



Enbridge Gaz Quebec Depreciation Study

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- Assistant Vice President with Concentric Advisors, ULC, based out of our Calgary, Alberta office working under Larry Kennedy – Senior Vice President.
- The Concentric Calgary office has submitted over 160 pieces of depreciation testimony throughout North America.
- Immediate Past-President of the Society of Depreciation Professionals.
- Member of the teaching faculty of the Society of Depreciation Professionals.
- Working in depreciation for over 16 years on projects beginning in 2009.
- I have submitted evidence before:

Alberta Utilities Commission

British Columbia Utilities Commission

Manitoba Public Utilities Board

Ontario Energy Board

The Public Utilities Commission of the Northwest Territories

Maryland Public Service Commission

State of Connecticut Public Utilities Regulatory Authority

Depreciation Study Highlights



Studied \$235.6 million in original cost using the actuarial analysis and traditional net salvage methods



Life extension was recommended in 4 accounts, net salvage was made more negative in 1 account, and less negative in 1 account



Recommended a change from Average Life Group to Equal Life Group procedure



Total depreciation accrual rate, net of customer contributions, is 4.08%

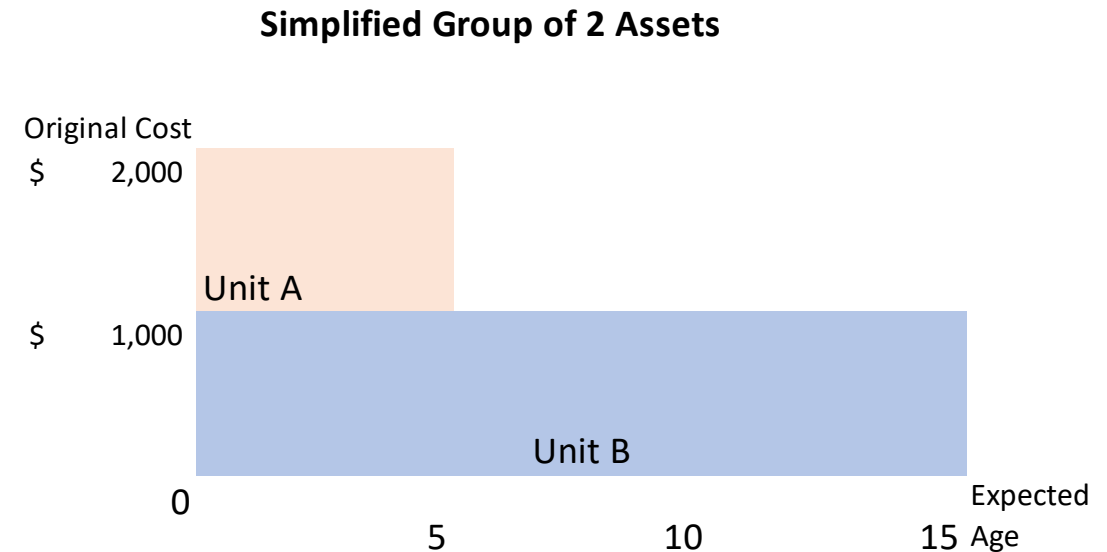
Group Depreciation Procedure Example

Homogenous groups of assets may have the same average life but will retire from differing forces of retirement and therefore not have the same realized life in practice due to third party damage, storms, changes in technology, premature failure, system reconfigurations, etc.

In order to demonstrate the different depreciation procedures, we will work through a simplified example of a group with two assets. The following assumptions can be made about the group.

- Unit A has a 5-year life
- Unit B has a 15-year life
- Each unit costs \$1,000 with no costs of removal

Based on the above, the average life for this account is 10 years and the group has an original cost amount of \$2,000 in total.



Average Life Group Depreciation Accrual Calculations

$$\text{Average Life} = (5+15) / 2 = 10$$

$$\text{Average Net Salvage} = 0$$

$$\begin{aligned} \text{Accrual Rate} &= \frac{1}{\text{Average Life}} (1 - \text{Net Salvage Ratio}) \\ &= \frac{1}{10} (1 - 0) \\ &= 0.10 \text{ or } 10\% \end{aligned}$$

$$\text{Annual accrual for first 5 years} = 0.10 \times \$2,000 = \$200$$

$$\text{Annual accrual for years 6 – 15} = 0.10 \times \$1,000 = \$100$$

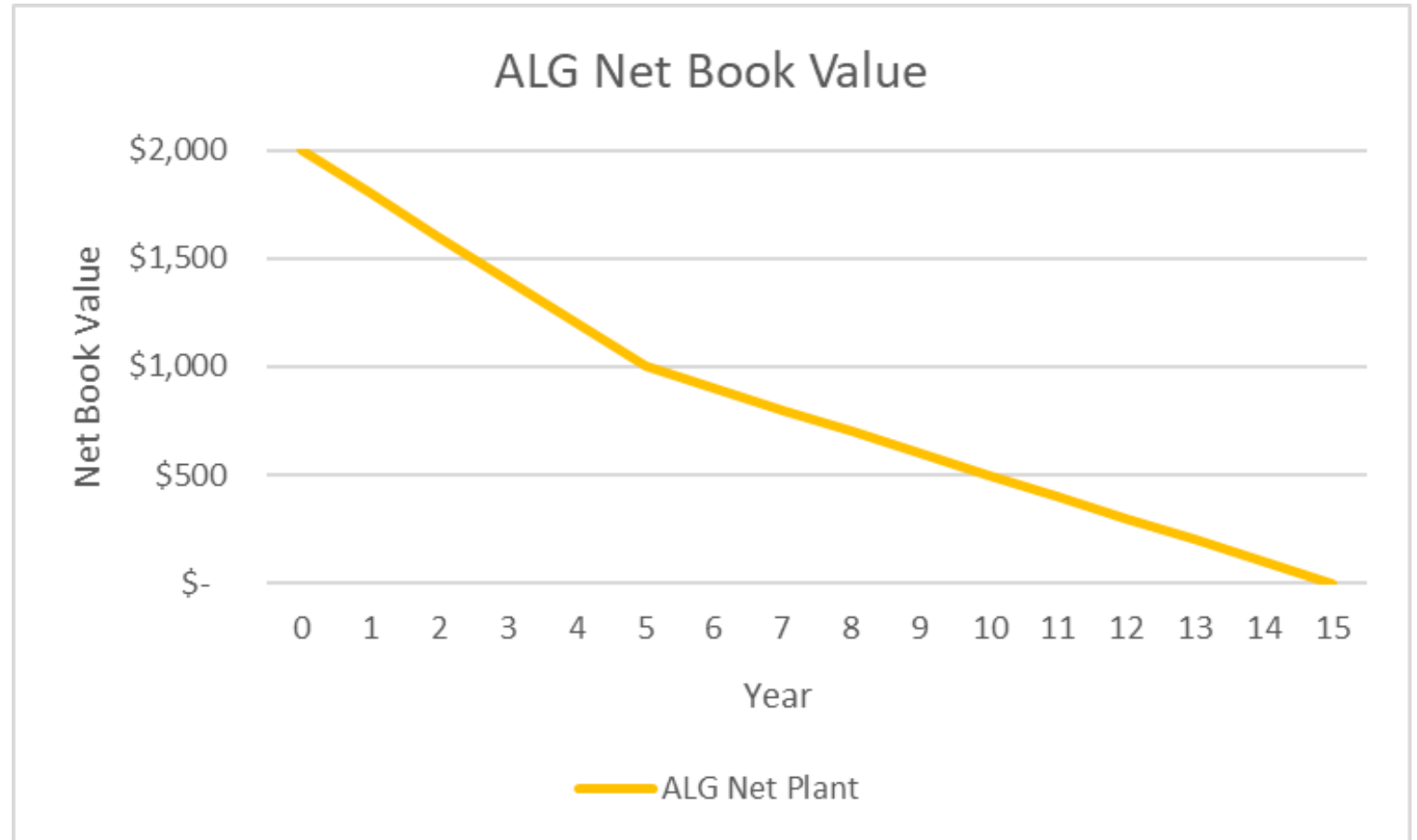
It is important to note that in year 5, with the retirement of Unit A, the accumulated depreciation amount is \$0. Any accumulated depreciation amount related to Unit B has been allocated to Unit A.

Year	Entry	Retirement	Gross Plant	Depreciation Expense	Accumulated Depreciation Balance	ALG Net Plant
0	Addition		\$ 2,000			\$ 2,000
1	Accrual		\$ 2,000	\$ 200	\$ 200	\$ 1,800
2	Accrual		\$ 2,000	\$ 200	\$ 400	\$ 1,600
3	Accrual		\$ 2,000	\$ 200	\$ 600	\$ 1,400
4	Accrual		\$ 2,000	\$ 200	\$ 800	\$ 1,200
5	Accrual		\$ 2,000	\$ 200	\$ 1,000	\$ 1,000
5	Retirement	\$ 1,000	\$ 1,000		\$ -	\$ 1,000
6	Accrual		\$ 1,000	\$ 100	\$ 100	\$ 900
7	Accrual		\$ 1,000	\$ 100	\$ 200	\$ 800
8	Accrual		\$ 1,000	\$ 100	\$ 300	\$ 700
9	Accrual		\$ 1,000	\$ 100	\$ 400	\$ 600
10	Accrual		\$ 1,000	\$ 100	\$ 500	\$ 500
11	Accrual		\$ 1,000	\$ 100	\$ 600	\$ 400
12	Accrual		\$ 1,000	\$ 100	\$ 700	\$ 300
13	Accrual		\$ 1,000	\$ 100	\$ 800	\$ 200
14	Accrual		\$ 1,000	\$ 100	\$ 900	\$ 100
15	Accrual		\$ 1,000	\$ 100	\$ 1,000	\$ -
15	Retirement	\$ 1,000	\$ -		\$ -	\$ -



Average Life Group Net Book Value Over Time

The net book value for this scenario begins at \$2,000 and decreases to \$1,000 by year 5. When Unit A is retired at year 5, the entire \$1,000 in the accumulated depreciation account is used to offset the retirement. As such, Unit B starts accruing depreciation at year 5 and is required to accrue the entire \$1,000 over a remaining period of 10 years instead of the 15 years Unit B is expected to live. This effect is especially problematic in the circumstances of dramatically shortening average service lives.



Equal Life Group Depreciation Accrual Calculations

Looking at the same example as outlined earlier, ELG (also known as “Unit Summation”) allows depreciation expense to be calculated based on the life of the individual units within the group. If Unit A lives for 5 years, it accrues depreciation expense at 20% while Unit B accrues depreciation expense at 6.67%. This results in a higher depreciation expense over the first 5 years than ALG with a lower rate over the remaining 10 years.

$$\begin{aligned} \text{Annual Accrual} &= \left[\left(\frac{1}{\text{Life Unit A}} (1 - \text{salvage}) \right) \text{Cost Unit A} \right] + \left[\left(\frac{1}{\text{Life Unit B}} (1 - \text{salvage}) \right) \text{Cost Unit B} \right] \\ &= \left[\left(\frac{1}{5} (1 - 0) \right) 1,000 \right] + \left[\left(\frac{1}{15} (1 - 0) \right) 1,000 \right] \\ &= (.200 \times 1,000) + (0.067 \times 1,000) && = \$267 \text{ for first 5 years} \end{aligned}$$

$$\begin{aligned} \text{Annual Accrual} &= \left[\left(\frac{1}{\text{Life Unit B}} (1 - \text{salvage}) \right) \text{Cost Unit B} \right] \\ &= \left[\left(\frac{1}{15} (1 - 0) \right) 1,000 \right] \\ &= 0.067 \times 1,000 && = \$67 \text{ for remaining 10 years} \end{aligned}$$



Detailed Depreciation Calculations with ELG and ALG

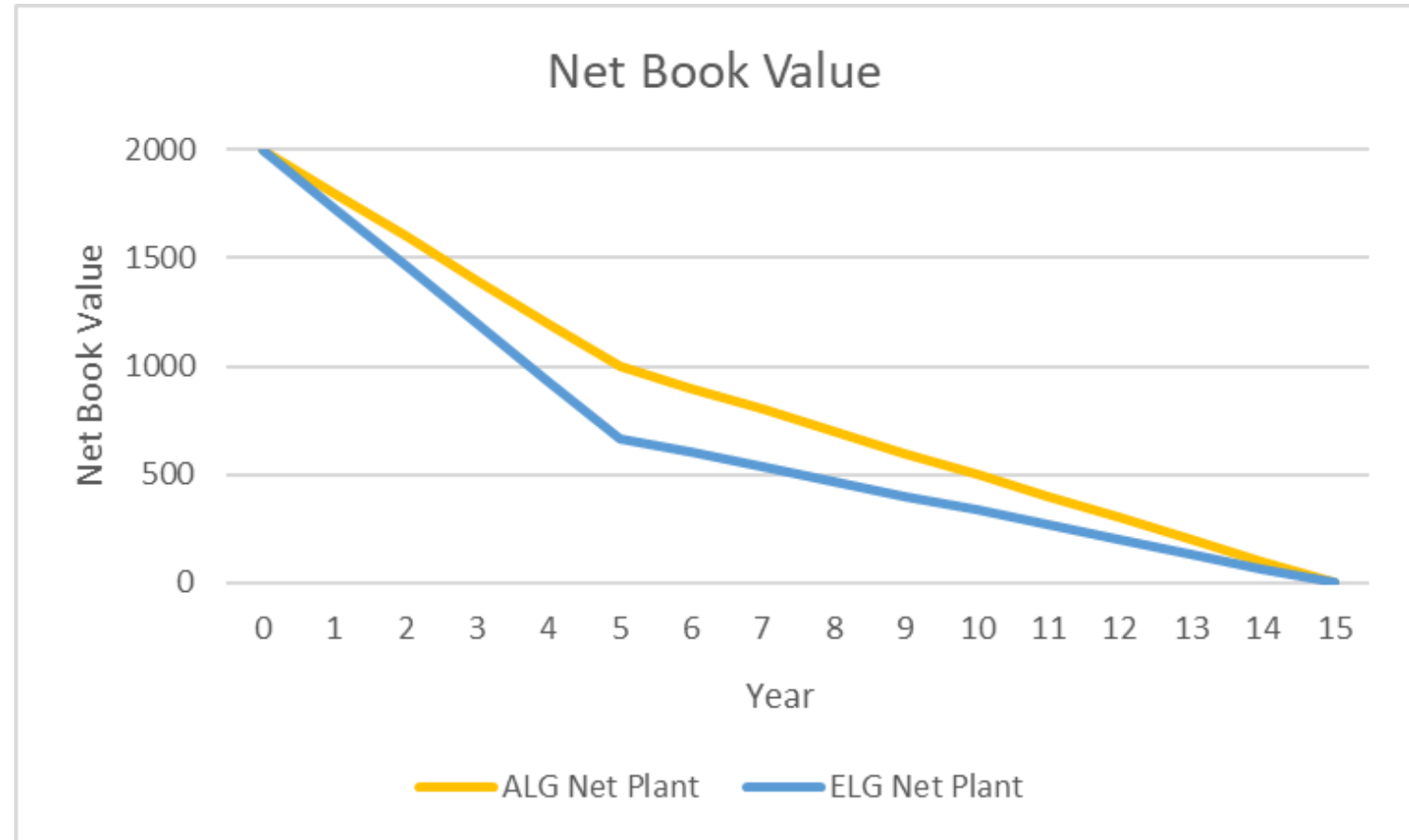
Depreciation expense in the first five years is \$267 to account for the five year life of Unit A and the 15 year life of Unit B. As such at year 5 when Unit A retires, there is the appropriate amount in the accumulated depreciated balance to allow for the expected life of Unit B. While depreciation expense is higher in the earlier years, it more closely aligns with the expected lives of both units.

Year	Entry	Retirement	Gross Plant	Depreciation Expense	Accumulated Depreciation Balance	ELG Net Plant	ALG Net Plant
0	Addition		\$ 2,000			\$ 2,000	\$ 2,000
1	Accrual		\$ 2,000	\$ 267	\$ 267	\$ 1,733	\$ 1,800
2	Accrual		\$ 2,000	\$ 266	\$ 533	\$ 1,467	\$ 1,600
3	Accrual		\$ 2,000	\$ 267	\$ 800	\$ 1,200	\$ 1,400
4	Accrual		\$ 2,000	\$ 267	\$ 1,067	\$ 933	\$ 1,200
5	Accrual		\$ 2,000	\$ 266	\$ 1,333	\$ 667	\$ 1,000
5	Retirement	\$ 1,000	\$ 1,000		\$ 333	\$ 667	\$ 1,000
6	Accrual		\$ 1,000	\$ 66	\$ 339	\$ 601	\$ 900
7	Accrual		\$ 1,000	\$ 67	\$ 466	\$ 534	\$ 800
8	Accrual		\$ 1,000	\$ 67	\$ 533	\$ 467	\$ 700
9	Accrual		\$ 1,000	\$ 66	\$ 599	\$ 401	\$ 600
10	Accrual		\$ 1,000	\$ 67	\$ 666	\$ 334	\$ 500
11	Accrual		\$ 1,000	\$ 67	\$ 733	\$ 267	\$ 400
12	Accrual		\$ 1,000	\$ 66	\$ 799	\$ 201	\$ 300
13	Accrual		\$ 1,000	\$ 67	\$ 866	\$ 134	\$ 200
14	Accrual		\$ 1,000	\$ 67	\$ 933	\$ 67	\$ 100
15	Accrual		\$ 1,000	\$ 67	\$ 1,000	\$ -	\$ -
15	Retirement	\$ 1,000	\$ -		\$ -		\$ -



ELG and ALG Net Book Value Over Time

The higher accrual rates in the first 5 years of this account result in a lower net book value at age 5 with ELG. Both procedures recover the same value over 15 years, however the net book value is better aligned with the expected life of the assets using the ELG method. This results in a lower risk of stranded costs, but also a lower rate base through the life of the account.



Equal Life Group Discussion

The ELG procedure is recognized by depreciation experts as being the most equitable recovery of original cost of investment for utility assets. In the widely acclaimed 1969 textbook “Depreciation of Group Properties”, Robley Winfrey states the following:

“ The unit-summation procedure [now known as the equal life group procedure] of the present-worth method is shown to be the only mathematically correct method. It is not admitted that more than one correct method exists for applying an age-life ratio to property groups when estimating depreciation. Recognition is given, however, to the convenience of the average-life and -life procedures at the sacrifice of accuracy in the mathematical calculations.” (Depreciation of Group Properties by Robley Winfrey, Engineering Research Institute Bulletin 155, Iowa State University, 1969 – page 6)

ELG is currently approved in:

Alberta

New Brunswick

Newfoundland

Nova Scotia

Northwest Territories

Saskatchewan

Quebec

Yukon



Why Change Procedures Now?

- As both ALG and ELG have pros and cons, the recommendation of depreciation procedure has been made on a case-by-case basis. Weighting was given to historical precedent of the utility and commission, the difference in depreciation expense between the two procedures, accounting requirements, and the risks of stranded costs of a given utility.
- Depreciation experts saw a shift towards ELG in the 1980s when telephone companies were facing major restructuring. At that time, ELG was consistently utilized and approved to help ensure full recovery of investment in the face of changing technology.
- ELG is more compliant with IFRS accounting standards, and there was a wave of utilities who moved over to ELG in the 2010 time period for utilities who reported under IFRS. It was at that time that Energir moved to ELG.
- The introduction of energy transition concerns requires more weighting be placed on mitigating stranded cost risks when selecting a depreciation procedure. This has started a wave of natural gas utilities applying to use ELG throughout North America.
- As the balance of priorities has shifted with the introduction of energy transition, so to has the recommendation. ELG is the lowest cost tool to start to mitigate the stranded cost risk. While other options exist, such as the Units of Production procedure, ELG is a more conservative option that should be implemented prior to the consideration of Units of Production.

