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Ms. Nancy Marconi
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September 6, 2024

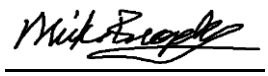
EB-2024-0200 St. Laurent Project Leave to Construct
Pollution Probe Interrogatories to Applicant

Dear Ms. Marconi:

In accordance with OEB direction, please find attached Pollution Probe's interrogatories to the Applicant. Pollution Probe is filing these in advance of the September 9, 2024 deadline to be of assistance to all parties. The following appendices have been filed in parallel.

PollutionProbe_IR_AppendixA_OEBletterArticle1_20240906
PollutionProbe_IR_AppendixA_OEBletterArticle2_20240906
PollutionProbe_IR_AppendixA_OEBletterArticle4_20240906
PollutionProbe_IR_AppendixB_PP11_20240906
PollutionProbe_IR_AppendixC_PP3_20240906
PollutionProbe_IR_AppendixD_JT5.37_OttawaCorrespondence_20240906
PollutionProbe_IR_AppendixE_EGI_ReplyARG_20240906
PollutionProbe_IR_AppendixF_EGI_IRR_20240906
PollutionProbe_IR_AppendixG_CanmetReport_20240906

Respectfully submitted on behalf of Pollution Probe.



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All Parties (via email)
Richard Carlson, Pollution Probe (via email)

EB-2024-0200

ONTARIO ENERGY BOARD

Enbridge Gas Inc.

St. Laurent Pipeline Replacement Project
Leave to Construct

POLLUTION PROBE INTERROGATORIES

September 6, 2024

Submitted by: **Michael Brophy**

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Consultant for Pollution Probe

1-PP-1

Please provide a summary by year from 2021-present of all Capital or O&M costs incurred related to replacement, upgrades or maintenance on the existing SLP pipeline.

1-PP-2

Reference: The findings of these assessments (as provided in detail in Exhibit B, Tab 1, Schedule 1) point decisively to the conclusion that urgent, significant mitigation is required to address the condition of the SLP." [A/2/2, Page 2]

Enbridge's assessment for the St. Laurent Pipeline (SLP) in EB-2020-0293 was that there was urgent mitigation required to address the condition of the SLP. Please explain how the new conclusion differs from the original conclusion in EB-2020-0293.

1-PP-3

Please confirm that Enbridge would proceed with the proposed project if no additional Capital funding is approved by the OEB.

1-PP-4

Reference: Full Replacement is the most predictable and stable solution that reduces the level of risk for the pipeline to an acceptable level, and it is also the most economic option for rate payers. [A/2/2, Page 3] and Table 1 [A/2/2]

a) For Table 1, please provide the source information for each value in Table 1.

b) Please confirm that the values in Table 1 were created or calculated by Enbridge staff. If any value or calculation was done by a third party, please provide details.

c) Please provide the calculation (and accompanying spreadsheets) for the Financial NPV value for Cases A, B & C in Table 1.

d) Please explain how Enbridge selected 63, 42 and 31 years for Cases A, B and C, respectively. Please provide any documentation and back-up supporting those values.

e) Did Enbridge calculate an NPV for any Case other than A. B or C? I f yes, please provide all materials and calculations related to those cases.

f) Please provide a calculation for Financial NPV (on the same basis) for Case D (15 years) and Case E (25 years). Please provide the accompanying spreadsheet.

1-PP-5

Reference: Beginning in June 2022, the reliability and condition of the SLP were comprehensively assessed with a Targeted Integrity Program. [B/1/1, Page 1]

a) Please explain the difference between the Targeted Integrity Program, Enbridge Integrity Management, DIMP, eDIMP and ALE in terms of what they are and which costs center pays for them.

b) What gaps (if any) in Enbridge's previous integrity assessment approach (as applied to the St. Laurent pipeline) have been closed though the Targeted Integrity Program? Please explain the quantitative and qualitative impact of closing these gaps.

c) Is the St, Laurent the only pipeline that Enbridge has done a Targeted Integrity Program on? If yes, why no others. If no, please provide details on the other pipelines where a Targeted Integrity Program has been applied.

d) Please provide a copy of Enbridge's manual (or Section if embedded in another larger manual) and/or guidance for conducting a Targeted Integrity Program. Please also indicate when this material was first created.

e) Has the OEB reviewed and approved Enbridge's Targeted Integrity Program approach? If yes, please provide the OEB reference. If no, please clarify when this is proposed to be done.

1-PP-6

Reference: The assessment of the SLP incorporated pipeline-specific data from in-line inspection tools and various field inspections, employing advanced reliability and risk models for a quantitative threat evaluation and more accurately assessing consequences using local factors like population and building densities … This assessment, building significantly upon previous work [B/1/1, Page 1]

a) Please provide a comparison of the SLP activities undertaken and indicate which of these were done previously on the St. Laurent pipeline and which are new activities not conducted previously. For each net new activity, please explain why it had not be conducted previously.

b) Enbridge has previously indicated that in-line inspection (e.g. smart pigs) could not be accommodated in the St. Laurent line for use. Please explain why this is now possible or what modification were made to the pipeline to enable in-line inspection.

1-PP-7

a) Please provide any correspondence or orders from CSA or TSSA requiring Enbridge to replace the existing pipeline due to poor condition.

b) Please confirm that the CSA does not prescribe Enbridge's Integrity program and it is Enbridge as the pipeline operator to have an adequate integrity management program in place. If that is incorrect, please explain and provide the prescriptive requirements.

1-PP-8

Reference: "…in line with the OEB recommendation, the Company initiated a "Targeted Integrity Program" to collect pipeline-specific condition data to gain a more comprehensive understanding of the SLP's condition and risks. [B/1/1, page 6]

a) Please provide the specific Decision wording that Enbridge is referring to.

b) Please explain what Enbridge has interpreted the OEB Decision wording to mean (i.e. if "x" is done, the OEB will approve the St. Laurent project).

c) Please explain why Enbridge has only applied its "Targeted Integrity Program" approach to the St. Laurent pipeline instead of applying it more broadly across other similar pipelines in the system. If Enbridge has applied a "targeted Integrity Program" approach to other pipelines, please provide details, dates and related costs.

d) Please provide Enbridge's Manual, guideline and/or specifications for applying a "Targeted Integrity Program".

e) Given that each pipeline assessed under Enbridge's Integrity Management Program is discrete, wouldn't every integrity program conducted on a line be a targeted integrity program? If not, please explain.

1-PP-9

Reference: Figure 16: Pipeline Failure on NPS20 Distribution Main Operating at 175psi – Detailed [B/1/1, Page 31]

The example noted above indicates the leak due to a damage. Please provide the location and source of the damage in this specific case.

1-PP-10

Reference: Six separate robotic crawler ILIs were completed at various locations along the SLP using a robotic crawler MFL-LDS inspection tool, capturing condition data on 4.5 km (40%) of the total pipeline system. [B/1/1, Page 8]

a) Please provide the Enbridge approved plan (and RFP and contract if conducted by an external firm) for the ILI activities undertaken on the SLP.

b) Please provide all reports, presentation and management notes related the ILI inspections and results.

c) Please explain how the SLP could operate to meet gas needs forecasted by Enbridge during the periods when the robotic crawlers were in the pipeline?

d) Was a comparable ILI program done on the Cherry to Bathurst Street project? If not, why not? If yes, Please provide the results and a comparison table to contrast the condition of the two ILI investigations.

1-PP-11

Reference: A total of 611 metal loss features, indicative of possible corrosion or gouging, were identified along the inspected portion of the pipeline with several significant features reported with depths greater than 40% of the wall thickness (12 features). This represents a metal loss density of 138 anomalies per km. [B/1/1, Page 9]

a) Is the SLP a transmission or distribution pipeline for OEB approval purposes? Please explain how Enbridge arrived at that classification?

b) Please provide the standard Enbridge is using when assessing the number of anomalies for this and other similar pipelines.

c) Based on the list of anomalies and ILI results recently conducted, was Enbridge aware of any of these prior to the most recent ILI (Targeted Integrity Program). If yes, please provide details.

d) Please provide the results for all comparable Enbridge pipelines in Ontario based on the same type of Targeted Integrity Program and ILI results.

e) For all the items (e.g. anomalies, dents, etc.) detected, please provide a list of which ones have been repaired.

1-PP-12

References: The sections of the SLP that were in-line inspected served to provide a representative sample for the condition of the rest of the system by capturing data on segments with unique characteristics which could influence corrosion [B/1/1, Page 11]

The like-in-kind extrapolation for corrosion on the SLP focused on two key factors that influence corrosion: coating type and Cathodic Protection (CP) … This approach ensures that conclusions drawn from the analysis are representative of the entire system, with a high level of confidence. [B/1/1, Page 12]

a) Please explain why it is appropriate to extrapolate the results of the ILI to the entire pipeline.

b) Please explain whether the ILI results could be extrapolated to other pipelines with the same characteristics of the SLP. If not why not.

c) Has Enbridge applied the results from the SLP ILI and Targeted Integrity Program to other pipelines in Ontario? If not, why not?

d) Please provide the code, standard and Enbridge manuals that define the term “like-in-kind” for integrity management application, including its definition..

e) Please provide a copy of the analysis done related to Cathodic Protection as a key factor for determining like-in-kind extrapolation.

1-PP-13

References: Wherever possible, excavations were conducted in areas that were accessible with only minor disruptions to the public, could be executed in reasonable timing or planning horizons, and/or collected from other projects that were underway. [B/1/1. Page 18] & St. Laurent Boulevard in Ottawa is an urban environment with dense population, businesses, and infrastructure. [B/1/1, Page 32]

a) Given that the SLP is located in busy areas of the downtown core, please describe how each excavation location was selected to minimize public disruption (including traffic)

b) Given the limits applied to the integrity excavation locations, please explain why that would not limit the ability to target the highest areas of concern along the pipeline.

c) Please provide details on the other projects underway that were leveraged for the integrity digs. Were these project for the SLP or adjacent facilities.

1-PP-14

Reference: Most notably, a 162-meter pipeline segment at Dig Site 12 was abandoned and replaced due to ILI-detected metal loss equal to or exceeding 80% of wall thickness. The feature was located on the pipeline running east to west beneath the on-ramp to the King's Highway 417, adjacent to Tremblay Road. [B/1/1, Page 28]

a) Please provide any documentation Enbridge has outlining the cause of this isolated loss of wall thickness that was ultimately repaired.

b) Please provide details on the repair performed, including type and cost.

c) Please explain if it would be statistically appropriate to extrapolate the 80% loss anomaly across the entire SLP or other similar pipelines operating in Ontario. If not, why not.

1-PP-15

Reference: The pipeline's Maximum Operating Pressure (MOP) of 1900 kPa (275 psi) greatly exceeds that of typical lower pressure lines, which often operate around 345 kPa (50 psi). [B/1/1, Page 30]

a) How many pipelines does Enbridge operate in Ontario that have a MOP of 1900 kPa (275 psi) or greater.

b) What integrity management program measures has Enbridge undertaken from a portfolio perspective to assess all of those pipeline to the same extent as the SLP.

c) What have been the outcomes of the integrity measures implemented on all pipelines operating at an MOP of 1900 kPa or greater, compared to SLP?

1-PP-16

References: Many contextual factors must be considered in addition to the measured and observed integrity risks, which, in the case of SLP, have aligned to create an unequivocally unacceptable situation, especially when compared with a lower pressure distribution line in a different location: [B/1/1, Pages 29] and Operational impacts: In the event that emergency repair activities force an unplanned outage, projected customer losses for a 0 Degree Day (15°C) and 47 Degree Day (-32°C) range between 18,000 to 65,000 customers [B/1/1, Page 32]

a) Please provide the analysis and backup supporting the above criteria selection and split of customers in Ottawa vs. Quebec for the 18,000 and 65,000 scenarios above.

b) Please provide the number of days in the past 10 years where the temperature in Ottawa reached a 47 Degree Day (-32°C) or colder.

c) Please provide a cost estimate for the low and high range of the scenario above.

d) Compared to the hypothetical scenario above, please provide details and actual cost impacts for all customer outage incidents due to damages and related repairs occurring along the SLP. Please include the number of customers impacted for each occurrence.

e) If a similar (customer impact and temperature scenarios) damage (e.g. third party damage) occurred on a new pipeline replacing the current SLP, what additional options would that provide Enbridge to reduce incident costs and impacts?

f) Please provide Enbridge's estimated impact (vs.18,000 to 65,000 customers) if the overall gas demand in the pipeline was decreased by 50%.

1-PP-17

Reference: The QRA (Quantitative Risk Assessment) utilized industry-standard reliability methods and published failure rates to form a comprehensive assessment of all threats to the pipeline, along with their potential failure modes. [B/1/1, Page 33]

a) Please provide a copy of the industry-standard reliability methods and published failure rates utilized.

b) Please provide the TSSA and CSA references and wording that require use of the reliability and failure rates noted above for a Quantitative Risk Assessment.

1-PP-18

a) Please confirm that the current CSA Z662 requirements apply to new pipelines constructed when the standard was in place and do not apply retroactively to all previous pipelines installed by Enbridge in Ontario. If incorrect, please provide the wording that required retroactive application.

b) Please provide a copy of the assessment, calculations and report for the sections of the SLP that Enbridge has determined are above the CSA Z662 - Annex O reliability thresholds.

c) Has Enbridge conducted an assessment against CSA Z662 - Annex O reliability thresholds for other similar pipelines in Ontario? If yes, please provide a summary of the results by pipeline.

1-PP-19

Reference: The rate of estimated significant incidents on the SLP is 0.046 (4.6E-2) incidents per km.yr, which is over 2,500 times higher than the historical average observed in the industry of 0.000017 (1.7E-5) incidents per km.yr. [B/1/1, Page 34]

a) Please confirm that the referenced paper [Lyons, S. & Modarres, M. (2020). Understanding Risks: Gas Distribution Piping in the United States, IPC2020-9238] is simply a paper submitted and presented at the 2020 13th International Pipeline Conference and is based on extrapolating an approach from the US space and nuclear industry. If incorrect, please provide the applicable code or standard reference that adopts paper for use in in Canada.

b) Please explain who regulates application of the Code of Federal Regulations (i.e. US 49 CFR § 191.3) in Canada.

c) Please explain why Enbridge was not able to use actual information from its own system to conduct failure rate estimates rather than having to rely on the theoretical methodology outlined in B/1/1 (i.e. using the Lyons, S. & Modarres conference paper).

d) Does Enbridge have equivalent failure rate data for its own system and if yes, can Enbridge provide the comparative analysis using actual Enbridge failure rate data?

1-PP-20

Reference: Based on the sensitivity analysis and the established confidence bounds, the conclusions of the QRA (Quantitative Risk Assessment) are not sensitive to reasonable variations in the input parameters or modelling assumptions. [B/1/1, Page 35]

a) Please provide the reference that defines “reasonable” in Enbridge’s evidence reference above. If this is simply based on what Enbridge deems as reasonable, please explain how that was developed and defined.

b) Please provide the TSSA and CSA requirements that were used to define the “confidence bounds” developed and used by Enbridge.

c) Please provide a list of the input parameters and modelling assumptions used and for each please provide the model sensitivity (absolute and percentage values) per unit change in each input.

d) Please confirm that Enbridge staff developed the input parameters and modelling assumptions for the SLP analysis. If this was developed by external experts, please indicate which industry experts were retained and their qualifications against each parameter they provided.

1-PP-21

Reference: "Unrealistic ranges" refer to input parameters or assumptions that deviate from established engineering best practices and the conventional approaches for conservatism. [B/1/1, Page 35]

a) Please provide the reference that defines “unrealistic ranges” in Enbridge’s evidence reference above. If this is simply based on what Enbridge deems as reasonable, please explain how that was developed and defined.

b) Please provide the TSSA and CSA requirements that were used to define the “unrealistic ranges” developed and used by Enbridge.

1-PP-22

Reference: Table 1 Detailed Threat-Level Reliability Assessments - Failure Rate (per km.yr) [B/1/1 Appendix B, Page 4]

a) Please provide the source of the estimated Failure Rate values per threat in Table 1.

b) Please provide the mathematical calculation applied for Third Party Damage to the SLP per the failure rate in Table 1.

c) Please provide the individual and total value by threat from Table 1 and indicate what Enbridge interprets that to mean when applied to the entire SLP, i.e. to 11.2 km of pipeline (10.8 km of NPS 12 steel pipe and 0.4 km of NPS 16 steel pipe).

d) Please confirm that the failure rates per threat identified in Table 1 are applicable to similar pipelines, rather than being SLP only estimated values. If the rates are only applicable to the SLP, please explain why.

e) Has Enbridge conducted similar Reliability Assessments based on failure rates for other XHP steel pipelines in Ontario, If yes, please provide a list of the pipelines and total aggregate values compared to that of SLP.

1-PP-23

Reference: The rate of estimated significant incidents on the SLP is 4.6E-2 incidents per km.yr which is over 2,500 times higher than the historical average observed in the industry (1.7E-5 incidents per km.yr) & Figure 2 [B/1/1 Appendix B, Page 8]

a) Please confirm the units and values along the x-axis for Figure 2.

b) Please confirm that the y-axis unit is the percent likelihood of an incident.

c) Please provide the definition and source of an “incident” in Figure 2.

d) Please confirm that Figure 2 was developed by Enbridge and provide the source materials explaining its purpose and use.

e) Please confirm that the comparator of over 2,500 times higher than the historical average observed in the industry (1.7E-5 incidents per km.yr) is based on the Lyons, S. & Modarres, M. conference paper [(2020). Understanding Risks: Gas Distribution Piping in the United States, Proceedings of the 2020 13th International Pipeline Conference. IPC2020-9238].

1-PP-24

Reference: To enhance the level of confidence in the results, the Company sought the expertise of DNV, an internationally recognized consulting firm with a specialization in quantitative risk assessments. DNV undertook an exhaustive evaluation of the reliability and risk assessment methodologies employed in the QRA, as well as the application of various risk tolerance thresholds. [B/1/1, Page 36] & DNV Memo [B/1/1 Attachment 3]

a) Please provide the RFP, proposal and contract with DNV for the work noted above.

b) Please provide a copy of all reports, presentation and other materials not already filed from DNV related to the work noted above.

c) Did Enbridge provide feedback to DNV as they undertook their assessment and/or draft materials (memo, report, presentations, etc.). If yes, please provide a copy of all edits and feedback provided to DNV through the process.

1-PP-25

Reference: Letter to OEB [Exhibit B, Tab 1, Schedule 1, Attachment 1]

a) Please provide the OEB document (guideline, Leave to Construct requirements, etc.) wording requiring Enbridge to notify the OEB by letter of the repair it planned to conduct on the SLP.

b) Did Enbridge notify any other party (e.g. Ministry, City of Ottawa, TSSA, CSA, etc.) of the proposed (or completed) repair referenced in the OEB letter. If yes, Please provide a copy of the correspondence.

c) Please provide the date and details of the repair conducted, including repair technique, costs (by Capital and O&M), etc.

d) Please provide a copy of all materials (reports, notes, presentations, etc.) made to Enbridge management and Board of Directions related to the repair and proposed communication to stakeholders (including the OEB).

e) Given the risk examples Enbridge included in the OEB letter of natural gas pipeline leak/rupture impacts, would a benefit of the Energy Transition be the move away from hydrocarbon (e.g. natural gas) pipelines and the related risks? If not, why not?

1-PP-26

Reference: Letter to OEB [Exhibit B, Tab 1, Schedule 1, Attachment 1], PollutionProbe_IR_AppendixA_OEBletterArticle1_20240906, PollutionProbe_IR_AppendixA_OEBletterArticle2_20240906 & PollutionProbe_IR_AppendixA_OEBletterArticle4_20240906

a) Please provide details on who selected and approved the examples of transmission pipeline ruptures that were selected for inclusion in the letter to the OEB and please explain how the examples were vetted as relevant to the St. Laurent Pipeline repair notification letter.

b) Appendix A Article 1 noted above is an article from the March 16, 2022 Consumers Energy example referenced in the OEB letter. The information indicates that the utility was cleaning the transmission pipeline when an ignition source resulted in the incident. Was Enbridge aware of those circumstances and is Enbridge aware if the utility was changed for the incident?

c) Appendix A Article 2 is the Incident Report for article 2 noted in Enbridge's letter to the OEB (December 25, 2020 event). The Incident report indicates that this was an Enbridge transmission line ruptured by a significant landslide and that Enbridge updated its procedures related to geohazard threats, such as an area of potential landslides. Please explain how a transmission pipeline incident due to a landslide as is relevant to informing the OEB that a repair is being conducted on the St. Laurent pipeline in Ottawa.

d) Appendix A Article 4 related to the fourth article noted in Enbridge's letter to the OEB (August 20, 2020 event). The National Transportation Safety Board Incident Report indicates that the cause was the utility's (El Paso Natural Gas Company) was lack of proper pipeline design, construction and operation. Please explain the relevance of a transmission pipeline incident due to a utility's negligence as an example in the OEB letter informing the OEB that a repair is being conducted on the St. Laurent pipeline in Ottawa.

1-PP-27

Reference: Quantitative Risk Assessment) [Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 2]

a) Please explain why the report is marked “Confidential” and what that means, particularly given that Enbridge has not requested confidential treatment in this proceeding.

b) Please provide the email requests sent to each of the approvers in the Review & Approvals table where all approvals were done via email. If additional materials or briefings were done prior to sign off, please describe that process and provide a copy of those materials.

c) Four reviews and sign offs were done on May 4, 2023. What ancillary activities were conducted in order to enable four sign offs to occur within one business day (e.g. were these staff involved in the draft report development, etc.).

1-PP-28

Reference: In June 2022, Enbridge Gas initiated a targeted integrity program (“Program”) for the St. Laurent pipeline system to gather additional information regarding its physical condition. Using data gathered from the Program, a Quantitative Risk Assessment (“QRA”) has been completed to assess the residual risk of the St. Laurent Pipeline. The QRA uses industry standard reliability methods and published failure rates to form a comprehensive defense-in-depth assessment of all threats that affect the pipeline. [Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 3]

Please explain how the QRA report fits into the broader QRA approach for similar pipelines across the Enbridge system and why that broader Integrity Program context was not included in the SLP QRA report (i.e. why SLP is considered a siloed assessment rather than consideration of SLP within the context of the Enbridge integrity program for similar pipelines across the system).

1-PP-29

Reference: The rate of estimated significant incidents on the St. Laurent Pipeline is orders of magnitude higher than the historical average significant incident rate observed in the industry. [B/1/1, Attachment 2, Page 3]

Please provide the actual list of incidents on the SLP over the past 10 years, a detailed description of the Enbridge response/remediation and related costs (split into Capital and O&M).

1-PP-30

Reference: Enbridge Standard Operational Risk Assessment Matrix [B/1/1 Attachment 2, Page 7]

a) Please provide a copy of the completed matrix for other similar (e.g. similar NPS, MOP, etc.) pipelines in Enbridge's Ontario system.

b) In its application, Enbridge indicates that small leaks are not a significant concern, but the F1 (small leaks) mapping on the matrix was chosen to be mapped in the "Very High Risk" category. Please explain why Enbridge chose to align small leaks that can be repaired as the highest risk category and what that mean to small leaks in existing pipelines across the Enbridge system in Ontario.

c) Has the Enbridge Standard Operational Risk Assessment Matrix been reviewed and approved by the OEB. If yes, please provide the Decision reference.

d) Has the Enbridge Standard Operational Risk Assessment Matrix been reviewed and approved by the TSSA. If yes, please provide a copy of the approval correspondence.

e) Has the Enbridge Standard Operational Risk Assessment Matrix been reviewed and approved by the CSA. If yes, please provide a copy of the approval correspondence.

1-PP-31

Reference: In addition to benchmarking with industry standard CSA Z662 thresholds, an assessment was performed to compare the estimated significant incident rates on the St. Laurent pipeline to significant incident rates observed on typical distribution pipelines. [Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 67]

a) Please explain what "benchmarking with industry standard CSA Z662" means and what the results of Enbridge's estimates would be (i.e. difference to Enbridge estimates) if that benchmarking was note conducted.

b) Please confirm what other standards were benchmarked against.

c) Please confirm that benchmarking against a standard is different that applying a standard directly and please explain why Enbridge chose a benchmarking approach.

1-PP-32

Reference: A risk assessment utilizing a defense-in-depth approach was conducted to evaluate the reliability and risk of the St. Laurent pipeline considering all applicable threats to pipeline integrity. [Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 67]

Please define “a defense-in-depth approach” and provide supporting references and the related materials if it was taken from another document, code, etc.

1-PP-33

Reference: [Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 75] The assessment concludes the following:

- We have calculated that we have a 99% confidence that the inspected portion of the pipeline is representative of 87.5% of the pipeline population in determining corrosion susceptibility (within 5% margin of error).
- The stated confidence levels indicate that a sufficient amount of sampling has been performed to make conclusions on the corrosion susceptibility of the pipeline population.

This confidence limit does not incorporate all uncertainties that are difficult to quantify mathematically and includes the following assumptions:

- The corrosion susceptibility is homogeneous within each strata (i.e. most correlated variables are accounted for in the stratification and there is little variance of corrosion within each strata)
- We have achieved true random sampling with the opportunistic samples.

a) Please provide the best and worse case calculation for confidence level if the threat category / pipeline is not homogeneous.

b) Please provide the best and worst case calculation for confidence level if the sampling is not true random sampling, but non-random sampling based on only convenient locations to sample.

c) Please provide the best and worst case calculation for confidence level if the pipeline is not homogeneous and the sampling is not true random sampling, but non-random sampling based on only convenient locations to sample.

1-PP-34

Reference: PollutionProbe_IR_AppendixB_PP11_20240906 [Response to EB-2020-0293 Exhibit I.PP.11]

Please confirm that the response to PP.11b noted above is still correct. If the values have changed significantly, please provide updated information.

1-PP-35

Reference: PollutionProbe_IR_AppendixC_PP3_20240906 [Enbridge response to EB-2020-0293 Exhibit I.PP.3]

Please confirm that the information in EB-2020-0293 Exhibit I.PP.3 remains correct today. If anything has changed, please provide an updated response.

2-PP-36

Reference: Enhances the longevity of the investment, offering potential future uses for alternative fuels e.g., hydrogen blends [A/2/2, Table 1 – Other Considerations]

a) Is Enbridge requesting that the OEB approve the proposed pipeline to carry hydrogen or just natural gas?

b) Has Enbridge received approval from TSSA to carry hydrogen in the proposed pipeline? If yes, please provide a copy of the TSSA application or approval letter.

c) Please provide a copy of all reports which indicate the maximum percentage of hydrogen that the proposed pipeline can carry.

d) Is the proposed pipeline approved for carrying pure (100%) hydrogen?

e) Please provide all documents which indicate Enbridge's plans to leverage the proposed St. Laurent pipeline to carry hydrogen, including the source of hydrogen production and the end-use of hydrogen.

f) Other than the Markham Pilot project which targets a maximum of 2% hydrogen blend, please provide details on all other Enbridge pipelines in Ontario which currently carry hydrogen blends.

g) Hydrogen is only 1/3rd the energy density of natural gas. Please explain how the St. Laurent project would provide the same energy to customers in the case hydrogen was to be blended in the proposed pipeline in the future.

2-PP-37

a) Please reconcile the Proposed project map in Figure 1 [Exhibit A, Tab 2, Schedule 2, Page 7] against the existing SLP map in Figure 2 [Exhibit B, Tab 1, Schedule 1]. If the proposed project is meant to replace the existing pipeline, please explain why the pipelines shown in each map appear different.

b) Please explain if the proposed preferred route follows the same rights-of-way as the existing SLP and what variations are proposed from that general alignment.

2-PP-38

Reference: In the Ontario Energy Board's (OEB) Decision and Order in the previous St. Laurent Ottawa North Replacement Project, the OEB suggested that Enbridge Gas work collaboratively with the City and other stakeholders to proactively plan a course of action for if and when pipeline replacement is required including the pursuit of Integrated Resource Planning (IRP) alternatives. [B/2/1, Page 1]

a) Please confirm that Enbridge is required (and was expected per the OEB Decision noted above) to do a fulsome IRP assessment should Enbridge consider proceeding with the St. Laurent pipeline replacement. If Enbridge believes it is exempt from this, please provide the rationale.

b) Please provide a copy of all Enbridge IRP alternative plans for implementation within the City of Ottawa and copies of all materials provided to the City of Ottawa and the OEB IRP TWG related to those IRP plans.

2-PP-39

In Exhibit B, Tab 3, Schedule 1 Enbridge outlines a very negative picture in the City of Ottawa for electrification, Energy Transition and moving to Net Zero by 2050.

a) Does this mean that Enbridge believe that the path to Net Zero by 2050 is not possible?

b) What would need to happen by 2050 to overcome the concerns Enbroidge has and enable Net Zero to be reached in the City of Ottawa?

2-PP-40

Reference: In more general terms and to the extent applicable for future leave to construct applications, the OEB encourages Enbridge Gas to undertake in-depth quantitative and qualitative analyses of alternatives that specifically include the impacts of IRP, DSM programs and de-carbonization efforts. [EB-2020-0293 OEB Decision Page 24]

a) What IRP programs and tangible outcomes (gas and demand reductions) have been delivered by Enbridge in the City of Ottawa since the OEB IRP Decision and Framework was issued in 2021 (EB-2020-0091).

b) Please provide all material Enbridge developed to “undertake in-depth quantitative and qualitative analyses of alternatives that specifically include the impacts of IRP, DSM programs and de-carbonization efforts.”.

c) Has Enbridge undertaken any analysis of the demand for natural gas by customers in Ottawa and Quebec over the 40 year amortization period (to 2065) of the proposed new pipeline? If no, please explain why not. If yes, please provide copies of all materials and studies.

2-PP-41

Reference: For these customers the gas system provides critical energy today and a potential pathway for decarbonization in the future using low and zero carbon gases, like renewable natural gas (RNG) and hydrogen. [B/3/1, Pages 1-2]

a) Has Enbridge conducted a lifecycle assessment (aligned with Energy Evolution) of using RNG and/or hydrogen to replace natural gas in the proposed pipeline. If yes, please provide a copy.

b) EB-2024-0111 is considering the practicality and prudence of blending RNG or hydrogen in Enbridge pipelines. If this is a critical element for the proposed SLP project to meet Energy Transition needs, should the OEB place this proceeding in abeyance until the EB-2024-0111 Decision is issued. If not, why not?

2-PP-42

References: Since that OEB Decision, Enbridge Gas has met with the City 16 times. Six of these meetings focused on (1) the St. Laurent Project, including pipeline integrity updates, (2) IRP implementation at Enbridge Gas, (3) IRP analysis completed for the St. Laurent Pipeline Replacement Project (the Project), including capacity scenarios, demand forecast process and assumptions, evaluating the Energy Evolution plan and an analysis of IRP alternatives, and (4) a list of Enbridge Gas's projects in Ottawa. [B/2/1, Page 1] & Enbridge provided in 2023 the presentations and correspondence related to the meetings with the City of Ottawa noted above [PollutionProbe_IR_AppendixD_JT5.37_OttawaCorrespondence_20240906]

a) Please provide any additional City of Ottawa IRP presentations and correspondence not already provided by Enbridge in EB-2022-0200 JT5.37 as noted above.

b) The decks [Appendix D pages 3-20 of 24] Enbridge presented to the City of Ottawa has slides [pages 10, 12, 13 of 24] that indicate that Enbridge intends to undertake analysis of Energy Evolution Plan for IRP and demand planning purposes. Please indicate if Enbridge ever undertook the analysis committed to and please provide a copy of all materials (analysis, reports, presentations, etc.) related to that analysis.

c) Please provide details on any IRP activities implemented by Enbridge in the area served by the SLP, included geo-targeted DSM.

d) The 2023 IRP related presentation to the City of Ottawa references a St. Laurent project application costs of $124 million [Appendix D noted above page 14 of 21] which is much lower than the $208.7 million project cost estimate Enbridge included in this application. Please explain the discrepancy.

2-PP-43

Reference: In its consideration of energy transition, Enbridge Gas has contemplated the drivers and pace of electrification of general service customers in Ottawa. [B/3/1, Page 2]

a) Enbridge provides its understanding of the status of the Energy Evolution Plan in B/3/1. Please provide the conclusion Enbridge has reached related to the Energy Evolution Plan and the City of Ottawa's ability to achieve Net Zero by 2050.

b) Enbridge previously confirmed that it does not have electrification and related Energy Transition experts in the Enbridge Gas utility. If that has changed, please provide the names and qualifications of those Enbridge Gas experts and explain their role in creating the evidence in B/3/1.

2-PP-44

Reference: In February 2024, Enbridge Gas engaged Integral Engineering (Integral) to perform probabilistic modeling using a set of input assumptions supplied by Enbridge Gas… The different scenarios modeled reflect the pace at which general service customers could exit the gas system in the future. [B/3/1, Page 11]

a) Please provide the RFP, bid and contract related to the work ultimately performed by Integral Engineering, as noted above.

b) What was the reason for retaining Integral Engineering to conduct Monte Carlo simulations, when that is simple analysis that could have been performed internally.

c) Please provide a copy of the input assumptions and instructions provided to Integral Engineering.

d) Were the input assumption provided to Integral Engineering, the same as those provided to Guidehouse and Posterity for completion of the Enbridge Pathways to Net Zero Emissions for Ontario Report [Filed by Enbridge in EB-2022-0200 Exhibit 1.10.5.2_Pathways to Net-Zero Emissions for Ontario_BLACKLINE_20230421]? If not, please highlight the differences and why they are different.

2-PP-45

Reference: In February 2024, Enbridge Gas engaged Integral Engineering (Integral) to perform probabilistic modeling using a set of input assumptions supplied by Enbridge Gas. [B/3/1, Page 11]

a) Please confirm the following statements. If any of these are incorrect, please explain why.
   - Monte Carlo simulation is a computational technique that uses random sampling to estimate the probability of different outcomes in a process that involves uncertainty.
   - The accuracy of the results heavily depends on the quality and accuracy of the input data.
   - Poor or biased inputs can lead to misleading outcomes.
   - Monte Carlo simulations rely on the assumptions made in the model. If the model does not accurately represent the real-world system, the results can be flawed.

b) Please explain why Monte Carlo simulation is the appropriate tool to model hypothetical assumptions on future forecasted outcome during the rapidly accelerating Energy Transition.

2-PP-46

Reference: B/3/1, Page 12 outlines the assumptions used in the Monte Carlo modeling scenario for residential space heating.

a) Please explain why Enbridge used “future customer disconnections” rather than “gas usage” as the forecasted outcome. Particularly since there are homes with gas connections that do not use gas.

b) Please provide a demand forecast (by year) from current to 2050 for the sector and assumptions outlined above. Please provide the results table in excel and also provide a copy of the result in graphical form.

c) Please confirm that the assumptions used include customers that have already moved to electric ASHPs, but have not disconnected from the Enbridge system at this point. If incorrect, please explain.

2-PP-47

Reference: Integral Engineering Slide deck [Exhibit B, Tab 3, Schedule 1, Attachment 1]

a) Did Enbridge receive any products (final or draft) from Intergal Engineering other than the slide deck noted above? If yes, please provide a copy of all materials.

b) Please explain the process Enbridge used in working with Integral while they conducted the work and produced the product(s).

c) Did Enbridge have a governance approach for the Integral Engineering project. If no, please explain why not. If yes, please provide details on the structure, members of governance groups, frequent & type of coordination between Enbridge and Integral Engineering staff.

2-PP-48

Reference: 0.7% of customers (320 of 44,891) who installed a heat pump in the HER+ program subsequently disconnected from the gas system. [Exhibit B, Tab 3, Schedule 1, Attachment 1, Slide 18 & 23]

a) Please provide a copy of the results (per slide 19) based on the following assumptions:

- Scenario A - All remaining HER+ participants noted above (99.3%) disconnected from natural gas in 2025. All else in assumptions remains the same.
- Scenario B - All remaining HER+ participants noted above (99.3%) disconnected from natural gas in 2025. Electric Heat Pump installation increases from 8% (Enbridge 2024 assumptions), but 5% per year until it reached 100%.

b) Please add the two scenarios above to a version of the slide 23 results in the deck.

2-PP-49

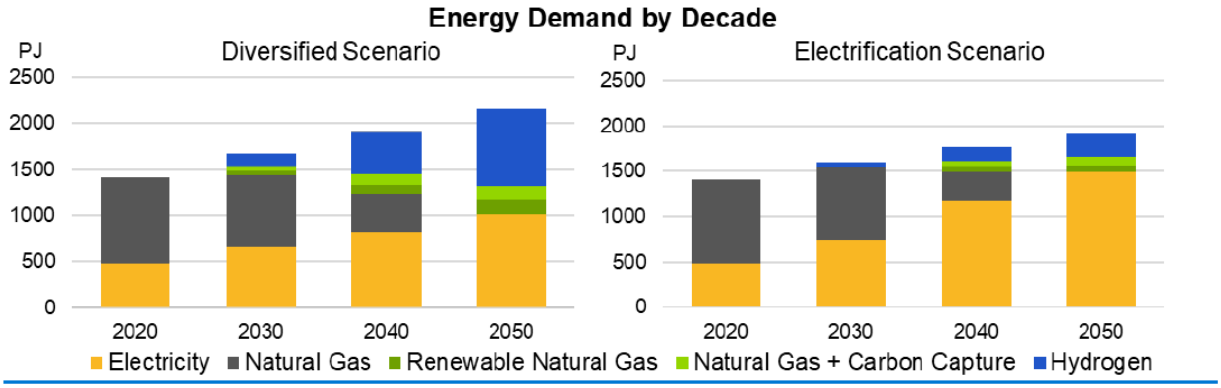
Reference: Enbridge Gas has undertaken outreach with the LVCD customers served by the SLP system to understand their current and future energy needs. Table 1 provides an overview of the aggregated demand information for the six LVCD customers connected directly or indirectly to the SLP System. [B/3/1, Page 17]

a) Please provide the information for each of the 6 customers included in Table 1.

b) Enbridge provided specific customer information previously. Please identify which LVCD customers (if any) are different than those included in the forecast for Enbridge's EB-2020-0293 application.

2-PP-50

Reference: Pathways to Net Zero Emissions for Ontario. [EB-2022-0200 Exhibit 1.10.5.2_Pathways to Net-Zero Emissions for Ontario_BLACKLINE_20230421]



Enbridge indicates that for both the (Enbridge-preferred) Diversified Scenario and the Electrification Scenario that by 2050 natural gas will no longer be used in Ontario with the potential exception of select large volume industrial customers that have economic access to carbon capture and geological sequestration.

a) Please explain why the proposed pipeline will not become a stranded assets based on Enbridge's 40 year amortization (i.e. until 2065).

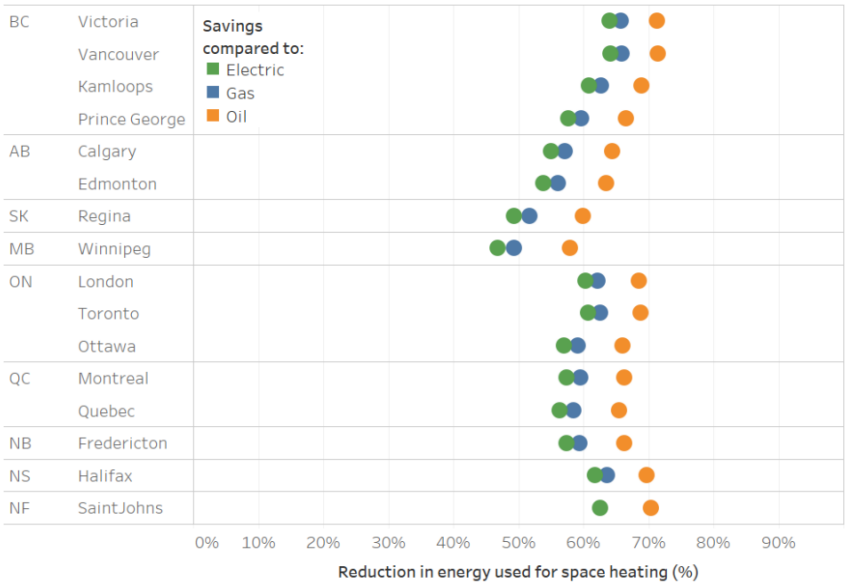
b) Please confirm that Enbridge has not received approval (from the OEB, TSSA or other relevant regulator) for use of 100% hydrogen for the Project assets proposed. If approval has been received for 100% hydrogen, please provide a copy of such approval.

c) If Enbridge intends to use hydrogen to serve this community once natural gas is no longer available, please provide details on the source, transmission and lifecycle carbon emissions of the proposed hydrogen.

2-PP-51

Reference: PollutionProbe_IR_AppendixG_CanmetReport_20240906 [per EB-2022-0200 Exhibit J11.5]

Figure 1: Energy Savings (percentage) for a ccASHP compared to natural gas, oil and baseboard electric.



The CanmetENERGY cold-climate air source heat pump (ccASHP) Report shows a ccASHP is 50% to 70% more efficient than natural gas, oil or resistance (i.e. baseboard) electric.

a) Please indicate whether this information for ccASHPs was included in Enbridge's Energy Transition analysis. If it was, please provide a copy of the details.

b) This information was provide in EB-2022-0200 based on a 2022 Study. If Enbridge has a more recent/relevant study/information that provides a different savings rate for ccASHPs vs. natural gas, please provide a copy.

2-PP-52

Reference: The IESO's analysis presents a low and high electricity demand forecast for the City of approximately 2,200 MW and 2,300 MW respectively by 2042. Neither of these demand forecasts accounts for demand due to the electrification of space heating as envisioned in the City's Energy Evolution Plan. [B/3/1, Page 20]

The footnote Enbridge provides for the above reference is a 2022 IESO Gatineau End of Life Study. How did Enbridge extrapolate that electricity demand for space heating was not envisioned in the Energy Evolution Plan?

2-PP-53

Reference: Posterity Report [C/1/1 Attachment 2]

a) Please provide a copy of the RFP, proposal and contract with Posterity related to the work on the above noted report.

b) Please provide a copy of the assumption inputs provided to Posterity to conduct its analysis.

c) Is the two-page report in Attachment 2 the only material Enbridge received from Posterity? If no, please provide a copy of the other materials. If yes, why it there so little IRP analysis and reporting for such a large and important project?

d) Were any third parties engaged to validate assumptions and alignment with Energy Evolution? If yes, please provide details and the impact on the final analysis based on their input and feedback.

2-PP-54

Reference: Enbridge Gas notes that a temperature of -24 C (42 HDD) was reached on February 12, 2022, and a temperature of -27 C (45 HDD) on February 13, 2016. Although not quite design day temperatures, interruptions on the cold days of winter such as these can cause similarly significant and material hardship for the customers served by the St. Laurent Pipeline.
[PollutionProbe_IR_AppendixE_EGI_ReplyARG_20240906 & PollutionProbe_IR_AppendixF_EGI_IRR_20240906 - Exhibit I.M.1.PP.1]

Please confirm that no additional peak temperatures were reached since Enbridge provided the information noted above in 2022. If there is additional data of events at or colder than the two events noted above, please provide the information.

3-PP-55

Reference: Table 4 [C/1/1, Page 16]

a) Please explain why the total Capital + O&M expenditures related to a full pipeline replacement is only $155 million in Table 4, when Enbridge has indicated that the Capital costs alone for the replacement is estimated to be $208.7 million.

b) Please confirm that the NPV does not include abandonment costs for the existing pipeline.

c) Please provide the estimated abandonment costs and also provide any amounts related to the current pipeline which have not been fully amortized at this time.

3-PP-56

Reference: Table 7 - Summary of NPVs for Alternative A and B with Various Useful Lives [C/1/1, Page 19]

a) Please provide the inputs and calculations related to each Case (A/B/C) for the Extensive Inspection and Repair column values.

b) Please provide an Excel version of the calculations and NPV related to each scenario.

3-PP-57

Reference: Project Costs [E/1/1]

Please explain why Indirect Capital Overheads and Loading of $35,517,720 are applicable to this project and how this is consistent with the OEB's EB-2022-0200 Decision.

4-PP-58

Reference: Environmental Report [Exhibit F]

a) Please explain how the Environmental Report (dated June 2020 and filed in EB-2020-0293) is relevant to this Application.

b) Please explain how the Environmental Report Amendment 1 (dated November 2020 and filed in EB-2020-0293) is relevant to this Application.

4-PP-59

Reference: Environmental Report [Exhibit F]

a) Please provide any updated correspondence since the Environmental Report and updated Application was filed.

b) Please provide a copy of any correspondence from MTO approving the location of the proposed pipeline. If this has not been obtained, please provide correspondence from MTO outline concerns or concurrence with the propose project.

4-PP-60

Reference: Figure 3: Preferred Route and Alternative Routes [F/1/1, Attachment 3, Page 20]

Enbridge has put significant effort into highlighting the issues associated with the existing pipeline location and risk factors. For example, Enbridge indicated that the pipeline route is in a “heavily urban area including: wall-to-wall concrete, densely congested right of way (beneath or adjacent to arterial roads), exposure to road salt, and frequent damage from third-party contractors (often unreported)”.

Please explain why Enbridge did not assess any route options that would by-pass (or at least reduce) the busy downtown area with the proposed new large diameter XHP pipeline (i.e. objectively redesign the project to avoid all the issues that it has flagged in its application).