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February 29, 2016

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC
V6Z 2N3

Attention: Ms. Laurel Ross, Acting Commission Secretary and Director

Dear Ms. Ross:

Re: FortisBC Energy Inc. (FEI)

Multi-Year Performance Based Ratemaking Plan for 2014 through 2019 approved by British Columbia Utilities Commission (Commission) Order G-138-14 (PBR Plan) – Annual Review for 2016 Rates (the Application)

Order G-193-15 Depreciation and Net Salvage Compliance Filing

On December 7, 2015, the Commission issued Order G-193-15 setting out the approval for FEI's interim delivery rates effective January 1, 2016, under the PBR Plan. On December 21, 2015, the Commission issued its reasons for decision in the proceeding (2016 Annual Review Decision). In the 2016 Annual Review Decision, the Commission did not approve the changes to depreciation rates that were proposed by FEI and directed FEI to maintain existing depreciation and net salvage rates until otherwise directed by the Commission. FEI was further directed to submit additional information and analysis on depreciation and net salvage rate changes to the Commission by February 29, 2016.

FEI has engaged Gannett Fleming to respond to the questions asked by the Commission, and also to provide additional background information on the depreciation methodology employed by FEI and an alternate methodology that would reduce the asset losses being experienced by FEI. The information provided by Gannett Fleming is attached as the Additional Evidence of Larry E Kennedy, and includes the following attachments:

- Attachment 1 Service Life Statistics
- Attachment 2 Group Accounting (British Columbia Utilities Commission April 6, 2009)
- Attachment 3 Accumulated Depreciation Reserve True-up Process
- Attachment 4 Peer IOWA Curves and Net Salvage Percentages

FEI notes that a number of the questions reference the asset losses (i.e. the under-recovery of depreciation expense) that have been experienced by FEI over the past 12 years. In Workshop Undertaking No. 6 in FEI's 2016 Annual Review, FEI was asked by the Commission staff to "provide the same format as the asset losses table in Exhibit A2-1, and provide the actual net losses for 2013 and 2014, and projected net losses for 2015 and 2016. Include the original cost for each of the relevant asset classes." FEI provided the requested information showing the projected net losses for 2015 at $4.956 million on a cost of $40.329 million. FEI is now able to report its 2015 actual asset losses which are $4.820 million on a cost of $40.099 million.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

FORTISBC ENERGY INC.

IN THE MATTER OF BRITISH COLUMBIA UTILITIES COMMISSION

ORDER G-193-15 FOR ADDITIONAL INFORMATION AND ANALYSIS ON DEPRECIATION AND NET SALVAGE CHANGES

ADDITIONAL EVIDENCE

OF

LARRY E KENNEDY

FEBRUARY 29, 2016

Gannett Fleming

Excellence Delivered ***As Promised***

ADDITIONAL INFORMATION AND ANALYSIS

LARRY KENNEDY

BACKGROUND

FortisBC Energy Inc. ("FEI") requested Gannett Fleming to conduct a depreciation study related to the gas utility plant of FortisBC Energy Inc. as of December 31, 2014. This study was filed in FEI's most recent Performance Based ratemaking (PBR) Plan. By order of British Columbia Utilities Commission ("BCUC" or "Commission") Order G-193-15, the Commission denied "…changes to depreciation rates…" and directed FEI "…to maintain existing depreciation rates until otherwise directed by the Commission". The Commission also directed "…FEI to maintain net salvage rates at existing rates until otherwise directed by the Commission." Furthermore the Commission directed FEI to "…submit additional information and analysis on depreciation and net salvage rate changes to the Commission by February 29, 2016."

In reviewing the additional information and analysis requests, Gannett Fleming considers that a more comprehensive background component is required which, in its view, would provide context and support to the responses to the Commission's requests. Some definitions and explanations are required to understand the differences between the Average Service Life (ASL) and Equal Life Group (ELG) procedures and the depreciation process. This information is provided in Section 1 below. Section 2 then responds to the Commission's questions and requests for further information.

SECTION 1 ADDITIONAL INFORMATION ON DEPRECIATION METHODS

Service Life refers to the actual life of an individual asset in a particular fixed asset account. For example, in a Vehicles fixed asset account, each vehicle will have a service life reflecting the date between the vehicle's capitalization date and the vehicle's eventual retirement date (i.e. removal from the fixed asset account). Each vehicle's service life is unknown until its eventual retirement date. However, in a depreciation study, an analysis of historical actual retirement records is used to estimate the expected statistical service life of each vehicle in the Vehicles fixed asset account.

Each vehicle's retirement date, and therefore service life, is dependent upon the reason the vehicle was removed from service. For example, vehicles can retire from utility service due to accidents, age and condition, changing business needs, capacity of the vehicle, etc. Each of these causes of vehicle retirement will result in a service life. For example, some vehicles may be in a traffic accident within the first year of service resulting in a one year Service Life. Likewise, a vehicle may be providing service and not have been in any accidents for 20 years (for example) and therefore would have a 20 year Service Life.

Average Service Life refers to the average service life of all individual assets in a particular fixed asset account. For example, in the Vehicles fixed asset account where a particular vintage of vehicles is expected to have physical retirements occur in a pre-determined pattern from age 1 to age 20, the average service life of all vehicles in the particular fixed asset account would be, for example, 10 years. In this case, it would be expected that 50% of all the vehicles capitalized in a particular year would retire before the 10 year average service life with the remaining 50% retiring after the 10 year average service life.

Gannett Fleming uses the recognized naming convention of Average Service Life-Iowa Curve in its documentation. For example, a 10 year average service life combined with a S2 Iowa Curve is referenced as 10-S2 or Iowa 10-S2, while a 15 year average service life with a R3 Iowa Curve is referenced as 15-R3 or Iowa 15-R3.

Retirement Dispersion Pattern (Iowa Curve) describes the estimated statistical dispersion of the retirement of the individual assets in a particular fixed asset account. Using the example above of the Vehicles fixed asset account with an average service life of 10 years, the retirement dispersion would describe an estimated statistical dispersion of the retirement of all vehicles in the fixed asset account. The retirement dispersion could range from a wide dispersion over ages 1 to 20 to a narrow dispersion from age 9 to 11, although the average service life would always be 10 years. The exhibited dispersion patterns are represented as Iowa Curves with a wide dispersion being reflective of a low order Iowa Curve (e.g. S0, L0, R0.5) and a narrow dispersion being reflective of a high order Iowa Curve (e.g. S6, L5, R5).

Please refer to Attachment 1 for graphic representations of a low order Iowa SO curve with a 10 year average service life, a high ordered Iowa S6 with a 10 year average service life, and a SQ (i.e. square curve) with a 10 year terminal date. As can be seen in Attachment 1, all three retirement dispersion patterns (Iowa Curves) have a 10 year average service life. With the wide dispersion (i.e. Iowa 10-S0), retirements begin to occur almost immediately upon capitalization and continue on a fairly linear pattern with the last retirement occurring at approximately 20 years of age. In contrast, with the narrow dispersion (i.e. Iowa Curve 10-S6), retirements begin to occur at age 8 with the last retirement occurring at age 12. The Iowa 10-SQ has all retirements occurring at 10 years of age.

The goal of the depreciation analyst is to determine the average service life and the retirement dispersion pattern for each asset account. For example, for a particular asset account, the recommendation could be Iowa 10-S0, indicating a 10 year average service life with a wide dispersion around the 10 year average service life or the recommendation could be Iowa 10-S6 indicating a 10 year average service life with a narrow dispersion around the 10 year average service life.

HISTORICAL LIFE ANALYSIS

The depreciation analyst, through analysis of historical actual retirement records (assuming a significant and accurate quantum of historical records are available), is able to ascertain the expected statistical service life of each asset in a fixed asset account. Thus a depreciation analyst has a high degree of confidence that the statistical dispersion will accurately estimate the actual retirement of the fixed asset account. Based on the analysis, a depreciation analyst is able to determine that, for example, for all vehicles capitalized in Year 1 approximately 1% of those vehicles will be estimated to retire in that same year. These vehicles would typically retire from collisions or catastrophic events resulting in a very short service life. Similarly, determinations of vehicle retirements at each successive year can be statistically determined until the complete retirement of all vehicles comprising the original capitalization in year 1. The last vehicle retired, say in year 20, would typically retire due to age resulting in a very long service life.

AVERAGE SERVICE LIFE (ASL) PROCEDURE

As detailed in Gannett Fleming's filed depreciation study, the depreciation rates for FEI's depreciable assets are based on the straight line method using the Average Service Life ("ASL") procedure. The ASL procedure is also known as the Average Life Group ("ALG") procedure.

With the ASL procedure, all assets in a fixed asset account are depreciated and recovered over that fixed asset account's average service life. In the Vehicle's account example, which has an average service life of 10 years, all vehicles would be recovered over a 10 year basis equating to an approximate 10% depreciation rate (assuming 0% net salvage). Thus all vehicles that physically retire prior to the 10 year average service life are under depreciated at the time of retirement. Similarly, all vehicles that physically retire after the 10 year average service life are over depreciated at the time of retirement. The under depreciation of all the vehicles that retire before the average service life is rectified by the over depreciation of all vehicles that retire after the average service life. This is the basic theory and expected results of the ASL procedure.

EQUAL LIFE GROUP (ELG) PROCEDURE

The other procedure commonly used for other Canadian[1] and North American utility companies is the Equal Life Group ("ELG") procedure. As compared to the ASL procedure, the ELG procedure is considered to more accurately estimate the actual consumption of a company's fixed assets and be the most mathematically correct procedure for capital recovery by depreciation specialists including Gannett Fleming.

[1] For example, the Alberta Utilities Commission has approved the ELG procedure for most of the regulated Alberta utilities; also Gaz Metro, NB Power, Newfoundland Power, Northland Utilities (NWT), Northland Utilities (Yellowknife), Nova Scotia Power, Sask Energy, and Yukon Electrical Company Limited all utilize this procedure.

The ELG procedure, through the more detailed use of Iowa Curve dispersions, statistically assigns each asset in a fixed asset account to a group based on the estimated life of each group. In this manner all investment with the same estimated life is depreciated separately from the remaining investment in other groups with a differing estimated life. In the vehicle example with a 10 year average service life and a wide linear dispersion pattern of 1 to 20 years, each vehicle in the account would be assigned to one of 20 ELGs. Each ELG would be expected to have 5% (i.e. 1/20) of the Year 0 capitalized assets in the fixed asset account. Each ELG would have a depreciation rate equal to the reciprocal of the service life of the ELG. For example, for the ELG with the 5% of assets statistically expected to physically retire in year 1, the applicable depreciation rate would be 1/1 or 100%. Similarly for the ELG with the 5% of the assets statistically expected to physically retire in year 2, the applicable depreciation rate would be 1/2 or 50%. This pattern would continue to the ELG with 5% of the assets statistically expected to physically retire in year 20 which would have a depreciation rate of 1/20 or 5%. The composite depreciation rate for year 1 would be the mathematical sum of each of the applicable ELG's depreciation rates.

In a simplified example, assume an asset has three ELGs with service lives of 1, 2, and 3 years and investment of $100 for each respective ELG. In the first year in which the assets have been capitalized, the depreciation rate would be as follows:

Year 1 Depreciation Rate = (ELG_1 Expense + ELG_2 Expense + ELG_3 Expense) / (Original Cost)

Or = ($100 x 1/1 + $100 x 1/2 + $100 x 1/3) / ($100 + $100 + $100) = 61.1%

At Year 2 the first ELG would no longer factor into the calculation as it is retired. The depreciation rate calculation for Year 2 would be as follows:

Year 2 Depreciation Rate = (ELG_2 Expense + ELG_3 Expense) / (Remaining Original Cost)

Or = ($100 x 1/2 + $100 x 1/3) / ($100 + $100) = 41.7%

At Year 3 the second ELG would no longer factor into the calculation as it is also retired. The depreciation rate calculation for Year 3 would be as follows:

Year 3 Depreciation Rate = (ELG_3 Expense) / (Remaining Original Cost)

Or = ($100 x 1/3) / ($100) = 33.3%

In summary, with the ELG procedure, each and every asset in a fixed asset account is depreciated over the service life of the specific ELG (based on its specific estimated life from the Iowa curve) to which it is assigned. As such, all assets are recovered over the specific expected service life. The composite depreciation rate for a given fixed asset account is the highest at year 0 for each new vintage year, reflecting the inclusion of any ELG with a short service life and its correspondingly high ELG depreciation rate. As the vintage of the assets ages, the asset groups with short service lives and correspondingly high depreciation rates are retired and removed from the calculation so that the composite depreciation rate for that vintage of assets declines. This is the basic theory and expected results of the ELG procedure.

By contrast, with the ASL procedure, the above example would have a depreciation rate for all years (i.e. Year 1, Year 2, and Year 3) equal to 1 / Average Service Life or 1/2 or 50%.

ASL vs ELG PROCEDURES COMPARISON

To compare the two procedures, consider the simple example of a fixed asset account with $300 capitalized in year 1, an average service life of 2 years and dispersion pattern resulting in three ELGs with service lives of 1, 2, and 3 years and investment of $100 for each respective ELG. The depreciation rates for the vintage of assets using the two procedures would be as follows:

	ELG - Procedure	ASL - Procedure
	Composite Rate/Expense	Composite Rate/Expense
Year 1	61.1% / $183 ($100+$50+33)	50% / $150 ($50+$50+$50)
Year 2	41.7% / $ 83 ($50+33)	50% / $100 ($50+$50)
Year 3	33.3% / $ 33 ($33)	50% / $ 50 ($50)
Total Recovery	$300	$300

As described above, both the ASL procedure and the ELG procedure will result in full recovery of the costs of the assets over the life of the fixed asset account; however, the ELG procedure is intended to reflect the expected physical retirement of the assets in each year while the ASL procedure will, by design, result in a under depreciation for those assets retired in year 1 with a corresponding over depreciation for those assets retired in year 3.

Please refer to Attachment 2 which is a Group Accounting presentation to the BCUC dated April 6, 2009 which further expands on the ASL and ELG procedures.

UNDER RECOVERY (LOSS)/OVER RECOVERY (GAIN)

As described above, the ASL procedure will result in an under recovery of depreciation (i.e. loss) for each asset that is retired before the average service life of the asset account. Similarly the ASL procedure will result in an over recovery of depreciation (i.e. gain) for each asset that is retired after the average service life. This under recovery and over recovery of the depreciation expense is a defining characteristic of the ASL procedure. The only time that an under or over recovery of depreciation will not occur is when a retirement occurs at the average service life. However, as described above under the definition of Dispersion Pattern (Iowa Curve), the amount of over or under recovery of depreciation will increase with the width of the dispersion pattern. That is, the wider the dispersion pattern (i.e. lower ordered Iowa curve), the less likely a retirement will occur at the average service life and the amount of the under and over recovery will also similarly increase. Conversely, the narrower the dispersion pattern (i.e. high ordered Iowa curve) the more likely a retirement will occur at the average service life and the amount of the under or over recovery of depreciation will become less pronounced. For a depiction of the "losses" and "gains" expectations for a range of dispersions for the Iowa 10-S0 vs the Iowa 10-S6, refer to Attachment 1.

In the example of the Vehicles fixed asset account, a wide dispersion pattern (i.e. low order Iowa Curve) is typically expected. And an expectation of retirements occurring evenly over, for example, a life from 1 to 20 years with an average service life of 10 years, is not unusual. Using an ASL procedure will result in significant losses and gains, but the occurrence of a loss or gain does <u>not</u> reflect on the accuracy of the dispersion pattern (i.e. Iowa Curve and Average Service Life) derived for any fixed asset account.

<u>SECTION 2 COMMISSION QUESTIONS AND RESPONSES</u>

<u>QUESTION #1 (ASSET CLASS - DISTRIBUTION MAINS - 475):</u>

(a) What specific information/data led Gannett Fleming to recommend an increase to this asset class's average service life?
Please consider and reference the following statements from the Depreciation Study and BCUC IR 1.28.1 when responding to Question #1:
Page II-4 of the Depreciation Study: "Since the last study, this account has continued to incur retirements at a consistent rate which provide for a reliable statistical indication of average service life characteristics."
BCUC IR 1.28.1: "Starting around 2010, the provincial government, municipalities, other utilities and FEI initiated significant projects and programs to upgrade infrastructure… At the same time, FEI initiated a program to replace distribution mains having high relative risk of pipe failure."

Question #1 (a) Response
Gannett Fleming notes that it is not recommending an increase in the average service life for Asset Class 475 – Distribution Mains. Gannett Fleming is recommending that the average service life remain at 64 years, but is recommending a change in the dispersion pattern from the currently approved R2 to R2.5.

The specific information that led to Gannett Fleming recommending a slightly higher mode Iowa 64-R2.5 survivor curve for Asset Class 475, as compared to the previous estimate of Iowa 64-R2, was as follows:

- FEI provided Gannett Fleming with updated historical aged retirements from 2010 to 2014 which provided a complete aged retirement history for this asset class from the first retirement in 1963 to 2014, for a total of almost $46M in assets. The ages of the provided retirements ranged up to 73.5 and are shown on Gannett Fleming's Depreciation Study pages V-38 and V-39. Gannett Fleming then used a retirement rate methodology to analyze the complete retirement history. The retirement rate analysis indicates a significant rate of retirement activity as plant reaches 50 years of age, with large retirement rates through to age 73.5 resulting in a slightly higher mode retirement dispersion pattern. Using the historical aged retirements, the retirement rate analysis does a best fitting match of the various aged retirements to an Iowa curve and average service life. The statistical analysis of this account indicated a best fit of historic retirements consistent with the 64-R2.5 Iowa curve and is shown on page V-37 of the filed depreciation study. The observed original curve (i.e. historic retirements) are shown as discrete black square points with the recommended 64-R2.5 Iowa curve shown as labelled.

- Gannett Fleming prepared a peer analysis which indicated average service life ranges from 55 years to 66 years with Iowa curves ranging from R2 to R4 for similar asset classes in other utilities. The peer analysis is included as Attachment 4.

- A discussion with FEI's operating and engineering staff did not indicate any specific reasons to believe that the future retirement trends in this account will be significantly different than the historic indications. Furthermore, operations staff indicated that it would be expected that the life of the FEI distribution mains would be in the range of similar asset classes in other industry peers and similar with the FEI Transmission mains (Iowa 65-R3).

- The response to BCUC IR 1.28.1 provided the reasons for the retirement activity since 2010. The reasons for the retirement activity provided support and background for the retirement activity and for the slightly more rectangular retirement dispersion pattern as noted by Gannett Fleming.

Therefore, in order to better fit to the observed retirement pattern, Gannett Fleming recommended a slightly higher mode Iowa 64-R2.5 survivor curve to better reflect the experienced retirement rates as compared to the previous estimate of the 64-R2. This minor increase in the mode of the Iowa curve combined with the 64-year average service life expectation provides a reasonable interpretation of the statistical analysis of the aged retirements that have occurred over the past 51 years, and is consistent with the range of typical service lives of other natural gas utilities for this account, and furthermore is consistent with the expectations of FEI's operations and engineering staff.

(b) How is the recommended increase to the average service life of Asset Class 475 consistent with the past twelve years of historical net asset losses experienced in this asset class?

Question #1 (b) Response

The recommended increase to the average service life of Asset Class 475 is consistent with the past twelve years of historical net asset losses experienced in this asset class because the average service life is 64 years and the average year of installation of assets in this account is 1995, indicating that the assets in the account are relatively young on average. Therefore significant losses are expected under the ASL procedure as described further below.

As discussed above in the "Under Recovery (Loss)/ Over Recovery (Gain)" section, the past twelve years of historical net asset losses in this account are expected due to the usage of the ASL procedure. As shown in the observed life table on page V-37 in the filed depreciation study and in the actual retirement history shown on pages V-38 to V-39, the bulk of observed historic retirements have occurred prior to the average service life of age 64.

As discussed above in the "Under Recovery (Loss)/ Over Recovery (Gain)" section, all retirements prior to the average service life are under recovered and considered to be "losses".

The fact that the majority of retirements have occurred prior to the average service life of 64 years reflects on the relatively young age of the assets in the account. An investment weighted average of the original cost as detailed in VII-42 to VII-43 results in an average vintage year of 1995. Therefore, the majority of recorded retirements have been on young plant where the retirement ages are less than the average service life of 64 years.

Additionally any "loss" on retirements less than the average service life will be larger compared to any "gains" on those retirements with an age greater than the average service life due to the effects of inflation and deflation and the fact that retirements are based on the cost of the original capitalization.

As this account ages and retirements begin to occur at ages greater than the recommended 64 year average service life, then "gains" will occur. These eventual "gains" will compensate for the recorded "losses". This is the defining characteristic of the ASL procedure. However, it should be recognized that the continual addition of assets will result in "losses" continuing to outpace "gains". In particular, due to the impacts of inflation on new capital investment, the under recovery of depreciation on short-lived assets will defer the ability of the utility to recognize a gain.

Gannett Fleming considers that the use of the ELG procedure would significantly reduce "losses" and "gains" compared to the "losses" and "gains" that result from the current use of the ASL procedure. As described above in "ASL vs ELG PROCEDURES COMPARISON" and the "UNDER RECOVERY (LOSS)/OVER RECOVERY (GAIN)", under the ELG procedure no "losses" or "gains" will occur provided retirements follow the expected retirement pattern of the Iowa 64-R2.5. Any deviations between actual retirements and predicted retirements from the Iowa 64-R2.5 are accounted for as "losses" or "gains"; however, the magnitude will be significantly reduced from the "losses" or "gains" under the ASL procedure. The transition from ASL to ELG would, however, result in increased depreciation rates overall. This is due to the significant amount of original cost reflected in current vintages. As shown in the simple example detailed above in "EQUAL LIFE GROUP (ELG) PROCEDURE", the current vintage reflects a higher vintage depreciation rate due to assets statistically expected to physically retire in earlier years with resulting increased vintage depreciation rates. Furthermore, the ELG procedure recognizes that assets that were previously depreciated using an ASL procedure will have a reserve deficiency compared to what would be expected if an ELG procedure had been used. This will result in additional depreciation to true-up the accumulated depreciation reserve deficiency and a significant depreciation rate increase at the time of transition.

The other way to minimize the "losses" and "gains" that occur using the ASL procedure is through increased componentization of each fixed asset account. A wide dispersion pattern can also be reflective of a variety of equipment capitalized to a single fixed asset account that has a variety of unique service lives. Although these component assets are all considered to be part of a fixed asset account (according to a Uniform System of Accounts designation), there are varying service lives associated with component assets. This dispersion of service lives typically will result in a wide dispersion pattern around the total fixed asset account's average service life. By creating more accounts with more unique average service lives, it would likely decrease the dispersion around these average service lives. Thus retirements would occur closer to each account's average service life decreasing the amount of "losses" and "gains".

For example, FEI's Account 48400 – Transportation Equipment includes the following component examples: automobile, tractor, truck c/w utility body, bins, truck canopies, truck trailer. Splitting this account into more homogeneous categories would likely result in narrower dispersions (i.e. high ordered Iowa curves) with retirements closer to each accounts average service life. This type of componentization, however, requires work and resources to split existing historical records to reflect the composition of the new fixed asset accounts. Newfoundland and Labrador Hydro is an example of a utility company that has a significant amount of componentization of their fixed asset accounts (approximately 125 fixed asset accounts) to reflect more homogeneity into each of their fixed asset accounts.

(c) Please explain how the recommendations and findings in the depreciation study to decrease the depreciation rate align with the increased retirement activities described in response to BCUC IR 1.28.1 of this proceeding.

Question #1 (c) Response

The response to BCUC IR 1.28.1 provided the reasons for the retirement activity since 2010. The reasons for the retirement activity provided support and background for the retirement activity and for the slightly higher mode retirement dispersion pattern as noticed by Gannett Fleming. The total retirement base from the previous depreciation study increased by approximately $10M (or 28%) for the period 2010 to 2014 period. Although this appears to be a sizeable amount, the cumulative retirements only reflect 3.5% of the total account investment as of December 31, 2014. This reflects the young age of this asset account and indicates that the total retirement experience is low.

Incorporating the above retirements, the response to BCUC IR 1.28.1, and Gannett Fleming's experience, a recommendation of a slightly higher mode Iowa 64-R2.5 survivor curve was made to better reflect the experienced retirement rates as compared to the previous estimate of the 64-R2.

This minor increase in the mode of the Iowa curve combined with the average service life expectation provides a reasonable interpretation of the historical retirement activity, and falls within the range of typical service lives for this account and was therefore recommended for this account.

QUESTION #2 (ASSET CLASS 465 – TRANSMISSION PIPELINE):

Please consider and reference the following statements from the Depreciation Study and BCUC IR 1.28.1 when responding to Question #2:

Page II-5 of the Depreciation Study: The Retirement Rate Analysis as presented at pages V-17 and V-18 of this report and discussions with the operations and engineering staff have indicated that to date the pipe has experienced only a limited level of retirement activity… The company has indicated that there are no major replacements expected during the immediate planning horizon and that the historical indications are indicative of the future.

BCUC IR 1.28.1: "Since the last depreciation study in 2009, retirement costs have increased for the period 2010-2014 with notable increases experienced in 2011 and 2014 for specific projects..."

(a) How does Gannett Fleming's recommendation to maintain the existing depreciation rate correlate to the past twelve years of historical net asset losses experienced in this asset class?

Question #2 (a) Response

The recommendation to maintain the previous Iowa 65-R3 is consistent with the past twelve years of historical net asset losses experienced in this asset class because the average service life is 65 years and the average vintage year of assets in this account is 1997, indicating that the assets in the account are relatively young on average. Therefore significant losses are expected under the ASL procedure as discussed below.

As discussed above in the "Under Recovery (Loss)/ Over Recovery (Gain)" section, the past twelve years of historical net asset losses in this account are expected due to the usage of the ASL procedure. As shown in the observed life table on page V-16 in the filed depreciation study and in the actual retirement history shown on pages V-17 to V-18, the bulk of observed historical retirements have occurred prior to the average service life of age 65. As discussed above in the "Under Recovery (Loss)/ Over Recovery (Gain)" section, all retirements prior to the average service life are under recovered and considered to be "losses".

The fact that the majority of retirements have occurred prior to the average service life of 65 years reflects on the relatively young age of the assets in the account. An investment weighted average of the original cost as detailed in VII-29 to VII-30 results in an average vintage year of 1997. Therefore, the majority of recorded retirements have been on young plant where the retirement ages are less than the average service life of 65 years.

Additionally, any losses on retirements less than the average service life will be larger compared to any "gains" on those retirements with an age greater than the average service life due to the effects of inflation and deflation and the fact that retirements are based on the cost of the original capitalization.

As this account ages and retirements begin to occur at ages greater than the recommended 64 year average service life, then "gains" will occur. These eventual "gains" will compensate for the recorded "losses". This is the defining characteristic of the ASL procedure.

Please see the response to 1(b) above for a description of ways in which the "losses" and "gains" that occur under the ASL procedure could be reduced.

b) Please explain how the recommendations and findings in the depreciation study regarding this asset class' depreciation rate align with the increased retirement costs described in response to BCUC IR 1.28.1.

Question #2 (b) Response

The increase in net salvage percentage is consistent with the observed increase in costs of removal over the past years. Retirement costs reflect the cost to remove assets upon retirement. The cost to remove are the same for similar work, whether the utility is removing older pipe or a newer pipe. The cost of removal is expressed as a percentage of the original cost (i.e. the numerator is expressed in current dollars while the denominator is expressed in original costs).

The response to BCUC IR 1.28.1 provided the reasons for the increased retirement costs (i.e. cost of removal) since 2010. With the retirement costs increasing for the period 2010-2014, the trend (shown on page VI-13 and detailed on page II-6) indicated a 2000-2014 three-year moving average range from negative 0 percent to negative 94 percent with the most recent five year average (i.e. 2010-2014) being negative 32 percent. All the bands indicated a higher level of negative net salvage in the more recent years compared to the earlier years. In the last depreciation study, Gannett Fleming recommended negative 10 percent to represent the net salvage expectation. The discussions held with the company operations and engineering staff indicated that the historical indications would be reasonable future expectations for the equipment in this account. Based upon the historical results, the current increased activity, and the comments from the operations and engineering staff, Gannett Fleming recommends that a moderate and conservative change to negative 20 percent is appropriate at this time and is within the range of the peer comparison analysis.

<u>QUESTION #3 (ASSET CLASSES 467 – MEASURING AND REGULATING EQUIPMENT – TRANSMISSION PLANT AND 477 – MEASURING AND REGULATING EQUIPMENT – DISTRIBUTION PLANT):</u>

(a) What specific information led to Gannett Fleming recommending an increase to these asset classes' average service lives?

Question #3 (a) Response

The asset classes where increased average service lives were recommended are as follows:

<u>Account 467.10 – Measuring and Regulating Equipment – Transmission Plant</u>

The previous recommendation for this account was an Iowa 27-L1. As detailed on page V-22 of the filed depreciation study, sufficient historical retirements were available for historical retirement rate analysis. As detailed in this graph, the historical retirement experience is shown as the black squares. The historical analysis utilized determined that the best fitting ASL and Iowa Curve was an Iowa 36-S0.5. As can be seen in the graph, this combination provided an excellent fit to the historical retirement data. Discussions with operations and engineering staff indicated that the historical results were reasonable expectations for the future. Based on the above the current recommendation for this account is an Iowa 36-S0.5.

The other two accounts from the 467 series where an increase is recommended are 467.00 Measuring and Regulating Equipment – Mt. Hayes and 467.31 – Intermediate Pressure - Measuring and Regulating Equipment – Whistler. The previous recommendation for account 467.00 was an Iowa 27-SQ and for account 467.31 was Iowa 25-R2.5. Sufficient historical retirements were not available for these accounts and thus could not be used to derive an ASL either at the time of the previous recommendation or for the current depreciation study. Discussions with operations and engineering staff indicated that the historical results of an Iowa 36-S0.5 for similar Account 467.10 – Measuring and Regulating Equipment – Transmission Plant was a reasonable expectation for the equipment in these two accounts. All of the 467 series accounts have similar components of measurement and regulated equipment, such as meters, gauges, regulators, and associated equipment used for measuring or regulating gas for gas transmission operations, and those intermediate pressure operations which are considered to be part of the transmission system. Based on the above, the current recommendation for this account is an Iowa 36-S0.5.

<u>Account 477.10 – Measuring and Regulating Additions – Distribution Plant</u>

The previous recommendation for this account was an Iowa 26-R2. As detailed on page V-40 of the filed depreciation study, sufficient historical retirements were available for retirement analysis. As detailed in this graph, the historical retirement experience is shown as the black squares. The historical analysis utilized determined that the best fitting Iowa Curve and ASL was an Iowa 30-R2. As can be seen in the graph this combination provided an excellent fit to the historical retirement data. Discussions with operations and engineering staff indicated that the historical results were reasonable expectations. Based on the above the current recommendation for this account is an Iowa 30-R2.

(b) How is this recommendation consistent with the past twelve years of historical net asset losses experienced in these asset classes?

Question #3 (b) Response

The recommended average service lives for the accounts referenced in #3 (a) above are consistent with the past twelve years of historical net asset losses experienced in the asset classes because of the age of retirements compared to each asset account's recommended average service lives. The average service life for account 467.10 is 36 years and the average vintage year of assets in this account is 2000, indicating that the assets in the account are relatively young on average. Likewise the average service life for Account 477.10 is 30 years and the average vintage year of assets in this account is 2002, indicating that the assets in both of the accounts are relatively young on average. Therefore significant losses are expected under the ASL procedure as discussed below.

As discussed above in the "<u>Under Recovery (Loss)/ Over Recovery (Gain)</u>" section, the experienced past twelve years of historical net asset losses in this account are expected due to the usage of the ASL procedure and that all retirements prior to the respective average service lives are under recovered and considered to be "losses".

Additionally any losses on retirements less than the average service life will be larger compared to any "gains" on those retirements with an age greater than the average service lives due to the effects of inflation and deflation and the fact that retirements are based on the cost of the original capitalization.

As these accounts age and retirements begin to occur at ages greater than the recommended average service lives, then "gains" will occur. These eventual "gains" will compensate for the recorded "losses". This is the defining characteristic of the ASL procedure.

Please see the response to 1(b) above for a description of ways in which the "losses" and "gains" that occur under the ASL procedure could be reduced.

<u>QUESTION #4:</u>

For the five asset classes which have experienced the largest historical net losses since 2003 (Asset Classes 465, 473, 474, 475 and 478), does Gannett Fleming expect that at some point in the future the trend of net losses will reverse and that these asset classes will start exhibiting net gains? If yes, please explain when the net gains are expected to starting occurring. If not, please explain why not.

Question #4 Response

A similar question was asked in the 2012-2013 RRA proceeding and referenced in the Commission Decision attached to Order G-44-12 where Commission refers to BCUC IR 2.74.13. The question and response provided to BCUC IR 2.74.13 was in relation to Account 475 but is indicative of all the accounts and has been reproduced as follows:

Question:

Under the fourth Factor, FEU describes group accounting as a method of accounting that should be expected to result in a buildup in unrecovered depreciation. Based on the survivor curves and the average useful life of assets, please complete the following table to demonstrate how and when the losses should end and gains should begin:

Expected losses (based on average service life, asset values and consideration of survivor curves)

Year	unrealized loss/(gain) expectation	net unrealized loss/(gain)
2012		
2013, etc.		
	Total	$0

Response:

There are a number of challenges to be able to fully respond to this question.

First, an estimate is required of the future retirement activity, by age of the investment being retired for each account through to the end of the expected maximum life of the investment. Given the long life expectation of a number of the accounts, this would include projections of the expected retirement amounts for approximately 120 years. As indicated in the plots of the Iowa curves included in Section VI of the Gannett Fleming depreciation study (Appendix E-1 of Exhibit B-1 [in the 2012-2013 RRA proceeding]) the maximum life expectancy of a number of the accounts are near to, or exceed 100 years.

Second, given that the plant currently installed in many accounts was originally placed into service in the late 1950's, over 50 vintages of plant would need to be considered, as each vintage is at a unique current age and will have a unique retirement profile in each forecast transaction year. As such the determination of the annual retirement amounts could consider over 6,000 individual calculations.

Finally, each of these individual calculations would then require a separate determination of the gain or loss associated with the projected retirement. Given the complexity and number of calculations, a full response for each account cannot be completed in a timely fashion.

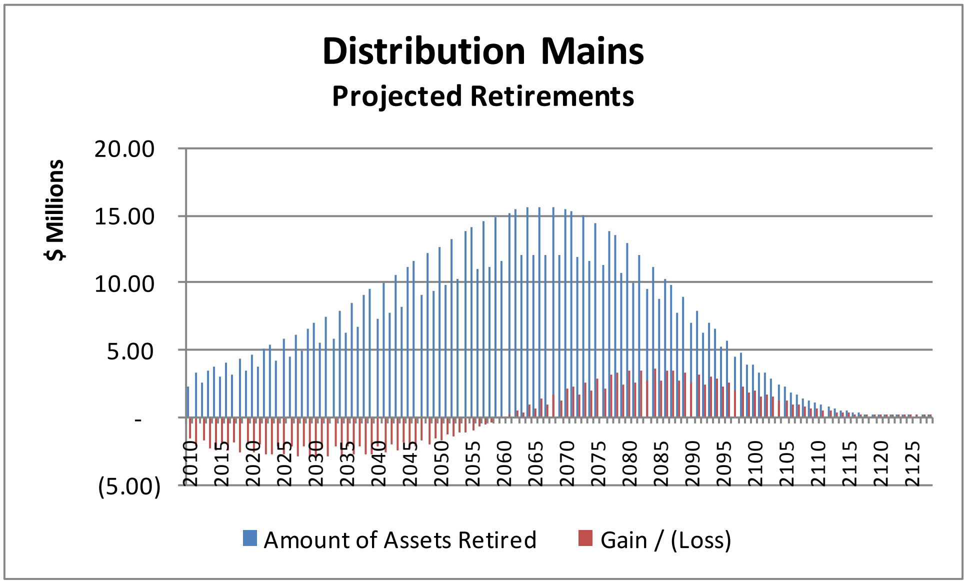
However, in order to be responsive and provide an indication of the trends of the future gain and loss amounts, FEI has requested that Gannett Fleming complete an analysis associated with the Account 475 Distribution Systems – Mains, representing a significant amount of investment and an asset class that has recorded retirement losses.

In completing the assessment for Account 475, Gannett Fleming included the following assumptions in order to simplify the model as much as possible:

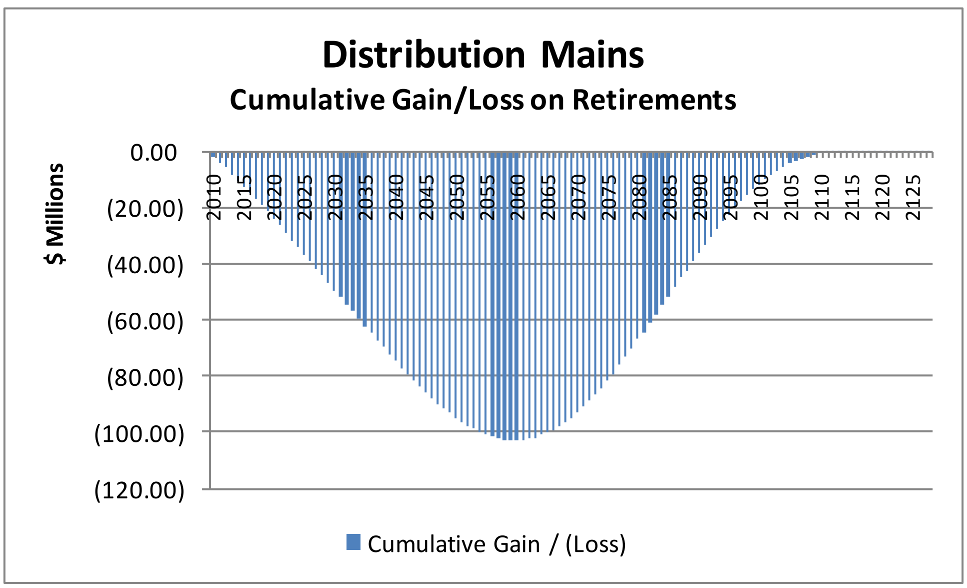
- *All future retirements have been estimated to occur exactly in accordance with the recommended Iowa curve;*
- *All net salvage considerations were removed from the gains and losses determination;*
- *The current amount of accumulated depreciation variance was not amortized through any type of true mechanism. As such, at the end of the calculations made for Account 475, a small amount (less than $3 million) of accumulated depreciation surplus still exist but is immaterial to the analysis provided.*
- *No future capital additions are made to the account, resulting in an analysis of the current investment as at December 31, 2009.*

For illustrative purposes, below is a graph showing the estimated annual and cumulative gains and losses through the year 2128. These amounts would be considered as normal and are required to be charged to the accumulated depreciation account in order to fully and accurately depreciate the current investment in Account 475. As noted above, the small amount of net gain at the end of 2128 is a function of the assumption to not amortize the accumulated depreciation variance that existed as at December 31, 2009.

As indicated on the graph below, losses are expected to continue until approximately the year 2060 at which time, based on the modelled assumptions and average estimated life, retirements of distribution mains are expected to lead to gains.



Over the asset life profile, the retirement losses and gains are expected to net out to zero.



QUESTION #5:

Please compare the proposed depreciation rates for the following FEI asset classes to the depreciation rates for the same (or similar) asset classes of other large Canadian gas utilities:

- **Asset Class 465 - TP Mains**
- **Asset Class 467 - TP Measuring & Regulating Equipment**

- **Asset Class 473 - DS Services**
- **Asset Class 475 - DS Mains**
- **Asset Class 477 - DS Measuring & Regulating Equipment**
- **Asset Class 478 - DS Meters**

Question #5 Response

A comparison of depreciation rates between similar asset accounts will typically not provide useful information or comfort in the filed depreciation study. A number of factors will produce varying depreciation rates such as the procedure used (i.e. ELG vs ASL), the accounting methodology used (i.e. FIFO, LIFO, amortization accounting), the Accumulated Depreciation Reserve True-up process utilized, the investment distribution between the applicable vintages (i.e. year of original capitalization), and the net salvage methodology (i.e. delineation between removal costs and new replacement costs), used by the comparable companies. All of these factors have the potential to produce significant varying depreciation rates.

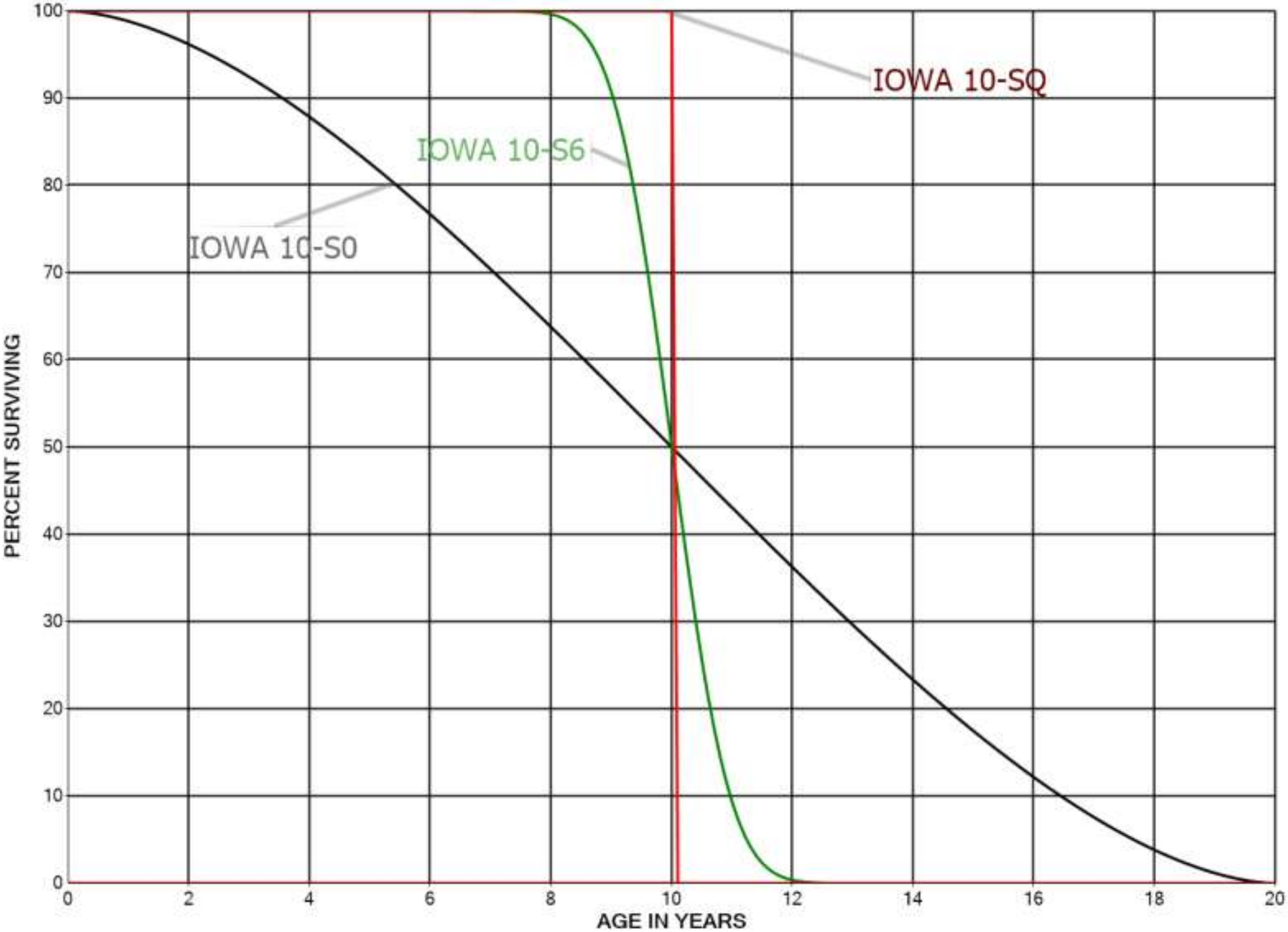
The simple example provided in <u>ASL vs ELG PROCEDURES COMPARISON</u> above shows the difference in depreciation rates through the application of the ASL and the ELG procedure on identical data. In this example the ASL depreciation rate remains at 50% through the 3 year life span of the account while the ELG depreciation rate varies from 44% to 61%. Furthermore the usage of an accumulated depreciation reserve true-up process, and the type of process used, will affect the resultant rates significantly. Attachment 3 illustrates the effects of the true-up process used by FortisBC Energy Inc. In addition, the net salvage methodology used by the comparable companies can vary significantly, producing similarly varying depreciation rates. The methodology used by comparable companies in regards to the delineation of removal costs versus the replacement costs can differ significantly resulting in large depreciation rate differences. For example, a company may charge a percentage of the replacement costs to cost of removal while another company may keep detailed actual removal activity with the potential of significant differences in their respective net salvage (i.e. gross salvage proceeds minus cost of removal costs) records. The company's removal/abandonment policy will likely result in significant net salvage records. A company that abandons its underground/buried mains or services will have significantly less net salvage costs than a company that physically removes them. These examples have the potential to change each company's depreciation rate significantly. If two companies had the exact 10% average service life rate, the incorporation of a net salvage of 0% would have a resultant rate of 10% (i.e. (100- Net Salvage) / Life or (100-0) / 10) while a company with a net salvage of -50% (i.e. (100+50) / 10) would have a resultant rate of 15% and a company utilizing a net salvage of -100% (i.e. (100+100) / 10) would have a resultant depreciation rate of 20%.

A more important and appropriate comparison of similarity between companies may be a peer analysis comparison of Iowa Curve/Average Service Life and a similar comparison of Net Salvage between peer companies. A peer analysis is typically provided for recommendations guidance where insufficient retirement data exists or if there is no management/engineering input. Although comfort can be gained by noting that the recommendations falls within a range similar to the peer companies, a recommendation outside of the peer companies does not reflect on a recommendation based on company specific retirement data or management/engineering input. A peer analysis comparison is provided in Attachment 4 to this document for those asset classes where data is available. This attachment shows 1) the recommended Iowa Curve and ASL for six peer Canadian Gas companies and 2) the recommended net salvage percentages for the same six peer Canadian Gas companies.

Attachment 1

SERVICE LIFE STATISTICS

ACCOUNT 12345
SMOOTH SURVIVOR CURVE



Attachment 2

Group Accounting

BRITISH COLUMBIA UTILITIES COMMISSION

APRIL 6, 2009

Presented by Larry Kennedy
Gannett Fleming, Inc.

GROUP ACCOUNTING

- GROUP ACCOUNTING CONCEPTS
- GROUP DEPRECIATION CONCEPTS
- RETIREMENT PROCEDURES

GROUP ACCOUNTING CONCEPTS

TENS OR HUNDREDS OF THOUSANDS OF ASSETS

MANY FORCES OF RETIREMENT

MANY DIVERSE AGES OF RETIREMENT

ASSETS USUALLY GROUPED INTO HOMOGENOUS GROUPS

GROUPINGS ARE USUALLY APPROVED BY REGULATORS

GROUP DEPRECIATION CONCEPTS

- Generally a unique concept to utilities
- Not really understood by those outside the utility industry

AT FIRST LOOK IT APPEARS THAT ASSETS ARE GROUPED AND NOT UNIQUELY DEPRECIATED OVER ASSET SPECIFIC AVERAGE SERVICE LIVES

BUT LET US EXPLORE……

WHAT IS GROUP DEPRECIATION

Depreciates a group of homogenous assets at a common rate rather than requiring a separate depreciation calculation for the tens or hundreds of thousands of assets within the group.

WHAT IS GROUP DEPRECIATION

Depreciates a group of homogenous assets at a common rate rather than requiring a separate depreciation calculation for the tens or hundreds of thousands of assets within the group.

HOWEVER

GROUP DEPRECIATION

THE LIVES USED IN THE DETERMINATION OF THE RATE ARE NOT COMMON TO ALL OF THE ASSETS WITHIN THE GROUP

IN FACT
THE USE OF A COMMON RATE IS USED PURELY FOR CONVENIENCE

The calculation of a rate is only a means to simplify the posting of the annual accrual amount and does not reflect the actual recovery of the investment in each of the assets

CALCULATION OF DEPRECIATION RATE

$$\text{Rate\%} = \frac{100\% - \text{Salvage}}{\text{Life}}$$

REQUIRES

- ESTIMATED LIFE
- ESTIMATED SALVAGE PERCENTAGE

FORCES OF RETIREMENT

- Utility assets retire over a wide band of ages
- Many forces of retirement due to the large number of assets
- Most forces of retirement occur annually or at least periodically
- A specific force of retirement cannot be assigned to a specific asset

THIRD PARTY STRIKES

An official looks into the hole where an excavator punctured an oil pipeline causing an oil spill in Burnaby, B.C. on July 24, 2007. (CP / Richard Lam)

FORCES OF NATURE

STORMS

SOIL EROSION

OTHER

- Replacement due to changes in capacity requirements
- Technology changes
- Changes in environmental legislation (i.e. PCB contamination)
- Physical Age and Condition

Estimated Life Considerations

Most of the forces of retirement can occur at any age

Not all utility assets installed in any given year will retire due to the same force of retirement

Not possible to isolate which specific asset will be retired due to storms, third party hits, etc.

History tells us that some assets from all ages will retire in most years

How do we deal with this?

- More finite componentization and site based depreciation
    - Not always possible/practicable
    - Allows for forces of retirement through the development of components
- Selection of appropriate grouping procedures
    - Equal Life Group Procedure
    - Average Service (Group) Life Procedure
- Development of Appropriate Retirement Practices
    - Retirement of actual original costs when tracked in Asset Ledgers
    - Retirement of estimated original costs
    - Retirement based on historic patterns
- Some combination of above

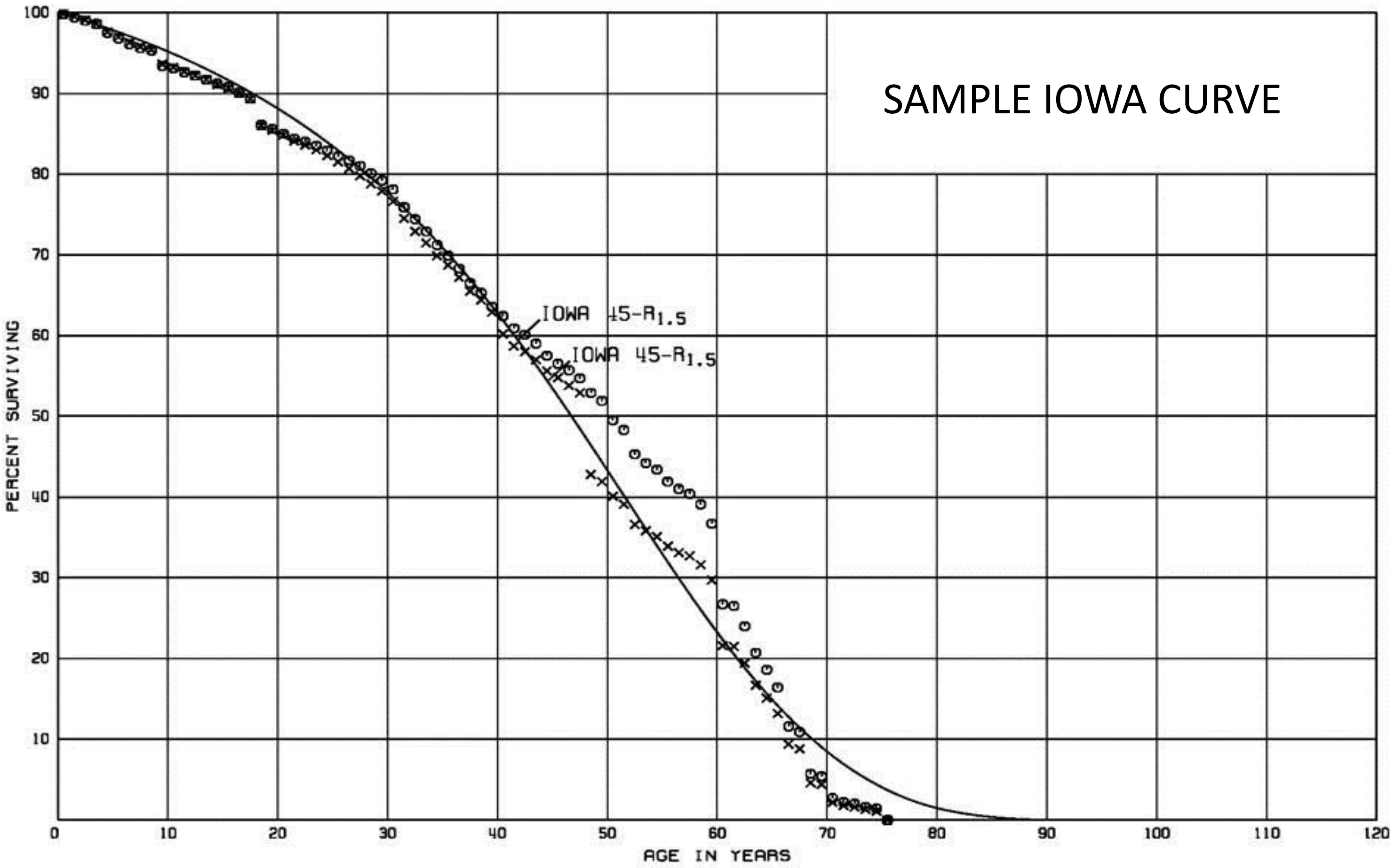
INCREASED COMPONENTIZATION…..

Presents Issues with Mass Property Accounts such as Pipe or Pole Accounts

Can be effective for Accounts such as Office Building and Software

Can be considered for Electric Generation Plant which may have some larger specific components

MASS PROPERTY GROUPING



IOWA Curves

- The X and O points represent actual retirement experience
- There is an estimated retirement amount in each year of the accounts life in both the actual retirements and in the smoothed curve
- The IOWA curve represents all forces of retirements at all ages

IOWA Curves

TWO ways to use the IOWA curve in Depreciation Rate Calculations

THE AVERAGE SERVICE LIFE PROCEDURE (ASL OR AGL)

THE EQUAL LIFE GROUP (ELG) PROCEDURE

AVERAGE SERVICE LIFE PROCEDURE

$$\text{RATE\%} = \frac{100\% - \text{SALVAGE}}{\text{AVERAGE SERVICE LIFE}}$$

- Complete area under the IOWA curve is used in the calculation
- The average age calculation incorporates all forces of retirement
- The average life estimate is in fact reduced due to the early retirement experience

Average Service Life Procedure (depreciation over remaining life)

- Also known as Direct Life Method
- Complete area under the IOWA curve is used in the calculation
- The average age calculation incorporates all forces of retirement
- Retirement of all assets are made at the end of the average life estimate

Equal Life Group Procedure

$$\text{Rate} = \sum \frac{\text{Investment of each retirement group - Salvage}}{\text{Age estimate of each retirement group}}$$

Equal Life Group Procedure

$$\text{Rate} = \sum \frac{\text{Investment of each retirement group - Salvage}}{\text{Age estimate of each retirement group}}$$

SIMPLIFIED EXAMPLE

ASL vs. ELG

Two Units:

$1,000 Each

1 - 5 Year Life

1 - 15 Year Life

ASL (AGL) PROCEDURE

$$\text{Average Life} = \frac{5 + 15}{2} = 10$$

Depreciation Rate = 10%

ASL PROCEDURE

$$10\% \text{ X } \$2{,}000 \text{ X } 5 = \$1{,}000$$

$$10\% \text{ X } \$1{,}000 \text{ X } 10 = \underline{\$1{,}000}$$

$$\$2{,}000$$

EQUAL LIFE GROUP

Annual Accrual, Years 1- 5

$$\frac{\$1{,}000}{5} + \frac{\$1{,}000}{15} = 200 + 67 = \$267$$

Depreciation rate = $267/$2,000 = 13.35%

EQUAL LIFE GROUP

Annual Accrual, Years 6-15

$$\frac{\$1,000}{15} = \$67$$

Depreciation rate = $67/$1,000 = 6.7%

DEPRECIATION PROCEDURES

Average Service Life Procedure				Equal Life Group Procedure				Average Service Life Procedure (direct life method)			
Year	Accruals ($)	Retirements ($)	Accum. Depr'n Balance ($)	Year	Accruals ($)	Retirements ($)	Accum. Depr'n Balance ($)	Year	Accruals ($)	Retirements ($)	Accum. Depr'n Balance ($)
1	200		200	1	267		267	1	200		200
2	200		400	2	267		534	2	200		400
3	200		600	3	267		801	3	200		600
4	200		800	4	267		1,068	4	200		800
5	200	1,000	0	5	267	1,000	335	5	200		1000
6	100		100	6	67		402	6	200		1200
7	100		200	7	67		469	7	200		1400
8	100		300	8	67		536	8	200		1600
9	100		400	9	67		603	9	200		1800
10	100		500	10	67		670	10	200	2000	0
11	100		600	11	67		736	11			
12	100		700	12	67		802	12			
13	100		800	13	67		868	13			
14	100		900	14	67		934	14			
15	100	1,000	0	15	67	1,000	0	15			

ASL vs. ELG ACCUMULATED DEPRECIATION AFTER 5 YEARS

ASL	$1,000	Accruals
	-1,000	Retirements
	-0-	
Equal Life Group	$1,333	Accruals
	-1,000	Retirements
	$ 333	

KEY POINTS

- In all procedures the total original cost is recovered
- With ASL there is no provision for accumulated depreciation for the second asset after the retirement of the first unit
- ELG is based on the life estimate of each group, leaving a provision for accumulated depreciation for the second asset at the point in time of retirement of the first asset

Remember…….

IN FACT
THE USE OF A COMMON RATE IS USED PURELY FOR CONVENIANCE

The calculation of a rate is only a means to simplify the posting of the annual accrual amount and does not reflect the actual recovery of the investment in each of the assets

In Fact with ELG

The first asset retired at age 5 has built up accumulated depreciation at the rate of $1,000/5 yrs or 20%

Therefore the net book value for the first asset retired needs to recognize that the accumulated depreciation related to the first asset = ($1,000 x 20%) X 5 years = $1,000

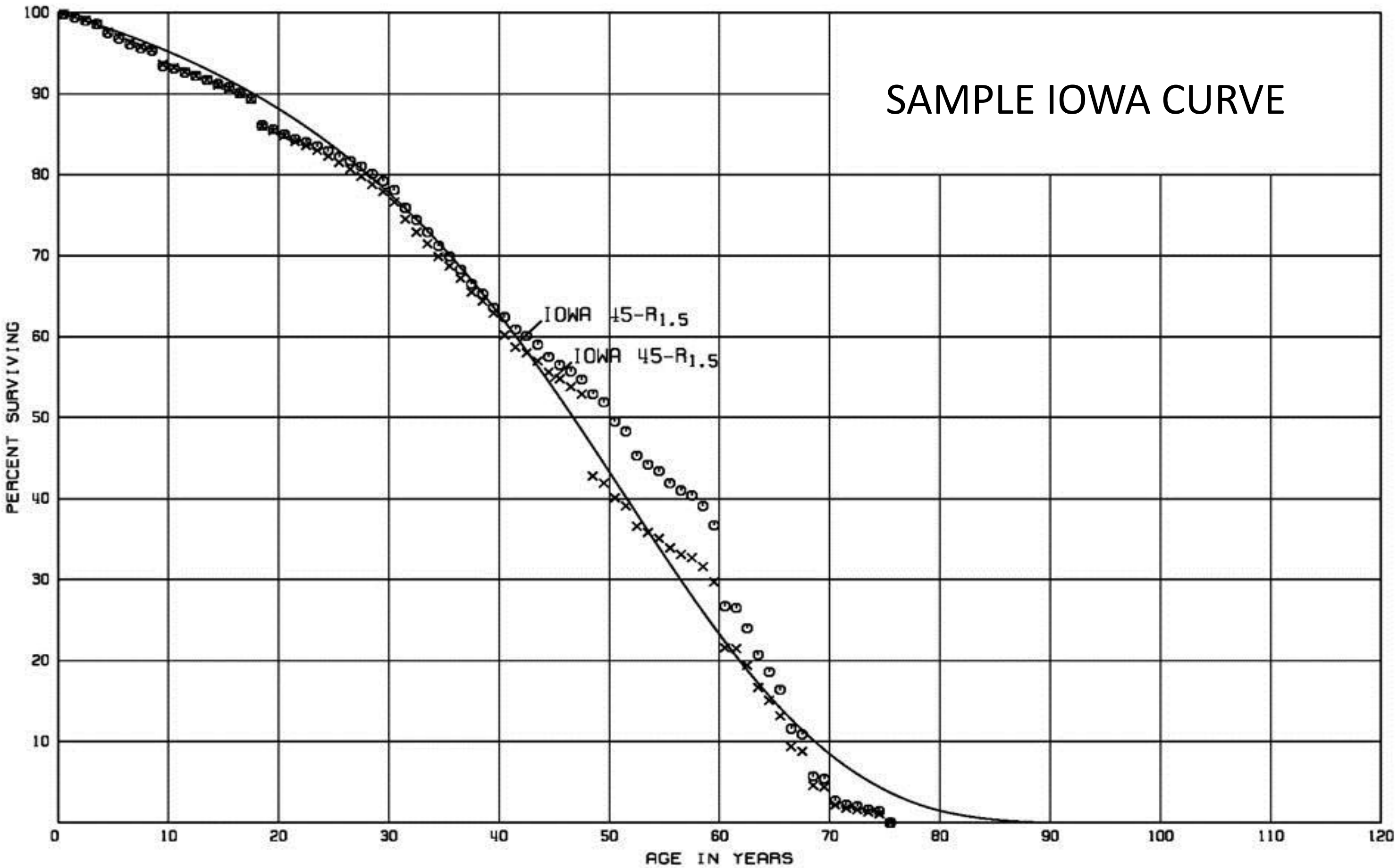
Net book value of first asset at retirment = $0.

BUT …….WHAT ABOUT ACCOUNTS WITH WAY MORE THAN TWO ASSETS

-ACCOUNTS SUCH AS PIPE OR LINE TRANSFORMERS

REMEMBER THAT SAMPLE IOWA CURVE ?

Estimated Life Considerations



ELG and IOWA Curves

- Sample curve has approximately 90 equal life groups - one for year within the curve
- ELG procedure would have approximately 90 calculations – one for each year within the curve
- The depreciation accrual is equal to (the investment in the group of assets retiring in first year X100%) + (group of assets retiring in second year X50%)........
- The result of the above calculation is a depreciation rate applied to all assets only for convenience.

MASS PROPERTY RETIREMENT PRACTICES

- Retirement of actual original cost is best when information is available
    - Requires tracking of the specific item in the fixed asset ledger
- Partial or estimated original cost is often used as a proxy
    - Used for accounts such as pipe and conductor
- Retirements based on historic experience and life estimations have historically been used for large volume accounts with small unit costs
    - Often used for general plant assets
- Various combinations of above can be used to best utilize the information available

Attachment 3

FORTISBC ENERGY INC.

Larry Kennedy – Valuation and Rate Division – Vice President

ACCUMLATED DEPRECIATION RESERVE TRUE-UP PROCESS

Larry Kennedy – Valuation and Rate Division – Vice President

FORTISBC ENERGY INC.

- **PURPOSE OF PRESENTATION**
  - HIGHLIGHT THE AVERAGE SERVICE LIFE ACCUMULATED DEPRECIATION RESERVE TRUE-UP PROCESS
  - DETAILED EXAMPLE
    - ASSUMPTIONS
    - NUMBERICAL EXAMPLE
  - DETAILED DESCRIPTIVE NOTES

FORTISBC ENERGY INC.

- **ACCUMULATED DEPRECIATION RESERVE TRUE-UP PROCESS**
  - ENSURES 100% CAPITAL RECOVERY
  - REFLECTS THE POSITION OF THE BOOKED ACCUMULATED DEPRECIATION RESERVE IN THE DEPRECIATION RATE DEVELOPMENT

- **ACCUMULATED DEPRECIATION RESERVE TRUE-UP PROCESS**
  - EXAMPLE ASSUMPTIONS:
    - ORIGINAL EXPECTED LIFE = 20 YEARS
    - LIFE REVISED AT YEAR 7 = 15 YEARS
    - IOWA CURVE = SQUARE
    - NET SALVAGE = 0%
    - NEW DEPRECIATION STUDY AT YEARS 7, 11, AND 15 REFLECTING UPDATED DEPRECIATION RATES

FORTISBC ENERGY INC.

• ACCUMULATED DEPRECIATION RESERVE TRUE-UP EXAMPLE

Year	Addition	Retirement	Remaining Original Cost	Realized Life	Remaining Life	Calculated Accm Depn @ 20 Year Life	Calculated Accm Depn @ 15 Year Life	Book Accm Depn	Difference between Book and Calculated Accm Depn	Future Book Accruals	Annual Accrual Amount	Annual Accrural Rate
a	b	c	d=b+c	e	f	g	h	i = l+c	j = i-g or i-h	k = d-i	l = k/f or d*m	m = l/d
1	1,000		1,000	0	20					1,000	50	5.00%
2			1,000	1	19	50	67	50	0	950	50	5.00%
3			1,000	2	18	100	133	100	0	900	50	5.00%
4		-250	750	3	17	113	150	-100	-213	850	38	5.00%
5			750	4	16	150	200	-63	-213	813	38	5.00%
6			750	5	15	188	250	-25	-213	775	38	5.00%
7			750	6	9		300	13	-288	738	82	10.93%
8	750		1,500	7	8		700	94	-606	1,406	164	10.93%
9			1,500	8	7		800	258	-542	1,242	164	10.93%
10			1,500	9	6		900	422	-478	1,078	164	10.93%
11		-900	600	10	5		400	-314	-714	914	183	30.46%
12	100		700	11	4		513	-131	-644	831	213	30.46%
13			700	12	3		560	82	-478	618	213	30.46%
14			700	13	2		607	295	-311	405	213	30.46%
15			700	14	1		653	509	-145	191	191	27.33%
16			700	15	0		700	700	0			

Gannett Fleming 100 Years of Excellence Delivered As Promised

- **ACCUMULATED DEPRECIATION RESERVE TRUE-UP PROCESS**
  - The accumulated depreciation reserve true-up process ensures 100% of capital recovery
    - It does this by reflecting the position of the booked accumulated depreciation reserve in the depreciation rate development.
  - Consistent with the Average Service Life procedure the whole life (pure rate without the reserve true-up process) would be the reciprocal of the average service life.
    - Whole life rate would be 5% (i.e. 1/20) for years 1-6.
    - Whole life rate would be 6.67% (i.e. 1/15) for years 7-15.
  - Without the reserve true-up process, the booked reserve in the example at the end of year 15 would be -$311 or a total deficiency of $1,011 (i.e. cost of $700 + reserve deficiency of $311)
  - This would require an <u>additional</u> 22 years to fully recover the cost of $700.

Attachment 4

FORTISBC ENERGY - RECOMMENDED CURVES AND PEER ANALYSIS

ACCOUNT		ATCO GAS 2009	CENTRA GAS MANITOBA 2010	ENBRIDGE GAS DISTRIBUTION 2010	ALTAGAS 2012	SASK ENERGY 2005	ATCO PIPELINES 2011	FEI 2014
	Transmission Plant							
462.00	Trans. Plant - Compressor Structures						35-L1.5	30-R4
463.00	Trans. Plant - Meas. & Reg. Structures		50-R5		55-R3		50-R2	38-S2
464.00	Trans. Plant - Other Structures		50-R5				33-R4	30-R4
465.00	Trans. Plant - Trans. Pipeline		65-R4		60-L3		62-R2.5	65-R3
466.00	Trans. Plant - Compressor Equipment						32-R0.5	35-R4
467.10	Trans. Plant - Meas. & Reg. Equipment		50-S2.5		45-S2.5		35-R1	36-S0.5
467.20	Trans. Plant - Telementry Equipment						15-R4	8-L1
467.30	Trans. Plant - Meas. & Reg. Equipment						18-R5	36-S0.5
468.00	Trans. Plant - Communications Equipment						30-R2	19-R3
	Distribution Plant							
472.00	Dist. Systems - Structures	55-R3	45-R1.5	60-S1.5	55-R3	35-R4		36-R1.5
473.00	Dist. Systems - Services	57-R2.5	55-R2.5	40-L1.5	50-R4	50-R3		45-R1
474.00	Dist. Systems - Meters/Reg. Installations	51-R3	35-R2		48-R2	55-S2.5		20-S0
474.02	New Meter Installations	15 R2						22-SQ
475.00	Dist. Systems - Mains	66-R2.5	65-R4	55-61 R3	62.5-R2	65-R4		64-R2.5
476.00	Dist. Systems - NGV Fuel Equipment							7-L0
477.10	Dist. Systems - Meas. & Reg. Additions	40-R2.5	35-R2	33-L1.5		35-R4		30-R2
477.20	Dist. Systems - Telemetry							16-L1
477.30	Dist. Systems - Meas. & Reg. Equipment							15-R2.5
478.10	Dist. Systems - Meters	20-R0.5	26-R1.5	20-S2	30-R2.5	32-R4		18-R2.5
478.20	Dist. Systems - Instruments							35-R5
	General Plant							
482.10	General Plant - Structures (Frame)							20-R2.5
482.20	General Plant - Structures(Masonry)	40-R2	45-R3		75-R2	30-R2	37-R2.5	50-R2.5
483.10	Computer Hardware				3-5 SQ			5-SQ
483.20	Computer Software 12.5%							8-SQ
483.30	Office Furniture and Equipment	20-SQ	15-SQ	15-SQ	15-SQ	20-SQ		15-SQ
483.40	Furniture			20-SQ				20-SQ
484.00	Vehicles	11-R2	10-R5	11-L1.5	7-L1.5	9-L2.5	7-L2	6-L0.5
485.10	Heavy Work Equipment	10-L2.5	20-R5	15-L2	14-L1	20-L2.5	18-R2	12-L0.5
485.20	Heavy Mobile Equipment							8-L2
486.00	Small Tools/Equipment	15-SQ	15-SQ	25-SQ	20-SQ	15-SQ		20-SQ
487.20	NGV Cylinders							15-SQ
488.10	Telephone Equipment							15-SQ
488.20	Radio Equipment	20-S0.5		10-SQ	5-SQ		10-L0	15-SQ

FORTISBC ENERGY - PEER NET SALVAGE PERCENTAGE ANALYSIS

	ACCOUNT	ATCO GAS 2009	CENTRA GAS MANITOBA 2010	ENBRIDGE GAS DISTRIBUTION 2010	ALTAGAS 2012	SASK ENERGY 2005	ATCO PIPELINES 2011	FEI 2014
	Transmission Plant							
462.00	Trans. Plant - Compressor Structures						-5%	-3%
463.00	Trans. Plant - Meas. & Reg. Structures		0%		0%		-15%	-15%
464.00	Trans. Plant - Other Structures		0%				-20%	-5%
465.00	Trans. Plant - Trans. Pipeline		0%		-10%		-50%	-20%
466.00	Trans. Plant - Compressor Equipment						-5%	-2%
467.10	Trans. Plant - Meas. & Reg. Equipment		0%		-35%		-20%	-7%
467.30	Trans. Plant - Meas. & Reg. Equipment							-7%
	Distribution Plant							
472.00	Dist. Systems - Structures	-40%	0%	20%	0%	-5%		-10%
473.00	Dist. Systems - Services	-100%	0%	-45%	-30%	-50%		-60%
474.00	Dist. Systems - Meters/Reg. Installations	-30%	0%		0%	0%		-20%
474.02	New Meter Installations	-20%						0%
475.00	Dist. Systems - Mains	-60%	0%	-85%/-90%	-10%	-10%		-25%
476.00	Dist. Systems - NGV Fuel Equipment							0%
477.10	Dist. Systems - Meas. & Reg. Additions	-40%	0%	0%		-5%		-10%
477.20	Dist. Systems - Telemetry							-5%
477.30	Dist. Systems - Meas. & Reg. Equipment							0%
478.10	Dist. Systems - Meters	0%	0%	5%	0%	0%		0%
478.20	Dist. Systems - Instruments							0%
	General Plant							
482.10	General Plant - Structures (Frame)							0%
482.20	General Plant - Structures(Masonry)	0%	0%		0%	0%	-5%	-10%
483.10	Computer Hardware				0%			0%
483.20	Computer Software 12.5%							0%
483.30	Office Furniture and Equipment	0%	0%	0%	0%	0%		0%
483.40	Furniture			0%				0%
484.00	Vehicles	10%	10%	0%	25%	20%	15%	4%
485.10	Heavy Work Equipment	25%	20%	25%	25%	20%	15%	5%
485.20	Heavy Mobile Equipment							15%
486.00	Small Tools/Equipment	0%	0%	0%	0%	0%		0%
487.20	NGV Cylinders							0%
488.10	Telephone Equipment							0%
488.20	Radio Equipment	0%		0%	0%		0%	0%