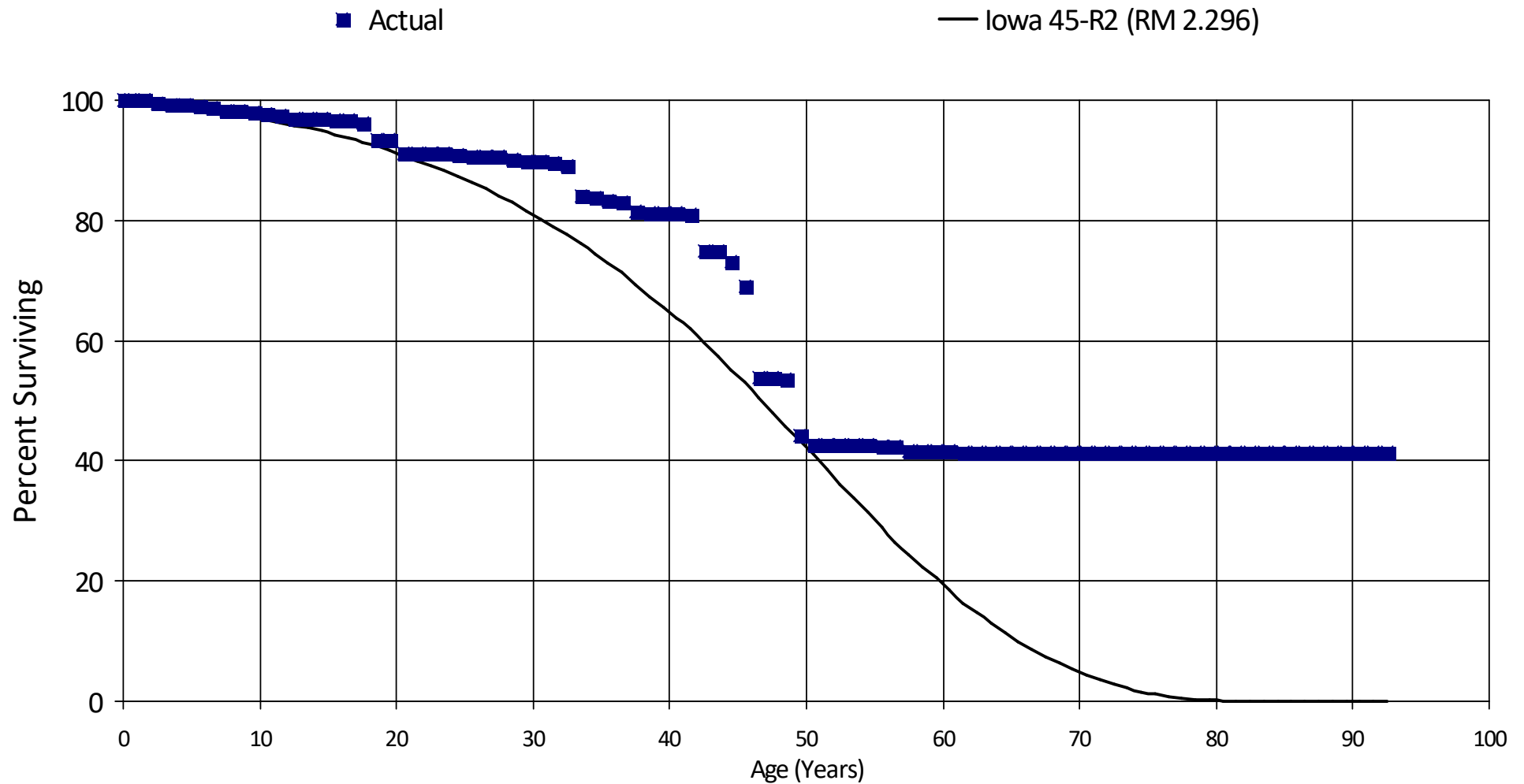
58.5	38,260	0	0.00000	1.00000	70.77
59.5	36,627	0	0.00000	1.00000	70.77
60.5	35,769	0	0.00000	1.00000	70.77
61.5	28,816	0	0.00000	1.00000	70.77
62.5	25,089	0	0.00000	1.00000	70.77
63.5	21,654	0	0.00000	1.00000	70.77
64.5	21,654	0	0.00000	1.00000	70.77
65.5	20,828	0	0.00000	1.00000	70.77
66.5	15,801	0	0.00000	1.00000	70.77
67.5	15,801	0	0.00000	1.00000	70.77
68.5	15,515	0	0.00000	1.00000	70.77
69.5	11,679	0	0.00000	1.00000	70.77
70.5	6,095	0	0.00000	1.00000	70.77
Totals:		75,413			

MDU Gas

Account 390.00 - General Plant - Structures & Improvements

Placement Band - 1928 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 390.00 - General Plant - Structures & Improvements

Placement Band - 1928 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	17,487,888	0	0.00000	1.00000	100.00
0.5	17,470,203	2,754	0.00016	0.99984	100.00
1.5	16,040,711	87,479	0.00545	0.99455	99.98
2.5	15,732,429	32,334	0.00206	0.99794	99.44
3.5	14,658,034	7,754	0.00053	0.99947	99.24
4.5	14,427,578	46,218	0.00320	0.99680	99.19
5.5	14,356,321	10,955	0.00076	0.99924	98.87
6.5	14,256,458	64,464	0.00452	0.99548	98.79
7.5	14,143,845	16,305	0.00115	0.99885	98.34
8.5	13,774,709	24,787	0.00180	0.99820	98.23
9.5	13,533,476	62,342	0.00461	0.99539	98.05
10.5	13,461,551	31,687	0.00235	0.99765	97.60
11.5	12,216,754	58,435	0.00478	0.99522	97.37
12.5	10,696,910	7,990	0.00075	0.99925	96.90
13.5	10,526,894	0	0.00000	1.00000	96.83
14.5	6,288,537	1,626	0.00026	0.99974	96.83
15.5	6,270,272	11,061	0.00176	0.99824	96.80
16.5	6,220,031	29,240	0.00470	0.99530	96.63
17.5	6,187,583	182,300	0.02946	0.97054	96.18
18.5	6,005,284	2,413	0.00040	0.99960	93.35
19.5	2,118,611	51,261	0.02420	0.97580	93.31
20.5	1,943,397	0	0.00000	1.00000	91.05
21.5	1,809,782	0	0.00000	1.00000	91.05
22.5	1,798,971	0	0.00000	1.00000	91.05
23.5	1,797,088	5,025	0.00280	0.99720	91.05
24.5	1,792,062	3,102	0.00173	0.99827	90.80
25.5	1,788,960	2,373	0.00133	0.99867	90.64
26.5	2,309,954	0	0.00000	1.00000	90.52

MDU Gas

Account 390.00 - General Plant - Structures & Improvements

Placement Band - 1928 - 2021 Experience Band - 1995 - 2021

27.5	2,279,171	8,368	0.00367	0.99633	90.52
28.5	2,159,563	8,647	0.00400	0.99600	90.19
29.5	2,150,229	0	0.00000	1.00000	89.83
30.5	2,113,837	3,000	0.00142	0.99858	89.83
31.5	2,106,825	16,636	0.00790	0.99210	89.70
32.5	2,075,138	113,842	0.05486	0.94514	88.99
33.5	1,937,582	10,258	0.00529	0.99471	84.11
34.5	1,902,965	10,100	0.00531	0.99469	83.67
35.5	1,781,507	2,477	0.00139	0.99861	83.23
36.5	1,803,040	37,061	0.02055	0.97945	83.11
37.5	1,742,916	2,257	0.00129	0.99871	81.40
38.5	1,714,683	1,528	0.00089	0.99911	81.29
39.5	1,702,107	500	0.00029	0.99971	81.22
40.5	1,694,094	2,533	0.00150	0.99850	81.20
41.5	1,662,257	128,072	0.07705	0.92295	81.08
42.5	1,531,797	0	0.00000	1.00000	74.83
43.5	1,492,044	32,012	0.02146	0.97854	74.83
44.5	1,456,713	81,666	0.05606	0.94394	73.22
45.5	1,361,595	300,143	0.22043	0.77957	69.12
46.5	1,056,701	608	0.00058	0.99942	53.88
47.5	1,040,816	3,191	0.00307	0.99693	53.85
48.5	1,011,792	181,290	0.17918	0.82082	53.68
49.5	651,683	22,021	0.03379	0.96621	44.06
50.5	628,542	0	0.00000	1.00000	42.57
51.5	583,055	0	0.00000	1.00000	42.57
52.5	577,130	0	0.00000	1.00000	42.57
53.5	574,759	0	0.00000	1.00000	42.57
54.5	568,156	925	0.00163	0.99837	42.57
55.5	529,335	0	0.00000	1.00000	42.50
56.5	479,465	10,077	0.02102	0.97898	42.50
57.5	459,451	0	0.00000	1.00000	41.61

MDU Gas

Account 390.00 - General Plant - Structures & Improvements

Placement Band - 1928 - 2021 Experience Band - 1995 - 2021

58.5	446,666	0	0.00000	1.00000	41.61
59.5	444,052	1,138	0.00256	0.99744	41.61
60.5	437,046	594	0.00136	0.99864	41.50
61.5	423,896	0	0.00000	1.00000	41.44
62.5	422,474	0	0.00000	1.00000	41.44
63.5	421,200	0	0.00000	1.00000	41.44
64.5	418,264	0	0.00000	1.00000	41.44
65.5	331,553	0	0.00000	1.00000	41.44
66.5	263,844	0	0.00000	1.00000	41.44
67.5	260,693	103	0.00040	0.99960	41.44
68.5	240,481	0	0.00000	1.00000	41.42
69.5	232,153	0	0.00000	1.00000	41.42
70.5	227,923	0	0.00000	1.00000	41.42
71.5	219,105	0	0.00000	1.00000	41.42
72.5	215,471	0	0.00000	1.00000	41.42
73.5	200,410	0	0.00000	1.00000	41.42
74.5	185,350	0	0.00000	1.00000	41.42
75.5	170,290	0	0.00000	1.00000	41.42
76.5	170,290	0	0.00000	1.00000	41.42
77.5	169,545	0	0.00000	1.00000	41.42
78.5	169,545	0	0.00000	1.00000	41.42
79.5	169,545	0	0.00000	1.00000	41.42
80.5	169,545	0	0.00000	1.00000	41.42
81.5	154,485	0	0.00000	1.00000	41.42
82.5	139,792	0	0.00000	1.00000	41.42
83.5	125,457	0	0.00000	1.00000	41.42
84.5	111,472	0	0.00000	1.00000	41.42
85.5	97,828	0	0.00000	1.00000	41.42
86.5	84,517	0	0.00000	1.00000	41.42
87.5	71,531	0	0.00000	1.00000	41.42
88.5	58,861	0	0.00000	1.00000	41.42

MDU Gas

Account 390.00 - General Plant - Structures & Improvements

Placement Band - 1928 - 2021 Experience Band - 1995 - 2021

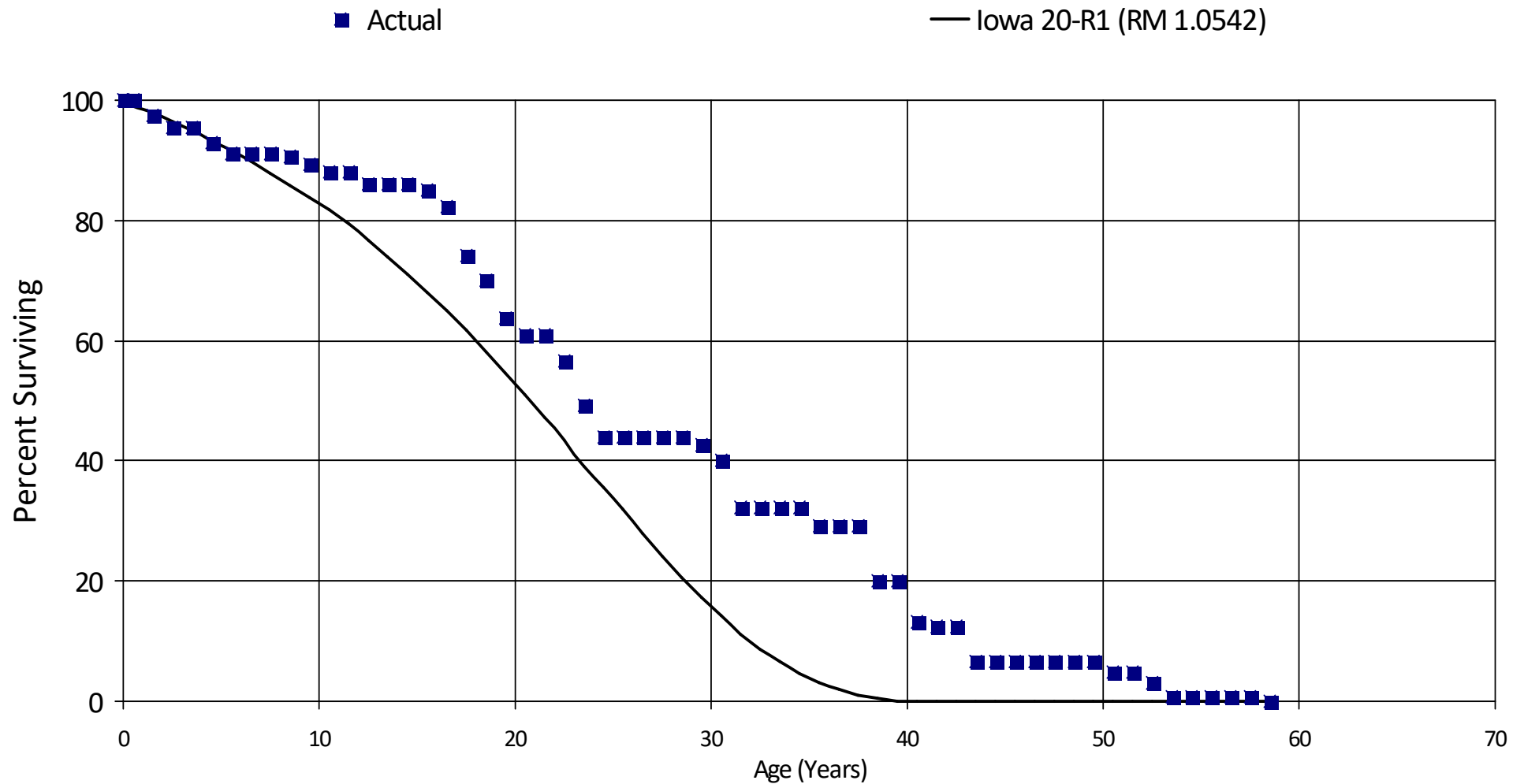
89.5	46,501	0	0.00000	1.00000	41.42
90.5	34,441	0	0.00000	1.00000	41.42
91.5	22,676	0	0.00000	1.00000	41.42
92.5	11,198	0	0.00000	1.00000	41.42
Totals:		1,720,952			

MDU Gas

Account 392.10 - General Plant - Transportation Equipment - Trailers

Placement Band - 1952 - 2021 Experience Band - 2000 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 392.10 - General Plant - Transportation Equipment - Trailers

Placement Band - 1952 - 2021 Experience Band - 2000 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	620,212	0	0.00000	1.00000	100.00
0.5	620,212	15,197	0.02450	0.97550	100.00
1.5	605,015	13,431	0.02220	0.97780	97.55
2.5	591,585	0	0.00000	1.00000	95.38
3.5	561,788	15,274	0.02719	0.97281	95.38
4.5	546,515	9,844	0.01801	0.98199	92.79
5.5	536,670	0	0.00000	1.00000	91.12
6.5	536,670	0	0.00000	1.00000	91.12
7.5	536,670	3,012	0.00561	0.99439	91.12
8.5	533,659	7,814	0.01464	0.98536	90.61
9.5	499,258	7,244	0.01451	0.98549	89.28
10.5	425,912	0	0.00000	1.00000	87.98
11.5	380,779	8,282	0.02175	0.97825	87.98
12.5	372,497	0	0.00000	1.00000	86.07
13.5	318,714	0	0.00000	1.00000	86.07
14.5	243,289	3,167	0.01302	0.98698	86.07
15.5	240,122	8,012	0.03337	0.96663	84.95
16.5	192,339	18,597	0.09669	0.90331	82.12
17.5	152,614	8,695	0.05697	0.94303	74.18
18.5	116,261	10,486	0.09019	0.90981	69.95
19.5	74,301	3,329	0.04480	0.95520	63.64
20.5	70,973	0	0.00000	1.00000	60.79
21.5	70,973	4,975	0.07010	0.92990	60.79
22.5	65,998	8,633	0.13081	0.86919	56.53
23.5	43,919	4,593	0.10458	0.89542	49.14
24.5	34,038	0	0.00000	1.00000	44.00
25.5	34,038	0	0.00000	1.00000	44.00
26.5	28,740	0	0.00000	1.00000	44.00

MDU Gas

Account 392.10 - General Plant - Transportation Equipment - Trailers

Placement Band - 1952 - 2021 Experience Band - 2000 - 2021

27.5	28,740	0	0.00000	1.00000	44.00
28.5	28,740	827	0.02878	0.97122	44.00
29.5	27,913	1,788	0.06406	0.93594	42.73
30.5	17,765	3,492	0.19657	0.80343	39.99
31.5	14,272	0	0.00000	1.00000	32.13
32.5	14,272	0	0.00000	1.00000	32.13
33.5	13,353	0	0.00000	1.00000	32.13
34.5	13,353	1,269	0.09504	0.90496	32.13
35.5	12,083	0	0.00000	1.00000	29.08
36.5	12,083	0	0.00000	1.00000	29.08
37.5	12,083	3,740	0.30951	0.69049	29.08
38.5	8,343	0	0.00000	1.00000	20.08
39.5	8,343	2,861	0.34291	0.65709	20.08
40.5	5,483	310	0.05654	0.94346	13.19
41.5	5,173	0	0.00000	1.00000	12.44
42.5	5,173	2,402	0.46437	0.53563	12.44
43.5	2,771	0	0.00000	1.00000	6.66
44.5	2,771	0	0.00000	1.00000	6.66
45.5	2,771	0	0.00000	1.00000	6.66
46.5	2,771	0	0.00000	1.00000	6.66
47.5	2,771	0	0.00000	1.00000	6.66
48.5	2,771	0	0.00000	1.00000	6.66
49.5	2,771	771	0.27825	0.72175	6.66
50.5	1,999	0	0.00000	1.00000	4.81
51.5	1,999	749	0.37460	0.62540	4.81
52.5	1,250	956	0.76482	0.23518	3.01
53.5	294	0	0.00000	1.00000	0.71
54.5	294	0	0.00000	1.00000	0.71
55.5	294	0	0.00000	1.00000	0.71
56.5	294	0	0.00000	1.00000	0.71
57.5	294	294	1.00150	-0.00150	0.71

MDU Gas

Account 392.10 - General Plant - Transportation Equipment - Trailers

Placement Band - 1952 - 2021 Experience Band - 2000 - 2021

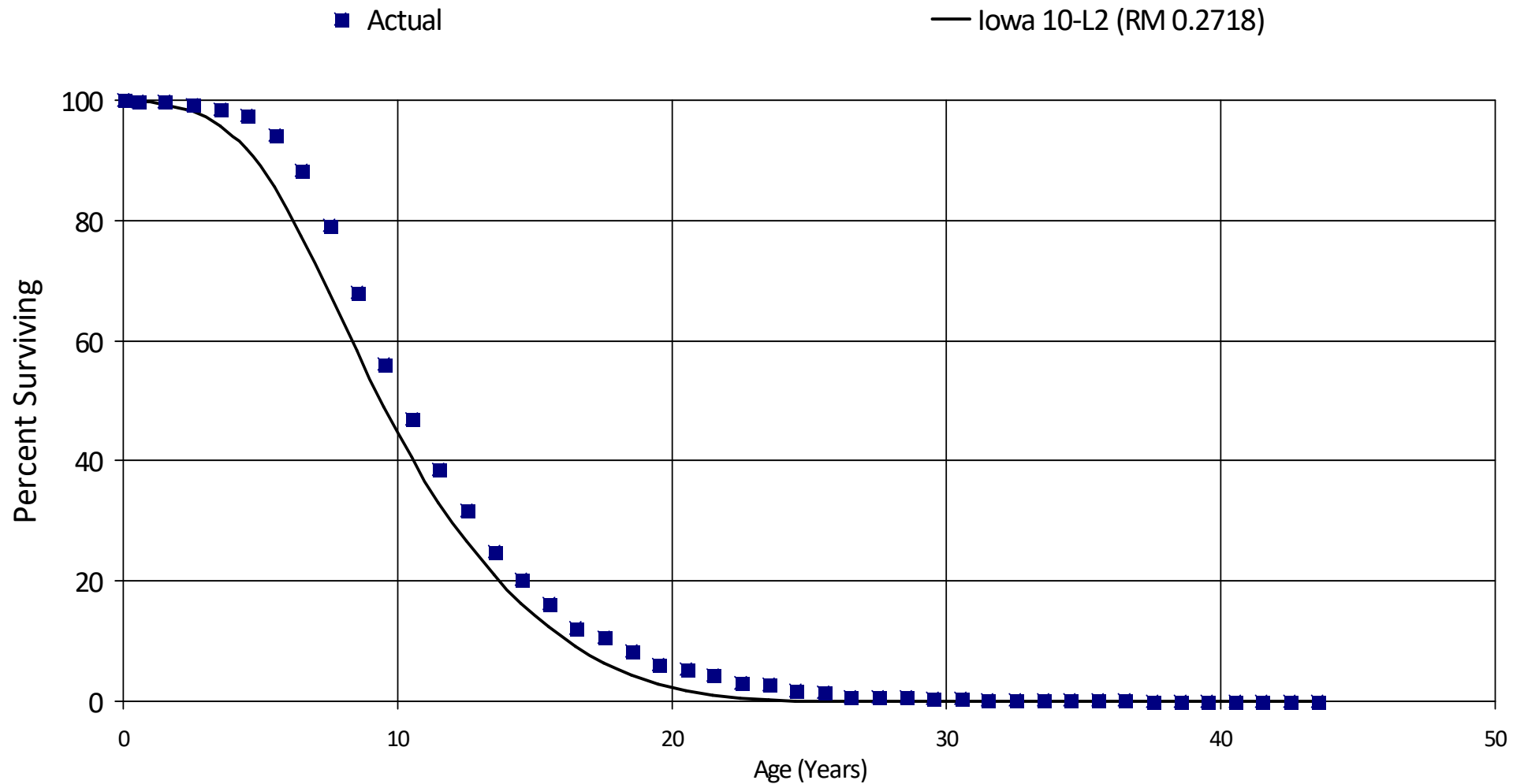
58.5	0	0	0.00000	0.00000	0.00
Totals:		170,044			

MDU Gas

Account 392.20 - General Plant - Transportation Equipment

Placement Band - 1953 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 392.20 - General Plant - Transportation Equipment

Placement Band - 1953 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	29,798,980	66,241	0.00222	0.99778	100.00
0.5	28,690,259	46,905	0.00163	0.99837	99.78
1.5	26,953,780	83,728	0.00311	0.99689	99.62
2.5	25,049,217	179,981	0.00719	0.99281	99.31
3.5	24,294,158	255,874	0.01053	0.98947	98.60
4.5	22,165,228	768,953	0.03469	0.96531	97.56
5.5	19,851,441	1,247,981	0.06287	0.93713	94.18
6.5	16,847,888	1,714,369	0.10176	0.89824	88.26
7.5	14,617,855	2,089,504	0.14294	0.85706	79.28
8.5	12,222,590	2,114,402	0.17299	0.82701	67.95
9.5	9,927,869	1,642,587	0.16545	0.83455	56.20
10.5	7,910,689	1,415,915	0.17899	0.82101	46.90
11.5	6,213,621	1,099,387	0.17693	0.82307	38.51
12.5	4,974,605	1,075,494	0.21620	0.78380	31.70
13.5	3,798,147	682,709	0.17975	0.82025	24.85
14.5	3,064,666	632,155	0.20627	0.79373	20.38
15.5	2,405,840	590,403	0.24540	0.75460	16.18
16.5	1,724,859	220,327	0.12774	0.87226	12.21
17.5	1,277,243	280,236	0.21941	0.78059	10.65
18.5	873,160	223,756	0.25626	0.74374	8.31
19.5	589,281	75,882	0.12877	0.87123	6.18
20.5	490,531	102,090	0.20812	0.79188	5.38
21.5	372,045	99,657	0.26786	0.73214	4.26
22.5	272,389	32,045	0.11764	0.88236	3.12
23.5	240,344	80,953	0.33682	0.66318	2.75
24.5	159,390	21,071	0.13220	0.86780	1.82
25.5	137,242	60,469	0.44060	0.55940	1.58
26.5	46,373	9,080	0.19580	0.80420	0.88

MDU Gas

Account 392.20 - General Plant - Transportation Equipment

Placement Band - 1953 - 2021 Experience Band - 1995 - 2021

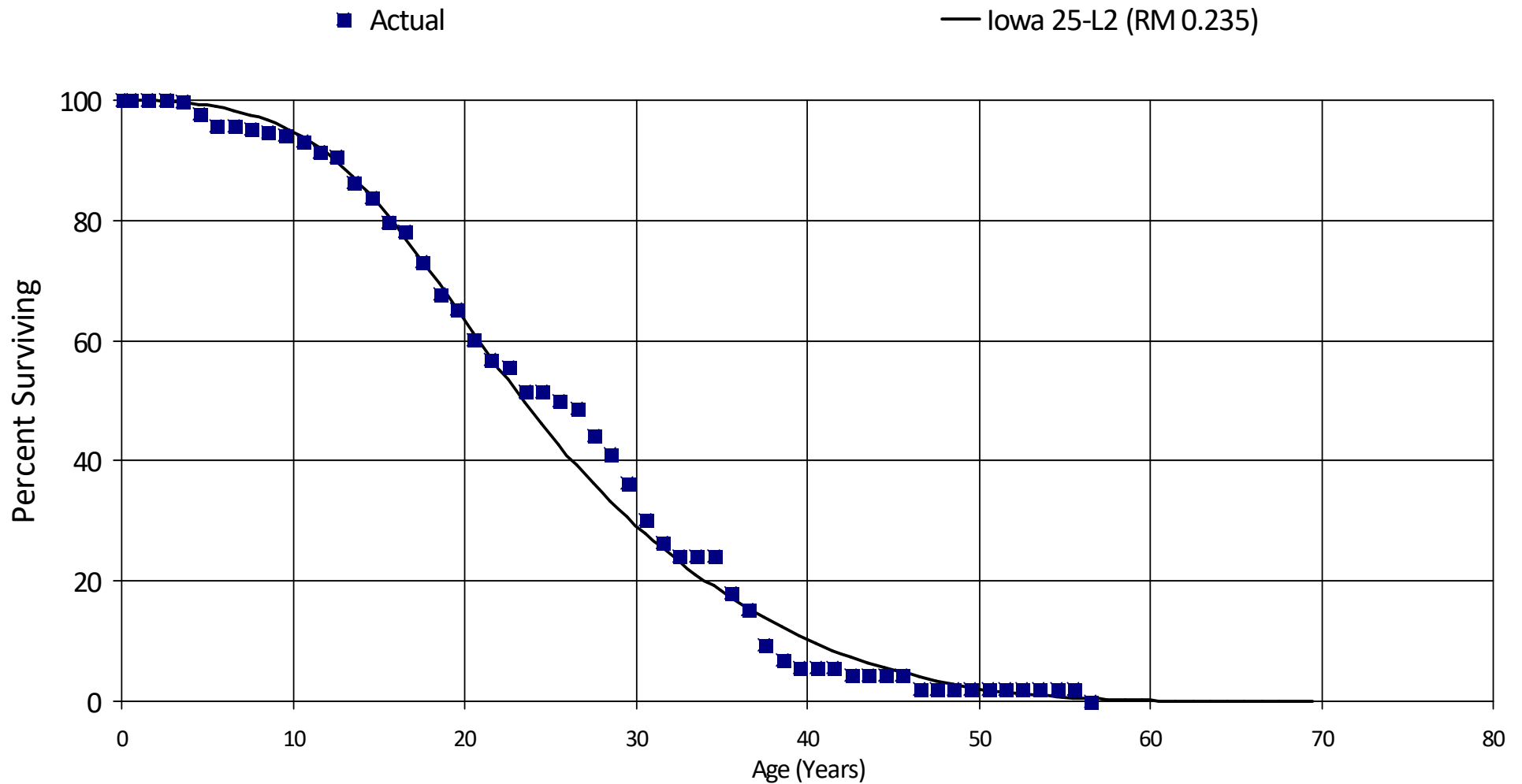
27.5	30,627	494	0.01613	0.98387	0.71
28.5	30,133	10,864	0.36054	0.63946	0.70
29.5	19,269	710	0.03685	0.96315	0.45
30.5	18,559	8,618	0.46436	0.53564	0.43
31.5	9,941	0	0.00000	1.00000	0.23
32.5	9,941	0	0.00000	1.00000	0.23
33.5	9,941	3,052	0.30701	0.69299	0.23
34.5	6,889	0	0.00000	1.00000	0.16
35.5	6,889	0	0.00000	1.00000	0.16
36.5	6,889	5,174	0.75100	0.24900	0.16
37.5	1,715	0	0.00000	1.00000	0.04
38.5	1,715	160	0.09329	0.90671	0.04
39.5	1,555	0	0.00000	1.00000	0.04
40.5	1,555	498	0.32021	0.67979	0.04
41.5	1,057	0	0.00000	1.00000	0.03
42.5	1,057	1,057	0.99958	0.00042	0.03
43.5	0	0	0.00000	0.00000	0.00
Totals:		16,942,781			

MDU Gas

Account 396.10 - General Plant - Trailers - Work Equipment

Placement Band - 1953 - 2021 Experience Band - 1997 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 396.10 - General Plant - Trailers - Work Equipment

Placement Band - 1953 - 2021 Experience Band - 1997 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,622,065	0	0.00000	1.00000	100.00
0.5	1,568,930	0	0.00000	1.00000	100.00
1.5	1,427,636	0	0.00000	1.00000	100.00
2.5	1,369,017	4,497	0.00328	0.99672	100.00
3.5	1,221,233	24,079	0.01972	0.98028	99.67
4.5	1,128,595	22,602	0.02003	0.97997	97.70
5.5	876,758	0	0.00000	1.00000	95.74
6.5	856,055	5,064	0.00592	0.99408	95.74
7.5	694,572	3,539	0.00510	0.99490	95.17
8.5	622,954	4,000	0.00642	0.99358	94.68
9.5	584,047	6,462	0.01106	0.98894	94.07
10.5	522,222	8,873	0.01699	0.98301	93.03
11.5	482,306	3,829	0.00794	0.99206	91.45
12.5	478,477	23,746	0.04963	0.95037	90.72
13.5	434,840	12,835	0.02952	0.97048	86.22
14.5	400,559	19,102	0.04769	0.95231	83.67
15.5	352,779	6,269	0.01777	0.98223	79.68
16.5	337,145	21,918	0.06501	0.93499	78.26
17.5	287,345	21,546	0.07498	0.92502	73.17
18.5	260,735	9,467	0.03631	0.96369	67.68
19.5	233,598	18,117	0.07756	0.92244	65.22
20.5	201,373	11,191	0.05557	0.94443	60.16
21.5	190,182	4,461	0.02346	0.97654	56.82
22.5	128,667	9,108	0.07079	0.92921	55.49
23.5	112,344	138	0.00123	0.99877	51.56
24.5	108,672	3,099	0.02852	0.97148	51.50
25.5	105,573	2,672	0.02531	0.97469	50.03
26.5	102,902	9,530	0.09261	0.90739	48.76

MDU Gas

Account 396.10 - General Plant - Trailers - Work Equipment

Placement Band - 1953 - 2021 Experience Band - 1997 - 2021

27.5	64,256	4,702	0.07318	0.92682	44.24
28.5	56,764	6,430	0.11328	0.88672	41.00
29.5	50,335	8,653	0.17191	0.82809	36.36
30.5	41,681	5,105	0.12248	0.87752	30.11
31.5	36,576	3,308	0.09044	0.90956	26.42
32.5	33,268	0	0.00000	1.00000	24.03
33.5	33,268	0	0.00000	1.00000	24.03
34.5	33,268	8,254	0.24810	0.75190	24.03
35.5	25,014	3,852	0.15399	0.84601	18.07
36.5	21,163	8,285	0.39149	0.60851	15.29
37.5	11,192	3,095	0.27653	0.72347	9.30
38.5	8,097	1,520	0.18772	0.81228	6.73
39.5	6,577	0	0.00000	1.00000	5.47
40.5	6,577	0	0.00000	1.00000	5.47
41.5	6,577	1,493	0.22701	0.77299	5.47
42.5	5,083	0	0.00000	1.00000	4.23
43.5	5,083	0	0.00000	1.00000	4.23
44.5	5,083	0	0.00000	1.00000	4.23
45.5	5,083	2,593	0.51009	0.48991	4.23
46.5	2,491	0	0.00000	1.00000	2.07
47.5	2,491	0	0.00000	1.00000	2.07
48.5	2,491	0	0.00000	1.00000	2.07
49.5	2,491	0	0.00000	1.00000	2.07
50.5	2,491	0	0.00000	1.00000	2.07
51.5	2,491	0	0.00000	1.00000	2.07
52.5	2,491	0	0.00000	1.00000	2.07
53.5	2,491	0	0.00000	1.00000	2.07
54.5	2,491	0	0.00000	1.00000	2.07
55.5	2,491	2,491	1.00006	-0.00006	2.07
56.5	0	0	0.00000	0.00000	0.00

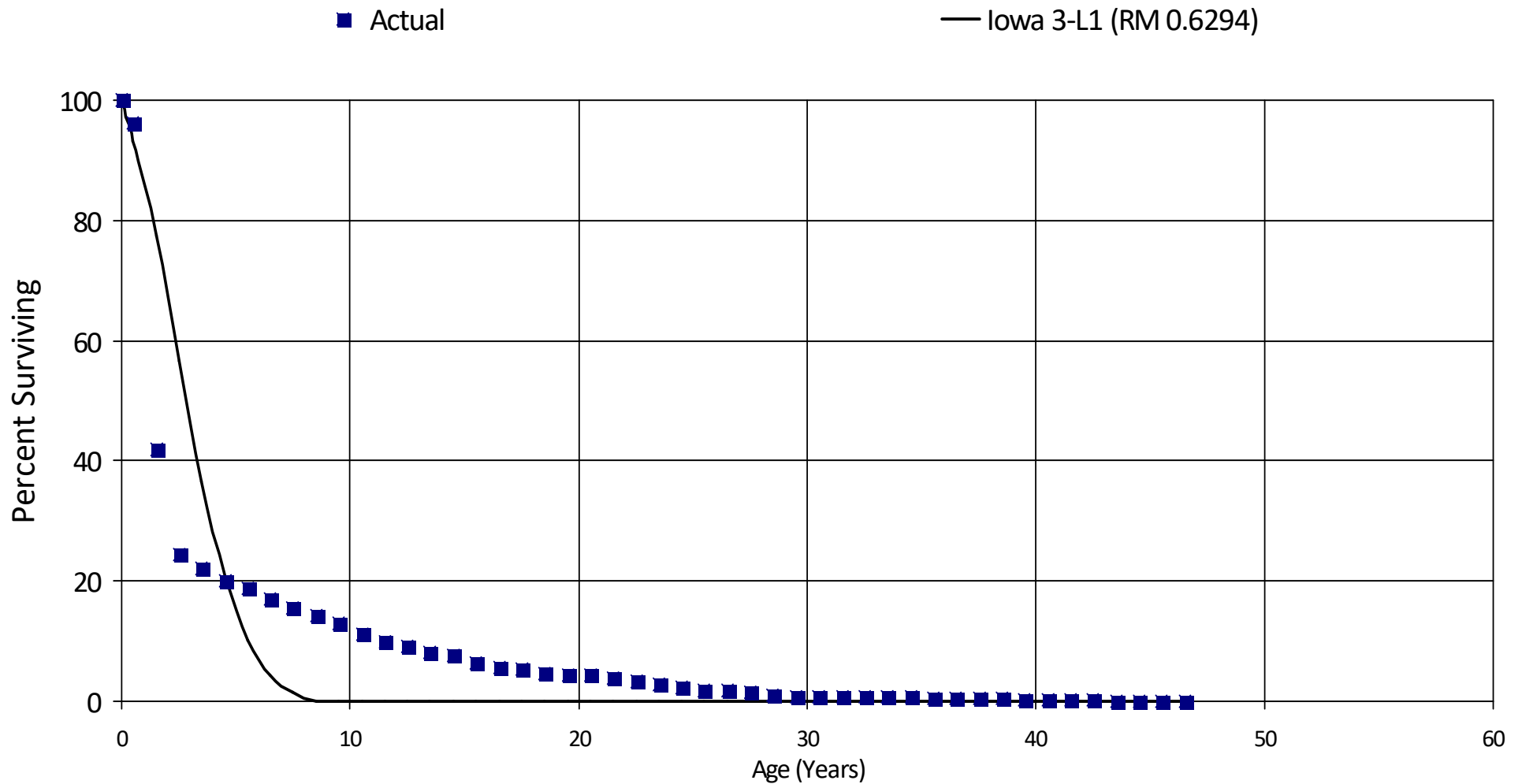
Totals: 315,925

MDU Gas

Account 396.20 - General Plant - Power Operated Equipment

Placement Band - 1953 - 2021 Experience Band - 1995 - 2021

Actual and Smooth Survivor Curves



MDU Gas

Account 396.20 - General Plant - Power Operated Equipment

Placement Band - 1953 - 2021 Experience Band - 1995 - 2021

RETIREMENT RATE ANALYSIS

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	64,675,834	2,543,199	0.03932	0.96068	100.00
0.5	58,642,873	33,142,793	0.56516	0.43484	96.07
1.5	24,914,766	10,339,982	0.41501	0.58499	41.78
2.5	14,116,952	1,349,769	0.09561	0.90439	24.44
3.5	12,186,392	1,062,198	0.08716	0.91284	22.10
4.5	10,641,556	717,271	0.06740	0.93260	20.17
5.5	9,031,281	847,303	0.09382	0.90618	18.81
6.5	7,904,243	751,130	0.09503	0.90497	17.05
7.5	6,716,302	582,368	0.08671	0.91329	15.43
8.5	5,960,900	526,472	0.08832	0.91168	14.09
9.5	5,084,631	679,818	0.13370	0.86630	12.85
10.5	4,176,501	418,747	0.10026	0.89974	11.13
11.5	3,679,257	364,744	0.09914	0.90086	10.01
12.5	3,314,512	317,151	0.09569	0.90431	9.02
13.5	2,878,761	234,234	0.08137	0.91863	8.16
14.5	2,400,382	348,908	0.14536	0.85464	7.50
15.5	1,932,795	270,011	0.13970	0.86030	6.41
16.5	1,468,970	71,444	0.04864	0.95136	5.51
17.5	1,352,698	156,322	0.11556	0.88444	5.24
18.5	1,066,010	66,599	0.06248	0.93752	4.63
19.5	914,634	18,569	0.02030	0.97970	4.34
20.5	896,065	71,652	0.07996	0.92004	4.25
21.5	758,045	118,098	0.15579	0.84421	3.91
22.5	639,193	90,827	0.14210	0.85790	3.30
23.5	548,366	101,408	0.18493	0.81507	2.83
24.5	446,958	80,486	0.18008	0.81992	2.31
25.5	366,471	37,916	0.10346	0.89654	1.89
26.5	325,859	34,710	0.10652	0.89348	1.69

MDU Gas

Account 396.20 - General Plant - Power Operated Equipment

Placement Band - 1953 - 2021 Experience Band - 1995 - 2021

27.5	291,149	107,895	0.37058	0.62942	1.51
28.5	183,254	27,055	0.14764	0.85236	0.95
29.5	156,199	2,498	0.01599	0.98401	0.81
30.5	153,701	15,680	0.10202	0.89798	0.80
31.5	138,021	0	0.00000	1.00000	0.72
32.5	138,021	0	0.00000	1.00000	0.72
33.5	138,021	0	0.00000	1.00000	0.72
34.5	138,021	20,288	0.14699	0.85301	0.72
35.5	117,733	10,913	0.09269	0.90731	0.61
36.5	106,820	1,727	0.01617	0.98383	0.55
37.5	105,093	19,393	0.18453	0.81547	0.54
38.5	85,700	15,903	0.18557	0.81443	0.44
39.5	69,797	0	0.00000	1.00000	0.36
40.5	69,797	8,672	0.12425	0.87575	0.36
41.5	61,124	20,648	0.33780	0.66220	0.32
42.5	40,477	18,271	0.45139	0.54861	0.21
43.5	22,206	3,191	0.14370	0.85630	0.12
44.5	19,015	0	0.00000	1.00000	0.10
45.5	19,015	19,015	0.99999	0.00001	0.10
46.5	0	0	0.00000	0.00000	0.00
Totals:		55,635,278			



SECTION 7

7 NET SALVAGE

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 376 - DISTRIBUTION PLANT - MAINS

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	81,561	22,342	27	(0)	(0)	(22,342)	-27					-22,342	-27
1996	309,280	83,392	27	(767)	(0)	(82,624)	-27					-52,483	-27
1997	187,244	-	0	(56,675)	(30)	56,675	30	-16,097	-8			-16,097	-8
1998	196,625	76,362	39	(806)	(0)	(75,556)	-38	-33,835	-15			-30,962	-16
1999	186,253	82,439	44		0	(82,439)	-44	-33,773	-18	-41,257	-21	-41,257	-21
2000	158,498	61,044	39		0	(61,044)	-39	-73,013	-40	-48,998	-24	-44,555	-24
2001	171,124	74,110	43		0	(74,110)	-43	-72,531	-42	-47,295	-26	-48,777	-26
2002	118,947	70,046				(70,046)		-68,400	-46	-72,639	-44	-51,436	-29
2003	234,206	150,702	64		0	(150,702)	-64	-98,286	-56	-87,668	-50	-62,465	-34
2004	390,888	80,069	20		0	(80,069)	-20	-100,272	-40	-87,194	-41	-64,226	-32
2005	169,555	57,360	34		0	(57,360)	-34	-96,044	-36	-86,457	-40	-63,602	-32
2006	122,132	50,615	41	(805)	(1)	(49,810)	-41	-62,413	-27	-81,598	-39	-62,452	-32
2007	260,243	85,572	33	(230)	(0)	(85,342)	-33	-64,171	-35	-84,657	-36	-64,213	-32
2008	441,209	72,514	16	(155)	(0)	(72,359)	-16	-69,171	-25	-68,988	-25	-64,795	-30
2009	230,827	74,552	32	(2,250)	(1)	(72,302)	-31	-76,668	-25	-67,435	-28	-65,295	-30
2010	302,631	101,644	34		0	(101,644)	-34	-82,102	-25	-76,291	-28	-67,567	-30
2011	333,661	201,494	60		0	(201,494)	-60	-125,146	-43	-106,628	-34	-75,445	-33
2012	222,753	120,281	54		0	(120,281)	-54	-141,139	-49	-113,616	-37	-77,936	-34
2013	440,039	176,361	40		0	(176,361)	-40	-166,045	-50	-134,416	-44	-83,116	-35
2014	514,341	250,309	49		0	(250,309)	-49	-182,317	-46	-170,018	-47	-91,476	-36
2015	508,795	476,808	94		0	(476,808)	-94	-301,159	-62	-245,050	-61	-109,825	-41
2016	605,695	238,752	39	(189)	(0)	(238,562)	-39	-321,893	-59	-252,464	-55	-115,677	-41
2017	614,168	546,423	89		0	(546,423)	-89	-420,598	-73	-337,693	-63	-134,405	-45
2018	679,997	545,026	80	(12,152)	(2)	(532,874)	-78	-439,287	-69	-408,995	-70	-151,008	-48
2019	1,112,186	533,323	48		0	(533,323)	-48	-537,540	-67	-465,598	-66	-166,300	-48
2020	1,223,259	1,879,764	154		0	(1,879,764)	-154	-981,987	-98	-746,189	-88	-232,203	-62
2021	1,260,741	1,606,339	127		0	(1,606,339)	-127	-1,339,809	-112	-1,019,745	-104	-283,097	-69
TOTAL	11,076,857	7,717,643	69.67	-74,030	(0.67)	-7,643,613	(69.01)						

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 378 - DISTRIBUTION PLANT - MEAS & REG STATION EQUIP - GENERAL

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	3,767	4,927	131	(4,785)	(127)	(142)						-142	-4
1996	22,620	10,141	45	(4,352)	(19)	(5,789)	-26					-2,966	-22
1997	17,785	8,057	45	(713)	(4)	(7,344)	-41	-4,425	-30			-4,425	-30
1998	16,659	8,754	53	(1,482)	(9)	(7,272)	-44	-6,802	-36			-5,137	-34
1999	3,764	749	20	0	0	(749)	-20	-5,122	-40	-4,259	-33	-4,259	-33
2000		6,839		(963)		(5,877)		-4,633	-68	-5,406	-44	-4,529	-42
2001	8,696	6,139	71	(2,154)	(25)	(3,986)	-46	-3,537	-85	-5,045	-54	-4,451	-43
2002	6,660	940	14	0	0	(940)	-14	-3,601	-70	-3,765	-53	-4,012	-40
2003	10,744	16,775	156	0	0	(16,775)	-156	-7,233	-83	-5,665	-95	-5,430	-54
2004	16,732	80,069	479		0	(80,069)	-479	-32,595	-286	-21,529	-251	-12,894	-120
2005	8,182	2,304	28		0	(2,304)	-28	-33,049	-278	-20,815	-204	-11,931	-114
2006	2,239		0		0	0	0	-27,458	-303	-20,018	-225	-11,931	-111
2007	22,626	913	4		0	(913)	-4	-1,073	-10	-20,012	-165	-11,013	-94
2008	17,733	850	5		0	(850)	-5	-588	-4	-16,827	-125	-10,232	-84
2009	21,935	1,147	5		0	(1,147)	-5	-970	-5	-1,043	-7	-9,583	-74
2010	9,162	10,177	111		0	(10,177)	-111	-4,058	-25	-2,618	-18	-9,622	-76
2011	3,332	(1,215)	(36)		0	1,215	36	-3,370	-29	-2,374	-16	-8,945	-74
2012	20,368		0		0	0	0	-2,987	-27	-2,192	-15	-8,945	-67
2013	20,366	10,761	53		0	(10,761)	-53	-3,182	-22	-4,174	-28	-9,052	-66
2014	17,711	12,015	68		0	(12,015)	-68	-7,592	-39	-6,347	-45	-9,216	-66
2015	5,755	4,268	74		0	(4,268)	-74	-9,015	-62	-5,166	-38	-8,956	-66
2016	(22)	3,912	(17,489)		0	(3,912)	17,489	-6,732	-86	-6,191	-48	-8,704	-68
2017	6,336	8,873	140		0	(8,873)	-140	-5,685	-141	-7,966	-79	-8,712	-70
2018	43,844	13,243	30		0	(13,243)	-30	-8,676	-52	-8,462	-57	-8,918	-64
2019	185,381	4,397	2		0	(4,397)	-2	-8,838	-11	-6,939	-14	-8,721	-41
2020	32,028	3,193	10		0	(3,193)	-10	-6,944	-8	-6,724	-13	-8,491	-39
2021	11,592	28,073	242		0	(28,073)	-242	-11,888	-16	-11,556	-21	-9,274	-43
TOTAL	535,996	246,302	45.95	-14,449	(2.70)	-231,853	(43.26)						

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 379 - DISTRIBUTION PLANT - MEAS & REG STATION EQUIP - CITY GATE

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	1,429		0		0	0	0						0
1996				(375)		375						375	
1997	19,118	846	4	(3,723)	(19)	2,877	15	1,084	16			1,626	
1998	2,594		0		0	0	0	1,084	14			1,626	
1999	1,744	280	16		0	(280)	-16	991	12	594	12	991	
2000						0		991	12	594	12	991	12
2001						0		991	12	594	12	991	12
2002						0		0	0	594	12	991	12
2003	(4,387)		0		0	0	0	0	0	594	15	991	15
2004	1,470		0		0	0	0	0	0	0	0	991	14
2005						0		0	0	0	0	991	14
2006						0		0	0	0	0	991	14
2007						0		0	0	0	0	991	14
2008	8,335		0		0	0		0	0	0	0	991	10
2009	23,768		0		0	0	0	0	0	0	0	991	5
2010						0		0	0	0	0	991	5
2011	15,454	1,500	10		0	(1,500)	-10	-500	-4	-300	-3	368	2
2012	2,466		0		0	0	0	-500	-8	-300	-3	368	2
2013	6279.98		0		0	0	0	-500	-6	-300	-3	368	2
2014	17,713		0		0	0	0	0	0	-300	-4	368	2
2015	7,312		0		0	0	0	0	0	-300	-3	368	1
2016	8,268		0		0	0	0	0	0	0	0	368	1
2017	9,848	197	2		0	(197)	-2	-66	-1	-39	0	255	1
2018	33,955	1,461	4	(12,152)	(36)	10,691	31	3,498	20	2,099	14	1,995	8
2019	24,638	6,728	27		0	(6,728)	-27	1,256	6	753	4	748	3
2020		9,804				(9,804)		-1,947	-10	-1,207	-8	-571	-3
2021	4,756		0		0	0	0	-5,511	-56	-1,207	-8	-571	-2
TOTAL	184,761	20,815	11.27	-16,251	(8.80)	-4,565	(2.47)						

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 380 - DISTRIBUTION PLANT - SERVICES

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	85,367	132,997	156	(239)	(0)	(132,758)	-156					-132,758	-156
1996	190,816	196,475	103	(489)	(0)	(195,985)	-103					-164,372	-119
1997	146,554	167,867	115	(274)	(0)	(167,593)	-114	-165,445	-117			-165,445	-117
1998	153,275	232,839	152	(166)	(0)	(232,674)	-152	-198,751	-122			-182,253	-127
1999	130,041	205,973	158		0	(205,973)	-158	-202,080	-141	-186,997	-132	-186,997	-132
2000	134,394	200,261	149		0	(200,261)	-149	-212,969	-153	-200,497	-133	-189,207	-135
2001	123,810	203,229	164	(31)	(0)	(203,197)	-164	-203,143	-157	-201,939	-147	-191,206	-139
2002	95,020	198,438	209		0	(198,438)	-209	-200,632	-170	-208,108	-163	-192,110	-145
2003	167,545	269,303	161	(2,266)	(1)	(267,037)	-159	-222,891	-173	-214,981	-165	-200,435	-147
2004	184,932	371,150	201		0	(371,150)	-201	-278,875	-187	-248,017	-176	-217,507	-154
2005	88,648	257,937	291	(79)	(0)	(257,858)	-291	-298,682	-203	-259,536	-197	-221,175	-162
2006	109,444	265,998	243	(275)	(0)	(265,723)	-243	-298,244	-234	-272,041	-211	-224,887	-168
2007	173,206	367,376	212	(46)	(0)	(367,329)	-212	-296,970	-240	-305,820	-211	-235,844	-172
2008	112,618	322,738	287	(461)	(0)	(322,277)	-286	-318,443	-242	-316,868	-237	-242,018	-179
2009	110,259	345,193	313	(336)	(0)	(344,857)	-313	-344,821	-261	-311,609	-262	-248,874	-186
2010	166,698	422,812	254	(135)	(0)	(422,678)	-254	-363,271	-280	-344,573	-256	-259,737	-191
2011	186,877	358,576	192		0	(358,576)	-192	-375,370	-243	-363,143	-242	-265,551	-191
2012	173,141	398,268	230		0	(398,268)	-230	-393,174	-224	-369,331	-246	-272,924	-194
2013	243,711	394,504	162		0	(394,504)	-162	-383,782	-191	-383,776	-218	-279,323	-191
2014	286,281	388,263	136		0	(388,263)	-136	-393,678	-168	-392,458	-186	-284,770	-186
2015	277,245	502,378	181		0	(502,378)	-181	-428,381	-159	-408,398	-175	-295,132	-186
2016	410,494	390,968	95	(40,328)	(10)	(350,640)	-85	-413,760	-127	-406,810	-146	-297,655	-175
2017	274,864	1,190,919	433		0	(1,190,919)	-433	-681,313	-212	-565,341	-189	-336,493	-192
2018	503,851	558,306	111		0	(558,306)	-111	-699,955	-177	-598,101	-171	-345,735	-183
2019	412,144	969,944	235		0	(969,944)	-235	-906,390	-228	-714,438	-190	-370,703	-188
2020	1,267,662	1,139,364	90		0	(1,139,364)	-90	-889,205	-122	-841,835	-147	-400,267	-168
2021	696,703	1,119,123	161		0	(1,119,123)	-161	-1,076,144	-136	-995,531	-158	-426,892	-167

TOTAL	6,905,600	11,571,198	167.56	-45,125	(0.65)	-11,526,073	(166.91)
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Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 381 - DISTRIBUTION PLANT - METERS

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	260,859		0	(141)	(0)	141	0					141	0
1996	148,430		0	(8,203)	(6)	8,203	6					4,172	2
1997	163,998		0	(3,569)	(2)	3,569	2	3,971	2			3,971	2
1998	167,985		0	(395)	(0)	395	0	4,056	3			3,077	2
1999	105,588		0	(1,112)	(1)	1,112	1	1,692	1	2,684	2	2,684	2
2000	81,310		0	(12,514)	(15)	12,514	15	4,674	4	5,159	4	4,322	3
2001	417,487	92,372	22	(3,201)	(1)	(89,171)	-21	-25,182	-12	-14,316	-8	-9,034	-5
2002	1,907	78	4	(756)	(40)	678	36	-25,326	-15	-14,894	-10	-7,820	-5
2003	13,398	838	6	(10,850)	(81)	10,013	75	-26,160	-18	-12,971	-10	-5,838	-4
2004	29,662	6,515	22	(13,191)	(44)	6,676	23	5,789	39	-11,858	-11	-4,587	-3
2005	1,342,412	418,681	31	(35,501)	(3)	(383,180)	-29	-122,164	-26	-90,997	-25	-39,005	-16
2006	46,152	6,552	14	(29,808)	(65)	23,256	50	-117,749	-25	-68,511	-24	-33,816	-15
2007	569,985	24,276	4	(11,103)	(2)	(13,173)	-2	-124,366	-19	-71,282	-18	-32,228	-13
2008	53,911	118,829	220	(48,608)	(90)	(70,221)	-130	-20,046	-9	-87,328	-21	-34,942	-14
2009	2,454,871	651,948	27	(10,242)	(0)	(641,706)	-26	-241,700	-24	-217,005	-24	-75,393	-19
2010	218,193	34,716	16	(8,228)	(4)	(26,488)	-12	-246,138	-27	-145,666	-22	-72,336	-19
2011	439,009	167,032	38	(25,672)	(6)	(141,360)	-32	-269,851	-26	-178,590	-24	-76,397	-20
2012	482,546	60,816	13	(15,026)	(3)	(45,791)	-9	-71,213	-19	-185,113	-25	-74,696	-19
2013	280,825		0		0	0	0	-62,384	-16	-171,069	-22	-74,696	-18
2014	372,162	148,438	40	(27,111)	(7)	(121,327)	-33	-55,706	-15	-66,993	-19	-77,150	-19
2015	361,847	75,061	21	(9,617)	(3)	(65,444)	-18	-62,257	-18	-74,784	-19	-76,565	-19
2016	417,093	72,759	17	(3,234)	(1)	(69,525)	-17	-85,432	-22	-60,417	-16	-76,230	-19
2017	814,936	105,166	13	(3,145)	(0)	(102,021)	-13	-78,997	-15	-71,663	-16	-77,402	-18
2018	690,542	128,851	19	(35,316)	(5)	(93,535)	-14	-88,360	-14	-90,371	-17	-78,104	-18
2019	1,777,501	199,304	11	(1,963)	(0)	(197,342)	-11	-130,966	-12	-105,573	-13	-83,072	-17
2020	1,488,126	302,639	20	(2,365)	(0)	(300,274)	-20	-197,050	-15	-152,539	-15	-91,760	-17
2021	1,871,033	316,458	17	(3,944)	(0.21)	(312,515)	-17	-270,043	-16	-201,137	-15	-100,251	-17
TOTAL	15,071,768	2,931,331	19.45	-324,816	(2.16)	-2,606,515	(17.29)						

Montana-Dakota Utilities Co. - Gas Plant
ACCOUNT 383 - DISTRIBUTION PLANT - SERVICE REGULATORS
SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	38,395		0	(378)	(1)	378	1					378	1
1996	55,425	738	1	(10,699)	(19)	9,961	18						0
1997	16,406		0	(7,614)	(46)	7,614	46	5,984	16			5,984	16
1998	30,249	72	0	(9,527)	(31)	9,455	31	9,010	26			6,852	20
1999	887		0		0	0	0	5,690	36	5,482	19	6,852	19
2000	3,395		0		0	0	0	3,152	27	5,406	25	6,852	19
2001	22,146		0	(6,353)	(29)	6,353	29	2,118	24	4,684	32	6,752	20
2002	5,255		0	(717)	(14)	717	14	2,357	23	3,305	27	5,746	20
2003	11,656	745	6	(19,962)	(171)	19,217	165	8,762	67	5,257	61	7,671	29
2004	3,292		0	(2,287)	(69)	2,287	69	7,407	110	5,715	62	6,998	30
2005	(19)		0	(4,479)	23,661	4,479	-23,661	8,661	174	6,611	78	6,718	32
2006	1,838		0	(8,135)	(442)	8,135	442	4,967	292	6,967	158	6,860	36
2007	273		0	(5,844)	(2,139)	5,844	2,139	6,153	882	7,992	235	6,767	39
2008	7,276	745	10	(11,579)	(159)	10,834	149	8,271	264	6,316	249	7,106	43
2009	10,028	(8)	(0)	(4,731)	(47)	4,739	47	7,139	122	6,806	175	6,924	44
2010	20,139		0	(6,366)	(32)	6,366	32	7,313	59	7,184	91	6,884	43
2011	8,331	641	8	(12,448)	(149)	11,806	142	7,637	60	7,918	86	7,212	46
2012	18,197	760	4	(6,613)	(36)	5,853	32	8,009	51	7,920	62	7,127	45
2013	19,423		0		0	0	0	5,886	38	5,753	38	7,127	42
2014	27,584	6,211	23	(21,359)	(77)	15,147	55	7,000	32	7,835	42	7,599	43
2015	45,321	5,899	13	(293)	(1)	(5,605)	-12	3,181	10	5,440	23	6,866	36
2016	56,446	13,840	25	(1,624)	(3)	(12,216)	-22	-891	-2	636	2	5,861	28
2017	63,395	13,785	22	(1,298)	(2)	(12,487)	-20	-10,103	-18	-3,032	-7	4,944	21
2018	105,784	20,540	19	(2,225)	(2)	(18,315)	-17	-14,339	-19	-6,695	-11	3,836	14
2019	86,067	12,896	15	(1,488)	(2)	(11,408)	-13	-14,070	-17	-12,006	-17	3,143	11
2020	118,467	41,235	35		0	(41,235)	-35	-23,653	-23	-19,132	-22	1,214	4
2021	130,888	45,765	35	(702)	(0.54)	(45,063)	-34	-32,569	-29	-25,702	-25	-714	-2
TOTAL	906,544	163,865	18.08	-146,720	(16.18)	-17,144	(1.89)						

Montana-Dakota Utilities Co. - Gas Plant
ACCOUNT 385 DISTRIBUTION PLANT - INDUSTRIAL MEAS. & REG. STATION EQUIPMENT
SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995						0							0
1996	521		0		0	0	0						0
1997	1778.43		0		0	0	0	0	0				0
1998	7894.41		0		0	0	0	0	0				0
1999	8,226		0		0	0	0	0	0	0	0		0
2000						0		0	0	0	0		0
2001	375		0		0	0	0	0	0	0	0		0
2002	561.38		0		0	0	0	0	0	0	0		0
2003	6,164		0		0	0	0	0	0	0	0		0
2004	464.54		0		0	0	0	0	0	0	0		0
2005	2526.6		0		0	0	0	0	0	0	0		0
2006						0		0	0	0	0		0
2007						0		0	0	0	0		0
2008						0		0	0	0	0		0
2009	24.58		0		0	0	0	0	0	0	0		0
2010						0		0	0	0	0		0
2011						0		0	0	0	0		0
2012						0		0	0	0	0		0
2013						0		0	0	0	0		0
2014						0		0	0	0	0		0
2015		(736)				736		245	0	147	0	736	3
2016	3,815	1,466	38		0	(1,466)	-38	-243	-19	-146	-19	-365	-2
2017	-3406.4	1,407	(41)		0	(1,407)	41	-712	-523	-427	-523	-712	-7
2018	285.57	3,689	1,292		0	(3,689)	-1,292	-2,187	-946	-1,165	-839	-1,456	-20
2019	34,766	3,661	11		0	(3,661)	-11	-2,919	-28	-1,897	-27	-1,897	-15
2020						0		-2,450	-21	-2,045	-29	-1,897	-15
2021	25,895	16,842	65		0	(16,842)	-65	-6,834	-34	-5,120	-44	-4,388	-29
TOTAL	89,890	26,329	29.29	0	0.00	-26,329	(29.29)						

Montana-Dakota Utilities Co. - Gas Plant
ACCOUNT 387.2- DISTRIBUTION PLANT - OTHER DISTRIBUTION EQUIPMENT
SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1996	3,481.02												0
1997	962.88												0
1998								0	0				0
1999	2,659.56							0	0				0
2000								0	0	0	0		0
2001								0	0	0	0		0
2002								0	0	0	0		0
2003	1,945.37		0	0	0	0	0	0	0	0	0		0
2004						0		0	0	0	0		0
2005	16,213.95		0	0	0	0	0	0	0	0	0		0
2006								0	0	0	0		0
2007								0	0	0	0		0
2008								0	0	0	0		0
2009								0	0	0	0		0
2010								0	0	0	0		0
2011								0	0	0	0		0
2012								0	0	0	0		0
2013						0		0	0	0	0		0
2014						0		0	0	0	0		0
2015						0		0	0	0	0		0
2016	15,091	640	4	0	(640)	-4		-213	-4	-128	-4	-40	-2
2017						0		-213	-4	-128	-4	-40	-2
2018						0		-213	-4	-128	-4	-40	-2
2019						0		0	0	-128	-4	-40	-2
2020						0		0	0	-128	-4	-40	-2
2021	35,061	1,376	4	0	(1,376)	-4		-459	-4	-275	-4	-119	-3
TOTAL	75,414	2,016	2.67	0	0.00	-2,016	(2.67)						

Montana-Dakota Utilities Co. - Gas Plant
ACCOUNT 390 - GENERAL PLANT - STRUCTURES & IMPROVEMENTS
SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	109,500	934	1	(154,090)	(141)	153,156	140					153,156	140
1996	138,638	1,218	1	(196,098)	(141)	194,880	141					174,018	140
1997	9710.6	578	6		0	(578)	-6	115,819	135			115,819	135
1998	6,373	1,007	16		0	(1,007)	-16	64,432	125			86,613	131
1999	2036.72		0		0	0	0	-528	-9	69,290	130	86,613	130
2000						0		-336	-12	38,659	123	86,613	130
2001						0		0	0	-317	-9	86,613	130
2002	469,369	23,530	5	(325,000)	(69)	301,470	64	100,490	64	60,093	63	129,584	88
2003	9314		0		0	0	0	100,490	63	60,294	63	129,584	87
2004	3,228	125	4		0	(125)	-4	100,448	63	60,269	63	107,966	87
2005	6,951		0		0	0	0	-42	-1	60,269	62	107,966	86
2006	11,119		0		0	0	0	-42	-1	60,269	60	107,966	85
2007	17,472	2,002	11	(40,375)	(231)	38,373	220	12,791	108	7,650	80	98,024	88
2008	10,888		0	(7,171)	(66)	7,171	66	15,181	115	9,084	91	86,668	87
2009	47,664	12,175	26	(192,347)	(404)	180,172	378	75,239	297	45,143	240	97,057	104
2010						0		62,448	320	45,143	259	97,057	104
2011	2,320	500	22		0	(500)	-22	59,891	359	45,043	287	87,301	103
2012	185,228	14,817	8	(234,016)	(126)	219,199	118	72,900	117	81,208	165	99,292	106
2013						0		72,900	117	79,774	170	99,292	106
2014	25,386	25,932	102		0	(25,932)	-102	64,423	92	38,554	91	88,857	101
2015	175,765	3,815	2		0	(3,815)	-2	-9,915	-15	37,791	49	81,728	86
2016	1,777	1,513	85		0	(1,513)	-85	-10,420	-15	37,588	48	75,782	86
2017	94,792	16,272	17		0	(16,272)	-17	-7,200	-8	-9,506	-16	69,645	79
2018	27,907	3,207	11	(100)	(0)	(3,107)	-11	-6,964	-17	-10,128	-16	65,098	77
2019	198,689	34,582	17	(207,978)	(105)	173,396	87	51,339	48	29,738	30	71,469	78
2020	164,413	27,509	17		0	(27,509)	-17	47,593	37	24,999	26	65,970	69
2021	2412.62	8,825	366		0	(8,825)	-366	45,688	37	23,537	24	62,033	68
TOTAL	1,720,952	178,540	10.37	-1,357,176	(78.86)	1,178,636	68.49						

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 392.1 - GENERAL PLANT - TRANSPORTATION EQUIPMENT - TRAILERS

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995													0
1996		47		(316)		269						134	0
1997						0		90	0			134	0
1998						0		90	0			134	0
1999						0		0	0	54	0	134	0
2000	826.93		0	(150)	(18)	150	18	50	18	84	51	140	51
2001	14,060		0	(1,701)	(12)	1,701	12	617	12	370	12	530	14
2002						0		617	12	370	12	530	14
2003						0		567	12	370	12	530	14
2004	310		0	(50)	(16)	50	16	17	16	380	13	434	14
2005	771		0		0	0	0	17	5	350	12	434	14
2006						0		17	5	10	5	434	14
2007	7,093		0	(2,500)	(35)	2,500	35	833	32	510	31	778	20
2008						0		833	35	510	31	778	20
2009	43,028		0	(22,510)	(52)	22,510	52	9,060	54	5,002	49	3,883	41
2010	13,681		0	(10,762)	(79)	10,762	79	12,647	67	7,154	56	4,743	48
2011	30,127		0	(13,422)	(45)	13,422	45	17,121	59	9,839	52	5,707	47
2012						0		8,061	55	9,339	54	5,707	47
2013	5,129		0	(601)	(12)	601	12	4,674	40	9,459	51	5,196	45
2014	18,787		0	(8,415)	(45)	8,415	45	3,005	38	6,640	49	5,489	45
2015						0		3,005	38	4,488	42	5,489	45
2016	13,283		0	(5,300)	(40)	5,300	40	4,572	43	2,863	38	5,473	45
2017	17,379		0	(2,830)	(16)	2,830	16	2,710	27	3,429	31	5,270	42
2018	2,402		0	(575)	(24)	575	24	2,902	26	3,424	33	4,935	41
2019	3,167		0	(3,775)	(119)	3,775	119	2,393	31	2,496	34	4,857	43
2020				(3,900)		3,900		2,750	148	3,276	45	4,797	45
2021						0		2,558	242	2,216	48	4,797	45
TOTAL	170,044	47	0.03	-76,807	(45.17)	76,760	45.14						

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 392.2 - GENERAL PLANT - TRANSPORTATION EQUIPMENT - VEHICLES

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	294,130	332	0	(31,226)	(11)	30,894	11					30,894	11
1996	387,552	3,363	1	(94,300)	(24)	90,937	23					60,915	18
1997	202,459	410	0	(35,010)	(17)	34,600	17	52,144	18			52,144	18
1998	436,319	1,086	0	(106,096)	(24)	105,010	24	76,849	22			65,360	20
1999	349,201	1,161	0	(56,913)	(16)	55,752	16	65,121	20	63,439	19	63,439	19
2000	706,715	795	0	(124,991)	(18)	124,196	18	94,986	19	82,099	20	73,565	19
2001	481,091	1,370	0	(84,395)	(18)	83,025	17	87,657	17	80,517	19	74,916	18
2002	385,991	789	0	(70,617)	(18)	69,828	18	92,350	18	87,562	19	74,280	18
2003	551,428	371	0	(94,188)	(17)	93,817	17	82,223	17	85,323	17	76,451	18
2004	703,343	158	0	(126,345)	(18)	126,187	18	96,611	18	99,410	18	81,425	18
2005	932,460		0	(189,285)	(20)	189,285	20	136,430	19	112,428	18	91,230	18
2006	634,321		0	(133,632)	(21)	133,632	21	149,701	20	122,550	19	94,764	19
2007	761,028		0	(158,848)	(21)	158,848	21	160,588	21	140,354	20	99,693	19
2008	856,416		0	(182,816)	(21)	182,816	21	158,432	21	158,154	20	105,630	19
2009	1,445,163		0	(319,046)	(22)	319,046	22	220,237	22	196,725	21	119,858	20
2010	491,271		0	(150,945)	(31)	150,945	31	217,602	23	189,057	23	121,801	20
2011	231,437		0	(62,100)	(27)	62,100	27	177,363	25	174,751	23	118,289	20
2012	484,401		0	(147,910)	(31)	147,910	31	120,318	30	172,563	25	119,935	21
2013	290,884		0	(96,441)	(33)	96,441		102,150	30	155,288	26	118,698	21
2014	293,262		0	(95,258)	(32)	95,258	32	113,203	32	110,531	31	117,526	22
2015	355,226		0	(75,648)	(21)	75,648	21	89,116	28	95,471	29	115,532	22
2016	1,270,125		0	(315,266)	(25)	315,266	25	162,057	25	146,105	27	124,611	22
2017	903,226		0	(273,191)	(30)	273,191	30	221,368	26	171,161	27	131,071	22
2018	683,049		0	(216,256)	(32)	216,256	32	268,238	28	195,124	28	134,620	23
2019	1,207,088	275	0	(231,840)	(19)	231,565	19	240,337	26	222,385	25	138,498	23
2020	884,714	4,290	0	(276,578)	(31)	272,288	31	240,036	26	261,713	26	143,644	23
2021	720,486	320	0	(202,344)	(28)	202,024		235,292	25	239,065	27	145,806	23
TOTAL	16,942,782	14,720	0.09	-3,951,484	(23.32)	3,936,764	23.24						

Montana-Dakota Utilities Co. - Gas Plant

ACCOUNT 396.1 - GENERAL PLANT - POWER OPERATED EQUIPMENT - TRAILERS

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1996	0			(102)		102						102	0
1997	15,108		0	(8,030)	(53)	8,030	53						0
1998						0		2,711	54			4,066	54
1999	16315.67		0	(7,500)	(46)	7,500	46	5,177	49			5,211	50
2000	1,335		0	(450)	(34)	450	34	2,650	45	3,216	49	4,020	49
2001	6,275	149	2	(2,060)	(33)	1,911	30	3,287	41	3,578	46	3,599	46
2002	1066.23		0	(653)	(61)	653	61	1,005	35	2,103	42	3,108	46
2003	5,323		0	(1,112)	(21)	1,112	21	1,225	29	2,325	38	2,823	43
2004	5537.87		0	(150)	(3)	150	3	638	16	855	22	2,488	39
2005						0		421	12	765	21	2,488	39
2006						0		50	3	383	16	2,488	39
2007	2816.61		0	(1,189)	(42)	1,189	42	396	42	490	18	2,344	39
2008	9,947		0	(1,207)	(12)	1,207	12	799	19	509	14	2,230	35
2009	19,234		0		0	0	0	799	7	479	7	2,230	27
2010	5,619		0	(3,225)	(57)	3,225	57	1,477	13	1,124	15	2,321	29
2011	8,753		0	(1,350)	(15)	1,350	15	1,525	14	1,394	15	2,240	28
2012	5,017		0		0	0	0	1,525	24	1,156	12	2,240	26
2013						0		450	10	915	12	2,240	26
2014				(150)		150		50	3	945	24	2,079	26
2015	30,099		0	(10,500)	(35)	10,500	35	3,550	35	2,400	27	2,681	28
2016	44,293		0	(12,902)	(29)	12,902	29	7,851	32	4,710	30	3,362	29
2017	20,960		0	(10,700)	(51)	10,700	51	11,367	36	6,850	36	3,821	31
2018	34,098		0	(13,679)	(40)	13,679	40	12,427	38	9,586	37	4,401	32
2019	32,660		0	(7,650)	(23)	7,650	23	10,676	37	11,086	34	4,581	31
2020	37,294		0	(8,000)	(21)	8,000	21	9,776	28	10,586	31	4,761	30
2021	14,173		0	(5,810)	(41)	5,810	41	7,153	26	9,168	33	4,813	30
TOTAL	315,924	149	0.05	-96,419	(30.52)	96,269	30.47						

Montana-Dakota Utilities Co. - Gas Plant
ACCOUNT 396.2 - GENERAL PLANT - POWER OPERATED EQUIPMENT
SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1995	757,409	10	0	(775,939)	(102)	775,929	102					775,929	102
1996	847,905	427	0	(632,158)	(75)	631,731	75					703,830	88
1997	1,325,620		0	(1,287,217)	(97)	1,287,217	97	898,293	92			898,293	92
1998	635,436	217	0	(520,006)	(82)	519,790	82	812,913	87			803,667	90
1999	1,604,865	16,945	1	(1,296,954)	(81)	1,280,009	80	1,029,005	87	898,935	87	898,935	87
2000	578,649		0	(446,315)	(77)	446,315	77	748,704	80	833,012	83	823,499	86
2001	1,331,620	1,185	0	(1,118,466)	(84)	1,117,281	84	947,868	81	930,122	85	865,467	86
2002	312,614	198	0	(203,872)	(65)	203,674	65	589,090	80	713,414	80	782,743	85
2003	1,489,389	637	0	(954,760)	(64)	954,123	64	758,359	73	800,280	75	801,785	81
2004	1,294,072		0	(1,087,417)	(84)	1,087,417	84	748,405	73	761,762	76	830,349	82
2005	1,593,725		0	(1,384,643)	(87)	1,384,643	87	1,142,061	78	949,428	79	880,739	82
2006	1,686,988		0	(1,363,963)	(81)	1,363,963	81	1,278,674	84	998,764	78	921,008	82
2007	1,938,280		0	(1,749,870)	(90)	1,749,870	90	1,499,492	86	1,308,003	82	984,766	83
2008	2,059,578		0	(1,894,912)	(92)	1,894,912	92	1,669,582	88	1,496,161	87	1,049,777	84
2009	1,888,458		0	(1,943,421)	(103)	1,943,421	103	1,862,734	95	1,667,362	91	1,109,353	86
2010	2,272,788		0	(1,969,431)	(87)	1,969,431	87	1,935,921	93	1,784,319	91	1,163,108	86
2011	2,313,463		0	(2,284,215)	(99)	2,284,215	99	2,065,689	96	1,968,370	94	1,229,055	87
2012	2,864,475		0	(2,613,890)	(91)	2,613,890	91	2,289,179	92	2,141,174	94	1,305,991	88
2013	135,654		0	(1,026,320)	(757)	1,026,320	757	1,974,808	111	1,967,455	104	1,291,271	91
2014	3,609,872		0	(2,615,759)	(72)	2,615,759	72	2,085,323	95	2,101,923	94	1,357,496	89
2015	2,897,221		0	(2,685,253)	(93)	2,685,253	93	2,109,111	95	2,245,087	95	1,420,722	89
2016	5,342,619		0	(3,047,345)	(57)	3,047,345	57	2,782,786	70	2,397,713	81	1,494,659	85
2017	1,968,418		0	(3,051,038)	(155)	3,051,038	155	2,927,879	86	2,485,143	89	1,562,328	88
2018	4,038,467		0	(3,612,285)	(89)	3,612,285	89	3,236,889	86	3,002,336	84	1,647,743	88
2019	5,104,954		0	(4,143,250)	(81)	4,143,250	81	3,602,191	97	3,307,834	85	1,747,563	88
2020	2,078,124		0	(1,387,298)	(67)	1,387,298	67	3,047,611	81	3,048,243	82	1,733,707	87
2021	3,664,618		0	(3,282,810)	(90)	3,282,810	90	2,937,786	81	3,095,336	92	1,791,081	87
TOTAL	55,635,280	19,618	0.04	-48,378,807	(86.96)	48,359,189	86.92						



SECTION 8

8 DETAILED DEPRECIATION CALCULATIONS

MDU Gas

Account #: 374.20 - Distribution - Land Rights

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 65

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1977	11,086.99	6,721	8,648	0.7800	2,439	25.59	95	44.5
1978	32,936.47	19,596	25,211	0.7655	7,725	26.33	293	43.5
1979	703.19	410	528	0.7508	175	27.07	6	42.5
1980	1,196.55	684	881	0.7359	316	27.82	11	41.5
1981	1,257.25	704	906	0.7208	351	28.58	12	40.5
1982	9,392.30	5,151	6,627	0.7056	2,765	29.35	94	39.5
1983	1,756.61	942	1,212	0.6902	544	30.13	18	38.5
1984	3,781.55	1,983	2,551	0.6747	1,230	30.91	40	37.5
1985	1,520.05	779	1,002	0.6589	518	31.71	16	36.5
1986	4,821.22	2,410	3,100	0.6430	1,721	32.51	53	35.5
1987	2,724.79	1,328	1,708	0.6270	1,016	33.32	31	34.5
1988	104.71	50	64	0.6108	41	34.14	1	33.5
1989	52.84	24	31	0.5944	21	34.97	1	32.5
1990	1,367.84	614	791	0.5780	577	35.80	16	31.5
1991	207.89	91	117	0.5613	91	36.64	2	30.5
1992	892.88	378	486	0.5445	407	37.49	11	29.5
1994	2,478.24	983	1,265	0.5105	1,213	39.21	31	27.5
1995	1,270.26	487	627	0.4933	644	40.08	16	26.5
1996	2,817.57	1,042	1,341	0.4760	1,476	40.95	36	25.5
1997	10.13	4	5	0.4580	5	41.83	0	24.5
1998	423.48	145	187	0.4409	237	42.72	6	23.5
1999	103.23	34	44	0.4231	60	43.62	1	22.5
2000	7,121.24	2,244	2,887	0.4053	4,235	44.52	95	21.5
2001	1,417.26	427	549	0.3874	868	45.43	19	20.5
2002	5,947.12	1,707	2,196	0.3693	3,751	46.34	81	19.5
2003	1,495.91	408	525	0.3511	971	47.26	21	18.5
2004	24,900.55	6,442	8,288	0.3328	16,613	48.18	345	17.5
2005	11,746.86	2,871	3,694	0.3144	8,053	49.11	164	16.5

MDU Gas

Account #: 374.20 - Distribution - Land Rights

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 65

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2006	32,481.06	7,472	9,613	0.2960	22,868	50.05	457	15.5
2007	105,201.84	22,681	29,180	0.2774	76,022	50.99	1,491	14.5
2008	15,054.53	3,027	3,895	0.2587	11,160	51.93	215	13.5
2009	8,595.96	1,603	2,063	0.2400	6,533	52.88	124	12.5
2010	4,915.75	845	1,087	0.2211	3,829	53.83	71	11.5
2011	77,682.44	12,209	15,708	0.2022	61,975	54.78	1,131	10.5
2012	49,726.92	7,082	9,111	0.1832	40,616	55.74	729	9.5
2014	3,954.75	446	574	0.1450	3,381	57.67	59	7.5
2015	70,158.17	6,864	8,831	0.1259	61,327	58.64	1,046	6.5
2016	868.72	72	93	0.1066	776	59.61	13	5.5
2018	784,206.39	41,457	53,336	0.0680	730,871	61.56	11,872	3.5
TOTAL	1,286,381.51	162,420	208,959		1,077,422		18,723	

COMPOSITE ANNUAL ACCRUAL RATE 1.46%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.16

COMPOSITE AVERAGE AGE (YEARS) 8.63

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 56.79

MDU Gas

Account #: 375.00 - Distribution - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 55

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1918	513.89	514	514	1.0000	0		0	103.5
1919	526.74	527	527	1.0000	0		0	102.5
1920	539.91	540	540	1.0000	0		0	101.5
1921	553.41	553	553	1.0000	0		0	100.5
1922	567.24	567	567	1.0000	0		0	99.5
1923	581.42	581	581	1.0000	0		0	98.5
1924	595.96	596	596	1.0000	0		0	97.5
1925	610.86	611	611	1.0000	0		0	96.5
1926	626.13	626	626	1.0000	0		0	95.5
1927	641.78	642	642	1.0000	0		0	94.5
1928	657.83	658	658	1.0000	0		0	93.5
1929	674.27	668	674	1.0000	0	0.50	0	92.5
1930	691.13	684	691	1.0000	0	0.55	0	91.5
1931	708.41	699	708	1.0000	0	0.71	0	90.5
1932	726.12	714	726	1.0000	0	0.91	0	89.5
1933	744.27	729	744	1.0000	0	1.13	0	88.5
1934	762.88	744	763	1.0000	0	1.35	0	87.5
1935	781.95	760	782	1.0000	0	1.57	0	86.5
1936	801.50	775	802	1.0000	0	1.81	0	85.5
1937	821.54	791	822	1.0000	0	2.05	0	84.5
1938	842.08	807	842	1.0000	0	2.30	0	83.5
1939	863.13	823	863	1.0000	0	2.55	0	82.5
1940	884.71	840	885	1.0000	0	2.80	0	81.5
1946	884.71	815	885	1.0000	0	4.33	0	75.5
1947	884.71	811	885	1.0000	0	4.59	0	74.5
1948	884.71	807	885	1.0000	0	4.85	0	73.5
1949	552.52	501	553	1.0000	0	5.11	0	72.5
1950	959.12	865	959	1.0000	0	5.37	0	71.5

MDU Gas

Account #: 375.00 - Distribution - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 55

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1951	4,043.89	3,630	4,044	1.0000	0	5.64	0	70.5
1952	4,816.72	4,300	4,817	1.0000	0	5.91	0	69.5
1953	3,135.87	2,783	3,136	1.0000	0	6.18	0	68.5
1954	19,134.05	16,884	19,134	1.0000	0	6.47	0	67.5
1955	7,665.77	6,723	7,666	1.0000	0	6.76	0	66.5
1956	29,215.63	25,462	29,216	1.0000	0	7.07	0	65.5
1957	11,076.38	9,590	11,076	1.0000	0	7.38	0	64.5
1958	13,637.62	11,726	13,638	1.0000	0	7.71	0	63.5
1959	9,646.07	8,234	9,646	1.0000	0	8.05	0	62.5
1960	12,678.12	10,741	12,678	1.0000	0	8.41	0	61.5
1961	11,208.34	9,420	11,208	1.0000	0	8.78	0	60.5
1962	22,583.10	18,822	22,583	1.0000	0	9.16	0	59.5
1963	16,792.47	13,873	16,792	1.0000	0	9.56	0	58.5
1964	5,881.89	4,815	5,882	1.0000	0	9.98	0	57.5
1965	7,359.24	5,966	7,359	1.0000	0	10.42	0	56.5
1966	5,380.89	4,318	5,381	1.0000	0	10.87	0	55.5
1967	6,103.82	4,846	6,104	1.0000	0	11.34	0	54.5
1968	6,507.11	5,108	6,507	1.0000	0	11.82	0	53.5
1969	6,192.13	4,804	6,192	1.0000	0	12.33	0	52.5
1970	10,607.83	8,129	10,608	1.0000	0	12.85	0	51.5
1971	983.02	744	983	1.0000	0	13.39	0	50.5
1972	3,146.24	2,349	3,146	1.0000	0	13.94	0	49.5
1973	2,949.96	2,171	2,950	1.0000	0	14.52	0	48.5
1974	3,242.67	2,352	3,243	1.0000	0	15.10	0	47.5
1975	1,625.13	1,161	1,625	1.0000	0	15.71	0	46.5
1979	2,889.58	1,930	2,890	1.0000	0	18.27	0	42.5
1980	818.39	537	818	1.0000	0	18.94	0	41.5
1981	511.36	329	511	1.0000	0	19.63	0	40.5

MDU Gas

Account #: 375.00 - Distribution - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 55

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1982	5,805.37	3,659	5,805	1.0000	0	20.33	0	39.5
1984	6,446.16	3,895	6,311	0.9790	136	21.77	6	37.5
1985	26,544.90	15,683	25,412	0.9573	1,133	22.50	50	36.5
1986	13,663.63	7,887	12,780	0.9353	884	23.25	38	35.5
1987	426.93	241	390	0.9130	37	24.01	2	34.5
1988	1,012.80	557	902	0.8904	111	24.78	4	33.5
1989	7,653.95	4,098	6,640	0.8675	1,014	25.55	40	32.5
1990	1,453.64	757	1,227	0.8443	226	26.34	9	31.5
1991	13,418.12	6,797	11,014	0.8208	2,405	27.14	89	30.5
1992	13,547.05	6,664	10,797	0.7970	2,750	27.95	98	29.5
1993	43,075.76	20,550	33,297	0.7730	9,779	28.76	340	28.5
1994	58,579.02	27,068	43,857	0.7487	14,722	29.59	498	27.5
1996	2,413.38	1,042	1,688	0.6993	726	31.26	23	25.5
1997	12,484.05	5,194	8,416	0.6742	4,068	32.12	127	24.5
1998	2,173.67	870	1,410	0.6488	763	32.98	23	23.5
2000	680.28	251	406	0.5975	274	34.72	8	21.5
2003	22,150.44	7,091	11,489	0.5187	10,662	37.39	285	18.5
2004	4,110.00	1,248	2,022	0.4920	2,088	38.30	55	17.5
2005	13,949.02	4,004	6,488	0.4651	7,461	39.21	190	16.5
2006	9,930.00	2,684	4,350	0.4380	5,580	40.13	139	15.5
2007	2,467.27	625	1,013	0.4108	1,454	41.06	35	14.5
2008	34,980.07	8,276	13,409	0.3833	21,571	41.99	514	13.5
2010	10,680.56	2,162	3,503	0.3280	7,178	43.87	164	11.5
2011	131,096.36	24,277	39,335	0.3000	91,761	44.82	2,048	10.5
2012	57,817.49	9,706	15,726	0.2720	42,092	45.77	920	9.5
2013	37,411.97	5,629	9,121	0.2438	28,291	46.72	605	8.5
2014	239,703.28	31,879	51,653	0.2155	188,050	47.69	3,944	7.5
2015	396,972.28	45,830	74,258	0.1871	322,715	48.65	6,633	6.5

MDU Gas

Account #: 375.00 - Distribution - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 55

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2016	22,443.92	2,196	3,558	0.1585	18,886	49.62	381	5.5
2017	80,321.09	6,439	10,433	0.1299	69,888	50.59	1,381	4.5
2018	26,002.17	1,623	2,630	0.1012	23,372	51.57	453	3.5
2019	24,459.99	1,092	1,770	0.0723	22,690	52.54	432	2.5
2020	22,798.25	612	991	0.0435	21,807	53.52	407	1.5
2021	110,950.94	993	1,609	0.0145	109,342	54.51	2,006	0.5
TOTAL	1,707,340.03	472,570	673,425		1,033,915		21,947	

COMPOSITE ANNUAL ACCRUAL RATE	1.29%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.39
COMPOSITE AVERAGE AGE (YEARS)	18.05
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	39.78

MDU Gas

Account #: 376.00 - Distribution - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R3
ASL: 55
Net Salvage: -55%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1916	38,005.92	58,909	58,909	1.0000	0		0	105.5
1917	66,510.80	103,092	103,092	1.0000	0		0	104.5
1918	68,173.57	105,669	105,669	1.0000	0		0	103.5
1919	69,877.90	108,311	108,311	1.0000	0		0	102.5
1920	71,624.85	111,019	111,019	1.0000	0		0	101.5
1921	73,415.47	113,794	113,794	1.0000	0		0	100.5
1922	75,250.86	116,639	116,639	1.0000	0		0	99.5
1923	77,132.13	119,555	119,555	1.0000	0		0	98.5
1924	79,060.43	122,544	122,544	1.0000	0		0	97.5
1925	81,036.94	125,607	125,607	1.0000	0		0	96.5
1926	83,062.87	128,747	128,747	1.0000	0		0	95.5
1927	84,889.12	131,578	131,578	1.0000	0		0	94.5
1928	87,267.92	135,265	135,265	1.0000	0		0	93.5
1929	89,449.62	137,386	137,837	0.9942	810	0.50	810	92.5
1930	90,618.28	139,063	139,519	0.9933	939	0.55	939	91.5
1931	91,257.63	139,615	140,072	0.9903	1,377	0.71	1,377	90.5
1932	95,875.35	146,138	146,618	0.9866	1,989	0.91	1,989	89.5
1933	97,989.44	148,767	149,255	0.9827	2,629	1.13	2,329	88.5
1934	101,204.04	153,025	153,527	0.9787	3,339	1.35	2,480	87.5
1935	89,875.55	135,326	135,770	0.9746	3,537	1.57	2,251	86.5
1936	102,142.99	153,117	153,619	0.9703	4,702	1.81	2,601	85.5
1937	108,570.14	162,008	162,540	0.9659	5,744	2.05	2,801	84.5
1938	101,557.89	150,836	151,330	0.9613	6,084	2.30	2,647	83.5
1939	102,861.20	152,043	152,542	0.9568	6,893	2.55	2,703	82.5
1940	103,663.58	152,505	153,005	0.9522	7,674	2.80	2,743	81.5
1946	109,147.59	155,854	156,365	0.9243	12,814	4.33	2,958	75.5
1947	102,054.09	144,987	145,462	0.9196	12,721	4.59	2,772	74.5
1948	114,190.47	161,398	161,927	0.9149	15,068	4.85	3,109	73.5

MDU Gas

Account #: 376.00 - Distribution - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R3
ASL: 55
Net Salvage: -55%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1949	106,229.49	149,366	149,855	0.9101	14,800	5.11	2,898	72.5
1950	355,485.71	497,197	498,827	0.9053	52,175	5.37	9,715	71.5
1951	320,038.95	445,234	446,694	0.9005	49,367	5.64	8,760	70.5
1952	506,337.85	700,550	702,847	0.8955	81,977	5.91	13,881	69.5
1953	385,002.27	529,664	531,400	0.8905	65,353	6.18	10,569	68.5
1954	461,337.15	630,969	633,038	0.8853	82,035	6.47	12,682	67.5
1955	766,085.60	1,041,414	1,044,829	0.8799	142,604	6.76	21,085	66.5
1956	646,702.34	873,586	876,451	0.8744	125,938	7.07	17,820	65.5
1957	352,654.49	473,248	474,800	0.8686	71,815	7.38	9,728	64.5
1958	436,038.84	581,122	583,027	0.8626	92,833	7.71	12,041	63.5
1959	570,477.55	754,810	757,285	0.8564	126,955	8.05	15,770	62.5
1960	701,230.69	920,794	923,813	0.8499	163,094	8.41	19,403	61.5
1961	545,479.14	710,589	712,919	0.8432	132,574	8.78	15,107	60.5
1962	832,138.17	1,074,978	1,078,503	0.8362	211,312	9.16	23,066	59.5
1963	701,324.27	898,052	900,996	0.8288	186,057	9.56	19,457	58.5
1964	717,167.59	909,887	912,871	0.8212	198,739	9.98	19,912	57.5
1965	629,900.85	791,449	794,043	0.8133	182,303	10.42	17,503	56.5
1966	481,202.94	598,486	600,448	0.8050	145,417	10.87	13,381	55.5
1967	573,587.38	705,798	708,112	0.7965	180,949	11.34	15,961	54.5
1968	727,011.56	884,605	887,505	0.7876	239,363	11.82	20,243	53.5
1969	647,163.14	778,250	780,801	0.7784	222,302	12.33	18,031	52.5
1970	2,680,793.80	3,184,413	3,194,853	0.7689	960,377	12.85	74,737	51.5
1971	672,290.56	788,391	790,975	0.7591	251,075	13.39	18,753	50.5
1972	1,636,023.75	1,892,973	1,899,179	0.7489	636,658	13.94	45,661	49.5
1973	871,203.97	993,983	997,242	0.7385	353,124	14.52	24,328	48.5
1974	460,172.75	517,398	519,095	0.7278	194,173	15.10	12,856	47.5
1975	805,975.98	892,495	895,421	0.7168	353,842	15.71	22,528	46.5
1976	1,121,570.89	1,222,414	1,226,422	0.7055	512,013	16.33	31,362	45.5

MDU Gas

Account #: 376.00 - Distribution - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 55

Net Salvage: -55%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1977	583,203.65	625,233	627,283	0.6939	276,683	16.96	16,315	44.5
1978	741,641.80	781,547	784,110	0.6821	365,435	17.61	20,755	43.5
1979	1,518,103.72	1,571,462	1,576,615	0.6700	776,446	18.27	42,501	42.5
1980	2,028,170.82	2,060,863	2,067,620	0.6577	1,076,045	18.94	56,801	41.5
1981	1,814,808.61	1,808,877	1,814,808	0.6452	998,146	19.63	50,843	40.5
1982	1,930,227.39	1,885,828	1,892,010	0.6324	1,099,842	20.33	54,093	39.5
1983	1,652,315.78	1,581,148	1,586,332	0.6194	974,758	21.04	46,319	38.5
1984	1,311,509.21	1,228,239	1,232,266	0.6062	800,574	21.77	36,776	37.5
1985	1,700,300.22	1,557,092	1,562,197	0.5928	1,073,268	22.50	47,691	36.5
1986	2,082,914.48	1,863,662	1,869,772	0.5791	1,358,746	23.25	58,438	35.5
1987	1,495,514.27	1,306,188	1,310,471	0.5653	1,007,577	24.01	41,968	34.5
1988	1,156,795.37	985,337	988,567	0.5513	804,466	24.78	32,470	33.5
1989	937,511.41	778,007	780,558	0.5372	672,584	25.55	26,321	32.5
1990	1,154,957.96	932,815	935,874	0.5228	854,311	26.34	32,433	31.5
1991	1,584,188.82	1,243,889	1,247,967	0.5082	1,207,526	27.14	44,495	30.5
1992	2,128,445.67	1,622,842	1,628,163	0.4935	1,670,928	27.95	59,793	29.5
1993	7,347,952.66	5,433,511	5,451,325	0.4786	5,938,001	28.76	206,459	28.5
1994	4,763,644.90	3,411,770	3,422,955	0.4636	3,960,694	29.59	133,870	27.5
1995	2,339,741.09	1,620,720	1,626,034	0.4484	2,000,565	30.42	65,763	26.5
1996	2,086,771.53	1,395,907	1,400,483	0.4330	1,834,013	31.26	58,663	25.5
1997	1,793,542.50	1,156,713	1,160,505	0.4174	1,619,486	32.12	50,427	24.5
1998	1,582,202.41	982,071	985,291	0.4018	1,467,122	32.98	44,492	23.5
1999	1,559,629.10	929,910	932,959	0.3859	1,484,467	33.84	43,863	22.5
2000	1,774,218.08	1,014,047	1,017,371	0.3699	1,732,667	34.72	49,905	21.5
2001	1,968,245.01	1,075,901	1,079,429	0.3538	1,971,351	35.60	55,370	20.5
2002	2,753,944.13	1,436,194	1,440,903	0.3376	2,827,711	36.50	77,482	19.5
2003	3,292,299.51	1,633,560	1,638,916	0.3212	3,464,148	37.39	92,640	18.5
2004	3,631,421.44	1,709,133	1,714,736	0.3046	3,913,967	38.30	102,194	17.5

MDU Gas

Account #: 376.00 - Distribution - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 55

Net Salvage: -55%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2005	4,757,333.13	2,116,712	2,123,652	0.2880	5,250,215	39.21	133,893	16.5
2006	3,600,696.04	1,508,792	1,513,738	0.2712	4,067,341	40.13	101,351	15.5
2007	3,300,813.95	1,297,040	1,301,292	0.2543	3,814,969	41.06	92,919	14.5
2008	7,267,448.10	2,664,955	2,673,692	0.2374	8,590,853	41.99	204,602	13.5
2009	3,092,287.13	1,052,278	1,055,728	0.2203	3,737,317	42.93	87,066	12.5
2010	4,051,042.80	1,270,952	1,275,119	0.2031	5,003,997	43.87	114,071	11.5
2011	5,954,325.09	1,709,077	1,714,680	0.1858	7,514,524	44.82	167,679	10.5
2012	16,073,142.32	4,182,067	4,195,778	0.1684	20,717,592	45.77	452,671	9.5
2013	12,595,253.33	2,937,506	2,947,136	0.1510	16,575,506	46.72	354,751	8.5
2014	36,155,477.79	7,453,064	7,477,499	0.1334	48,563,491	47.69	1,018,415	7.5
2015	11,874,663.18	2,124,918	2,131,885	0.1158	16,273,843	48.65	334,506	6.5
2016	7,780,568.91	1,179,922	1,183,790	0.0982	10,876,092	49.62	219,193	5.5
2017	10,129,649.30	1,258,646	1,262,773	0.0804	14,438,183	50.59	285,390	4.5
2018	22,247,014.79	2,152,870	2,159,928	0.0626	32,322,944	51.57	626,824	3.5
2019	19,000,794.59	1,315,031	1,319,342	0.0448	28,131,889	52.54	535,395	2.5
2020	12,943,487.08	538,118	539,883	0.0269	19,522,522	53.52	364,738	1.5
2021	16,798,817.05	233,051	233,815	0.0090	25,804,352	54.51	473,407	0.5
TOTAL	278,503,430.43	106,782,375	107,127,614		324,552,703		7,797,758	

COMPOSITE ANNUAL ACCRUAL RATE 2.80%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.38

COMPOSITE AVERAGE AGE (YEARS) 15.47

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 41.39

MDU Gas

Account #: 378.00 - Distribution - Meas. & Reg. Station Equip. - General

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 50

Net Salvage: -30%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1920	3,168.71	4,119	4,119	1.0000	0		0	102.5
1921	3,247.93	4,222	4,222	1.0000	0		0	101.5
1922	3,329.13	4,328	4,328	1.0000	0		0	100.5
1923	3,412.36	4,436	4,436	1.0000	0		0	99.5
1924	3,497.67	4,547	4,547	1.0000	0		0	98.5
1925	3,585.11	4,661	4,661	1.0000	0		0	97.5
1926	3,674.73	4,777	4,777	1.0000	0		0	96.5
1927	3,766.61	4,897	4,897	1.0000	0		0	95.5
1928	3,860.77	5,019	5,019	1.0000	0		0	94.5
1929	3,957.29	5,093	5,144	1.0000	0	0.50	0	92.5
1930	4,056.22	5,219	5,273	1.0000	0	0.51	0	91.5
1931	4,157.62	5,329	5,405	1.0000	0	0.70	0	90.5
1932	4,261.56	5,437	5,540	1.0000	0	0.93	0	89.5
1933	4,368.10	5,546	5,679	1.0000	0	1.17	0	88.5
1934	4,477.30	5,655	5,820	1.0000	0	1.42	0	87.5
1935	4,589.23	5,765	5,966	1.0000	0	1.69	0	86.5
1936	4,703.97	5,876	6,115	1.0000	0	1.95	0	85.5
1937	4,821.56	5,989	6,268	1.0000	0	2.22	0	84.5
1938	4,942.11	6,104	6,425	1.0000	0	2.50	0	83.5
1939	5,065.66	6,220	6,585	1.0000	0	2.78	0	82.5
1940	5,192.30	6,337	6,750	1.0000	0	3.06	0	81.5
1946	5,192.30	6,104	6,750	1.0000	0	4.78	0	75.5
1947	5,192.30	6,065	6,750	1.0000	0	5.07	0	74.5
1948	7,082.24	8,219	9,207	1.0000	0	5.37	0	73.5
1949	5,192.30	5,986	6,750	1.0000	0	5.66	0	72.5
1950	9,447.81	10,820	12,282	1.0000	0	5.95	0	71.5
1952	7,454.91	8,423	9,596	0.9902	95	6.55	15	69.5
1953	5,277.59	5,921	6,746	0.9833	115	6.85	17	68.5

MDU Gas

Account #: 378.00 - Distribution - Meas. & Reg. Station Equip. - General

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 50

Net Salvage: -30%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1954	13,267.21	14,780	16,839	0.9763	408	7.15	57	67.5
1955	20,157.67	22,293	25,399	0.9692	806	7.47	108	66.5
1956	14,042.15	15,414	17,562	0.9620	693	7.78	89	65.5
1957	5,153.29	5,613	6,396	0.9547	304	8.10	37	64.5
1958	10,849.14	11,725	13,358	0.9471	745	8.43	88	63.5
1959	16,644.98	17,842	20,328	0.9395	1,310	8.77	149	62.5
1960	25,153.30	26,736	30,462	0.9316	2,238	9.12	245	61.5
1961	18,046.93	19,016	21,666	0.9235	1,795	9.47	189	60.5
1962	14,493.61	15,135	17,244	0.9152	1,598	9.84	162	59.5
1963	13,430.27	13,894	15,830	0.9067	1,630	10.21	160	58.5
1964	11,058.96	11,330	12,909	0.8979	1,468	10.60	139	57.5
1965	25,585.90	25,950	29,566	0.8889	3,695	10.99	336	56.5
1966	11,501.19	11,544	13,152	0.8797	1,799	11.40	158	55.5
1967	9,168.89	9,103	10,372	0.8701	1,548	11.81	131	54.5
1968	13,995.34	13,739	15,654	0.8604	2,540	12.24	207	53.5
1969	20,113.63	19,516	22,235	0.8504	3,913	12.68	309	52.5
1970	22,456.29	21,525	24,524	0.8401	4,669	13.13	355	51.5
1971	21,588.19	20,432	23,280	0.8295	4,785	13.60	352	50.5
1972	16,079.12	15,020	17,112	0.8187	3,790	14.07	269	49.5
1973	13,257.50	12,216	13,918	0.8076	3,317	14.56	228	48.5
1974	46,340.78	42,098	47,964	0.7962	12,279	15.06	815	47.5
1975	15,254.65	13,655	15,558	0.7845	4,273	15.57	274	46.5
1976	39,729.01	35,023	39,903	0.7726	11,745	16.09	730	45.5
1977	25,003.86	21,694	24,717	0.7604	7,788	16.63	468	44.5
1978	13,141.04	11,215	12,778	0.7480	4,306	17.18	251	43.5
1979	6,555.77	5,500	6,266	0.7352	2,257	17.73	127	42.5
1980	30,346.14	25,008	28,492	0.7222	10,958	18.30	599	41.5
1981	2,665.85	2,157	2,457	0.7090	1,009	18.89	53	40.5

MDU Gas

Account #: 378.00 - Distribution - Meas. & Reg. Station Equip. - General

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 50

Net Salvage: -30%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1982	36,333.43	28,833	32,850	0.6955	14,383	19.48	738	39.5
1983	27,344.35	21,270	24,234	0.6817	11,314	20.08	563	38.5
1984	19,620.59	14,949	17,032	0.6677	8,475	20.70	409	37.5
1985	13,474.74	10,047	11,447	0.6535	6,070	21.32	285	36.5
1986	15,572.40	11,354	12,936	0.6390	7,308	21.96	333	35.5
1987	13,667.79	9,736	11,092	0.6243	6,676	22.60	295	34.5
1988	23,002.21	15,992	18,220	0.6093	11,683	23.26	502	33.5
1989	21,913.57	14,855	16,925	0.5941	11,562	23.93	483	32.5
1990	3,664.45	2,420	2,757	0.5787	2,007	24.60	82	31.5
1991	13,169.23	8,461	9,640	0.5631	7,480	25.29	296	30.5
1992	23,454.34	14,645	16,686	0.5472	13,805	25.98	531	29.5
1993	66,463.83	40,282	45,895	0.5312	40,508	26.69	1,518	28.5
1994	45,915.18	26,976	30,735	0.5149	28,955	27.40	1,057	27.5
1995	8,536.92	4,855	5,532	0.4984	5,566	28.13	198	26.5
1996	7,774.30	4,274	4,869	0.4818	5,237	28.86	181	25.5
1997	57,422.11	30,460	34,705	0.4649	39,944	29.60	1,350	24.5
1998	25,865.86	13,218	15,059	0.4479	18,566	30.35	612	23.5
1999	29,622.55	14,554	16,582	0.4306	21,927	31.10	705	22.5
2000	23,766.12	11,204	12,766	0.4132	18,130	31.87	569	21.5
2001	24,655.14	11,128	12,679	0.3956	19,373	32.64	594	20.5
2002	56,560.98	24,380	27,778	0.3778	45,752	33.42	1,369	19.5
2003	33,621.75	13,803	15,727	0.3598	27,982	34.21	818	18.5
2004	144,246.34	56,235	64,071	0.3417	123,449	35.01	3,527	17.5
2005	119,416.60	44,061	50,201	0.3234	105,041	35.81	2,933	16.5
2006	84,687.89	29,463	33,568	0.3049	76,526	36.62	2,090	15.5
2007	71,324.14	23,297	26,544	0.2863	66,178	37.44	1,768	14.5
2008	184,472.43	56,302	64,147	0.2675	175,667	38.26	4,591	13.5
2009	15,915.17	4,513	5,142	0.2485	15,547	39.09	398	12.5

MDU Gas

Account #: 378.00 - Distribution - Meas. & Reg. Station Equip. - General

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 50

Net Salvage: -30%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2010	68,458.32	17,923	20,420	0.2294	68,576	39.93	1,717	11.5
2011	485,802.54	116,518	132,754	0.2102	498,790	40.78	12,233	10.5
2012	233,267.24	50,788	57,865	0.1908	245,383	41.63	5,895	9.5
2013	153,075.78	29,917	34,086	0.1713	164,913	42.48	3,882	8.5
2014	127,843.09	22,116	25,198	0.1516	140,998	43.35	3,253	7.5
2015	286,863.38	43,144	49,155	0.1318	323,767	44.22	7,322	6.5
2016	116,909.82	14,923	17,003	0.1119	134,980	45.09	2,994	5.5
2017	169,682.22	17,775	20,251	0.0918	200,336	45.97	4,358	4.5
2018	395,764.35	32,339	36,845	0.0716	477,649	46.86	10,194	3.5
2019	130,155.54	7,618	8,680	0.0513	160,522	47.75	3,362	2.5
2020	403,040.55	14,194	16,172	0.0309	507,781	48.65	10,438	1.5
2021	736,486.98	8,668	9,876	0.0103	947,557	49.55	19,124	0.5
TOTAL	5,144,890.27	1,577,772	1,784,120		4,904,237		120,684	

COMPOSITE ANNUAL ACCRUAL RATE 2.35%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.35

COMPOSITE AVERAGE AGE (YEARS) 15.47

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 38.21

MDU Gas

Account #: 379.00 - Distribution - Meas. & Reg. Station Equip. - City Gate

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 45

Net Salvage: -5%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1951	32,046.47	31,127	33,649	1.0000	0	3.37	0	70.5
1952	10,929.56	10,559	11,476	1.0000	0	3.60	0	69.5
1953	12,791.21	12,291	13,431	1.0000	0	3.82	0	68.5
1954	16,510.04	15,780	17,336	1.0000	0	4.04	0	67.5
1955	11,089.00	10,542	11,643	1.0000	0	4.26	0	66.5
1956	2,640.59	2,497	2,773	1.0000	0	4.48	0	65.5
1957	6,442.35	6,057	6,764	1.0000	0	4.70	0	64.5
1958	2,389.84	2,234	2,509	1.0000	0	4.93	0	63.5
1961	19,993.62	18,362	20,993	1.0000	0	5.64	0	60.5
1962	21,076.26	19,235	22,130	1.0000	0	5.89	0	59.5
1963	17,090.34	15,497	17,945	1.0000	0	6.14	0	58.5
1964	43,667.39	39,333	45,851	1.0000	0	6.40	0	57.5
1965	21,911.37	19,600	23,007	1.0000	0	6.66	0	56.5
1966	3,124.58	2,775	3,281	1.0000	0	6.94	0	55.5
1967	16,208.70	14,285	17,019	1.0000	0	7.23	0	54.5
1968	10,071.23	8,805	10,575	1.0000	0	7.53	0	53.5
1969	11,039.31	9,570	11,591	1.0000	0	7.85	0	52.5
1970	24,855.93	21,357	26,099	1.0000	0	8.18	0	51.5
1971	11,931.25	10,155	12,528	1.0000	0	8.52	0	50.5
1972	21,630.82	18,227	22,712	1.0000	0	8.89	0	49.5
1973	15,194.12	12,668	15,954	1.0000	0	9.27	0	48.5
1974	20,289.49	16,726	21,304	1.0000	0	9.67	0	47.5
1975	4,084.06	3,327	4,244	0.9897	44	10.09	4	46.5
1976	9,564.89	7,693	9,814	0.9772	229	10.53	22	45.5
1977	2,444.28	1,940	2,475	0.9642	92	10.99	8	44.5
1978	10,943.00	8,562	10,923	0.9507	567	11.47	49	43.5
1979	2,994.43	2,308	2,945	0.9366	199	11.96	17	42.5
1980	18,719.62	14,205	18,121	0.9219	1,535	12.48	123	41.5

MDU Gas

Account #: 379.00 - Distribution - Meas. & Reg. Station Equip. - City Gate

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 45

Net Salvage: -5%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1981	10,545.92	7,871	10,041	0.9068	1,032	13.01	79	40.5
1982	10,842.95	7,952	10,145	0.8911	1,240	13.57	91	39.5
1983	12,492.46	8,996	11,476	0.8749	1,641	14.14	116	38.5
1984	3,339.54	2,359	3,009	0.8582	497	14.73	34	37.5
1986	441.28	299	382	0.8235	82	15.95	5	35.5
1987	22.12	15	19	0.8056	5	16.59	0	34.5
1990	1,043.38	643	821	0.7490	275	18.58	15	31.5
1991	549.87	330	421	0.7294	156	19.27	8	30.5
1993	221,413.83	125,591	160,217	0.6892	72,267	20.69	3,493	28.5
1994	233,814.46	128,655	164,126	0.6685	81,379	21.42	3,800	27.5
1995	20,429.51	10,889	13,891	0.6476	7,560	22.16	341	26.5
1997	42,271.29	21,038	26,839	0.6047	17,546	23.67	741	24.5
1998	5,200.58	2,495	3,182	0.5828	2,278	24.44	93	23.5
2003	23,171.92	8,946	11,413	0.4691	12,918	28.45	454	18.5
2004	5,186.61	1,902	2,426	0.4455	3,020	29.28	103	17.5
2006	5,519.33	1,807	2,305	0.3977	3,491	30.97	113	15.5
2008	23,444.56	6,732	8,588	0.3489	16,028	32.69	490	13.5
2009	5,925.19	1,581	2,017	0.3242	4,205	33.57	125	12.5
2010	130,602.22	32,164	41,032	0.2992	96,101	34.45	2,790	11.5
2011	426,969.79	96,317	122,872	0.2741	325,446	35.33	9,211	10.5
2012	680,609.77	139,344	177,762	0.2487	536,879	36.23	14,820	9.5
2013	2,039,274.15	374,676	477,975	0.2232	1,663,263	37.13	44,801	8.5
2014	623,289.53	101,333	129,271	0.1975	525,183	38.03	13,809	7.5
2015	1,210,936.95	171,093	218,264	0.1717	1,053,220	38.94	27,044	6.5
2016	694,083.31	83,201	106,139	0.1456	622,648	39.86	15,620	5.5
2017	861,410.98	84,702	108,055	0.1195	796,427	40.79	19,527	4.5
2018	2,245,951.29	172,185	219,657	0.0931	2,138,592	41.71	51,268	3.5
2019	1,228,736.32	67,445	86,039	0.0667	1,204,134	42.65	28,235	2.5

MDU Gas

Account #: 379.00 - Distribution - Meas. & Reg. Station Equip. - City Gate

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R2.5
ASL: 45
Net Salvage: -5%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2020	4,026.40	133	170	0.0401	4,058	43.59	93	1.5
2021	552,946.33	6,101	7,783	0.0134	572,811	44.53	12,864	0.5
TOTAL	11,726,165.59	2,022,513	2,545,424		9,767,050		250,406	

COMPOSITE ANNUAL ACCRUAL RATE	2.14%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.22
COMPOSITE AVERAGE AGE (YEARS)	8.60
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	37.61

MDU Gas

Account #: 380.00 - Distribution - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 50

Net Salvage: -100%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1920	21,368.77	42,738	42,738	1.0000	0		0	101.5
1921	22,014.61	44,029	44,029	1.0000	0		0	100.5
1922	22,564.97	45,130	45,130	1.0000	0		0	99.5
1923	23,129.10	46,258	46,258	1.0000	0		0	98.5
1924	23,707.33	47,415	47,415	1.0000	0		0	97.5
1925	24,300.01	48,600	48,600	1.0000	0		0	96.5
1926	24,907.51	49,815	49,815	1.0000	0		0	95.5
1927	25,530.20	51,060	51,060	1.0000	0		0	94.5
1928	26,135.35	52,271	52,271	1.0000	0		0	93.5
1929	26,789.56	53,579	53,579	1.0000	0		0	92.5
1930	26,915.61	53,831	53,831	1.0000	0		0	91.5
1931	28,127.56	56,255	56,255	1.0000	0		0	90.5
1932	28,851.97	57,704	57,704	1.0000	0		0	89.5
1933	29,554.47	59,109	59,109	1.0000	0	0.00	0	88.5
1934	30,315.73	60,025	60,631	1.0000	0	0.50	0	87.5
1935	31,006.76	60,773	62,014	1.0000	0	1.00	0	86.5
1936	31,883.71	61,854	63,767	1.0000	0	1.50	0	85.5
1937	32,603.56	62,599	65,207	1.0000	0	2.00	0	84.5
1938	33,476.47	63,724	66,953	1.0000	0	2.41	0	83.5
1939	34,124.37	64,562	68,249	1.0000	0	2.70	0	82.5
1940	33,123.32	62,308	66,247	1.0000	0	2.97	0	81.5
1946	33,187.28	60,572	66,375	1.0000	0	4.37	0	75.5
1947	32,799.30	59,576	65,599	1.0000	0	4.59	0	74.5
1948	33,095.49	59,821	66,191	1.0000	0	4.81	0	73.5
1949	33,810.35	60,811	67,621	1.0000	0	5.04	0	72.5
1950	17,403.23	31,144	34,806	1.0000	0	5.26	0	71.5
1951	90,240.97	160,664	180,482	1.0000	0	5.49	0	70.5
1952	110,843.54	196,316	221,687	1.0000	0	5.72	0	69.5

MDU Gas

Account #: 380.00 - Distribution - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 50

Net Salvage: -100%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1953	81,374.66	143,357	162,749	1.0000	0	5.96	0	68.5
1954	108,550.90	190,193	217,102	1.0000	0	6.20	0	67.5
1955	82,631.02	143,973	165,262	1.0000	0	6.44	0	66.5
1956	172,025.59	298,017	344,051	1.0000	0	6.69	0	65.5
1957	120,973.11	208,340	241,946	1.0000	0	6.94	0	64.5
1958	119,805.52	205,074	239,611	1.0000	0	7.21	0	63.5
1959	139,482.49	237,250	278,965	1.0000	0	7.48	0	62.5
1960	107,065.00	180,914	214,130	1.0000	0	7.76	0	61.5
1961	120,515.22	202,245	241,030	1.0000	0	8.05	0	60.5
1962	179,784.14	299,543	359,568	1.0000	0	8.35	0	59.5
1963	145,268.41	240,212	290,537	1.0000	0	8.66	0	58.5
1964	181,819.15	298,270	363,638	1.0000	0	8.99	0	57.5
1965	152,397.80	247,921	304,796	1.0000	0	9.33	0	56.5
1966	133,708.68	215,607	267,417	1.0000	0	9.69	0	55.5
1967	136,124.35	217,471	272,249	1.0000	0	10.06	0	54.5
1968	138,874.35	219,700	277,749	1.0000	0	10.45	0	53.5
1969	160,451.95	251,226	320,904	1.0000	0	10.86	0	52.5
1970	747,734.35	1,158,080	1,495,469	1.0000	0	11.28	0	51.5
1971	259,695.73	397,629	519,391	1.0000	0	11.72	0	50.5
1972	514,226.93	777,913	1,028,454	1.0000	0	12.18	0	49.5
1973	452,909.05	676,524	905,818	1.0000	0	12.66	0	48.5
1974	591,397.21	871,710	1,182,794	1.0000	0	13.15	0	47.5
1975	522,378.40	759,303	1,044,757	1.0000	0	13.66	0	46.5
1976	672,345.29	963,096	1,344,691	1.0000	0	14.19	0	45.5
1977	485,853.98	685,381	971,708	1.0000	0	14.73	0	44.5
1978	501,890.37	696,753	1,003,781	1.0000	0	15.29	0	43.5
1979	697,621.58	952,402	1,395,243	1.0000	0	15.87	0	42.5
1980	797,432.22	1,069,804	1,594,864	1.0000	0	16.46	0	41.5

MDU Gas

Account #: 380.00 - Distribution - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 50

Net Salvage: -100%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1981	709,530.20	934,677	1,419,060	1.0000	0	17.07	0	40.5
1982	780,469.24	1,008,760	1,560,938	1.0000	0	17.69	0	39.5
1983	905,277.44	1,147,113	1,810,555	1.0000	0	18.32	0	38.5
1984	780,514.17	968,807	1,561,028	1.0000	0	18.97	0	37.5
1985	864,317.72	1,050,001	1,728,635	1.0000	0	19.63	0	36.5
1986	682,970.48	811,318	1,359,535	0.9953	6,406	20.30	316	35.5
1987	565,956.49	656,814	1,100,632	0.9724	31,281	20.99	1,491	34.5
1988	565,874.97	640,959	1,074,063	0.9490	57,687	21.68	2,660	33.5
1989	477,939.40	527,829	884,489	0.9253	71,389	22.39	3,188	32.5
1990	503,894.31	542,012	908,255	0.9012	99,533	23.11	4,307	31.5
1991	690,667.75	722,770	1,211,155	0.8768	170,181	23.84	7,139	30.5
1992	830,064.95	844,094	1,414,458	0.8520	245,672	24.58	9,996	29.5
1993	961,747.30	949,165	1,590,527	0.8269	332,968	25.33	13,147	28.5
1994	1,982,685.87	1,896,516	3,178,014	0.8014	787,358	26.09	30,183	27.5
1995	926,473.61	857,706	1,437,268	0.7757	415,679	26.86	15,478	26.5
1996	1,513,820.74	1,354,315	2,269,442	0.7496	758,199	27.63	27,437	25.5
1997	1,428,610.20	1,233,068	2,066,267	0.7232	790,953	28.42	27,829	24.5
1998	1,207,810.61	1,003,998	1,682,411	0.6965	733,210	29.22	25,094	23.5
1999	998,645.40	797,950	1,337,134	0.6695	660,157	30.02	21,988	22.5
2000	1,072,359.14	821,926	1,377,312	0.6422	767,407	30.84	24,885	21.5
2001	1,181,525.00	866,723	1,452,377	0.6146	910,673	31.66	28,763	20.5
2002	1,381,516.64	967,521	1,621,286	0.5868	1,141,747	32.49	35,140	19.5
2003	2,115,730.48	1,410,733	2,363,982	0.5587	1,867,479	33.33	56,029	18.5
2004	2,516,125.70	1,592,514	2,668,594	0.5303	2,363,658	34.18	69,159	17.5
2005	2,733,402.78	1,636,656	2,742,564	0.5017	2,724,241	35.03	77,767	16.5
2006	2,854,720.43	1,610,941	2,699,473	0.4728	3,009,968	35.89	83,861	15.5
2007	2,964,362.05	1,569,840	2,630,599	0.4437	3,298,125	36.76	89,719	14.5
2008	3,687,280.35	1,823,583	3,055,800	0.4144	4,318,761	37.64	114,751	13.5

MDU Gas

Account #: 380.00 - Distribution - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 50

Net Salvage: -100%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2009	3,242,364.13	1,489,173	2,495,425	0.3848	3,989,304	38.52	103,570	12.5
2010	3,714,443.42	1,574,024	2,637,610	0.3550	4,791,277	39.41	121,587	11.5
2011	5,181,056.23	2,010,170	3,368,465	0.3251	6,993,648	40.30	173,538	10.5
2012	7,741,827.81	2,724,944	4,566,220	0.2949	10,917,436	41.20	264,983	9.5
2013	7,981,946.98	2,520,253	4,223,217	0.2645	11,740,677	42.11	278,834	8.5
2014	7,942,457.82	2,218,297	3,717,227	0.2340	12,167,689	43.02	282,854	7.5
2015	7,402,027.65	1,796,047	3,009,657	0.2033	11,794,398	43.93	268,458	6.5
2016	6,230,349.86	1,282,162	2,148,534	0.1724	10,312,166	44.86	229,899	5.5
2017	7,709,381.09	1,301,008	2,180,114	0.1414	13,238,648	45.78	289,173	4.5
2018	9,515,831.67	1,251,735	2,097,548	0.1102	16,934,116	46.71	362,526	3.5
2019	12,994,100.32	1,223,516	2,050,260	0.0789	23,937,941	47.65	502,412	2.5
2020	9,263,690.29	524,478	878,874	0.0474	17,648,507	48.58	363,253	1.5
2021	12,322,993.38	233,173	390,731	0.0159	24,255,255	49.53	489,738	0.5
TOTAL	148,582,912.62	64,977,739	102,882,033		194,283,793		4,501,152	

COMPOSITE ANNUAL ACCRUAL RATE 3.03%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.69

COMPOSITE AVERAGE AGE (YEARS) 12.85

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 39.07

MDU Gas

Account #: 381.00 - Distribution - Meters

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 31

Net Salvage: -20%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1956	3.18	4	3	0.7785	1		1	66.5
1957	35.06	42	33	0.7787	9		9	65.5
1958	139.38	167	130	0.7786	37		37	64.5
1959	748.19	898	699	0.7786	199		199	63.5
1966	2,122.17	2,547	1,983	0.7786	564		564	56.5
1967	4,387.63	5,265	4,100	0.7786	1,166		1,166	55.5
1968	5,314.86	6,378	4,966	0.7786	1,412		1,412	54.5
1969	30,491.84	36,590	28,490	0.7786	8,100		8,100	53.5
1970	16,595.23	19,593	15,256	0.7661	4,658	0.50	4,658	51.5
1971	54,685.37	64,365	50,116	0.7637	15,506	0.59	15,506	50.5
1972	215,126.17	251,685	195,970	0.7591	62,182	0.78	62,182	49.5
1973	235,436.69	273,477	212,938	0.7537	69,586	0.99	69,586	48.5
1974	535,315.68	616,999	480,415	0.7479	161,964	1.22	132,240	47.5
1975	491,922.46	562,373	437,881	0.7418	152,426	1.47	103,905	46.5
1976	525,937.79	596,262	464,269	0.7356	166,857	1.71	97,439	45.5
1977	521,911.55	586,613	456,755	0.7293	169,539	1.96	86,318	44.5
1978	457,107.37	509,275	396,537	0.7229	151,992	2.22	68,512	43.5
1979	801,002.89	884,498	688,699	0.7165	272,505	2.47	110,155	42.5
1980	723,078.84	791,306	616,136	0.7101	251,559	2.73	92,175	41.5
1981	820,671.03	889,904	692,908	0.7036	291,898	2.99	97,712	40.5
1982	249,544.85	268,036	208,701	0.6969	90,753	3.25	27,903	39.5
1983	281,405.51	299,256	233,011	0.6900	104,676	3.53	29,671	38.5
1984	490,621.47	516,249	401,968	0.6828	186,778	3.82	48,930	37.5
1985	336,913.62	350,515	272,922	0.6751	131,374	4.12	31,858	36.5
1987	179,019.68	181,527	141,343	0.6579	73,481	4.80	15,293	34.5
1988	38,954.05	38,927	30,310	0.6484	16,435	5.18	3,170	33.5
1989	67,347.14	66,237	51,574	0.6382	29,243	5.59	5,229	32.5
1990	173,807.07	167,992	130,804	0.6272	77,764	6.03	12,894	31.5

MDU Gas

Account #: 381.00 - Distribution - Meters

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 31

Net Salvage: -20%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1991	451,268.25	427,980	333,239	0.6154	208,283	6.50	32,044	30.5
1992	501,456.97	465,882	362,750	0.6028	238,998	7.00	34,146	29.5
1993	762,703.39	692,941	539,546	0.5895	375,698	7.53	49,896	28.5
1994	797,282.93	707,062	550,541	0.5754	406,198	8.09	50,210	27.5
1995	719,317.72	621,518	483,934	0.5606	379,247	8.68	43,697	26.5
1996	1,120,784.19	941,660	733,206	0.5452	611,735	9.30	65,811	25.5
1997	993,926.89	810,365	630,976	0.5290	561,736	9.94	56,526	24.5
1998	1,212,044.43	956,891	745,066	0.5123	709,388	10.60	66,892	23.5
1999	1,647,981.98	1,257,019	978,755	0.4949	998,823	11.30	88,428	22.5
2000	1,699,981.44	1,249,836	973,162	0.4770	1,066,815	12.01	88,848	21.5
2001	1,624,923.03	1,148,595	894,333	0.4587	1,055,575	12.74	82,859	20.5
2002	1,491,981.11	1,011,204	787,355	0.4398	1,003,022	13.49	74,346	19.5
2003	1,308,712.99	847,958	660,247	0.4204	910,209	14.26	63,822	18.5
2004	1,317,427.34	813,412	633,349	0.4006	947,564	15.05	62,962	17.5
2005	2,356,109.38	1,381,294	1,075,520	0.3804	1,751,812	15.85	110,490	16.5
2006	1,978,551.25	1,097,033	854,185	0.3598	1,520,077	16.68	91,151	15.5
2007	8,121,135.50	4,239,514	3,301,021	0.3387	6,444,342	17.51	367,952	14.5
2008	9,647,859.22	4,717,981	3,673,570	0.3173	7,903,861	18.37	430,329	13.5
2009	634,511.44	288,980	225,009	0.2955	536,405	19.23	27,888	12.5
2010	1,002,550.07	422,388	328,885	0.2734	874,175	20.12	43,457	11.5
2011	2,878,063.85	1,112,857	866,506	0.2509	2,587,171	21.01	123,134	10.5
2012	3,372,612.29	1,185,589	923,137	0.2281	3,123,997	21.92	142,527	9.5
2013	2,625,400.08	829,491	645,868	0.2050	2,504,612	22.84	109,669	8.5
2014	3,368,376.35	942,955	734,215	0.1816	3,307,837	23.77	139,171	7.5
2015	3,584,227.96	872,948	679,705	0.1580	3,621,369	24.71	146,565	6.5
2016	2,169,597.78	448,684	349,360	0.1342	2,254,157	25.66	87,856	5.5
2017	2,453,490.27	416,469	324,276	0.1101	2,619,913	26.61	98,438	4.5
2018	4,266,733.96	564,947	439,886	0.0859	4,680,195	27.58	169,698	3.5

MDU Gas

Account #: 381.00 - Distribution - Meters

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R3
ASL: 31
Net Salvage: -20%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2019	5,759,145.48	546,111	425,219	0.0615	6,485,756	28.55	227,169	2.5
2020	5,391,097.77	307,436	239,379	0.0370	6,229,938	29.53	210,993	1.5
2021	2,127,295.42	40,516	31,547	0.0124	2,521,207	30.51	82,641	0.5
TOTAL	84,646,197.49	39,354,497	30,642,661		70,932,776		4,596,439	

COMPOSITE ANNUAL ACCRUAL RATE	5.43%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.36
COMPOSITE AVERAGE AGE (YEARS)	14.11
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	18.99

MDU Gas

Account #: 383.00 - Distribution - Service Regulators

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 58

Net Salvage: -5%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1946	15,910.38	14,436	15,840	0.9481	866	7.88	110	75.5
1947	21,130.25	19,074	20,928	0.9433	1,259	8.14	155	74.5
1948	21,130.25	18,973	20,817	0.9383	1,369	8.40	163	73.5
1949	21,130.25	18,869	20,703	0.9331	1,483	8.67	171	72.5
1950	20,806.94	18,476	20,272	0.9279	1,576	8.95	176	71.5
1951	25,809.25	22,783	24,998	0.9224	2,102	9.24	227	70.5
1952	27,034.58	23,719	26,025	0.9168	2,361	9.54	248	69.5
1953	34,556.19	30,126	33,055	0.9110	3,229	9.84	328	68.5
1954	28,772.56	24,918	27,340	0.9050	2,871	10.16	283	67.5
1955	45,241.58	38,910	42,692	0.8987	4,812	10.49	459	66.5
1956	84,767.21	72,376	79,412	0.8922	9,594	10.84	885	65.5
1957	37,420.53	31,709	34,791	0.8855	4,500	11.19	402	64.5
1958	29,209.77	24,555	26,942	0.8785	3,728	11.56	322	63.5
1959	45,612.86	38,027	41,724	0.8712	6,170	11.95	516	62.5
1960	65,506.02	54,139	59,402	0.8636	9,379	12.35	760	61.5
1961	43,013.80	35,227	38,652	0.8558	6,513	12.76	510	60.5
1962	44,518.05	36,114	39,625	0.8477	7,119	13.19	540	59.5
1963	34,689.57	27,862	30,571	0.8393	5,853	13.63	429	58.5
1964	27,309.47	21,708	23,818	0.8306	4,857	14.09	345	57.5
1965	25,859.29	20,333	22,310	0.8217	4,843	14.57	332	56.5
1966	16,810.75	13,069	14,340	0.8124	3,311	15.06	220	55.5
1967	24,612.24	18,910	20,749	0.8029	5,094	15.56	327	54.5
1968	27,055.47	20,534	22,530	0.7931	5,879	16.08	366	53.5
1969	18,693.34	14,007	15,368	0.7830	4,260	16.61	256	52.5
1970	29,227.68	21,611	23,712	0.7726	6,978	17.16	407	51.5
1971	35,406.49	25,820	28,330	0.7620	8,847	17.72	499	50.5
1972	80,853.58	58,120	63,770	0.7512	21,126	18.29	1,155	49.5
1973	70,100.59	49,645	54,471	0.7400	19,135	18.88	1,013	48.5

MDU Gas

Account #: 383.00 - Distribution - Service Regulators

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 58

Net Salvage: -5%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1974	92,738.06	64,669	70,956	0.7287	26,419	19.48	1,356	47.5
1975	90,094.50	61,826	67,836	0.7171	26,764	20.09	1,332	46.5
1976	78,854.81	53,220	58,393	0.7053	24,404	20.72	1,178	45.5
1977	80,963.80	53,710	58,931	0.6932	26,081	21.36	1,221	44.5
1978	62,031.78	40,423	44,353	0.6810	20,781	22.00	944	43.5
1979	84,250.92	53,896	59,135	0.6685	29,328	22.66	1,294	42.5
1980	124,441.35	78,096	85,688	0.6558	44,976	23.33	1,927	41.5
1981	125,645.98	77,304	84,819	0.6429	47,109	24.01	1,962	40.5
1982	63,231.65	38,113	41,818	0.6299	24,575	24.71	995	39.5
1983	91,093.22	53,751	58,976	0.6166	36,672	25.41	1,443	38.5
1984	116,925.53	67,490	74,051	0.6032	48,721	26.12	1,866	37.5
1985	97,342.40	54,919	60,258	0.5896	41,951	26.84	1,563	36.5
1986	53,198.01	29,312	32,161	0.5758	23,697	27.56	860	35.5
1987	38,224.55	20,551	22,548	0.5618	17,587	28.30	621	34.5
1988	44,368.62	23,254	25,515	0.5477	21,072	29.05	725	33.5
1989	38,988.02	19,902	21,836	0.5334	19,101	29.80	641	32.5
1990	12,409.21	6,163	6,762	0.5190	6,268	30.57	205	31.5
1991	80,674.36	38,938	42,723	0.5044	41,985	31.34	1,340	30.5
1992	97,836.09	45,840	50,297	0.4896	52,431	32.12	1,632	29.5
1993	136,183.68	61,866	67,880	0.4747	75,113	32.91	2,283	28.5
1994	128,747.54	56,633	62,138	0.4597	73,046	33.70	2,167	27.5
1995	121,108.17	51,512	56,519	0.4445	70,644	34.51	2,047	26.5
1996	129,613.49	53,228	58,403	0.4291	77,692	35.32	2,200	25.5
1997	156,500.78	61,952	67,974	0.4137	96,352	36.13	2,667	24.5
1998	184,970.52	70,458	77,308	0.3980	116,911	36.96	3,163	23.5
1999	133,798.63	48,951	53,709	0.3823	86,779	37.79	2,296	22.5
2000	142,958.23	50,131	55,004	0.3664	95,102	38.63	2,462	21.5
2001	99,623.44	33,409	36,657	0.3504	67,948	39.48	1,721	20.5

MDU Gas

Account #: 383.00 - Distribution - Service Regulators

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2.5

ASL: 58

Net Salvage: -5%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2002	114,771.27	36,718	40,288	0.3343	80,222	40.33	1,989	19.5
2003	181,308.21	55,188	60,553	0.3181	129,821	41.19	3,152	18.5
2004	111,550.24	32,208	35,339	0.3017	81,789	42.05	1,945	17.5
2005	202,172.43	55,185	60,550	0.2852	151,731	42.92	3,535	16.5
2006	221,446.20	56,932	62,467	0.2687	170,052	43.80	3,883	15.5
2007	151,030.23	36,417	39,957	0.2520	118,624	44.68	2,655	14.5
2008	303,487.17	68,299	74,939	0.2352	243,723	45.57	5,348	13.5
2009	105,664.35	22,071	24,217	0.2183	86,731	46.46	1,867	12.5
2010	314,153.35	60,513	66,395	0.2013	263,466	47.36	5,563	11.5
2011	575,614.51	101,465	111,329	0.1842	493,067	48.26	10,216	10.5
2012	678,869.47	108,507	119,055	0.1670	593,758	49.17	12,075	9.5
2013	505,532.32	72,451	79,494	0.1498	451,315	50.08	9,011	8.5
2014	674,903.22	85,524	93,838	0.1324	614,810	51.00	12,055	7.5
2015	862,194.75	94,880	104,103	0.1150	801,202	51.92	15,431	6.5
2016	345,974.71	32,278	35,416	0.0975	327,858	52.85	6,204	5.5
2017	440,610.32	33,697	36,973	0.0799	425,668	53.78	7,916	4.5
2018	736,451.26	43,889	48,155	0.0623	725,118	54.71	13,254	3.5
2019	1,303,718.29	55,595	60,999	0.0446	1,307,905	55.64	23,505	2.5
2020	791,461.97	20,287	22,259	0.0268	808,776	56.58	14,293	1.5
2021	469,994.45	4,025	4,417	0.0089	489,078	57.53	8,502	0.5
TOTAL	12,799,915.00	3,259,696	3,576,574		9,863,336		218,114	

COMPOSITE ANNUAL ACCRUAL RATE 1.70%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.28

COMPOSITE AVERAGE AGE (YEARS) 16.65

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 43.93

MDU Gas

Account #: 385.00 - Distribution - Industrial Meas. & Reg. Station Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 40

Net Salvage: -10%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1951	2,680.88	2,872	2,949	1.0000	0	1.04	0	70.5
1952	4,868.52	5,182	5,355	1.0000	0	1.29	0	69.5
1953	2,163.85	2,288	2,380	1.0000	0	1.55	0	68.5
1954	745.37	783	820	1.0000	0	1.82	0	67.5
1955	2,362.95	2,463	2,599	1.0000	0	2.10	0	66.5
1956	6,597.03	6,826	7,257	1.0000	0	2.37	0	65.5
1957	6,061.41	6,225	6,668	1.0000	0	2.66	0	64.5
1958	4,054.18	4,132	4,460	1.0000	0	2.94	0	63.5
1959	4,573.78	4,625	5,031	1.0000	0	3.23	0	62.5
1960	12,461.11	12,502	13,707	1.0000	0	3.52	0	61.5
1961	8,196.22	8,158	9,016	1.0000	0	3.81	0	60.5
1962	1,763.36	1,741	1,940	1.0000	0	4.10	0	59.5
1963	10,583.20	10,365	11,642	1.0000	0	4.39	0	58.5
1964	17,835.10	17,324	19,619	1.0000	0	4.68	0	57.5
1965	11,173.34	10,762	12,291	1.0000	0	4.97	0	56.5
1966	5,393.07	5,150	5,894	0.9935	39	5.27	7	55.5
1967	4,491.43	4,252	4,866	0.9848	75	5.57	13	54.5
1968	9,911.64	9,299	10,641	0.9760	262	5.88	44	53.5
1969	612.68	570	652	0.9670	22	6.20	4	52.5
1970	11,417.57	10,512	12,029	0.9578	530	6.52	81	51.5
1971	5,523.88	5,035	5,762	0.9483	314	6.85	46	50.5
1972	7,541.45	6,804	7,785	0.9385	510	7.19	71	49.5
1973	6,520.05	5,819	6,659	0.9284	513	7.55	68	48.5
1974	1,656.04	1,461	1,672	0.9180	149	7.91	19	47.5
1975	13,094.98	11,420	13,068	0.9072	1,336	8.29	161	46.5
1980	6,543.69	5,331	6,101	0.8476	1,097	10.37	106	41.5
1981	242.64	195	223	0.8344	44	10.83	4	40.5
1983	172.25	134	153	0.8068	37	11.80	3	38.5

MDU Gas

Account #: 385.00 - Distribution - Industrial Meas. & Reg. Station Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 40

Net Salvage: -10%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1984	19,084.23	14,535	16,633	0.7923	4,360	12.30	354	37.5
1985	78,994.35	59,034	67,553	0.7774	19,341	12.82	1,508	36.5
1986	4,425.00	3,242	3,710	0.7621	1,158	13.36	87	35.5
1987	16,965.27	12,173	13,929	0.7464	4,733	13.91	340	34.5
1988	19,930.67	13,991	16,010	0.7303	5,914	14.47	409	33.5
1989	103.59	71	81	0.7137	33	15.05	2	32.5
1990	15,148.91	10,147	11,611	0.6968	5,053	15.64	323	31.5
1991	17,900.06	11,691	13,378	0.6794	6,312	16.25	388	30.5
1992	11,678.51	7,428	8,500	0.6617	4,346	16.87	258	29.5
1993	12,614.53	7,804	8,930	0.6436	4,946	17.50	283	28.5
1994	8,709.85	5,234	5,989	0.6251	3,592	18.15	198	27.5
1995	26,585.34	15,493	17,729	0.6062	11,515	18.81	612	26.5
1996	28,112.90	15,864	18,154	0.5870	12,771	19.48	656	25.5
1997	12,388.03	6,758	7,733	0.5675	5,894	20.16	292	24.5
1998	15,936.47	8,389	9,599	0.5476	7,931	20.86	380	23.5
1999	9,754.16	4,945	5,658	0.5274	5,071	21.57	235	22.5
2000	3,184.71	1,552	1,775	0.5068	1,728	22.28	78	21.5
2001	6,751.97	3,154	3,609	0.4860	3,818	23.01	166	20.5
2002	1,505.72	673	770	0.4648	886	23.75	37	19.5
2003	55,438.44	23,625	27,034	0.4433	33,948	24.50	1,385	18.5
2004	8,460.91	3,429	3,923	0.4215	5,384	25.26	213	17.5
2006	48,061.67	17,425	19,939	0.3772	32,928	26.82	1,228	15.5
2008	153,039.71	48,795	55,836	0.3317	112,508	28.41	3,961	13.5
2013	126,104.75	25,885	29,620	0.2135	109,095	32.54	3,353	8.5
2014	746,852.02	135,828	155,429	0.1892	666,108	33.39	19,951	7.5
2015	72,902.60	11,537	13,202	0.1646	66,991	34.25	1,956	6.5
2016	19,959.39	2,683	3,070	0.1399	18,885	35.11	538	5.5
2017	106,033.12	11,708	13,397	0.1149	103,239	35.98	2,869	4.5

MDU Gas

Account #: 385.00 - Distribution - Industrial Meas. & Reg. Station Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 40

Net Salvage: -10%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2018	94,659.57	8,159	9,337	0.0897	94,789	36.87	2,571	3.5
2019	369,319.28	22,821	26,114	0.0643	380,137	37.75	10,069	2.5
2020	277,148.73	10,311	11,799	0.0387	293,065	38.65	7,583	1.5
2021	193,419.80	2,406	2,753	0.0129	210,009	39.55	5,310	0.5
TOTAL	2,750,415.93	689,019	784,042		2,241,416		68,220	

COMPOSITE ANNUAL ACCRUAL RATE2.48%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR0.29

COMPOSITE AVERAGE AGE (YEARS)11.83

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)30.89

MDU Gas

Account #: 386.10 - Distribution - Misc. Property on Customer's Premises

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R3
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1996	1,679.84	1,680	1,680	1.0000	0		0	26.5
TOTAL	1,679.84	1,680	1,680		0		0	

COMPOSITE ANNUAL ACCRUAL RATE	0.00%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	1.00
COMPOSITE AVERAGE AGE (YEARS)	26.50
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	0.00

MDU Gas

Account #: 387.20 - Distribution - Other Distribution Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 30

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1950	6,095.32	6,095	6,095	1.0000	0		0	71.5
1951	5,583.99	5,584	5,584	1.0000	0		0	70.5
1952	3,835.98	3,836	3,836	1.0000	0		0	69.5
1953	285.53	286	286	1.0000	0		0	68.5
1955	5,026.90	5,027	5,027	1.0000	0		0	66.5
1956	826.65	827	827	1.0000	0		0	65.5
1958	3,434.38	3,434	3,434	1.0000	0		0	63.5
1959	3,727.71	3,728	3,728	1.0000	0		0	62.5
1960	6,953.03	6,953	6,953	1.0000	0		0	61.5
1961	857.93	858	858	1.0000	0		0	60.5
1962	1,632.84	1,633	1,633	1.0000	0		0	59.5
1963	6,585.10	6,585	6,585	1.0000	0		0	58.5
1964	1,401.51	1,402	1,402	1.0000	0		0	57.5
1965	2,334.15	2,334	2,334	1.0000	0		0	56.5
1966	355.00	355	355	1.0000	0		0	55.5
1967	1,372.26	1,372	1,372	1.0000	0		0	54.5
1968	474.99	475	475	1.0000	0		0	53.5
1969	205.76	206	206	1.0000	0		0	52.5
1970	1,862.30	1,862	1,862	1.0000	0		0	51.5
1971	82.78	81	83	1.0000	0	0.50	0	50.5
1978	193.93	182	194	1.0000	0	1.79	0	43.5
1979	11,269.15	10,501	11,269	1.0000	0	2.05	0	42.5
1980	8,199.96	7,571	8,200	1.0000	0	2.30	0	41.5
1981	18,505.15	16,928	18,505	1.0000	0	2.56	0	40.5
1982	24,398.55	22,111	24,399	1.0000	0	2.81	0	39.5
1983	34,342.71	30,822	34,343	1.0000	0	3.08	0	38.5
1984	42,801.42	38,025	42,801	1.0000	0	3.35	0	37.5
1985	51,766.92	45,499	51,767	1.0000	0	3.63	0	36.5

MDU Gas

Account #: 387.20 - Distribution - Other Distribution Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R3

ASL: 30

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1986	71,344.20	61,985	71,344	1.0000	0	3.94	0	35.5
1987	2,462.33	2,113	2,462	1.0000	0	4.26	0	34.5
1988	11,522.03	9,752	11,522	1.0000	0	4.61	0	33.5
1989	9,146.81	7,627	9,102	0.9951	44	4.99	9	32.5
1990	13,687.46	11,227	13,400	0.9790	288	5.39	53	31.5
1991	3,018.54	2,432	2,903	0.9616	116	5.83	20	30.5
1992	8,276.24	6,539	7,804	0.9429	472	6.30	75	29.5
1993	8,327.43	6,440	7,686	0.9230	641	6.80	94	28.5
1994	33,680.29	25,450	30,374	0.9018	3,306	7.33	451	27.5
1995	16,037.28	11,817	14,104	0.8794	1,933	7.89	245	26.5
1996	51,301.41	36,789	43,908	0.8559	7,394	8.49	871	25.5
1997	38,312.61	26,681	31,844	0.8312	6,469	9.11	710	24.5
1998	4,950.24	3,341	3,987	0.8054	963	9.76	99	23.5
2000	7,454.90	4,691	5,598	0.7509	1,857	11.12	167	21.5
2002	1,415.33	822	981	0.6930	435	12.58	35	19.5
2005	9,902.45	4,980	5,944	0.6002	3,959	14.91	265	16.5
2006	1,748.39	832	993	0.5679	756	15.73	48	15.5
2015	78,459.03	16,441	19,623	0.2501	58,836	23.71	2,481	6.5
2016	61,480.35	10,942	13,059	0.2124	48,421	24.66	1,963	5.5
2017	699.18	102	122	0.1744	577	25.62	23	4.5
2021	1,107,722.01	18,167	21,682	0.0196	1,086,040	29.51	36,805	0.5

MDU Gas

Account #: 387.20 - Distribution - Other Distribution Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R3
ASL: 30
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
TOTAL	1,785,360.41	493,740	562,854		1,222,507		44,414	
COMPOSITE ANNUAL ACCRUAL RATE				2.49%				
THEORETICAL ACCUMULATED DEPRECIATION FACTOR				0.32				
COMPOSITE AVERAGE AGE (YEARS)				11.49				
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)				21.70				

MDU Gas

Account #: 390.00 - General - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 45

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1928	11,198.16	11,198	11,198	1.0000	0		0	93.5
1929	11,478.12	11,478	11,478	1.0000	0		0	92.5
1930	11,765.07	11,765	11,765	1.0000	0		0	91.5
1931	12,059.19	12,059	12,059	1.0000	0		0	90.5
1932	12,360.67	12,361	12,361	1.0000	0		0	89.5
1933	12,669.69	12,670	12,670	1.0000	0		0	88.5
1934	12,986.42	12,986	12,986	1.0000	0		0	87.5
1935	13,311.09	13,311	13,311	1.0000	0		0	86.5
1936	13,643.86	13,644	13,644	1.0000	0		0	85.5
1937	13,984.96	13,985	13,985	1.0000	0		0	84.5
1938	14,334.59	14,175	14,335	1.0000	0	0.50	0	83.5
1939	14,692.95	14,527	14,693	1.0000	0	0.51	0	82.5
1940	15,060.28	14,840	15,060	1.0000	0	0.66	0	81.5
1944	744.81	718	745	1.0000	0	1.62	0	77.5
1946	15,060.28	14,337	15,060	1.0000	0	2.16	0	75.5
1947	15,060.28	14,245	15,060	1.0000	0	2.44	0	74.5
1948	15,060.28	14,151	15,060	1.0000	0	2.72	0	73.5
1949	3,633.90	3,392	3,634	1.0000	0	3.00	0	72.5
1950	8,818.31	8,174	8,818	1.0000	0	3.29	0	71.5
1951	4,229.80	3,894	4,230	1.0000	0	3.57	0	70.5
1952	8,328.12	7,614	8,328	1.0000	0	3.86	0	69.5
1953	20,108.62	18,254	20,109	1.0000	0	4.15	0	68.5
1954	3,150.93	2,840	3,151	1.0000	0	4.44	0	67.5
1955	67,709.22	60,591	67,709	1.0000	0	4.73	0	66.5
1956	86,710.76	77,033	86,711	1.0000	0	5.02	0	65.5
1957	2,936.53	2,590	2,937	1.0000	0	5.32	0	64.5
1958	1,273.68	1,115	1,274	1.0000	0	5.61	0	63.5
1959	1,421.98	1,235	1,422	1.0000	0	5.91	0	62.5

MDU Gas

Account #: 390.00 - General - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 45

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1960	12,556.02	10,823	12,556	1.0000	0	6.21	0	61.5
1961	5,868.26	5,018	5,868	1.0000	0	6.52	0	60.5
1962	2,613.71	2,217	2,614	1.0000	0	6.83	0	59.5
1963	12,785.33	10,754	12,785	1.0000	0	7.15	0	58.5
1964	9,937.61	8,286	9,938	1.0000	0	7.48	0	57.5
1965	49,870.40	41,213	49,870	1.0000	0	7.81	0	56.5
1966	37,894.62	31,026	37,895	1.0000	0	8.16	0	55.5
1967	6,603.48	5,355	6,603	1.0000	0	8.51	0	54.5
1968	2,370.54	1,903	2,371	1.0000	0	8.87	0	53.5
1969	5,925.76	4,708	5,926	1.0000	0	9.25	0	52.5
1970	45,486.46	35,746	45,486	1.0000	0	9.64	0	51.5
1971	1,119.99	870	1,120	1.0000	0	10.03	0	50.5
1972	178,819.27	137,313	178,819	1.0000	0	10.45	0	49.5
1973	25,832.84	19,594	25,833	1.0000	0	10.87	0	48.5
1974	15,277.76	11,440	15,278	1.0000	0	11.30	0	47.5
1975	4,750.43	3,510	4,750	1.0000	0	11.75	0	46.5
1976	13,452.36	9,801	13,452	1.0000	0	12.22	0	45.5
1977	3,318.56	2,383	3,319	1.0000	0	12.69	0	44.5
1978	39,753.00	28,110	39,753	1.0000	0	13.18	0	43.5
1979	2,388.45	1,662	2,376	0.9948	12	13.68	1	42.5
1980	29,303.93	20,059	28,671	0.9784	633	14.20	45	41.5
1981	7,513.80	5,055	7,226	0.9616	288	14.73	20	40.5
1982	11,047.24	7,299	10,433	0.9444	614	15.27	40	39.5
1983	1,965.82	1,275	1,822	0.9268	144	15.82	9	38.5
1984	23,063.40	14,664	20,960	0.9088	2,104	16.39	128	37.5
1986	111,357.97	67,900	97,055	0.8716	14,303	17.56	814	35.5
1987	24,357.94	14,525	20,761	0.8523	3,597	18.17	198	34.5
1988	23,714.81	13,816	19,748	0.8327	3,966	18.78	211	33.5

MDU Gas

Account #: 390.00 - General - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R2

ASL: 45

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1989	15,050.58	8,558	12,233	0.8128	2,818	19.41	145	32.5
1990	4,011.80	2,224	3,179	0.7924	833	20.05	42	31.5
1991	36,391.88	19,648	28,084	0.7717	8,307	20.70	401	30.5
1992	686.48	361	515	0.7507	171	21.37	8	29.5
1993	111,240.44	56,753	81,122	0.7292	30,119	22.04	1,366	28.5
1994	30,782.37	15,236	21,779	0.7075	9,004	22.73	396	27.5
1998	1,883.54	813	1,163	0.6172	721	25.57	28	23.5
1999	10,810.87	4,492	6,420	0.5939	4,391	26.30	167	22.5
2000	133,614.95	53,300	76,186	0.5702	57,429	27.05	2,123	21.5
2001	123,952.73	47,369	67,708	0.5462	56,245	27.80	2,023	20.5
2002	3,360,893.35	1,227,375	1,754,382	0.5220	1,606,511	28.57	56,238	19.5
2004	3,208.31	1,061	1,517	0.4727	1,692	30.12	56	17.5
2005	39,180.19	12,269	17,538	0.4476	21,643	30.91	700	16.5
2006	16,639.46	4,916	7,026	0.4223	9,613	31.71	303	15.5
2007	4,238,356.15	1,176,258	1,681,318	0.3967	2,557,038	32.51	78,651	14.5
2008	162,026.39	42,038	60,088	0.3709	101,938	33.32	3,059	13.5
2009	1,461,409.05	352,481	503,829	0.3448	957,580	34.15	28,043	12.5
2010	1,213,110.45	270,242	386,278	0.3184	826,832	34.98	23,640	11.5
2011	9,583.55	1,957	2,797	0.2919	6,787	35.81	190	10.5
2012	216,445.76	40,136	57,370	0.2651	159,076	36.66	4,340	9.5
2013	352,831.01	58,755	83,984	0.2380	268,847	37.51	7,168	8.5
2014	48,149.52	7,100	10,149	0.2108	38,001	38.36	991	7.5
2015	88,907.29	11,402	16,298	0.1833	72,609	39.23	1,851	6.5
2016	25,039.35	2,727	3,897	0.1556	21,142	40.10	527	5.5
2017	222,701.59	19,909	28,457	0.1278	194,244	40.98	4,740	4.5
2018	1,042,060.64	72,689	103,901	0.0997	938,160	41.86	22,411	3.5
2019	220,803.25	11,036	15,775	0.0714	205,028	42.75	4,796	2.5
2020	1,426,738.07	42,917	61,345	0.0430	1,365,393	43.65	31,283	1.5

MDU Gas

Account #: 390.00 - General - Structures & Improvements

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: R2
ASL: 45
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2021	17,684.99	178	254	0.0144	17,431	44.55	391	0.5
TOTAL	15,766,936.32	4,479,705	6,201,672		9,565,265		277,543	

COMPOSITE ANNUAL ACCRUAL RATE	1.76%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.39
COMPOSITE AVERAGE AGE (YEARS)	16.01
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	32.21

MDU Gas

Account #: 391.10 - General - Office Furniture & Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: SQ

ASL: 15

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2007	134,717.36	130,227	90,021	0.6682	44,697	0.50	44,697	14.5
2008	14,663.46	13,197	9,123	0.6221	5,541	1.50	3,694	13.5
2011	3,687.21	2,581	1,784	0.4839	1,903	4.50	423	10.5
2012	2,878.08	1,823	1,260	0.4378	1,618	5.50	294	9.5
2013	8,972.57	5,084	3,515	0.3917	5,458	6.50	840	8.5
2014	6,598.93	3,299	2,281	0.3456	4,318	7.50	576	7.5
2015	7,222.65	3,130	2,164	0.2995	5,059	8.50	595	6.5
2016	4,120.79	1,511	1,044	0.2535	3,076	9.50	324	5.5
2017	10,923.27	3,277	2,265	0.2074	8,658	10.50	825	4.5
2018	64,553.45	15,062	10,412	0.1613	54,141	11.50	4,708	3.5
2019	15,239.53	2,540	1,756	0.1152	13,484	12.50	1,079	2.5
2020	31,354.81	3,135	2,167	0.0691	29,187	13.50	2,162	1.5
2021	2,675.45	89	62	0.0230	2,614	14.50	180	0.5
TOTAL	307,607.56	184,956	127,853		179,755		60,397	

COMPOSITE ANNUAL ACCRUAL RATE 19.63%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.42

COMPOSITE AVERAGE AGE (YEARS) 9.02

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 5.98

MDU Gas

Account #: 391.30 - General - Computer Equipment - PC

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 5
Net Salvage: 0%
Truncation Year:

Year		Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2018		1,030.46	721	820	0.7956	211	1.50	140	3.5
2021		17,668.66	1,767	2,008	0.1137	15,660	4.50	3,480	0.5
TOTAL		18,699.12	2,488	2,828		15,871		3,620	

COMPOSITE ANNUAL ACCRUAL RATE	19.36%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.15
COMPOSITE AVERAGE AGE (YEARS)	0.67
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	4.33

MDU Gas

Account #: 392.10 - General - Transportation Equipment - Trailers

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: R1

ASL: 20

Net Salvage: 10%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1988	919.23	738	827	1.0000	0	2.15	0	33.5
1991	8,360.24	6,359	7,524	1.0000	0	3.10	0	30.5
1995	5,298.28	3,688	4,768	1.0000	0	4.53	0	26.5
1997	5,287.98	3,490	4,759	1.0000	0	5.33	0	24.5
1998	13,445.80	8,620	12,101	1.0000	0	5.75	0	23.5
2002	31,473.89	17,568	28,327	1.0000	0	7.60	0	19.5
2003	27,658.15	14,813	24,892	1.0000	0	8.10	0	18.5
2004	21,127.88	10,821	19,015	1.0000	0	8.62	0	17.5
2005	39,770.62	19,407	35,794	1.0000	0	9.16	0	16.5
2007	75,425.15	32,979	67,883	1.0000	0	10.28	0	14.5
2008	53,783.17	22,090	48,405	1.0000	0	10.87	0	13.5
2010	45,133.06	16,047	38,447	0.9465	2,173	12.10	180	11.5
2011	66,102.35	21,614	51,785	0.8705	7,707	12.73	605	10.5
2012	26,586.22	7,918	18,971	0.7929	4,957	13.38	370	9.5
2018	29,796.26	3,396	8,137	0.3034	18,680	17.47	1,069	3.5
TOTAL	450,168.28	189,548	371,635		33,516		2,224	

COMPOSITE ANNUAL ACCRUAL RATE 0.49%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.83

COMPOSITE AVERAGE AGE (YEARS) 14.25

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 10.64

MDU Gas

Account #: 392.20 - General - Transportation Equipment - Vehicles

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: L2

ASL: 10

Net Salvage: 20%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1994	6,665.89	5,066	3,835	0.7191	1,498	0.50	1,498	27.5
1995	30,400.31	22,992	17,403	0.7156	6,917	0.55	6,917	26.5
1996	1,076.97	805	609	0.7069	252	0.66	252	25.5
2000	16,395.45	11,398	8,627	0.6577	4,489	1.31	3,427	21.5
2001	22,868.12	15,557	11,775	0.6436	6,520	1.50	4,357	20.5
2002	60,123.25	39,966	30,250	0.6289	17,849	1.69	10,556	19.5
2003	123,846.92	80,314	60,789	0.6136	38,288	1.89	20,218	18.5
2004	227,288.72	143,540	108,644	0.5975	73,187	2.11	34,754	17.5
2005	90,578.36	55,594	42,078	0.5807	30,384	2.33	13,052	16.5
2006	26,670.64	15,873	12,014	0.5631	9,322	2.56	3,641	15.5
2007	50,772.32	29,235	22,128	0.5448	18,490	2.80	6,598	14.5
2008	100,964.06	56,127	42,482	0.5260	38,289	3.05	12,549	13.5
2009	139,629.38	74,826	56,635	0.5070	55,068	3.30	16,680	12.5
2010	281,152.83	145,120	109,840	0.4883	115,082	3.55	32,436	11.5
2011	374,593.47	186,138	140,886	0.4701	158,788	3.79	41,911	10.5
2012	180,318.93	86,148	65,205	0.4520	79,050	4.03	19,625	9.5
2013	305,760.51	139,892	105,883	0.4329	138,725	4.28	32,405	8.5
2014	515,664.08	223,896	169,465	0.4108	243,066	4.57	53,157	7.5
2015	1,755,572.41	711,116	538,238	0.3832	866,219	4.94	175,465	6.5
2016	1,544,833.66	567,130	429,257	0.3473	806,610	5.41	149,067	5.5
2017	1,873,055.94	595,583	450,792	0.3008	1,047,652	6.03	173,875	4.5
2018	575,076.89	148,186	112,161	0.2438	347,901	6.78	51,320	3.5
2019	1,820,835.09	346,358	262,156	0.1800	1,194,512	7.62	156,714	2.5
2020	1,689,573.50	198,426	150,187	0.1111	1,201,472	8.53	140,820	1.5
2021	1,042,480.61	41,577	31,469	0.0377	802,515	9.50	84,462	0.5

MDU Gas

Account #: 392.20 - General - Transportation Equipment - Vehicles

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: L2

ASL: 10

Net Salvage: 20%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
TOTAL	12,856,198.31	3,940,863	2,982,809		7,302,149		1,245,756	
COMPOSITE ANNUAL ACCRUAL RATE				9.69%				
THEORETICAL ACCUMULATED DEPRECIATION FACTOR				0.23				
COMPOSITE AVERAGE AGE (YEARS)				5.32				
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)				6.17				

MDU Gas

Account #: 393.00 - General - Stores Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 30
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1996	1,389.93	1,181	953	0.6859	437	4.50	97	25.5
2000	755.02	541	437	0.5782	318	8.50	37	21.5
2001	21,319.46	14,568	11,754	0.5513	9,566	9.50	1,007	20.5
2002	14,197.38	9,228	7,445	0.5244	6,752	10.50	643	19.5
2003	14,253.48	8,790	7,092	0.4975	7,162	11.50	623	18.5
2004	5,267.69	3,073	2,479	0.4706	2,789	12.50	223	17.5
2018	5,088.91	594	479	0.0941	4,610	26.50	174	3.5
2020	35,087.10	1,754	1,415	0.0403	33,672	28.50	1,181	1.5
2021	5,939.28	99	80	0.0134	5,859	29.50	199	0.5
TOTAL	103,298.25	39,829	32,134		71,164		4,184	

COMPOSITE ANNUAL ACCRUAL RATE	4.05%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.31
COMPOSITE AVERAGE AGE (YEARS)	11.57
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	18.43

MDU Gas

Account #: 394.10 - General - Tools, Shop, & Garage Equipment - Non-Unitized

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: SQ

ASL: 20

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2004	172,050.35	150,544	165,993	0.9648	6,057	2.50	2,423	17.5
2005	209,470.07	172,813	190,547	0.9097	18,923	3.50	5,406	16.5
2006	234,239.43	181,536	200,165	0.8545	34,074	4.50	7,572	15.5
2007	189,720.92	137,548	151,663	0.7994	38,058	5.50	6,920	14.5
2008	157,584.50	106,370	117,286	0.7443	40,299	6.50	6,200	13.5
2009	72,922.59	45,577	50,254	0.6891	22,669	7.50	3,023	12.5
2010	172,074.59	98,943	109,097	0.6340	62,978	8.50	7,409	11.5
2011	157,395.97	82,633	91,113	0.5789	66,283	9.50	6,977	10.5
2012	158,798.39	75,429	83,170	0.5237	75,628	10.50	7,203	9.5
2013	351,862.77	149,542	164,888	0.4686	186,975	11.50	16,259	8.5
2014	264,155.89	99,058	109,224	0.4135	154,932	12.50	12,395	7.5
2015	274,487.44	89,208	98,363	0.3584	176,124	13.50	13,046	6.5
2016	576,092.53	158,425	174,684	0.3032	401,409	14.50	27,683	5.5
2017	795,502.28	178,988	197,356	0.2481	598,146	15.50	38,590	4.5
2018	711,086.42	124,440	137,211	0.1930	573,876	16.50	34,780	3.5
2019	527,577.86	65,947	72,715	0.1378	454,863	17.50	25,992	2.5
2020	685,399.59	51,405	56,680	0.0827	628,719	18.50	33,985	1.5
2021	2,149,400.32	53,735	59,249	0.0276	2,090,151	19.50	107,187	0.5
TOTAL	7,859,821.91	2,022,141	2,229,659		5,630,163		363,050	

COMPOSITE ANNUAL ACCRUAL RATE 4.62%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR 0.28

COMPOSITE AVERAGE AGE (YEARS) 5.15

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 14.85

MDU Gas

Account #: 394.30 - General - Vehicle Maintenance Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 20
Net Salvage: 0%
Truncation Year:

		Accumulated		ALG			
Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Depreciation Factor	Net Book Value	Remaining Life	Annual Accrual Average Age
2006	5,923.44	4,591	4,598	0.7762	1,325	4.50	295 15.5
2007	30,449.83	22,076	22,109	0.7261	8,340	5.50	1,516 14.5
TOTAL	36,373.27	26,667	26,707		9,666		1,811

COMPOSITE ANNUAL ACCRUAL RATE	4.98%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.73
COMPOSITE AVERAGE AGE (YEARS)	14.66
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	5.34

MDU Gas

Account #: 395.00 - General - Laboratory Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 20
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2002	53,124.91	51,797	26,462	0.4981	26,663	0.50	26,663	19.5
2009	59,556.79	37,223	19,017	0.3193	40,540	7.50	5,405	12.5
2013	3,826.75	1,626	831	0.2171	2,996	11.50	261	8.5
2014	25,534.24	9,575	4,892	0.1916	20,642	12.50	1,651	7.5
2018	33,267.14	5,822	2,974	0.0894	30,293	16.50	1,836	3.5
2019	54,739.64	6,842	3,496	0.0639	51,244	17.50	2,928	2.5
2020	32,924.30	2,469	1,262	0.0383	31,663	18.50	1,712	1.5
2021	53,812.00	1,345	687	0.0128	53,125	19.50	2,724	0.5
TOTAL	316,785.77	116,700	59,620		257,166		43,180	

COMPOSITE ANNUAL ACCRUAL RATE	13.63%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.19
COMPOSITE AVERAGE AGE (YEARS)	7.37
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	12.63

MDU Gas

Account #: 396.10 - General - Trailers - Work Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: L2

ASL: 25

Net Salvage: 30%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1984	1,685.39	866	1,180	1.0000	0	6.65	0	37.5
1993	2,788.91	1,258	1,952	1.0000	0	8.89	0	28.5
1994	29,115.83	12,933	20,381	1.0000	0	9.14	0	27.5
1997	3,534.95	1,499	2,474	1.0000	0	9.86	0	24.5
1998	7,213.88	3,010	5,050	1.0000	0	10.10	0	23.5
1999	57,054.45	23,408	39,938	1.0000	0	10.35	0	22.5
2001	14,107.86	5,578	9,876	1.0000	0	10.88	0	20.5
2002	17,670.84	6,843	12,370	1.0000	0	11.17	0	19.5
2003	5,063.98	1,916	3,545	1.0000	0	11.49	0	18.5
2004	27,881.96	10,278	19,517	1.0000	0	11.83	0	17.5
2005	9,365.26	3,352	6,556	1.0000	0	12.22	0	16.5
2006	28,677.96	9,921	20,075	1.0000	0	12.65	0	15.5
2007	21,445.76	7,133	15,012	1.0000	0	13.12	0	14.5
2008	19,890.76	6,321	13,924	1.0000	0	13.65	0	13.5
2010	31,042.83	8,793	21,730	1.0000	0	14.88	0	11.5
2011	55,363.27	14,589	37,913	0.9783	841	15.59	54	10.5
2012	34,907.25	8,458	21,980	0.8995	2,455	16.35	150	9.5
2013	68,079.28	14,971	38,905	0.8164	8,751	17.15	510	8.5
2014	156,419.16	30,757	79,928	0.7300	29,566	17.98	1,645	7.5
2015	20,702.99	3,574	9,288	0.6409	5,204	18.83	276	6.5
2016	229,234.62	33,901	88,097	0.5490	72,368	19.72	3,670	5.5
2017	68,558.94	8,391	21,805	0.4544	26,186	20.63	1,269	4.5
2018	143,287.11	13,780	35,809	0.3570	64,492	21.57	2,991	3.5
2019	58,618.83	4,061	10,553	0.2572	30,480	22.53	1,353	2.5
2020	141,293.68	5,910	15,358	0.1553	83,547	23.51	3,554	1.5
2021	53,135.76	743	1,932	0.0519	35,263	24.50	1,439	0.5

MDU Gas

Account #: 396.10 - General - Trailers - Work Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: L2
ASL: 25
Net Salvage: 30%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
TOTAL	1,306,141.51	242,246	555,146		359,153		16,911	
COMPOSITE ANNUAL ACCRUAL RATE				1.29%				
THEORETICAL ACCUMULATED DEPRECIATION FACTOR				0.43				
COMPOSITE AVERAGE AGE (YEARS)				8.03				
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)				18.38				

MDU Gas

Account #: 396.20 - General - Power Operated Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: L1

ASL: 3

Net Salvage: 85%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1995	2,696.46	404	-1,219	-3.0134	1,623		1,623	27.5
1999	753.59	113	-341	-3.0134	454		454	23.5
2000	66,368.27	9,955	-29,999	-3.0134	39,954		39,954	22.5
2002	84,776.40	12,716	-38,320	-3.0134	51,036		51,036	20.5
2003	130,365.37	19,555	-58,927	-3.0134	78,481		78,481	19.5
2004	44,828.72	6,724	-20,263	-3.0134	26,987		26,987	18.5
2005	193,813.70	29,072	-87,606	-3.0134	116,678		116,678	17.5
2006	118,679.47	17,802	-53,644	-3.0134	71,446		71,446	16.5
2007	244,145.52	36,622	-110,357	-3.0134	146,978		146,978	15.5
2008	118,600.33	17,790	-53,609	-3.0134	71,399		71,399	14.5
2010	78,497.44	11,775	-35,482	-3.0134	47,256		47,256	12.5
2011	228,311.70	34,247	-103,199	-3.0134	137,446		137,446	11.5
2012	349,796.46	52,469	-158,112	-3.0134	210,581		210,581	10.5
2013	173,033.41	21,629	-65,178	-2.5112	91,133	0.50	91,133	8.5
2014	436,810.84	53,662	-161,707	-2.4680	227,228	0.54	227,228	7.5
2015	279,736.03	32,645	-98,373	-2.3444	140,334	0.67	140,334	6.5
2016	893,003.87	96,571	-291,009	-2.1725	424,959	0.84	424,959	5.5
2017	482,637.34	47,106	-141,950	-1.9608	214,346	1.05	204,535	4.5
2018	580,791.23	49,342	-148,686	-1.7067	235,805	1.30	181,265	3.5
2019	457,831.79	31,947	-96,269	-1.4018	164,944	1.60	102,806	2.5
2020	585,314.24	30,032	-90,499	-1.0308	178,296	1.97	90,331	1.5
2021	3,489,761.83	75,660	-227,996	-0.4356	751,460	2.57	292,809	0.5

MDU Gas

Account #: 396.20 - General - Power Operated Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: L1
ASL: 3
Net Salvage: 85%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
TOTAL	9,040,554.01	687,840	-2,072,744		3,428,827		2,755,719	
COMPOSITE ANNUAL ACCRUAL RATE				30.48%				
THEORETICAL ACCUMULATED DEPRECIATION FACTOR				-0.23				
COMPOSITE AVERAGE AGE (YEARS)				4.90				
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)				1.48				

MDU Gas

Account #: 397.10 - General - Comm. Equip. - Fixed Radios

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2007	25,677.39	24,821	23,288	0.9069	2,390	0.50	2,390	14.5
2009	230,835.87	192,363	180,477	0.7818	50,359	2.50	20,144	12.5
2010	60,049.13	46,038	43,193	0.7193	16,856	3.50	4,816	11.5
2011	38,559.26	26,991	25,324	0.6567	13,236	4.50	2,941	10.5
2013	351,331.96	199,088	186,786	0.5317	164,546	6.50	25,315	8.5
2014	180,810.68	90,405	84,819	0.4691	95,992	7.50	12,799	7.5
2015	67,172.78	29,108	27,310	0.4066	39,863	8.50	4,690	6.5
2016	71,933.82	26,376	24,746	0.3440	47,188	9.50	4,967	5.5
2017	45,623.70	13,687	12,841	0.2815	32,782	10.50	3,122	4.5
2018	15,760.98	3,678	3,450	0.2189	12,311	11.50	1,070	3.5
2020	76,666.80	7,667	7,193	0.0938	69,474	13.50	5,146	1.5
2021	26,121.94	871	817	0.0313	25,305	14.50	1,745	0.5
TOTAL	1,190,544.31	661,093	620,243		570,301		89,145	

COMPOSITE ANNUAL ACCRUAL RATE	7.49%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.52
COMPOSITE AVERAGE AGE (YEARS)	8.33
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	6.67

MDU Gas

Account #: 397.20 - General - Comm. Equip. - Mobile Radios

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2008	98,031.63	88,228	84,721	0.8642	13,311	1.50	8,874	13.5
2009	164,946.06	137,455	131,990	0.8002	32,956	2.50	13,182	12.5
2010	45,022.41	34,517	33,145	0.7362	11,878	3.50	3,394	11.5
2011	2,138.33	1,497	1,437	0.6722	701	4.50	156	10.5
2012	21,603.54	13,682	13,138	0.6082	8,465	5.50	1,539	9.5
2013	19,539.26	11,072	10,632	0.5441	8,907	6.50	1,370	8.5
2014	18,424.79	9,212	8,846	0.4801	9,579	7.50	1,277	7.5
2015	51,534.27	22,332	21,444	0.4161	30,091	8.50	3,540	6.5
2016	26,099.70	9,570	9,189	0.3521	16,910	9.50	1,780	5.5
2017	8,182.69	2,455	2,357	0.2881	5,825	10.50	555	4.5
2018	5,832.33	1,361	1,307	0.2241	4,526	11.50	394	3.5
TOTAL	461,355.01	331,382	318,207		143,148		36,061	

COMPOSITE ANNUAL ACCRUAL RATE	7.82%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.69
COMPOSITE AVERAGE AGE (YEARS)	10.77
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	4.23

MDU Gas

Account #: 397.30 - General Telephone Communication Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 10
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2013	2,295.23	1,951	1,403	0.6113	892	1.50	595	8.5
2016	22,189.34	12,204	8,777	0.3955	13,413	4.50	2,981	5.5
2017	101,395.61	45,628	32,813	0.3236	68,582	5.50	12,470	4.5
2020	2,578.64	387	278	0.1079	2,300	8.50	271	1.5
TOTAL	128,458.82	60,170	43,271		85,188		16,317	

COMPOSITE ANNUAL ACCRUAL RATE	12.70%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.34
COMPOSITE AVERAGE AGE (YEARS)	4.68
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	5.32

MDU Gas

Account #: 397.80 - Network Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION
BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life
Survivor Curve: SQ
ASL: 5
Net Salvage: 0%
Truncation Year:

Year		Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2018		9,063.76	6,345	4,836	0.5336	4,227	1.50	2,818	3.5
2020		20,001.23	6,000	4,574	0.2287	15,427	3.50	4,408	1.5
2021		11,240.90	1,124	857	0.0762	10,384	4.50	2,308	0.5
TOTAL		40,305.89	13,469	10,267		30,039		9,534	

COMPOSITE ANNUAL ACCRUAL RATE	23.65%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.25
COMPOSITE AVERAGE AGE (YEARS)	1.67
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	3.33

MDU Gas

Account #: 398.00 - Miscellaneous Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2021

ALG - Remaining Life

Survivor Curve: SQ

ASL: 25

Net Salvage: 0%

Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2002	2,240.64	1,748	2,241	1.0000	0	5.50	0	19.5
2003	541.85	401	542	1.0000	0	6.50	0	18.5
2005	790.03	521	790	1.0000	0	8.50	0	16.5
2006	11,912.45	7,386	11,912	1.0000	0	9.50	0	15.5
2007	2,964.83	1,720	2,965	1.0000	0	10.50	0	14.5
2008	10,585.40	5,716	10,585	1.0000	0	11.50	0	13.5
2011	2,281.70	958	-4,442	-1.9468	6,724	14.50	464	10.5
2012	1,969.43	748	-6,628	-3.3652	8,597	15.50	555	9.5
2013	13,207.22	4,490	-67,342	-5.0988	80,549	16.50	4,882	8.5
2017	4,061.42	731	4,061	1.0000	0	20.50	0	4.5
2018	9,478.36	1,327	9,478	1.0000	0	21.50	0	3.5
2020	8,595.27	516	8,595	1.0000	0	23.50	0	1.5
2021	3,076.06	62	376	0.1224	2,700	24.50	110	0.5
TOTAL	71,704.66	26,324	-26,865		98,569		6,011	

COMPOSITE ANNUAL ACCRUAL RATE 8.38%

THEORETICAL ACCUMULATED DEPRECIATION FACTOR -0.37

COMPOSITE AVERAGE AGE (YEARS) 9.18

DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS) 15.82



SECTION 9

9 ESTIMATION OF SURVIVOR CURVES

9.1 Average Service Life

All assets have a service life, which is defined as “the period of time from its installation until it is retired from service”³. All account groups of property are made up of various assets with differing service lives and investment values. To calculate a depreciation rate, one must first calculate an average life for all assets in a single account. This can be done by ascertaining the age at retirement for every asset in an account and plotting it as a percentage of the units surviving at each age interval (a “Survivor Curve”). From the average life for each account, remaining lives can then be found which are then used to calculate the annual depreciation accruals and ultimately depreciation rate. A discussion of the general concept of survivor curves is presented and the Iowa type survivor curves are reviewed.

9.2 Survivor Curves

A survivor curve is defined as “a graph of the percent of units remaining in service expressed as a function of age”⁴. To calculate the average life of the group, the remaining life expectancy, the probable life and the frequency curve, one must first create a survivor curve. Figure 1 shows a typical 40-R4 smoothed survivor curve as well as the accompanying derived curves. The type 40-R4 refers to the Iowa type curve, whose designation will be explained in further detail in the next section

To calculate the average service life, one must calculate the area under the survivor curve and divide by the percent surviving at age zero. The remaining life is equal to the area under the survivor curve and to the right of the current age, divided by the percent surviving at the current age. In Figure 1, for example, the hatched area to the right of age 45 divided by 28.9 percent surviving balance represents the remaining life for an asset that has reached that age. The probable life is “the total life expectancy of the property surviving at any age and is equal to the remaining life plus the current age.”⁵ If the probable life of the property is calculated for each year of age, the probable life curve shown in the chart can be developed. The frequency curve is calculated by taking the difference between the percent surviving on successive years on the survivor curve⁶. Alternatively, frequency can be empirically determined by finding the amount of retirements at any given age. Plotting retirement frequency from the youngest to oldest ages and then taking the cumulative frequencies will generate percent surviving versus age.

³ Wolf, Frank K. and W. Chester Fitch, *Depreciation Systems* (Iowa State University Press, 1994), 21.

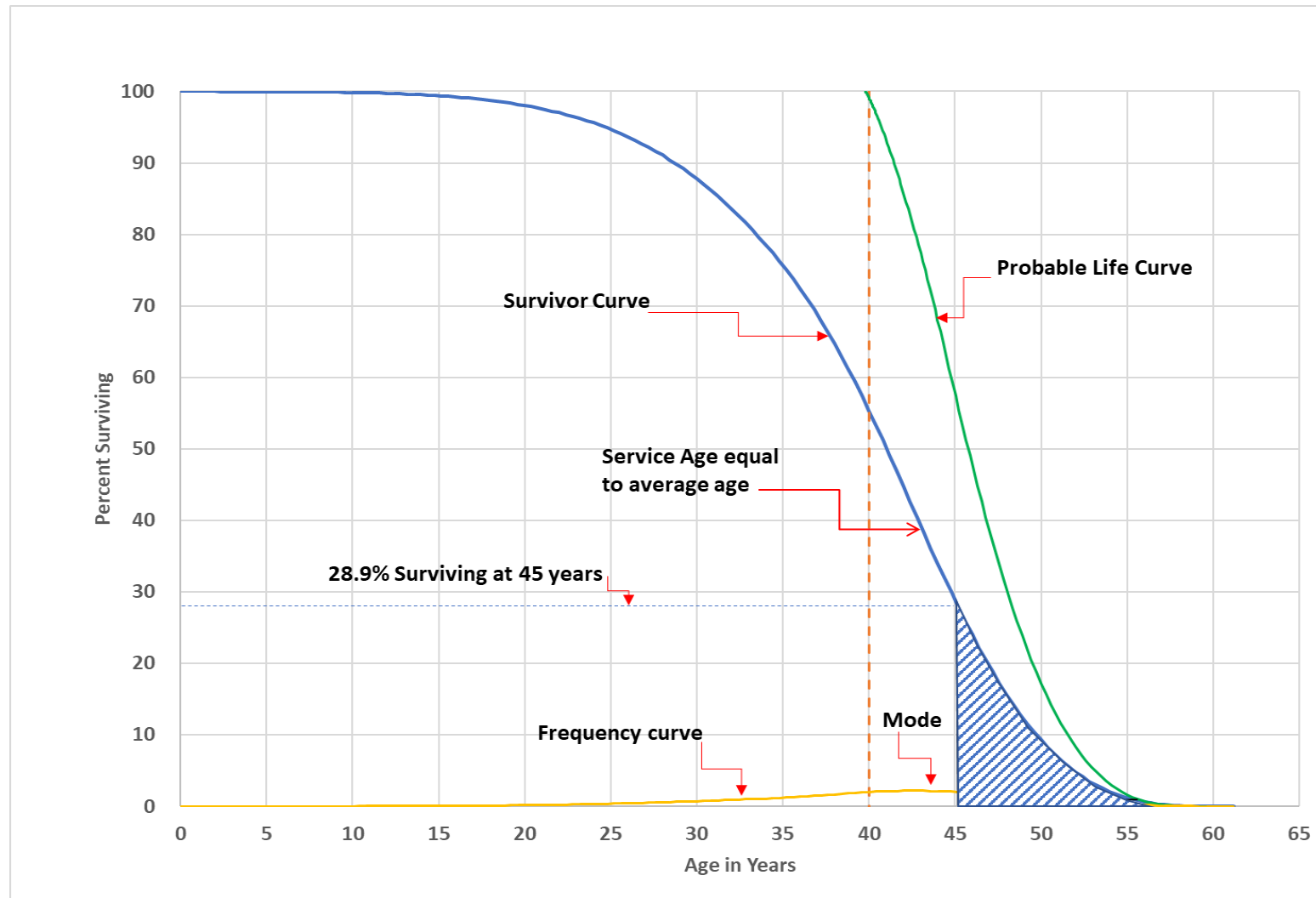
⁴ *Ibid*, 23.

⁵ *Ibid*, 29.

⁶ *Ibid*, 23-24.



FIGURE 1: TYPICAL SURVIVOR CURVE (40-R4) AND DERIVED CURVES





9.3 Iowa Type Curves

In 1931, Robley Winfrey and Edwin Kurtz of the Engineering Research Institute at Iowa State University published Bulletin 103, which laid the groundwork for what would eventually be known as the Iowa Curves. “The 13 type curves can be used as valuable aids in forecasting the probable future service lives of individual items and of groups of items of different kinds of physical equipment”⁷. The 13 curves described in Bulletin 103 eventually became a series of 22 generalized survivor curves which are used throughout the regulated utility industry. These 22 curves were described in Bulletin 125, published in 1967 by Harold A. Cowles, which became known as the Iowa curves.

The Iowa curves are organized with three variables: the average life of the plant; the location of the mode; and the variation of the life. All Iowa curves have both a letter and a number to represent the shape and height of the mode. The L curves, or left-moded curves, are used when the mode of the curve should be to the left of the average life. There are six L curves presented in Figure 2. The R curves, or right-moded, are used when the mode of the curve should be to the right of the average life. There are five R curves, which are presented in Figure 3. The S curves, or symmetrically-moded, are used when the mode is equal to the average life. There are seven S curves, which are presented in Figure 4. The O curves, or origin curves, are used when the mode occurs at age 0. There are four O curves, which are presented in Figure 5. There are some occasions where it is appropriate to use a half curve. In these cases, the curve is assumed to be exactly half way between the two curves.

In addition to Bulletin 125, Iowa curves have also been presented in subsequent Experiment Station bulletins and in the text *Engineering Valuation and Depreciation*⁸. In 1957, Frank V. B. Couch, Jr., an Iowa State College graduate student, submitted a thesis⁹ presenting his development of the fourth family consisting of the four O-type survivor curves.

⁷ *Ibid*, 21

⁸ Marston, Anson, Robley Winfrey and Jean C. Hempstead, *Engineering Valuation and Depreciation* (The Iowa State University Press, 1953)

⁹ Couch, Frank V. B., Jr., *Classification of Type O Retirement Characteristics of Industrial Property* Unpublished M.S. Thesis (Engineering Valuation, Library, Iowa State College, Ames, Iowa, 1957)



FIGURE 2: LEFT MODAL OR "L" IOWA TYPE SURVIVOR CURVES

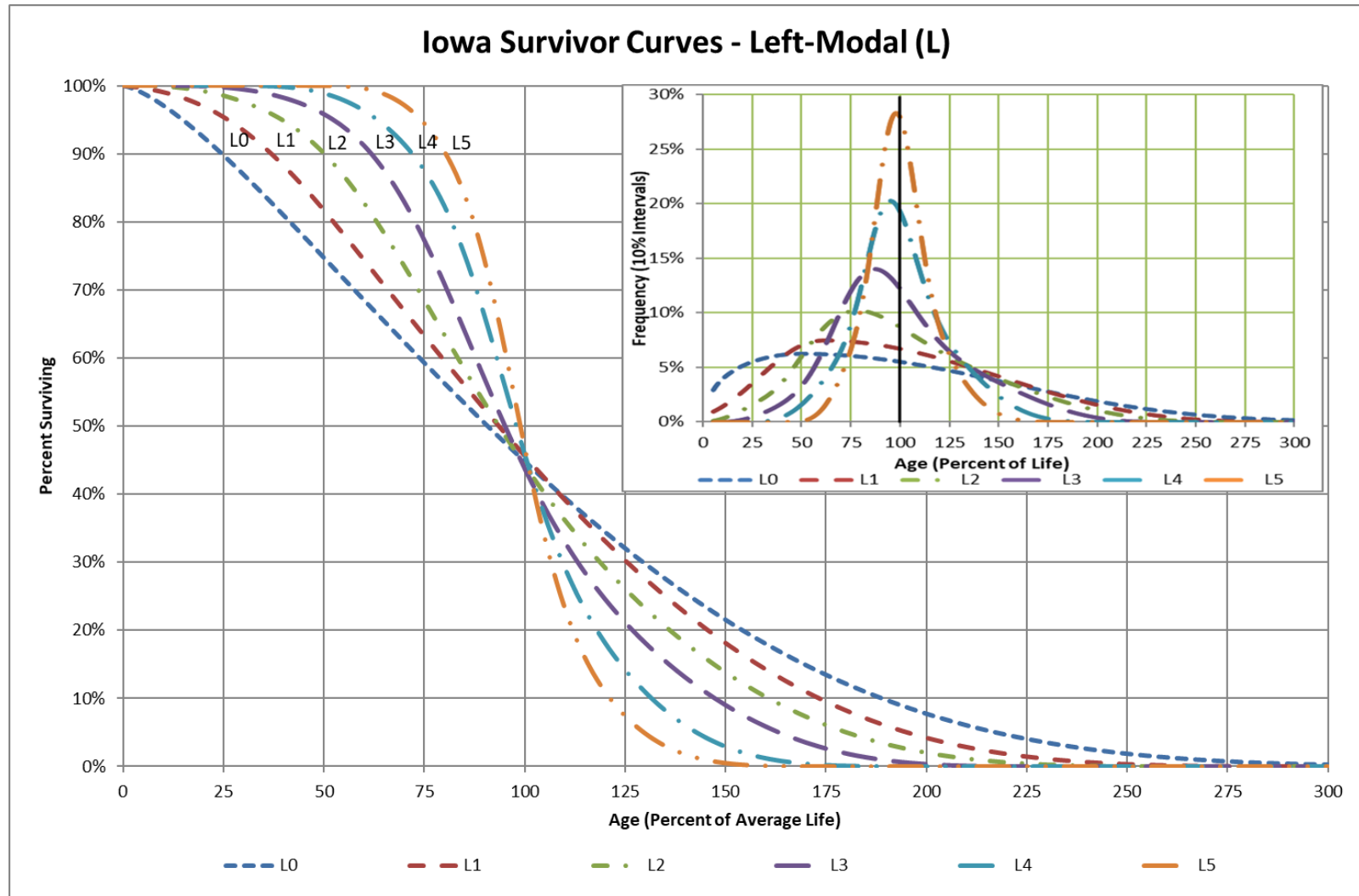




FIGURE 3: RIGHT MODAL OR "R" IOWA TYPE SURVIVOR CURVES

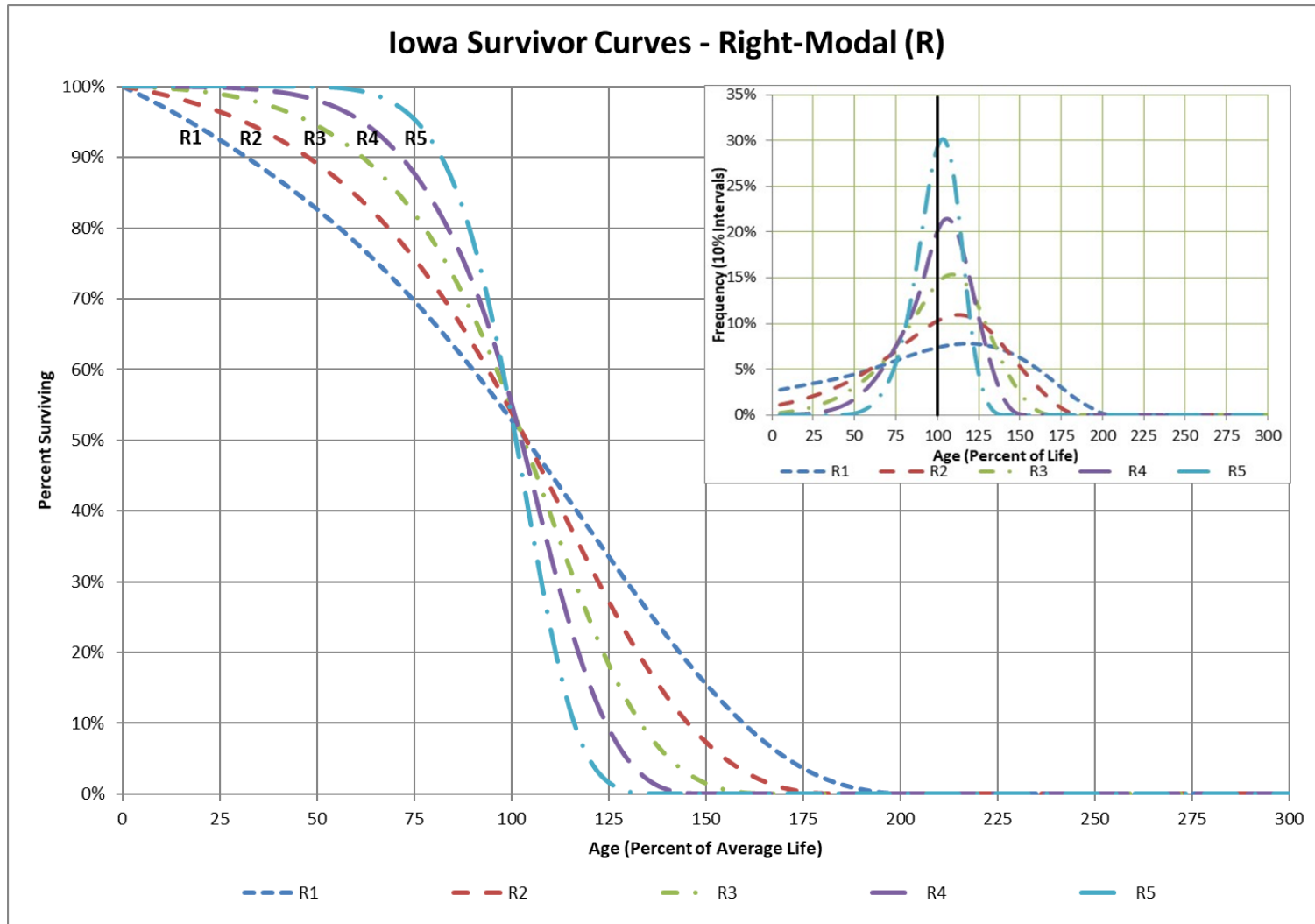




FIGURE 4: SYMMETRICAL OR "S" IOWA TYPE SURVIVOR CURVES

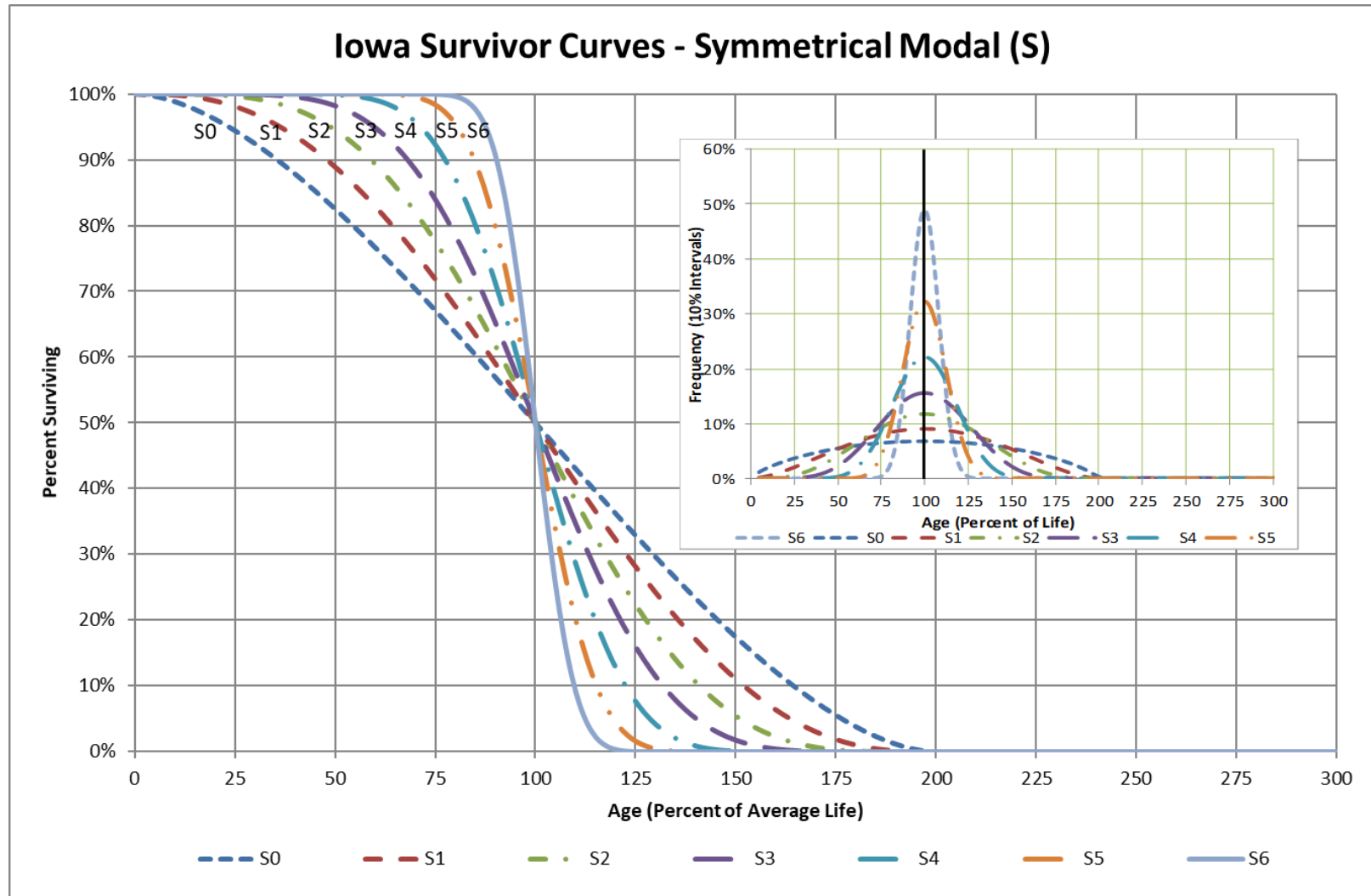
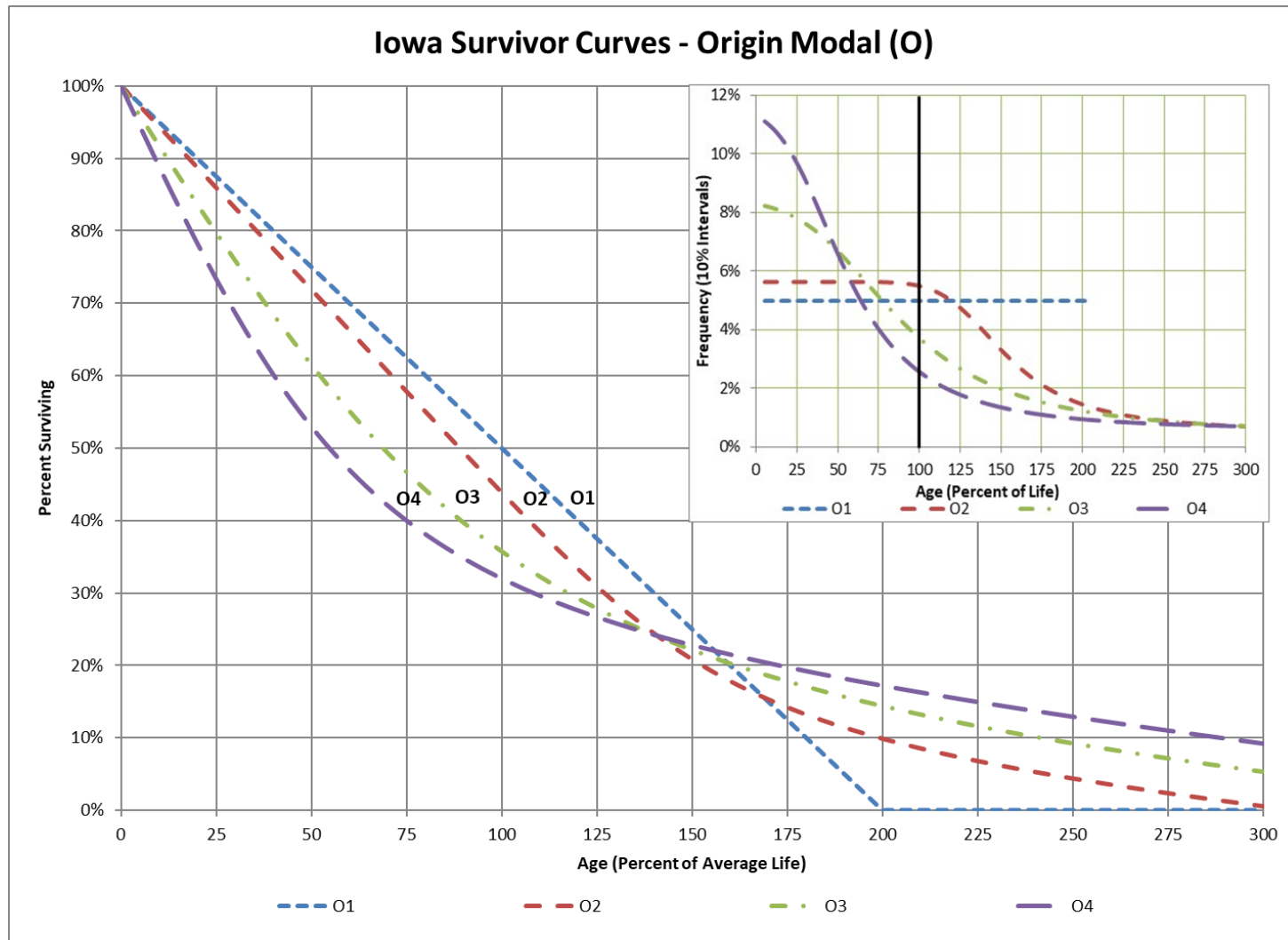




FIGURE 5: ORIGIN MODAL OR "O" IOWA TYPE SURVIVOR CURVES





9.4 Retirement Rate Method of Analysis

The retirement rate method is a widely accepted actuarial method used to create survivor curves. This method is also referred to as an original life table. These survivor curves can then be used to determine the average service life of a plant account. The retirement rate method is thoroughly explained in several publications, including Statistical Analyses of Industrial Property Retirements,¹⁰ Engineering Valuation and Depreciation¹¹ and Depreciation Systems¹².

The retirement rate method is a subgroup of the placement and the experience band methods, as described in “Depreciation Systems”. The placement band method creates a survivor curve which describes the life characteristics of assets placed into service during a selected timeframe. The experience band method creates a survivor curve which describes the life characteristics of assets removed from service during a selected time frame. The retirement rate method creates both placement and experience bands to give the most complete or representative data. An example of the calculations used in the development of a life table follows. The example includes schedules of annual aged property transactions, a schedule of plant exposed to retirement, a life table and illustrations of smoothing the stub survivor curve.

9.5 Schedules of Annual Transactions in Plant Records

The property group used to illustrate the retirement rate method is observed for the experience band 2008-2017 during which there were placements during the years 2003-2017. In order to illustrate the summation of the aged data by age interval, the data was compiled in the manner presented in Schedules 1 and 2. In Schedule 1 (page 9-10), the year of installation (year placed) and the year of retirement are shown. The age interval during which a retirement occurred is determined from this information. In the example which follows, \$10,000 of the asset invested in 2003 were retired in 2008. The \$10,000 retirement occurred during the age interval between 4 ½ and 5 ½ years (2008 - 2003) on the basis that approximately one-half of the amount of property was installed prior to and after July 1 of each year. That is, on the average, property installed during a year is placed in service at the midpoint of the year for the purpose of the analysis. All retirements also are stated as occurring at the midpoint of a one-year age interval of time, except the first age interval which encompasses only one-half year.

The total retirements occurring in each age interval in a band are determined by summing the amounts for each transaction year-installation year combination for that age interval. For example, the total of \$143,000 retired for age interval 4½-5½ is the sum of the retirements entered on Schedule 1 immediately above the stair step line drawn on the table beginning with the 2008 retirements of 2003 installations and ending with the 2016 retirements of the 2011 installations. Thus, the total amount of \$143,000 for age interval 4½-5½ equals the sum of:

$$\$10 + \$12 + \$13 + \$11 + \$13 + \$13 + \$15 + \$17 + \$19 + \$20 = \$143 \text{ k}$$

¹⁰ Anson, Winfrey & Hempstead, supra note 7

¹¹ Anson, Winfrey & Hempstead, supra note 7

¹² Wolf & Fitch, supra note 2



Other transactions which affect the group are recorded in a similar manner in Schedule 2 (page 9-11). The entries illustrated include transfers and sales. The entries which are credits to the plant account are shown in parentheses. The items recorded on this schedule are not totaled with the retirements but are used in developing the exposures at the beginning of each age interval.



SCHEDULE 1. RETIREMENTS FOR EACH YEAR 2008-2017 – SUMMARIZED BY AGE INTERVAL

Experience Band 2008-2017

Placement Band 2003-2017

Retirements (Thousands of Dollars)
Annual Survivors at the Beginning of the Year

Year Placed (1)	2008 (2)	2009 (3)	2010 (4)	2011 (5)	2012 (6)	2013 (7)	2014 (8)	2015 (9)	2016 (10)	2017 (11)	Total Durring Age Interval (12)	Age Interval (13)
2003	10	11	12	13	14	16	23	24	25	26	26	13½-14½
2004	11	12	13	15	16	18	20	21	22	19	44	12½-13½
2005	11	12	13	14	16	17	19	21	22	18	64	11½-12½
2006	8	9	10	11	11	13	14	15	16	17	83	10½-11½
2007	9	10	11	12	13	14	16	17	19	20	93	9½-10½
2008	4	9	10	11	12	13	14	15	16	20	105	8½-9½
2009		5	11	12	13	14	15	16	18	20	113	7½-8½
2010			6	12	13	15	16	17	19	19	124	6½-7½
2011				6	13	15	16	17	19	19	131	5½-6½
2012					7	14	16	17	19	20	143	4½-5½
2013						8	18	20	22	23	146	3½-4½
2014							9	20	22	25	150	2½-3½
2015								11	23	25	151	1½-2½
2016									11	24	153	½-1½
2017										13	80	0-½
Total	53	68	86	106	128	157	196	231	273	308	1,606	



SCHEDULE 2. OTHER TRANSACTIONS FOR EACH YEAR 2008-2017 – SUMMARIZED BY AGE INTERVAL

Experience Band 2008-2017

Placement Band 2003-2017

Acquisitions, Transfers and Sales (Thousands of Dollars)
Annual Survivors at the Beginning of the Year

Year Placed (1)	2008 (2)	2009 (3)	2010 (4)	2011 (5)	2012 (6)	2013 (7)	2014 (8)	2015 (9)	2016 (10)	2017 (11)	Total Durring Age Interval (12)	Age Interval (13)
2003	-	-	-	-	-	-	60 ^a	-	-	-	-	13½-14½
2004	-	-	-	-	-	-	-	-	-	-	-	12½-13½
2005	-	-	-	-	-	-	-	-	-	-	-	11½-12½
2006	-	-	-	-	-	-	-	(5) ^b	-	-	60	10½-11½
2007	-	-	-	-	-	-	-	6 ^a	-	-	-	9½-10½
2008	-	-	-	-	-	-	-	-	-	-	(5)	8½-9½
2009		-	-	-	-	-	-	-	-	-	-	7½-8½
2010			-	-	-	-	-	-	-	-	-	6½-7½
2011				-	-	-	-	(12) ^b	-	-	-	5½-6½
2012					-	-	-	-	22 ^a	-	-	4½-5½
2013						-	-	(19) ^b	-	-	10	3½-4½
2014							-	-	-	-	-	2½-3½
2015								-	-	(102) ^c	(121)	1½-2½
2016									-	-	-	½-1½
2017												0-½
Total	-	-	-	-	-	-	60	(30)	22	(102)	(50)	

^a Transfer Affecting Exposures at Beginning of Year

^b Transfer Affecting Exposures at End of Year

^c Sale with Continued Use

Parentheses denote Credit amount.



9.6 Schedule of Plant Exposed to Retirement

The development of the amount of plant exposed to retirement at the beginning of each age interval is illustrated in Schedule 3 (page 9-13). The surviving plant at the beginning of each year from 2007 through 2016 is recorded by year in the portion of the table titled "Annual Survivors at the Beginning of the Year." The last amount entered in each column is the amount of new plant added to the group during the year. The amounts entered in Schedule 3 for each successive year following the beginning balance or addition, are obtained by adding or subtracting the net entries shown on Schedules 1 and 2. For the purpose of determining the plant exposed to retirement, transfers-in are considered as being exposed to retirement in this group at the beginning of the year in which they occurred, and the sales and transfers-out are considered to be removed from the plant exposed to retirement at the beginning of the following year. Thus, the amounts of plant shown at the beginning of each year are the amounts of plant from each placement year considered to be exposed to retirement at the beginning of each successive transaction year. For example, the exposures for the installation year 2013 are calculated in the following manner:

Exposures at age 0	=	amount of addition	=	\$750,000
Exposures at age ½	=	\$750,000 - \$ 8,000	=	\$742,000
Exposures at age 1½	=	\$742,000 - \$18,000	=	\$724,000
Exposures at age 2½	=	\$724,000 - \$20,000 - \$19,000	=	\$685,000
Exposures at age 3½	=	\$685,000 - \$22,000	=	\$663,000

For the entire experience band 2008-2018, the total exposures at the beginning of an age interval are obtained by summing diagonally in a manner similar to the summing of the retirements during an age interval (Schedule 1). For example, the figure of 3,789, shown as the total exposures at the beginning of age interval 4½-5½, is obtained by summing:

$$\$255 + \$268 + \$ 284 + \$311 + \$334 + \$374 + \$405 + \$448 + \$501 + \$609 = \$3,789k$$



SCHEDULE 3 – PLANT EXPOSED TO RETIREMENT AT THE BEGINNING OF EACH YEAR, 2008 -2017 – SUMMARIZED BY AGE INTERVAL

Experience Band 2008 - 2017

Placement Band 2003-2017

Exposures (Thousands of Dollars)
Annual Survivors at the Beginning of the Year

Year Placed (1)	2008 (2)	2009 (3)	2010 (4)	2011 (5)	2012 (6)	2013 (7)	2014 (8)	2015 (9)	2016 (10)	2017 (11)	Total at Beginning of Age Interval (12)	Age Interval (13)
2003	255	245	234	222	209	195	239	216	192	167	167	13½-14½
2004	279	268	256	243	228	212	194	174	153	131	323	12½-13½
2005	307	296	284	271	257	241	224	205	184	162	531	11½-12½
2006	338	330	321	311	300	289	276	262	242	226	823	10½-11½
2007	376	367	257	346	334	321	307	267	280	261	1,097	9½-10½
2008	420 ^a	416	407	397	386	374	361	347	332	316	1,503	8½-9½
2009		460 ^a	455	444	432	419	405	390	374	356	1,952	7½-8½
2010			510 ^a	504	492	479	464	448	431	412	2,463	6½-7½
2011				580 ^a	574	561	546	530	501	482	3,057	5½-6½
2012					660 ^a	653	639	623	628	609	3,789	4½-5½
2013						750 ^a	742	724	685	663	4,332	3½-4½
2014							850 ^a	841	821	799	4,955	2½-3½
2015								960 ^a	949	923	5,719	1½-2½
2016									1,080 ^a	1,069	6,579	½-1½
2017										1,220 ^a	7,490	0-½
Total	1,975	2,382	2,724	3,318	3,872	4,494	5,247	5,987	6,852	7,796	44,780	

^a Additions during the year.

1555	1922	2214	2738	3212	3744	4397	5027	5772	6576	44780
420	460	510	580	660	750	850	960	1080	1220	0
1975	2382	2724	3318	3872	4494	5247	5987	6852	7796	44780



9.7 Original Life Tables

The original life table, illustrated in Schedule 4 (page 9-15) is developed from the totals shown on the schedules of retirements and exposures, Schedules 1 and 3, respectively. The exposures at the beginning of the age interval are obtained from the corresponding age interval of the exposure schedule, and the retirements during the age interval are obtained from the corresponding age interval of the retirement schedule. The retirement ratio is the result of dividing the retirements during the age interval by the exposures at the beginning of the age interval. The percent surviving at the beginning of each age interval is derived from survivor ratios, each of which equals one minus the retirement ratio. The percent surviving is developed by starting with 100 percent at age zero and successively multiplying the percent surviving at the beginning of each interval by the survivor ratio, i.e., one minus the retirement ratio for that age interval. The calculations necessary to determine the percent surviving at age 5½ are as follows:

Percent surviving at age 4½	=	88.15		
Exposures at age 4½	=	\$3,789,000		
Retirements from age 4½ to 5½	=	\$143,000		
Retirement Ratio	=	$\$143,000 \div \$3,789,000$	=	0.0377
Survivor Ratio	=	$1.000 - 0.0377$	=	0.9623
Percent surviving at age 5½	=	$(88.15) \times (0.9623)$	=	84.83

The totals of the exposures and retirements (columns 2 and 3) are shown for the purpose of checking with the respective totals in Schedules 1 and 3. The ratio of the total retirements to the total exposures, other than for each age interval, is meaningless. The original survivor curve is plotted from the original life table (column 6, Schedule 4). When the curve terminates at a percent surviving greater than zero, it is called a stub survivor curve. Survivor curves developed from retirement rate studies generally are stub curves.



SCHEDULE 4: ORIGINAL LIFE TABLE - CALCULATED BY THE RETIREMENT RATE METHOD

Experience Band 2008-2017				Placement Band 2003-2017	
Age at Beginning of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retirement Ratio	Survivor Ratio	% Surviving at Beginning of Age Interval
0	7,490	80	0.0107	0.9893	100.00
0.5	6,579	153	0.0233	0.9767	98.93
1.5	5,719	151	0.0264	0.9736	96.62
2.5	4,955	150	0.0303	0.9697	94.07
3.5	4,332	146	0.0337	0.9663	91.22
4.5	3,789	143	0.0377	0.9623	88.15
5.5	3,057	131	0.0429	0.9571	84.83
6.5	2,463	124	0.0503	0.9497	81.19
7.5	1,952	113	0.0579	0.9421	77.11
8.5	1,503	105	0.0699	0.9301	72.65
9.5	1,097	93	0.0848	0.9152	67.57
10.5	823	83	0.1009	0.8991	61.84
11.5	531	64	0.1205	0.8795	55.6
12.5	323	44	0.1362	0.8638	48.9
13.5	167	26	0.1557	0.8443	42.24
					35.66
Total	44,780	1,606			

- Exposure and Retirement Amounts are in Thousands of Dollars
- Column 2 from Schedule 3, Column 12, Plant Exposed to Retirement.
- Column 3 from Schedule 1, Column 12, Retirements for Each Year.
- Column 4 = Column 3 divided by Column 2.
- Column 5 = 1.0000 minus Column 4.
- Column 6 = Column 5 multiplied by Column 6 as of the Preceding Age Interval.



9.8 Smoothing the Original Survivor Curve

The smoothing of the original survivor curve eliminates any irregularities and serves as the basis for the preliminary extrapolation to zero percent surviving of the original stub curve. Even if the original survivor curve is complete from 100 percent to zero percent, it is desirable to eliminate any irregularities, as there is still an extrapolation for the vintages which have not yet lived to the age at which the curve reaches zero percent. In this study, the smoothing of the original curve with established type curves was used to eliminate irregularities in the original curve.

The Iowa type curves are used in this study to smooth those original stub curves which are expressed as percentages surviving at ages in years. Each original survivor curve was compared to the Iowa curves using visual and mathematical matching in order to determine the better fitting smooth curves. In Figures 6, 7, and 8, the original curve developed in Schedule 4 is compared with the L, S, and R Iowa type curves which most nearly fit the original survivor curve. In Figure 6, the L1 curve with an average life between 12 and 13 years appears to be the best fit. In Figure 7, the S0 type curve with a 12-year average life appears to be the best fit and appears to be better than the L1 fitting. In Figure 8, the R1 type curve with a 12-year average life appears to be the best fit and appears to be better than either the L1 or the S0.

In Figure 9, the three fittings, 12-L1, 12-S0 and 12-R1 are drawn for comparison purposes. It is probable that the 12-R1 Iowa curve would be selected as the most representative of the plotted survivor characteristics of the group.



FIGURE 6: ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH A L1 IOWA TYPE CURVE ORIGINAL AND SMOOTH SURVIVOR CURVES

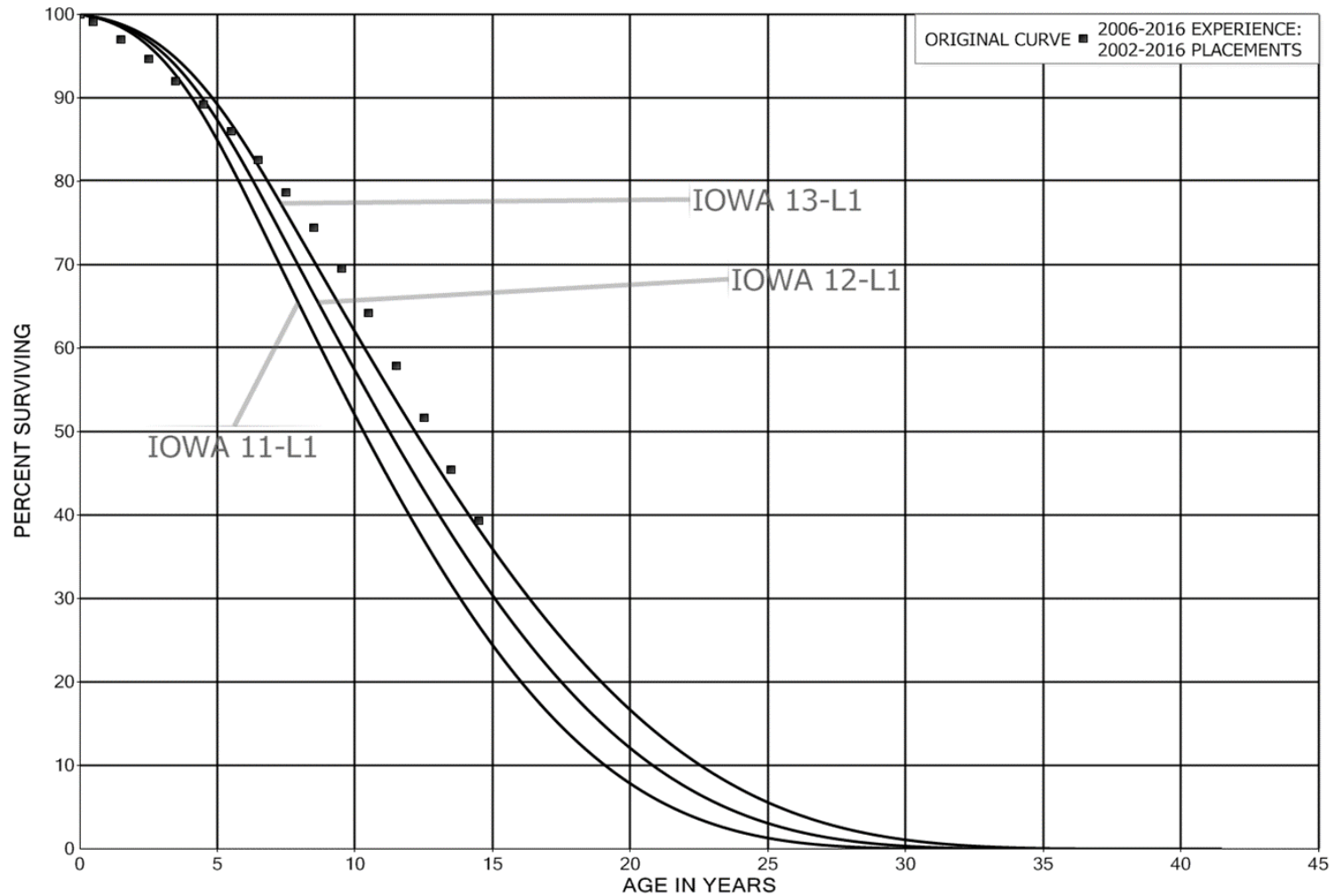




FIGURE 7: ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH A SO IOWA TYPE CURVE ORIGINAL AND SMOOTH SURVIVOR CURVES

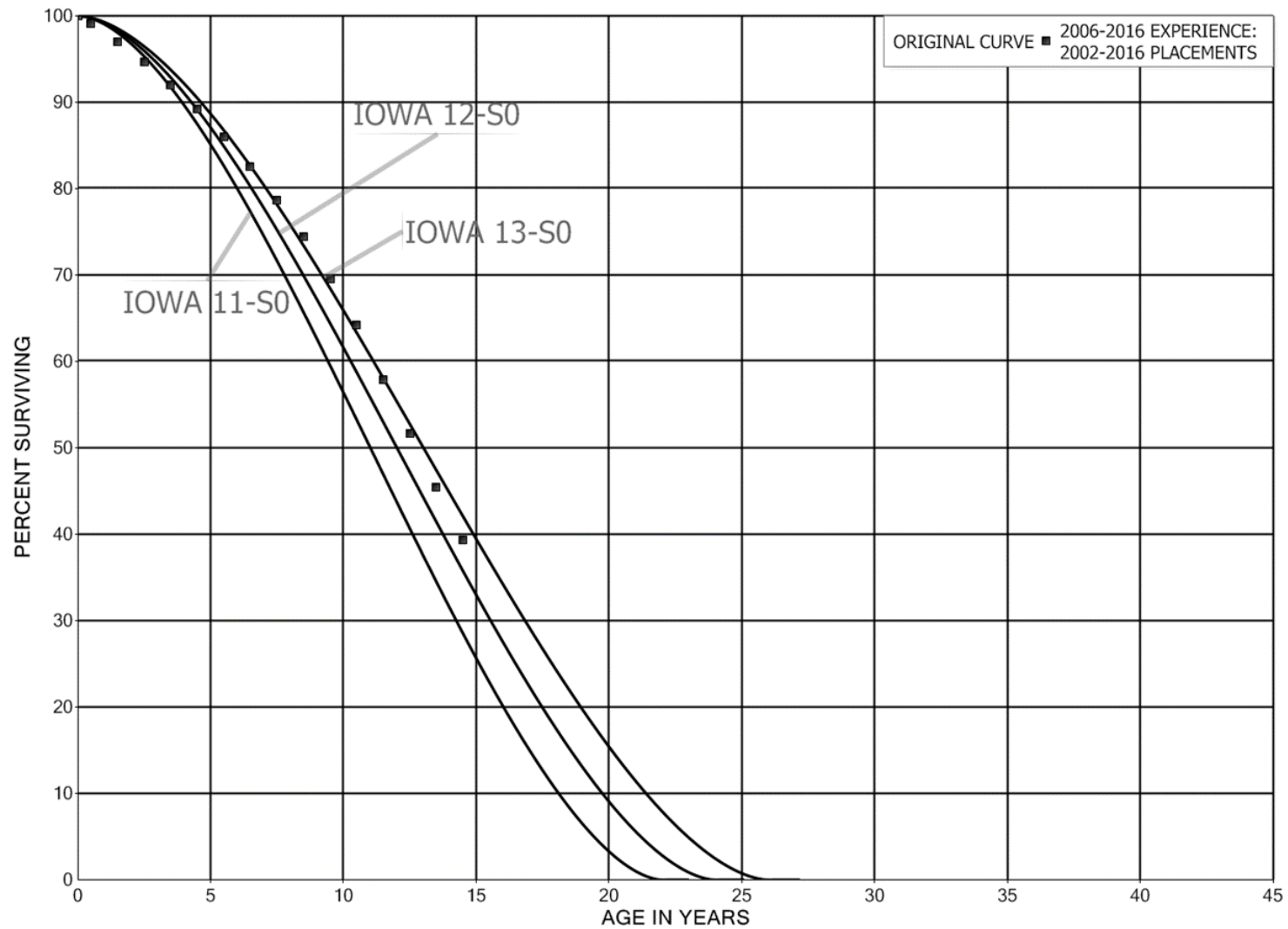




FIGURE 8: ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH A R1 IOWA TYPE CURVE ORIGINAL AND SMOOTH SURVIVOR CURVES

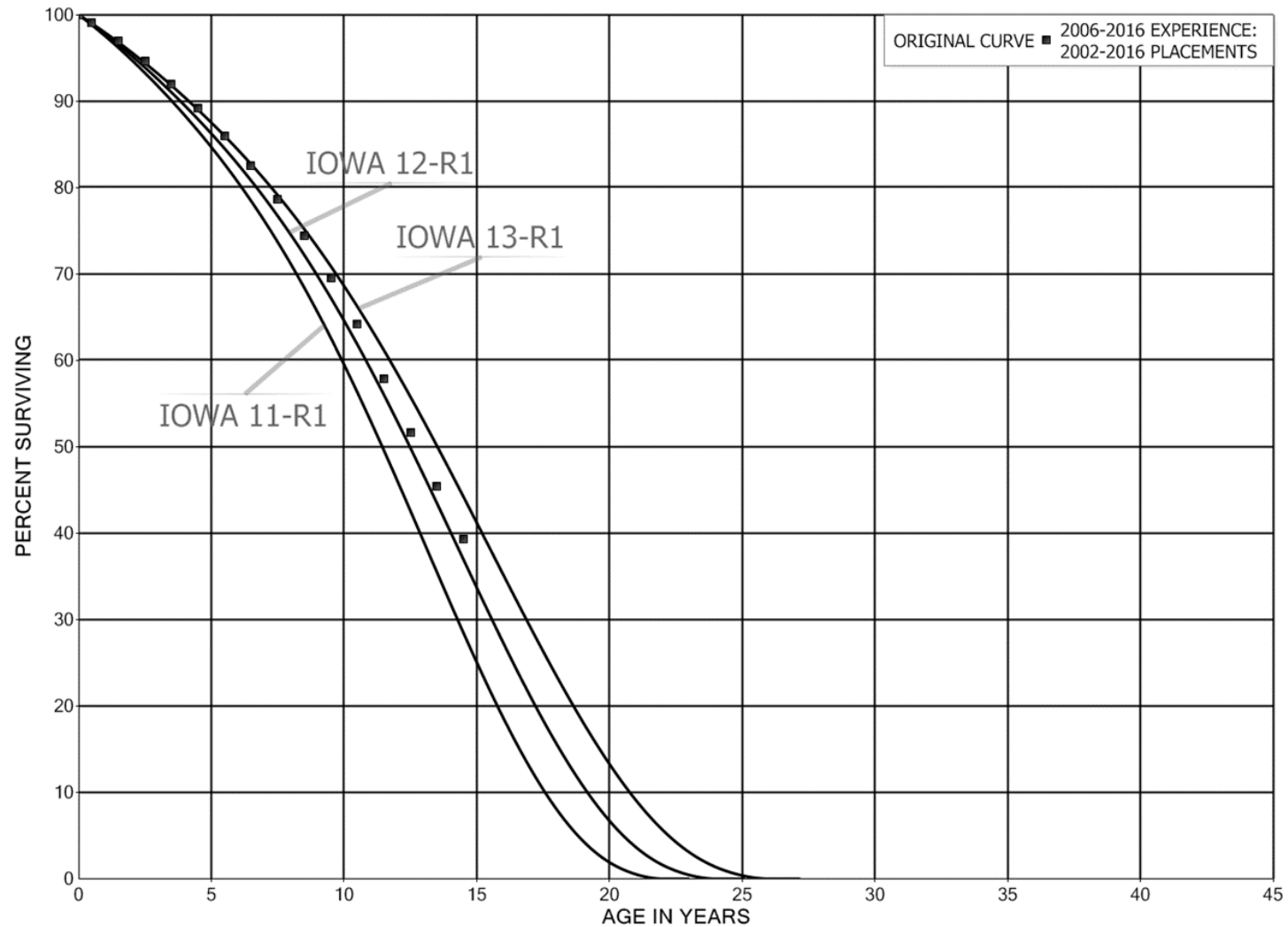
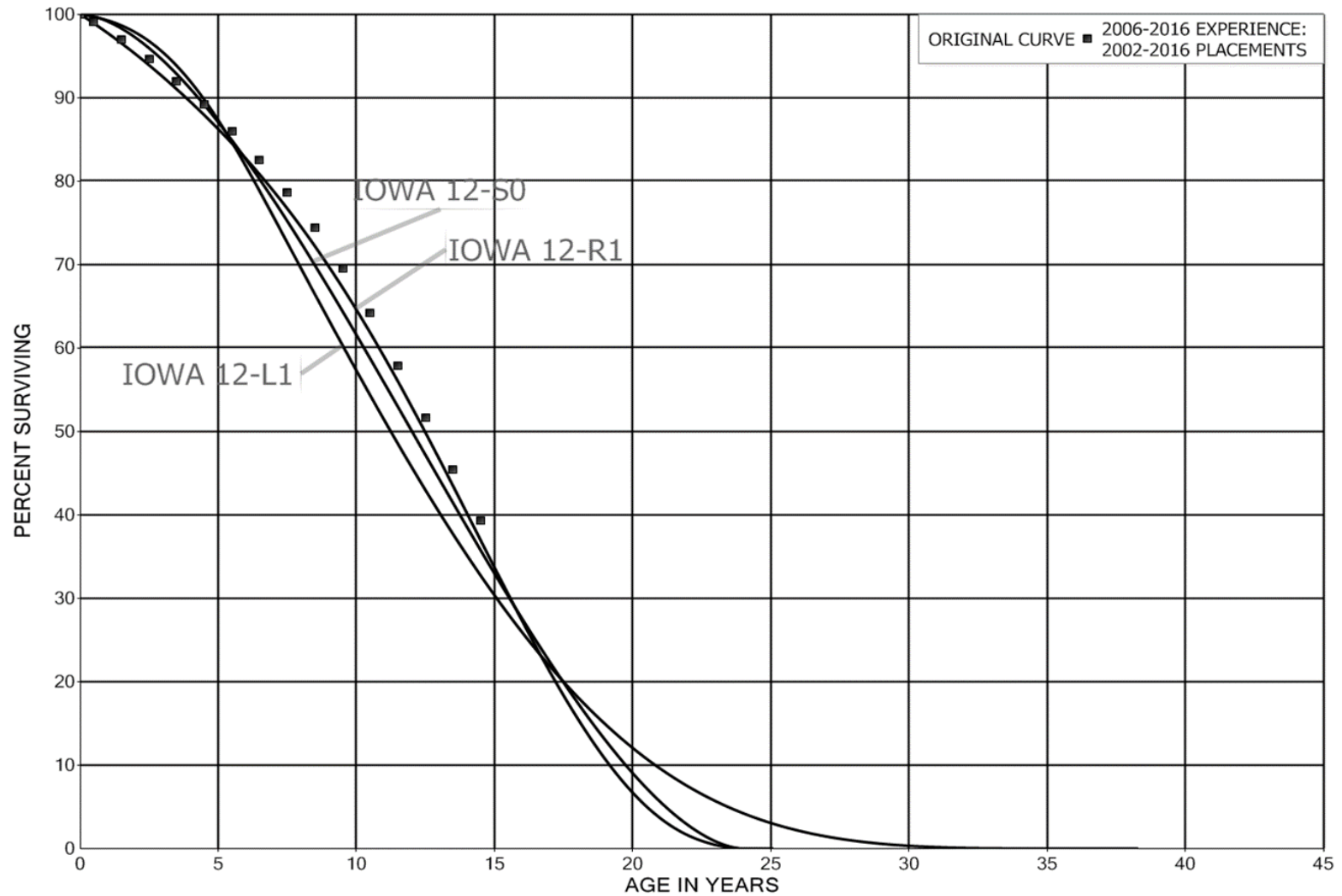




FIGURE 9: ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH A L1 IOWA TYPE CURVE ORIGINAL AND SMOOTH SURVIVOR CURVES





SECTION 10

10 ESTIMATION OF NET SALVAGE

The estimates of net salvage were based primarily on the professional judgment of Concentric, based in part on historical data, and in part through a comparison to Canadian peer companies. The analysis of historic net salvage activity considered gross salvage and cost of removal as recorded to the depreciation reserve account. Net salvages as a percentage of the cost of plant retired are calculated for each plant component on both annual and three-year moving average bases.

The net salvage percentages estimated are usually determined using the “Traditional Approach” for net salvage estimation. When a utility retires plant, the plant may be: (1) sold to a third party; (2) reused by the utility for additional service; (3) abandoned in place; or (4) physically removed. In the circumstances where the plant is sold or re-used, a salvage proceeds (or positive salvage amount) is normally recognized. In circumstances where the plant is abandoned in place or physically removed, a cost of removal expenditure (or negative salvage) is incurred. The net of these estimated gross salvage proceeds and the estimated costs of removal are expressed as a percentage of the account’s original cost to determine a net salvage percentage. In the circumstances where the salvage proceeds exceed the costs of retirement, a net positive salvage percentage exists. In the circumstances where the costs of removal exceed the salvage proceeds, a net negative salvage as a percentage of the original cost is the result.

The estimation of the net salvage as a percentage of original cost as developed using the traditional approach, includes the following five steps.

1. The annual retirement, gross salvage and cost of removal transactions for the period of analysis is extracted from the plant accounting systems.
2. A net salvage amount (gross salvage proceeds less cost of retirement) is calculated for each historic year. Additionally, a net salvage amount is also calculated for each historic three-year rolling band and the most recent five-year rolling band.
3. The net salvage amount determined above is compared to the original booked costs retired for each period in the manner described, which results in a net salvage percentage of original costs retired for each year, in addition to three-year rolling bands and the most recent five-year rolling band. The annual, the three-year rolling average, and the most recent five-year rolling average net salvage percentages are analyzed to determine a reasonable estimated net salvage percentage. At this point the net salvage percentage is based purely upon statistical analysis.
4. Each account is then compared to the net salvage percentage currently approved, compared to Canadian peer companies, and discussed with company engineering staff. Based on the statistical analysis, the review of current and Canadian peer company net salvage percentages, and with the professional judgment of Concentric, a net salvage percentage is determined for each account.
5. The net salvage percentage is then used in the depreciation rate calculations in the technical update or report.