BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

IN THE MATTER OF THE APPLICATION OF ATMOS ENERGY CORPORATION FOR REVIEW AND ADJUSTMENT OF ITS NATURAL GAS RATES	))))	Docket No. 19-ATMG-525-RTS

REBUTTAL TESTIMONY OF NED W. ALLIS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ned W. Allis. I am Vice President at Gannett Fleming Valuation and Rate Consultants, LLC. My business address is 207 Senate Avenue, Camp Hill, Pennsylvania, 17011.

Q. ARE YOU THE SAME NED W. ALLIS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS DOCKET?

A. Yes. I submitted testimony supporting the depreciation study and the depreciation rates proposed by Atmos Energy Corporation ("Atmos Energy" and "Company").

Q. TO WHOM DOES YOUR REBUTTAL TESTIMONY RESPOND?

A. My rebuttal testimony responds to the testimonies of Roxie McCullar on behalf of the Kansas Corporation Commission Staff ("Staff") and James S. Garren on behalf of the Citizens' Utility Ratepayer Board ("CURB").

I. EXECUTIVE SUMMARY

My rebuttal testimony responds to the testimonies of Roxie McCullar on behalf of Staff and James S. Garren on behalf of CURB. There are three primary issues related to the testimonies of each party - net salvage, service lives and depreciation calculation procedure. In general, Staff and CURB's proposals are

focused primarily on what occurred in the past - relying almost entirely on historical data - and, in many instances, based on unreasonable methodologies. In contrast, Atmos Energy's proposals, while still considering the available data, are forward-looking and incorporate the Company's future plans. Atmos Energy's approach is supported by depreciation authorities, which recognize that depreciation is a prospective endeavor and that service lives and net salvage are estimates of the future, not a description of what occurred in the past. Considering the Company's plans to accelerate the replacement of its assets, Atmos Energy's approach to determining depreciation rates is most appropriate.

The first depreciation-related issue raised by Staff and CURB is the method used to estimate net salvage. Unlike Atmos Energy, who has used the industry standard method of estimating future net salvage, Staff and CURB propose alternative proposals that are not designed to fully estimate future net salvage. Instead, their proposed methodologies, which have no support from depreciation authorities and which at most have limited acceptance by regulatory commissions, are based on the recovery of net salvage costs that have been recently incurred by the Company. Net salvage should be recovered over the lives of the Company's assets and Staff's and CURB's proposals will fail to do so, resulting in intergenerational inequity. Their methodologies will be particularly insufficient as the increased replacement of assets resulting from the Company's accelerated pipe replacement program results in higher levels of net salvage.

The second issue is the appropriate service life estimates for the Company's assets. Staff's proposed depreciation rates used the same service lives as the

Company, so CURB is the only party to challenge the Company's proposed service lives. Mr. Garren recommends longer service lives for seven accounts. In all but one of these instances, the Company has already proposed to increase the service life from the current estimate. Mr. Garren's proposals are not based on a sound method of estimating service lives and his approach is not consistent with the recommendations of depreciation authorities. Further, his proposals do not give proper consideration to Company plans, such as the accelerated pipe replacement program, and as a result produce unreasonable estimates of future service lives.

The final depreciation-related issue is the appropriate depreciation procedure, which is the means of grouping related assets in an account or subaccount to calculate depreciation rates and accruals. In the depreciation study, I have proposed to use the equal life group ("ELG") procedure, whereas both Staff and CURB use the average life group ("ALG") procedure (although CURB only uses ALG for some accounts). While both procedures are accepted procedures and supported by depreciation authorities, the ELG procedure provides for a better match of the recovery of the costs of each asset to its expected service life. CURB presents no support of its proposal on this issue, and Staff's arguments do not stand up to scrutiny.

II. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. The purpose of my rebuttal testimony is to respond to the depreciation proposals of Staff and CURB that are set forth in Ms. McCullar's and Mr. Garren's testimonies,

respectively. There are three primary depreciation-related issues raised by Staff and CURB. These are the method of net salvage[1] estimation and resultant net salvage estimates, the Company's proposed service lives, and the depreciation procedure to be used. Both Staff and CURB propose changes for net salvage and the depreciation procedure. Only CURB proposes changes to the Company's service life estimates.

Q. ARE YOU PROVIDING ANY EXHIBITS FOR YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. Yes. I am providing Rebuttal Exhibit NWA-3, which is the notes taken during meetings with Company personnel held while conducting the depreciation study. These notes, as well as Company testimony in this proceeding, provide insight into the Company's future plans that should be considered when estimating service lives and net salvage.

Q. PLEASE SUMMARIZE THE RESULTS OF THE PROPOSALS OF EACH PARTY.

A. Table NWA-1 below shows the dollar impact of each change proposed by Staff and CURB and illustrates how these changes result in their proposed depreciation expense.

[1] Net salvage is gross salvage less cost of removal. Because cost of removal frequently exceeds gross salvage, net salvage is often a negative amount. In my testimony, when I refer to "higher net salvage" I mean more negative net salvage or higher cost of removal.

Table NWA-1: Staff and CURB Proposed Changes to Depreciation and Resulting Depreciation Expense

Proposal	Staff	CURB[2]
Atmos Energy Proposal	*$13,731,406*	*$13,731,406*
Net Salvage Changes	(184,371)	(421,122)
Service Life Changes	---	(1,190,459)
Change ELG to ALG	(2,435,073)	(1,361,667)
Party's Proposal	*$11,111,962*	*10,758,158*

As shown in Table NWA-1, the largest dollar impact for Staff's proposal is the change from ELG to ALG. CURB's recommended change to ALG is less than Staff's, because Mr. Garren has only used ALG for select accounts. Mr. Garren's service life and net salvage proposals both have a larger impact than Staff's net salvage proposals.

Staff's and CURB's proposed changes for service lives and net salvage are the result of a fundamental difference in approach to determining these depreciation parameters than the approach in the Company's depreciation study. While depreciation studies incorporate an analysis of historical data, they are fundamentally a forward-looking endeavor. A depreciation study results in estimates of future service lives and future net salvage. It does not merely calculate what occurred in the past. For net salvage, both Staff and CURB have proposed unproven methodologies that almost exclusively focus on past levels of spending for net salvage (*i.e.*, primarily cost of removal). Similarly, CURB's service life proposals are based primarily on calculations of what occurred in the past, and Mr.

[2] As discussed later in my testimony, CURB has not only failed to provide supporting testimony on the topic of the depreciation procedure but has also inappropriately used both ELG and ALG rates depending on the account. For this comparison, I have calculated the standalone impact of the changes in Mr. Garren's service lives and net salvage, with the difference between those impacts and his total proposal representing his (partial) change to ELG. For this reason, the impact of his proposed ALG rates are different from those of Staff.

Garren effectively ignores known changes in the Company's plans that will result in different service lives going forward. In both instances, Staff's and CURB's proposals are inconsistent with Company efforts to upgrade its infrastructure and replace vintage pipe. The replacement of mains, services and other assets will require investments by the Company that will both increase the amount of net salvage incurred by the Company and result in higher levels of retirements than have occurred in the past. Higher levels of retirements will, in turn, result in both higher levels of net salvage and shorter service lives than has been experienced in the recent past. The service lives and net salvage estimates I have recommended in the depreciation study take these realities into consideration and are consistent with Company plans, whereas Staff's and CURB's proposals do not reasonably incorporate these considerations.

III. MASS PROPERTY NET SALVAGE

A. Staff and CURB Have Not Proposed an Appropriate Method to Estimate Net Salvage

Q. WHAT IS NET SALVAGE?

A. Net salvage as used in depreciation is defined as gross salvage less cost of removal. When an asset is retired it may have scrap or reuse value, which is gross salvage. There is also a cost to retire the asset. Removal costs can occur even if an asset is not physically removed if there are costs associated with retiring it. For example, when retiring a gas main there are typically costs to purge gas from the main and cut and cap the pipe even though the main may not be physically removed from the ground.

Most types of utility property typically experience negative net salvage, meaning that cost of removal exceeds gross salvage. It is also important to understand that net salvage recorded in a given year is a function of the amount of property retired. For example, it would cost more to retire 1,000 service lines in a given year than to retire 100 service lines. The method I have used to estimate net salvage in the depreciation study, which is the industry standard method for estimating future net salvage, recognizes this relationship between net salvage and retirements. Staff's and CURB's proposed methodologies, which are not supported by depreciation authorities, do not recognize this important relationship. This is a particularly critical flaw in their methodology, particularly since the Company plans to increase retirement activity to replace aging pipe and other infrastructure which will result in higher levels of net salvage.

Q. WHAT HAS STAFF PROPOSED FOR NET SALVAGE?

A. Ms. McCullar proposes different net salvage estimates from the Company's proposal for three accounts. In each case, the difference between her estimate and the Company's is that she uses an approach to estimate net salvage that does not have a sound mathematical basis and is not supported by depreciation authorities. Rather than using the accepted approach of expressing net salvage as a percentage of retirements, Ms. McCullar's approach is based on the dollar amount of net salvage recorded in recent years. Her recommendations are designed to produce annual depreciation accruals for net salvage that are closer to the average net salvage dollar amounts that have been recorded in recent years.

Ms. McCullar's proposal is, therefore, based on an incorrect premise that annual depreciation accruals for net salvage should be the same as or similar to recent net salvage costs. However, if depreciation accruals were determined to be the same as recent net salvage costs, such an approach would mean that net salvage is recovered in a manner more consistent with that of an operating expense rather than as a capital cost because it would recover net salvage as it occurs rather than over the lives of the Company's assets.[3]

Unlike CURB, Ms. McCullar has not proposed to set depreciation expense for net salvage to be precisely the same as recent net salvage costs. Instead, she has arbitrarily established net salvage depreciation accrual amounts to be a multiple of 1.4 higher than recent net salvage costs. Ms. McCullar provides no support for the specific multiple of 1.4 that she uses, nor does she provide any evidence for why this multiple is superior to any other number.

Q. WHAT HAS CURB PROPOSED FOR NET SALVAGE?

A. CURB proposes to set the annual depreciation accruals for net salvage to be equal to the most recent five-year average of recorded net salvage costs. This approach is based on a similar concept as Staff's methodology. The difference is that Mr. Garren has set net salvage such that the Company's net salvage accruals equal,

[3] Ms. McCullar appears to argue in footnote 21 on page 13 of her testimony that her proposal is not a change from an accrual basis to a cash basis because she is "not recommending or implying that the depreciation accrual no longer be credited to the Accumulated Provision for Depreciation or that the net salvage costs be 'expensed'." However, merely recording costs to accumulated depreciation does not meet the requirements of accrual accounting if the timing of the recording of these costs does not align with the time periods in which they provide service. Recognizing net salvage when it is incurred (i.e., when the money is spent or received), rather than over the life of the related property, is more consistent with cash basis accounting than accrual accounting. As a result, a net salvage method that only recovers net salvage costs as they occur is not consistent with accrual accounting for net salvage.

rather than exceed, the most recent five-year average of net salvage costs. This approach does not result in an estimate of future net salvage and instead would only recover net salvage costs as they occur. It also produces unusual results, such as very high negative net salvage percentages for some accounts and negative depreciation rates for others.

While Staff's proposal is not as extreme as CURB's, both suffer from many of the same issues. Most importantly, neither will recover future net salvage costs over the lives of the Company's assets resulting in intergenerational inequity because future customers will have to pay these costs.

B. Staff and CURB's Proposals Will Fail to Recover Future Net Salvage Costs Over the Lives of the Company's Assets

1. Net Salvage Accruals Should Not Be Expected to Be the Same as Recent Net Salvage Costs

Q. BOTH STAFF AND CURB BASE THEIR NET SALVAGE ESTIMATES ON A COMPARISON OF RECENT NET SALVAGE COSTS TO THE PROPOSED NET SALVAGE ACCRUALS. IS THIS A REASONABLE BASIS FOR THE ESTIMATION OF FUTURE NET SALVAGE?

A. No. The underlying premise of both Staff's and CURB's approaches are that net salvage accruals should be similar to, if not the same as, recent net salvage costs. This premise is incorrect. Net salvage accruals are intended to allocate future net salvage costs over the life of a Company's assets, and therefore should not be expected to be the same as recent net salvage costs.

Q. IS THERE REASON TO EXPECT THAT FUTURE NET SALVAGE WILL BE HIGHER ON A DOLLAR BASIS THAN CURRENT AND RECENT LEVELS OF NET SALVAGE?

A. Yes. There are several conceptual reasons why one should not expect future net salvage to occur at a similar dollar level to current or recent costs, which I will discuss in more detail below. However, there are also important realities for the Company that will result in capital costs and, therefore, cost of removal and net salvage to increase in the coming years. Specifically, the Company has plans to accelerate its replacement of gas pipe. The Commission is aware of these plans and has recognized the need to increase the replacement of vintage pipe and other aging infrastructure. As I discuss in more detail in Section III.B.2 and Section IV, this will also mean the replacement or retirement of other assets such as regulator stations.

The result of these plans is that the Company's cost of removal will increase in the coming years. Both Staff's and CURB's net salvage methodologies fail to recognize that the level of net salvage is not static and will change over time. Due to this flaw, neither of their methodologies will recover the expected increases in future net salvage until after they occur. This will result in intergenerational inequity as future customers will be paying the costs of assets that have already been retired. Another likely result would be the need to raise additional external capital in order to fund accelerated replacements of gas assets such as high-risk pipe. The Commission should carefully consider whether lowering depreciation in

the short term, particularly based on incorrect methods of determining future net salvage, is consistent with goals of replacing infrastructure and improving safety.

Q. PLEASE PROVIDE AN EXAMPLE TO DEMONSTRATE THAT, IN GENERAL, NET SALVAGE ACCRUALS SHOULD NOT BE THE SAME AS CURRENT NET SALVAGE COSTS.

A. Consider an example of a single gas service line that costs $5,000, has a service life of 40 years, and for which the cost to retire the service, net of any salvage, is $1,000. To properly allocate these net salvage costs in equal amounts over the asset's 40-year service life through depreciation expense, depreciation accruals for net salvage would need to be $25 per year to recover the full $1,000 future net salvage costs.

However, recovering $25 per year in net salvage means that the net salvage accruals will not be the same as the dollar levels of net salvage recorded in a given year. In each year of the service line's life, the recorded amount of net salvage would be $0. When the asset is eventually retired in year 40, the recorded net salvage would be $1,000. Using accrual accounting and the straight-line basis, the depreciation accruals for net salvage would be the same $25 amount each year, as the net salvage costs are allocated in equal amounts over the service's life. By allocating the capital costs for net salvage equally over its service life, customers are equitably charged for the cost of the service provided by the asset.

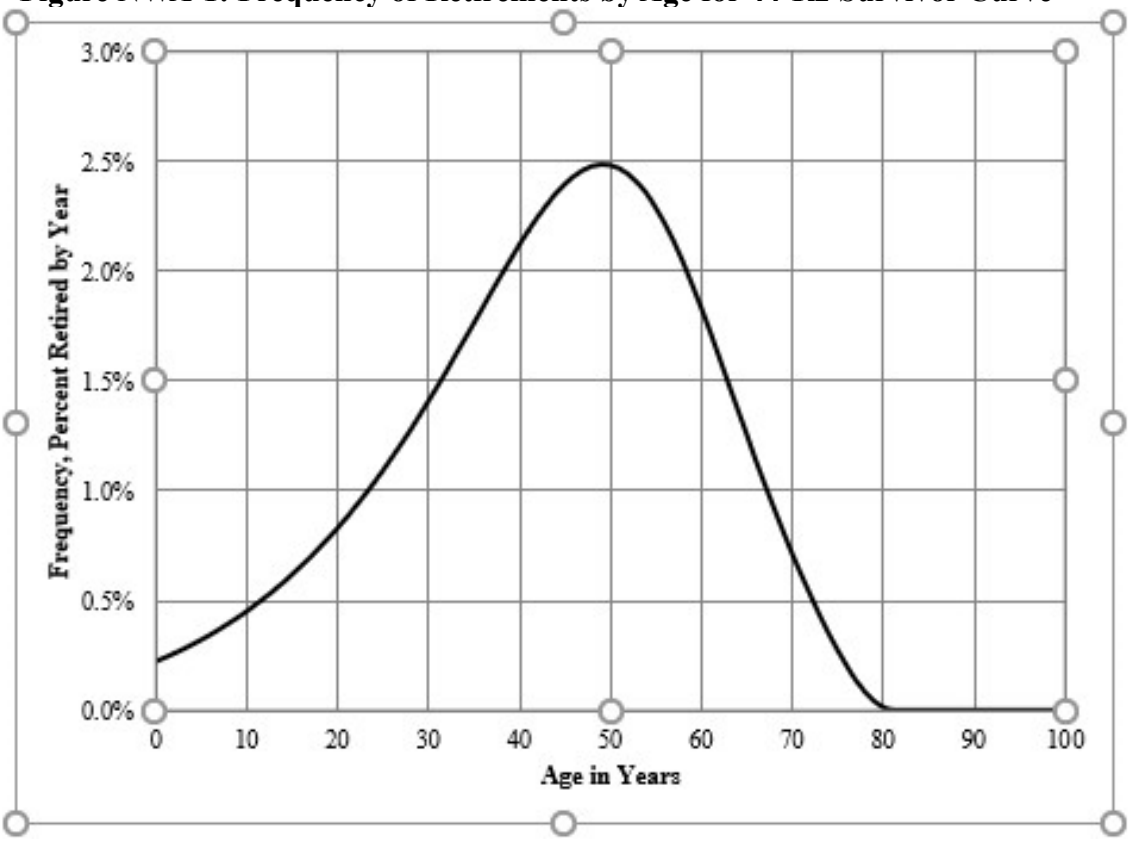
In contrast, Staff's and CURB's approach would be inequitable. Their method would charge customers for none of the net salvage costs from years 1 through 39 and then require customers in year 40 (or shortly after year 40) to bear the entire cost to retire the service line once it is retired. This occurs because Staff's

and CURB's methods are based on the dollar level of costs that have been recorded in the recent past, which in this example is $0 until year 40. This demonstrates that the traditional accrual method is equitable to customers, whereas Staff's and CURB's approach would inappropriately defer net salvage costs to customers who receive no service from the asset.

Q. THE EXAMPLE ABOVE WAS FOR A SINGLE UNIT. WOULD THE SAME CONCEPTS APPLY TO A GROUP OF PROPERTY?

A. Yes. Consider a group of services that for which each has the same cost of installation and retirement as for the single-unit example. This time I will use an average service life of 44-years, as each party has proposed the same 44-R2 survivor curve. If 10,000 service lines were installed in the year 2015, then the total original cost of this group of services would be $50 million. For a group of assets, there is typically a range of lives. Some service lines are retired prior to the average service life and some survive longer than the average. The 44-R2 survivor curve for these assets experiences retirements consistent with the pattern shown in Figure NWA-1 below.

Figure NWA-1: Frequency of Retirements by Age for 44-R2 Survivor Curve

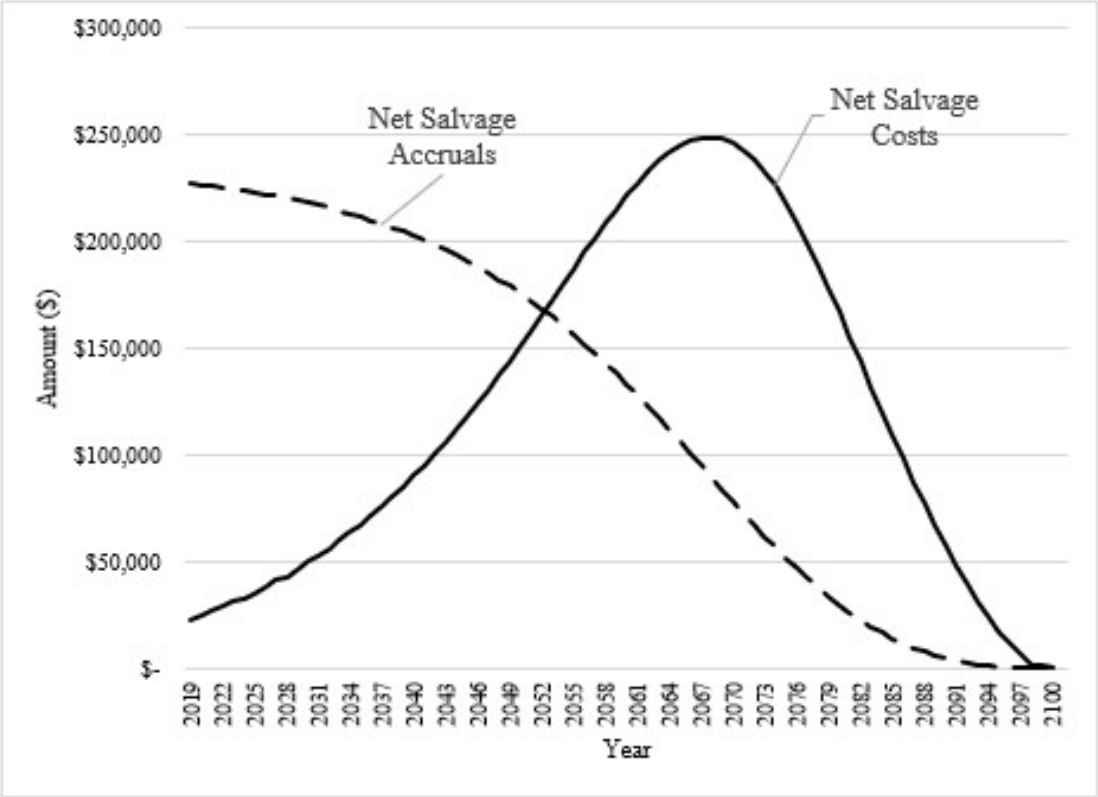


The chart shows the percentage of the 2015 assets that will be retired each year. For example, the chart shows that approximately 0.45% of the assets will retire at age 10. Based on the starting balance of 10,000 service lines, this means that about 45 service lines would retire at age 10. The peak of the curve occurs at age 49, at which point the largest number of retirements will occur. Specifically, of the 10,000 service lines originally installed, 249 will retire at age 49. That is, more than five times as many service lines will be retired at age 49 than at age 10.

Q. DOES THE DISPERSION OF SERVICE LIVES FOR A PROPERTY GROUP DEMONSTRATE THAT NET SALVAGE COSTS WILL BE HIGHER IN SOME YEARS THAN IN OTHER YEARS?

A. Yes. Continuing the example from the previous question, the net salvage cost for a single service line is $1,000. If retirements are more than five times larger at age 49 than at age 10, then net salvage costs would similarly be about five times greater. This is illustrated in Figure NWA-2 below, which shows the net salvage cost by year.

Figure NWA-2: Net Salvage Accruals and Net Salvage Costs by Year



Q. PLEASE EXPLAIN THE NET SALVAGE COSTS SHOWN IN FIGURE NWA-2.

A. The solid black line shows the net salvage cost by year. Contrary to the assumptions of Staff's and CURB's net salvage proposals, the total net salvage cost incurred is not the same in each year. The net salvage costs are instead a function of the retirements that occur each year, and for this reason the net salvage costs follow the frequency curve shown in Figure NWA-1. For example, net salvage costs for vintage 2019 are much higher in the years 2050 through 2070 than they are in earlier years. This demonstrates that the approach used by Staff and CURB will fail to capture the higher future net salvage costs, because net salvage costs are not the same in each year.

Q. PLEASE EXPLAIN THE NET SALVAGE ACCRUALS SHOWN IN FIGURE NWA-2.

A. Figure NWA-2 also shows the depreciation accruals for each year for this example that are needed to properly recover the net salvage costs for these assets over their service lives. The net salvage accruals follow the survivor curve for this account, and the same amount is accrued for each unit of service provided by the group. Figure NWA-2 demonstrates that the depreciation accruals for net salvage should not be expected to be the same as net salvage costs. Instead, the accruals for net salvage are higher than the annual net salvage costs for about the first 40 years, at which point the net salvage costs begin to exceed the net salvage accruals. If net salvage costs are allocated on a straight-line basis for the group of 10,000 service

lines, then the net salvage accruals should be expected to be different from the net salvage costs incurred in a given year.

Q. WHAT DOES THIS EXAMPLE ILLUSTRATE WITH REGARD TO STAFF'S AND CURB'S METHODOLOGIES?

A. This example demonstrates that both of their methodologies are based on a flawed concept. Net salvage accruals and net salvage costs at each age are not the same, and for this reason their methods do not provide a reasonable basis for accruing for future net salvage. The accruals resulting from both of Staff's and CURB's approaches would track the solid line labeled "Net Salvage Costs" in Figure NWA-2. These approaches would result in net salvage costs being deferred, and most of the costs would be paid by customers after the year 2055 - at which time about half of the assets have already been retired.

Q. ONE OF STAFF'S AND CURB'S CRITIQUES OF THE TRADITIONAL METHOD FOR NET SALVAGE IS THAT IT INCLUDES FUTURE INFLATION. IN THE EXAMPLE PROVIDED IN THIS SECTION, DO NET SALVAGE ACCRUALS EXCEED NET SALVAGE COSTS DUE TO INFLATION?

A. No. In this example, the cost to retire a service line remains constant over the lives of the property group. That is, for this example, inflation has no impact on net salvage accruals or net salvage costs. Net salvage accruals exceed net salvage costs in many years due to the need to accrue for future net salvage, not due to inflation.

Q. THIS EXAMPLE WAS FOR A SINGLE VINTAGE. DO THE SAME CONCEPTS APPLY TO REAL WORLD PROPERTY ACCOUNTS THAT INCLUDE MANY VINTAGES?

A. Yes. For most real-world accounts, net salvage accruals are higher than recent net salvage costs. Because utility systems have grown over time, a Company's assets are typically newer, on average, than the average service life. Just as the net salvage accruals exceed net salvage costs prior to the average service life (i.e., for the first 40 years) in Figure NWA-2, net salvage accruals for real-world property groups typically exceed recent net salvage costs.

2. Atmos Energy's Data and Future Plans Demonstrate Flaws in Staff's and CURB's Methods

Q. PLEASE PROVIDE AN EXAMPLE OF ATMOS ENERGY'S DATA THAT ILLUSTRATES ISSUES WITH STAFF'S AND CURB'S NET SALVAGE METHODS.

A. One example is Account 378, Measuring and Regulating Station Equipment, which Ms. McCullar discusses in her testimony. Ms. McCullar notes that "Atmos actually incurred $2,735 on average per year" in net salvage over the most recent three-years, and then compares this amount to the net salvage accruals based on my proposal and her proposal.[4] However, she fails to recognize that there was little net salvage recorded in the last three years because there were few retirements in these years. Indeed, as can be seen on pages VIII-12 and VIII-13 of Exhibit NWA-1 attached to my direct testimony, over the past three years (2016-2018), retirements

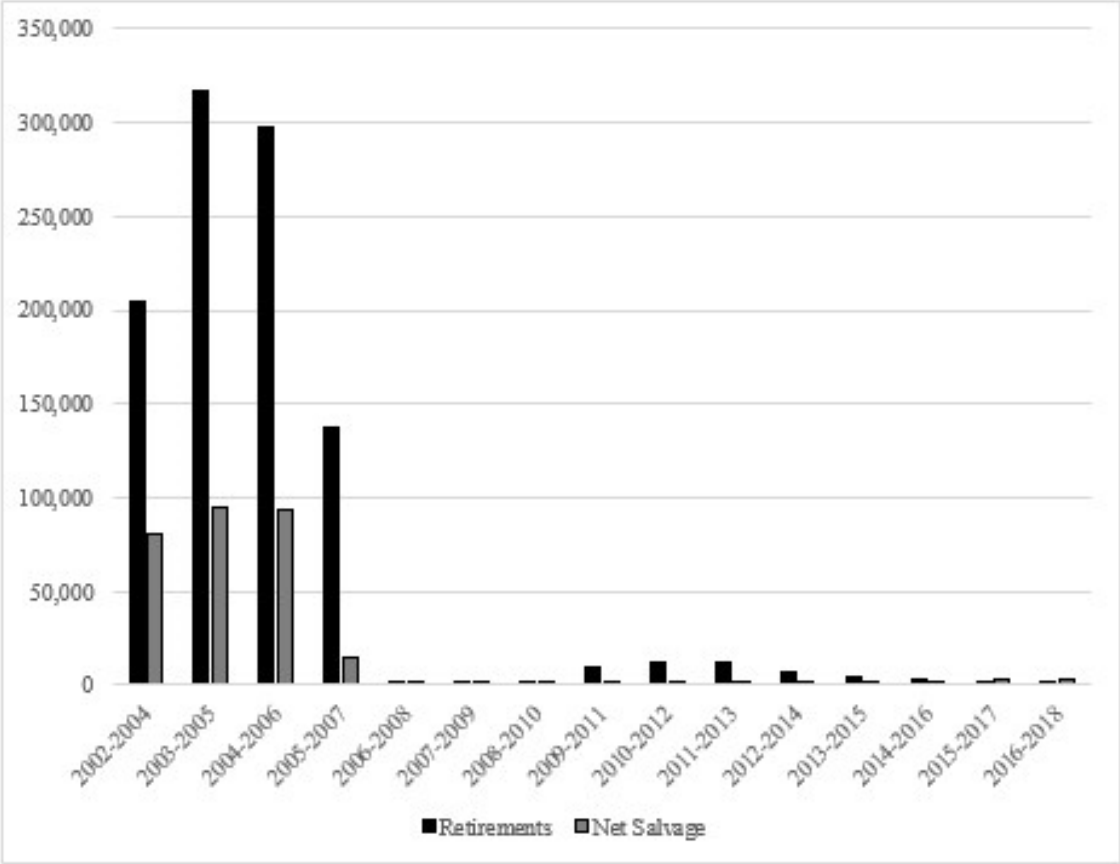
[4] See page 13 of Ms. McCullar's testimony.

were only recorded in one year for an amount of $2,124 - on average $708 per year. The December 31, 2018 plant balance for this account was approximately $5.6 million. At a pace of $708 retirements per year, it would take almost 8,000 years to replace all the assets in this account. Obviously, no one believes that the assets in this account will be replaced at this pace. Instead, all parties propose average service lives in the 35 to 40-year range for this account. As a result, there is little doubt that retirements will, on average, be higher in the future on an annual basis than has occurred in the past three years. Cost of removal and net salvage will, therefore, also be higher. For this reason, using the dollar level of net salvage from the last three-years to establish net salvage accruals will fail to recover the Company's future net salvage costs over their service lives.

Q. DO THE HISTORICAL DATA FOR THIS ACCOUNT ALSO SUPPORT THAT THE MOST RECENT THREE-YEAR AVERAGE OF NET SALVAGE COSTS WILL NOT BE SUFFICIENT TO RECOVER NET SALVAGE OVER THE LIVES OF THE COMPANY'S ASSETS?

A. Yes. Figure NWA-3 below provides a graph of the three-year averages of retirements and negative net salvage (both retirements and net salvage are shown as positive amounts on the graph) from the 2002-2004 period until the 2016-2018 period. The graph shows that there have been historical periods in which both retirements and net salvage have been significantly higher. For example, from 2003-2005, the Company averaged retirements of $316,716 per year. As one would expect, net salvage was also higher and averaged $97,816 per year.

Figure NWA-3: Three-Year Moving Averages of Historical Retirements and Net Salvage for Account 378, Measuring and Regulating Station Equipment



This illustrates one of the primary problems of Ms. McCullar's and Mr. Garren's methodologies. Both of their approaches assume a relatively constant dollar level of net salvage each year. However, this does not, and should not be expected to occur. Net salvage will vary from year to year as more or less retirements occur. Indeed, the numbers from Table 4 on page 11 of Ms. McCullar's testimony and in the graph above help to prove this point. She shows that her net salvage proposal produces $8,249 in accruals for net salvage, which is approximately three times what had been recorded in the period 2016-2018. However, this amount is much less than the $97,816 recorded from 2003-2005.

That is, if she used her method for a study in 2005, Ms. McCullar's approach would have resulted in much higher net salvage accruals. Indeed, to even have accruals that matched the recent net salvage at that time, Ms. McCullar's net salvage accruals would have had to be more than 11 times larger than what she proposes in this case.

This illustrates that, unlike the traditional method I have used, Staff's and CURB's approaches will not reasonably estimate future net salvage. It also demonstrates that, if one were to use Staff's or CURB's methods, the net salvage accruals would have to be adjusted annually in order to capture changes in recorded net salvage.

Q. MR. GARREN ARGUES ON PAGES 29 THROUGH 32 OF HIS TESTIMONY THAT THERE IS NO CAUSAL RELATIONSHIP OR CORRELATION BETWEEN RETIREMENTS AND NET SALVAGE. PLEASE ADDRESS HIS CRITICISM.

A. I have discussed previously that there is a causal relationship between retirements and cost of removal (and, therefore, net salvage). Specifically, cost of removal occurs as the result of retirements. Mr. Garren's argument that there is no correlation between the two is also incorrect. As seen in Figure NWA-3 above, the years with higher retirements tended to have more net salvage, as one should expect.

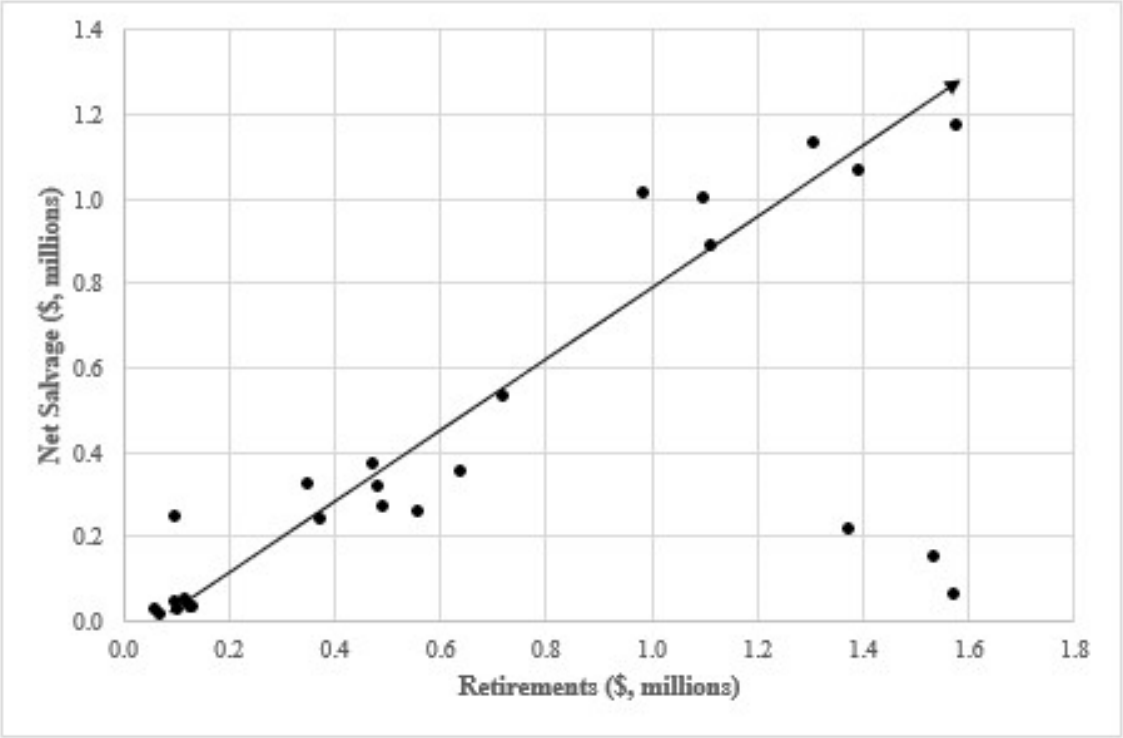
Mr. Garren presents an analysis on page 31 of his testimony in which he argues that the annual net salvage ratios for Account 376, Mains show that there is no mathematical correlation between retirements and net salvage. However, a

closer look at the data demonstrates the opposite is true. The first problem with Mr. Garren's analysis is that he only considers annual amounts. Because annual amounts can fluctuate due to many factors (including timing differences in recording retirements and net salvage, the type of work performed in a given year, and statistical noise), a net salvage analysis examines moving averages and long-term averages in addition to individual years.

Q. DO THE DATA FOR ACCOUNT 376, MAINS SHOW A CORRELATION IF ONE USES MOVING AVERAGES?

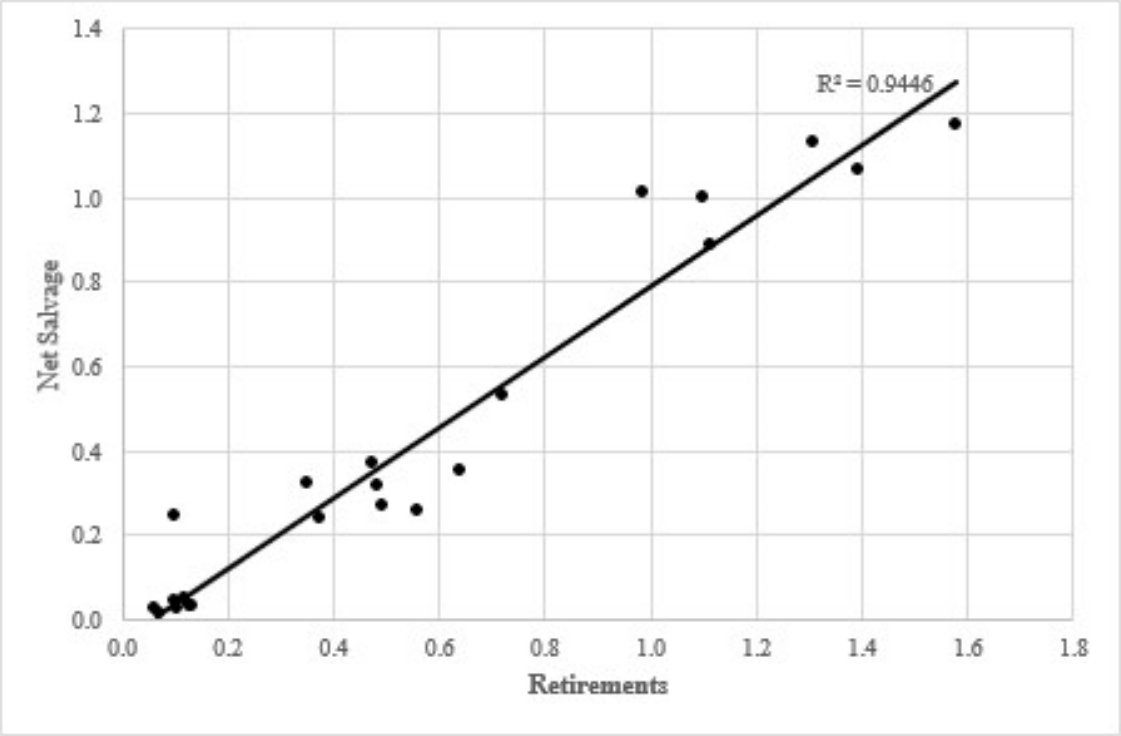
A. Yes. This is particularly true if one analyzes the data carefully and recognizes and accounts for outliers. Figure NWA-4 below provides a graph of the retirements in the x-axis and net salvage in the y-axis. The line on the graph illustrates the general trend of the data points. Except for the three data points in the lower right of the graph, net salvage has tended to be higher when retirements were higher and vice versa.

Figure NWA-4: Three-Year Averages of Recorded Retirements and Net Salvage for Account 376, Mains



Each of the three data points at the bottom right of the graph include the year 2004, in which a $3.2 million retirement was recorded but relatively limited net salvage was recorded. While there could be multiple causes of the relationship of retirements and net salvage being much different in 2004 than in other years, we can reasonably observe that the retirement and net salvage activity was atypical in this year. Figure NWA-5 shows a graph of the data points excluding the moving averages that include 2004. One can see that there is a definite correlation between the three-year average of recorded retirements and the three-year average of recorded net salvage. Indeed, the correlation coefficient is 0.9446, which is a strong correlation for real-world data spanning less than 30 years.

Figure NWA-5: Three-Year Averages of Recorded Retirements and Net Salvage for Account 376, Mains with Outliers Excluded



The data demonstrate that there is a correlation between retirements and net salvage. As discussed previously, there is also a causal relationship. Net salvage tends to increase when retirements increase and vice versa. This is one reason why the method I have used, which recognizes this relationship and expresses net salvage as a percentage of retirements, is long-established and supported by depreciation authorities.

In contrast, as Figure NWA-3 helps to illustrate, there is not a correlation between the annual amount of net salvage recorded in a given year (or a given three- or five-year period) and the annual amount that will be recorded in the future. This means that Staff's and CURB's proposals do not have a sound mathematical basis. Their proposals fail to recognize this important relationship between net salvage

and retirements and, as a result, will not recover a sufficient level of net salvage over the lives of the Company's assets.

Q. ARE THERE ANY SPECIFIC COMPANY PLANS THAT WILL RESULT IN FUTURE NET SALVAGE BEING HIGHER THAN THE NET SALVAGE RECORDED IN THE LAST THREE OR FIVE YEARS?

A. Yes. The direct testimony of Atmos Energy witness Armstrong discusses the need for the accelerated replacement of high-risk pipe,[5] as well as the Commission's recognition of the need for such accelerated replacements.[6] Higher levels of future replacement activity will in turn result in higher negative net salvage. This is obviously true for the gas mains and gas services accounts for which either Staff or CURB (or both) have proposed different net salvage estimates. However, it will also affect other accounts. For example, the Company has many district regulator stations that reduce pressure to serve the Company's low-pressure systems. As vintage pipe is replaced, many low-pressure systems will be converted to higher pressures, resulting in the retirement of regulator stations. In my meetings with Company personnel conducted for the study, the Company indicated that between a quarter and a half of its district regulator stations could be retired as the low-pressure systems are replaced.[7]

It follows that net salvage will increase going forward for many accounts as the Company replaces aging infrastructure. Both Staff's and CURB's proposed net salvage methods will fail to capture these increases and, as a result, will fail to

[5] See, for example, pages 2-3 of Mr. Armstrong's testimony.
[6] See pages 15-16 of Mr. Armstrong's testimony.
[7] See page 9 of Rebuttal Exhibit NWA-3 attached to this testimony.

recover the Company's future net salvage over the lives of the Company's assets. In contrast, as I describe in the next section, the traditional method does properly capture the relationship between retirements and net salvage and will properly allocate future net salvage costs over the lives of the Company's assets.

3. Staff's and CURB's Methods Do Not Properly Allocate Net Salvage Costs

Q. PLEASE EXPLAIN HOW NET SALVAGE IS ESTIMATED USING THE TRADITIONAL METHOD OF ESTIMATING NET SALVAGE.

A. When using the traditional method of estimating net salvage, the analysis of historical net salvage data is performed by comparing historical net salvage to historical retirements. Net salvage (and its components, cost of removal and gross salvage) is expressed as a percentage of retirements for each year and for longer term periods. The traditional method does not focus solely on the dollar amount of net salvage recorded, as Staff's and CURB's methods do. Instead, it properly recognizes that the dollar level of net salvage will tend to vary based on the level of retirements recorded in a given year.

Q. PLEASE PROVIDE AN EXAMPLE TO DEMONSTRATE THAT, UNLIKE STAFF'S AND CURB'S PROPOSALS, THE TRADITIONAL METHOD WILL PROPERLY ESTIMATE NET SALVAGE.

A. To demonstrate this concept, consider a utility that has 100,000 services, for which the original cost of each is $5,000 and the cost of removal, net of salvage, is $1,000. Thus, the total future net salvage would be $100 million (100,00 x $1,000). If the average service life for services were 40 years, then the annual accruals for the net salvage for these service lines would be $2.5 million ($100 million divided by 40).

That is, a $2.5 million annual accrual amount is the correct amount to recover the future net salvage of $100 million for these service lines over their service lives. This is illustrated in Table NWA-2 below.

Table NWA-2: Quantities, Costs and Average Service Life for Group of Services

Number of Services	100,000
Original Cost per Service	5,000
Plant in Service	500,000,000
Net Salvage Per Service	1,000
Future Net Salvage	100,000,000
Average Service Life	40
Net Salvage Accruals	2,500,000

Q. PLEASE EXPLAIN HOW NET SALVAGE WOULD BE ESTIMATED USING STAFF'S OR CURB'S METHOD AND THE TRADITIONAL METHOD.

A. As discussed in Section III.A, the number of services retired in a given year will vary based on the age of the assets and the survivor characteristics of the assets in the account. Consider a scenario in which this example company would have retired an average of 1,000 services per year for the last five years. This would mean that net salvage was, on average, $1 million per year (1,000 x $1,000). If one were to use Staff's or CURB's approach and establish a net salvage accrual based on this average cost of $1 million, then the Company would recover $1 million per year through depreciation expense for net salvage. The result is that the Company would not recover the necessary $100 million in future net salvage and instead would only recover $40 million. Even if the net salvage allowance were

increased by Ms. McCullar's arbitrary multiple of 1.4, the total net salvage recovered would only be $56 million. Thus, both Ms. McCullar's method and Mr. Garren's method will fail to properly recover the future net salvage costs for the Company's assets.

In contrast, using the traditional method, the result would be the proper recovery of the full $100 million in future net salvage costs. The average net salvage recorded for this period would be $1 million and the retirements would be on average $5 million (1,000 x $5,000). Net salvage is divided by the original cost of the retirements. Thus, the traditional net salvage analysis would indicate a net salvage percent of negative 20 percent ($1 million divided by $5 million). With a 40-year average service life, the use of a negative 20 percent net salvage estimate would correctly produce annual accruals for net salvage of $2.5 million[8] and would recover the full $100 million in future net salvage over the lives of the assets.

Q. PLEASE EXPLAIN THE IMPLICATIONS OF STAFF'S AND CURB'S METHOD AND THE TRADITIONAL METHOD IF A HIGHER NUMBER OF SERVICES HAD BEEN RETIRED IN THE LAST FIVE YEARS.

A. Consider a scenario in which the Company retired an average of 4,000 services per year for the most recent five years, resulting in an average net salvage of $4 million per year (4,000 x $1,000). If Staff's or CURB's approaches were used then the Company would recover $4 million per year through depreciation for net salvage, which would result in a recovery of $160 million over the lives of the service lines, which is too much. If the net salvage accruals were increased by Ms. McCullar's

[8] $500 million plant in service multiplied by 20 percent divided by 40 years is $2.5 million.

arbitrary multiple of 1.4, it would still fail to recover the correct amount of future net salvage.

If the traditional method were used, then the average dollar amount of $4 million for net salvage would be divided by the average retirement amount of $20 million (4,000 x $5,000). This too would indicate a net salvage percent of negative 20 percent and result in the correct depreciation accruals.

Q. WHAT DOES THIS EXAMPLE DEMONSTRATE WITH REGARD TO STAFF'S AND CURB'S METHODS?

A. This example further demonstrates the basis of their approaches, that net salvage accruals should be based on the dollar level of recent net salvage costs, is fundamentally flawed. The dollar amount of recent net salvage costs is not a reasonable basis for estimating future net salvage because it does not consider the number of assets that were retired over the same time period. In both scenarios discussed above, Staff's and CURB's methods fail to correctly allocate the future net salvage costs of the Company's assets. Their approaches are dependent on the amount of assets retired in recent years and, as a result will not recover the correct amount of net salvage.

In contrast to Staff's and CURB's methods, this example demonstrates that the traditional method determines the correct future net salvage and properly allocates net salvage over the lives of the assets. By properly recognizing the relationship of net salvage to retirements, the traditional method incorporates the fact that retirements do not occur at the same level in each year and provides a reasonable basis for the estimation of future net salvage.

C. Staff's and CURB's Proposed Net Salvage Methods Are Not Supported by Depreciation Authorities

1. Authoritative Depreciation Texts Do Not Support Staff's and CURB's Proposed Net Salvage Methods

Q. DO AUTHORITATIVE TEXTS ON DEPRECIATION ADDRESS THE ISSUE OF WHETHER NET SALVAGE SHOULD BE ACCRUED DURING THE LIFE OF THE RELATED PLANT?

A. Yes, they do.

Q. WHAT DO THESE TEXTS STATE ON THIS TOPIC?

A. Two widely cited, preeminent depreciation texts are the National Association of Public Regulatory Utility Commissioners' ("NARUC") Public Utility Depreciation Practices (the "NARUC Manual") and Depreciation Systems by Wolf and Fitch ("Wolf and Fitch"). Ms. McCullar cites both texts in her testimony, although neither actually supports her proposed methodology. Instead, each supports the traditional method. Both texts explain that net salvage should be accrued over the life of the related property and should be estimated using the traditional method of net salvage analysis in which net salvage is expressed as a ratio of retirements. Neither of these texts support Staff's or CURB's methods.

Q. PLEASE EXPLAIN.

A. First, both textbooks explain that net salvage should be recovered over the life of the related assets. For example, the NARUC Manual states at page 157:

> Historically, most regulatory commissions have required that both gross salvage and cost of removal be reflected in depreciation rates. The theory behind this requirement is that, since most physical plant placed in service will have some residual value at the time of retirement, the original cost recovered through depreciation should

> be reduced by that amount. Closely associated with this reasoning is the accounting principle that revenues be matched with costs and the regulatory principle that utility customers who benefit from the consumption of plant pay for the cost of that plant, no more, no less. The application of the latter principle also requires that the estimated cost of removal of plant be recovered over its life.

> Similarly, the 1994 edition of *Depreciation Systems* states at page 7: The matching principle specifies that all costs incurred to produce a service should be matched against the revenue produced. Estimated future costs of retiring of an asset currently in service must be accrued and allocated as part of the current expenses.

Thus, both sources use mandatory language when describing the traditional approach of accruing "retirement" or "removal" costs over the life of the plant.

Q. DO BOTH OF THESE TEXTS EXPLAIN HOW FUTURE NET SALVAGE IS ESTIMATED?

A. Yes. Both explain that net salvage, expressed as a percentage of original cost of plant in service, is estimated incorporating the same methods of analysis employed in the Company's depreciation studies. That is, both texts support the traditional method of estimating future net salvage.

Q. HOW DOES NARUC EXPLAIN HOW NET SALVAGE SHOULD BE ESTIMATED?

A. NARUC states that "net salvage is expressed as a percentage of plant retired by dividing the dollars of net salvage by the dollars of original cost of plant retired."[9] This is the method of analysis used in the Company's depreciation study and referred to in my testimony as the traditional method.

[9] NARUC Manual, p. 18.

Q. HOW DO WOLF AND FITCH EXPLAIN THAT NET SALVAGE IS ANALYZED?

A. Wolf and Fitch also explain that net salvage is expressed as a percentage of the original cost of plant retired, noting "the SR [Salvage Ratio] is the salvage divided by the original cost of the retirements and usually is expressed as a percentage."[10]

Q. DO ANY AUTHORITATIVE DEPRECIATION TEXTS SUPPORT STAFF'S OR CURB'S METHOD?

A. No. I am not familiar with any, and neither Ms. McCullar nor Mr. Garren provided any in their testimony or in responses to discovery.

2. The Traditional Method Meets the Requirements of the Uniform System of Accounts

Q. WHAT IS THE FEDERAL ENERGY REGULATORY COMMISSION ("FERC") UNIFORM SYSTEM OF ACCOUNTS?

A. The Uniform System of Accounts ("USOA") is the standard set of definitions, rules and instructions established by the FERC that provides consistency in accounting for utilities under its jurisdiction. Most jurisdictions, including Kansas, have adopted the Uniform System of Accounts for the utilities they regulate.

[10] Wolf and Fitch, p. 261. Note that, in this context, Wolf and Fitch use the term "salvage" to mean "net salvage." In addition to describing the traditional method, Wolf and Fitch also present more detailed analysis of net salvage by age. The intent of this more detailed analysis is to recognize the impact of age and inflation on the traditional method of net salvage analysis. In the aged net salvage analysis described by Wolf and Fitch, net salvage is first converted to constant dollars. Then, the level of inflation that will occur over the full service life of each asset is calculated (which is often longer than the age of retirements in the historical net salvage data). The result of this more detailed analysis is typically more negative net salvage estimates than would occur from the traditional method.

Q. DOES THE USOA ADDRESS THE ISSUE OF HOW NET SALVAGE COSTS SHOULD BE ACCOUNTED FOR, AND IF SO, HOW?

A. Yes. The USOA requires that net salvage costs should be recorded to the accumulated provision for depreciation account and accrued as part of depreciation expense over the course of an asset's service life (i.e., recognized in each period in which the asset provides service) in a systematic and rational manner.

Q. PLEASE DISCUSS IN MORE DETAIL THE UNIFORM SYSTEM OF ACCOUNTS' TREATMENT OF DEPRECIATION.

A. The USOA defines depreciation as follows:

> Depreciation, as applied to depreciable gas 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, changes in demand and requirements of public authorities.[11]

Q. IN THE QUOTE ABOVE, THE USOA REFERS TO DEPRECIATION AS THE "LOSS IN SERVICE VALUE." WHAT IS SERVICE VALUE?

A. Service value, as also defined in the USOA, is "the difference between original cost and net salvage value of gas plant."[12] Thus, the Uniform System of Accounts requires that depreciation include net salvage as well as the original cost of the Company's assets.

[11] FERC Uniform System of Accounts Prescribed for Natural Gas Companies Subject to the Provisions of the Natural Gas Act, definition 12B.
[12] FERC Uniform System of Accounts Prescribed for Natural Gas Companies Subject to the Provisions of the Natural Gas Act, definition 37.

Q. DOES THE USOA ALSO DEFINE WHAT IT MEANS BY "NET SALVAGE VALUE"?

A. Yes. "'Net salvage value' means the salvage value of property retired less the cost of removal."[13] These costs are recorded to accumulated depreciation at the cost expended (or received as salvage) at the time they occur and are included in depreciation expense over the service lives of the assets.

Q. DOES THE USOA PRESCRIBE A BASIS FOR ACCOUNTING?

A. Yes. The gas USOA includes General Instruction 11, "Accounting to be on accrual basis," which states, "[t]he utility is required to keep its accounts on the accrual basis." Under the accrual basis of accounting, transactions are accounted for when the order is made, the item is delivered, or the service occurs, regardless of when any money for such orders, items, or services is actually received or paid. The accrual basis recognizes economic events without regard to when the related cash transaction occurs. Combined with the use of the terms service value in the definition of depreciation, the use of accrual accounting means that net salvage costs should be recognized while the asset is providing service - that is, over its service life, rather than when the costs are actually incurred.

To further emphasize this point, General Instruction 22 in the electric USOA states:

> Utilities must use a method of depreciation that allocates in a systematic and rational manner the service value of depreciable property over the service life of the property.

[13] Id, definition 23.

While the gas USOA does not have the same language, one can reasonably infer that the service value (including net salvage) for gas plant must also be allocated over the service life of the property. Additionally, the requirement for accrual accounting and the inclusion of net salvage in the service value of an asset similarly require that net salvage costs be recovered over the service life of an asset.

Q. DOES THE TRADITIONAL METHOD SATISFY THESE REQUIREMENTS?

A. Yes. I have demonstrated previously that the traditional method results in the recovery of net salvage costs over the lives of the related assets. The traditional method, therefore, satisfies these requirements of the USOA.

Q. DO STAFF'S OR CURB'S METHODS SATISFY THESE REQUIREMENTS?

A. No. As discussed previously, both Staff's and CURB's methods are not designed to properly allocate net salvage costs over the service lives of the Company's assets. Instead, they are based on the level of net salvage costs recently incurred.

3. Staff's and CURB's Methods Have Been Rejected in Other Jurisdictions

Q. IS THE TRADITIONAL METHOD WIDELY USED IN THE UTILITY INDUSTRY?

A. Yes. The traditional method is used in the vast majority of regulatory jurisdictions. While Ms. McCullar cites three jurisdictions that do not use the traditional method (two of which do not include future net salvage in depreciation rates), to my knowledge almost every other jurisdiction uses the traditional method.

Q. ARE YOU FAMILIAR WITH ANY STATES THAT HAVE SPECIFICALLY REJECTED THE METHODS FOR NET SALVAGE SIMILAR TO THOSE PROPOSED BY STAFF OR CURB?

A. Yes. There are a number of states that have specifically rejected the methods for net salvage proposed by Staff and CURB. I will briefly discuss two recent cases in Washington and Massachusetts in which Ms. McCullar's proposals were rejected. Other states that have rejected Staff's or CURB's methods include California,[14] Michigan,[15] Georgia[16] and Missouri.[17]

Q. PLEASE DESCRIBE THE RECENT CASE IN WASHINGTON IN WHICH MS. MCCULLAR'S NET SALVAGE METHOD WAS REJECTED.

A. On behalf of the Washington Public Counsel, Ms. McCullar proposed a similar net salvage method in a case for Puget Sound Energy ("PSE"). While other parties in that case reached a settlement agreement that adopted most of the recommendations in PSE's depreciation study, the Washington Public Counsel did not agree to the settlement and continued to argue for Ms. McCullar's inappropriate net salvage method. The Washington Commission rejected Ms. McCullar's proposed method, stating:

> 164. Public Counsel's proposed alternative to the Settlement Stipulation's treatment of net salvage of mass assets used in natural gas operations appears to be based on testimony by Ms. McCullar that we find to be vague in its methodology, not supported by authoritative accounting literature, and supported by unwarranted assumptions. Mr. Spanos' estimates of net salvage for natural gas mass assets, in contrast, does not suffer from these deficiencies.

[14] See California D.07-03-044 in A.05-12-002, pp. 226 and 227.

[15] Michigan Public Service Commission Order, Case No. U-15629, filed September 29, 2009, p. 12.

[16] Georgia Public Service Commission Docket No. 31647, Final Order, filed December 21, 2010.

[17] Missouri Case No. GR-99-315, Third Report and Order issued January 11, 2005, p. 7-16.

> 165. In addition, Ms. McCullar's comparison of net salvage accruals to net salvage expenditures PSE incurred during recent years would effectively recover net salvage as an operating expense, not a depreciation expense. We do not accept this result.

> 166. Thus, we reject Public Counsel's alternative viewpoint and approve the Settlement Stipulation with respect to net salvage of mass assets that support PSE's natural gas operations.[18]

Q. PLEASE DESCRIBE THE CASE IN MASSACHUSETTS IN WHICH MS. MCCULLAR'S PROPOSED METHOD WAS REJECTED.

A. Ms. McCullar's firm was involved in a recent case for two Eversource subsidiaries (Massachusetts Docket D.P.U 17-05-F). In that case, Eversource's proposed net salvage estimates were based on the traditional method I have used in the instant case. Ms. McCullar's firm proposed to reduce Eversource's proposed net salvage estimates to achieve net salvage accruals that were an arbitrary multiple higher than recent net salvage costs. It should be noted in that case, Ms. McCullar's proposal was that net salvage accruals be 2.2 times higher than recent net salvage costs, which is higher than either Atmos Energy or Staff has proposed in the instant case.

Upon reconsideration, the Massachusetts Department of Public Utilities ("DPU") rejected the proposal of Ms. McCullar's firm and adopted the Company's net salvage proposals. First, the DPU held that:

> [w]e conclude that the Eversource's method of deriving net salvage values was appropriate and, in this instance, should have been accepted.[19]

[18] See page 60 of the Final Order of the Washington Utilities and Transportation Commission in Dockets UE-170033 and UE-170034, issued on December 5, 2017.

[19] Massachusetts Docket No. D.P.U. 17-05-F, Order on Eversource's Motion for Reconsideration and Motion for Leave to File a Response, dated May 11, 2018, page 13.

Ms. McCullar and Mr. Garren have both criticized the traditional method of net salvage in the instant case for incorporating some degree of future inflation. The Massachusetts DPU disagreed. First, addressing the textbook Wolf and Fitch, the DPU stated:

> [i]t is clear that the final salvage ratios developed using the method described in Depreciation Systems include inflation.[20]

The DPU also stated that:

> Given that the method set forth in Depreciation Systems and the one prescribed by NARUC both recognize an inflation component, the Department no longer is persuaded that Eversource's failure to discount its salvage values for the time value of money resulted in proposed net salvage factors that overstate the Companies' salvage costs and produce excessive depreciation accrual rates. Rather, we find that for the 14 subject accounts, Eversource's proposed net salvage factors appropriately recognize the full service value of the assets in these accounts. While it is true that Eversource's net salvage factors result in higher depreciation rates than those proposed by the Attorney General, we find that the rates, which were calculated according to an acceptable method, are appropriate to ensure that current customers who receive service from those particular assets pay for an appropriate share of the costs for retiring those assets. Therefore, the proposed net salvage factors should have been approved in D.P.U. 17-05.[21]

The DPU affirmed that Eversource's use of the traditional method was consistent with NARUC:

> Based on a review of Eversource's depreciation studies, the Department finds that Eversource's salvage analysis is consistent with the analysis prescribed by NARUC.[22]

[20] Massachusetts Docket No. D.P.U. 17-05-F, Order on Eversource's Motion for Reconsideration and Motion for Leave to File a Response, dated May 11, 2018, pages 16-17.
[21] Massachusetts Docket No. D.P.U. 17-05-F, Order on Eversource's Motion for Reconsideration and Motion for Leave to File a Response, dated May 11, 2018, pages 16-17.
[22] Massachusetts Docket No. D.P.U. 17-05-F, Order on Eversource's Motion for Reconsideration and Motion for Leave to File a Response, dated May 11, 2018, page 16.

Finally, the DPU also concluded that Ms. McCullar's method was not appropriate.

> [w]e conclude that other than demonstrating that her alternative represents a gradual decrease from the Companies' proposed accruals, the Attorney General offered no persuasive explanation why net salvage accruals that are 2.2 times larger than a recent average annual net salvage expense are more appropriate than the Companies' proposal or appropriate on their own merit.[23]

The DPU concluded by explaining that Eversource's use of the traditional method was a recognized and accepted approach, that Ms. McCullar's method was not reliable, and that Eversource's depreciation rates were appropriate. Specifically, the DPU stated:

> While we recognize that, in contrast to the selection of average service lives and dispersion curves, the selection of salvage values is more subjective, the Department is not prepared to deviate from a recognized and accepted approach to deriving salvage ratios in the absence of an appropriately supported alternative. In this case, upon reconsideration, we are not persuaded that the Attorney General's alternative approach is sufficiently reliable to warrant a departure from the approach used by Eversource. Moreover, as noted above, we find that the overall depreciation rates proposed by Eversource are appropriate and not excessive.[24]

[23] Massachusetts Docket No. D.P.U. 17-05-F, Order on Eversource's Motion for Reconsideration and Motion for Leave to File a Response, dated May 11, 2018, page 17.
[24] Massachusetts Docket No. D.P.U. 17-05-F, Order on Eversource's Motion for Reconsideration and Motion for Leave to File a Response, dated May 11, 2018, page 18.

D. Staff's and CURB's Arguments Against the Traditional Method Do Not Provide a Basis to Deviate from the Industry Standard Method for Estimating Net Salvage

Q. WHAT ARGUMENTS DO STAFF AND CURVE MAKE WITH REGARD TO THE TRADITIONAL NET SALVAGE METHOD YOU HAVE USED?

A. Ms. McCullar only makes one primary argument against the use of the traditional net salvage method. It relates to the implication that there is future inflation in historical net salvage ratios because historical net salvage and retirements are at different price levels. I will address this argument along with Mr. Garren's similar argument but I first note that Ms. McCullar does not provide any reasoning or justification why this would be problematic. While she does cite to both the NARUC Manual and Wolf and Fitch, but as mentioned previously, neither text supports her method. She also cites three jurisdictions that she claims support her proposal. However, none of these three states use the method she has proposed and two do not even include future net salvage in depreciation rates.

Mr. Garren offers three primary arguments against the traditional method. The first is an unsupported claim that the traditional method produces "unrealistically high future net salvage ratios."[25] I will address his argument but note that authoritative depreciation textbooks and the overwhelming majority of regulatory jurisdictions disagree with him. He also argues that "net salvage and retirements are not causally related or mathematically correlated in any way."[26] I have previously addressed this argument and explained that Mr. Garren is incorrect

[25] Garren at 27.
[26] Garren at 27.

in Section III.B.2. Finally, Mr. Garren makes a similar argument to Ms. McCullar's with regard to the difference in price levels between net salvage and retirements in the calculation of historical net salvage ratios.

Q. PLEASE ADDRESS THE ARGUMENT MADE BY BOTH STAFF AND CURB REGARDING THE DIFFERENCE IN PRICE LEVELS IN THE CALCULATING OF HISTORICAL NET SALVAGE RATIOS.

A. Both parties criticize the traditional method because historical net salvage is expressed at current price levels (meaning the price level when the net salvage is recorded) whereas retirements are recorded at original cost. There are several arguments against this criticism. The first is that the Company's current plant balances, to which net salvage ratios are applied, are expressed at original cost. That is, the assets in service are not brand new and many are decades old. Further, these assets will not all be retired today but instead most will be retired in the future. For these reasons, expressing historical net salvage as a percentage of historical retirements makes sense and is appropriate. Not doing so would understate future net salvage. The second response is that, as discussed in detail in Section III.C, authoritative depreciation textbooks and most regulatory commissions support the use of the traditional method. There is a longstanding history of using the traditional method and most regulatory commissions have not been convinced by the types of arguments set forth by Staff and CURB to adopt a change in methodology.

The third response is that, when one analyzes the age of historical retirements in the net salvage analysis and compares this to the age at which assets

currently in service will be retired (i.e., the average service life or the probable life), the time period between installation and retirement in the historical data is typically shorter than will occur for assets in service. Thus, the traditional method of net salvage typically results in conservative estimates of net salvage, at least with regard to any changes in price levels that will occur.

Mr. Garren also argues on page 33 of his testimony that "ratepayers are effectively being charged for future net salvage at inflated future dollar values but are required to pay those amounts with current dollars." He also refers to "the time-value of money." Both of these concepts are not relevant to depreciation as it relates to accounting and ratemaking. Depreciation is understood as a cost allocation concept, in which recorded costs (both historical and future costs) are allocated to accounting periods over which an asset provides service. Using the straight line method, equal portions of the service value (including net salvage) of an asset are allocated to each year of service. Depreciation is not a method of valuation and, as a result, does not typically incorporate adjustments for inflation or the time value of money. Indeed, if it did, depreciation expense would actually be much higher than it is when applying a cost allocation concept to the original cost of plant. As noted above, the Company's assets are stated at original cost and many are decades old. However, these are still recovered on a straight line basis and are not adjusted for the time-value of money. It would be unfair and inequitable to adjust net salvage for the time-value of money but not to do the same for the original cost.

Mr. Garren continues this argument by stating that "in the case of net salvage, current ratepayers are being asked to provide the Company with a loan

without any kind of compensation to ratepayers."[27] This statement is incorrect. First, customers are not providing a loan for net salvage. They are paying a cost of service. Second, they are compensated for any net salvage recovered through depreciation rates. This occurs because net salvage recovered through depreciation increases accumulated depreciation and, in turn, reduces rate base. This reduces the return on rate base paid by customers and is compensation for any net salvage recovered through depreciation. Indeed, when one compares the overall methods proposed by Staff and CURB to the traditional method, over the long run the traditional method will typically result in lower customer rates due to the impact on rate base.

As a final response to Staff and CURB, neither party has actually attempted to propose a method of estimating or recovering future net salvage that would adjust future net salvage rates for inflation. It may be possible to construct a methodology that would do so, although such a method would have to recognize the age of retirements in the historical net salvage analysis and would be very complex. Neither Staff nor CURB have proposed such a method. Instead, they have merely based their net salvage proposals on the costs the Company has incurred in recent years (either explicitly, in the case of CURB, or implicitly for Staff). Their methodologies are not even a reasonable basis to estimate future net salvage, much less attempt to adjust future net salvage for inflation.

[27] Garren at 33.

Q. IN RESPONSE TO A QUESTION OF WHETHER THERE IS "ANY CONCERN REGARDING THE HISTORIC NET SALVAGE RATIOS CALCULATED IN THE DEPRECIATION STUDY," MS. MCCULLAR CITES WOLF AND FITCH AND NARUC. DO THESE TEXTS SUPPORT THAT THERE IS A "CONCERN" WITH THE TRADITIONAL METHOD?

A. No. They do not. As discussed in Section III.C.1, both texts support the traditional method and neither support Ms. McCullar's method. The recognition by both texts of certain aspects of the traditional method does not mean either text considers the difference in price level between net salvage and retirements in historical net salvage ratios to be a concern. Ms. McCullar's phrasing in her testimony should not be misconstrued as support by either of these sources of an alleged "concern" with the traditional method.

Q. MS. MCCULLAR PRESENTS A TABLE ON PAGE 11 OF HER TESTIMONY IN WHICH SHE COMPARES THE NET SALVAGE ACCRUALS FOR YOUR PROPOSALS AND HER PROPOSALS TO RECENT NET SALVAGE COSTS. ARE THERE ANY PROBLEMS WITH HER TABLE?

A. Yes. In Table 4 of her testimony, Ms. McCullar shows the net salvage accruals from my proposal based on the ELG procedure and the accruals from her estimates based on the ALG procedure. As discussed in Section V, the timing of recovery of costs is different for the ELG and ALG procedures and, as a result, she does not present a meaningful comparison in this table.

This inconsistency also raises another problem with her methodology. If one were trying to make net salvage accruals be either equal to or a given multiple of recent net salvage costs, this would mean that the net salvage estimates would differ depending on the use of the ELG or ALG procedure. However, the depreciation procedure should not change the service life net salvage estimates but is instead merely the process by which assets are grouped to calculate depreciation. That both Ms. McCullar's and Mr. Garren's methods would produce different net salvage estimates depending on the depreciation procedure used reveals another flaw in their methodologies.

Q. ON PAGES 15 AND 16 OF HER TESTIMONY, MS. MCCULLAR CITES THREE JURISDICTIONS THAT "HAVE ADOPTED FUTURE NET SALVAGE PERCENTS THAT RECOGNIZE THE INFLATED DOLLARS INCLUDED IN THE HISTORIC NET SALVAGE RATIOS." DID ANY OF THESE JURISDICTIONS ADOPT MS. MCCULLAR'S PROPOSED METHODOLOGY?

A. No. Further, her statement is fundamentally incorrect with regard to Pennsylvania and New Jersey, as can be observed by reading the plain language in her footnotes on page 16 of her testimony. Pennsylvania does not include any future net salvage in depreciation rates and has not done so since a Superior Court decision in 1962. Instead, net salvage is recovered after it is incurred (typically over a five-year period). New Jersey's approach is similar to Pennsylvania's as New Jersey also

does not include future net salvage in depreciation rates.[28] A slight difference is that rather than recover net salvage costs after they are occurred, New Jersey develops a normalization amount based on recent net salvage costs. This means that New Jersey's approach is similar to treating net salvage as a normalized operating expense.

Thus, both Pennsylvania and New Jersey do not include future net salvage in depreciation rates and instead treat net salvage similar to an operating expense. As discussed in Section III.C.2., these approaches are not consistent with the requirements of the USOA. Since Ms. McCullar claims in her testimony to be estimating future net salvage, the methods used in Pennsylvania and New Jersey are presumably not what she has proposed and, therefore, do not support her estimates. If she is in fact proposing the methods used in Pennsylvania and New Jersey, then she is proposing to treat net salvage as an operating expense and does not propose a method that satisfies the requirements of the USOA.

The third jurisdiction cited by Ms. McCullar, the District of Columbia ("D.C."), also does not use the method she has proposed for Atmos Energy. Instead, net salvage estimates are determined in the same manner I have estimated net salvage for Atmos Energy. However, rather than recovering these costs on a straight line basis, a present value method is used in D.C. This is not what Staff (or CURB) have proposed for Atmos Energy.

[28] The order cited in footnote 28 of Ms. McCullar's testimony plainly states that "The Board HEREBY FINDS the recommendation of and Staff to exclude estimated net salvage from depreciation rates to be appropriate."

Thus, neither party has cited a single regulatory jurisdiction that uses their proposed methods. This contrasts with Atmos Energy's proposal to use the traditional method, which is used in most U.S. regulatory jurisdictions.

It is also noteworthy that Mr. Garren, in the response to Atmos Information Request 4-CURB , stated that the methods used in Pennsylvania and New Jersey are "variations" of the net salvage methodology he has proposed in the instant case. Given that neither Pennsylvania nor New Jersey recover future net salvage in depreciation rates, this is an implicit admission that CURB's proposed method is not designed to recover future net salvage. Rather, it is designed to effectively recover net salvage as it occurs. By extension, because Staff's method has the same basis as CURB's, Ms. McCullar's proposed method is also not designed to recover future net salvage.

Q. ON PAGE 13 OF HER TESTIMONY, MS. MCCULLAR STATES THAT HER "PROPOSED FUTURE NET SALVAGE PERCENTS ARE LESS ACCELERATED THAN ATMOS [ENERGY]'S PROPOSED FUTURE NET SALVAGE PERCENTS." PLEASE ADDRESS THIS CLAIM.

A. I should first make clear that "accelerated" has a specific meaning in the context of depreciation that is not related to Ms. McCullar's proposal and is not consistent with Ms. McCullar's usage of the term. Accelerated depreciation is depreciation that results in higher accruals in the early years of an asset's life than the later years. I have not proposed accelerated depreciation and instead have proposed the straight line method. Based on Ms. McCullar's explanation on page 13 of her testimony, it appears that her use of the term "less accelerated" simply means that her proposals

result in lower depreciation than mine. I disagree with this use of terminology, since it could give the incorrect impression that I have not used the straight line method. Further, as I have discussed in detail, Ms. McCullar's proposals are not based on a sound method for estimating future net salvage. As a result, the reason her proposals result in lower depreciation than mine is because they will fail to recover the Company's future net salvage costs over the lives of its assets. That is, the difference in the results of our proposals is because I have used an acceptable method and Ms. McCullar has not.

Q. ON PAGE 28 OF HIS TESTIMONY, MR. GARREN ARGUES THAT THE TRADITIONAL METHOD PRODUCES RESULTS THAT ARE "EXCESSIVE." PLEASE ADDRESS HIS ALLEGATION.

A. The analysis Mr. Garren presents compares the total future net salvage resulting from his method (multiplying the most recent five-year average of net salvage costs by the remaining life for the account) to the future net salvage resulting from my estimates. However, as I have explained, his method does not result in a reasonable amount of future net salvage. Therefore, all his analysis shows is that his method does not result in sufficient future net salvage.

IV. SERVICE LIFE ESTIMATES

A. Introduction

Q. PLEASE SUMMARIZE THE SERVICE LIFE PROPOSALS IN THIS PROCEEDING.

A. Mr. Garren has proposed different service lives for seven accounts, three of which were studied together. The table below summarizes the current estimates for these accounts, the Company's proposals and Mr. Garren's proposals.

Table NWA-3: Comparison of Service Life Estimates

Account	Current	Atmos	CURB
375, Structures and Improvements	31-L2	35-S0	40-L0
376.1, Mains - Cathodic Protection	50-R1.5	55-R2	63-R1.5
376.2, Mains - Steel	50-R1.5	55-R2	63-R1.5
376.3, Mains - Plastic	50-R1.5	55-R2	63-R1.5
378, Measuring and Regulating Station Equipment	25-R0.5	35-S0	42-R0.5
379, Meas. and Reg. Station Eq. - City Gate	30-R2	40-R2	57-R2.5
381, Meters	20-R1	20-R3	30-R3

As shown, for each of these accounts, except meters, Atmos Energy has proposed to increase the average service life. CURB's proposals are a significant increase in service life for many accounts. For example, for Account 379, Mr. Garren proposes a 27-year increase in average service life, that nearly doubles the current service life. Generally, one should not anticipate the life expectations to change that dramatically from one study to the next. This is particularly true when the Company has plans to increase the level of replacements of many of its assets.

Q. HAS STAFF PROPOSED ANY CHANGES IN SERVICE LIVES FROM ATMOS ENERGY'S PROPOSALS?

A. No. Ms. McCullar has used the Company's proposed service lives for her depreciation rate proposals.

Q. WHAT ARE THE REASONS FOR THE DIFFERENCES BETWEEN YOUR PROPOSALS AND CURB'S SERVICE LIFE PROPOSALS?

A. While specific differences vary by account, there are three primary reasons for the differences between my proposed survivor curves and those of Mr. Garren. The first is that Mr. Garren's proposals are based primarily, if not entirely, on mathematical results. As I will discuss in detail, this is not the proper approach to estimating service lives and is inconsistent with the guidance of depreciation authorities such as NARUC. It is particularly inappropriate for a situation such as Atmos Energy's in which the Company plans to increase the level of replacement of aging infrastructure. The second reason is that Mr. Garren has not given any consideration to the concept of gradualism. Given the Company's planned replacement of assets, as well as the data available for the study, it is not appropriate to make increases in service lives as significant as he has proposed. Future experience is likely to indicate shorter service lives than currently indicated by the data and making the very large changes proposed by Mr. Garren risks resulting in shortening service lives in future studies and significant increases in depreciation expense. Finally, there are issues with Mr. Garren's mathematical curve fitting, as he gives undue consideration to data points with limited value in some circumstances and fails to recognize other important information in the historical data.

In summary, Atmos Energy's depreciation study takes into consideration many relevant factors and is not based solely on mathematical results. Not only was the Company's historical data considered and the data properly interpreted, but

Company plans and their impact on future service life expectations were also incorporated into Atmos Energy's study. CURB's proposals, in contrast, are based on little more than the results of mathematical computations and, thus, are inconsistent with the Company's future plans.

B. The Estimation of Service Lives Is Not a Purely Mathematical Exercise and Must Incorporate Informed Judgment

Q. HAS MR. GARREN USED THE SAME APPROACH TO ESTIMATING SERVICE LIVES THAT YOU USED IN THE DEPRECIATION STUDY?

A. No. While we both used Iowa type survivor curves to calculate depreciation expense and used the retirement rate method to analyze historical data, Mr. Garren's overall approach differs from mine. His approach also differs from the correct and proper approach to estimating service lives that is set forth in depreciation textbooks such as the NARUC Manual. Specifically, Mr. Garren's testimony indicates that, contrary to the NARUC Manual, he believes estimating service lives is primarily a mathematical exercise in which little more than mathematical computations of historical accounting data will result in reasonable estimates. Such an approach is incorrect. Depreciation, and particularly the estimation of service lives, is a forecast of the future rather than a calculation of what has occurred in the past.

Q. PLEASE EXPLAIN IN MORE DETAIL HOW MR. GARREN'S APPROACH DOES NOT COMPORT WITH THE PROPER MANNER FOR DETERMINING SERVICE LIFE ESTIMATES.

A. According to Mr. Garren's direct testimony, for each account at issue other than meters, he simply selected the highest-ranked curve from his mathematical curve

fitting software. For meters, he selected the longest life he considered to be appropriate for the account.[29] Mr. Garren has given little consideration to anything other than mathematical results. Relying solely on mathematical results is not the appropriate approach to estimating service lives. There are many factors external to the statistical analysis that provide sound reason not to increase lives as significantly as Mr. Garren has done. These factors include the following, each of which was information provided to Mr. Garren through testimony or workpapers:

- The accelerated replacements of gas mains and services.
- Retirements of regulator stations as the Company's low-pressure systems are removed concurrent with pipeline replacements.
- Higher levels of replacements of meters, both as the result of the replacement of low-pressure systems and wireless meter-reading ("WMR") meters

These factors will impact each of the accounts for which Mr. Garren has proposed a different service life from Atmos Energy's. They provide reasons to expect that the Company's service lives in the future will be shorter than indicated by its historical data. In my professional judgment, they also provide reason for a more gradual lengthening of service lives consistent with my proposals in the depreciation study, rather than the more significant changes proposed by Mr. Garren.

[29] See page 21 of Mr. Garren's testimony.

Q. DOES THE NARUC MANUAL EXPLAIN THE IMPORTANCE OF INCORPORATING FACTORS SUCH AS THESE WHEN ESTIMATING SERVICE LIVES AND THAT SERVICE LIFE ESTIMATES SHOULD NOT BE BASED PRIMARILY ON MATHEMATICAL RESULTS?

A. Yes. The NARUC Manual makes clear that many factors must be considered when estimating service lives. Chapter XIII of the NARUC Manual, entitled "Actuarial Life Analysis" discusses and emphasizes the subjective nature of the process of estimating service lives. Page 111 of the NARUC Manual explains that the analysis of historical data is only one part of the process of estimating service lives:

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

The NARUC Manual clarifies that the process of estimating service lives must go beyond any objective measurement of the past. In describing the determination of a survivor curve estimate (referred to as the "projection life" in this passage), the NARUC Manual states on page 126:

> <u>The projection life is a projection, or forecast, of the future of the property.</u> Historical indications may be useful in estimating a projection life curve. Certainly the observations based on the property's history are a starting point. Trends in life or retirement dispersion can often be expected to continue. Likewise, unless there is some reason to expect otherwise, stability in life or retirement dispersion can be expected to continue, at least in the near term.
>
> <u>Depreciation analysts should avoid becoming ensnared in the mechanics of the historical life study and relying solely on mathematical solutions.</u> The reason for making an historical life analysis is to develop a sufficient understanding of history in order to evaluate whether it is a reasonable predictor of the future. The

> importance of being aware of circumstances having direct bearing on the reason for making an historical life analysis cannot be understated. These circumstances, when factored into the analysis, determine the application and limitations of an historical life analysis. (emphasis added)

Thus, the NARUC Manual strongly advises against the approach used by Mr. Garren, stating that "relying solely on mathematical solutions" should be avoided.

Q. THE COMPANY'S DEPRECIATION STUDY USES THE TERM "INFORMED JUDGMENT." DOES THE NARUC MANUAL DISCUSS INFORMED JUDGMENT?

A. Yes. On page 128, the NARUC Manual explains the term informed judgment and further elaborates on the need for a subjective component to forecasting service lives:

> A depreciation study is commonly described as having three periods of analysis: the past, present, and future. The past and present can usually be analyzed with great accuracy using many currently available analytical tools. The future still must be predicted and must largely include some subjective analysis. *Informed judgment* is a term used to define the subjective portion of the depreciation study process. It is based on a combination of general experience, knowledge of the properties and a physical inspection, information gathered throughout the industry, and other factors which assist the analyst in making a knowledgeable estimate.
>
> The use of informed judgment can be a major factor in forecasting. A logical process of examining and prioritizing the usefulness of information must be employed, since there are many sources of data that must be considered and weighed by importance. For example, the following forces of retirement need to be considered: Do the past and current service life dispersions represent the future? Will scrap prices rise or fall? What will be the impact of future technological obsolescence? Will the company be in existence in the future? The analyst must rank the factors and decide the relative weight to apply to each. The final estimate might not resemble any one of the

specific factors; however, the result would be a decision based upon a combination of the components. (emphasis added)

Q. HAVE YOU INCORPORATED THE VARIOUS FACTORS DISCUSSED BY THE NARUC MANUAL INTO YOUR ESTIMATES?

A. Yes. For the Atmos Energy's depreciation study, I conducted site visits and had discussions with Company personnel to familiarize myself with the Company's assets. These discussions included plans to replace high-risk vintage pipe as well as how such plans would impact other assets. In addition, throughout my career, I have worked on over a hundred utility depreciation studies. The information obtained from this experience has also been incorporated into our recommendations.

Q. HAS MR. GARREN INCORPORATED FACTORS OTHER THAN MATHEMATICAL RESULTS, AS DISCUSSED BY NARUC, INTO HIS RECOMMENDATIONS?

A. No, at least not to the degree necessary to develop a reasonable forecast. As an example, on page 23 of his testimony Mr. Garren discusses his estimate for Account 376, Mains. While he recognizes that the Company has a program to replace vintage pipe, he downplays this significant program by stating that "in the case of Mains, these types of replacement programs are a regular occurrence, with older types of mains being replaced with newer types." This statement demonstrates a misunderstanding of Company plans. The direct testimony of Atmos Energy witness Armstrong discusses the need for the accelerated replacement of high-risk

pipe,[30] as well as the Commission's recognition of the need for accelerated replacements of pipe.[31] The accelerated replacement of pipe means that, going forward, replacements will occur at a faster pace than have occurred in the past. This, in turn, means more retirements than in the past and that future service lives should be shorter than indicated by the historical data. Mr. Garren's characterization of the Company's pipeline replacements is incorrect, thus his service life estimate does not adequately incorporate Company plans.

Q. IN ADDITION TO COMPANY PLANS, ARE THERE ANY FACTORS SPECIFIC TO THE DATA THAT NEED TO BE CONSIDERED?

A. Yes. This is the first study for Atmos Energy for which actuarial analysis using the retirement rate method was performed. In the previous study a semi-actuarial method known as the simulated plant record ("SPR") method was used because only limited aged data (meaning that the vintage year of transactions was known) were available. As discussed on pages 11 through 12 of my direct testimony, aged accounting data were available since 2005. For the current study, statistically aged data were used for prior years and additional adjustments were made for portions of the data. The result is, in my professional judgment, the best data available for the study.[32] However, because of how the data had to be assembled, there are differences between statistical life analysis conducted on Atmos Energy's data and similar analysis for a Company with many decades of aged data. At a minimum, the nature of Atmos Energy's data means that there is more uncertainty in the

[30] See, for example, pages 2-3 of Mr. Armstrong's testimony.

[31] See pages 15-16 of Mr. Armstrong's testimony.

[32] No party has challenged the data used in the depreciation study or any of these adjustments.

statistical results, and that it is more imperative that informed judgment be exercised when interpreting and extrapolating the data. These considerations also suggest, to the extent the data indicate longer service lives, that it is more appropriate to make gradual increases in service lives.

In summary, for this particular depreciation study both the available data and the Company's future plans support lengthening service lives on a more gradual basis than proposed by CURB. As noted above, for each account at issue, except meters, I have increased the average service life in the depreciation study. I note that Staff agrees, at least implicitly, that more gradual changes are appropriate, as Staff has used Atmos Energy's proposed service lives for its proposed depreciation rates. In future studies, not only will more aged data be available, but future data will also incorporate the impact of accelerated replacements of aging infrastructure. We will then be better able to assess the impact of these programs, which may result in indications of shorter service lives than the data currently show.

Q. WAS THE INFORMATION SUPPORTING YOUR ESTIMATE AVAILABLE TO ALL PARTIES?

A. Yes. The information specific to Atmos Energy that is discussed above and in the discussions for each account in Section IV.C was available in either Company testimony or in the notes provided with my workpapers, which I have included with my rebuttal testimony as Rebuttal Exhibit NWA-3.

C. Response to CURB's Service Life Recommendations

1. Account 375, Structures and Improvements

Q. WHAT ARE THE PROPOSALS FOR THIS ACCOUNT?

A. The current estimate for this is the 31-L2 survivor curve. In the depreciation study, I have recommended increasing the service life and have proposed the 35-S0 survivor curve. CURB has proposed to increase the service life further and recommends a 40-L0 survivor curve.

Q. WHAT IS THE BASIS FOR MR. GARREN'S PROPOSAL?

A. Mr. Garren has selected the highest ranked survivor curve from his mathematical curve fitting.

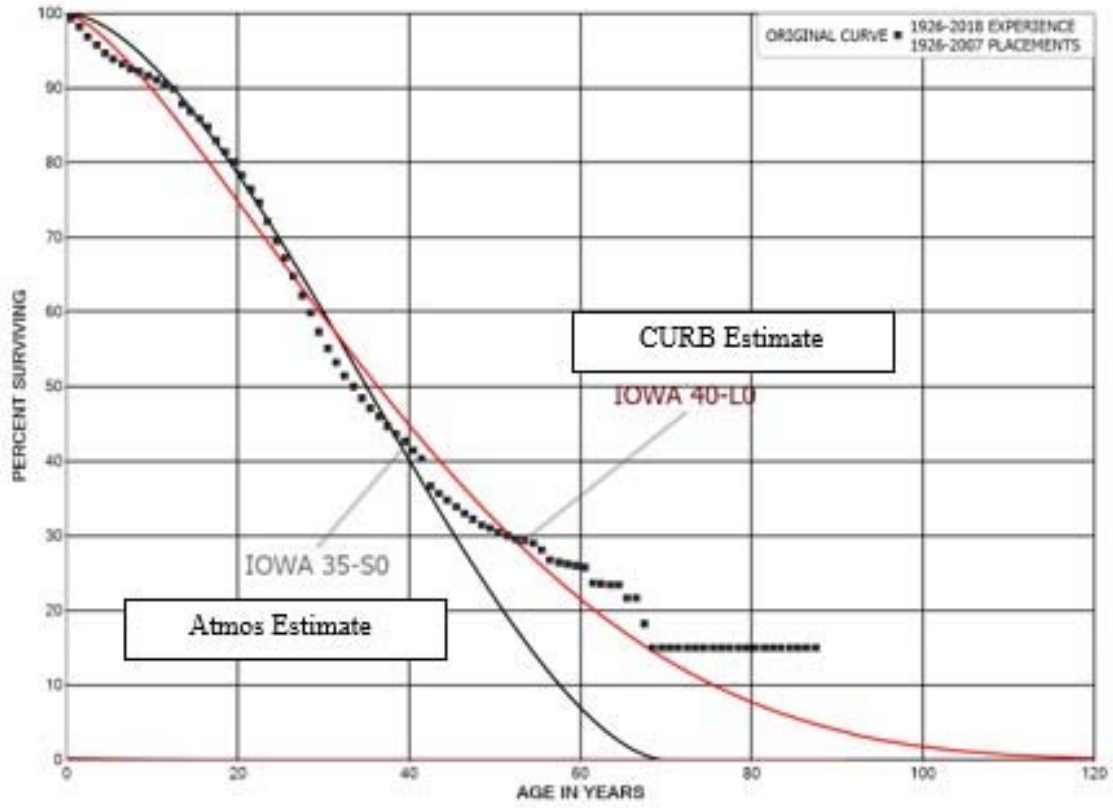
Q. DO YOU AGREE WITH MR. GARREN'S PROPOSAL?

A. No. First, Mr. Garren gives too much consideration to older data points, resulting in a curve that is an inferior fit to earlier ages. Second, his estimate extrapolates very long service lives for some assets. While his proposal has a 40-year average service life, it predicts that a portion of plant will be in service more than 100 years and some will survive as long as 120 years. Given the historical retirement patterns, Company plans and typical survivor curves for this account, the lives extrapolated by Mr. Garren's estimate are not reasonable. Further, the L0 curve type is not common for the types of assets in this account.

Q. PLEASE DISCUSS THE CURVE FITTING FOR THIS ACCOUNT.

A. This is an account for which the curve fitting produces different results depending on which portion of the data is emphasized. Figure NWA-6 below shows both estimates compared with all of the data points.

Figure NWA-6: Comparison of Survivor Curve Estimates and All Data Points from OLT for Account 375, Structures and Improvements

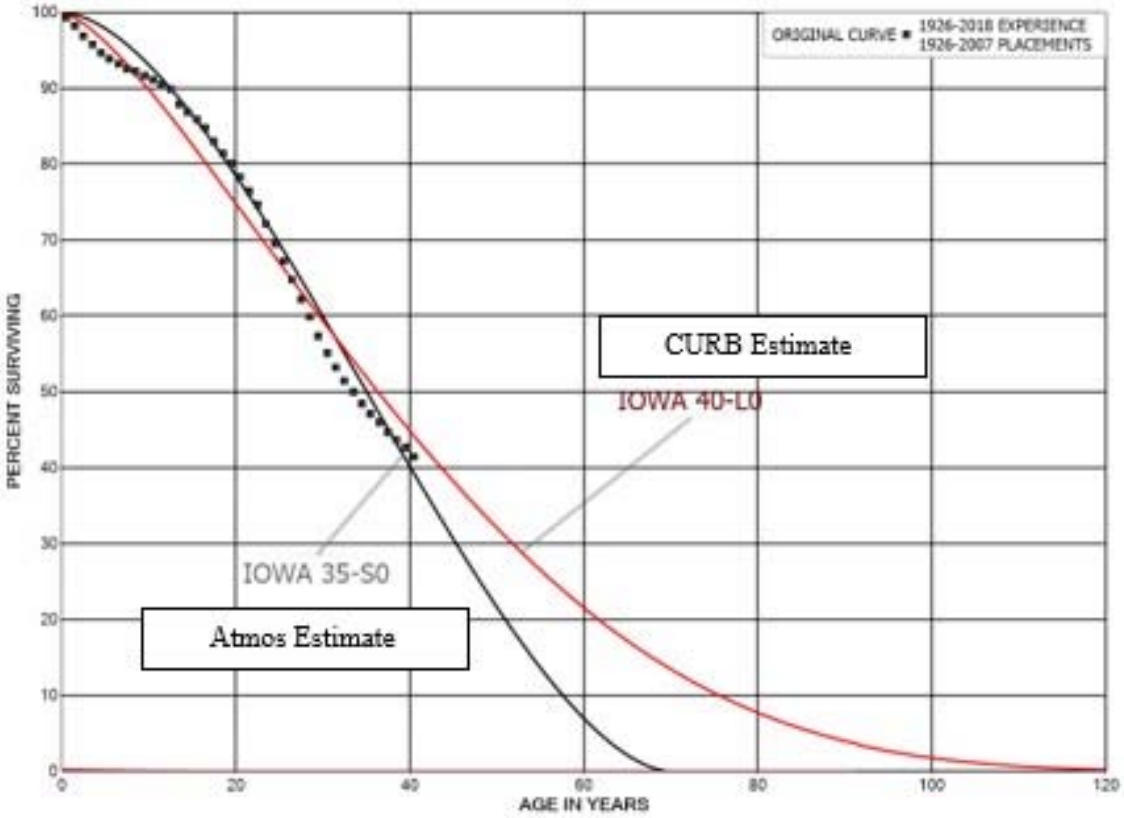


My estimate, the 35-S0, better matches the data through about age 40. CURB's estimate better matches the data from about age 50 and beyond. However, most of the points beyond age 50 are based on minimal data. Beyond age 55, all data points are based on less than $20,000 in investment. Given the small sample size this represents, as well as data considerations discussed previously in my testimony, these older data points should, in my professional judgment, be given less consideration.

Figure NWA-7 below provides a comparison of both curves through age 40.5. In this graph, the 35-S0 is the better visual fit of the data. It is also a better

mathematical fit of the data, with a residual measure of 2.17 compared to 3.05 for Mr. Garren's estimate.

Figure NWA-7: Comparison of Survivor Curve Estimates and Data Points Through Age 40.5 for Account 375, Structures and Improvements



Accordingly, the results of statistical curve fitting depend on which range of data is emphasized. Depending on the data range given more considered, one could make an argument that either the 35-S0 or the 40-L0 is the better fit. However, several additional factors support the 35-S0 such as the long lives forecasted by the 40-L0, the atypical use of an L curve for these types of assets, and the appropriateness of gradualism. When these factors are considered, the 35-S0 is the better estimate for this account.

2. Accounts 376.00, 376.01 and 376.02, Mains

Q WHAT ARE THE PROPOSALS FOR THESE ACCOUNTS?

A. Each of these subaccounts was studied together, as was the case in the Company's previous depreciation study. The current estimate is the 50-R1.5 survivor curve. I have proposed the 55-R2 survivor curve, which represents an increase in the average service life. Mr. Garren has proposed a much more significant increase and recommends the 63-R1.5 survivor curve.

Q. WHAT IS THE BASIS OF MR. GARREN'S PROPOSAL?

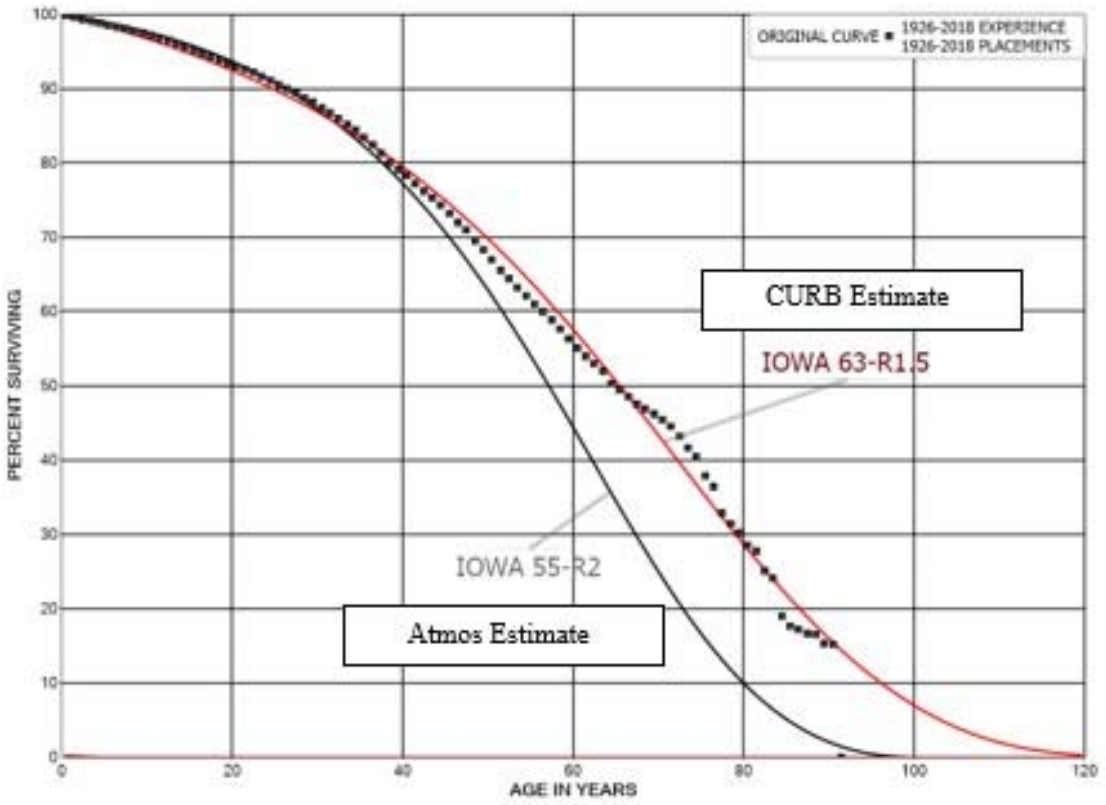
A. Mr. Garren's proposal is based on selecting the highest ranked curve from his statistical analysis. As discussed previously, he dismisses the impact of the Company's accelerated pipe replacement program and instead relies entirely on the statistical results. As the Commission is aware, the accelerated pipe replacement program will, by its nature, result in more retirements of mains going forward than have occurred in the past. This alone creates significant problems with Mr. Garren's approach. When this program and other factors discussed earlier in my testimony are considered, my recommendation for a more gradual change in the service life is more appropriate.

Q. ARE THERE ANY OTHER ASPECTS OF THE DATA THAT SUPPORT YOUR ESTIMATE OVER THAT OF MR. GARREN?

A. Yes. Figure NWA-8 below provides a comparison of both estimates with the historical data. In this instance, both curves are similar through age 40. While Mr. Garren's estimate is a better match of the data beyond age 40, these are the ages for which accelerated pipe replacements will have the most significant impact. As a

result, it is reasonable to expect the data to trend closer to my estimate. Additionally, as can be observed in the graph, Mr. Garren's estimate extends many years beyond the end of the data and reaches an age of 120 years. The Company has no experience of any assets lasting that long, and to date, all assets have been retired by age 91.5, as evidenced by the data declining to zero percent surviving at this age.

Figure NWA-8: Comparison of Survivor Curve Estimates and All Data Points from OLT for Account 376, Mains



While older data points are based on limited levels of investment, the fact that no assets have remained in service past age 91.5 should not be discounted. My estimate results in a maximum life that is consistent with the indications from the data. The 55-R2 fits the data well through about age 40 and then anticipates a

higher level of retirements (and resultant steeper decline in the survivor curve) from age 40 through age 90. As a result, it better represents Company plans than the 63-R1.5 estimate. Further, the more gradual change provided by the 55-R2 is a better estimate than Mr. Garren's and incorporates all relevant information.

3. Account 378, Measuring and Regulating Station Equipment

Q. WHAT ARE THE PROPOSALS FOR THIS ACCOUNT?

A. The current estimate for this account is the 25-R0.5. I have proposed the 35-S0, which represents a 10-year increase in average service life over the current estimate. Mr. Garren has proposed the 42-R0.5. This is a 17-year increase in average service life, which is a significant change.

Q. WHAT IS THE BASIS OF MR. GARREN'S PROPOSAL?

A. Mr. Garren acknowledges that "none of the Iowa curves produce a particularly good fit to the available data."[33] In such circumstances, it is even more important to consider other factors, such as Company plans and gradualism. However, Mr. Garren still selects the highest-ranked curve from his statistical analysis.

Q. ARE THERE REASONS TO ANTICIPATE THAT FUTURE EXPECTATIONS WILL BE DIFFERENT FROM THE HISTORICAL DATA?

A. Yes. As discussed previously, the Company will retire district regulator stations at a higher rate than has occurred in the past as low-pressure systems are upgraded to higher pressures. The Company expects that a quarter to a half of district stations

[33] Garren at 24.

could be retired as a result of these upgrades.[34] In addition to the limitations of the historical data, these plans provide reason to expect that the future will differ from the past. As a result, the data should be given less consideration and my proposal, which is already a 10-year increase in the average service life, is more appropriate than Mr. Garren's proposal.

4. Account 379, Measuring and Regulating Station Equipment - City Gate

Q. WHAT ARE THE PROPOSALS FOR THIS ACCOUNT?

A. The current estimate for this account is the 30-R2. I have proposed the 40-R2, which is a 10-year increase in the average service life. Mr. Garren proposes the 57-R2.5 survivor curve, which is a 27-year increase and would nearly double the average service life for this account.

As with each of the previous accounts, Mr. Garren's proposal is based on selecting the highest-ranked curve from his statistical analysis. However, his recommendation results in a far too drastic increase in service life. The 10-year increase I have proposed is more reasonable. Similar to the discussion of Account 376 above, none of the Company's assets in the account have survived beyond 70 years of age. It is premature to extrapolate that over a quarter of the assets in this account will do so, as Mr. Garren's estimate predicts.

[34] See page 9 of Rebuttal Exhibit NWA-3.

5. Account 381, Meters

Q. WHAT ARE THE PROPOSALS FOR THIS ACCOUNT?

A. The current estimate is the 20-R1 survivor curve. I have recommended the same average service life, but with a R3 curve type. Mr. Garren increases the average service life by 10 years and proposes the 30-R3 survivor curve.

Q. WHAT IS THE BASIS OF MR. GARREN'S PROPOSAL?

A. For this account, neither Mr. Garren nor I have put much emphasis on the historical data. Mr. Garren proposes a curve that is at "the high end of what [he] would consider reasonable for this type of plant."[35]

Q. DO YOU AGREE WITH MR. GARREN'S PROPOSAL?

A. No. As with other accounts, Mr. Garren's proposal is inconsistent with Company plans which support a shorter service life. The Company has a 5-year program to implement wireless meter reading ("WMR") in Olathe and Independence. All new meters will be WMR meters. Generally, while meters that are 15-years old or newer would be retrofit with a WMR device, many older meters will be replaced. Additionally, as the Company upgrades low pressure systems as part of its accelerated pipe replacement program, meters will be replaced. Going forward, WMR devices are expected to have a 15-year battery life, which could impact the life of the associated meters.[36]

The combination of all these factors does not support the 30-year average service life Mr. Garren proposes. Not only do they support that retirements will

[35] Garren at 26.
[36] See page 10 of Rebuttal Exhibit NWA-3.

occur at a higher rate going forward, but they also support an average service life more consistent with the current estimate of 20-years.

V. DEPRECIATION PROCEDURE

Q. WHAT IS A DEPRECIATION PROCEDURE?

A. A depreciation procedure determines the way assets in a depreciable group (e.g., an account) are grouped when calculating depreciation. In the instant case, the Company has proposed the equal life group ("ELG") procedure and Staff has proposed the average life group ("ALG") procedure. Mr. Garren does not discuss either depreciation procedure in his testimony. However, based on a review of his depreciation results, it appears he has used ALG to calculate depreciation for the accounts where he proposes a different service life but uses ELG (albeit calculated incorrectly) for all other accounts.

Q. WHAT IS THE EQUAL LIFE GROUP PROCEDURE?

A. For the Equal Life Group procedure, a group of property (*e.g.*, a vintage within a property account) is subdivided into groups having equal service lives. The size of these "equal life groups" is based on the estimated survivor characteristics of the account. Depreciation can then be calculated for each equal life group based on the straight line method; that is, an equal amount of the group's service value is recorded as depreciation expense in each year of service. The total depreciation for an account is the summation of the depreciation calculated for each equal life group. In other words, based on the survivor curve estimate for an account, the ELG procedure mathematically determines the life for each unit in the account, and then depreciates each unit over its expected life. For this reason, the procedure is also

known as the "unit summation" procedure. By calculating depreciation for each equal life group, the ELG procedure contrasts with the Average Service Life ("ASL", also referred to as "Average Life Group" or "ALG") procedure, which depreciates every asset within an account over the average life of the account.

Q ARE THE COMPANY'S CURRENT DEPRECIATION RATES BASED ON THE ELG PROCEDURE?

A. No. The Company's current depreciation rates are based on a settlement agreement that used ALG depreciation rates. However, the Company has used ELG depreciation rates in previous depreciation studies, and the depreciation rates adopted in a stipulation in Docket 03-ATMG-1036-RTS used the ELG procedure. I am not aware of an instance in which this issue has been fully litigated for Atmos Energy since at least the early 2000s. Additionally, Atmos Energy affiliates in Texas, Mississippi and Colorado use ELG.

Q. PLEASE PROVIDE AN EXAMPLE TO ILLUSTRATE HOW THE ELG PROCEDURE DIFFERS FROM ALG PROCEDURE.

A. A simple example employing two units of property of the same vintage in the same property account will show how the ELG procedure more appropriately matches cost recovery through depreciation to consumption or loss in service value than the ASL procedure. For purposes of this example, it is assumed that each unit has an original cost of $1,000. Unit A will be in service for five (5) years and Unit B will be in service for fifteen (15) years. No net salvage will result from the retirement of either unit.

Under the ASL procedure, the average service life for the two units is ten years: (5+15)/2. The annual depreciation rate is 10% (1/10). Thus, for the first five years that both units are in service, the total amount of annual depreciation is $200 ($2,000 x 10%). At the end of year five, the total of five annual accruals for the account is $1,000 ($200 x 5). At that time, Unit A is retired, which results in a deduction of $1,000 from accumulated depreciation (when a unit of property is retired, its original cost is deducted from both the balance of utility plant in service and from accumulated depreciation).

At the start of year six, Unit B remains in service, and the original cost ($1,000) is offset by the accumulated depreciation of $0. However, at this point, one third of Unit B's service life has, in fact, expired. Its accumulated depreciation should, therefore, not be zero.

For the remaining ten years, $100 (10% x $1,000) of annual depreciation expense is charged to accumulated depreciation for a total of $1,000 of expense over this period. When Unit B is retired, $1,000 is deducted from accumulated depreciation and both the original cost and accumulated depreciation will equal zero. When Unit B is retired, the Company will have finally recovered the total depreciable cost of both units. However, at the end of year five only one unit remained in service with two-thirds of its life expectancy still to be consumed, but with 100% of the original investment in that unit still to be recovered. As a result, the ALG procedure did not fully match cost recovery to the actual consumption of the service life the asset.

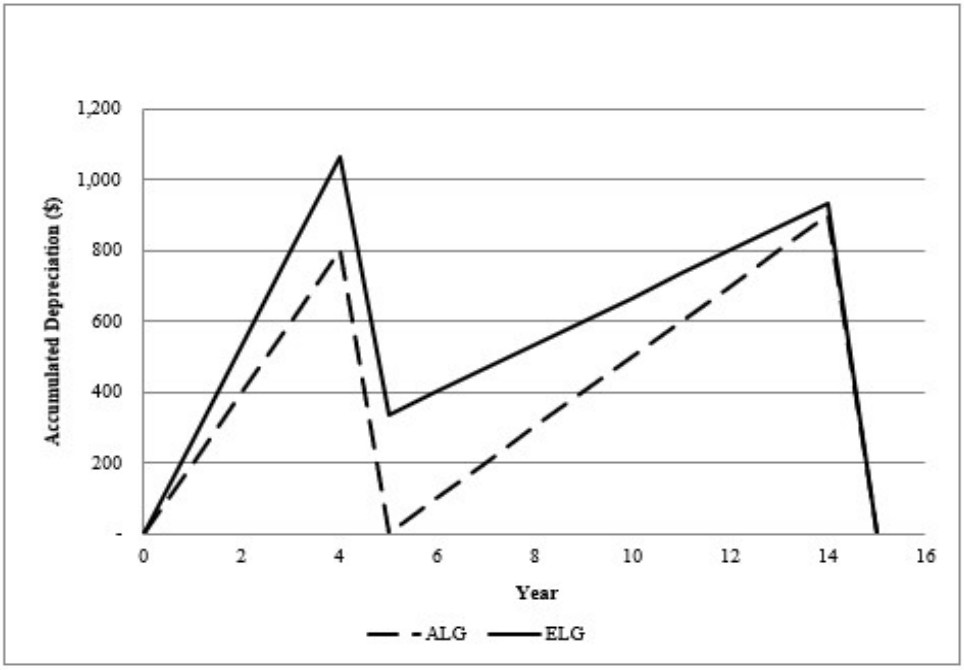
Q. HOW IS DEPRECIATION DETERMINED USING THE ELG PROCEDURE?

A. When depreciation is determined using the ELG procedure, the pattern of cost recovery more accurately matches the actual consumption of the property's service value. Using the same two-unit example discussed above, the annual depreciation expense under the ELG procedure is calculated by summing the annual expense for each equal life group. In this case, there are two equal life groups - one for Unit A, which has a life of five years, and one for Unit B, which has a life of fifteen years. The annual depreciation rate for Unit A is 20% (1/5) and for Unit B is 6.67% (1/15). Thus, the annual accruals for years one through five will be $200 (20% x $1,000) for the first equal life group (Unit A) summed with $66.67 (6.67% x $1,000) for the second (Unit B), or $266.67. At the end of year 5, when Unit A is retired, the total accruals would be $1,333.33. The retirement of Unit A results in a deduction of $1,000 from accumulated depreciation and, at the start of year 6, the $1,000 original cost of Unit B remains with $333.33 in accumulated depreciation. Thus, with one-third of Unit B's life consumed, accumulated depreciation is exactly one-third of the original cost for this unit.

In years six through fifteen, the annual depreciation expense is $66.67, or a total of $666.67 over the ten years remaining in the life of Unit B. Thus, when Unit B is retired, the accumulated depreciation goes to $0 ($1,000 is deducted from the total of $1,000 of accruals), and the entire original cost of both units has been recovered.

As this example shows, the ELG procedure more accurately matches cost recovery for both units with their actual service lives. Figure 9 below provides a graphic representation of the accumulated depreciation for the same property under both the ELG and ALG procedures. The end of year five provides the best illustration of the difference between the two procedures. Using the ELG procedure, the original cost of Unit A is fully recovered when it is retired at the end of year five; Unit B is one-third through its service life and one-third of its cost has been recovered. For both units, cost recovery matches their individual service lives. This contrasts with the ALG procedure, in which accumulated depreciation is $0 at the end of year five, despite the fact that one-third of the service life of the only unit remaining in service has been expended.

Figure NWA-9: Comparison of Accumulated Depreciation Using the ALG and ELG Procedures



The distance between the two lines on the graph between years five and fifteen represents the additional annual depreciation that will be paid by customers

in those years to catch-up for the cost of Unit A that was not recovered when it was providing service. As a result, the fact that ALG is less precise at matching recovery with usage results in intergenerational inequities. Later generations of customers pay for the necessary recovery of the original plant cost that was not recovered from the customers that received 100% of the property's service value.

In contrast to the ALG procedure, the ELG procedure assures that cost recovery through annual accruals accurately follows the actual service lives for both units of property in my example, which means that cost recovery is properly obtained from the customers who actually receive the service each unit provides.

Q. DO THE SAME PRINCIPLES ILLUSTRATED BY THE TWO-UNIT EXAMPLES DISCUSSED ABOVE ALSO APPLY TO LARGER PROPERTY GROUPS THAT CONTAIN MANY MORE UNITS OF PROPERTY?

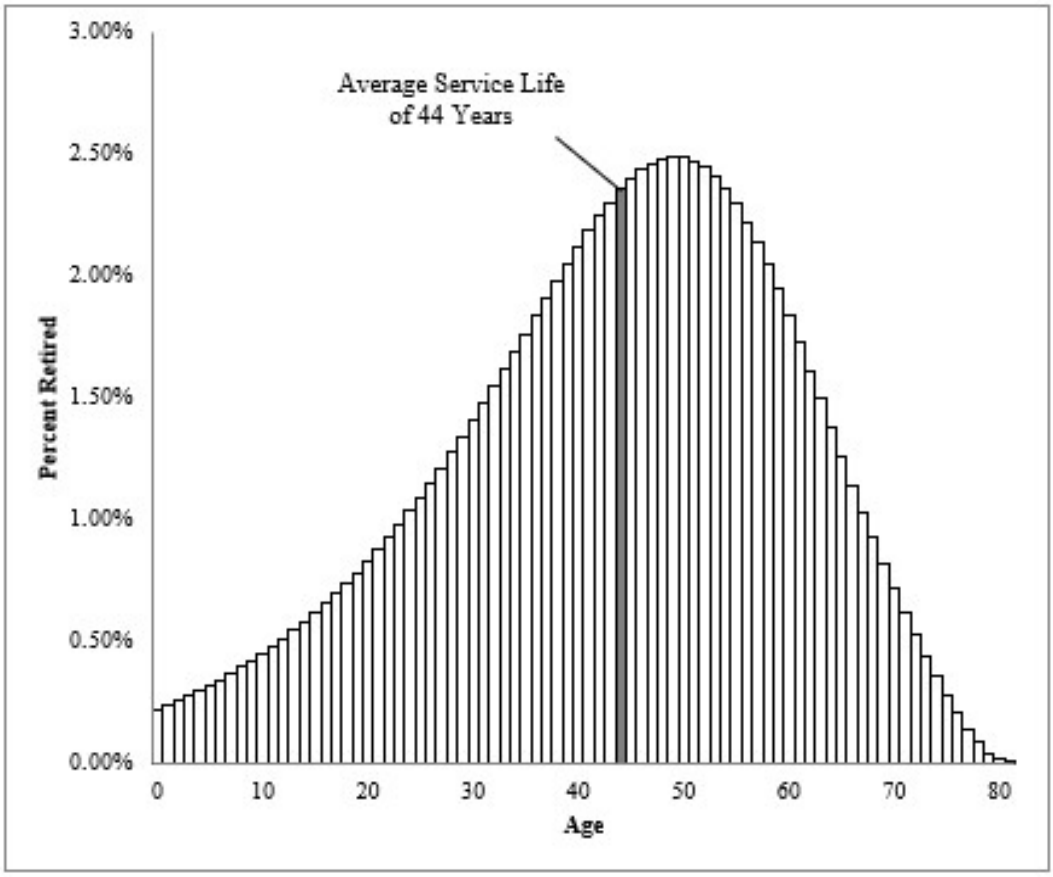
A. Yes. The same principles apply when the ELG procedure is applied to a large group of property with many units, as is typical of utility property. The survivor curve estimated for each property account can be used to divide an account into equal life groups. The survivor curve allows for the calculation of the percentage of the property account that is in each equal life group, which allows for the calculation of ELG annual depreciation accruals for the entire property group. Under the ALG procedure, the depreciation expense for all property in the account is calculated based on the average service life for the entire group.

The ELG procedure recognizes the reality of "dispersion." Specifically, it recognizes that in actual utility operations only a very small percentage of the dollars of plant investment in an account will actually be retired at the average

service life determined for the account. Figure NWA-10, below, is a chart of the frequency curve for the 44-R2 survivor curve that I have proposed for Account 380, Services and which is also used for Staff's depreciation rates. The frequency curve shows the percentage of property in this account that will be retired at each age based on the estimated survivor curve. This percentage is also the size of each equal life group.

The shaded bar in Figure NWA-10 represents the percentage of property that will have a life of 44 years. In other words, it represents the percentage of property that is expected to be in service a period that corresponds exactly to the average service life for the account. As the chart shows, about 2.4% of the assets will be in service for 44 years; conversely, about 97.6% will have service lives that differ from 44 years. Some services will be damaged or have to be relocated and, therefore, will be retired much earlier than the average, while others will be in service much longer than the average. Most will fall somewhere between these "tails" of the curve.

Figure NWA-10: Percent Retired by Age Based on 44-R2 Survivor Curve



The ELG procedure recognizes dispersion and allocates costs for each equal life group over the expected life for that group. As a result, the ELG procedure allocates cost in a manner that approximates the result of each asset being depreciated over its actual life. Conversely, the ALG procedure depreciates every unit of property within an account over the same life, that is, the average life of the entire account. As Figure NWA-10 shows, this average life will be incorrect the majority of the time - in this example, the average life will be the wrong life for about 97.7% of the assets. Just as in the case of the two-unit examples discussed above, the ELG procedure better matches capital recovery with the actual lives that are forecast by the estimated survivor curve.

Q. IS THE ELG PROCEDURE ALSO SUPPORTED BY OTHER DEPRECIATION AUTHORITIES?

A. Yes. ELG is discussed and supported in authoritative depreciation texts and academic literature. One such authority - and a very significant one - is Robley Winfrey who, as a professor at Iowa State University, developed the Iowa survivor curves and is generally regarded as the father of utility depreciation practices. Winfrey referred to the ELG procedure as "the only mathematically correct procedure."[37]

Q. DOES CURB MAKE ANY ARGUMENTS AGAINST THE USE OF THE ELG PROCEDURE OR IN FAVOR OF THE ALG PROCEDURE?

A. No. Mr. Garren does not mention which depreciation procedure he used in his testimony. He has used ALG for some accounts and ELG for others, which is not an appropriate or reasonable approach.

Q. DOES STAFF PRESENT ANY ARGUMENTS AGAINST THE USE OF THE ELG PROCEDURE?

A. Yes. Ms. McCullar puts forward two arguments against the ELG procedure. Specifically, she states that "compared to the ALG procedure, the ELG procedure should be adjusted annually and is front-loaded."[38] First note that the use of the phrase "compared to the ALG procedure" dispels that the ELG procedure is actually front-loaded. Rather, Ms. McCullar merely compares the timing of the recovery for the two methods. It is true that the timing of depreciation accruals will be

[37] Robley Winfrey, Depreciation of Group Properties, Bulletin 155 (Ames, IA: Iowa State University Press, 1942, reprinted 1969); p. 71.
[38] McCullar at 6:18-19.

different under the ELG and ALG procedures. However, as discussed above, the ELG procedure results in the proper and mathematically correct allocation of the costs of each asset in a group over its expected service life. It is the ALG procedure that simplifies the dispersed lives into an average and, therefore, results in the less precise recovery of costs. Rather than claiming that the ELG is "front-loaded" when compared to ALG, it would be more accurate to state that ALG is "back-loaded" when compared to the actual consumption of capital for a group of property over its dispersed service lives.

Q. PLEASE ADDRESS MS. MCCULLAR'S ARGUMENT THAT ELG DEPRECIATION RATES NEED TO BE ADJUSTED ANNUALLY.

A. To make this argument, Ms. McCullar discusses a simplified three-unit example on page 9 of her testimony. However, this example is not reflective of real-word property. One reason is that her example only has assets with lives of one, two or three years. Most assets in real-world utility accounts have much longer lives than three-years, which reduces the impact of any annual changes resulting from the ELG procedure. Another problem with Ms. McCullar's example is that it only presents a single vintage of property. Typically, most accounts have additions and retirements each year. As a result, ELG depreciation rates are more stable than Ms. McCullar's example implies.

As discussed in Section III, Ms. McCullar has proposed a method for net salvage that is based on recent recorded costs for net salvage. Because retirements and, therefore, net salvage vary from year to year, a precise implementation of her net salvage method would require annual updates to depreciation rates. Indeed,

there are a variety of depreciation parameters that could, strictly speaking, require annual updates in order to be precisely implemented. However, because depreciation is a process of estimation of the future, it is not necessary to do so every year. The same is true of ELG.

Q. MS. MCCULLAR CITES EXAMPLES OF COMMISSIONS THAT HAVE REQUIRED ANNUAL UPDATES OF ELG DEPRECIATION RATES. HAVE ALL COMMISSIONS THAT HAVE ADOPTED ELG DEPRECIATION RATES REQUIRED ANNUAL UPDATES?

A. No. As an example, Indiana has used ELG depreciation rates for almost four decades and does not require annual updates. The Texas Railroad Commission also does not require annual updates. It should also be noted that the orders Ms. McCullar cites are from the 1990s or earlier. In the time since, experience with calculations of ELG depreciation rates has shown that there is less of a need for annual updates than may have been expected at the time of those orders. For example, Pennsylvania uses ELG rates and Pennsylvania utilities file annual updates to their depreciation rates. My firm has performed depreciation studies and annual updates for most Pennsylvania utilities for decades. We have observed that, in the aggregate, depreciation rates have not changed dramatically from one year to the next.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

COMMONWEALTH OF PENNSYLVANIA §
§
COUNTY OF CUMBERLAND §

Ned W. Allis, being duly sworn upon his oath, deposes and states that he is Vice President at Gannett Fleming Valuation and Rate Consultants, LLC; that he has read and is familiar with the foregoing Rebuttal Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information and belief.

Ned W. Allis

Subscribed and sworn before me this 11th day of November, 2019.

Notary Public

My appointment expires: February 20, 2023

Commonwealth of Pennsylvania - Notary Seal
Cheryl Ann Rutter, Notary Public
Cumberland County
My commission expires February 20, 2023
Commission number 1143028
Member, Pennsylvania Association of Notaries

Atmos Energy – Plant Accounting

Date: 4/2/2019

Attendees: Ned Allis – Gannett Fleming
Melissa Howard – Gannett Fleming
John Johnson – Project Manager, Rates and Regulatory
Patricia Ortiz Walther – Senior Accountant
Cara Croissant – Manager of Plant Accounting

Cost of Removal

- Time and Motion Studies
- Mains and Services – Effective 10/2015 (Fiscal 2016)
- M&R Stations – Effective Fiscal 2017

Gas/Mains

- Acquisitions in 1998 may be recorded as single 1998 vintage

Oracle until Power Plan in 2004

- Power Plant upgrade in 2015

Account 382/383

- If prefab unit, will split cost between accounts

Accounts 381, 382, 383 – manual retirements determined each month

Account 381 – no labor charged to Account 381 (all to 382)

Account 390

- Olathe office sold in 2006
- Coffeyville office sold in 2001

Curve Retires for Distribution Accounts
Amortization for General Plant
Inventory performed for 390, 392, 396 (quarterly)

Atmos – Kansas Gas

Date: 4/2/2019

Attendees: Ned Allis – Gannett Fleming
Melissa Howard – Gannett Fleming
John Johnson – Project Manager, Rates and Regulatory
Jerry Barrios - Operations Manager
Matt McDonald – Manager, Technical Support
Harold Nelson – Safety Specialist
Jared Geiger – VP, Rates and Regulatory Services
Namrata Mishra – Rates Analyst
Gary Merritt – IT Manager
David Harsin – Operations Manager

IT

- WMR – Wireless Meter Reading

- R100 – Data collection devices
    - R100 – on poles <1,000 meters
    - M100 – on towers >1,000 meters

- Own poles, lease towers (primarily from telecoms or municipalities)
    - ~10 poles will be added in KS

- Rolling out meters currently (transponder on existing meter – all new meters will have endpoint)

- Modems for communications
    - Networks change – obsolescence
    - Changes – 3-year cycles (due in part to obsolescence)

- Service terms, construction moving to Dell 7212 Tablets
        - 4 Year replacement cycle
    - Laptops – 4 year replacement cycle
    - Desktops – 4 year replacement cycle

Communication Equipment

- Modems, telemetering, telephone
- Telephone – Avaya 11500 about 5 years ago
    - Phone system for offices
- Servers – 7 year replacement cycle

Kansas Division - Background

Predecessor companies

- Union Gas
- United Cities – Purchased Union in 1989
- Greeley Gas – 1993 Name Change
- Atmos acquired in 1997

Union – Olathe, Independence, Gate Center
United Cities – Harrington, Bonner, Anthony, Eureka, Johnson

Storage – Originally Union Gas
Sold Buffalo and Fredonia

Liberty Storage – North and South
Original wells in 1950s
Added wells in 1980s-90s
Added compressors in 1980s

Retired three compressors in 2000s
Use leased compressors currently

Storage

Wells

- North/South 4.8 BCF capacity
- Salt Storage

Connects to Coffeyville (local distribution)
Can sell to Southern Star Pipeline or feed to own system

Currently need capacity on Southern Star most days

- Has impacted operation of equipment
    - Off and on most days

Need for LDC Storage has decreased.

Newer regulations

- Reinforce wells
- Abandoned wells
    - Mostly Federal regulations
    - State enforced

New well = ~$50-60,000
Reinforce - similar cost

More drawdown results in greater water intake
Needed filters, dehydration investment

Eventual retirement of site

- Attempt to sell gas
- Likely plug wells
- Remove equipment
    - May be able to resell some

Transmission

Account 367 – Mains

- Connects Storage to Pipeline

Two Lines – 4” and 6”

- First in 1960s (rehabbed)
- Second in early 1990s

Both used for injection and withdrawal
Both steel

- Wrapped and cathodically protected
- Have retested and done work as needed (2010)

Pressure tests run around 2010
MAOP – 740 psi for each

- Run typically 650-720 psi

Transmission mains would be retired or sold if storage retired or sold

- Would be cut, purged and capped when retired

Account 369 – M&R Station Equipment

Regulating station in field
Station at Southern Star

Installed Chromatograph
= ~$30-50,000

Distribution

Account 376 – Mains

Steel ~1,600 mi
~830 mi bare steel
remainder is coated
All is cathodically protected

Plastic ~2,400 mi

GSRS Mechanism

- Target bare steel in Class 3 locations based on risk model
  - leak rate, population density, age, % under concrete, identified sites (distribution integrity program)
- Class 3 ~ 577 mi as of December 31 (urban areas)
- Replacement of pipe may reduce total miles of mains (e.g., 1 plastic for 2 steel)
- Small amount of plastic included in replacement program which will typically be abandoned in place
- Filed an estimate to replace Class 3 over 35 years
- Have replaced all known cast iron (did not have significant amount)
- Bare steel largely installed prior to 1970s
  - Most since 1970s is plastic
  - Oldest is 1920s
  - First plastic 1950s
  - Vintage Plastic
    - Marlex
      - Thin-walled, tends to crack
      - 1950s until early 1970s
    - Aldyl-A
      - 1970s to mid-1980s
      - Difficult to detect
    - Drisco 7000-8000
      - 1970s and 1980s
      - Not as many issues
      - Some fusion issues
    - Total ~ 2,400 miles (estimated)

- May plan to target (risk-based) vintage plastic

Cost Drivers

Urban Areas

- Restoration
- Street repairs
- Other utilities in ROW
- Camera sewer lines before and after boring
- Shallow bedrock in ground in many places
    - Expensive to drill/bore
    - Have to remove rock and backfill
    - Sometimes a work requirement
        - E.g., Johnson County
- Rarely have to remove pipe from ground
- Cut, purge/fill (usually with air), and cap, when retired
    - Sometimes water filled (e.g. highway crossing)

- Restoration – varies by City
    - e.g. seed and straw
    - Johnson County – Hydro seed
    - Repave or cover cost to repave
    - Replace sidewalks
- Backfill requirements changing

- Current Installations
    - >100 psi – steel
    - Plastic in most other cases

<u>Account 380 – Services</u>

~28,000 bare steel yard lines
~95,000 plastic

In Kansas, ownership is to building wall

- Have responsibility for customer-owned

Will incur costs to move entry to above-grade

- Adds costs, including replacements inside house
- ~$3,000 per house and ~1/4 projects

Almost all meters outside house

Will replace services when main is replaced, unless new plastic.

Replacements

- Will replace some (if using)
    - Same trench
- Cut and cap others

Vintage Plastic

- Typically in same areas as mains
- Services often damaged more than mains
- Have challenges to meet labor supply
    - Primarily use large local contractor
- 25% yard line law (Kansas law)
    - If have to replace 25% of yard line in given area due to corrosion, will have to replace all yard lines in area.

Low pressure - < 1 psi
Intermediate pressure - 1 – 100 psi
High pressure - > 100 psi (highest is 280 psi)

285 is MAOP for most of Kansas

Most bare steel is low pressure

- Most is in Coffeyville, South
- Most is cross-country so footage is higher and due to pipe on both sides of road

Supply

- Southern Star primarily supply
- Kansas pipeline
- Kansas Gas Service
- Tall Grass
- 1 local producer – Kansas Gas Company
- 104 take points – Town Border / City Gate
    - Some have multiple town take points off single tap
    - ~6 large stations (Olathe, Independence are largest), others smaller
    - 90% of gas goes to Olathe, Independence

- Large City Gate (Southern Star) – 80-90% of gas
    - Olathe North
    - Olathe East
    - Olathe South
    - South Glavin
    - Liberty North
    - Compton Corner (Coffeyville)
- All are older stations and have replaced regulation

- Southern Star plans to rebuild stations in coming years; Atmos will try to rebuild at same time
- 2015 new tap Forest View - feeds growth area in Olathe area
- Odorize at most small stations
    - Southern Star odorizes many in Olathe
- Typically try to rebuild station when assets age (may do regulators)
- Removal – remove piping, regulators and scrap
    - Odorizers need licensed disposal contractor
- Many older ones have regulators inside buildings
- Newer stations regulators are typically outside
- Control valves at newer stations
- Heaters, etc., at some stations
- SCADA equipment
- Do not have chromatographs (but may in future)
- Expect increase in station replacements going forward
    - Upgrade stations

<u>Account 378 – M&R Station Equipment</u>

- District Regulating Stations (DRS)
    - Almost all above ground
- Typically replace station when doing capital work
    - May move location if relocation improves safety, etc.
- ~650 stations total
    - May eliminate up to ¼ to ½ of stations as low pressure system is removed (main replacements)
    - e.g., one project in South will eliminate 17 DRSs
    - Most have regulator and relief valve, almost no meters or SCADA
    - Equipment removed and scrapped

Farm Taps

- ~200 for state
- Southern Star owns to meter
- Atmos owns small regulator and meter

Compton – Buckeye

- Upgrade 100 to 175 psi
- Update Compton and Buckeye

Account 376 - Mains

Pflum line replaced in 2011/2012

- Loop in Olathe, Overland Park
- Replace 11 miles of 8" steel mains

2011 Beltline around Olathe – replace valves

Account 381 - Meters

5-year WMR project in Olathe/Independence

- All new meters WMR
- If replace, low pressure system, all meters will be replaced
- Some older meters cannot be retrofit
- Rule of thumb – anything 15 years or newer would be retrofit
- WMR project may reduce life of meter – will replace meters in future if transponder fails
- Module expected to have 15-year battery life
- Sensus module

Account 382/383 – Meters-House Regulators Installations

- Not always replaced when meter replaced.
- Will replace meter when low pressure system replaced
- Will add 20,000-40,000 regulators over period of time when low pressure system replaced
- Regulator, meter set replaced when service replaced
- Expect meters replaced more frequently than regulators

Account 385 – Industrial M&R Equipment

- Industrial set
    - Usually new is pre-fab meter set with meter
- ~90 on system
- Similar life to Reg Stations, but customer request can cause retirements so shorter overall life
- A few transport customer (e.g. Waste Management, UPS, schools)

IT

Routers, switches = 7-year replacement
Phone switches = 7 years
Security controllers = 10-15 years

Account 390 – Structures

Owned Service Centers

- Independence office = 2002 (S)
    - Added to in 2015
- Yates Center office = 2010 (S)
- Anthony = 2009 (SW)
- Pleasanton = 2011 (S)

- Olathe retired in 2004-2005
    - New building is leased
- Warehouse – Bonner Springs Pipe Yard (leased) – 1980s

Account 392 – Transportation Equipment

- Primarily leased
- Most in account is trailers

Account 396 – Power Operated Equipment

- Most leased
- May own a few

Account 394 – Tools, Shop Equipment

- Locators - 5-6 year life
- Generators
- Gauges
- Trimmers
- Boring equipment – ~5 years
- Plugging equipment – 10+ years
- Electrofusion equipment - ~5 years (technology changes)