INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Ontario Energy Board Staff (STAFF)

Reference:

Exhibit M5, p.7-9
Exhibit M2, p. 6-7, 9-10

Question:

The IGUA Depreciation Report recommends different average service lives and survivor curves for various accounts than those proposed by Enbridge Gas. The Ontario Energy Board (OEB) Staff Depreciation Report also recommends different asset life parameters for various accounts than those proposed by Enbridge Gas.

Furthermore, the OEB Staff Depreciation Report recommends different net salvage parameters than those proposed by Enbridge Gas.

a) With regards to asset service life parameters, the IGUA and OEB Staff Depreciation Reports both made recommendations for Accounts 475.21 Mains – Coated and Wrapped and Account 475.3 Mains – Plastic. The OEB Staff Depreciation Report also makes recommendations for various accounts (Accounts 452, 456, 457, 465) that the IGUA Depreciation Report did not comment on. Please provide IGUA's expert's view on the asset life recommendations proposed in the OEB Staff Depreciation Report. Also, for accounts that the IGUA Depreciation Report did not comment on, please provide IGUA's expert's view on whether the asset life parameters proposed in the OEB Staff Depreciation Report or proposed by Enbridge Gas would be more appropriate.

b) With regards to the net salvage parameters recommended in the OEB Staff Depreciation Report, please provide IGUA's expert's view on these recommendations as compared to the net salvage parameters proposed by Enbridge Gas.

Response:

a) The following summarizes my opinion on each of the accounts addressed in the asset life recommendations of InterGroup's report:

   i. Account 452.00 – Underground Storage – Structures and improvements – InterGroup recommends a 45-R2.5 curve as compared to the 40-R3 proposed by Concentric. I agree with InterGroup that there is a superior mathematical fit for the 45-R2.5 given the residual measure is 0.2695 as compared to 1.0564. I also agree there is a superior visual fit to the observed retirement data, including through approximately age 10.5 to 20.5. I agree with InterGroup's recommendation for this account.

ii. Account 456.00 – Underground Storage – Compressor Equipment – InterGroup recommends a 44-R4 curve as compared to the 40-R4 proposed by Concentric. InterGroup observes that a 44-R4 curve has a superior mathematical and visual fit as compared to the 40-R4 curve. I agree. However, I also note InterGroup's evidence that Concentric, previously Gannett Fleming, recommended a 45-R3 curve in its 2016 Depreciation Study. In my opinion, a 44-R4 curve is superior to a 40-R4 curve for the reasons stated in InterGroup's evidence. However, I also consider that a 45-R3 curve, and in particular the R3 curve in general provides a superior visual fit to the observed retirement data through approximately age 25.5. The mathematical fit with a residual measure of 0.5075 is also comparable to the residual measure for a 44-R4 of 0.4221. Therefore, while I support the recommendation of InterGroup over that of Concentric, I would have recommended a 45-R3 curve.

iii. Account 457.00 – Underground Storage – Regulating and measuring equipment – InterGroup recommends a 40-R2.5 curve as compared to the 35-R3 curve proposed by Concentric. InterGroup observes there is a superior mathematical and visual fit to the observed retirement data with a 40-R2.5 curve. I agree with InterGroup's findings for this account.

iv. Account 465.00 – Transmission plant – Mains – InterGroup recommends a 70-R4 curve as compared to the 60-R4 curve proposed by Concentric. I agree with InterGroup that Concentric has provided minimal evidence from discussions with management to support its recommended curve given the mathematical fit and residual measure of 4.3693. I also agree that a 70-R4 curve provided a better visual fit and would provide a better mathematical fit. Finally, I agree that directionally a life extension for this account would better align with peer data. Therefore, I support the recommendations of InterGroup for this account.

v. Account 475.21 – Mains – Coated & Wrapped – InterGroup recommends a 70-R3 curve, I recommended a 63-R3 to 65-R3 curve, and Concentric recommended a 55-R3 curve. InterGroup concludes that "it is more appropriate at a minimum to maintain the currently approved EGD's life curve of Iowa 61-R3" and further concludes that a 70-R3 provides a better mathematical fit and is aligned with the peer data range. I agree with InterGroup's observations, and my own evidence supports a life extension albeit less than InterGroup. On the balance, while I continue to recommend a life of 65-R3, I would also accept a 70-R3 curve as being reasonable in the circumstances. I assessed both a 70-R3 and 80-R3 curve (see PDF 56, lines 6 to 11), including various life-curve combinations and agree that a 70-R3 curve would be reasonable, provide a good mathematical and visual fit, and be consistent with the peer group. My selection of a 65-R3 curve is based on the reasons stated at PDF page 56 lines 12 to 19 of my evidence, and to provide for a more moderate and gradual life extension.

vi. Account 475.30 – Mains – Plastic – InterGroup recommends a 65-R3 curve, I recommended a 70-R2 curve, and Concentric recommended a 60-R4 curve. I note

InterGroup also observe in its evidence that "a 70-R4 would also be within the range of peers and EGD's past evidence." In rejecting a 70-R4 curve InterGroup states "actuarial data was not analyzed for a Iowa 70-R4 and it is likely less robust than Iowa 65-R3 which was compared to Enbridge Gas's recorded experience." I conducted actuarial analysis of a 70-R4 curve and arrived at a similar conclusion. In particular, the R4 curve at this average service life does not provide a good fit to the observed retirement data. In particular, a 70-R4 curve would provide a poor fit to the retirement data through approximately age 60. The same conclusion can be drawn in general for the R4 curve. For this reason, I recommended a 70-R2 curve which provides a superior fit to the observed retirement data and a residual measure of 0.3116. I continue to prefer a 70-R2 curve relative to the curves recommended by Concentric and InterGroup.

b) The following summarizes my opinion on each of the accounts addressed in the net salvage recommendations of InterGroup's report:

i. Account 465.00 – Transmission plant – Mains – InterGroup recommends a -15% net salvage rate as compared to the -25% rate proposed by Concentric.

ii. Account 466.00 – Compressor Equipment – InterGroup recommends a -5% net salvage rate as compared to the -10% rate proposed by Concentric.

iii. Account 467.00 – Measuring and Regulating Equipment – InterGroup recommends a -10% net salvage rate as compared to the -25% rate proposed by Concentric.

iv. Account 473.02 – Services – Plastic – InterGroup recommends a -40% net salvage rate as compared to the -50% rate proposed by Concentric.

v. Account 475.21 – Mains – Coated and wrapped – InterGroup recommends a -40% net salvage rate as compared to the -80% rate proposed by Concentric.

vi. Account 475.30 – Mains – Plastic – InterGroup recommends a -25% net salvage rate as compared to the -80% rate proposed by Concentric.

Each of the above recommendations of InterGroup are based on a review of the net salvage rates for Enbridge's peers. Having reviewed the evidence, including Concentric's conclusions regarding the same, I am generally supportive of the recommendations made by InterGroup. Specifically, I agree that many of InterGroup's recommendations tend to maintain the level as currently approved while also aligning the rates with peers.

Maintaining salvage rates that are consistent with peers and existing experience also aligns with my own evidence which suggests more data is required to better understand the expected level of salvage costs in the future. Avoiding significant changes to existing net salvage rates is appropriate in order to better understand the full magnitude of any future obligations. This information will also permit parties a better opportunity to review the appropriateness of the CDNS calculations, and other potential alternatives to the recovery of net salvage in a wholistic manner.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5

Preamble:

To understand which aspects were in and out of scope and what the mandate was.

Question:

Please provide the retainer agreement and the scope of work IGUA requested Emrydia to conduct in relation to depreciation and copies of all communications between IGUA and Emrydia that relate in any way to the opinions stated by Intergroup in its report.

Response:

A partially redacted copy of IGUA's Consulting Service Agreement with Emrydia is attached. Schedule A to that agreement lists the tasks that IGUA and Emrydia agreed would be carried out in the course of the retainer. The substantive scope of work which IGUA requested Emrydia to conduct is as described in IGUA counsel's letter to the OEB dated April 21, 2023 as filed along with Emrydia's evidence, as follows:

> *… addressing EGI's proposed depreciation policy and provision, including site restoration costs.*

Dustin Madsen of Emrydia was asked to review EGI's depreciation evidence and provide IGUA with his assessment of EGI's depreciation proposal, and Concentric's supporting depreciation report, and provide alternative recommendations in respect of depreciation, including site restoration costs, as he considered appropriate.

Also attached to this response is the correspondence between Emrydia and IGUA (through counsel) regarding the opinions stated by Intergroup in its report.

Filed: 2023-05-15
EB-2022-0200
N.M5.EGI-29
Attachment

Partially Redacted Copy of IGUA's Consulting Service Agreement with Emrydia

THIS CONSULTING SERVICE AGREEMENT (the “Agreement”) is by and between:

Industrial Gas Users Association (“IGUA”),

And

Emrydia Consulting Corporation (“the Consultant”)

In exchange for the payment from IGUA to the Consultant of $1.00 in addition to the payments and other consideration set out below, the receipt and sufficiency of which is acknowledged by the parties, IGUA and the Consultant agree to the terms and conditions set out below.

1. Contract, Amendment, Nature of Relationship

This contract is for consulting services provided to IGUA by the Consultant from January 1, 2023 (“the Start Date”) until June 1, 2024, subject to any early termination in accordance with its terms. This Agreement may only be modified by mutual written agreement of the Parties.

The Parties to this Agreement agree that the Consultant is providing services under this Agreement as an Independent Contractor. The Consultant will perform the required services through its expert, Dustin Madsen (“the Expert”). The Consultant agrees that it may not substitute any other individual for the Expert or otherwise subcontract the services to be provided under this Agreement (as set out in the Scope of Work attached as Schedule A) without the prior written consent of IGUA.

The Parties further agree that neither the Consultant nor the Expert are employees, dependent contractors, affiliates or subsidiaries of IGUA, and neither of them are entitled to any IGUA employment rights or benefits.

The Parties agree that the Consultant is solely responsible for payment of all taxes and/or payments arising out of the fees for services under this Agreement (on its own behalf and with respect to the services provided by the Expert) including, but not limited to, income taxes, H.S.T., provincial sales taxes, (and if applicable) employment insurance, Canada Pension Plan, provincial pension plans, Employer Health Tax and any other taxes or fees, as required.

The Consultant agrees to save harmless and indemnify IGUA from and against all claims, charges, taxes or penalties and demands which may be made, as a result of the Consultant's and/or the Expert's delivery of services pursuant to this Agreement, by the Minister of National Revenue requiring IGUA to pay income tax under the Income Tax Act (Canada), H.S.T., or in respect of any and all claims, charges, taxes or penalties and demands which may be made on behalf of or related to the Canada Employment Insurance Commission, the Ministry of Labour, the Canada Pension Plan, the applicable workers' compensation authorities or any other statutory body.

2. Scope of Activity

The Consultant shall perform the services and provide the deliverables as set out in the Scope of Work attached as Schedule A to this Agreement. The parties agree that the Scope of Work may only be modified upon the written agreement of the parties.

The Consultant shall provide monthly reports to IGUA's project manager that briefly describe:

- the work activity and deliverables completed;
- the total hours spent that month (along with cumulative totals)
- the fees incurred that month (along with cumulative totals).

3. Payment Terms and Schedule

a. Fees

The Consultant will be paid an hourly rate of [redacted] (CAD) plus HST for services up to a maximum of 300 hours ([redacted], plus HST, "the Total Fee Cap").

If the Consultant determines that additional hours may be required to complete the services in the Scope of Work, the Consultant must request pre-approval of those hours from IGUA before incurring them. IGUA will review, assess and respond to any such requests in good faith, although it is under no obligation to approve fees/hours in excess of any of the Interim or Total Fee Caps described in this section. The Consultant will not be entitled to payment for hours/fees in excess of the Fee Caps that have not been approved in advance by IGUA.

The fees will be paid in instalments upon completion of the following milestones:

> Milestone 1: Upon completion of the services listed above "Milestone 1" in the attached Schedule A, and delivery to IGUA of an itemized interim invoice, the Consultant shall be entitled to payment for the actual hours worked on the Milestone 1 tasks up to a maximum of [redacted] plus HST ("the First Interim Fee Cap").
>
> Milestone 2: Upon completion of the services/deliverables listed above "Milestone 2" in the attached Schedule A, and delivery to IGUA of an itemized interim invoice,

the Consultant shall be entitled to payment for the actual hours worked up on the Milestone 2 tasks up to a maximum of [redacted] plus HST ("the Second Interim Fee Cap").

Final Payment: Upon completion of the Ontario Energy Board ("OEB") hearing, the Consultant will immediately deliver to IGUA a Final Invoice in the OEB Cost Claim Form attached as Schedule B. IGUA will then submit a costs claim to the OEB for the Consultant's actual hours worked [redacted] (up to the Total Fee Cap, plus any pre-approved additional hours). [redacted], IGUA will pay the Consultant for the balance of the hours worked, less the interim Milestone Payments described above. For further clarity, [redacted] the Final Payment will not be due to the Consultant until [redacted].

In the event that the OEB disallows any portion of IGUA's costs claim in respect of the Consultant's hours, [redacted] For example, if IGUA claims 300 hours for the Consultant's work, and the OEB awards costs for only 250 hours, IGUA's Final Payment to the Consultant would be for [redacted] less the interim Milestone Payments described above.

As a condition of this final payment, the Consultant shall provide IGUA with an itemized final invoice for the balance owing.

b. Business Expenses

The Consultant is entitled to reimbursement for reasonable business and travel expenses related to the Scope of Work described at Schedule A. Any individual expense in excess of $500.00 (or total monthly expenses in excess of $1,000.00) must be approved by IGUA in advance. The Consultant may submit business expense reimbursement requests for review and approval by IGUA on a monthly basis. All such requests must be itemized and include supporting receipts.

4. Confidential and Proprietary Information and Obligations

The Consultant and the Expert acknowledge that in the course of performing services under this Agreement they may have access to IGUA's confidential information. The term "confidential information" includes all non-public information regarding IGUA, its members, contractors, and personnel, as well as its business and activities. The Consultant and the Expert agree that they will not, either during the term of this Agreement (except in the normal course of their duties as authorized by IGUA) or at any time thereafter, directly or indirectly use IGUA's confidential information or disclose it to any other person or entity. Pursuant to Section 8 of this Agreement, the Consultant and the Expert agree to be bound by the IGUA Confidentiality Policy.

5. Intellectual Property

The Consultant and the Expert assign to IGUA the entire worldwide right, title and interest in and to all work product created for the benefit of IGUA and all other rights and interests of a proprietary nature in and associated with their work product for IGUA. To the extent that the Consultant and/or the Expert retains or acquires legal title to any such rights and interests, they each hereby declare and confirms that such legal title is and will be held only as trustee and agent for IGUA.

6. Conflict of Interest

IGUA recognizes the Consultant and the Expert's right to have other clients provided there is no conflict of interest with this Agreement. If the Consultant or the Expert become aware of a potential or actual conflict of interest, they shall immediately disclose the conflict to IGUA, and the Parties may engage in discussions regarding potential remedies. If the Parties are unable to agree on a remedy, IGUA may terminate this Agreement without prejudice to any other legal remedies IGUA may have.

7. Termination of the Agreement

This Agreement may be terminated for any lawful reason by either Party with 4 weeks' written notice or, in the case of IGUA (and at its discretion), payment in lieu of 4 weeks' notice.

The Consultant agrees that all hours worked during the applicable notice period must be pre-approved by IGUA. IGUA will endeavor to outline tasks to be completed and the approved number of hours for those tasks.

If the Consultant provides notice of termination, the parties agree that IGUA may choose to waive this notice, in whole or in part, and if it does so, IGUA shall only be required to pay the Consultant for hours worked up to the date of waiver.

While it is understood and agreed between the Parties that neither the Consultant nor the Expert is an IGUA employee or dependent contractor and that no notice or termination payments, other than as set out in this Agreement, are due upon termination, in the event that a competent authority determines the Consultant or the Expert to be an employee or dependent contractor, the Parties agree that the Consultant and/or the Expert shall only be entitled to the minimum notice (or pay in lieu), severance (if any), benefits and any other minimum entitlements as set out in the Ontario *Employment Standards Act,* and shall not be entitled to any other pay in lieu of notice or other payments or amounts arising under the common law or otherwise.

8. Observance of the Law and IGUA Policies

The Consultant and the Expert shall comply with all laws, ordinances, rules, and regulations bearing upon the performance of their obligations under the terms of this Agreement.

The Consultant and the Expert agree to comply with all applicable IGUA policies including, without limitation, IGUA's Code of Conduct, Harassment and Discrimination Policy, Health & Safety and Prevention of Violence Policy, and Accessibility Policy when providing services under this Agreement. The Consultant and the Expert further agree to be bound by IGUA's Company Property Policy when using IGUA property. The Consultant and the Expert acknowledge that each of them have been provided with copies of the applicable IGUA policies and that they have read and understood them.

9. Governing Law and Jurisdiction

The Parties agree that any disputes arising out of or in connection with this Agreement will be subject to the exclusive jurisdiction of the Courts of Ontario. This Agreement is governed by and shall be construed in accordance with the laws of Ontario.

10. Authority

The Consultant and/or the Expert shall not, without the prior written consent of IGUA, enter into any contract or commitment in the name of or on behalf of IGUA or bind IGUA in any respect whatsoever.

11. Whole Agreement and Severability

The parties agree that this Agreement constitutes the entire agreement between them with respect to all matters related to the provision of services to IGUA, and supersedes any and all prior agreements and communications between the parties regarding those matters. It is agreed that each provision of this Agreement is severable from the remainder of the Agreement and in the event that any provision is found by a court to be unlawful or unenforceable, the remainder of the Agreement will be unaffected and will remain in full legal force and effect.

12. Assignment

The Consultant may not assign this Agreement or its obligations under it without IGUA's written consent.

13. Legal advice

The Consultant and the Expert acknowledge that each of them have had the opportunity to obtain independent legal advice concerning all applicable rights and the advisability of entering into this Agreement and have either obtained that advice or waived their right to do so, and that they are entering into this Agreement voluntarily and without duress.

Date: **January 25, 2023**

By:

Shahrzad Rahbar, PhD, ICD.D
President
Industrial Gas Users Association

"I have authority to bind the corporation."

Date: January 24, 2023

By:

Emrydia Consulting Corporation
Per: Dustin Madsen

"I have authority to bind the corporation."

Date: January 24, 2023

By:

Dustin Madsen

Schedule A – Scope of work for Emrydia Consulting Corporation
Enbridge Rebasing Application

Tasks

- Reviewing the evidence
- Coordinate with other experts
- Preparing information requests
- Review Interrogatory Responses
- Preparing full outline of evidence
- Provide full written evidence
- Coordinate with other experts
- Provide Interrogatories on evidence of other parties
- Provide responses on interrogatories received
- Review and comment on interrogatory responses form other parties

Milestone 1

- Attendance at the Hearing
- coordination with other experts
- completing all work required until the Hearing is concluded and the OEB has taken the matter under advisement;
- Assisting with preparing the final argument

Milestone 2

Completion

- upon receipt by IGUA of payment of its final cost claim, subject to sharing the risk of any disallowance

IGUA | ACIG

Schedule B – OEB Cost Claim Filing
Enbridge Rebasing Application

CASE	COST CLAIM	INTERVENOR NAME	PARTICIPANT CLAIM STATUS

FILING PARTICIPANT	NEW PARTICIPANT	NON-FILING PARTICIPANT F. NAME	NON-FILING PARTICIPANT L. NAME

SERVICE PROVIDER TYPE	YEAR CALLED TO BAR	COMPLETED YEARS PRACTICING/YEARS OF RELEVANT EXPERIENCE	HOURLY RATE

CV STATUS (FOR CONSULTANT/ANALYST)	LAST CV DATE		HST RATE CHARGED
			13.00

HEARINGS	CONSULTATIONS	DISBURSEMENTS
Yes	No	No

HEARINGS

Name	Hours	Hourly Rate	Sub Total	HST Rate	HST	Total
Review Application and Evidence						
Review Application and Evidence				13.00		
Discovery						
Preparation of Interrogatories				13.00		
Review Interrogatory Responses				13.00		
Technical Conference Preparation				13.00		
Technical Conference Attendance				13.00		
Technical Conference Follow Up				13.00		
Issues List						
Preparation				13.00		
Attendance at Issues Conference				13.00		
Intervenor Evidence						
Preparation				13.00		
Interrogatory Responses				13.00		
Preparation of Witness(es) for Attendance at Hearing				13.00		
Settlement Conference / ADR						
Preparation				13.00		
Attendance				13.00		
Preparation of Settlement Proposal				13.00		
Attendance at Presentation to Panel				13.00		
Oral Hearing						
Preparation				13.00		
Attendance at Oral Hearing				13.00		
Submissions						
Written Submissions				13.00		
Oral Submissions				13.00		
Attendance at Oral Submissions				13.00		
Other Attendance						
Other Attendance				13.00		
Communication						
With Client				13.00		
With Other Parties				13.00		
Motions						
Preparation of Motion(s) Materials				13.00		
Prepare Submissions on the Motion(s)				13.00		
Attendance at Hearing on Motion(s)				13.00		
Confidentiality						

Preparation of Application for Confidentiality	13.00
Prepare Submissions on Confidentiality	13.00
Attendance at Hearing on Confidentiality	13.00
Decision	
Review	13.00
Rate Order	
Review	13.00
Prepare Submission on Rate Order	13.00
Total Service Provider Fees	
Total Service Provider Fees:	

Filed: 2023-05-15
EB-2022-0200
N.M5.EGI-29
Attachment

Correspondence between Emrydia and IGUA (through counsel) regarding the opinions stated by Intergroup in its report.

Galler, Cathy

From: Dustin Madsen <dustin@emrydia.com>
Sent: April 27, 2023 3:12 PM
To: Mondrow, Ian
Subject: Re: Intergroup Evidence.

Hi Ian,

Good question. My recommendations are based on Concentric's simplified use of the CDNS model. What Intergroup is pointing out is that in theory the CDNS costs should grow over time, but they do not based on the Concentric model. The issue with Intergroup's assumption is not that it is incorrect in theory, but rather that in practice it may not yield a materially different result than the Concentric recommended approach. Specifically, each year as new assets are added the remaining life of the assets extends, and likely overall stays the same. For example, in 2024, if the expected remaining life is 50 years, then using a CDNS model calculation for those assets, the next year in 2025, the remaining life would be 49 years for those same assets and the CDNS accrual should increase. However, the reality is new assets are added in 2025 likely bringing the overall expected remaining life to 50 years again. In other words, the "increase" that is expected to occur is offset by the "decrease" from adding assets at the commencement of the CDNS inflation curve.

Concentric's model holds constant this level and never appears to accrete the amount to be included. It is likely because of this mechanic and that is why I did not address it in my evidence. The key items influencing the CDNS charge, excluding the assumed amount of traditional salvage as the starting point, are the discount rate, inflation rate and expected remaining life. Given the final variable likely never changes over time, I focused on the first two.

Happy to discuss.

Dustin

On Thu, Apr 27, 2023 at 1:00 PM Mondrow, Ian <Ian.Mondrow@gowlingwlg.com> wrote:

> Me again….
>
> As I understand Intergroup's discussion of CDNS, they calculate that if Concentric had applied a proper CDNS calculation, even removing the double inflation factor problem (which your evidence also discusses), the annual CDNS accrual would be higher than the provision provided by Concentric. (See Intergroup page 52.) I think what they are saying is the double counting of inflation raises the provision, but the calculation approach taken by Concentric overall lowers the provision below what it should be. Am I understanding that correctly?

Your conclusion seems to be that Concentric has overstated the net salvage provision. (See page 87, lines 15-17.)

Of course, you then both recommend application of a WACC discount rate, which I believe reduces the net salvage provision below that recommended by Concentric in any event. (See Intergroup page 54.)

Just trying to understand if there is a potential conflict in the evidence on this topic as between you and Intergroup. What do you think? (I am most likely missing something…)

Ian

Ian Mondrow
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Galler, Cathy

From: Dustin Madsen <dustin@emrydia.com>
Sent: April 24, 2023 12:16 PM
To: Mondrow, Ian
Cc: Shahrzad Rahbar; Nazim Sebaa - IGUA (nsebaa@igua.ca)
Subject: Re: EGI Rebasing: Intergroup Depreciation Report.

Hi Ian,

For 475.3 I note at PDF page 48 of the Intergroup report, they state:

> However, a life parameter of Iowa 70-R4 better fits the operations interviews from 2016, and the lives adopted by Enbridge Gas's peers. This parameter would lead to a depreciation expense reduction of approximately $9 million.
> However, actuarial data was not analyzed for a Iowa 70-R4 and it is likely less robust than Iowa 65-R3 which was compared to Enbridge Gas's recorded experience.

They recommend a 65-R3 in lieu of a 70-R4, apparently because the 70-R4 was not assessed actuarially. I ran the actuarial data on the 70-R4 and dismissed it in favor of the 70-R2 that I recommend as it provides a superior visual fit to the retirement data. I expect that with my evidence on this account Intergroup would support my proposal. For Account 475.21 I appreciate that 2016 operational data leans towards a 70 year life but that data is dated, and the most recent operational data appears to better support by recommendation. In any case, a longer life is not necessarily a bad thing if it is supportable.

Finally, Intergroup does not provide the math to support the calculation of depreciation expense so I am unclear how they arrived at the impacts. Regards,

Dustin

On Mon, Apr 24, 2023 at 10:03 AM Dustin Madsen <dustin@emrydia.com> wrote:

> Hi Ian,
>
> The only overlap is Account 475.21 and 475.3. I am quite interested in how they calculated the depreciation impact. It appears to be the impact under ELG not ALG which may drive the difference.
>
> Beyond that, I am confused as to why Intergroup would be suggesting a lower life for plastic mains than steel mains. This is unusual both because of the retirement pattern and the long life of plastic mains. I may try to touch base with Patrick to see what if there is any other rationale beyond that in the evidence.

Cheers,

Dustin

On Mon, Apr 24, 2023 at 9:29 AM Mondrow, Ian <Ian.Mondrow@gowlingwlg.com> wrote:

> Hi Dustin.
>
> A colleague (Mark Rubenstein, Counsel for School Energy Coalition) sent me this table comparing the intergroup depreciation recommendations with yours. Would appreciate your thoughts once you have had a chance to review.
>
> Ian

Account	Description	Concentric	Madsen	*Variance ($M) (1)*		Intergroup	*Variance ($M) (2)*	
446	Transmission – Compressor Equipment	39-R4	37-R4	-9.7				
452	Underground Storage - Structures and Improvements	40-R3				45-R2.5	-0.3	
456	Underground Storage - Compressor Equipment	40-R4				44-R4	-1.5	
457	Undergroung Storage - Regulated and Measuring Equipment	35-R3				40-R2.5	-0.3	
465	Transmision Plant - Mains	60-R4				70-R4	-7	
473.01	Services – Metal	45-S1	50-L1	-5.1				
473.02	Services – Plastic	55-S3	60-S3	-14.8				
475.21	Mains – Coated and Wrapped	55-R3	60-R3	-18.9		70-R3	-15	
475.3	Mains – Plastic	60-R4	70-R2	-26.2		65-R3	-5	
478	Meters	15-S2.5	25-L1.5	-58.7				
472.35	472.35 – Structures and improvements – Mainway		Other Issue					
474	Regulators	25-SQ	50-L1	-34.4				
491.01	Software acquired intangibles and Account	4-SQ	5-SQ	Not material				
491.02	Software developed intangibles	4-SQ	5-SQ	Not Material				
(1) Assumes ALG procedure								
(2) Do not believe it assumes ALG (Need to check)								

Ian Mondrow
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Canada

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5

Question:

Did Emrydia review/discuss the evidence on depreciation prepared by InterGroup prior to submitting their report to the OEB? If so, please provide all communications between Emrydia and InterGroup.

Response:

A 1-hour virtual meeting was held between Dustin Madsen, Patrick Bowman and Hayitbay Mahmudov on March 24, 2023. The 1-hour meeting addressed at a high level the planned areas of evidence for both parties. Detailed notes of the conversation were not maintained. Drafts of evidence were not exchanged, nor were any other written communications exchanged.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5

Question:

Please identify where Emrydia considered in its report the initiatives being led by the OEB to examine energy transition and its impact on consumers and rate regulated utilities in Ontario? Please specifically list these initiatives. Please then reference the sections relied upon for the purposes of your report.

Response:

The evidence does not consider the initiatives being led by the OEB to examine energy transition and its impact on consumers and rate regulated utilities in Ontario, beyond the discussion of the same contained in EGI's evidence and/or Concentric's depreciation report. Emrydia's retainer was to address EGI's proposed depreciation policy and provision, including site restoration costs.

The evidence does discuss either an "economic planning horizon" or an "economic life", in consideration of the energy transition evidence provided by Enbridge and its expert Concentric, including the potential for an Economic Planning Horizon (EPH). For example, as I state at PDF page 28, lines 5 to 7 of my evidence:

> Specifically, Enbridge has provided no evidence to support the use of an economic planning horizon at this time and thus relying on the ELG procedure to move closer towards such a result is similarly not justified.

While an EPH is contemplated by Concentric in its evidence for Enbridge, Concentric does not propose an EPH be implemented at this time, and instead proposes a transition to the ELG procedure. I agree with Concentric's evidence at page 19 of the 2021 Depreciation Study that:

> Common depreciation practice is to deal with the anticipated large scale retirements through the introduction of an economic planning horizon within the depreciation rate calculations. However, at this time the future impacts of the relevant climate change legislation have not been sufficiently studied, nor have specific programs been put into place that would provide indications of the changes in the utilization levels. Concentric views that additional study of the changes is required before the introduction of a Life Span date for the EGI system into the depreciation rate calculations. While such an introduction will cause a significant increase in the depreciation rate, Concentric notes that future depreciation studies of the EGI system may require the introduction of an EPH into the depreciation rate calculations. Concentric has attached Appendix 1 that shows the depreciation rate calculations using the same recommended

> depreciation parameters as the current study, with the introduction of a 2050 EPH. While Concentric is not recommending this move at this time, the calculations are provided as an example of what would be expected if a 2050 EPH were approved.

Given that I agree with Concentric that there is insufficient evidence in this proceeding of a need to implement economic live at this time, I do not address the issue further in my own evidence.

It is also important to ensure that the assessment of depreciation expense is first performed on the basis of the expected useful lives of the assets. Any further adjustments to depreciation expense to address economic lives of the assets should only be performed after proper useful lives are established.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5

Question:

Please confirm that Emrydia has not provided evidence, as part of any proceeding, that supports a depreciation method other than ALG or ASL methodology. If not confirmed, please identify the proceeding and a provide a complete copy of Emrydia's (or its predecessor's) evidence.

Response:

I have not filed evidence in another proceeding that recommends a change from the ALG procedure, nor have I filed evidence in another proceeding to recommend the ELG procedure be discontinued if it is in use. For example, I have prepared evidence in Alberta where the ELG procedure is employed, and I have not recommended that the ELG procedure be changed in those proceedings which I have filed evidence in.

I do not always consider it necessary to propose a change from the ELG or ALG procedure to another procedure. Such changes can be disruptive and create or exacerbate intergenerational inequities and thus must be made with caution.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 10
Exhibit JT4.17

Preamble:

At page 10, Emrydia has recommended changes to Enbridge Gas's depreciation proposal which directionally decrease annual depreciation compared to Enbridge Gas's proposal.

At Exhibit JT.4.17, Concentric estimated the impact on depreciation expense from applying a 2050 EPH if it were to start being applied in future periods.

Question:

Please confirm that if Emrydia's recommended changes were adopted under each of the ALG and ELG procedures the impact of applying a 2050 EPH in a future period would further increase the depreciation expense impacts presented in the response to Exhibit JT4.17. Please provide the estimated impact on the response provided at JT4.17 at the times stated either specifically or directionally under both ALG and ELG. Please state any simplifying assumptions and caveats necessary to provide a response.

Response:

Notwithstanding the simplified and potentially unreasonable assumptions of applying a broad based 2050 EPH, for example that all assets would be retired by 2050, I can confirm that based on that simplified approach there would be a further directional increase to the depreciation expense impacts estimated in Exhibit JT4.17 if my recommended changes were adopted under either ALG or ELG procedures. This is because regardless of the depreciation procedure or life curve selected, the same amount of expense is recovered over the estimated useful life. If there is a truncation of that life, and a reduction of the amount of depreciation expense claimed in the test period as I recommend, then future depreciation expense would be greater, all else being equal.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Reference 1: Exhibit M5, pages 17, 28, 29
Reference 2: Exhibit M5, Sections 3.1.2.1 to 3.1.3.2
Reference 3: Exhibit M5, page 8, line 16
Reference 4: Exhibit 4, Tab 5, Schedule 1, Attachment 2

Preamble:

At page 17, Mr. Madsen states:

"The proposed adoption of the ELG procedure is inconsistent with the principles of gradualism and moderation in the context of depreciation expense."

At page 29, Mr. Madsen states:

"It is commonly accepted amongst depreciation experts that recommended changes to depreciation life estimates should be gradual and moderate."

At page 28, Mr. Madsen states:

"A 10.0% increase in depreciation expense is neither gradual nor moderate."

Questions:

a) Please confirm that the sum of Mr. Madsen's recommended changes to average service lives and survivor curves in Reference 2 would result in a $229.5 million reduction in depreciation expense (assuming ELG procedure).

b) Please confirm that the adoption of the changes in question a) would cause EGI's 2024 forecasted depreciation expense ($892.4 million in Reference 4) to decline to $662.9 million, which represents a reduction of $108.7 million when compared to depreciation expense at existing rates ($771.6 million in Reference 4).

c) Please confirm that the sum of Mr. Madsen's recommended changes to average service lives and survivor curves in Reference 2 would result in a $169.5 million reduction in depreciation expense (assuming ALG procedure).

d) Please confirm that combining the impact of implementing ALG instead of ELG ($81.4 million in Reference 3) and the changes in part c) would result in a total reduction of $250.9 million to depreciation expense.

e) Please confirm that the adoption of the changes in question d) would cause EGI's 2024 forecasted depreciation expense ($892.4 million in Reference 4) to decline to $641.5 million, which represents a reduction of $130.1 million when compared to depreciation expense at existing rates ($771.6 million in Reference 4).

Responses:

a) Emrydia is not able to determine how the $229.5 million figure in this question is derived. Emrydia prepared its evidence by including a paragraph for each account that summarizes the recommended reduction first relative to Enbridge's calculated ALG rates and second relative to Enbridge's calculated ELG rates. For example, the following paragraph was included for Account 466:

> The estimated depreciation expense from using a 37-R4 curve and the ALG procedure is $25.6 million assuming an accrual rate of 2.48% and an investment balance of $1,031.8 million ($1,031.8 million + $0.0 million). This estimate reflects a $9.7 million reduction as compared to the calculated depreciation expense of $35.3 million using a 30-R4 curve and assuming the ALG procedure, or a $12.8 million reduction as compared to the calculated depreciation expense of $38.4 million using a 30-R4 curve of and assuming the ELG procedure.

The differences calculated in the paragraph referenced above are based on the information provided for each account by Enbridge. In preparing its evidence, Emrydia assumed these rates were calculated correctly by Enbridge.

It appears that with this interrogatory Enbridge is seeking to confirm the aggregation of the differences for each of the examined accounts as summarized in Emrydia's evidence. The following table summarizes the recommended reductions included in Emrydia's evidence from the recommended increases proposed by Enbridge. Specifically:

- Column 1 – Reflects Enbridge's recommended depreciation expense increase for each account relative to the 2023 existing rates, including Enbridge's proposal to move to the ELG procedure.
- Column 2 – Reflects Emrydia's recommended depreciation expense reduction for each account (using the ALG procedure) relative to the ALG procedure rates calculated by Enbridge. For example, this equates to $9.7 million as referred to in the quote above for Account 466.
- Column 3 – Reflects Emrydia's recommended depreciation expense reduction for each account (using the ALG procedure) relative to the ELG procedure rates recommended by Enbridge. For example, this equates to $12.8 million as referred to in the quote above for Account 466.

In summary, column 2 isolates the impacts of Emrydia's recommended survivor curve changes, while column 3 presents the impact of both Emrydia's recommended survivor curve changes and the adoption of ELG rather than ALG.

($ millions)	**Column 1**	**Column 2**	**Column 3**
($ millions)	**Enbridge proposed increase using ELG procedure for listed accounts relative to 2023 rates**	**Emrydia reduction to Enbridge calculated ALG rates using ALG rates and recommended survivor curves for listed accounts**	**Emrydia reduction to Enbridge proposed ELG rates using ALG rates and recommended survivor curves for listed accounts**
Account 466	5.6	(9.7)	(12.8)
Account 473.01	6.1	(5.1)	(9.6)
Account 473.02	16.9	(14.8)	(25.7)
Account 475.21	34.3	(18.9)	(36.1)
Account 475.3	22.5	(26.2)	(33.6)
Account 478	42.4	(58.7)	(73.8)
Account 472.35	8.6	TBD	(8.6)
Account 474	25.7	(34.4)	(34.4)
Account 491.01 and 491.02	5.2	(1.4)	(1.4)
Total	**167.3**	**(169.2)**	**(236.0)**

The table reflects the total reduction recommended by Emrydia using ALG rates and the recommended survivor curves of $236.0 million as compared to Enbridge's recommended depreciation expense, of;

i. $169.2 million is the impact of adopting Emrydia's recommended survivor curves; and

ii. $66.8 million (the difference between column 3 and column 2) is the incremental impact of adopting the ALG procedure for the accounts included in the table.

b) A reduction of $236.0 million as calculated in response to a) would decrease applied for depreciation expense from $892.4 million to $656.4 million before accounting for other adjustments to net salvage. This reflects a reduction from the depreciation expense calculated using existing rates of $115.2 million ($771.6 million - $656.4 million).

c) Emrydia is not able to determine how the $169.5 million figure in this question is derived. If the request is seeking the aggregation of reductions as a result of Emrydia's proposed changes ot the survivor curves, then the impact is $169.2 million as calculated in column 2 of table a) above.

d) Not confirmed. The amount would be $250.6 million ($169.2 million + $81.4 million). This reflects the impacts of Emrydia's prposed changes to the survivor curves ($169.2 million) plus the impact of adopting the ALG procedure for all of Enbridge's asset accounts ($81.4 million) as recommended by Emrydia.

e) The revised depreciation expense would be $641.8 million ($892.4 million - $250.6 million). This reflects a reduction from the depreciation expense calculated using existing (2023) rates of $129.8 million ($771.6 million - $641.8 million).

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, pages 23-24

Preamble:

At pages 23 and 24, Emrydia states:

"In response to an information request from the IGUA, Concentric confirmed that its statement above was not technically correct. Specifically, while I appreciate that Concentric was attempting to provide a simplified illustration of the depreciation concepts under ALG and ELG, the example incorrectly exaggerates the difference between the two procedures on an asset-by-asset basis. In reality, group depreciation accounting dictates that each asset would be allocated a portion of the depreciation expense under either ALG or ELG. Therefore, by year 5 under the ALG procedure the first asset would not be fully depreciated and instead would have only been charged $500 ($100 * 5 years) of depreciation expense and the difference in the asset net book value on retirement would be recognized as a loss.

As Concentric employs the remaining life technique, the loss would be charged to the accumulated depreciation account for the asset and recovered over the remaining life of the remaining asset. Thus, a portion of the current depreciation expense would have been allocated to the retired asset, and future depreciation expense would be comprised of both the depreciation of the remaining asset and the depreciation of the loss recognized on the disposal of the first asset."

Questions:

a) Please confirm that in the referenced example, the accumulated depreciation account is in a $500 deficit under the ALG example after year 5.

b) Please confirm that the assets retired at year 5 are no longer used and useful beyond this point.

c) Please confirm that the accumulated depreciation account is in the theoretically correct position after year 5 when using ELG in the same example.

d) Please confirm that Mr. Madsen agrees that Dr. Winfrey is a widely acclaimed expert in the field of utility depreciation calculations.

Responses:

a) Confirmed in part. Each asset under group accounting would be charged $500 of depreciation expense. The first asset would have a reserve deficit of $500 and the second asset would have a reserve surplus of $500, assuming no amortization of the $500 deficit over the first five years. This reserve surplus carries through until the final year.

To illustrate this result, I have expanded the simplified example used by Concentric to illustrate the impacts on each asset under both the ALG and ELG procedure. Year 5 of the ALG procedure shows the offsetting deficit and surplus.

Average Life Group Procedure							Equal Life Group Procedure						
Year	Accruals asset 1 ($)	Accruals asset 2 ($)	Retirements asset 1 ($)	Retirements asset 2 ($)	Acc. Dep Balance asset 1 ($)	Acc. Dep Balance asset 2 ($)	Year	Accruals asset 1 ($)	Accruals asset 2 ($)	Retirements asset 1 ($)	Retirements asset 2 ($)	Acc. Dep Balance asset 1 ($)	Acc. Dep Balance asset 2 ($)
1	100	100			100	100	1	200	67			200	67
2	100	100			200	200	2	200	67			400	133
3	100	100			300	300	3	200	67			600	200
4	100	100			400	400	4	200	67			800	267
5	100	100	1000		-500	500	5	200	67	1000		0	333
6		100				600	6		67				400
7		100				700	7		67				467
8		100				800	8		67				533
9		100				900	9		67				600
10		100				1000	10		67				667
11		100				1100	11		67				733
12		100				1200	12		67				800
13		100				1300	13		67				867
14		100				1400	14		67				933
15		100		1000		500	15		67		1000		0

b) Confirmed.

c) Confirmed, if the “theoretically correct position after year 5” is intended to be that $1,000 of depreciation expense is collected on the asset by year 5. As I note in my evidence, whether the theoretical result aligns with actual results can and does vary.

d) Confirmed.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 24

Preamble:

At page 24, Emrydia states:

"Enbridge does not separately identify in its accounting records each asset that is included in each category and depreciate those assets based on their specific group and rate. Rather, Enbridge has a single depreciation rate for each account and does not physically identify and tag each asset in its system to group that asset into an equal life group with other like assets. Such an effort would be exceptionally costly, subject to significant judgment, and not likely to be much more accurate relative to a more general approach to depreciating assets."

Questions:

a) Please confirm that the ELG procedure does not require Enbridge Gas to calculate the specific life of each asset.

b) Please confirm that the ELG procedure uses the Iowa curve to determine the percentage of assets likely to retire at a given age interval.

Responses:

a) Confirmed. However, where the actual recognition of depreciation expense differs from the theoretical approach assumed by the ELG procedure, then it is inappropriate to suggest that the theoretical accuracy of the ELG procedure is maintained in the actual depreciation of the assets. Specifically, the actual depreciation charged to a specific asset would not align with the example or theoretical correctness discussed in the example referenced in N.M5.EGI-35.

b) Confirmed. This is the theoretical result of the ELG procedure.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 26

Preamble:

At page 26, Emrydia states:

"Concentric confirms, as does Dr. Winfrey in Bulletin 155, that ELG is only "mathematically" more accurate than other procedures. I do not dispute this conclusion, but the mathematical accuracy of the estimate is entirely dependent upon the actual retirement experience for the asset closely approximating the current estimate of the expected useful life and consumption of value. To the extent there is variation between the estimated and actual retirement pattern, which indeed is expected to occur, this estimate will be subject to change, mathematically revised and no longer necessarily true. In practice, the original estimate determined using an ALG procedure may ultimately provide for a more accurate recovery of depreciation expense over the life of the assets."

Questions:

a) Please cite an authoritative source for the assertion that "using an ALG procedure may ultimately provide for a more accurate recovery of depreciation expense over the life of the assets."

b) Please cite examples, including filing and decision numbers, of calculations where ALG provided "a more accurate recovery of depreciation expense over the life of the assets" than ELG for the majority of accounts within a depreciation study.

Response(s):

a) The referenced statement is one of simple logic rather than "authoritative sources", and in making it I relied on logic not authority. For example, using the simplified example provided by Concentric in its evidence, if the first asset did not retire until year 10, as opposed to year 5, then the following would be the result:

- Under the ALG procedure, $200 of depreciation expense would be charged in years 6 through 10, increasing total depreciation expense to $2,000 by year 10. An additional $100 of depreciation expense would be collected per year from year 11 to 15 assuming no reserve account adjustments are made in the simplified example. The total depreciation collected would be $2,500 as opposed to the $2,000 assumed to be collected. Under this result, by year 10, the first asset is fully recovered with no reserve surplus or deficit. By year 15 there is a reserve surplus of $500 related to the second asset.

- Under the ELG procedure, the $267 of depreciation expense would be charged in years 6 through 10, increasing total depreciation expense to $2,670 by year 10. An additional $67 of depreciation expense would be collected per year from year 11 to 15 assuming no reserve account adjustments are made in the simplified example. The total depreciation collected would be $3,005 as opposed to the $2,000 assumed to be collected. Under this result, by year 10, the first asset has a reserve surplus of $1,000. By year 15, there is no reserve surplus for the final asset.

The results of these calculations are illustrated in the following table:

Average Life Group Procedure							Equal Life Group Procedure						
Year	Accruals asset 1 ($)	Accruals asset 2 ($)	Retirements asset 1 ($)	Retirements asset 2 ($)	Acc. Dep Balance asset 1 ($)	Acc. Dep Balance asset 2 ($)	Year	Accruals asset 1 ($)	Accruals asset 2 ($)	Retirements asset 1 ($)	Retirements asset 2 ($)	Acc. Dep Balance asset 1 ($)	Acc. Dep Balance asset 2 ($)
1	100	100			100	100	1	200	67			200	67
2	100	100			200	200	2	200	67			400	133
3	100	100			300	300	3	200	67			600	200
4	100	100			400	400	4	200	67			800	267
5	100	100			500	500	5	200	67			1000	333
6	100	100			600	600	6	200	67			1200	400
7	100	100			700	700	7	200	67			1400	467
8	100	100			800	800	8	200	67			1600	533
9	100	100			900	900	9	200	67			1800	600
10	100	100	1000		0	1000	10	200	67	1000		1000	667
11		100				1100	11		67				733
12		100				1200	12		67				800
13		100				1300	13		67				867
14		100				1400	14		67				933
15		100		1000		500	15		67		1000		0
Total	**1000**	**1500**	**1000**	**1000**			**Total**	**2000**	**1000**	**1000**	**1000**		

Overall, under this theoretical example, the ELG procedure collects $500 more of depreciation expense than the ALG procedure over the life of the assets. For this reason, the acceleration of depreciation expense under the ELG procedure can result in estimate errors and larger surpluses being accumulated particularly where the lives of assets extend over time. With improved maintenance practices and technological advancements, assuming the assets do not become obsolete, it is reasonable to assume some life lengthening is likely to occur for certain accounts over time.

b) There are no examples I am aware of where a utility has tracked the amount of depreciation expense that would have been required over the life of an entire group of assets (or even a vintage of assets) using both the ELG and ALG procedure and accounted for the changes in depreciation parameters over time. I am aware of reserve surpluses and deficiencies occurring in jurisdictions where both the ELG and ALG procedures are used, but I am unable to directly compare the size of those balances across different companies, or even the same company, to assess whether they illustrate a pattern.

I do note that there is one recent example in Alberta where the ELG procedure resulted in significant surpluses in certain accounts and required the Alberta Utilities Commission (AUC) to approve refunds of depreciation expense over short periods of time to draw down the surpluses. In Decision 21341-D01-2017, relating to AltaLink Management Ltd.'s 2017-

2018 GTA the AUC observed an overall surplus of $201.8 million as shown in the table below[1] and approved a refund of $31.4 million.[2]

Table 1. Accumulated depreciation surplus (deficit)

	2016 forecast Proceeding 3524 (AML-UCA-2016JAN20-12(b) Attachment 15) Proceeding 21341 (AML-AUC-2016OCT05-026 Attachment C)					
		Accumulated depreciation surplus (deficit)				
	Estimated survival curve	Calculated accrued depreciation	Booked accumulated depreciation	Accumulated depreciation surplus (deficit)	PUB's* tolerance limit	Lump sum true-up
Transmission plant		($ million)			(5%)	($ million)
350.10 land rights	56-R4	29.6	35.4	5.8	1.5	4.3
352.00 structures and improvements	50-R2.5	48.8	58.0	9.2	2.4	6.7
353.00 station equipment	47-R2	535.8	581.2	45.5	26.8	18.7
353.10 system communication and control	25.L1.5	230.7	279.3	48.6	11.5	37.1
354.00 towers and fixtures	57-R2.5	134.0	172.9	38.8	6.7	32.1
354.01 towners and fixtures (post 2011)	67-R2.5	78.7	115.2	36.5	3.9	32.5
355.00 poles and fixtures	50-R2.5	188.3	107.6	(80.6)	9.4	(90.1)
356.00 overhead conductors and devices	65-R4	178.3	291.5	113.2	8.9	104.3
358.00 underground conductors and devices	50-R5	6.1	6.9	0.8	0.3	0.5
		1,430.2	**1,648.0**	217.7	71.5	146.2
Annual provision for true-up						
2017				(7.9)	-	(7.9)
2018				(8.0)	-	(8.0)
				201.8	**71.5**	**130.3**

In subsequent decisions, AltaLink applied for and received approval to refund additional amounts of the surplus, which continued to grow under the ELG procedure and further life extensions for certain accounts. In Decision 26248-D02-2021, relating to the AltaLink Management Ltd. 2021-2023 Tariff Refund Application, AltaLink requested approval to refund a further $200.0 million[3] of accumulated depreciation surplus and the Commission approved $80.0 million.[4]

For clarity, I cannot confirm that use of the ELG procedure results in materially greater surpluses in the above case than the ALG procedure would have. However, in theory it should. I can confirm that the surpluses were significant, resulted from the use of the ELG procedure, and increased due to life extensions.

[1] AUC Decision 21341-D01-2017, PDF page 17, Table 1.
[2] AUC Decision 21341-D01-2017, PDF page 30, paragraph 141.
[3] AUC Decision 26248-D02-2021, PDF page 4, Table 1.
[4] AUC Decision 26248-D02-2021, PDF page 10, Table 2.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 27

Preamble:

At page 27, Emrydia states:

"The underlined text above summarizes the reasons for Concentric's proposed use of the ELG procedure for Enbridge. Regarding the first point, while the ELG procedure may be a better match to the results achieved under the Generation Arrangement procedure previously used by Union Gas, the ALG procedure was also previously used by EGI. As EGI represents the larger portion of the unamortized assets, if past precedent is weighed as a relevant factor, then I would suggest the continued use of ALG for all assets is more appropriate."

Questions:

a) What is the total percentage of the Enbridge Gas system related to historical EGD assets?

b) What is the total percentage of the Enbridge Gas system related to historical Union assets?

Responses:

a) & b) Per Exhibit 4, Tab 5, Schedule 1, Attachment 3, page 10 of 28 (PDF 1,318), the average plant balance for EGD in 2023 is $11,994.1 million. Per page 25 of 28 of the same Exhibit (PDF page 1,333), the average plant balance for UGL is $11,867.7 million. This results in a split of 50.3% EGD and 49.7% UGL.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 27

Preamble:

At page 27, Emrydia states:

"Regarding the first point, while the ELG procedure may be a better match to the results achieved under the Generation Arrangement procedure previously used by Union Gas, the ALG procedure was also previously used by EGI."

Questions:

a) Please provide a detailed depreciation rate calculation for Account 462.00 using the Iowa 60-S4 and a net salvage percentage of negative 5% prepared in accordance with the ELG – Remaining Life procedure, the ALG – Remaining Life procedure and Generation Arrangement Procedure. Please respond with all the calculation details to support all three calculations.

b) Please confirm that over the life of a group of assets, all three procedures (ELG, AGL [*sic*] and Generation arrangement) will recover only the prudently made investment in the group of assets) – nothing more-nothing less.

Responses:

a) The relationship of this question to the referenced statement is unclear. I do not address Account 462.00 in my evidence. While the calculations under the ELG and ALG procedures can be done, it is not without some effort. For the generation arrangement, there is some judgment in the manner of how the calculations are performed, and thus it would be subject to a great deal of discretion.

The point of my evidence is that the ALG procedure was previously used by EGD, the generation arrangement is being discontinued, which I support, and the ELG procedure has never been applied to EGD or UGL assets. The detailed calculations being requested would not alter this conclusion.

b) Confirmed.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 29

Preamble:

At page 29, Emrydia states:

"In some cases, it may be appropriate to overlook whether the impact of a change in depreciation procedure is gradual or moderate, given that it is expected future changes from the new base would be expected to be consistent going forward if the new depreciation procedure were approved. However, I do not consider it appropriate to do so in this case as there is not clear or convincing evidence to support the need for a change and thus the change can be likened to a significant life shortening for Enbridge's assets as a result of the change to the ELG procedure."

Question:

Please confirm that Concentric has not recommended a significant life shortening for Enbridge Gas assets given that Mr. Madsen only objects to a life change in nine accounts, none of which include changes of more than five years from the currently approved life parameter for one of EGD or Union.

Response:

The referenced evidence suggests that the change to the ELG procedure can be "***likened*** to a significant life shortening" (emphasis added). That is, the effect of implementing the ELG procedure, if approved, is to accelerate the amount of depreciation expense collected on the assets.

In addition, there are a number of asset accounts for which EGI has in fact proposed a significant life shortening. For example, for Account 475.21 – Mains – Coated & Wrapped, the previous EGD life parameter was 61 years (61-R3 curve) and the recommended life parameter is 55 years (55-R3 curve), which is a change of 6 years to the life parameter. For Account 478 – Meters, the previous Union life parameter was 25 years (25-L1.5 curve) and the recommended life parameter is 15 years (15-S2.5 curve), which is a change of 10 years to the life parameter.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, pages 29, 39, 43

Preamble:

At page 39, Emrydia states:

"Concentric recommends using a 30-R4 curve for this asset class. For the reasons detailed below, I recommend using a 37-R4 curve for this asset class, which relative to Concentric's recommendation, reduces depreciation expense by $9.7 million assuming use of the ALG procedure as I recommend, or by $12.8 million if the ELG procedure is adopted."

At page 29, Emrydia states:

"It is commonly accepted amongst depreciation experts that recommended changes to depreciation life estimates should be gradual and moderate."

At page 43, Emrydia states:

"As stated above, the primary driving factor for the life of "most critical compressor equipment" is the Original Equipment Manufacturer (OEM) support, which has been stated to "become limited after 40 years"."

"Stub curves contain the essence of the shape of the curve and can be accurately fit even though the curve is not complete. To clarify this, think about conducting the following experiment. Gather several complete survivor curves and fit them to the to the [*sic*] Iowa curves. Then truncate the observed survivor curves and fit the truncated curves to Iowa curves. Compare the fits of the complete and stub curves to see if consistent results are obtained. The experiment could be repeated by successively truncating more of the curve until only a short stub remained. Analysis of the results of the experiment will reveal how short the stub curve can be before the results of fitting the stub curves differ from the fit to the entire curve**. This experiment was performed by Cowles (1957), who concluded that reasonably good fits were obtained for stub curves that ended at a point as high as 70% surviving**. Longer stub curves (i.e., those with 40% or less surviving) were fit with a high degree of accuracy. This shows that the upper portions of the various types of Iowa curves are distinctive enough to identify the curve."[5] (emphasis added)

[5] Depreciation Systems, Frank Wolf, W. Chester Fitch, p.49.

Questions:

a) Please confirm that the actuarial analysis performed for this account was a stub curve ending at approximately 80% surviving.

b) Please reconcile Mr. Madsen's high weighting of the actuarial analysis with the above quote from Depreciation Systems.

Responses:

a) Confirmed.

b) No reconciliation is required as my evidence is consistent with the referenced quote from Depreciation Systems. Specifically, nowhere have I concluded that "high weighting of the actuarial analysis" is appropriate. I conclude at lines 4 to 8 of PDF page 42 of my evidence:

> Concentric's primary basis for its recommendation is the significant new investment that caused it to "place less weighting on the actuarial analysis for this account." While it is reasonable to some extent to discount the actuarial analysis when there are significant additions to an account which can alter the life expectations, it is unclear why Concentric has ignored or discounted certain management and peer data.

[Emphasis added]

Like Concentric, I do not ignore the actuarial analysis, and accept some discounting. The issue I take with Concentric's evidence is not the actuarial analysis or reliance upon it, but rather why Concentric "ignored or discounted certain management and peer data", which supports a life extension for this account.

Additionally, regarding the referenced text from Depreciation Systems, Cowles concluded that "reasonably good fits were obtained for stub curves that ended at a point as high as 70% surviving". Cowles did not conclude that it was appropriate to ignore stub curves greater than 70%.

Finally, as stated in the referenced text above, "the upper portions of the various types of Iowa curves are distinctive enough to identify the curve". I consider that the upper portion of the 37-R4 Iowa curve as I recommend better fits the stub curve than Concentric's recommended 30-R4.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 31

Preamble:

At page 31, Emrydia states:

"Assuming a 15-year average life but selecting either an L0.0, S1.0 or R5.0 Iowa curve can have a material impact on the amount of depreciation expense charged and the timing of that expense despite the consistent use of a 15-year average life."

Questions:

a) Please provide a visual representation of a 15-L0, 15-S1, and 15-R5.

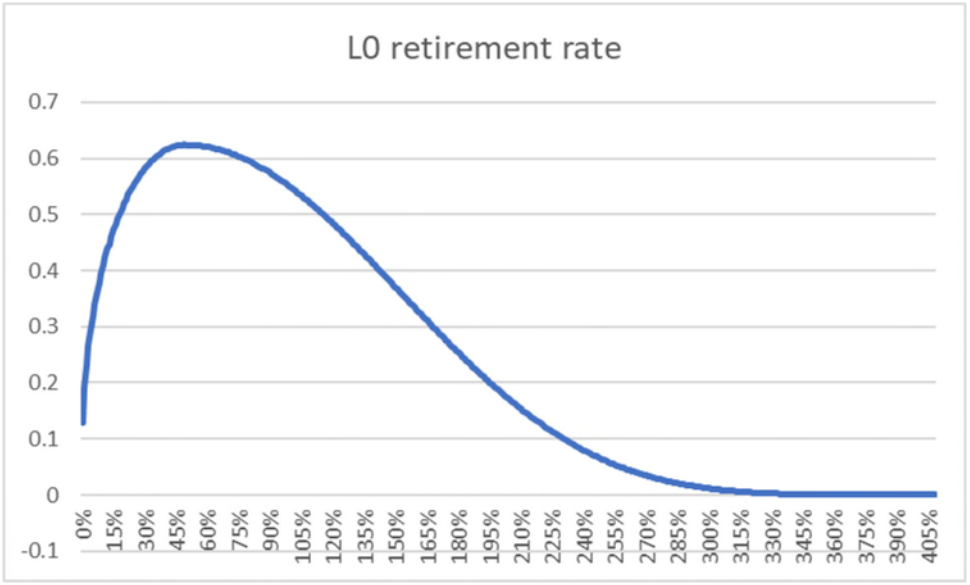
b) Please confirm that the 15-L0 Iowa curve models steady retirements over the life of the assets, with a maximum life of 61.2 years.

c) Please confirm that the 15-R5 models minimal retirements, as defined as more than 90% surviving, until approximately age 12 with all investment retired by age 20.55.

Responses:

a) Please refer to the figure below.

b) I can confirm that the maximum life of the assets assumed in a 15-L0 curve is 61.2 years. However, it is unclear what is meant by "steady retirements" in the request. The retirement rate as depicted in the frequency curve for an L0 curve is depicted below:



As depicted above, the retirement rate accelerates in the earlier portion of the expected life, peaks at a rate of approximately 0.624 at approximately 50% of the expected life, then declines thereafter. The average retirement rate over the entire life is approximately 0.245, which is less than half the peak retirement rate.

I can accept that, like most curves, there is a steady and smooth progression of retirements, but I cannot agree that there is a steady rate of retirement.

c) Confirmed. A 15-R5 curve reflects relatively few retirements with 100% surviving through approximately age 5.4 and falling below 90% surviving only at approximately age 12.45. At age 20.55 all investment is retired.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 34

Preamble:

At page 34, Emrydia states:

"If the OEB approves a transition to the ELG procedure, I recommend a phase-in of the transition over a period of five years. Specifically, I recommend the OEB discount the increase by four fifths in the 2024 test year, three fifths in the 2025 test year and so on."

Questions:

a) Please provide examples, including docket and decisions numbers, where a change in procedure has been phased-in using the approach recommended by Mr. Madsen. For those docket and decisions with a phased-in approach, are they still in-effect or have they been abandoned prior to full implementation.

b) How would the phase-in work in the context of a price-cap mechanism, would it be treated as a Y-factor?

Responses:

a) Changes in depreciation procedure are uncommon. Therefore, phase-in options are not frequently considered as they are not necessary. Manitoba Hydro recently proposed to phase-in its proposed adoption of the ELG procedure in its 2024-25 GRA.[6] Neither the change to ELG procedure nor the phase-in have been approved by the Manitoba Public Utilities Board at this time.

b) One option is to utilize a Y-factor to permit the phase-in. However, my preference is to adopt the ALG procedure to avoid any need for phase-in.

[6] https://www.hydro.mb.ca/docs/regulatory_affairs/pdf/electric/gra_2023_2025/04-3_appendix_4.3_regulatory_deferrals.pdf, PDF page 30.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 45

Preamble:

At page 45, Emrydia states:

"Based on the visual fit of the retirement data to the curve, I observed that an L-type curve may provide for a better visual and mathematical fit to the data."

Questions:

a) Please confirm that the RM listed for the Iowa 45-L0.5 in Figure 11 is the lowest RM listed.

b) Please list the most common forces of retirement of natural gas services.

c) Please list the most common forces of retirement of natural gas mains.

Responses:

a), b) & c) Confirmed. However, the difference between the calculated residual measures is not significant for those included in Figure 11.

I understand the forces of retirement for services and mains to be generally the same. Mains are less likely to be impacted by customer-specific forces of retirement than are services. Beyond normal degradation through wear and tear, and other physical forces of retirement, changes in technology and economic forces of retirement would be common. Economic forces can include retiring assets by customer request (i.e., road move or change in need) or a lack of need for the infrastructure for other external reasons.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 60

Preamble:

At page 60, Emrydia states:

"Finally, recommending a life for plastic mains that is below the life for steel mains would be inappropriate for the reasons noted earlier, and is not supported by the peer analysis or retirement data."

Questions:

a) Please confirm that Concentric recommended a 55-R3 for steel mains.

b) Please confirm that Concentric recommended a 60-R4 for plastic mains.

Responses:

a) Confirmed. The statement was in general and not in reference to Concentric's recommendations.

b) Confirmed.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, pages 62-66

Questions:

a) Please confirm that none of the peers in peer review table with a life of 25 years are currently using cellular technology for AMI assets.

b) Please confirm that the retirement history associated with meters [*sic*] the period from 1884 through 2010 have no bearing on the life of meters currently in service.

c) Please confirm that there are significant penalties to Canadian natural gas utilities if meters fail while in utility service. Further, please list the penalties associated with this failure.

Responses:

a) I am unable to provide the requested confirmation as I do not have access to the records for the peers to understand the technology used.

b) Not confirmed. While the current meters would be different from historical meters, I consider it inappropriate to suggest the retirement data has "no bearing on the life of meters currently in service." The data may not be representative but could be of some value to understand overall retirement patterns of historical meters. All data can have some informative value. Admittedly, though, data from more than 100 years ago would likely be of limited value, and the more recent data would be potentially more informative.

c) I cannot provide the requested confirmation as I have no familiarity with the penalties, nor do I recommend that Enbridge operate in a manner that results in the incurrence of those penalties.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 72

Preamble:

At page 72, Emrydia states:

"Regarding the first question, Concentric estimated the under-accrued amount to be $124.9 million. The amortization of this under accrual is significant to the calculated depreciation rate. An alternative approach to addressing this issue is to amortize the balance consistent with the remaining life in accounts 473.01 and 473.02 proportional to the original amount of the investment included in each account if it is known. This approach maintains a consistent level of depreciation of the investment with the historical rate of depreciation of the investment.

Further, I note that few peers separately track and amortize these assets in Account 474, with only AltaGas (35-S3) and FortisBC (20-S0) reporting a distinct rate.89 While not confirmed by Concentric, I expect other entities would treat the balances in a similar manner as EGD previously treated those amounts by including the costs in Account 473. Therefore, separate amortization of the balance consistent with the remaining life of the assets in Account 473.01 and 473.02 provides for consistency with the treatment applied by peers."

Questions:

a) Please confirm that the industry wide standard throughout North America is to amortize the variance of accumulated depreciation over the remaining life of the assets in service based on the recommended curve, and not over the previously approved remaining life.

b) Please provide docket and decision numbers for any cases Mr. Madsen is aware of where a true up mechanism similar to the one he is suggesting has been approved by a regulator.

c) Please confirm the following quote from Public Utility Depreciation Practices, Compiled and Edited by the Staff Subcommittee on Depreciation of the Finance and Technology Committee of the National Association of Regulatory Utility Commissioners page 41 "Depreciation accounting is the systematic allocation of the cost of the asset over its useful life."

Responses:

a) Confirmed. The accepted industry wide standard is also to propose changes to depreciable lives for assets that are gradual and moderate.

b) I am not aware of any.

c) Confirmed.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Exhibit M5, page 77

Questions:

a) Please confirm that some of the software packages listed in Table 13 are related to CIS packages, and therefore are properly allocated into accounts with lives of more than 10 years.

b) Please confirm that Enbridge Gas is not requesting to depreciate CIS software over a period of 4 years.

c) Please confirm that Concentric is requesting a 10-year account for software installations.

Responses:

The following response(s) was/were prepared by Dustin Madsen.

a) Confirmed.

b) Confirmed.

c) Confirmed. Account 491.03 is a 10 year account.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Enbridge Gas Inc. (EGI)

Reference:

Supreme Court of Canada Decision, Docket 35506, September 25, 2015, Ontario Energy Board vs. Ontario Power Generation, paragraph 16[7]

Court of Appeal of Alberta, Docket 1901-0344AC, April 14, 2023, ATCO Electric Ltd. vs. Alberta Utilities Commission, paragraph 45[8]

Australian Energy Regulatory (AER), Regulating gas pipelines under uncertainty, November 2021[9]

Preamble

At paragraph 16, the Supreme Court of Canada Decision states:

"[16] This means that the utility must, over the long run, be given the opportunity to recover, through the rates it is permitted to charge, its operating and capital costs ("capital costs" in this sense refers to all costs associated with the utility's invested capital)."[10]

At paragraph 45, the Supreme Court of Canada Decision states:

"The "allocation of risks and benefits associated with property ownership" and "fundamental property and corporate law principles" are only of peripheral importance to determining if a utility should be given the opportunity to recover prudently incurred costs."[11]

At Section 4.2, the Australian Energy Regulator, provides a number of pros and cons related to the acceleration of depreciation expense (including the shortening of asset lives) to deal with the issue of Energy Transition for gas pipelines.[12]

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[7] Docket 25506, Supreme Court of Canada Decision, September 25, 2015.
https://www.canlii.org/en/ca/scc/doc/2015/2015scc44/2015scc44.html
[8] Docket 25506, Supreme Court of Canada Decision, September 25, 2015.
https://www.canlii.org/en/ca/scc/doc/2015/2015scc44/2015scc44.html
[9] Regulating gas pipelines under uncertainty. Information Paper. November 2021.
https://www.aer.gov.au/system/files/AER%20Information%20Paper%20-%20Regulating%20gas%20pipelines%20under%20uncertainty%20-%2015%20November%202021.pdf
[10] Docket 25506, Supreme Court of Canada Decision, September 25, 2015.
https://www.canlii.org/en/ca/scc/doc/2015/2015scc44/2015scc44.html
[11] Docket 1901-0344AC, Court of Appeal of Alberta, April 14, 2023.
https://www.canlii.org/en/ab/abca/doc/2023/2023abca129/2023abca129.html
[12] Regulating gas pipelines under uncertainty. Information Paper. November 2021.
https://www.aer.gov.au/system/files/AER%20Information%20Paper%20-%20Regulating%20gas%20pipelines%20under%20uncertainty%20-%2015%20November%202021.pdf

Questions:

a) Please confirm that Mr. Madsen was aware of the above two Decisions directly related to the concept of utility recovery of prudently incurred capital costs in Canada.

b) Please confirm that Mr. Madsen is aware of the discussion of the AER regarding energy transition.

Response(s):

a) Confirmed.

b) I have reviewed the link provided and note the Australian Energy Regulator refers to various pros and cons in Section 4.2 of adjusting depreciation expense. For example, a pro is the reduced risk of stranded investment, while a con is the potential for increasing costs that further erode demand and "hasten the decline in demand for gas network services."

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Environmental Defence (ED)

Reference:

Report, p. 89

Question:

The report states: “I accept Enbridge’s statement that it does not expect a large-scale retirement of assets.” Is this an assessment of the likelihood of large-scale retirement of assets, or merely a simplifying assumption? If it is the former, please explain whether Emrydia has the expertise to make this assessment, justifying the response with reference to specific qualifications in Mr. Madsen’s CV.

Response:

The statement is a simplifying assumption that I made based on Enbridge’s evidence. I have not independently assessed such likelihood.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Environmental Defence (ED)

Reference:

Report

Question:

One possible outcome of decarbonization is that assets are increasingly underutilized or stranded because residential customers leave the system in favour of more cost-effective electric heat pumps, with harder-to-decarbonize industrial customers forming an increasingly large proportion of peak and annual throughput over time. If depreciation rates are not adjusted to address this potential outcome, and it comes to pass, please discuss the potential fairness implications between rate classes.

Response:

I was retained in this matter by the IGUA to address EGI's proposed depreciation policy and provision, including site restoration costs. I was also retained to assess the conclusions of Concentric in relation to applying an Economic Planning Horizon at this time. The topic of whether, and if so how, to adjust depreciation policy in order to address speculative energy transition risks, such as that outlined in this question, is a significant and involved one in its own right, and beyond the scope of my current retainer. As a matter of depreciation policy in general, it is advisable, and most fair to customers, to adopt policies that generally match, from a timing perspective, recovery of depreciation expense with utilization of the underlying assets.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Environmental Defence (ED)

Reference:

Report

Question(s):

a) If a 2050 Economic Planning Horizon is not appropriate, please comment on alternative, more appropriate methods to accelerate depreciation to account for the possibility that assets will no longer be used and useful prior to what the Iowa Curves would predict based on physical factors alone?

b) For the sake of discussion, say that a review of scenarios determined that there is a X% chance that Y% of steel pipes would no longer be used and useful by 2050. Could this be reflected in depreciation amounts by way of adjusting the Iowa Curves for that asset class? What other mechanisms could be used?

c) Would Emrydia agree that the current depreciation methodology implicitly assigns a 0% probability that a substantial portion of assets will reach the end of their economic life before the end of their physical life due to decarbonization? If not, please explain, and provide the probability of this implicitly accounted for in the current methodology.

d) Does Emrydia agree that the current depreciation methodology implicitly assigns a 0% probability that a substantial portion of assets will reach the end of their economic life before the end of their physical life due to decarbonization?

e) Please discuss the merits of addressing decarbonization risks through accelerated depreciation for: (A) all assets, (B) only new assets, and/or (C) assets facing the greatest stranded asset risks (e.g. “small pipes” serving residential customers that can easily switch to more cost-effective heat pumps, pipes that are incompatible with hydrogen, etc.).

Response:

a) Please see response to N.M5.GEC-2.

b) Yes. Beyond applying an overall truncation year to the entire asset class, another alternative would be to apply a high-level adjustment to the calculated rate for a percentage of the asset class. The issue with this approach is that it may ignore that some of the assets in the class are already assumed to be retired earlier than others, and further, some remaining assets may continue to survive well beyond the assumed early retirement date. For this reason, it is best to only apply an economic life to the assets (i.e., use an economic planning horizon) once ample evidence exists to support such a result.

c) The assumption currently included in the calculation of depreciation expense is that there is no additional percentage chance that specific assets will be retired by 2050. However, for clarity, the observed retirement data includes retirements due to all forces of retirement. It is possible that some retirements due to decarbonization may have already occurred on Enbridge's system. Such retirements would be included with all other retirements and would at least in part influence the selection of existing survivor curves for assets.

d) Please refer to the response to (c) above.

e) To the extent accelerated depreciation is adopted, it should be adopted only for the specific assets that will be impacted by its adoption. For example, the broad-based 2050 Economic Planning Horizon modeled by Concentric would be unreasonable to apply as it improperly accelerates the depreciation expense on all assets, even though many assets are likely to continue to have useful and economic life beyond that period. The purpose of determining a depreciation expense is to provide for a systematic allocation of depreciation expense that best aligns with the utility of the assets to the parties benefiting from those assets. Accelerating depreciation expense without clear evidence of a need to accelerate the depreciation expense risks transferring the costs of the assets on current ratepayers when future ratepayers will benefit.

Therefore, I would not support applying a blanket accelerated depreciation rate on all assets as it would not align with the expected useful or economic life of the assets given it would be at this time and subject to much more analysis and investigation, arbitrary. For the same reasons, accelerating depreciation on all new assets would also be arbitrary and likely result in intergenerational inequities. Where there is clear evidence that a portion of certain assets are likely to become retired earlier, it may be appropriate to accelerate depreciation expense on those assets.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from Green Energy Coalition

Reference:

Exhibit M – IGUA – Depreciation, Page 10: "Fundamentally, depreciation is an accounting concept that seeks to ensure the future economic values of an asset are consumed over a systematic period.[13]

Background:

Enbridge has filed evidence produced by Guidehouse which provides two illustrative futures ('Electrification' and 'Diversified') that are postulated to conform to an energy transition that achieves net zero by 2050. The peak energy delivery and peak capacity impacts of the two scenarios can be found at ex. 1.10.5 attachment 2 Figures 10 and 11 (see below). In the 'Electrification' scenario the move off gas is very significant but even in the 'Diversified' scenario, given the fact that hydrogen has approximately 1/3rd the energy content of methane, the system is projected to meet a significantly reduced peak energy demand by 2050 (as evidenced by Guidehouse Figure 10 vs Figure 11). Further, Guidehouse (at page 30) finds that by 2050 85% of all buildings will convert to electric heating systems in the electrification scenario and 40% will do so in the diversified scenario. Accordingly, the impact on annual energy services delivered by the gas system to customers is even greater than the impact on peak energy delivery and there may be far fewer customers left 'holding the bag'.

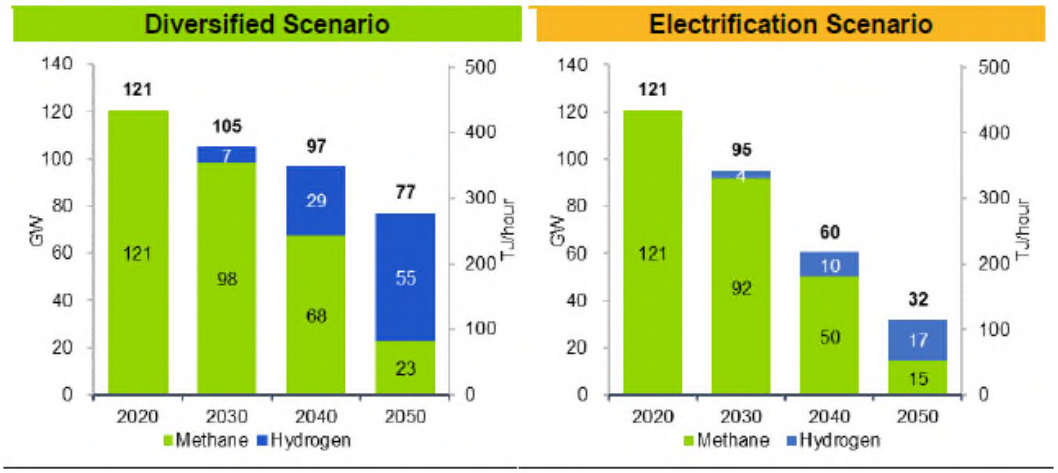
Questions:

a) Does Mr. Madsen agree that the economic value of an asset can change if it provides significantly different level of service and value to its users over time?

b) Please assume that by 2050 Enbridge's assets currently in service will accommodate significantly fewer customers at peak then at present and that a large portion of customer annual energy needs will move off gas, and comment on the relative merits of ALG, ELG, EPH, Capacity-based Units of Production, and Energy-based Units of Production depreciation methodologies as a means of achieving inter-generational equity given those assumptions.

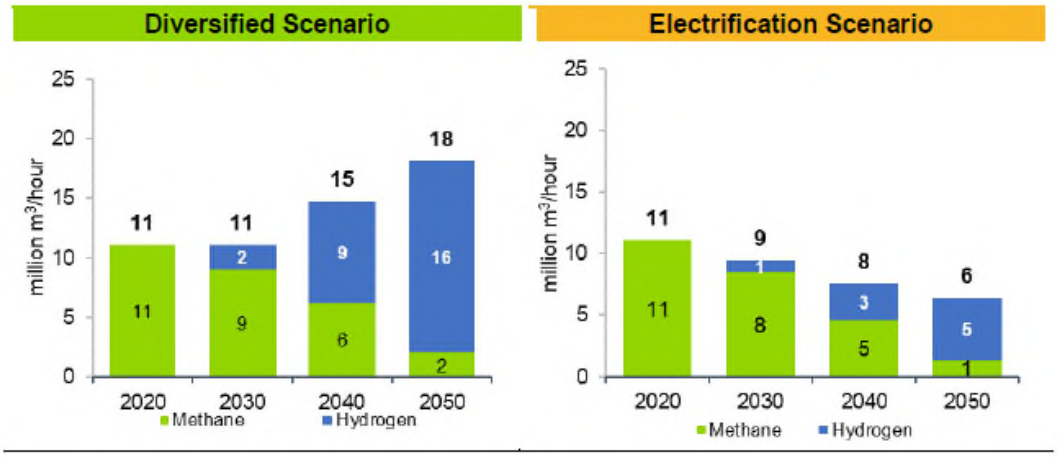
[13] A systematic period is a period that is reflective of the consumption of the value of the assets over the expected useful life. Generally, this systematic period is on a straight-line basis and thus does not vary significantly from year-to-year.

Figure 10. Gas System Peak Demand[59]



While the gas system peak declines for both scenarios in energy terms, the volumetric gas system peak rises significantly in the Diversified scenario. This is because hydrogen has a lower energy density than methane, so more volume is needed to provide the same amount of energy. This trend, along with the volumetric gas system peak for the Electrification scenario can be seen below in Figure 11.

Figure 11. Volumetric Gas System Peak Demand[59]



Response:

a) Yes, I do. The economic value and life of assets is an important consideration in determining the level of depreciation expense. However, where an economic life is established, it is preferrable to have detailed information and evidence in place prior to

implementation. This evidence avoids or at least mitigates potential intergenerational inequities that may otherwise be created.

b) As a preliminary matter, one must be cautious making assumptions, particularly where those assumptions relate to a period that is well beyond the current test period under consideration. For this reason, any conclusions drawn based on assumptions that may not come to pass, and certainly will not come to pass in the current test period, have limited value.

Notwithstanding the above, if the assumed conditions occur, the preferred option is to implement, at a later date, an economic life for the assets that are specifically and identifiably impacted by those conditions. Implementation of a specific economic planning horizon for certain assets, or if entirely necessary, entire asset classes, would be the most effective means of implementing an economic life depreciation for impacted assets. An economic planning horizon can be implemented for any depreciation procedure, including ALG, ELG or a units of production procedure.

The ALG procedure provides for a balanced allocation of depreciation expense over time, and regardless of whether an economic life (i.e., economic planning horizon) is implemented, both the ALG and ELG procedures will recover the same amount of depreciation expense. However, the depreciation expense recovered under the ALG procedure is more balanced and may prevent an acceleration of the problem that is being contemplated in the assumption as a result of allocating a greater proportion of depreciation expense to customers earlier in the planning horizon.

The ELG procedure can accelerate the recovery of depreciation expense in earlier years but is not an economic life approach to determining depreciation expense. Further, the acceleration in earlier years may result in an acceleration of the transition due to rising costs.

In preparing my evidence, I did not review in detail unit of production alternatives for Enbridge. Any such alternative would require a great deal of historical and forecast data to support the amount of depreciation expense that will be recorded. To the extent the estimate is based on inaccurate data, this can create significant current and future volatility in depreciation expense, some of which may not ultimately be necessary. Unit of production procedures, either on an energy or capacity-based basis, may result in some acceleration of depreciation expense, but could also introduce some degree of unpredictability and could trigger the same issues that would arise from the acceleration of depreciation expense using the ELG procedure.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen

Answer to Interrogatory from (Pollution Probe)

Reference:

Table from Exhibit JT5.33 of major pipeline projects constructed but not approved for rate recovery.

Project Name	Applicant	Docket Number	Total Capital Cost (Forecasted)	Total Capital Cost (Actual)	Total Capital Cost Ex. I.2.1-SEC-98	Variance Driver	Capital Overhead Amount	In-Service Date (Actual or Expected)	Amortization Period	Amortization Period - Leave to Construct
2018 Dutton Reinforcement Project	Union Gas	EB-2018-0008	$ 7,396,000.00	$ 4,662,754.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 872,204.84	October 4, 2018 (Actual)	55 years	40 years
Kingsville Transmission Reinforcement Project	Union Gas	EB-2018-0013	$ 105,716,000.00	$ 77,642,559.00	$ 91,563,885.00	The Forecasted and Actual costs are presented without overheads. Ex. I.2.1-SEC-98 includes overheads.	$ 15,440,932.60	October 24, 2018 (Actual)	60 years	40 years
Liberty Village Project	Enbridge Gas Distribution	EB-2018-0096	$ 3,823,283.00	$ 4,151,681.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 1,124,045.73	March 28, 2019 (Actual)	55 years	40 years
Bathurst Reinforcement Project	Enbridge Gas Distribution	EB-2018-0097	$ 9,147,651.00	$ 9,442,615.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 3,237,782.72	December 11, 2019 (Actual)	55 years	40 years
Don River 30" Pipeline Project	Enbridge Gas Distribution	EB-2018-0108	$ 25,318,141.00	$ 23,706,759.00	$ 31,013,254.00	The Forecasted and Actual costs are presented without overheads. Ex. I.2.1-SEC-98 includes overheads.	$ 7,394,061.65	April 21, 2020 (Actual)	55 years	
Chatham-Kent Rural Project	Union Gas	EB-2018-0188	$ 19,100,000.00	$ 14,797,695.00	$ 14,912,202.00	Immaterial completion costs	$ 1,396,671.24	November 22, 2019 (Actual)	55 years	20 years
Georgian Sands Pipeline Project	Enbridge Gas Inc	EB-2018-0226	$ 2,827,437.00	$ 2,112,532.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 625,330.46	June 1, 2020 (Actual)	55 years	40 years
Stratford Reinforcement Project	Union Gas	EB-2018-0305	$ 28,540,000.00	$ 34,796,716.00	$ 35,002,541.00	Immaterial completion costs	$ 4,217,375.89	September 14, 2019 (Actual)	60 years	40 years
St Laurent Pipeline Project	Enbridge Gas Inc	EB-2019-0006	$ 5,510,519.00	$ 6,546,818.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 1,627,364.47	September 4, 2020 (Actual)	60 years	
Windsor Line Replacement Project	Enbridge Gas Inc	EB-2019-0172	$ 108,805,000.00	$ 82,629,806.00	$ 83,123,644.00	Immaterial completion costs	$ 14,690,089.06	September 10, 2021 (Actual)	55 years	
Owen Sound Reinforcement Project	Enbridge Gas Inc	EB-2019-0183	$ 68,695,000.00	$ 70,121,772.00	$ 70,166,009.00	Immaterial completion costs	$ 11,959,309.96	October 20, 2020 (Actual)	60 years	40 years
Saugeen First Nation Community Expansion	Enbridge Gas Inc	EB-2019-0187	$ 2,537,360.00	$ 3,058,999.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 2,182.15	August 24, 2020 (Actual)	60 years	40 years
North Bay Community Expansion Project	Enbridge Gas Inc	EB-2019-0188	$ 10,995,250.00	$ 11,861,640.00	$ 11,861,640.00	No variance	$ 37,664.96	October 1, 2021 (Actual)	60 years	40 years
Sarnia Reinforcement Project	Enbridge Gas Inc	EB-2019-0218	$ 30,761,000.00	$ 36,966,604.00	$ 36,966,604.00	No variance	$ 6,031,845.22	November 1, 2021 (Actual)	60 years	20 years
Low Carbon Energy Project	Enbridge Gas Inc	EB-2019-0294	$ 5,232,355.00	$ 6,779,329.00	n/a	Not included in Ex. I.2.1-SEC-98	$ 1,356,973.56	October 1, 2021 (Actual)	55 years	
NPS 20 Replacement Cherry to Bathurst Project	Enbridge Gas Inc	EB-2020-0136	$ 130,947,891.00					December 8, 2022 (Actual)	55 years	
London Lines Replacement Project	Enbridge Gas Inc	EB-2020-0192	$ 164,098,000.00					December 10, 2021 (Actual)	55 years	
Greenstone Pipeline Project	Enbridge Gas Inc	EB-2021-0205	$ 25,777,789.00					March 2023 (Expected)	55 years	20 years
Waterfront Toronto Relocation Project	Enbridge Gas Inc	EB-2022-0003	$ 29,481,558.00					August 2024 (Expected)	55 years	
Dawn to Corunna Pipeline Project	Enbridge Gas Inc	EB-2022-0086	$ 250,749,703.00					November 1, 2023 (Expected)	55 years	
Haldimand Shores Community Expansion Project	Enbridge Gas Inc	EB-2022-0088	$ 4,048,709.00					February 9, 2023 (Actual)	55 years	40 years
Covey and Kimball-Colinville Well Drilling Project (Gathering Lines)	Enbridge Gas Inc	EB-2021-0248	$ 5,078,600.00					September 9, 2022 (Actual)	55 years	

Enbridge has proposed that the OEB approve in this proceeding an amortization period significantly greater (in some cases increasing from 20 years to 60 years) than what was filed in several major pipeline applications through the OEB Leave to Construct proceeding for those projects.

Question:

Please provide what additional costs and other risks would likely occur if the OEB were to approve the longer amortization period for these projects. Please provide any other appropriate comments or opinions on the appropriateness of this proposal

Response:

[This response is provided by counsel for IGUA.]

This question conflates the concept of amortization period for depreciation purposes with the economic horizon prescribed by the OEB for the purposes of assessing the economics of a proposed pipeline in a leave to construct proceeding. As IGUA understands it (though this is EGI's table), the "amortization period" in the second last column of the table referenced is the depreciation useful life for the asset, while the "Amortization Period – Leave to Construct" in the last column is the economic planning horizon prescribed for the economic calculation for leave to construct approval. EGI is not proposing to increase the latter. Rather EGI is proposing useful lives for depreciation purposes as stipulated in the second last column, and as derived with the assistance of Concentric's depreciation study.

Mr. Madsen has provided evidence addressing EGI's proposed depreciation policy and provision. The topic of whether, and if so how, to adjust depreciation policy in order to address energy transition risks, such as that outlined in this question, is a significant and involved one in its own right, and beyond the scope of Mr. Madsen's current retainer, though for general comment from Mr. Madsen on this topic please see responses N.M5.ED-2, N.M5.ED-3 and N.M5.GEC-1.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen

Answer to Interrogatory from (Pollution Probe)

Question:

Please clarify what responsibility Enbridge has to ensure that amortization periods are not longer than the expected useful life of capital assets and what options are open to the OEB to mitigate rate payer risks and related costs in cases where Enbridge proposes amortization periods that are longer than what is prudent.

Responses:

Amortization and depreciation periods should reflect the expected useful lives of the assets. Where necessary economic considerations that are not already reflected in the expected useful lives can also be considered. All parties, including utilities, should propose depreciation and amortization periods that are reflective of the expected useful lives of assets. This assessment requires significant judgment and expertise.

Regarding options to the OEB, I consider that the risk of approving longer amortization or depreciation periods than is prudent is equal to the risk of approving shorter periods than is prudent. In my opinion, in balancing the public interest the OEB should first set depreciation and amortization periods based on the available evidence that best reflects the expected useful lives of the assets. The second step is to assess whether there is sufficient evidence to warrant an adjustment to those expected useful lives, either upwards or downwards, based on any externalities, which could include energy transition considerations.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from (Pollution Probe)

Question:

Please list any tools and regulatory approaches you are aware of that are used by regulators to mitigate rate payer risks and related costs due to regulated utilities using longer amortization periods for capital assets.

Response:

Please see response N.M5.PP-2.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen

Answer to Interrogatory from (Pollution Probe)

Questions:

Concentric has outlined energy transition and other risks to natural gas capital assets becoming stranded, yet Enbridge is proposing to increase the amortization period for capital assets (e.g. pipeline) which would increase risk of stranded assets if the issues raised by Concentric have merit.

a) Please explain your position on this apparent dichotomy and what approach(es) the OEB could use to mitigate the risks, including to [sic] those to rate payers.

b) What are the pros and cons of decreasing the amortization period for capital assets (e.g. pipelines) from the existing amortization period rather than increasing them as proposed by Enbridge.

Response:

a) & b) Mr. Madsen has provided evidence addressing EGI's proposed depreciation policy and provision. The topic of whether, and if so how, to adjust depreciation policy in order to address energy transition risks, such as that outlined in this question, is a significant and involved one in its own right, and beyond the scope of Mr. Madsen's current retainer, though for general comment from Mr. Madsen on this topic please see responses N.M5.ED-2, N.M5.ED-3 and N.M5.GEC-1.

INDUSTRIAL GAS USERS ASSOCIATION (Madsen)

Answer to Interrogatory from School Energy Coalition (SEC)

Reference:

[p. 56-57]

Question:

With respect to Account 475.21 (Mains – Coated & Wrapped), Mr. Madsen recommends the use of useful life of between 63 to 65 years (63-R3 and 65-R3) but then provides an estimate of the impact based on 60 years (60-R3). Please provide the revised impact on depreciation (both based on ALG and ELG procedure) for (65-R3 curve).

Response:

The annual accrual rate using the ELG procedure, a 65-R3 curve and a -42% net salvage rate, is approximately 2.59%. Applied to the balance of $4,008.89 million in the account, the depreciation expense would be $103.8 million.

The annual accrual rate using the ALG procedure, a 65-R3 curve and a -42% net salvage rate, is approximately 2.21%. Applied to the balance of $4,008.89 million in the account, the depreciation expense would be $88.6 million. This result is approximately $10.0 million lower than the $98.6 million depreciation expense calculated using a 60-R3 curve. However, I also note that on further review, the $98.6 million was calculated assuming a -39% net salvage rate by Concentric, whose information I previously used, and thus a small portion of the recalculated difference of ~$10 million results from a slightly lower net salvage.