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September 27, 2024

**BY RESS AND EMAIL**

Nancy Marconi  
Registrar  
Ontario Energy Board  
2300 Yonge Street, Suite 2700  
Toronto, ON M4P 1E4

Dear Nancy Marconi:

**Re: Enbridge Gas Inc. (Enbridge Gas)  
Ontario Energy Board (OEB) File: EB-2024-0200  
St. Laurent Pipeline Replacement Project  
Interrogatory Responses**

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In accordance with the OEB's Procedural Order No. 1 dated August 21, 2024, enclosed please find the interrogatory responses of Enbridge Gas.

In accordance with the OEB's Practice Direction on Confidential Filings, Enbridge Gas is requesting confidential treatment of the following information. Details of the specific confidential information for which confidential treatment is sought are set out in Table 1:

Table 1

<b>Exhibit</b>	<b>Confidential Information Location</b>	<b>Brief Description</b>	<b>Basis for Confidentiality</b>
I.1-CAFES Ottawa-12	Attachment 1 pgs. 1, 2 and 3	Landowner complaint  The redacted information is landowner name, address and phone number.	The redactions relate to the names and contact information of property owners. This information should not be disclosed in accordance with the <i>Freedom of Information and Protection of Privacy Act</i> . Pursuant to section 10 of the OEB's <i>Practice Direction on Confidential Filings</i> , such information should not be provided to parties to a proceeding.
I.1-EP-1	pg. 1, part a – c)	Customer Information	Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the Board.  This is information that the OEB has indicated will be presumptively considered to be confidential – Information that would disclose load profiles, energy usage and billing information of a specific customer that is not personal information <sup>1</sup>
I.1-EP-2	pg. 1, part a – b)	Customer Information	Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the Board.  This is information that the OEB has indicated will be presumptively considered to be confidential – Information that would disclose load profiles, energy usage and billing information of a specific customer that is not personal information
I.2-EP-5	pg. 2, part b – d)	Customer Information	Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the Board.  This is information that the OEB has indicated will be presumptively considered to be confidential – Information that would disclose load profiles, energy usage and billing information of a specific customer that is not personal information

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<sup>1</sup> As noted as Item#3 in the "Categories of Information that Will Presumptively Be Considered Confidential", as found at Appendix B to the OEB's Practice Direction on Confidential Filings.



I.1-FRPO-20	pg. 3, part b)	Asset Location  The redacted information is rectifier locations.	The redactions relate to the locations of Enbridge Gas critical infrastructure. Public disclosure poses both a safety and a security risk as it may allow third parties to determine gas system configurations and points of sensitivity or vulnerability that may expose Enbridge Gas to security risks.
I.2-FRPO-22	Attachment 1	System Map  The redacted information is the existing system map with pipeline MOP and station locations.	The redactions relate to the locations of Enbridge Gas critical infrastructure. Public disclosure poses both a safety and a security risk as it may allow third parties to determine gas system configurations and points of sensitivity or vulnerability that may expose Enbridge Gas to security risks.
I.2-FRPO-23	pg. 2 - Table 1	Station Inlet Pressure and Flow  The redacted information is station numbers and names.	The redactions relate to the locations of Enbridge Gas critical infrastructure. Public disclosure poses both a safety and a security risk as it may allow third parties to determine gas system configurations and points of sensitivity or vulnerability that may expose Enbridge Gas to security risks.
I.2-FRPO-24	pg. 2 – Table 1	Station Inlet Pressure and Flow  The redacted information is station numbers and names.	The redactions relate to the locations of Enbridge Gas critical infrastructure. Public disclosure poses both a safety and a security risk as it may allow third parties to determine gas system configurations and points of sensitivity or vulnerability that may expose Enbridge Gas to security risks.
I.2-FRPO-25	pg. 2 – Table 1	Station Inlet Pressure and Flow  The redacted information is station numbers and names.	The redactions relate to the locations of Enbridge Gas critical infrastructure. Public disclosure poses both a safety and a security risk as it may allow third parties to determine gas system configurations and points of sensitivity or vulnerability that may expose Enbridge Gas to security risks.
I.1-PP-16	pg. 2, part a)	Asset Location  The redacted information is station name and location.	The redactions relate to the locations of Enbridge Gas critical infrastructure. Public disclosure poses both a safety and a security risk as it may allow third parties to determine gas system configurations and points of sensitivity or vulnerability that may expose Enbridge Gas to security risks.
I.1-PP.24	Attachment 3 pg. 1 – Table 1 pg. 2 – Table 2	Scope of Work  The redacted information is hourly and task-specific pricing information, and names of team members.	This is information that the OEB has indicated will be presumptively considered to be confidential – Billing rates and/or unit pricing of a third party. <sup>2</sup>  The vendor requested the names of third party team members be redacted on the basis of personal information and relevance. Team member roles are provided along with the name of the Team Lead.
I.1-PP-24	Attachment 4 pg. 2	Scope of Work  The redacted information is pricing information.	This is information that the OEB has indicated will be presumptively considered to be confidential – Billing rates and/or unit pricing of a third party

<sup>2</sup>These are noted as items #1 and 2 in the “Categories of Information that Will Presumptively Be Considered Confidential”, as found at Appendix B to the OEB’s Practice Direction on Confidential Filings.

I.2-PP-44	Attachment 1, pgs. 12 and 21-23	Consulting Agreement  The redacted information is task-specific pricing information.	This is information that the OEB has indicated will be presumptively considered to be confidential – Billing rates and/or unit pricing of a third party
I.2-PP-44	Attachment 2 pg. 3	Consulting Agreement  The redacted information is task-specific pricing information.	This is information that the OEB has indicated will be presumptively considered to be confidential – Billing rates and/or unit pricing of a third party
I.2-PP-44	Attachment 3 pg. 3	Consulting Agreement  The redacted information is task-specific pricing information.	This is information that the OEB has indicated will be presumptively considered to be confidential – Billing rates and/or unit pricing of a third party
I.2-PP-49	pg. 1, part a – b)	Customer Information	Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the Board.  This is information that the OEB has indicated will be presumptively considered to be confidential – Information that would disclose load profiles, energy usage and billing information of a specific customer that is not personal information
I.2-PP-53	Attachment 1 pg. 4	Scope of Work  The redacted information is hourly and task-specific pricing information.	This is information that the OEB has indicated will be presumptively considered to be confidential – Billing rates and/or unit pricing of a third party

The above noted submission has been filed electronically through the OEB's RESS and will be made available on Enbridge Gas's website. Please see the link below (then navigate to the "Regulatory Information" tab).

<https://www.enbridgegas.com/about-enbridge-gas/projects/st-laurent-pipeline-replacement-project>

If you have any questions, please contact the undersigned.

Sincerely,

*Patricia Squires*

Patricia Squires  
Manager, Regulatory Applications – Leave to Construct

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Application and Evidence, Exhibit B, Tab 1, Schedule 1 Plus Attachments: Project Need

Preamble:

This is Enbridge's second application for leave to construct the St. Laurent Pipeline system (SLP) replacement project. The first application (File No. EB-2020-0293) was denied on May 3, 2022. The OEB found that there was not sufficient evidence to approve the project. Specifically, the OEB found that Enbridge did not demonstrate that SLP system integrity was compromised to the extent that it required replacement. The OEB asked Enbridge to examine additional alternatives to full replacement such as development and implementation of in-line inspection and maintenance programs using modern technology.

In its Decision and Order, the OEB found:

...the need for the Project and the alternatives to the Project have not been appropriately assessed. Enbridge has not demonstrated that the pipeline integrity is compromised, and that pipeline replacement is required at this time. The OEB urges Enbridge to thoroughly examine other alternatives such as the development and implementation of an in-line inspection and maintenance program using available modern technology, and propose appropriate action based on its finding as part of its next rebasing application.<sup>1</sup>

Enbridge suggests that, in the current application, the need for the Project is underpinned by the need to mitigate the risks of declining pipeline integrity of the St.

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<sup>1</sup> EB-2020-0293 Decision and Order, May 3, 2022, page 3

1 EB-2020-0293 Decision and Order, May 3, 2022, page 3

Laurent Pipeline system that is based on improved, pipeline-specific extensive inspection and quantitative risk assessment. Enbridge states that it followed the OEB's direction in the decision and applied a Targeted Integrity Program which included collection of historical data and pipeline-specific surveys using modern technology. Based on the results of the Targeted Integrity Program, Enbridge conducted sensitivity analysis, and quantitative risk assessment.

Question(s):

- a) Beyond the use of the Targeted Integrity Program discussed in the current application, please describe any other differences between the current application and the previously denied application. Please comment on issues related to the proposed route, environmental impacts assessment, land matters, public consultation including consultation with the City of Ottawa, Indigenous consultation and any other changes compared.
- b) In order to present a high-level summary of the integrity assessment project, please provide the integrity assessment project flowchart starting with the Targeted Integrity Program activities ending with the Quantitative Risk Assessment, Reliability Modelling and evaluation of Full Replacement and Extensive Inspection and Repairs as options to mitigate the risks. Please show how the project components relate to each other indicating time sequence, inputs and outputs (i.e. integrity assessment data, benchmarks).
- c) Please include a complete list of all references, standards and codes used to assess the SLP integrity.

Response:

Since the time of the OEB decision in the earlier application, Enbridge Gas has taken extensive steps to acquire additional information through incremental inspections and testing, and performed an objective evaluation of the current intolerable risk and reliability concerns through the Quantitative Risk Assessment. These steps have confirmed the conclusion that urgent, significant mitigation is required to address the condition of the St. Laurent Pipeline.

There are many differences in the evidence in this current Application compared to the prior application. This Application and its supporting evidence should be reviewed in its entirety. It is not practical to try to list all of the differences in this regard. However, the main differences in this current Application include the following:

- The implementation of the Targeted Integrity Program detailed in Exhibit B, Tab 1, Schedule 1.

- A comprehensive and objective Quantitative Risk Assessment and Risk Evaluation was performed against established risk thresholds. Refer to Exhibit I.1-PP-2 for additional details on how this approach differs from the approach in EB-2020-0293.
  - Energy Transition was comprehensively considered.
  - Project facility alternatives focus on “Full Replacement” and “Extensive Inspection and Repair with Crawler ILI” and were comprehensively assessed on feasibility, residual risk, and multiple NPV scenarios which included Energy Transition considerations.
  - Project non-facility alternatives were comprehensively assessed, including IRP alternatives.
  - Stranded Asset Risk was evaluated and included as part of multiple NPV scenarios.
- a) In addition, in respect of the specific items on which the question asks for comment, the differences between the current application and previous application can be summarized as follows:
- i. Proposed route (please see Attachment 1 to this response)
    - Elimination of plastic gas main installation being proposed on St. Laurent Blvd and Sandridge Rd between Brittany Rd and Hillsdale Rd.
    - Elimination of plastic gas main installation being proposed on Coventry Rd between St. Laurent Blvd and Belfast Rd.
    - Reconnecting all services to the new NPS 12 extra-high pressure steel gas main on St. Laurent Blvd and Sandridge Rd between Brittany Rd and Hillsdale Rd (originally proposed to be attached to new plastic pipeline mentioned above).
    - Reconnecting all services to the new Nominal Pipe Size (NPS) 12 extra-high pressure (XHP) steel (ST) gas main on Coventry Rd between St. Laurent Blvd and Belfast Rd (originally proposed to be attached to new plastic pipeline mentioned above) .
    - Timing of construction and construction sequencing has been adjusted to maximize installation efficiencies in 2025 and 2026.
    - Addition of NPS 12 XHP ST gas main from St Laurent Control south to Industrial Ave.
    - Multiple alternative routes are no longer being pursued (i.e., Aviation Parkway, Sir George-Etienne Parkway, Queen Mary St, Hemlock Road).
  - ii. Environmental Impacts Assessment
    - The Environmental Report (ER) and ER Amendment 1 were included in the first application. ER Amendment 2 was filed alongside the ER and ER Amendment 1 in the second application and provides an

updated assessment of the environmental impacts and summary of updated public consultation efforts since the initial filing.

iii. Land Matters

- Enbridge Gas continues to engage with directly affected landowners and is further along in the negotiation process. Due to constructability constraints, one additional property where a permanent land right is required has been identified.

iv. Public Consultation

- As outlined in Exhibit B, Tab 2, Schedule 1, since the EB-2020-0293 Decision and Order, Enbridge Gas has consulted extensively with the public, the City of Ottawa, Hydro Ottawa, the IESO and other local stakeholders to share information about the need for the Project and proactively plan the details of the Project including the possibility of IRP alternatives. Please refer to Exhibit I.1-CAFES Ottawa-10 for details and sample communication materials shared with key stakeholders.

v. Indigenous Consultation

- For the previously denied application, Enbridge Gas was delegated the duty to consult with Algonquins of Ontario and Mohawks of Akwesasne. As outlined at Exhibit H, Tab 1, Schedule 1, pages 2-3, on November 7, 2023, Enbridge Gas provided the Ontario Ministry of Energy (ENERGY) with a description of the St. Laurent Pipeline Replacement Project (the Project) to determine if there are any duty to consult requirements and, if so, if ENERGY would delegate the procedural aspects of the duty consult to Enbridge Gas. Enbridge Gas received a letter from ENERGY on December 21, 2023, indicating that consistent with the Ministry of Energy's previous delegation letter issued January 30, 2020, the consultation list will continue to include Algonquins of Ontario and Mohawks of Akwesasne. However, with respect to consultation with the Algonquins of Ontario, that the Algonquins of Pikwakanagan First Nation is one of the communities that comprises the Algonquins of Ontario and should be notified separately for consultation and engagement purposes.

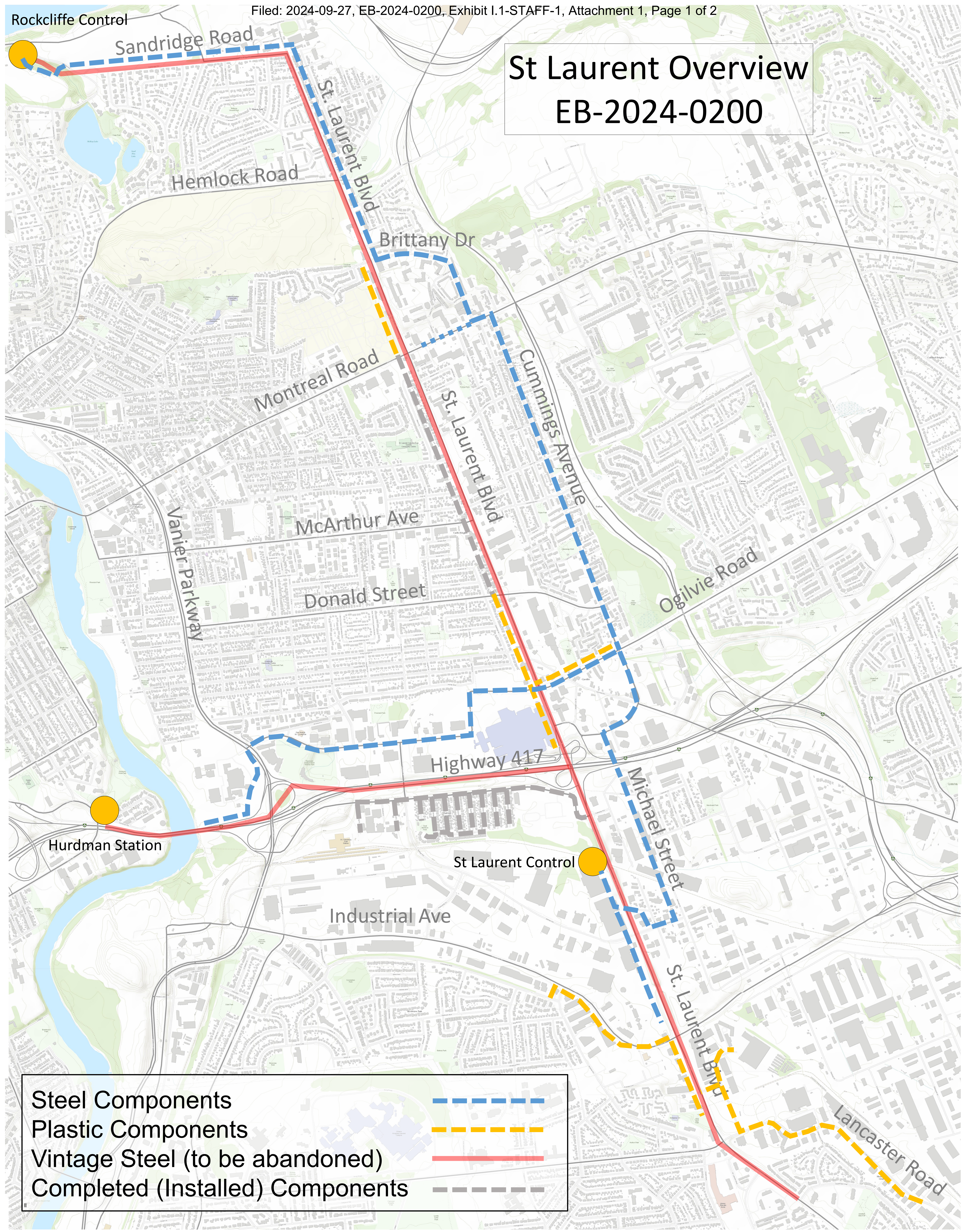
- b) Please see Attachment 2 for a flow chart containing a high-level summary of the integrity assessment project, including how the project components relate to each other and with time sequencing, inputs and outputs indicated.



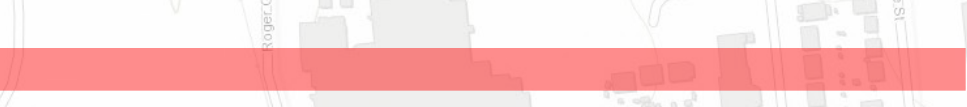

- c) The primary references, standards, and codes used to assess the integrity of the SLP are:
- i. TSSA FS-253-20 Oil and Gas Pipeline Systems Code Adoption Document Amendment
  - ii. CSA Z662 - Oil and gas pipeline systems
  - iii. ASME B31.8S – Managing System Integrity of Gas Pipelines
  - iv. API RP 580 – Risk-Based Inspection
  - v. ASME B31G – Manual for Determining Remaining Strength of Corroded Pipelines
  - vi. API 1163 – In-line Inspection Systems Qualification
  - vii. PHMSA Pipeline Risk Modelling – Overview of Methods and Tools for Improved Implementation (Feb 1, 2020)

A more comprehensive list of references used in the Quantitative Risk Assessment is provided in Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 68 to 69.



# St Laurent Overview EB-2024-0200

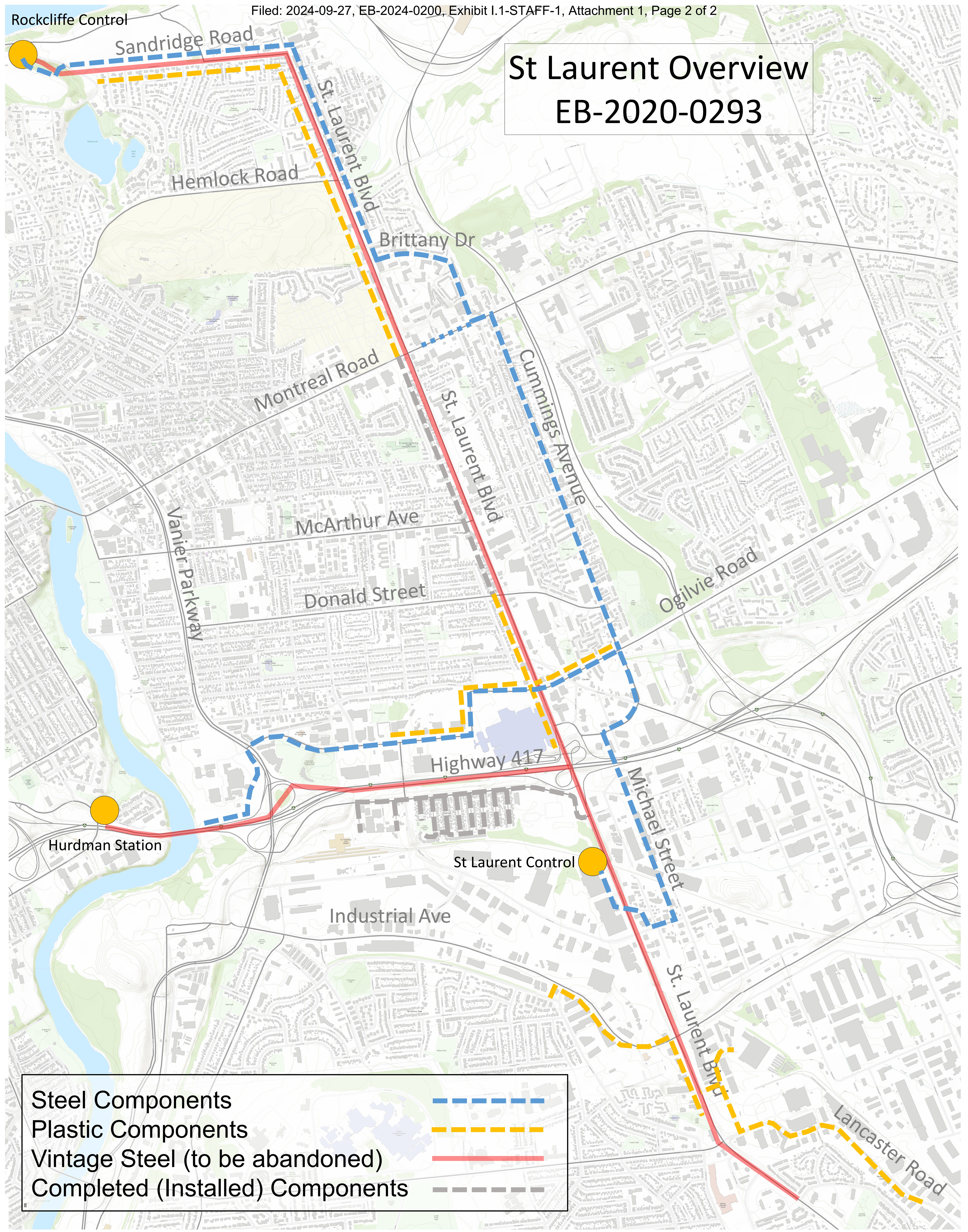




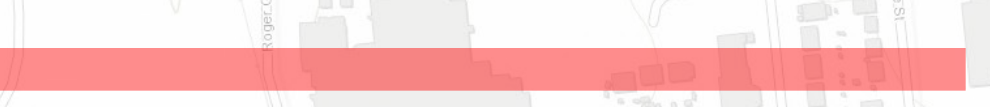

- Steel Components 
- Plastic Components 
- Vintage Steel (to be abandoned) 
- Completed (Installed) Components 



# St Laurent Overview

## EB-2020-0293



- Steel Components 
- Plastic Components 
- Vintage Steel (to be abandoned) 
- Completed (Installed) Components 



## INPUTS

<p>Initiate Targeted Integrity Program</p> <ul style="list-style-type: none"> <li>• Targeted pipeline inspections (crawler in-line inspections (ILI) and non-destructive examinations (NDE))</li> <li>• Special surveys (details CP survey (CIPS/DCVG) and depth of cover survey)</li> </ul>	<p>Conduct Risk Assessment</p> <ul style="list-style-type: none"> <li>• QRA and Risk Evaluation</li> <li>• Independent third-party review of QRA methods and conclusions</li> <li>• Risk endorsement and approvals</li> </ul>	<p>Identify Risk Mitigations</p> <ul style="list-style-type: none"> <li>• Pipeline risks are not tolerable, risk mitigation is required, including from a Health &amp; Safety perspective</li> </ul>	<p>Develop Alternatives</p> <ul style="list-style-type: none"> <li>• Assessment of non-facility or IRP alternatives</li> <li>• Assessment of facility alternatives</li> <li>• Preliminary evaluation of facility alternatives</li> <li>• Development of probabilistic NPV assessment</li> </ul>	<p>Re-assess Alternatives in Light of 2024 Rebasing Decision</p> <ul style="list-style-type: none"> <li>• Re-assess alternatives to integrate energy transition scenarios into NPV analysis</li> <li>• Continued development of Full Replacement alternative</li> </ul>
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<ul style="list-style-type: none"> <li>• ILI-based pipeline condition data</li> <li>• NDE pipeline condition data</li> <li>• Repairs to significant anomalies</li> <li>• Validation data to measure ILI performance</li> <li>• 162 m emergency pipeline replacement (80%+ metal loss feature)</li> </ul>	<ul style="list-style-type: none"> <li>• Reliability for each pipeline segment and overall pipeline</li> <li>• Highest risks quantified (Health &amp; Safety, Operational Disruption, Financial)</li> <li>• Validation of QRA by third-party consultant</li> <li>• Immediate risk mitigation required</li> </ul>	<p>Implement immediate partial risk mitigations until full risk mitigation achieved with permanent solution</p> <ul style="list-style-type: none"> <li>• Vital main designation</li> <li>• Daily pipeline patrols</li> <li>• Mandated on-site supervision for any excavation activities</li> <li>• Public awareness campaign</li> <li>• Additional pipeline markers</li> </ul>	<ul style="list-style-type: none"> <li>• No feasible non-facility or IRP alternatives to downsize the pipe</li> <li>• Four potential facility options, two selected for comprehensive analysis</li> <li>• Enhanced NPV analysis including risk benefits, financial uncertainties</li> <li>• Full Replacement alternative selected, confirmed through enhanced NPV analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Full Replacement alternative confirmed as most financially prudent option with best risk reduction</li> </ul>
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## OUTPUTS

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, paragraph 11, page 5  
Exhibit A, Tab 2, Schedule 2, paragraph 9, page 6

Preamble:

The SLP system is a critical component of Enbridge's natural gas distribution network in the National Capital Region. Enbridge stated that approximately 168,000 customers on networks downstream of the SLP system in Ottawa, Ontario and Gatineau, Quebec are served by the SLP and potentially exposed to reliability risk.

The SLP is supplied from a single source, the St. Laurent Control Station, and consists of steel mains primarily installed in 1958 and 1959. It is an integral part of the natural gas network that supplies, directly or indirectly, natural gas to approximately 168,000

customers in the City of Ottawa and in Gatineau, Quebec. Enbridge noted that the SLP system is the main source of supply for Gazifere.

Question(s):

- a) Please provide approximate number of customers served by the SLP:
  - i. in the City of Ottawa
  - ii. in Gatineau
  - iii. other service areas of Gazifere
- b) What portion of the cost of the Project will be carried by Enbridge's ratepayers and what portion will be carried by Gazifere's ratepayers?
- c) Please describe any agreements or other regulatory mechanism to allocate the cost of the Project between Enbridge's ratepayers and Gazifere's ratepayers.

Response:

a) i - iii.

Approximate customer counts are outlined below:

	City of Ottawa <sup>[1]</sup>	Gazifère (in Gatineau)	Gazifère (not in Gatineau)	Total
Customers Served	126,200	40,700	600	167,500

[1] City of Ottawa is considered to include all customers on the “Ottawa System”, which may include some customers outside of City of Ottawa who are served by the SLP.

b) Enbridge Gas is not proposing any unique rate recovery treatment for the capital costs of the Project. If the Project is approved and it qualifies for ICM recovery, Enbridge Gas will bring forward a request for approval in the rate year in which the project goes into service (2025 or 2026). If there is no ICM recovery, the Project will not be included in rate base for rate setting purposes until the next rebasing application based on the proposed in-service dates. Current approved rates for the EGD rate zone are underpinned by the OEB approved 2018 Cost Allocation Study<sup>1</sup>. Issues related to cost allocation and rate design will be determined as part of Phase 3 of the 2024 Rebasing Application.

The Project is designed to replace approximately 14.4 km of existing extra high pressure (XHP) steel pipeline with 12.8 km of XHP steel pipeline and 4.8 km of intermediate pressure pipeline.

In the 2018 Cost Allocation Study, the costs of XHP pipeline are allocated by the Delivery Demand TP > 4” allocator<sup>2</sup> provided in Table 1:

Table 1: EGD Rate Zone Delivery Demand TP >4” Allocator

Line No.	Particulars	Allocation Factor (a)
1	Rate 1	46.34%
2	Rate 6	40.64%
3	Rate 9	0.00%
4	Rate 100	0.00%
5	Rate 110	0.02%
6	Rate 115	0.01%
7	Rate 125	0.08%
8	Rate 135	0.00%

<sup>1</sup> EB-2017-0086

<sup>2</sup> Ibid, Exhibit G2, Tab 6, Schedule 3, p.2, Item 2.1.

9	Rate 145	0.00%
10	Rate 170	0.00%
11	Rate 200	0.01%
12	Rate 300	0.00%
13	Total	100%

As shown in Table 1, 0.01% of the Project cost would be allocated to Gazifère ratepayers through their Rate 200 service and the remainder would be allocated to EGD rate zone ratepayers in other rate classes.

- c) Enbridge Gas allocates costs to various rate classes in accordance with approved cost allocation studies and there is no agreement or other regulatory mechanism to allocate the cost of the Project between Enbridge Gas's ratepayers and Gazifère's ratepayers.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, paragraph 8 and 9 pages 3 and 4, Figure 1. St. Laurent Pipeline Map

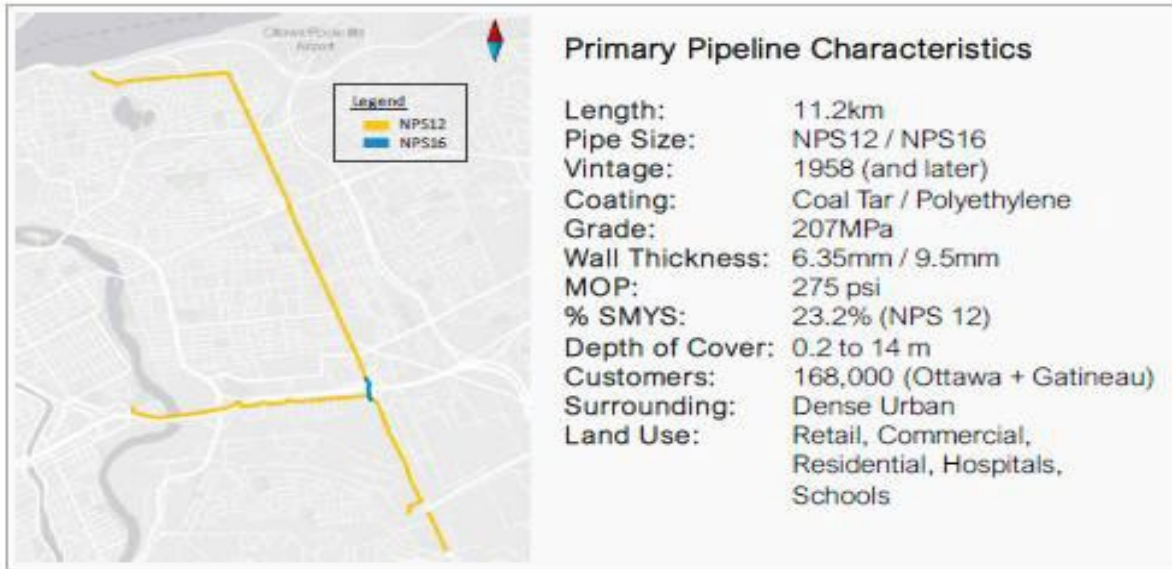
Preamble:

The SLP system is comprised of 10.8 km of NPS 12 steel pipe and 0.4 km of NPS 16 steel pipe. St. Laurent Pipeline system is a one-way feed from the St. Laurent Control Station to the Rockcliffe Station. The pipeline was constructed between 1958 and 1959. It is a coated steel pipe with the following specifications:

- i. Wall Thickness = 6.35 mm and 9.5 mm
- ii. Coating = Polyethylene (PE) (13%) / Coal Tar (87%)
- iii. Grade = 207 MPa

A map of the pipeline system and an overview of its primary characteristics are shown in Figure 1.

Figure 1: St. Laurent Pipeline Map



The new replacement pipelines (total length of approximately 17.6 km) and ancillary facilities are proposed to replace 14.4 km of the existing pipelines along St. Laurent Avenue, Sandridge Road, and Tremblay Road in the City of Ottawa. The existing pipelines are proposed to be abandoned and replaced with approximately:

- 10.0 km of NPS 12 XHP ST;
- 2.5 km of NPS 16 XHP ST;
- 0.3 km of NPS 6 XHP ST;
- 0.9 km of NPS 6 Intermediate Pressure (IP) Polyethylene (PE); and
- 3.9 km of NPS 4 IP PE.

Question(s):

- a) Enbridge provided that the Specified Minimum Yield Strength (SMYS) for the existing NPS 12 is 23.2%. What is the SMYS for the existing NPS 16 segment?
- b) Enbridge replacement pipelines include about 4.8 km of IP PE pipelines. Which sections of the SLP system are proposed to be replaced by these pipelines? In response to the question, please file a map indicating the existing pipelines being replaced by PE IP pipelines and the location of the proposed replacement.

- c) What is the SMYS of the existing IP PE pipelines planned to be replaced? Please explain if the need to replace these pipelines is based on their integrity decline. If so, how and when is the decline established or predicted and which repair measures are currently being implemented?

Response:

- a) The SMYS for the existing NPS 16 segment is 16.8%.
- b) The 4.8 km IP PE gas pipeline is required to connect customers that are currently being fed from the extra high pressure (XHP) system that is proposed for replacement. A long segment of the proposed XHP gas main routing is being installed on streets other than St Laurent Blvd where the existing XHP gas main is located. The purpose of the proposed plastic IP gas mains is to keep the existing customers on St. Laurent Blvd serviced once the XHP system is abandoned. Please see Attachment 1 to this response for a visual of where the plastic gas mains are in comparison to the proposed and existing steel gas mains.
- c) There are no IP PE pipelines being replaced as part of this Project.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, paragraph 2, page 1, and paragraph 13 and 14, pages 6-7

Preamble:

Beginning in June 2022, following a denial of the previous SLP Replacement application in May 2022, Enbridge commenced a Targeted Integrity Program, a comprehensive assessment of the reliability and condition of the SLP, which included:

- SLP's Operating History data
- Assessment of current condition applying the following methods to collect pipeline-specific data by:
  - i) In-line inspection (ILI)
  - ii) Field excavations
  - iii) Non-Destructive Examinations (NDE)
- Quantitative Risk Assessment
  - a. Risk Modelling
  - b. Reliability Modellings

Question(s):

Please discuss the rationale to not implement the Targeted Integrity Program prior to May 2022? Please refer to the outcomes of "2018-2027 Asset Management Plan (AMP)" published in 2018.

Response:

The new activities associated with the Targeted Integrity Program were not completed prior to May 2022 because it was Enbridge Gas's understanding at the time that sufficient historical evidence (e.g., inadequate cathodic protection, repair and leak

history, tacit knowledge of pipe condition, existing modelling, etc.) existed to justify the replacement project as part of Enbridge Gas's previous LTC submission (EB-2020-0293).

In similar previous LTC applications for other projects, assessments of a similar level of detail were sufficient to obtain OEB leave to construct for replacement projects.<sup>1</sup>

The 2018-2027 Asset Management Plan (AMP) published in 2018 highlighted the need to replace the St. Laurent pipeline to "address known pipeline integrity and operational field concerns" but also acknowledged that the project required "some additional investigation to confirm the pipe condition status, and then identify the appropriate scope and the replacement timing".<sup>2</sup>

Although the Targeted Integrity Program was not completed at that time, EB-2020-0293 Exhibit B, Tab 1, Schedule 1, pages 27 to 32 described the additional cathodic protection assessment, coating assessment, and depth of cover work that was completed in 2018 to further assess the pipe condition and confirm the recommendation for replacement.

Enbridge Gas has continued to evolve its approach to assessing the integrity needs of distribution assets, with a growing emphasis on integrating risk as a core component of decision-making.

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<sup>1</sup> EB-2019-0172 "Windsor Line Replacement Project", Decision and Order (April 1, 2020); EB-2020-0192 "London Line Replacement Project", Decision and Order (January 28, 2021); EB-2020-0136 "NPS 20 Replacement Cherry to Bathurst", Decision and Order (December 17, 2020).

<sup>2</sup> EB-2017-0306/EB-2017-0307, Exhibit C.STAFF.54, Attachment 1, p. 118.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

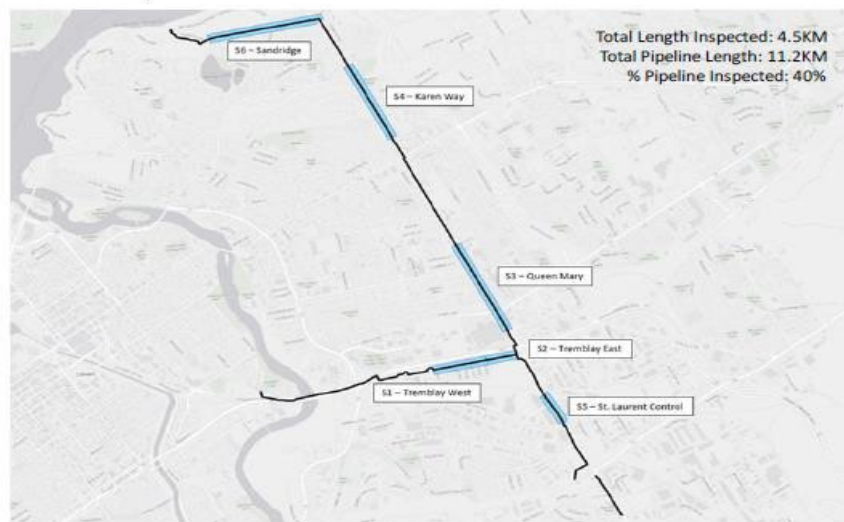
Exhibit B, Tab 1, Schedule 1, paragraph 14, page 6, Table 1. Inspections and Surveys and Figure 2. Robotic Crawler ILI Extents and Locations

Preamble:

Enbridge noted that robotic crawler ILI and Non-Destructive Examinations provided the “most definitive” results regarding the condition of the existing pipeline.

Data collected by robotic crawler MFL-LDS cover 4.5 km or 40% of the total length of the SLP.

Figure 2: Robotic Crawler ILI Extents and Locations



Question(s):

- a) Please discuss the reasons for not using ILI and Non-Destructive Examinations prior to June 2022?
- b) Referring to the map in Figure 2, please explain the method for selecting the locations for ILI.
- c) Please discuss and explain the rationale of using pipeline-specific ILI data along 40% of the SLP length to extrapolate and assess the condition of the entire SLP.

Response:

- a) Please see response at Exhibit I.1-STAFF-4.
- b) Please see Exhibit B, Tab 1, Schedule 1, pages 11-13 for a description of the methodology for determining the locations for ILI. ILI locations were chosen objectively to ensure that each pipe grouping with unique characteristics (e.g. vintage, cathodic protection area, pipe coating) was sufficiently assessed to provide representative results for similar segments. Additionally, the precise locations of the excavations to launch the ILI tool were selected to gather the maximum amount of inspection data and, where possible, to limit public disruption (e.g. outside of travelled portions of the road, away from intersections etc.).
- c) The like-in-kind analysis methodology provides an efficient and cost-effective approach for assessing pipeline conditions by utilizing pipeline-specific inspection data on portions of the system. This approach is consistent with industry best practices for evaluating the condition and risks associated with uninspected or difficult-to-inspect pipelines.

This method was selected over 100% inspection coverage of the SLP for the following reasons:

- i. Unlike traditional free-flowing inline inspection technologies, due to battery constraints, robotic crawler inspections are limited to a range of approximately 500 meters from the launch site. However, this limitation allows operators to strategically select specific areas for inspection, effectively “sampling” pipeline conditions without requiring continuous coverage.
- ii. The cost-effectiveness of gathering inspection data depends on both the expense of retrofitting launch points and the volume of data that can be collected at each site. By optimally selecting launch locations, Enbridge Gas was able to minimize costs while maximizing data collection,

ultimately obtaining a representative dataset for the uninspected portions of the pipeline.

- iii. Enbridge Gas selected cost-effective launch points while minimizing public disruption (e.g., avoiding roadways and intersections) and avoiding additional retrofits of pipeline segments due to inline obstructions (e.g., reduced bore valves or protrusions). For complete inspection coverage, Enbridge Gas would be required to inspect areas that would not be cost-effective given the amount of additional condition understanding they would provide. As such, the costs of inspecting the additional 60% of the pipeline would be substantially higher than the first 40% and the value to Enbridge Gas's risk assessments would have diminishing returns.
- iv. Timing was also a critical factor in determining the inspection approach. In 2022, Enbridge Gas completed the maximum number of inspections feasible, using the sole vendor that could provide the appropriate inspection technology within the available timelines.

It is important context that inspections, while reducing uncertainty and improving the understanding of pipeline conditions, do not directly mitigate threats or reduce risk. Achieving 100% inspection coverage would result in significantly higher costs in gathering data for the remaining 60% of the pipeline, without altering the current risk profile. Additionally, achieving full inspection would require a large number of launch sites in the densely populated St. Laurent area, creating logistical and financial challenges.

By strategically selecting sections of the pipeline for inspection, Enbridge Gas was able to maximize representative data collection, providing an unbiased and objective assessment of pipeline conditions, while minimizing costs and public disruptions.

For more detailed information on the methodologies used to extrapolate the gathered pipeline-specific ILI data to uninspected sections and the statistical significance of the collected data, please refer to Exhibit B, Tab 1, Schedule 1, pages 11-12, paragraphs 21-23. This optimized condition assessment methodology will continue to be employed to gather pipeline-specific condition data and support risk assessments as a part of the EDIMP program.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

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Reference:

Exhibit B, Tab 1, Schedule 1 paragraphs 31-33, pages 16-17, and page 17, Table 3:  
Integrity Dig Findings

Preamble:

Enbridge conducted Non-Destructive Excavations at 13 locations (including one where NDE assessment was not completed). These locations were at ILI launch sites or ILI driven except for five where operational concerns were determined). A total of 212 anomalies were found (i.e. corrosion, gouging, arc burns welded defects). Enbridge stated that over 100 of the anomalies were significant enough to require pipeline repairs in compliance with Enbridge's Operating Standards and CSA Z662 Oil and Gas Pipeline Systems (CSA Z662-19).

Question(s):

- a) Please specify the characteristics of the identified anomalies and explain why these require repair under:
  - i. Enbridge's operating standards
  - ii. CSA Z662-19
- b) As part of the response please provide excerpts of sections and clauses of Enbridge's Operating Standards and CSA Z662-19 which call for the repairs of these anomalies.

Response:

- a) Please see Exhibit B, Tab 1, Schedule 1, paragraphs 38-42 for a description of the identified anomalies and the most severe features that required repair. Please also see response at Exhibit I.1.SEC-3 for the detailed results of the non-destructive examination assessments.

i) and ii)

CSA Z662-19 does not prescribe repair requirements for anomalies on steel distribution pipelines; however, Clause 10.3 requires operators to implement robust integrity management programs which include the assessment and repair of features to mitigate conditions that can lead to failure. Section 3 of the CSA Z662-19 also requires operators to implement a Safety and Loss Management System that provides for the protection of people, the environment, and property. This requirement includes the identification of hazards that may risk the integrity of the system, risk management, and pipeline system integrity management. Additionally, Enbridge Gas has established internal standards to outline repair requirements using guidance from the transmission pipeline repair requirements (CSA Z662-19 Clause 10.10) along with consideration of the practicality of applying the criteria on a wide range of distribution assets and the risk associated with the densely populated areas many of these assets operate.

Anomalies on steel distribution pipelines, such as the St. Laurent Pipeline, are assessed and evaluated for repair using the Enbridge Gas Distribution Steel Pipeline Repair Standard.

b) The table below lists excerpts from EGI Distribution Steel Pipeline Repair Standard criteria applicable to the St. Laurent Pipeline repairs:

Anomaly Type	Repair Criteria
Metal Loss – Corrosion	<ul style="list-style-type: none"> <li>• Metal loss &gt;10% and ≤ 20% of the wall thickness with a length &gt;500mm, repair required</li> <li>• Metal loss &gt;20% of the wall thickness regardless of length, repair required</li> </ul>
Metal Loss – Gouges, Grooves, Scrapes and Arc Burns	<p>Operating Pressure &gt;1,200kPa:</p> <ul style="list-style-type: none"> <li>• All gouges, grooves, scrapes, and arc burns must be repaired regardless of metal loss.</li> <li>• Metal loss that contains cracks must be repaired regardless of metal loss.</li> </ul>
Weld Defects	Repair is required for all weld defects.
Dents	<p>Plain Dents</p> <ul style="list-style-type: none"> <li>• Dents with depth &gt;6mm or &gt;2% of pipe outside diameter require repair.</li> </ul> <p>Dents with Stress Concentrators or Corrosion</p> <ul style="list-style-type: none"> <li>• Dents that contain cracks, gauges, grooves or arc burns must be repaired regardless of dent depth.</li> <li>• Dents with metal loss should be evaluated with the most conservative assessment for Plain Dents and Metal Loss assessment</li> </ul>

	(when using dent assessment metal loss depth should be added to dent depth).
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Below is a summary of relevant sections from CSA Z662:19:

- i) Clause 3.1.1 states: *“Operating companies shall develop and implement a documented safety and loss management system for the pipeline system that provides for the protection of people, the environment, and property.”*
- ii) Clause 3.1.2 states: *“The safety and loss management system shall cover the life cycle of the pipeline system and shall include the following elements: ...
  - f) controls for ...
    - i) risk management; ...
    - iv) operations and maintenance;
    - v) pipeline system integrity management;
    - vi) engineering assessments; ...”*
- iii) Clause 10.3 states: *“The pipeline system integrity management program required by Clause 3.3 shall include procedures to monitor for conditions that can lead to failures, to eliminate or mitigate such conditions, and to manage integrity data. ....”*
- iv) Clause 10.3.2.1 states: *“Where the operating company becomes aware of conditions that can lead to failures in its pipeline systems, it shall conduct an engineering assessment to determine which portions can be susceptible to failures and whether such portions are suitable for continued service.  
Notes:
  - 1) Examples of conditions that can lead to failures include
    - a) mechanical damage that can develop into failures under sustained operation;
    - b) mill defects not detected during the manufacturing process;
    - c) corrosion;
    - d) stress corrosion cracking;
    - e) unstable slopes;
    - f) the presence of low-frequency (less than 1 kHz) electric resistance welded pipe in areas with significant cyclic loading; and
    - g) loss or reduction of cover. ...”*
- v) Clause 12.9.3 states: *“Where corrosion is found, corrosion in excess of the limits defined by the operating company shall be assessed and where applicable, the piping shall be repaired as specified in Clause 12.10.7”*



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

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Reference:

Exhibit B, Tab 1, Schedule 1, paragraph 43, pages 26 and 27, Table 5: Integrity Related Repairs

Preamble:

Enbridge stated that “numerous” pipeline repairs and replacements were required based on the results of field inspections and findings of the Targeted Integrity Program. Enbridge filed a summary of the repairs indicating the repair type and targeted defects (see Table 5: Integrity Related Repairs). Enbridge noted that 162-meter segment at dig at Tremblay Road was abandoned and replaced in November 2022. In that instance, ILI detected metal loss of the pipeline wall which was equal to or exceeded 80% of wall thickness.

Question(s):

- a) Please discuss the significance of the metal loss equal to or greater than 80%?
- b) What was the continuous length of the metal loss equal to or greater than 80% along the replaced segment of the pipeline?
- c) Please specify any other segments examined either by ILI or/and by a dig that has the metal loss of similar depth and length as the replaced segment.
- d) Please refer to longitudinal corrosion and depth of wall loss that represent the risk of pipeline rupture for a pipeline that operates at the same SMYS as SLP system? Please discuss this in terms of any repair requirements set by CSA Z662-19 or other standards, operating rules or regulations.

Response:

- a) A feature reported as having metal loss equal to or greater than 80% is significant because it indicates the feature is nearing failure and the pipeline is at risk of losing containment. Enbridge Gas does not operate its assets to the point of failure.

As outlined in Exhibit B, Tab 1 Schedule 1, paragraph 47, a leak on this pipeline could result in severe consequences due to several factors including the pipeline's urban location, hard surface coverage, and high pressure. As outlined in the response in Exhibit I.1-STAFF-8 part c), each leak poses a potential for catastrophic consequences, including gas migration and explosions or ignited jet fires, both of which can cause serious harm to public safety and property.

Specifically for the reported feature at Tremblay Road, these factors necessitated Enbridge Gas's initiation of an Emergency Operating Centre (EOC) and Planned Emergency Repair (Exhibit B, Tab 1, Schedule 1, Attachment 1).

Additionally, as described in Exhibit B, Tab 1, Schedule 1, Attachment 1, a leak in this location would have required Enbridge Gas to isolate the affected NPS 12 East/West pipeline, which directly supplies natural gas to key institutions like the Department of Public Works Canada and the RCMP headquarters. It is also a major source of supply for thousands of customers in downtown Ottawa. An outage during peak winter conditions could have left more than 10,000 customers without natural gas service for several days while repairs were being completed, the system being re-energized, and customer appliances safely re-lit. Finally, the proximity of this pipeline to the Highway 417 on-ramp added heightened risks, as high vehicle traffic could have increased potential ignition sources in the event of a leak.

Enbridge Gas has identified a metal loss of this significance after inspecting only 4.5 km (40%) of the pipeline. Although this specific anomaly has been remediated, it is highly likely that similar metal loss features with comparable severity and risk are present within the remaining 60% of the pipeline. This is a key factor contributing to the elevated risk levels calculated for the SLP. The replacement option presents the most practical solution to resolve any similar features found in inaccessible locations. Please see response at Exhibit I.1-STAFF-5 part c) for a description of the like-in-kind analysis methodology used to extrapolate and assess the condition of the entire pipeline by utilizing pipeline-specific inspection data on portions of the system.

- b) The metal loss reported as equal to or greater than 80% was measured by the ILI vendor to have a length of 17.2 mm. It's important to note that the tool's ability to size defects is limited when the depth exceeds 80% of the wall thickness, which may also affect the accuracy of the measured length and width. Due to the feature's inaccessible location, performing Non-Destructive Examination (NDE) to validate its characteristics was not feasible.

Please note that this feature was also part of a cluster, which extended the length to 151 mm.

- c) Enbridge Gas in-line inspected 4.5km of the St. Laurent Pipeline. There were no other metal loss anomalies with a depth of 80% or greater reported on these segments or identified during any other integrity dig completed on the pipeline. As specified in the response to a.), it is highly likely that other features of similar nature may exist given the limits of the inspection with the ILI.
- d) As outlined in the QRA, the predicted failure mode for corrosion features on the SLP pipeline is a leak. According to industry-standard defect assessment methods, a corrosion anomaly would need to be longer than 25cm long to pose a rupture threat on a pipeline operating at the same stress level as the SLP (23.4% SMYS). However, as detailed in sections 3.2.3 to 3.2.9 of the QRA, other threats, such as Selective Seam Weld Corrosion (SSWC), manufacturing defects, and latent damage have, on numerous occasions, caused ruptures in pipelines operating at similar stress levels (i.e., below 30% SMYS).<sup>1</sup>

The specific failure mode (i.e., leak or rupture) associated with each threat mechanism has been comprehensively incorporated in the QRA, thereby linking it to the corresponding consequence. The outcome of the QRA concluded that the corresponding risks associated with a leak are intolerable and immediate significant mitigation actions are required.

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<sup>1</sup> Rosenfeld, M., & Fassett, R. (2013). Pipeline Pigging and Integrity Management Conference (PPIM). In Study of pipelines that ruptured while operating at a hoop stress below 30% SMYS.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

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Reference:

Exhibit B, Tab 1, Schedule 1, paragraph 46, pages 28-29, Table 6: Leak/Repair Summary

Preamble:

Enbridge reported ten leaks which were repaired between 2007 and 2023. Nine of the leaks were at valves, fittings and service connections which Enbridge assessed represent no potential hazard. One leak was on a pipeline main and Enbridge assigned level seven to the potential hazard of this fault. Enbridge further noted that in urban environments hard surfaces and buildings which represents a higher risk of a gas leaks in confined spaces and increased risk of a build up to explosive levels.

Question(s):

- a) Please comment on the cause of leaks on a pipeline versus the leaks at valves/fittings and service connection.
- b) When was the leak, which was assigned level seven, on the pipeline identified?
- c) Considering that Enbridge detected only ten leaks from 2007 to 2023, what is the probability of leaks occurring in the future? What is the correlation between the probability of leaks and high level of safety and reliability risks on the SLP?
- d) Please discuss historical occurrences of gas explosions or similar catastrophic events that occurred in the SLP system since 1958 when it first was in service?

Response:

Before addressing the questions in this exhibit, Enbridge Gas would like to clarify the evidence presented in paragraph 46, based on the "Preamble" provided in Exhibit I.1-STAFF-8.

Table 6 provides the total number of "Leaks" and "Damages or Potential Hazards" observed on the pipeline from 2007 to 2023, which amounts to 17. The "Damage / Potential Hazard" category is not a severity indicator for the incidents listed under the "Leak" category, rather it represents the count of damages or potential hazards.

- a) Leaks on pipelines can arise from various threats, with Corrosion and Third-Party Damage being the most predominant in the industry and for the SLP. Leaks at valves and fittings typically result from insufficient seals at mechanical connections or gaskets.
- b) The leak on the pipeline was detected in September 2013. As noted in the clarification above, this leak was not assigned a Level 7 severity. In terms of classification, the leak was classified as "Class A", which is the highest severity/criticality level according to Enbridge Gas standards. A "Class A" leak is defined as "a leak on any asset that poses an existing or probable hazard to persons or property."
- c) Every leak in a pipeline, especially a high-pressure pipeline in an urban area, such as the SLP, poses the risk of catastrophic consequences. From a corrosion threat perspective, the primary safety concern is the potential for gas migration into nearby buildings, followed by ignition, which could result in a building explosion. Based on PHMSA incident data, the probability of a building explosion following a leak is 1.8E-4 per leak. This leads to an explosion rate of 4.86E-4 events per year on the SLP, as specified in Exhibit B, Tab 1, Schedule 1, Attachment 2, page 52.<sup>1</sup> This rate of building explosions is deemed unacceptable by both Enbridge and industry standards as such events typically lead to fatalities, as described in Exhibit B, Tab 1, Schedule 1, Attachment 2, page 54.

Further and in any event, Enbridge Gas's position is that it is not appropriate to assess the condition of the pipeline and the need for specific action (e.g., replacement) based solely on the number of leaks and whether historical catastrophic failures have already occurred on the pipeline. Enbridge does not operate its assets to failure; risks must be adequately addressed before they materialize. The decision to take action, including replacing an asset, should rest on

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<sup>1</sup>  $P_{(M+E)} = P_{(M+E | \text{Small Leak} - \text{Corrosion})} \times P_{(\text{Small Leak} - \text{Corrosion/yr})} = 1.8E-4 \times 2.7 = 4.86E-4$

objective analyses based on appropriate data and evidence to manage risk and protect the public, as presented in Exhibit B, Tab 1, Schedule 1.

To be responsive to the question, using the leak history of a single pipeline over the past 16 years to estimate the leak rate for the next 10 years is not appropriate for the following reasons:

- i. Corrosion is a time-dependent threat that escalates as the pipeline ages. As a result, the current failure rate is expected to be higher than the historical average.
- ii. The sample size is too limited to make a reliable statistical assessment. With only the history of a single 11.2 km pipeline, the data set is insufficient for accurate leak rate predictions.
- iii. The frequency of hits on a distribution asset are typically correlated to urban density and construction activity around the pipeline asset. Historical evidence may therefore not be representative of future projections as these factors increase with time.
- iv. Pipeline-specific condition data obtained through the Targeted Integrity Program provides a far more accurate reflection of the pipeline's current condition than its leak history.

Based on the results of the Targeted Integrity Program and the subsequent reliability analysis, the pipeline's current leak frequency is 2.4E-1 per km per year. The details of the reliability calculations are provided in the QRA, specifically at Exhibit B, Tab 1, Schedule 1, Attachment 2, page 17 to 21.

Additionally, the SLP pipeline has a significant risk due to the third-party damage threat, with a large leak failure rate of 3.1E-3 per km per year, as specified in Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 21 to 28. The main safety risk for third-party damage is the possibility of direct ignition at the damage site, resulting in a jet fire. The probability of a jet fire ignition is estimated at 7E-4 events per year, as specified in Exhibit B, Tab 1, Schedule 1, Attachment 2, page 53.<sup>2</sup> This rate of jet fire, which could likely result in fatality, is also considered unacceptable by Enbridge and industry standards as described in Exhibit B, Tab 1, Schedule 1, Attachment 2, page 54.

The safety risks discussed are heightened further by various pipeline and site-specific factors of the SLP. These factors are discussed in detail in Exhibit B, Tab 1, Schedule 1, page 29 to 32, Paragraph 47, and further contribute to the enhanced safety risk profile of the pipeline.

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<sup>2</sup>  $P_{(\text{Ignition})} = P_{(\text{M+E | Large Leak})} \times P_{(\text{Large Leak/yr})} = 0.02 \times 3.5\text{E-}2 = 7\text{E-}4$

It is important to note that the failure rates discussed above account only for corrosion and third-party damage. Additional pipelines threats such as manufacturing defects, selective seam weld corrosion, delayed failure of mechanical damage, fabrication defects, and interaction of threats contribute to additional rates of failure. For a summary of the SLP's reliability in the context of these other threats, please see Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 5.

- d) Based on existing records, Enbridge Gas is unaware of catastrophic failures during the early life of this pipeline. However, most integrity-related pipeline threats are time-dependent, meaning that a pipeline's condition deteriorates over time. Therefore, using the pipeline's incident history from such a distant past is not indicative of its current or future risk levels nor is it relevant to assess the current health of the pipeline.

As outlined in response c), Enbridge Gas has calculated the frequency of catastrophic incidents, such as building explosions due to gas migration ( $5.0E-4$  events per year) and ignited jet fires ( $7.6E-4$  events per year), for the SLP as part of its Quantitative Risk Assessment (Exhibit B, Tab 1, Schedule 1, Attachment 2). While these frequencies may seem low, the high consequences and public safety impacts make them significant. To provide further context, if Enbridge Gas were to operate its entire distribution steel main pipeline network (approximately 30,000 km) at these same risk levels as the SLP, it could expect approximately 1.34 building explosions and 2 ignited jet fires annually.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

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Reference:

Exhibit B, Tab 1, Schedule 1, paragraph c), page 30 and Figures 15 and 16: Pipeline Failure on NPS 20 Distribution Main Operating at 175 psi

Preamble:

The Maximum Operating Pressure of the SLP system is 1900 kPa (275 psi) which is above the lower pressure pipelines that operate around 345 kPa (50 psi). Figures 15 and 16 show photos of pipeline failure on NPS 20 pipeline operating at 175 psi.

Question(s):

- a) Please indicate the SMYS of the pipeline shown as an example of pipeline failure of NPS 20 and operating at 175 psi?
- b) Describe the direct cause of the pipeline failure and of road surface collapse in the example provided in Figures 15 and 16.
- c) What time of the year and which year did the failure occur? Was there a loss of service, and if so, for how many customers and how long did it last?

Response:

- a) The NPS 20 pipeline was operating at approximately 18% SMYS, which is less than the SLP's stress level of 23.2% SMYS. Both lines are distribution assets operated in an urban environment.



- b) This pipeline failure resulted from damage by a third-party excavator operating a horizontal directional drill. The road surface collapse was caused by the uncontrolled release of natural gas at high pressures, which significantly eroded the soil supporting the pavement.
  
- c) This failure occurred in the summer (June, 2021) at 1661 Blythe Rd., Mississauga, Ontario. The isolation of the pipeline to make the repair resulted in a loss of service to 17 customers. The limited customer loss was the result of the summer conditions and the pipeline being part of a larger network with more than one feed. The customer outage ranged from 24 to 36 hours. As described by Exhibit B, Tab 1, Schedule 1, Paragraph 47e), a similar customer outage on the SLP system could impact up to 65,000 customers depending on the location and other factors (e.g., temperature).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

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Reference:

Exhibit B, Tab 1, Schedule 1, paragraphs 49-54, pages 33-37, Figure 17: SLP Reliability versus Targets (LLS and ULS targets combined)

Preamble:

Enbridge concluded in its Quantitative Risk Analysis (QRA) that 8.8.km of the 11.2 km SLP pipeline (79%) fail the acceptable CSA Z662-Annex O reliability thresholds. Enbridge noted that the segments that fail the Leakage Limit State (LLS) and Ultimate Limit State (ULS) along the SLP pipeline are non-continuous. The location of these segments is shown red in Figure 17 below.

Figure 17: SLP Reliability vs. Targets (LLS and ULS targets combined)



Enbridge applied three sets of evaluation criteria to determine if immediate interventions or risk mitigation measures are required for continued safe operation of the SLP:

1. CSA Z662-19 Annex O Reliability Targets: LLS (small leaks) and ULS (large leaks and ruptures).
2. Pipeline and Hazardous Materials Administration (PHMSA) USA incident database for distribution pipelines. Referring to the PHMSA Enbridge applied a US CFR 191.3 definition of significant incident. The PHMSA defines a significant incident as incident resulting in fatalities or hospitalization or incident where operator incur costs of \$129,300 USD (2022 dollars).
3. Enbridge Standard Operational Risk Assessment Matrix (ORAM) which maps Health and Safety, Financial and Operational Reliability risks related to the condition of SLP.

Question(s):

- a) Please provide a relevant excerpt from CSA Z662-19: Annex O, Reliability Thresholds.
- b) In the Canadian regulatory context, referring to CSA Z662-19, what are the SMYS values to define transmission pipeline versus distribution pipelines for the purpose of integrity monitoring and mitigation of risks? Which clauses of CSA Z662-19 apply directly to the pipeline of the same operational design as SLP?
- c) Considering SMYS of the SLP what are the criteria that justify applying US PHMSA rates of significant incidents to assess the risk of incidents on the SLP?
- d) Please define and describe benchmarks and targets of Health and Safety, Financial, and Operational Reliability Risks used in the ORAM for risk assessment of the SLP.

Response:

- a) The thresholds applied from CSA Z662-19 Annex O are described in clauses O.1.5.2.2.1 and O.1.5.3.2:

O.1.5.2.2.1: *“The ultimate limit state target reliability for natural gas pipelines is defined as a function of pipeline diameter, pressure, and population density. The target shall be as specified in Equation O.3 and Figure O.2, where  $\rho$  is the population density (people per hectare),  $P$  is the pressure (MPa), and  $D$  is the diameter (mm). The target is defined on a per km-yr basis.”*

O.1.5.3.2: *“The LLS (i.e., small leaks) target reliability for natural gas pipelines shall be  $1-10^{-3}$  per km-year.”*

Further details on the application of the thresholds in Annex O can be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 38 to 40.

In addition to O.1.5.2.2.1 and O.1.5.3.2, the following clauses provide relevant context to the application of Annex O:

O.1.1.2: *“[Annex O] is applicable to all engineering analysis carried out to demonstrate structural reliability and integrity of the pipe, including design of new pipelines, fitness-for-service evaluation of existing lines, and assessment of changes in operational parameters (e.g., class location or pressure changes), and evaluation of inspection and maintenance alternatives.”*

O.1.5.1.1 and O.1.5.1.2: *“For the purpose of demonstrating that the requirements of this Annex are met, the pipeline shall be divided into segments...the target reliability shall be met along the entire length of each pipeline segment”.*

- b) The CSA Z662-19 does not explicitly define a percentage SMYS value to distinguish between a distribution pipeline versus a transmission pipeline.

In the Ontario regulatory context, the TSSA CAD (FS-253-20) amends the CSA Z662-19 by providing the following clarification:

*“For the purpose of this Code Adoption Document, within a gas pipeline system, transmission pipelines are those lines that operate at or above 30% of the pipe’s specified minimum yield strength (SMYS) at MOP.”*

As described in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 38 to 40, it is recognized that the SLP, operating at 23.2% of SMYS, does not meet the TSSA CAD definition of a transmission pipeline. However, it is important to note that the 30% SMYS cutoff is not universally applied in the North American regulatory context. In the US CFR, any pipeline which operates at or above 20% of SMYS is considered a transmission pipeline, and would therefore be subject to the same integrity

regulations that govern lines at and above 30% SMYS. The SLP would therefore be considered a transmission asset in the US, which represents a large majority of the North American pipeline network. Furthermore, as described in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 38 to 40, the development of the Annex O LLS and ULS thresholds was performed on a range of design cases following that included consideration of pipelines between 20 to 30% of SMYS. Thus, the SLP falls within the scope of intended pipelines that the CSA Z662 Annex O LLS and ULS thresholds were originally designed and calibrated to. This indicates that CSA Z662 Annex O is reasonable and applicable benchmark for the SLP. With that said, no guidance for risk methods or acceptable thresholds exists in the industry in Canada, therefore CSA Z662 Annex O constitutes the only viable option for Enbridge Gas for such computations.

- c) The US PHMSA significant incident rate cited in the QRA was derived by reviewing PHMSA incidents on the US distribution network, which comprises only pipelines operating at less than 20% of SMYS. This rate was compared to the SLP significant incident rate to examine the difference in between SLP (running at 23.2% of SMYS) to traditional distribution pipelines, which SLP has historically been treated as. The SLP rate of significant incidents is 2,500 times higher than the historical average observed in the industry, as shown in Exhibit B, Tab 1, Schedule 1, page 34, paragraph 50, which further supports Enbridge Gas's conclusions.
- d) The Enbridge ORAM is an internally published corporate framework used for the assessment and communication of risks that has been adopted by Enbridge. The matrix follows the guidelines of CSA Z662-23 Annex B and provides quantitative criteria for the definition of low, medium, high, and very high risks across Health & Safety, Financial, Operational, Environmental, and Reputational impact categories. Details and further descriptions of the ORAM can be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 51 and pages 89 to 90.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

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Reference:

Exhibit D, Tab 1, Schedule 1, page 9

Preamble:

According to Enbridge's proposed construction schedule Project construction is expected to take approximately 21 months, starting in April 2025. The SLP is expected to be in service by December 2026.

Table 1  
Overall Proposed Construction Schedule

Expected LTC Approval	January 2025
Receipt of Permits and Approvals	April 2025
Commence Construction	April 2025
Expected In-Service	December 2026
Completion of Construction	December 2026
Completion of Site Restoration	October 2027
Final Inspection	March 2028

Question(s):

- a) How is Enbridge planning to proceed with maintaining the safe and reliable service on the SLP, in the event of a delay of the construction commencement due to delays in permits and approvals?
- b) If the OEB does not grant its approval for a Full Replacement of the SLP, how is Enbridge planning to maintain safe and reliable service on the SLP?

Response:

- a) Enbridge Gas has taken all feasible measures to temporarily reduce the risks associated with the SLP until a permanent solution can be implemented as soon as practicable. While these temporary mitigations do not fully address the high risks, Enbridge Gas believes it has reduced them to As Low As Reasonably Practicable (ALARP) as an interim measure until the permanent mitigation is completed. In the event of construction delays due to permits and approvals, Enbridge Gas will take all possible actions to expedite these processes and advance the Project timelines to ensure the risk is fully mitigated by the end of 2026.
- b) If the OEB denies this application seeking approval for a Full Replacement of the SLP (thus maintaining the status quo), Enbridge Gas will have no other alternative in the short term but to pursue the implementation of proven pressure and load reductions as risk mitigation measures (“Extraordinary Measures”) to help safeguard the public and the reliability of the Company’s system. These measures will include:
- i. halting gas connections to new customers, including where applications have already been received;
  - ii. removing gas service from large-volume customers on interruptible contracts even in summer conditions;
  - iii. removing or significantly reducing gas service from large-volume customers on firm contracts; and
  - iv. implementing a significant reduction in the SLP’s operating pressure to bring the risks down to a tolerable level. This would have an impact on up to 52,000 customers currently served by the SLP and downstream networks. In order to ensure the SLP could still supply customers and the downstream systems to some extent, actions would need to be taken to shed demand. Depending on the details of the actions taken to address the pressure reduction, the 52,000 customers estimated to be impacted could include approximately 48,000 residential customers, 260 Apartment/multi-residential, 4,100 commercial customers, and 50 industrial customers (including both Contract and regular-rate customers). In this scenario the impacted area serves several City of Ottawa buildings, Federal government buildings, foreign government buildings, and schools/universities.

Safety is the Company’s top priority, and the risks on the SLP system cannot be effectively mitigated without an appropriate long-term solution.

As these measures collectively, and at this scale, are unprecedented, the Company does not have a precise timeline and cost estimate to implement at this time, and

therefore would have to develop these estimates in the context of the OEB decision and the operating conditions at the time.

In parallel, upon receipt of an OEB decision denying Full Replacement, Enbridge Gas would have to evaluate the content of that decision to understand the implications of it, and then to assess our options going forward in the longer term. Regardless of the path pursued, Enbridge Gas will not extend the risk reduction timeframe beyond the end of 2026 for the reasons detailed in a) above as this would pose unacceptable risk to both public safety and system integrity.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit D, Tab 1, Schedule 1

Preamble:

On April 29, 2024, Enbridge filed with the Technical Standards and Safety Authority (TSSA) an application for the approval of the design of the proposed facilities.

Question(s):

- a) Please provide any update on the review of that application by TSSA. Please file a correspondence between Enbridge and TSSA and any relevant documentation to date regarding the TSSA's review of the Project.
- b) If TSSA approval has not yet been received, when does Enbridge anticipate receiving it?

Response:

- a) Please see Attachment 1 for correspondence to date between Enbridge Gas and the TSSA regarding the application for the approval of the design of the proposed facilities.

In addition to this application, Enbridge Gas also requested the TSSA to perform an Engineering Consultation and provide comments on the fitness-for-service, integrity, and risk assessments completed by Enbridge Gas on the SLP for the existing pipeline. On September 20, 2024, the TSSA issued the results of its assessment in the form of a letter (please see Attachment 2). In its letter, the TSSA concluded that "the risks now need to be properly managed by Enbridge to remain in compliance

with the CSA Z662-2019 [and that] actions shall be taken by Enbridge to remediate the condition of the St. Laurent pipeline”.

- b) TSSA approval has not yet been received. Enbridge Gas anticipates receiving TSSA approval prior to construction starting in Q2 2025, consistent with typical timelines.



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June 18, 2024

MARK CAIRNS  
ENBRIDGE GAS INC  
101 HONDA BLVD,  
MARKHAM ON L6C 0M6  
CANADA  
MARK.CAIRNS@ENBRIDGE.COM

**Legacy SR No.:**

**Work Order Type:** FS Pipeline New Projects

**Work Order No.:** 14355589

**Customer Reference No.:**

**Engineering Assignment Notification**

Dear MARK CAIRNS,

We have processed your application for FS Pipeline New Projects located at 101 HONDA BLVD, MARKHAM, ON, L6C 0M6 our file referenced as Work Order number above.

This file has been assigned to Robin Yu for review.

Please contact via email Robin Yu at [ryu@tssa.org](mailto:ryu@tssa.org) if you have additional questions.

Yours truly,

Fuels Safety Program

From: [Mark Cairns](#)  
 To: [Robin Yu](#); [prdfsnotifications](#)  
 Cc: [Robin Yu](#); [prdfsnotifications](#)  
 Subject: RE: Confirmation of Engineering Assignment WO - 14355589 TSSA:0000338047896  
 Date: Monday, August 12, 2024 3:00:00 PM  
 Attachments: [image007.png](#)  
[image008.png](#)  
[image009.png](#)  
[image010.png](#)  
[image011.png](#)  
[image012.png](#)  
[image013.png](#)  
[image014.png](#)  
[image015.png](#)  
[image016.png](#)  
[image017.png](#)

Good afternoon Robin.  
 Please see below.

**Mark Cairns**  
 Senior Advisor, Capital Development  
 System Improvement

ENBRIDGE INC.  
 TEL: 905-927-3333  
 101 Honda Blvd, Markham Ontario L6C 0M6

[enbridgegas.com](http://enbridgegas.com)

Safety, Integrity, Respect, Inclusion

At Enbridge, we work flexibly. I'm sending this message now because it works best for me. I do not expect you to read, respond to, or otherwise act on it outside your work hours.

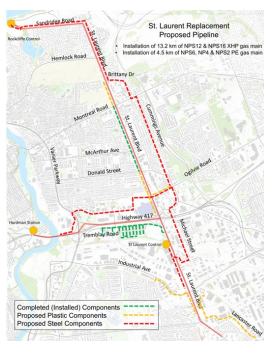
From: Robin Yu <[ryu@tssa.org](mailto:ryu@tssa.org)>  
 Sent: Tuesday, August 6, 2024 4:30 PM  
 To: [prdfsnotifications](#) <[prdfsnotifications@tssa.org](mailto:prdfsnotifications@tssa.org)>; Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>  
 Subject: [External] RE: Confirmation of Engineering Assignment WO - 14355589 TSSA:0000338047896

**CAUTION! EXTERNAL SENDER**  
 Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate?  
 DO NOT click links or open attachments unless you are 100% sure that the email is safe.

Hi Mark,

Could you please respond to the following questions below as part of your application?

1. Please describe the scope of this project. Please indicate what is in scope and what is out of scope. Please show this in a diagram if applicable. Enbridge Gas is proposing to replace approximately 400 m of Nominal Pipe Size (NPS) 16 Extra High Pressure (XHP) Steel Coated (ST) natural gas main, approximately 10.2 km of NPS 12 XHP ST, and approximately 3.8 km of smaller diameter (NPS 4, 6 & 8) XHP ST natural gas main in the City of Ottawa, Ontario.  
 The pipelines to be abandoned will be replaced with, approximately:
  - 2.5 km of NPS 16 SC XHP, 10.0 km of NPS 12 SC XHP, and 0.3 km of NPS 6 XHP ST gas mains
  - 4.8 km Polyethylene (PE) Intermediate Pressure (IP) gas mains (NPS 2, NPS 4 & NPS 6)



2. Does this project have an OEB file number? If so, please provide OEB file number, or the link in OEB website, for this project. Yes, OEB file is [EB-2024-200](#)
3. What is the purpose of this project? Why is the project being undertaken? The NPS 12 St Laurent XHP SC is a single-fed system that consists of vintage steel mains installed in 1958 and is a critical supply to the city of Ottawa and Gatineau, supplying natural gas to more than 168,000 customers. This pipeline has shown signs of severe corrosion and inspection has led us to believe the line is in poor health – the segment we are looking to replace feeds 12 district regulation stations and one header station, including a large population of non-interruptible residential, industrial, and commercial customers (including Parliament buildings), and a natural gas fired power plant.
4. Please provide the link to the environmental study report, if available. Please find the initial ER [here](#) (2020). Please find the Amended ER dated November 2020 [here](#). Please find the second ER amendment dated January 2024 [here](#).
5. What fuel will the proposed pipelines carry? Natural Gas
6. How many customers will be covered under this project for natural gas delivery? We anticipate 502 customers will be directly impacted with necessary service alterations (relay, reconnect etc.)
7. What fuel are the affected customers using right now, propane, natural gas, or other fuel? Natural Gas
8. Please provide a High Consequence Area study, if applicable, for this application. Please refer to the Initial Environmental Report (2020) section 2.1 for this information.
9. Please confirm that this project will be designed, constructed, inspected, and maintained, in accordance with CSA Z662-19 (Oil and Gas Pipeline Systems). Confirmed.
10. Please confirm that this project will be designed, constructed, inspected, and maintained, in accordance with Enbridge's construction and maintenance procedures. Confirmed.
11. Please provide the design and piping specifications related to this project. Please see attached document titled Pipeline Specs, Material and Standards
12. What is the length of the proposed pipeline installation? The pipelines to be abandoned will be replaced with, approximately:
  - 10.0 km of NPS 12 XHP ST;
  - 2.5 km of NPS 16 XHP ST;
  - 0.3 km of NPS 6 XHP ST;
  - 0.9 km of NPS 6 Intermediate Pressure (IP) Polyethylene (PE); and
  - 3.9 km of NPS 4 IP PE
13. What is the pipe material and its standards? Please see attached document titled Pipeline Specs, Material and Standards
14. What are the pipe wall thicknesses? Please see attached document titled Pipeline Specs, Material and Standards
15. What is the maximum operating pressure of the pipeline systems related to this project? Please see attached document titled Pipeline Specs, Material and Standards
16. When is the approximate date for the completion of this project and natural gas delivery to the customers? December 31, 2026
17. Appliance inspection and suitability of the appliances for natural gas delivery is very important. When will the appliance inspection report will be available to confirm that it has been inspected that the appliances are suitable for natural gas use? Enbridge will try to avoid customers temporarily losing supply of natural gas during service transfers. Where there is a need to interrupt customer supply, Enbridge will have an inspector on hand (Lakeside Gas or Enbridge) to inspect all appliances. Inspection Reports will be available once inspections (if any) are completed.
18. Will excess flow valve(s) be installed for the new customers as part of this project? Excess Flow Valves will be used where applicable as outlined in our Construction and Maintenance manual.
19. Please provide the construction schedule of this project. As part of audit of this project, TSSA might select to witness pressure test of some lines. Please see high level schedule below:

Task Name	St. Laurent Pipeline Project Schedule																																																				
	2023												2024												2025												2026																
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
<b>Environmental</b>																																																					
Environment Report																																																					
Field Surveys (topsoil, arch, etc.)																																																					
<b>Regulatory</b>																																																					
Prepare Evidence for O&B Filing																																																					
OB: License to Construct Application																																																					
<b>Land &amp; Land Rights</b>																																																					
<b>Engineering &amp; Construction</b>																																																					
Procurement																																																					
Permits																																																					
Construction																																																					
SD																																																					

20. Could you please confirm that all pressure carrying components are rated for the design and test pressure that they are exposed to? [Confirmed.](#)
21. Could you please confirm that all components that come into contact with the service fluid are compatible with the service fluid? [Not applicable.](#)
22. Could you please confirm that all environmental permits and approvals will be obtained for this project? [Confirmed.](#)

Please let me know if you have any questions or concerns.

Thanks,



**Robin Yu | Engineer, Fuels**  
 Fuels  
 345 Carlingview Drive  
 Toronto, Ontario M9W 6N8  
 Tel: +1 416-734-3402 | Cell: +1 647-203-7214 | E-Mail: [ryu@tssa.org](mailto:ryu@tssa.org)  
[www.tssa.org](http://www.tssa.org)



**Winner of 2024 5-Star Safety Cultures Award**

From: [prdfsnotifications](mailto:prdfsnotifications@tssa.org) <[prdfsnotifications@tssa.org](mailto:prdfsnotifications@tssa.org)>  
 Sent: Tuesday, June 18, 2024 10:24 AM  
 To: MARK CAIRNS@ENBRIDGE.COM; Robin Yu <[ryu@tssa.org](mailto:ryu@tssa.org)>  
 Subject: Confirmation of Engineering Assignment WO - 14355589 TSSA:0000338047896

Good morning/afternoon:  
 We have processed your application and your work order has been assigned to a Fuels Safety Engineer for review.  
 Please see the attached letter for the assigned engineer's contact information.  
 Regards,

**Technical Standards and Safety Authority**  
 This electronic message and any attached documents are intended only for the named recipients. This communication from the Technical Standards and Safety Authority may contain information that is privileged, confidential or otherwise protected from disclosure and it must not be disclosed, copied, forwarded or distributed without authorization. If you have received this message in error, please notify the sender immediately and delete the original message.



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September 20, 2024

ENBRIDGE GAS INC  
101 HONDA BLVD,  
MARKHAM ON L6C 0M6  
CANADA

**Work Order Type:** FS Engineering Consultation  
**Work Order No.:** 14370698

Dear ENBRIDGE GAS INC,

As part of the FS Engineering Consultation application for WO# 14370698, TSSA reviewed the following documents:

- Enbridge Internal memo document entitled **St. Laurent Pipeline (SLP) Conditional Fitness-for-Service Assessment;**
- Enbridge Integrity plan document entitled **NPS 12/16 St. Laurent Pipeline Integrity Plan;** and
- Document submitted to the OEB entitled **Enbridge Gas Inc. (Enbridge Gas) Ontario Energy Board (OEB) File: EB-2024-0200 St. Laurent Pipeline Replacement Project Application and Evidence.**

The above documents were reviewed for compliance with the **CSA Z662:19 Oil and Gas Pipeline Systems Code (CSA Z662:19)**. Below are the key indicators of the condition of the pipeline from the above documents:

- The Crawler In-line Inspection (ILI) tool was used to inspect 40% of the pipeline and found a total of 611 metal loss features, which is indicative of possible corrosion or gouging. This represents a metal loss density of 138 anomalies per km. These metal loss features are still present. 60% of the pipeline was not inspected.
- The ILI tool found a metal loss feature where the metal loss was 80% of the pipe wall thickness. This feature was removed but is a sign that the pipeline is in poor condition.
- The ILI tool has limitations, where it only captures some of the metal loss features on the pipelines. Field verification reports from Enbridge confirmed that the tool has missed various metal loss features which is an indication that there may be additional damage to the pipeline that is not captured by the ILI.
- The ILI tool found that there was a total of 386 dent features over 40% of the pipeline. This represents a deformation density of 86 dents per km. Dents are likely caused by previous third-party mechanical damage. This deformation density is considered high for a critical pipeline and may indicate reduced depth of cover over the pipeline which further increases the risk of mechanical damage.

TSSA found that these documents complied with the intent of clauses 3, 10 and 12 of the CSA Z662:19. Clause 3 requires pipeline operators to have a safety and loss management system (SLMS) for the pipeline system that provides for the protection of people, the environment, and property. The SLMS requires pipeline operators to have controls for risk management and pipeline system integrity management. The controls for risk management shall be in the form of a risk management process that identifies, assesses, and manages the hazards and associated risks for the life cycle of the pipeline system. The risks associated with this pipeline have been identified by Enbridge in the Inspection reports and other documentation provided. The risks now need to be properly managed by Enbridge to remain in compliance with the CSA Z662-2019. Therefore, based on the information provided in the aforementioned documents, actions shall be taken by Enbridge to remediate the condition of the St. Laurent pipeline.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robin Yu', with a long horizontal flourish extending to the right.

Robin Yu P.Eng.  
Fuels Safety Engineer  
416-734-3402  
ryu@tssa.org

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Energy Transition, pages 10-17, EB-2024-0111, [Exhibit JT 1.19](#)

Preamble:

Enbridge describes its probabilistic analysis of customer disconnection, as a proxy for the useful life of the Project. Enbridge defines an asset's useful life as the lesser of the asset's depreciable life, or the length of time an asset could be needed to supply gas. For the latter, Enbridge assumes that 100% disconnection is required, noting that it cannot choose to discontinue gas services to customers along its pipeline system, even if only one customer remains.

Question(s):

Does Enbridge believe that some level of disconnection (or reduction in demand) less than 100% (e.g., a 75% reduction in customers or in demand, relative to the demand level the asset was originally sized to serve) could also be used to estimate an asset's expected useful life, as system pruning may be a preferred approach once an asset reaches this level of underutilization? Why or why not?

Response:

Generally, no. In the hypothesized example, a 75% reduction in demand does not mean that the remaining demand belongs to customers that have viable alternatives to the gas they are consuming. In addition, as referenced, Enbridge Gas has an obligation under the Ontario Energy Board Act, to serve its customers; under that obligation the Company cannot discontinue service to customers that would like to continue to avail themselves of the services provided by the Company. Further, part of Enbridge Gas's



view of the energy transition and a diversified pathway is that customers can meet emissions reductions targets by making energy choices that meet their affordability, reliability and resiliency requirements.

In the context of considering system pruning as an alternative, a large amount of customer disconnection, or demand reduction, could be a factor in assessing feasibility. As noted in Rebasing Phase 2 (EB-2024-0111) Exhibit 1, Tab 17, Schedule 1 page 23 – 24, Enbridge Gas will need to develop processes to identify and evaluate segments of the Company's system that are candidates for system pruning. Factors may include the number of connected services and the types of attached customers - including their energy needs, energy preferences and available energy alternatives, the planned in-service date for system renewal investments, and the driver of the project need.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Energy Transition, page 13

Preamble:

Enbridge describes its probabilistic analysis of customer disconnection, as a proxy for the useful life of the Project. Enbridge uses data from the Home Energy Rebate Plus (HER+) program to develop a lower bound for the probability of customer disconnection (1%).

Question(s):

- a) Enbridge notes that the disconnection probability was based on customers that participated in HER+ from Jan 1, 2023, to March 22, 2024. At what date was the customer's connection status assessed, and does Enbridge intend to continue tracking the connection status of these participants into the future, to determine if the disconnection percentage increases over time?
- b) Does the HER+ data allow Enbridge to determine the disconnection percentage for the subset of HER+ heat pump purchasers who installed a cold-climate heat pump? If so, please provide.

Response:

- a) The customer disconnection status was assessed when the data was pulled in March of 2024. Yes, Enbridge Gas intends to monitor customers' connection status to understand how disconnection rates may change over time.

- b) Yes. The disconnection rate for HER+ program participants that installed cold-climate heat pumps is approximately 0.67%. Notably, of the 44,891 participants who installed a heat pump, 42,744 participants installed a cold-climate heat pump while retaining gas service.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Energy Transition, pages 21, 27-28

Preamble:

Enbridge describes the electrification assumptions for Ottawa regarding space heating in the electricity Integrated Regional Resource Plan (IRRP) process, noting that the IRRP reference scenario electricity demand forecast, “Moderate B”, assumes 76% of space heating will be provided by electricity in 2050.

Question(s):

Please clarify why Enbridge believes that the Ottawa IRRP’s reference case “Moderate B” is “an unlikely and highly aggressive option” (p. 28). To the best of Enbridge’s knowledge, why have Hydro Ottawa and the IESO adopted this scenario as the reference scenario if it is unlikely to occur?

Response:

Enbridge Gas provides the response below based on conversations with the IESO and Hydro Ottawa as part of the Ottawa Region Integrated Regional Resource Planning (IRRP) process and the public engagement webinar.<sup>1</sup>

The IESO states that while the planning horizon in the IRRP is 20 years, the intent of the process is to identify specific priorities and actions to meet any needs for the near term (0-5 years) and medium term (5-10 years), and to develop options which should be preserved for the long term (10-20 years). Enbridge Gas understands that the “Moderate B” scenario was recommended as it includes a demand forecast that the

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<sup>1</sup> IESO Webinar, May 24, 2024. <https://youtu.be/mCLPCATRdaY>

IESO and Hydro Ottawa have determined is prudent to use for investment planning purposes in the near to medium term. It is Enbridge Gas's understanding that planning investments for this "Moderate B" scenario is considered a prudent and appropriate planning approach, as planning for and investing in this scenario's forecasted level of electrification, over the next 5-years, ensures that both organizations would then be in a position to (1) deliver on the "Moderate B" scenario should that continue to be expected, (2) ramp up investments in time to be ready for a full electrification scenario should that appear to be materializing, or (3) pivot to "Moderate A" scenario, which has a large percentage of hybrid heating, without having overbuilt should that come to fruition.<sup>2</sup>

As stated in the letter provided at Attachment 2 to Exhibit B, Tab 3, Schedule 1, planning based on this scenario allows Hydro Ottawa to adjust its planning for investments based on actual electrification and the evolving energy policy landscape. Enbridge Gas understands that IESO and Hydro Ottawa will monitor energy transition trends and will make recommendations as various demand milestones are achieved as compared to the reference case demand forecast. Enbridge Gas further understands that it is easier to slow the pace of investment in the future if required – depending on which scenario is coming to fruition and at what pace - than it would be to ramp-up to the level of investments that would be required if the "Moderate B" demand forecast is exceeded.

It is, and will likely continue to be, difficult to predict the choices energy consumers will make and neither Enbridge Gas, Hydro Ottawa, or the IESO can control these decisions. Both the gas and electric systems must be planned in a way that ensures the supply of safe and reliable energy for customers. Enbridge Gas believes that a coordinated approach to energy planning involving the City, Enbridge Gas, the local distribution companies (LDCs), and the IESO is critical to enabling a net zero future for the City of Ottawa. Planning energy systems collaboratively, with a commitment to align with government's climate and natural gas policy, as well as to model the benefits and costs of each system, would support achieving the goal of reducing emissions, maintaining consumer choice, and maintaining a safe, reliable, and resilient energy system at the least cost.

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<sup>2</sup> In the webinar on May 24, 2024, the IESO discusses how the planning process allows them to set and monitor "signposts", and to slow down or bring forward investments as needed based on the actual demand that materializes. This discussion is held around the 29-, 44-, and 57-minute marks in the recorded webinar.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1, pages 3, Table 1: Initial Assessment of Risk Mitigation Alternatives

Preamble:

Enbridge initially evaluated six alternatives and selected two for further evaluation:

- A. Full Replacement
- B. Extensive Inspection and Repair

These two alternatives were comparatively assessed based on: approximate reduction of Health and Safety risk, Operational Reliability risk, and financial risks (i.e., cost of property damage, emergency repair, restoring service to customers). Considerations Enbridge applied to comparative assessment of risk mitigation alternatives - Full Replacement vs Extensive Inspection and Repair are:

- i. Public Safety and Residual Risks
- ii. Public Disruption and Nuisance
- iii. Financial Assessment (NPV)
- iv. Uncertainty of Plan and Outcomes
- v. Other Considerations (i.e., long-term uncertainty impacts, potential for using the pipeline for future low-carbon initiatives etc.)

Question(s):

Please rank the weight (i.e., importance) of the five sets of criteria applied to evaluate Full Replacement versus Extensive Inspection and Repair risk mitigation alternatives.

Response:

All factors are important, and collectively they helped assess the risk mitigation options. Please see Exhibit A, Tab 2, Schedule 2, Table 1 for a summary of the comparison between the Full Replacement versus Extensive Inspection and Repair alternatives against the five dimensions described above. Since each of the five dimensions used to compare the alternatives concluded that the "Full Replacement" option is superior, Enbridge Gas did not need to rank or assign weights to the criteria to support its decision-making. In other words, independent of the weighting, the outcome would be the same.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Please provide a copy of all presentation, memos and related materials made to Enbridge management, Board of Director and Committees (including the Capital Committees) on the proposed St. Laurent project.

Response:

Please see response at Exhibit I.1-SEC-2.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Has Enbridge completed a forward-looking forecast (i.e. 2050 or beyond) of natural gas annual consumption and/or peak demand for the Ottawa or the area served by the SLP? If no, why not. If yes, please provide a copy.

Response:

A forward-looking 20-year forecast of general service customer peak hourly demand for the area directly served (in whole, or partially) by the SLP is included in Table 1 and 2. Forecast years 1-10 underpin the Asset Management Plan (AMP),<sup>1</sup> while years 11-20 are utilized to ensure projects near the end of the AMP are appropriately designed to account for future demands. Enbridge Gas only produces these forecasts over a 20-year time horizon.

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<sup>1</sup> EB-2020-0091, Enbridge Gas Asset Management Plan Addendum - 2024

Table 1: Area 60 (Ottawa) Demand Forecast

Directly Supported by SLP - 47 HDD IOFF Winter Condition

Year	Total Count of Customers	Count of Residential Customers	Count of Commercial & Industrial Customers	Residential Hourly Load (m <sup>3</sup> /hr)	Commercial & Industrial Hourly Load (m <sup>3</sup> /hr)	Total Hourly Load (m <sup>3</sup> /hr)
2023	32741	29351	3390	37502	65013	102515
2024	32858	29444	3414	37594	66505	104099
2025	33035	29611	3425	37568	66926	104495
2026	33238	29815	3423	37587	67023	104610
2027	33691	30269	3422	37827	67217	105043
2028	34077	30656	3421	38007	67366	105373
2029	34228	30781	3447	37940	67805	105745
2030	34287	30816	3472	37795	68247	106042
2031	34448	30954	3494	37786	68618	106404
2032	34816	31301	3515	38010	68970	106980
2033	35228	31693	3535	38295	69296	107591
2034	35610	32057	3553	38567	69598	108166
2035	35965	32395	3570	38827	69858	108684
2036	36293	32707	3586	39074	70067	109140
2037	36593	32994	3600	39301	70228	109528
2038	36867	33254	3613	39506	70338	109843
2039	37114	33489	3624	39686	70452	110138
2040	37333	33699	3634	39843	70551	110393
2041	37526	33883	3643	39976	70635	110610
2042	37694	34043	3651	40087	70704	110791

Table 2: Area 90 (Gazifere) Demand Forecast

Directly Supported by SLP - 47 HDD IOFF Winter Condition

Year	Total Count of Customers	Count of Residential Customers	Count of Commercial & Industrial Customers	Residential Hourly Load (m <sup>3</sup> /hr)	Commercial & Industrial Hourly Load (m <sup>3</sup> /hr)	Total Hourly Load (m <sup>3</sup> /hr)
2023	34701	32313	2388	28238	29513	57751
2024	36457	34046	2411	29501	30316	59816
2025	37922	35502	2420	30551	30326	60878
2026	38890	36458	2432	31246	30341	61586
2027	39941	37506	2435	32008	30344	62352
2028	40975	38540	2435	32756	30344	63100
2029	42008	39573	2435	33504	30344	63848
2030	43044	40609	2435	34255	30344	64599
2031	43974	41539	2435	34928	30344	65272
2032	44903	42468	2435	35601	30344	65945
2033	44903	42468	2435	35601	30344	65945
2034	44903	42468	2435	35601	30344	65945
2035	44903	42468	2435	35601	30344	65945
2036	44903	42468	2435	35601	30344	65945
2037	44903	42468	2435	35601	30344	65945
2038	44903	42468	2435	35601	30344	65945
2039	44903	42468	2435	35601	30344	65945
2040	44903	42468	2435	35601	30344	65945
2041	44903	42468	2435	35601	30344	65945
2042	44903	42468	2435	35601	30344	65945

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Has Enbridge completed a forward-looking forecast (i.e. 2050 or beyond) of natural gas annual consumption and/or peak demand in Quebec or area served by the SLP? If no, why not. If yes, please provide a copy.

Response:

Please see response at Exhibit I.1-CAFES Ottawa-2.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Has Enbridge conducted analysis of projected gas demand in the commercial and industrial sectors out to 2050 or beyond? If no, why not. If yes, please provide a copy.

Response:

Please see response at Exhibit I.1-CAFES Ottawa-2 for the general service forecast. For Large Volume Contract Demand (LVCD) customers, please see responses at Exhibit I.1-CAFES Ottawa-6 and Exhibit I.2-ED-21c.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Has Enbridge assessed the impact of variation in heating degree days due to climate change over the lifetime of the project? If no, why not. If yes, please provide a copy.

Response:

Enbridge Gas conducted a review of design conditions which included temperature, windspeed effects, and weather zones as part of the Rebasing proceeding. Please see Design Criteria and Design Demands Process in EB-2022-0200 Exhibit 4, Tab 2, Schedule 3. Although the average number of winter heating degree days is reducing (warming), extreme weather events are still occurring and the distribution system must be designed to meet peak design hour demands during these events.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Has Enbridge undertaken an analysis of energy/climate plans in Quebec (including Gatineau which is served by Enbridge's affiliate Gazifere)? If no, why not? If yes, please provide a copy of the analysis.

Response:

As discussed in Exhibit B, Tab 3, Schedule 1, paragraph 38, Enbridge Gas has undertaken outreach with the Large Volume Contract Demand (LVCD) customers served by the SLP system to understand their current and future energy needs. In addition to customers served directly or indirectly by the SLP system in Ottawa, Enbridge Gas also spoke to Gazifère to understand their contract needs, which takes into account any potential impacts from energy transition. This was considered in the demand forecast for SLP, as shown in Exhibit I.1-CAFES Ottawa 2, Table 2. Please also refer to Exhibit I.1-FRPO-1 for additional information on Gazifère programs designed to reduce gas use.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Please provide a copy of the agreement Enbridge Gas Distribution (Ontario utility) has with Gazifere (and any other parties taking gas outside the Ontario franchise area) with a commitment for gas demand/volumes. Please confirm the term of the agreement if not included in the document.

Response:

The original and amending agreements are included as Attachment 1 and Attachment 2, respectively.



## GAS TRANSPORTATION AND SALE AGREEMENT

This Agreement made as of the 1st day of October, 1991

B E T W E E N:

THE CONSUMERS' GAS COMPANY LTD.,  
an Ontario corporation  
(hereinafter called the "Company")

and

GAZIFERE INC.  
a Quebec corporation  
(hereinafter called the "Customer")

WHEREAS the Customer and the Company desire to enter into an agreement providing, among other things, for the Company to transport gas for the Customer to Point of Delivery and to sell gas to the Customer;

NOW THEREFORE in consideration of the foregoing and of the covenants and agreements herein contained, the parties hereto covenant and agree as follows:

### ARTICLE I - DEFINITIONS

1.1 In this Agreement and each Appendix hereto, unless the context otherwise requires:

- (a) "Applicable Rate" means the Company's Rate Number 200 as amended or replaced from time to time and fixed, approved or authorized by the OEB;
- (b) "Business Day" means a day on which the offices of the Company at 500 Consumers Road, Willowdale, Ontario, are open to the public during normal business hours for the conduct of business in the normal course;
- (c) "cubic metre" or "m<sup>3</sup>" means that volume of gas which at a temperature of 15 degrees Celsius and at an absolute pressure of 101.325 kilopascals ("kPa") occupies one cubic metre; "10<sup>3</sup> m<sup>3</sup>" means one thousand cubic metres;
- (d) "Date of First Deliveries" means 0800 hours Eastern Standard Time ("EST") on such date as the Company and the Customer mutually agree upon in writing and unless otherwise so agreed upon such date shall be October 1, 1991;

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- (e) "day" means a period of 24 consecutive hours, beginning and ending at 0800 hours EST and a day that is specified by a date shall be the day which begins at 0800 hours EST on that specified date;
- (f) "Joule" or "J" means the amount of work done when the point of application of a force of one newton is displaced a distance of one metre in the direction of the force; one "megajoule" or "MJ" means 1,000,000 joules;
- (g) "Load Balancing Gas" for or in respect of any day means a volume of gas equal to the combined net credit balance, if any, of all Banked Gas Accounts maintained by the Company for the Customer in respect of this Agreement, determined as at the end of the day immediately preceding such day and in the manner contemplated in section 18.1 of this Agreement and the Handbook referred to in that section;
- (h) "month" means a period beginning at 0800 hours EST on the first day of a calendar month and ending 0800 hours EST, on the first day of the next succeeding calendar month;
- (i) "natural gas" or "gas" means natural and/or residue gas comprised primarily of methane, which conforms to the quality specifications contemplated in Part 3 of the General Terms and Conditions attached hereto;
- (j) "Nomination" means a notice given by the Customer to the Company which refers to this Agreement specifically and specifies the volume of gas (the "Nominated Volume") that the Customer is nominating to deliver on each day to which the notice applies and unless the Company otherwise permits, shall specify separately in respect of each class of service referred to below the volumes of gas included in the Nominated Volume which are to be delivered for the account or benefit of customers of the Customer in respect of gas service arrangements between the Customer and such customers respectively under which the class of service is that provided by the Customer is firm service or interruptible service;
- (k) "Nomination Time" applicable to a day means the time which is two hours before the time (the "TCPL Nomination Time") on or before which, in accordance with the terms of a contract between the Company and TCPL which provides for firm transportation service on TCPL's natural gas pipeline system, TCPL is to receive the first nomination of the Company stating the volume of gas which the Company desires TCPL to deliver to the Company on such day, and if there is more than one such TCPL Nomination Time, the "Nomination Time" shall be the earliest such TCPL Nomination Time;



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- (l) "OEB" means the Ontario Energy Board;
- (m) "Required Orders" means such grants, permits, licences, approvals, authorizations, orders and decisions of or by any regulatory body or governmental authority having jurisdiction or control over any of the parties hereto, their respective facilities or gas supply, the sale or transportation of gas or this Agreement or any provision hereof, as are from time to time necessary in order that this Agreement and the performance hereof in accordance with its terms be in compliance with all applicable laws and regulations and all applicable rules, orders and decisions of any regulatory body or governmental authority having jurisdiction in respect of gas to be purchased, sold or transported hereunder, including without limitation, the transportation in the Province of production and removal from such Province of such gas and the sale of gas to the Company or to the Customer hereunder;
- (n) "Sales Gas" for or in respect of any day means the volume of gas, if any, by which
  - (i) the Usage Gas for the day exceeds
  - (ii) the aggregate of the Transportation Gas for the day and the Load Balancing Gas for the day;
- (o) "TCPL" means TransCanada PipeLines Limited;
- (p) "Transportation Gas" for or in respect of any period means the volume of gas which the Customer establishes to the satisfaction of the Company, acting reasonably is
  - (i) delivered in the period to the Company at the Point of Acceptance for, to, on behalf of, for the account of, or for delivery through one or more gas transmission or distribution systems to, the Customer and
  - (ii) is owned by a party other than the Company and
  - (iii) is delivered to the Point of Acceptance in connection with the performance of obligations under an agreement between the Customer and one or more third parties other than the Company, and for purposes of this Agreement all such gas shall be deemed to have been delivered by the Customer to the Company; and
- (q) "Usage Gas" for or in respect of any period means gas delivered in the period by the Company at the Point of Delivery for, to, on behalf of, for the account of, or for delivery through one or more gas transmission or distribution systems to the Customer or the gas distribution system of, the Customer.

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- 1.2 Each term used herein and defined in Appendix "A" shall have the meaning assigned to such term in such Appendix.

ARTICLE II - EFFECTIVENESS AND TRANSPORTATION, PURCHASE AND SALE

- 2.1 This Agreement shall only be effective if it is approved by La Regie du Gaz Naturel on or before the 30th day of September, 1992 or such later date as the Customer and the Company mutually agree upon in writing. Provided such approval is obtained, this Agreement shall be effective and apply as of the Date of First Deliveries. Notwithstanding the foregoing this Agreement shall be deemed never to have become or been effective if, not later than ten (10) days after the receipt by the Customer of a decision of La Regie du Gaz Naturel approving this Agreement, the Customer has not also received a decision of La Regie du Gaz Naturel approving an agreement between the Customer and Niagara Gas Transmission Limited respecting the transportation on the latter's gas transmission system of gas delivered hereunder to the Point of Delivery and within such ten (10) day period the Customer gives a written notice to the Company stating that this Agreement shall be deemed never to have become or been effective.
- 2.2 Subject to the terms of the Applicable Rate and to this Agreement, during the Term:
- (a) the Company shall transport gas to the Customer and
  - (b) the Company shall sell gas to the Customer and the Customer shall purchase gas from the Company.
- 2.3 A copy of the Applicable Rate is attached hereto and forms a part of this Agreement. Each of the parties hereto shall have the rights and obligations which such party is contemplated to have in the provisions of the Applicable Rate if the same were construed as though references therein
- (a) to "Applicant" or "Customer" were to the Customer and
  - (b) to "Service Contract" were to this Agreement and
  - (c) to "Terminal Location" were to the Point of Delivery" and as though words defined herein have the same meaning when used in the Applicable Rates.

ARTICLE III - POINT OF ACCEPTANCE AND DELIVERY

- 3.1 All gas (other than gas which is owned by the Company when delivered at the Point of Acceptance) which is to be transported by the Company for the Customer under this Agreement shall be delivered to the Company at the Point of Acceptance.



- 3.2 All gas which is to be transported by the Company for, or sold by the Company to, the Customer shall be delivered by the Company to the Point of Delivery.

ARTICLE IV - LIMITS AND ADJUSTMENTS RESPECTING VOLUMES OF GAS

- 4.1 The maximum volume of gas the Company is required to receive as Transportation Gas in any day is the lesser of the Mean Daily Volume and the Nominated Volume provided for in the Nomination applicable to the day and in any hour is one-twentieth of the Mean Daily Volume.
- 4.2 Subject to sections 8.1 and 9.1, the maximum volume of gas the Company is required to deliver to the Customer in any day at the Point of Delivery shall be the sum of the Firm Contract Demand and the Interruptible Contract Demand.
- 4.3 The maximum volume of gas the Company is required to deliver to the Customer in any one hour period of time at the Point of Delivery shall be the sum of the Firm Hourly Demand and the Interruptible Hourly Demand.
- 4.4 The Usage Gas for a day shall be deemed to consist of the following (all as determined for the day)
- (a) the Usage Transportation Gas which shall be equal to the lesser of
    - (i) the Transportation Gas and
    - (ii) the Usage Gas,
  - (b) the Usage Load Balancing Gas which shall be equal to the lesser of
    - (i) the Load Balancing Gas and
    - (ii) the excess, if any, of the Usage Gas over the Usage Transportation Gas and
  - (c) the Sales Gas.
- 4.5 The Company shall be deemed to have sold to the Customer on a day a volume of gas equal to the Sales Gas for the day.
- 4.6 For purposes of determining the volume of Unauthorized Overrun Gas taken by the Customer on any day and determining the amount of any minimum bill payable in respect of this Agreement, it is understood that the Contract Demand applicable to this Agreement is the aggregate of the Firm Contract Demand and the Interruptible Contract Demand

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and that for purposes of determining the Authorized Volume this Agreement is to be considered as a T-Service arrangement.

4.7 At least ninety (90) days prior to the end of any contract year the Customer shall give to the Company written notice of any changes which the Customer would like to have made to this Agreement effective at the commencement of the next following contract year and which concern any one or more of the following, namely:

- (a) the Contract Demand,
- (b) the Firm Contract Demand,
- (c) the Interruptible Contract Demand,
- (d) the Maximum Daily Transportation Volume,
- (e) the Mean Daily Firm Volume and
- (f) the Mean Daily Interruptible Volume.

Following receipt of such notice the Customer and the Company shall review the changes set forth in such notice and shall negotiate such changes as are set forth in the notice but shall use reasonable efforts to accommodate the Customer in making such changes provided that the then existing facilities and contractual rights of the Company are sufficient to enable the Company to both perform its obligations under this Agreement after giving effect to such changes and to provide service to its then existing customers and to future customers as reasonably determined by the Company. The Company shall have no obligation to accept or agree to any changes set forth in the notice. In negotiating such changes the Company and the Customer shall, without limitation, take into account the following as they exist at the time of such negotiations, namely: gas supply arrangements which the Company has in effect, the obligations of the Company to provide service to its other customers, the forecasts of the Company for the provision of service to both existing and future customers, the rights of the Company in respect of transportation service on the TCPL gas transmission system and the ability of the Company to increase or decrease or otherwise change those rights and the risks to the Company of increasing or decreasing or otherwise changing those rights. If the Company and the Customer mutually agree upon amendments to this Agreement, such amendments shall be set forth in a written agreement which shall be signed by the Company and the Customer and delivered by each of them to the other. Nothing contained in this section shall limit the right of the Customer to change the Firm Contract Demand, the Mean Daily Firm Volume or the Mean Daily Interruptible Volume in accordance with the applicable provisions of Appendix "A".

#### ARTICLE V - RATES FOR SERVICE

5.1 Subject to the provisions of Part I of the General Terms and Conditions attached hereto, the rates and charges to be charged by the Company in respect of this Agreement and the transportation and sale of gas under this Agreement shall be determined in accordance with the



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Applicable Rate. Subject to the foregoing, the monthly customer charge applicable to this Agreement in the first contract year shall be \$nil and in any subsequent contract year shall be the lesser of the maximum monthly customer charge permitted by the Applicable Rate and such other amount as may be agreed upon by the Company and the Customer.

- 5.2 For purposes of this Agreement on any day all gas in the Company's gas distribution system shall be deemed to be gas owned by the Company except for any of such gas which is Transportation Gas for the day or Load Balancing Gas for the day and is not included in the Usage Gas for the day as determined in accordance with section 4.4.

#### ARTICLE VI - PRICE, BILLING AND PAYMENT

- 6.1 The billing period shall be a month.
- 6.2 A statement showing the daily volumes of gas delivered by the Company hereunder shall be delivered monthly to the Customer. The Customer acknowledges that by virtue of the Customer providing gas service to certain shippers on the TCPL gas transmission system, the Customer or such shippers may be in possession of information with respect to volumes delivered to the Company hereunder which may be required by the Company in the preparation of such statement. The Customer agrees to, and to use its best efforts to require and cause such shippers to, co-operate with the Company to the extent necessary for the Company to obtain any information not in its possession and required for the preparation of such monthly statement.
- 6.3 It is understood that the bill for any particular month may be prepared by the Company on the basis of estimates of volumes of gas and other matters. The charges which are based on any such estimate and set out in the bill for the particular month shall be adjusted, if necessary, so that after giving effect to such adjustments, the charges correctly reflect the charges for the particular month disregarding any such estimate. Such adjustments shall be reflected as a separate item or items in the bill for a month following the particular month or in a separate statement issued after the particular month. Nothing in this section is intended to limit the application of section 6.4. The charges reflected in any bill shall be due and payable in accordance with this Agreement notwithstanding that any or all of such charges are based on any estimate referred to above.
- 6.4 If an error in a monthly bill or statement is discovered by the Company or made known to the Company by the Customer, an adjustment to correct the same shall be made in the next subsequent monthly bill or statement. Claims for errors shall be made promptly upon discovery, but in no event more than one year from the date of such monthly bill or statement.



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6.5 Each of the Company and the Customer shall retain for the period set out below all charts and calculations upon which a monthly bill is based, and its books and records insofar as they pertain to measurement and settlement for accounts hereunder. The period for which the foregoing shall be so retained shall be

- (a) a period of one year from the date of such monthly bill, or
- (b) the period while any claim, which relates to such monthly bill and of which within the aforesaid one year period the Company receives written notice from the Customer or the Customer receives written notice from the Company, is outstanding,

whichever is the longer. The documents which a party is to retain pursuant to this section shall be available for inspection by the other party hereto at all reasonable business hours of the party that is to retain the same.

The Customer shall promptly after receipt thereof deliver to the Company a copy of all bills, invoices, statements, charts and calculations which the Customer receives or obtains from Niagara Gas Transmission Limited.

6.6 Notwithstanding anything in this Article VI, the Company shall have the right to withhold (either by withholding payment or by withholding a credit to which the Customer might otherwise be entitled) an amount owing to the Customer by the Company equal to the amount of money then due, owing and unpaid by the Customer to the Company (the "Withheld Amount") but the aggregate of all amounts entitled to be so withheld at any time shall be limited to the aggregate of all amounts then due, owing and unpaid by the Customer to the Company. Upon the Company ceasing to be entitled to hold any particular portion of a Withheld Amount the Company shall forthwith pay to the Customer an amount equal to such portion of the Withheld Amount.

6.7 The contractually specified multiple that shall be applicable in the determination of any Minimum Annual Volume used for purposes of calculating any applicable minimum bill payable by the Customer in respect of service under the Applicable Rate shall be the Applicable Multiple.

#### ARTICLE VII - DISPATCH

7.1 The Customer shall give a Nomination to the Company before the Nomination Time applicable to the day before

- (a) the first day on which gas will be tendered for delivery to the Company as Transportation Gas hereunder and
- (b) the first day on which any change in the Mean Daily Volume becomes effective.



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A Nomination given at any time on a day shall be deemed to have been given immediately before the first point in time thereafter which is the Nomination Time applicable to a subsequent day (the "Nomination Reference Date"). The first day to which a Nomination shall apply shall be the later of

- (i) the day after the Nomination Reference Date and
  - (ii) the day, if any, specified in the Nomination as the first day to which the Nomination is to apply. A Nomination shall apply to each day after the first day to which it applies until the first day thereafter to which a subsequently given Nomination applies.
- 7.2 The Customer shall give a Nomination (a "revised Nomination") to the Company immediately when the Customer becomes aware of any circumstances that will alter the volume of gas to be delivered on a day to a volume other than the Nominated Volume provided for in the Nomination applicable to such day. In particular, the Customer shall give notice to the Company of any inability to deliver the Nominated Volume on any day and shall give notice to the Company by means of a revised Nomination of a revised Nominated Volume to be applicable to such day.
- 7.3 Acceptance by the Company of any Nomination or revised Nomination shall be subject to the provisions of Article VIII and Article IX.
- 7.4 All Nominations and revised Nominations contemplated in this Article shall be made by telephone, telecopier or other telecommunications device and if given orally shall, at the option of the Company, only be effective if they are confirmed the same day in writing by way of telecopier or other written instrument.
- 7.5 The accounting between the Customer and the Company will be on a daily basis with no right in either party to transfer any volumes of gas as between the days during which this Agreement is in effect.
- 7.6 The Customer hereby authorizes the Company, as agent for the Customer,
- (i) to accept, or not accept, from any party which the Customer at any time provides with gas transportation service any notice or nomination from such party in connection with the volume of gas to be delivered on any day pursuant to gas transportation arrangements in effect from time to time between such party and the Customer and
  - (ii) to prepare any Nomination or revised Nomination of the Customer under this Agreement based on the information contained in the notices and nominations which the Company receives from such parties and which in the Company's opinion, acting reasonably and having regard to the relevant contractual arrangements



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between the Customer and such parties respectively, are given on a timely basis.

ARTICLE VIII - CURTAILMENT OR DISCONTINUANCE OF INTERRUPTIBLE SERVICE

- 8.1 Service on any day in the Term under the Applicable Rate shall be subject to curtailment or complete discontinuance by the Company down to the level of the Firm Contract Demand upon prior notice in compliance with the Applicable Rate (currently 4 hours' prior notice) being given by the Company to the Customer, or any third party which the Customer provides with interruptible gas service, by telephone, electronic or other communication device or in person. Any notice given to a third party at any time as provided for in this section shall be deemed to have been given to the Customer at the same time. The Company shall give actual notice to the Customer of the material details of any notice given to a third party at any time as provided for in this section and shall do so reasonably promptly following the giving of such notice to the third party. For purposes of this Agreement the "Daily Capacity Repurchase Quantity" applicable to any day is the aggregate of all volumes of gas, without duplication, which the Company, by virtue of the right to curtail service set out in this section, requires not be used on such day by the Customer or by third parties which the Customer provides with gas service.
- 8.2 The Customer shall, and shall cause parties which the Customer provides with interruptible gas service to, comply with any request of the Company, made by notice as aforesaid, that the Customer or such parties curtail or discontinue the use of gas supplied or transported by the Company or the Customer.
- 8.3 Service will be resumed as soon as possible when the conditions described in section 8.1 cease to be operative.
- 8.4 The Customer acknowledges and agrees that it can accommodate any total or partial interruption of gas service by the Company down to the level of the Firm Contract Demand and that the Company shall have no liability for any loss arising from any such interruption of gas service.

ARTICLE IX - PRIORITY OF SERVICE

- 9.1 In the event of actual or threatened shortage of gas due to circumstances beyond the control of the Company, or when curtailment or discontinuance of supply is ordered by an authorized governmental agency, the Customer shall at the direction of the Company, curtail or discontinue use of gas, and shall cause third parties which the Customer provides with gas service to curtail or discontinue the use of gas, during the period specified by the Company (by notice to the Customer made or given by telephone, electronic or other communication device and which, if given orally, shall be

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confirmed in the same day in writing by way of telex, telecopier or other written instrument) so as to safeguard the health and safety of the public. The Company shall not be liable for any loss of production or for any damages whatsoever by reason of any such curtailment or discontinuance or because of the length of advance notice given directing such curtailment or discontinuance.

ARTICLE X - DELIVERY, POSSESSION, TITLE AND COMMINGLING

10.1 As between the Company and the Customer,

- (a) with respect to gas that is the subject matter of this Agreement and is not owned by the Company,
  - (i) the Customer shall be deemed to be in control and possession of such gas until such gas shall have been delivered to or for the account of the Company at the Point of Acceptance, after which the Company shall be deemed to be in control and possession thereof until such gas is delivered to the Point of Delivery, after which the Customer shall be deemed to be in control and possession thereof,
  - (ii) the Customer shall bear the full cost and expense of transporting such gas to the Point of Acceptance and
  - (iii) the Customer shall bear full and complete liability and responsibility and risk of loss in respect of such gas in respect of any time up to its delivery to the Point of Acceptance or after its delivery to the Point of Delivery, and
- (b) with respect to gas that is the subject matter of this Agreement and is owned by the Company,
  - (i) the Company shall be deemed to be in control and possession of such gas until such gas shall have been delivered to the Point of Delivery, after which the Customer shall be deemed to be in control and possession thereof,
  - (ii) the Customer shall bear full and complete liability and responsibility and risk of loss in respect of such gas in respect of any time after its delivery to the Point of Delivery, and
  - (iii) title to such gas shall pass from the Company to the Customer at the time it is delivered to the Point of Delivery.



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- 10.2 Except as hereinafter provided, title to the Transportation Gas for any period and the Load Balancing Gas for any period shall not pass to the Company but shall remain in the respective parties (the "Gas Owners") that had title thereto immediately prior to the delivery of such gas to the Point of Acceptance and in proportion to their respective interests therein. Title to the Sales Gas for any period shall pass from the Company to the Customer at the time it is delivered to the Point of Delivery. If at any time the Company is obligated to purchase gas pursuant to this Agreement title to such gas (whether or not the same was Transportation Gas for any period or Load Balancing Gas for any period) shall pass to the Company upon the purchase price for such gas being paid or credited to the Customer. In connection with the sale of any gas which is to be sold to the Company pursuant to this Agreement, the Customer represents and warrants to the Company that upon the purchase price for such gas being paid or credited to the Customer, title to such gas shall pass to the Company free and clear of any adverse claim of any nature whatsoever.
- 10.3 The Company shall have the right to commingle gas delivered to the Company by or for the Customer at the Point of Acceptance with gas owned by the Company or others and the Company shall have the right and full and absolute authority to deal in any manner with gas so delivered.

#### ARTICLE XI - REPRESENTATIONS, WARRANTIES AND CONDITIONS

11.1 The Customer represents and warrants that:

- (a) it, or Gas Owners (as defined in section 10.2) for whom the Customer is authorized by contract to transport such gas on the Customer's gas distribution system, shall own or control a legal or equitable estate in and to the gas (other than gas owned by the Company) which is delivered by the Customer or Gas Owners to the Company at the Point of Acceptance and that the Customer is entitled to deliver and where applicable, sell such gas to the Company in accordance with the terms of this Agreement, free and clear of any adverse claim of any nature whatsoever; and
- (b) gas delivered to the Company will not be subject to any royalties, taxes (Federal and/or Provincial) or other charges payable by, or that may become a liability of, the Company and the purchases by the Company from the Customer contemplated hereby will not result in liability to the Company for royalties, taxes (Federal and/or Provincial but not income taxes) or like charges which are applicable before possession of and title to such gas passes to the Company.

11.2 In addition to any other rights the Company may have if the Customer fails to perform its obligations hereunder, subject to section 11.3 the



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Company shall not be required to perform its obligations under this Agreement in respect of Transportation Gas, including the obligation to receive or take delivery of any gas as Transportation Gas or to transport any such gas, and shall be entitled to suspend any of such obligations at any particular time if

- (a) prior to such time there has been a breach or default of any representation, warranty or obligation of the Customer under any of sections 11.1, 12.2 and 12.3;
- (b) prior to such time any Required Order ceases to be in effect;
- (c) performance of any such obligation would be in contravention of any law or regulation or any order or decision of a regulatory body or governmental authority having jurisdiction;
- (d) prior to such time the Company has not received a written notice from the Customer which identifies the following:
  - those parties that are or are about to sell gas to the Customer or to a party who at the Point of Acceptance is or will be the owner of gas, which gas is in any such case to be received by the Company as Transportation Gas,
  - the producing province of gas which is to be received by the Company as Transportation Gas and
  - all Required Orders to be provided by the Customer and is accompanied by a true copy of all such Required Orders.

Any period throughout which the Company shall not be required to perform its obligations and shall be entitled to suspend obligations as contemplated in this section shall commence upon the occurrence of any event described in subparagraphs (a), (b), (c) or (d) of this section and shall continue until the third Business Day after the later of the day such event has been remedied to the satisfaction of the Company and the day written notice that such event has been remedied is given by the Customer to the Company to the attention of the Company's Manager, Contract Marketing.

- 11.3 If as a result of any Required Order not being obtained or ceasing to be in effect the Company, pursuant to either of sections 11.2 and 12.5, is not obligated to perform certain obligations under this Agreement or is entitled to suspend certain of such obligations, then following full disclosure to the Company of all information requested by the Company, the Company shall determine in its absolute discretion the obligations which it has under this Agreement which are not relevant to or affected by such Required Order and the Company shall use reasonable efforts to perform those obligations to the extent that the Company in its absolute discretion determines that it can properly and lawfully do so in the circumstances as they exist from time to time.



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- 11.4 If at any time the Customer is in default of paying to the Company any amount that is due and payable prior to such time in respect of service under this Agreement and if such amount is not paid within thirty days of the date when it became due, then subject to the provisions of this section the Company, in addition to any other remedy it may have, shall be entitled to suspend service under this Agreement until the third Business Day after the later of the day such amount is paid and the day written notice of such payment is given by the Customer to the Company to the attention of the Company's Manager, Contract Marketing. If the Customer in good faith shall dispute its liability to pay such amount and within twenty days of a demand therefor made by the Company shall deliver to the Company a Satisfactory Surety Bond (as hereinafter defined) then the Company shall not be entitled to suspend service under this Agreement based on the failure of the Customer to pay such amount unless and until there is a default in the performance of the terms or conditions of the Satisfactory Surety Bond. In this section, "Satisfactory Surety Bond" means a surety bond which is satisfactory to the Company, acting reasonably, as to its form and the creditworthiness of the Issuer (the "Issuer") thereof, and under which the Issuer guarantees payment to the Company of all amounts (collectively, the "Customer Payable Amount") determined to be owing to the Company in respect of the amount in dispute and interest thereon and costs incurred by the Company in connection with any proceedings relating to obtaining any determination of the liability of the Customer to pay the Customer Payable Amount or any part thereof or the enforcement of the Company's claim in respect of the Customer Payable Amount or any part thereof with payment of the Customer Payable Amount to be made by the Issuer to the Company within thirty days after the Issuer receives notice from the Company that a final determination in respect of the Customer Payable Amount has been made by agreement of the Customer and the Company, an arbitration decision or an order or judgment of a court of competent jurisdiction together with a copy of such agreement, decision, order or judgment, as the case may be.
- 11.5 The Customer shall indemnify and save the Company harmless from any and all suits, claims, liens and encumbrances of whatsoever nature relating to the title or ownership to gas (other than gas owned by the Company) delivered by the Customer to the Company. If at any time an adverse claim of any nature is asserted against the title to any of such gas, the Company may withhold, in an interest bearing escrow account at a Chartered Bank in Canada, during the period of such claim or until the title is freed from such claim, but only as to the property in dispute, any amounts payable by the Company to the Customer not exceeding in the aggregate the amount of such claim or until the Customer furnishes a bond, in form and with sureties acceptable to the Company, conditioned to save the Company harmless, as provided for in this section 11.5.
- 11.6 The Company represents and warrants in respect of the Sales Gas for any day that at the time such gas is delivered at the Point of Delivery



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the Company shall be entitled to deliver such gas and to sell such gas to the Customer free and clear of any adverse claim of any nature whatsoever.

#### ARTICLE XII - GOVERNMENTAL REGULATION

- 12.1 This Agreement is subject to the maintenance of appropriate Required Orders. In addition, this Agreement is subject to present and future valid orders, rules and regulations of duly constituted governmental authorities (including, without limitation, local, Provincial, Federal and any other regulatory authority) having jurisdiction or control over the parties, their facilities, gas supply, the sale, purchase, or transportation of gas or this Agreement or any provision hereof.
- 12.2 Except as provided in section 12.4, the Customer shall promptly endeavour to obtain or cause to be obtained all Required Orders. The Customer shall provide true copies of all Required Orders (other than those contemplated in section 12.4) to the Company.
- 12.3 The Customers shall comply with the terms of all Required Orders and shall use its best efforts to maintain the same in full force and effect throughout the Term. The Company will comply with Required Orders of the Ontario Energy Board and will use its best efforts to maintain the same in full force and effect throughout the Term.
- 12.4 The Company shall promptly endeavour to obtain any Required Order as relates to gas to be dealt with under this Agreement after it is delivered to the Company at the Point of Acceptance until it is delivered to the Point of Delivery.
- 12.5 Subject to section 11.3, the Company shall not be required to perform its obligations under this Agreement, other than under section 12.4, at any time or in any period
- (a) when or in respect of which any Required Order is not in effect;
  - (b) prior to the Company actually receiving an original or a true copy of every Required Order necessary at such time.
  - (c) prior to the Company receiving a duplicate original copy of this Agreement which has been duly executed by or on behalf of all of the parties thereto.
  - (d) on the day (the "Reference Date") which includes a time contemplated in any of subparagraphs 12.5(a), (b) or (c) or on any day thereafter which precedes the second Business Day to follow the Reference Date.

The Company may by notice to the Customer terminate this Agreement if all Required Orders necessary to commence service under this Agreement are not obtained, and an original or true copy of all such

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Required Orders is not actually received by the Company, on or before the Required Order Cut Off Date.

#### ARTICLE XIII - NOTICE OR COMMUNICATION

13.1 Subject to the express provisions of this Agreement, all communications provided for or permitted hereunder shall be in writing, personally delivered to an officer or other responsible employee of the addressee or sent by registered mail, charges prepaid, telecopy or other means of recorded telecommunication, charges prepaid, to the applicable telecommunications number as set forth in Appendix "A" or as changed in accordance with this section provided that no communication shall be sent by mail at any time when a postal strike or other disruption of the postal service in Canada is threatened, pending or ongoing. Any communication so personally delivered shall be deemed to have been validly and effectively received on the date of such delivery. Any communication so sent by telecopier or other means of telecommunication shall be deemed to have been validly and effectively received on the day on which it is sent. Any communication so sent by mail shall be deemed to have been validly and effectively received on the fourth Business Day following the day on which it is post marked.

Communications to the parties hereto shall be directed as provided for in Appendix "A" hereto.

Each party may from time to time change its address or any nominee, telephone number or telecopier number for the purpose of this section by giving notice of such change to the other party in accordance with this section.

#### ARTICLE XIV - EXECUTION OF DOCUMENTS

14.1 Each party to this Agreement and its successors and assigns shall execute, acknowledge or verify, and deliver any and all documents which from time to time may be reasonably requested by the other party to carry out the purposes and intent hereunder.

#### ARTICLE XV - NON-WAIVER

15.1 No failure by either party to insist upon compliance with any term of this Agreement, to exercise any option, enforce any right, or seek any remedy upon any default of the other party shall affect, or constitute a waiver of, the party's right to insist upon such strict compliance, exercise that option, enforce that right, or seek that remedy with respect to the default or any prior, contemporaneous, or subsequent default; nor shall any custom or practice of the parties at variance with any provisions of this Agreement affect, or constitute a waiver of, any party's right to demand strict compliance with all provisions hereunder.



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ARTICLE XVI - GENDERS AND NUMBERS

16.1 When permitted by the context, each pronoun used in this Agreement includes the same pronoun in other genders or numbers, and each noun used hereunder includes the same noun in other numbers.

ARTICLE XVII - COMPLETE AGREEMENT

17.1 This Agreement contains the entire agreement between the parties relating to the transportation, purchase and sale of gas between the parties during the Term in relation to gas to be delivered by the Company to the Point of Delivery and supersedes all prior to contemporaneous discussions, negotiations, representations, or agreements relating to the subject matter of this Agreement. All other agreements between the Company and the Customer pursuant to which the Company has an obligation to sell to or transport gas for the Customer shall terminate as at the start of the Term.

ARTICLE XVIII - GENERAL TERMS AND CONDITIONS

18.1 The General Terms and Conditions attached hereto form a part of this Agreement and are incorporated herein.

Parts III and IV of the Company's HANDBOOK OF RATES AND DISTRIBUTION SERVICES (the "Handbook") forms part of this Agreement and the provisions thereof are incorporated herein by reference. Subject to the following provisions of this section, the provisions of PARTS III and IV of the Handbook shall be construed using the definitions in this Agreement (other than the Handbook) and the terms used therein and not otherwise defined in this Agreement shall be construed using the definitions in PART I of the Handbook.

For purposes of this Agreement, the following provisions shall apply in respect of the provisions of the Handbook as it applies to this Agreement:

- (a) the Applicable Rate shall be deemed to be one of the Large Volume Service Rates as that term is used in the Handbook,
- (b) for purposes of determining the volume of Unauthorized Overrun Gas for a day under this Agreement the Mean Daily Volume that applies to the interruptible rate stipulated in this Agreement shall be deemed to be the Mean Daily Interruptible Volume,
- (c) all Transportation Gas for a period, shall be credited to a Banked Gas Account for the Customer in respect of such period,
- (d) all Usage Gas for a period (other than Sales Gas for any day in such period) shall be debited to a Banked Gas Account for the Customer in respect of such period,

cc

- (e) except as provided for above and except as provided for in the Handbook in connection with the Disposition of Banked Gas Account Balances (currently SECTION F in PART IV of the Handbook), no other volumes of gas shall be debited or credited to a Banked Gas Account for the Customer, and
- (f) if there is any conflict between the provisions of this Agreement (other than the Handbook) and the provisions of the Handbook, then the provisions of this Agreement (other than the Handbook) shall prevail.

ARTICLE XIX - LANGUAGE

19.1 The parties acknowledge their express wish that this Agreement be drawn up in the English language only. Les parties confirment leur volonté que ce contrat soi rédigé en langue anglaise seulement.

IN WITNESS WHEREOF this Agreement has been executed by the parties hereto, as of the day and year first above written.

THE CONSUMERS' GAS COMPANY LIMITED

GAZIFERE INC.

By: \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

APPENDIX "A"  
(DEFINITIONS)

TO

GAS TRANSPORTATION AND SALE AGREEMENT

BETWEEN

THE CONSUMERS' GAS COMPANY LTD.

AND

GAZIFERE INC.

DATED October 1, 1991

1.01 "Applicable Multiple" means 147.

1.02 Communications to the Company shall be directed as follows:

DELIVERY ADDRESS: THE CONSUMERS' GAS COMPANY LTD.  
500 Consumers Road  
WILLOWDALE, Ontario  
M2J 1P8

MAILING ADDRESS: P.O. Box 650  
SCARBOROUGH, Ontario  
M1K 5E3

NOMINATIONS: Attention: Manager, Gas Control  
Telephone: 416-495-5056  
Telecopier: 416-491-7497

LEGAL AND OTHER: Attention: Manager, Contract  
Marketing  
Telephone: 416-495-5348  
Telecopier: 416-495-8350

1.03 Communications to the Customer shall be directed as follows:

DELIVERY ADDRESS: 71 rue Jean Proulx  
Hull, Ontario  
J8Z 1W2



MAILING ADDRESS: P.O. Box 327, Station A  
Hull, Québec  
J8Y 6M9

NOMINATIONS: Attention: Assistant General  
Manager  
Telephone: 819-771-8321  
Telecopier: 819-771-6079

LEGAL AND OTHER: Attention: Assistant General  
Manager  
Telephone: 819-771-8321  
Telecopier: 819-771-6079

- 1.04 "Contract Demand" means  $1\ 115.0\ 10^3\text{m}^3$  of gas.
- 1.05 "contract year" means a period (a) from and including the Date of First Deliveries to and including September 30, 1992 (the "First Contract Year Terminal Date") or (b) from and including a day which is the next day following the last day in a contract year to and including the next following anniversary of the First Contract Year Terminal Date.
- 1.06 "Firm Contract Demand" means  $801\ 10^3\text{m}^3$  of gas provided that the Customer may change the "Firm Contract Demand" to a fixed volume of gas (expressed in  $10^3\text{m}^3$  and not greater than the Contract Demand) stipulated in a notice given to the Company at least thirty days prior to the date on which such change is to become effective (which date shall be the first day of a month and shall be stipulated in the notice), and if a notice is given in accordance with the foregoing, then effective on the date stipulated in the notice and thereafter the "Firm Contract Demand" shall be the volume of gas which it is to be in accordance with the notice until the next day thereafter on which a change in the Firm Contract Demand made as aforesaid becomes effective. "Firm Hourly Demand" means one-twentieth of the Firm Contract Demand.
- 1.07 "Interruptible Contract Demand" means the volume of gas, if any, by which the Contract Demand exceeds the Firm Contract Demand. "Interruptible Hourly Demand" means one-twentieth of the Interruptible Contract Demand.
- 1.08 "Maximum Daily Transportation Volume" means  $1\ 115.0\ 10^3\text{m}^3$  of gas.

- 1.09 "Mean Daily Firm Volume" means nil provided that the Customer may change the "Mean Daily Firm Volume" to a fixed volume of gas (expressed in  $10^3 \text{m}^3$  and not greater than the volume of gas by which the Maximum Daily Transportation Volume exceeds the Mean Daily Interruptible Volume as at the date on which such change of the Mean Daily Firm Volume is to become effective as hereinafter provided) stipulated in a notice given to the Company at least thirty days prior to the date on which such change is to become effective (which date shall be the first day of a month and shall be stipulated in the notice), and if a notice is given in accordance with the foregoing, then effective on the date stipulated in the notice and thereafter the "Mean Daily Firm Volume" shall be the volume of gas which it is to be in accordance with the notice until the next day thereafter on which a change in the Mean Daily Firm Volume made as aforesaid becomes effective.
- 1.10 "Mean Daily Interruptible Volume" means nil provided that the Customer may change the "Mean Daily Interruptible Volume" to a fixed volume of gas (expressed in  $10^3 \text{m}^3$  and not greater than the volume of gas by which the Maximum Daily Transportation Volume exceeds the Mean Daily Firm Volume as at the date on which such change of the Mean Daily Interruptible Volume is to become effective as hereinafter provided) stipulated in a notice given to the Company at least thirty days prior to the date on which such change is to become effective (which date shall be the first day of a month and shall be stipulated in the notice), and if a notice is given in accordance with the foregoing, then effective on the date stipulated in the notice and thereafter the "Mean Daily Interruptible Volume" shall be the volume of gas which it is to be in accordance with the notice until the next day thereafter on which a change in the Mean Daily Interruptible Volume made as aforesaid becomes effective.
- 1.11 "Mean Daily Volume" means the aggregate of the Mean Daily Firm Volume and the Mean Daily Interruptible Volume.
- 1.12 "Point of Acceptance" means the point of interconnection of the Company's and TCPL's facilities at Ottawa, Ontario.
- 1.13 "Point of Delivery" means the point situate in Lot A, Junction Gore of the Rideau and Ottawa Rivers, Township of Gloucester, County of Carlton, now Village of Rockcliffe Park, Regional Municipality of Ottawa Carleton, Province of Ontario, at which the gas transmission pipeline of Niagara Gas Transmission Limited



- connects with the gas distribution pipeline system of the Company.
- 1.14 "Point of Delivery Pressure" means 1 200 kilopascals.
- 1.15 "Required Order Cut Off Date" means September 30, 1992.
- 1.16 "Term" means the period from and including the Date of First Deliveries to (but not including) the earliest of
- (i) 0800 hours EST on the next day following the Terminal Date,
  - (ii) the date of the termination of this Agreement in accordance with any of its provisions and
  - (iii) the date fixed by, or determined from, any Order of the Ontario Energy Board as the date for the termination or expiration of this Agreement.
- 1.17 "Terminal Date" means earliest date to occur which is both:
- (i) the 30th day of September, 2001 (the "First Possible Terminal Date") or an anniversary thereof, and
  - (ii) which is stipulated by either party hereto in a notice given to the other party hereto not less than ninety (90) days prior to such date and not more than one hundred and eighty (180) days prior to such date.



THE CONSUMERS' GAS COMPANY LTD.  
GAS TRANSPORTATION AND SALE AGREEMENT  
GENERAL TERMS AND CONDITIONS

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PART 1 - RATES, TERMS AND CONDITIONS

- 1.1 Bills are issued monthly in respect of service provided by the Company under the agreement of which these General Terms and Conditions form a part and are due when rendered. If payment in full is not received within ten (10) days of the rendering of the bill, the current charges otherwise payable shall be increased by five per cent (5%).
  - 1.2 In the event of any change in any of the rates or charges approved or fixed by the Ontario Energy Board for or in respect of or applicable to this Agreement or service which the Customer is to receive under this Agreement, including retroactive changes, to the extent that such changed rate or charge is ordered by the Ontario Energy Board to be charged to the Customer or a class of customers of the Company that includes the Customer, the changed rate or charge shall be applicable hereunder and shall be applied upon becoming effective, and in accordance with any provisions relating to its application, in accordance with any applicable order of the Ontario Energy Board or rate number or schedule of the Company fixed, approved or authorized by the Ontario Energy Board.
  - 1.3 In the event the terms and conditions of this Agreement are changed by Order of the Ontario Energy Board, including retroactive changes, such changed terms and conditions shall be deemed to be in effect between the Company and the Customer in accordance with the terms of such Order.
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PART 2 - UNAUTHORIZED OVERRUN GAS

- 2.1 The Customer acknowledges and agrees that the use of, or deemed taking of, a volume of Unauthorized Overrun Gas (as determined from the Company's HANDBOOK OF RATES AND DISTRIBUTION SERVICES) will result in the Customer paying a price for such volume of gas which is likely to be significantly greater than the price payable under this Agreement for gas which is not Unauthorized Overrun Gas. The Customer also acknowledges and agrees that if demand charges are payable under any rate of the Company applicable to this Agreement, then the use of Unauthorized Overrun Gas may in some circumstances result in the Contract Demand applicable to such rate under this Agreement being increased by the volume of such Unauthorized Overrun Gas (and such increased Contract Demand shall be deemed to be specified as the Contract Demand applicable to such



rate in this Agreement) and in the demand charges applicable to such rate and payable under this Agreement being calculated, for the whole of the then current contract year (including the expired portion thereof and thereafter, based on such increased Contract Demand being applicable to such rate and any increase in the demand charges applicable to such contract year shall be payable when billed by the Company. The Customer also acknowledges and agrees that if demand charges are not payable under any rate of the Company applicable to this Agreement, then the use of Unauthorized Overrun Gas will result in the Contract Demand applicable to such rate under this Agreement being increased by the volume of such Unauthorized Overrun Gas, and such increased Contract Demand shall be deemed to be specified as the Contract Demand applicable to such rate in this Agreement. The Customer further agrees that the Customer has no right to take Unauthorized Overrun Gas and that payment therefor shall not relieve the Customer from any other remedy available to the Company against the Customer for breach of this Agreement. The Customer acknowledges that it has been provided with a copy of the rate of the Company applicable to backstopping service.

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### PART 3 - QUALITY AND MEASUREMENTS

- 3.1 The quality, pressure and temperature of the gas delivered at the Point of Acceptance under this Agreement shall conform to the minimum standards of TCPL and such gas shall otherwise be marketable natural gas.
- 3.2 The Company and the Customer each recognize that the gas delivered hereunder will be from a commingled stream of gas and will be carried to the Point of Acceptance through the facilities of TCPL. The volume of gas delivered by the Customer at the Point of Acceptance on each day will be determined by TCPL, and the volume of gas so determined for a particular day shall be deemed to be the volume of gas delivered by the Customer to the Company at the Point of Acceptance on such day.
- 3.3 It is understood and agreed that neither the Company nor the Customer owns or operates custody transfer quality measuring and/or testing equipment at the Point of Acceptance and neither contemplates obtaining such equipment. Therefore the parties agree to accept the metering of TCPL for the purpose of determining the volume of gas delivered to the Company by the Customer. The standard of measurement and tests for the gas delivered at the Point of Acceptance under this Agreement shall be in accordance with the contractual arrangements made by the Company with TCPL in effect from time to time.
- 3.4 The Company agreed, in its arrangements with TCPL, to obtain measuring and/or testing in a manner and at an interval which is in compliance with the practice of TCPL. In the event that either party hereto should request measuring or testing at any time, the other party



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will cooperate fully to obtain such measurement and testing from TCPL, provided that the party seeking the test shall bear the cost thereof if the contractual arrangements with TCPL require payment of the cost.

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#### PART 4 - METERING AT THE POINT OF DELIVERY

- 4.1 The quality, pressure and temperature of the gas delivered at the Point of Delivery under this Agreement shall conform to the minimum standards of TCPL and such gas shall otherwise be marketable natural gas.
- 4.2 The Company and the Customer each recognize that the gas delivered hereunder will be from a commingled stream and will be carried to the Point of Delivery through the facilities of the Company.
- 4.3 It is understood and agreed that neither the Company nor the Customer owns or operates custody transfer quality measuring and/or testing equipment at the Point of Delivery and neither contemplates obtaining such equipment. Therefore the parties agree to accept the metering of Niagara Gas Transmission Limited ("Niagara"), as provided for in the Transportation Service Agreement made as of the 1st day of October, 1991 between Niagara and the Customer, for the purpose of determining the volume of gas delivered by the Company to the Point of Delivery. The standard of measurement and tests for the gas delivered at the Point of Delivery under this Agreement shall be in accordance with the contractual arrangements made by the Customer with Niagara in effect from time to time.
- 4.4 The Customer agreed, in its arrangements with Niagara, to obtain measuring and/or testing in a manner and at an interval which is in compliance with the practice of Niagara. In the event that either party hereto should request measuring or testing at any time, the other party will co-operate fully to obtain such measurement and testing from Niagara, provided that the party seeking the test shall bear the cost thereof if the contractual arrangements with Niagara require payment of the cost.

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#### PART 5 - FORCE MAJEURE

- 5.1 Neither the Company nor the Customer shall have any claim, action, cause of action or other right against the other as a result of any inability of the Company to accept deliveries or of the Customer to make deliveries of gas hereunder caused by force majeure which shall include, inter alia, Acts of God, the elements, labour disputes, strikes, lockouts, fires, accidents, breakage or repair of pipeline or machinery, order of any legislative body or duly constituted authority, or other causes or contingencies beyond the control of such other party, but force majeure shall not mean or include depletion, failure or shortage of gas supply unless the same is of less than three days

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duration and has resulted from a temporary failure such as a well freeze-up or unless the same is caused by or occurs as a result of any matter or event which is a force majeure. Deliveries of gas hereunder shall resume when, and if, the force majeure ceases. The party claiming that force majeure exists shall immediately notify the other of such condition by telephone, electronic or other communication device and such force majeure shall be deemed to have commenced when it occurs provided notice is given within six hours and otherwise when such notice is given. Notices given orally hereunder shall only be effective if they are confirmed the same day in writing by way of telex, telecopier or other written instrument. It is understood and agreed that the settlement of strikes or lockouts shall be entirely within the discretion of the party affected. If any curtailment or discontinuance of service resulting from any such cause continues for any period in excess of twenty-four (24) hours, the minimum bill charge payable by the Customer shall, upon the request of the Customer, be reasonably adjusted.

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#### PART 6 - AGREEMENTS OF INDEMNITY

- 6.1 Each of the Company and the Customer shall save harmless and indemnify the other from any injury, loss or damages to persons or property caused by its negligence or wilful misconduct or by the negligence or wilful misconduct of its agents or employees or persons acting under its authority or with its permission.

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#### PART 7 - MISCELLANEOUS

- 7.1 No waiver by either party of any one or more defaults by the other in the performance of any provisions of this Agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or a different character.
- 7.2 This Agreement shall be interpreted, performed and enforced in accordance with the laws of the Province of Ontario.
- 7.3 No addition, deletion or modification of the terms and provisions of this Agreement shall be or become effective except by the execution of a new agreement.
- 7.4 This Agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns but shall not be assigned or be assignable by the Customer without the consent in writing of the Company first obtained. The Company agrees that such consent shall not be unreasonably withheld.



TRANSPORTATION SERVICE RIDER "A"

**APPLICABILITY:**

This rider is applicable to any Applicant who enters into Gas Transportation Agreement with the Company under any rate other than Rates 300 and 305.

**T-SERVICE CREDIT:**

In T-Service Arrangements between the Company and an Applicant the Company shall pay the Applicant 2.9978 cents per cubic metre for any volumes of natural gas owned by the Applicant and received by the Company at the Point of Acceptance.

**EFFECTIVE DATE:**

To apply to gas delivered on and after October 1, 1991.

BUY/SELL SERVICE RIDER "B"

**APPLICABILITY:**

This rider is applicable to any Applicant who enters into a Gas Purchase Agreement with the Company to sell to the Company a supply of natural gas.

**BUY/SELL PRICE:**

In Buy/Sell Arrangements between the Company and an Applicant, the Company shall buy the Applicant's gas at a price of 10.9765¢ per cubic meter of gas containing 37.45 MJ/m<sup>3</sup>, less pipeline transmission costs, if applicable.

**PRICE IN CERTAIN BUY/SELL ARRANGEMENTS:**

For certain Buy/Sell Arrangements, the Company shall buy the Applicant's gas at a price of 10.9879¢ per cubic metre of gas containing 37.45 MJ/m<sup>3</sup>, less pipeline transmission costs, if applicable. The formula by which the aforementioned price is determined shall remain in effect only for the initial term of those certain contracts.

**EFFECTIVE DATE:**

To apply to gas purchases on and after October 1, 1991.



THE CONSUMERS' GAS COMPANY LTD.  
RATE NUMBER 200  
WHOLESALE SERVICE

**APPLICABILITY:**

To any Distributor who enters into a Service Contract with the Company to use the Company's gas distribution network for the transportation of an annual supply of natural gas to customers outside of the Company's franchise area.

**CHARACTER OF SERVICE:**

Service shall be continuous (firm), except for events as specified in the Service Contract including force majeure, up to the contracted firm daily demand and subject to curtailment or discontinuance, of demand in excess of the firm contract demand, upon the Company issuing a notice not less than 4 hours prior to the time at which such curtailment or discontinuance is to commence.

**RATE:**

The following rates and charges shall apply for deliveries to the Terminal Location.

Rates per cubic metre assume an energy content of 37.45 MJ/m<sup>3</sup>.

	Billing Month	
	December to March	April to November
<b>Customer Charge</b>		
The monthly customer charge shall be negotiated with the applicant and shall not exceed:	\$2,000	\$2,000
<b>Delivery Charge</b>		
Per cubic metre of Firm Contract Demand	7.00¢	7.00¢
Per cubic metre of Gas Delivered		
For the first 15 times Firm Contract Demand	1.5009¢	1.0006¢
For the next 10 times Firm Contract Demand	1.2009¢	0.8006¢
For all over 25 times Firm Contract Demand	1.3209¢	0.8806¢
<b>Gas Supply Load Balancing Charge per cubic metre</b>	2.9938¢	2.4630¢
<b>Gas Supply Charge per cubic metre (if applicable)</b>	8.0900¢	8.0900¢
<b>Monthly Direct Purchase Administration Charge (if applicable)</b>	\$225.00	\$225.00

The Gas Supply Charge is applicable to volumes of natural gas purchased from the Company. The volumes purchased shall be the volumes delivered at the Point of Delivery less any volumes, which the Company does not own and are received at the Point of Acceptance for delivery to the applicant at the Point of Delivery.

The Direct Purchase Administration Charge is applicable to any Applicant who delivers gas to the Company, whether for delivery to a Terminal Location or for sale to the Company pursuant to a Gas Purchase Agreement.

**DIRECT PURCHASE ARRANGEMENTS:**

Rider "A" or Rider "B" shall be applicable to Applicants who enter into Direct Purchase Arrangements under this rate schedule.

**MINIMUM BILL:**

Per cubic metre of Annual Volume Deficiency  
(See Terms and Conditions of Service):

Sales and Western Canada Buy/Sell	3.2103¢
T-Service and Ontario Buy/Sell	0.8124¢

**CAPACITY REPURCHASE RATE:**

On days when the Applicant is ordered by the Company to curtail the use of gas, the Company shall purchase the Applicant's right to take service hereunder.

Rate for Service Rights  
per cubic metre of  
Daily Capacity Repurchase Quantity per day of curtailment 1.0 cents

In addition, if the Applicant is supplying its own gas requirements, the gas delivered by the Applicant during the period of curtailment shall be purchased by the Company for the Company's use at the rate of 7.9173 cents per m<sup>3</sup>.

For the areas specified in Appendix A to this rate schedule, the Company's gas distribution network does not have sufficient physical capacity under current operating conditions to accommodate the provision of firm service to existing interruptible locations. For any location presently served or any new Applicant for service pursuant to this Rate Schedule in these areas, the Company shall purchase the rights to take service hereunder at 125% of the above-stated Rate for Service Rights.

**UNAUTHORIZED OVERRUN GAS RATE:**

On the first occasion in a contract year when the Applicant takes Unauthorized Overrun Gas the Applicant may elect to either:

- (i) purchase such gas at a rate of 150% of the maximum Gas Supply Charge stated in Rate 320;
- or
- (ii) adjust this Contract Demand to the actual maximum daily volume taken and the Demand Charges stated above shall apply for the whole contract year, including retroactive, if necessary.

On the second and subsequent occasions in a contract year when the Applicant takes Unauthorized Overrun Gas both (i) and (ii) shall apply.

Should the Applicant fail to curtail its use of natural gas within the contracted time period or as ordered by the Company the rate shall be:

For the first instance of such failure in any contract year:	25 cents per cubic metre.
For the second instance of such failure in any contract year:	50 cents per cubic metre.

**TERMS AND CONDITIONS OF SERVICE:**

The provisions of PARTS III and IV of the Company's HANDBOOK OF RATES AND DISTRIBUTION SERVICES apply, as contemplated therein, to service under this Rate Schedule.

**EFFECTIVE DATE:**

To apply to bills rendered for gas consumed on and after October 1, 1991

“  
“



**THE CONSUMERS' GAS COMPANY LTD.**

**GAS TRANSPORTATION AND SALE  
AMENDING AGREEMENT**

**DATE OF GAS TRANSPORTATION AND SALE  
AMENDING AGREEMENT: October 27, 1994  
AMENDING AGREEMENT: August 25, 1995  
AMENDING AGREEMENT: October 4, 1996  
AMENDING AGREEMENT: September 29, 1997  
AMENDING AGREEMENT: November 4, 1997  
AMENDING AGREEMENT: October 26, 1998  
AMENDING AGREEMENT: June 3, 1999  
AMENDING AGREEMENT: November 30, 1999  
AMENDING AGREEMENT: September 28, 2001  
AMENDING AGREEMENT: September 30, 2002  
AMENDING AGREEMENT: September 25, 2003  
AMENDING AGREEMENT: September 30, 2004  
AMENDING AGREEMENT: September 30, 2005  
AMENDING AGREEMENT: November 09, 2006  
AMENDING AGREEMENT: November 13, 2007  
AMENDING AGREEMENT: December 01, 2008  
AMENDING AGREEMENT: December 23, 2009  
AMENDING AGREEMENT: December 31, 2010  
AMENDING AGREEMENT: December 20, 2011  
AMENDING AGREEMENT: December 07, 2012  
AMENDING AGREEMENT: December 04, 2013  
AMENDING AGREEMENT: November 11, 2014  
AMENDING AGREEMENT: December 18, 2015  
AMENDING AGREEMENT: November 16, 2016  
AMENDING AGREEMENT: November 15, 2017  
AMENDING AGREEMENT: December 10, 2018  
AMENDING AGREEMENT: December 10, 2019  
AMENDING AGREEMENT: November 27, 2020  
AMENDING AGREEMENT: December 03, 2021  
AMENDING AGREEMENT: December 15, 2022  
AMENDING AGREEMENT: December 04, 2023**

**PARTIES TO AGREEMENT:**

**ENBRIDGE GAS INC. (the "Company")**

**AND**

**GAZIFERE INC. (the "Customer")**

For good and valuable consideration given by each party hereto to each other party hereto (the receipt of which is acknowledged by each part hereto), it is agreed that the gas transportation agreement between us, dated 1<sup>st</sup> day of October, 1991, as the same may have been amended and renewed from time to time, (such agreement as so amended and renewed being referred to herein as the "Gas Transportation Agreement") is amended and shall be construed, effective on and from the effective time of this agreement set out below, to give effect to the following changes, namely;

- (a) Section 5.1: For the purposes of section 5.1 of the Gas Transportation Agreement, the monthly customer charge shall be \$nil.
- (b) Appendix A: Appendix A of the Gas Transportation Agreement shall be deleted and the annexed Appendix A shall be substituted therefor.
- (c) Effective Time: The effective time of this agreement shall be 1000 hours EST on the first day of **January, 2024**.
- (d) This agreement is only to be effective if a duplicate original copy of this agreement, duly executed by all parties to this agreement, is received by the Company on or before the **fifteenth day of January, 2024**.

Nothing contained herein shall affect the application of the Gas Transportation Agreement with respect to any period prior to the effective time of this agreement. Except as amended hereby the Gas Transportation Agreement shall continue in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE EXECUTED THIS AGREEMENT.

**ENBRIDGE GAS INC.**

*Rob DiMaria*  
By: [Rob DiMaria \(Dec 15, 2023 08:44 EST\)](#)  
Name: Rob DiMaria  
Title: Manager, Contracting & Compliance

**GAZIFERE INC.**

*Jean-Benoit Trahan*  
By: [Jean-Benoit Trahan \(Dec 15, 2023 08:37 EST\)](#)  
Name: Jean-Benoit Trahan  
Title: Director, Gazifère



**APPENDIX "A"  
(DEFINITIONS)**

**TO**

**GAS TRANSPORTATION AND SALE AGREEMENT**

**BETWEEN**

**ENBRIDGE GAS INC.**

**AND**

**GAZIFERE INC.**

**DATED: OCTOBER 1, 1991**

**AMENDING AGREEMENT DATED: October 27, 1994**  
**AMENDING AGREEMENT DATED: August 25, 1995**  
**AMENDING AGREEMENT DATED: October 4, 1996**  
**AMENDING AGREEMENT DATED: September 29, 1997**  
**AMENDING AGREEMENT DATED: November 4, 1997**  
**AMENDING AGREEMENT DATED: October 26, 1998**  
**AMENDING AGREEMENT DATED: June1, 1999**  
**AMENDING AGREEMENT DATED: November 30, 1999**  
**AMENDING AGREEMENT DATED: September 28, 2001**  
**AMENDING AGREEMENT DATED: September 30, 2002**  
**AMENDING AGREEMENT DATED: September 25, 2003**  
**AMENDING AGREEMENT DATED: September 30, 2004**  
**AMENDING AGREEMENT DATED: September 30, 2005**  
**AMENDING AGREEMENT DATED: November 09, 2006**  
**AMENDING AGREEMENT DATED: November 13, 2007**  
**AMENDING AGREEMENT DATED: December 01, 2008**  
**AMENDING AGREEMENT DATED: December 23, 2009**  
**AMENDING AGREEMENT DATED: December 31, 2010**  
**AMENDING AGREEMENT DATED: December 20, 2011**  
**AMENDING AGREEMENT DATED: December 07, 2012**  
**AMENDING AGREEMENT DATED: December 04, 2013**  
**AMENDING AGREEMENT DATED: November 11, 2014**  
**AMENDING AGREEMENT DATED: December 18, 2015**  
**AMENDING AGREEMENT DATED: November 16, 2016**  
**AMENDING AGREEMENT DATED: November 15, 2017**  
**AMENDING AGREEMENT DATED: December 10, 2018**  
**AMENDING AGREEMENT DATED: December 10, 2019**  
**AMENDING AGREEMENT DATED: November 24, 2020**  
**AMENDING AGREEMENT DATED: December 03, 2021**  
**AMENDING AGREEMENT DATED: December 15, 2022**  
**AMENDING AGREEMENT DATED: December 04, 2023**

1.01 “Applicable Multiple” means **86.35**.

1.02 Communications to the Company shall be directed as follows:

**DELIVERY ADDRESS:** ENBRIDGE GAS INC.  
500 Consumers Road  
NORTH YORK, Ontario  
M2J 1P8

**MAILING ADDRESS:** P. O. Box 650  
SCARBOROUGH, Ontario  
M1K 5E3

**NOMINATIONS:** Attention: Enbridge Operational Services Inc.  
Telephone: (780) 420-8850  
Email: SMS@enbridge.com

**LEGAL AND OTHER:** Attention: Manager, Contracting & Compliance  
Telephone: (416) 495-7051  
Email: ContractSupportandCompliance@enbridge.com

1.03 Communications to the customer shall be directed as follows:

**DELIVERY ADDRESS:** 706 Grebér Blvd  
Gatineau, Quebec  
J8V 3P8

**MAILING ADDRESS:** 706 Grebér Blvd  
Gatineau, Quebec  
J8V 3P8

**NOMINATIONS:** Attention: General Manager



Telephone: (819) 776-8813  
Telecopier: (819) 771-6079

**LEGAL AND OTHER:** Attention: General Manager  
Telephone: (819) 776-8813  
Telecopier: (819) 771-6079

- 1.04 "Contract Demand" means **1,681.1**  $10^3\text{m}^3$  of gas.
- 1.05 "contract year" means a period (a) from and including the Date of First Deliveries to and including September 30, 1992 (the "First Contract Year Terminal Date") or (b) from and including a day which is the next day following the last day in a contract year to and including the next following anniversary of the First Contract Year Terminal Date.
- 1.06 "Firm Contract Demand" means **1,252.1**  $10^3\text{m}^3$  of gas provided that the customer may change the "Firm Contract Demand" to a fixed volume of gas (expressed in  $10^3\text{m}^3$  and not greater than the Contract Demand) stipulated in a notice given to the Company at least thirty days prior to the date on which such change is to become effective (which date shall be the first day of a month and shall be stipulated in the notice), and if a notice is given in accordance with the foregoing, then effective on the date stipulated in the notice and thereafter the "Firm Contract Demand" shall be the volume of gas which it is to be in accordance with the notice until the next day thereafter on which a change in the Firm Contract Demand made as aforesaid becomes effective. "Firm Hourly Demand" means one-twentieth of the Firm Contract Demand.
- 1.07 "Interruptible Contract Demand" means the volume of gas, if any, by which the Contract Demand exceeds the Firm Contract Demand. "Interruptible Hourly Demand" means one-twentieth of the Interruptible Contract Demand.
- 1.08 "Maximum Daily Transportation Volume" means **1,681.1**  $10^3\text{m}^3$  of gas.
- 1.09 "Mean Daily Firm Volume" means nil provided that the Customer may change the "Mean Daily Firm Volume" to a fixed volume of gas (expressed in  $10^3\text{m}^3$  and not greater than the volume of gas by which the Maximum Daily Transportation Volume exceeds the Mean Daily Interruptible Volume as at the date on which such change of the Mean Daily Firm Volume is to become effective as hereinafter provided) stipulated in a notice given to the Company at least thirty days prior to the date on which such change is to become effective (which date shall be the first day of a month and shall be stipulated in the notice), and if a notice is given in accordance with the foregoing, then effective on the date stipulated in the notice and thereafter the "Mean Daily Firm Volume" shall be the volume of gas which it is to be in accordance with

the notice until the next day thereafter on which a change in the Mean Daily Firm Volume made as aforesaid becomes effective.

- 1.10 “Mean Daily Interruptible Volume” means nil provided that the Customer may change the “Mean Daily Interruptible Volume” to a fixed volume of gas (expressed in  $10^3\text{m}^3$  and not greater than the volume of gas by which the Maximum Daily Transportation Volume exceeds the Mean Daily Firm Volume as at the date on which such change of the Mean Daily Interruptible Volume is to become effective as hereinafter provided) stipulated in a notice given to the Company at least thirty days prior to the date on which such change is to become effective (which date shall be the first day of a month and shall be stipulated in the notice), and if a notice is given in accordance with the foregoing, then effective on the date stipulated in the notice and thereafter the “Mean Daily Interruptible Volume” shall be the volume of gas which it is to be in accordance with the notice until the next day thereafter on which a change in the Mean Daily Interruptible Volume made as aforesaid becomes effective.
- 1.11 “Mean Daily Volume” means the aggregate of the Mean Daily Firm Volume and the Mean Daily Interruptible Volume.
- 1.12 “Point of Acceptance” means the point of interconnection of the Company’s and TCP’s facilities at Ottawa, Ontario.
- 1.13 “Point of Delivery” means the point situate in Lot A, Junction Gore of the Rideau and Ottawa Rivers, Township of Gloucester, County of Carlton, now Village of Rockcliffe Park, Regional Municipality of Ottawa Carleton, Province of Ontario, at which the gas transmission pipeline of Niagara Gas Transmission Limited connects with the gas distribution pipeline system of the Company.
- 1.14 “Point of Delivery Pressure” means **1,200** kilopascals.
- 1.15 “Required Order Cut Off Date” means September 30, 1992.
- 1.16 “Term” means the period from and including the Date of First Deliveries to (but not including) the earliest of
  - (i) 1000 hours EST on the next day following the Terminal Date,
  - (ii) the date of the termination of this Agreement in accordance with any of its provisions and
  - (iii) the date fixed by, or determined from, any Order of the Ontario Energy Board as the date for the termination or expiration of this Agreement.



1.17 “Terminal Date” means earliest date to occur which is both:

- (i) the 31<sup>st</sup> day of December, 2024 (the “First Possible Terminal Date”) or an anniversary thereof, and
- (ii) which is stipulated by either party hereto in a notice given to the other party hereto not less than ninety (90) days prior to such date and not more than one hundred and eighty (180) days prior to such date.












# ICMNonTemplateSupplement\_536

Final Audit Report

2023-12-15

Created:	2023-12-13
By:	Enbridge Contracts (Contract_Admin_ESig@enbridge.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAMZEnf8DZDMGzxfv8oIxcVIVdaSabLWwC

## "ICMNonTemplateSupplement\_536" History

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-  Document emailed to jean-benoit.trahan@gazifere.com for signature  
2023-12-13 - 4:58:49 PM GMT
-  Email viewed by jean-benoit.trahan@gazifere.com  
2023-12-13 - 5:07:01 PM GMT- IP address: 24.114.100.126
-  Email viewed by jean-benoit.trahan@gazifere.com  
2023-12-15 - 1:36:37 PM GMT- IP address: 184.148.210.203
-  Signer jean-benoit.trahan@gazifere.com entered name at signing as Jean-Benoit Trahan  
2023-12-15 - 1:37:10 PM GMT- IP address: 184.148.210.203
-  Document e-signed by Jean-Benoit Trahan (jean-benoit.trahan@gazifere.com)  
Signature Date: 2023-12-15 - 1:37:12 PM GMT - Time Source: server- IP address: 184.148.210.203
-  Document emailed to rob.dimaria@enbridge.com for signature  
2023-12-15 - 1:37:14 PM GMT
-  Email viewed by rob.dimaria@enbridge.com  
2023-12-15 - 1:44:02 PM GMT- IP address: 198.162.78.5
-  Signer rob.dimaria@enbridge.com entered name at signing as Rob DiMaria  
2023-12-15 - 1:44:22 PM GMT- IP address: 198.162.78.5
-  Document e-signed by Rob DiMaria (rob.dimaria@enbridge.com)  
Signature Date: 2023-12-15 - 1:44:24 PM GMT - Time Source: server- IP address: 198.162.78.5
-  Agreement completed.  
2023-12-15 - 1:44:24 PM GMT



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

Please provide Enbridge's current best estimate of the cost of RNG vs. natural gas (by m<sup>3</sup> and GJ). Please provide the source of the information.

Response:

The cost of renewable natural gas (RNG) and conventional natural gas is subject to many factors including market dynamics at the time of procurement.

The average price for RNG in Canada identified by the Canadian Gas Association (CGA)<sup>1</sup> as of January 2024 was \$15.98/GJ (62.5 cents/m<sup>3</sup>) and the range of prices across Canada was \$10 to \$30/GJ (39.09 to 117.27 cents/m<sup>3</sup>).

The average price of conventional natural gas at the Dawn Hub in Ontario calculated for the forward 12 months included in Enbridge Gas's July QRAM<sup>2</sup> was \$3.60/GJ (14.07 cents/m<sup>3</sup>).

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<sup>1</sup> Canadian Gas Association. (2024 Feb 9). Canadian Gas Association 2024 Pre-Budget Submission. <https://www.cga.ca/wp-content/uploads/2024/02/Canadian-Gas-Association-PreBudget-RNG-ITC.pdf>. Conversion to cents/m<sup>3</sup> based on Enbridge Gas South heat value of 39.09 GJ / 10<sup>3</sup>m<sup>3</sup> effective July 1, 2024.

<sup>2</sup> EB-2024-0166, Exhibit E, Tab 1, Schedule 1, line 12.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

What share of existing natural gas demand in Ottawa does Enbridge believe can be enabled by hydrogen? Where does Enbridge intend to source this hydrogen? Please provide any supporting documentation Enbridge has to support the volumes and sources that could be leveraged.

Response:

Please see response at Exhibit I.2-STAFF-18. The Grid Study is still in progress and no sourcing of hydrogen has been considered nor specific pipeline volumes determined at this time for the St. Laurent Pipeline or the Ottawa region.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Reference:

The results of the physical inspection, integrity assessments, and QRA demonstrate that not only is urgent mitigation required, but also maintaining the status quo as a permanent mitigation strategy is unacceptable because of the current condition and risks associated with the pipeline. If the status quo continues, Enbridge Gas will take extraordinary measures to reduce the operating risk, which will also result in a significant impact on customers. [A/2/2, Page 2]

Question(s):

- a) Please explain what “extraordinary measures to reduce the operating risk” Enbridge will need to take and provide the timeline and cost estimate.
- b) Please explain why Enbridge has not mitigated any of these risk prior to 2024 if they are of concern to Enbridge.
- c) Has Enbridge notified the public of any risks associated with the urgent condition issues for the existing St. Laurent (Extra High Pressure) pipeline? If yes, please provide a copy of all material specific to the urgent risks associated with the current pipeline.
- d) Please provide a copy of all stakeholder (including public, TSSA, etc.) and City of Ottawa (Councilor, Committee, Council, Mayor’s Office, etc.) presentations and communications pertaining to the current condition of the existing St. Laurent pipeline.
- e) Please provide a copy of all stakeholder (including public, TSSA, etc.) and City of Ottawa (Councilor, Committee, Council, Mayor’s Office, etc.) presentations and

communications pertaining to the proposed new St. Laurent pipeline (if not already provided in part d above).

Response:

- a) Please see response at Exhibit I.1-STAFF-11 part b).
- b) Enbridge Gas implemented temporary risk mitigation measures immediately after confirming the intolerable risks on the SLP (in May 2023, after the completion of the QRA). While these measures temporarily lower the risk of third-party damage, they fall short of meeting the pipeline's risk thresholds and are not suitable as a mitigation strategy beyond the short term. For details of the risk mitigation measures implemented to reduce third-party damage risks, please see Exhibit B, Tab 1, Schedule 1, page 38, paragraph 58. In addition, Enbridge Gas has implemented a higher frequency leak survey program on the pipeline.

These efforts have temporarily reduced SLP's high risks until appropriate permanent risk mitigation is implemented by way of replacement of the pipeline, as soon as practicable.

- c) In December 2023, advertisements were placed in local media outlets to raise awareness with the public about the need for the St. Laurent Pipeline Replacement Project. Enbridge Gas also held two bilingual public information sessions in October 2023, which highlighted the need for pipeline replacement, and made information available on its website. The need for immediate pipeline replacement is communicated throughout the following material found on the St. Laurent Pipeline Replacement Project web page:<sup>1</sup>
- Public Information Session poster boards
  - Attachment 1: Notice of Study and Public Information Session advertisements (English and French)
  - Attachment 2 and 3: Open Letter - Ottawa newspaper advertisements (English and French)

d – e)

In addition to the response at Exhibit I.1-STAFF-12 part a), please refer to the following Attachments:

- Attachment 4: Letter to Mayor and Council
- Attachment 5: Communication from Ottawa Board of Trade to membership

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<sup>1</sup> <https://www.enbridgegas.com/about-enbridge-gas/projects/st-laurent-pipeline-replacement-project>



- Attachment 6: Ottawa Board of Trade speech
- Attachment 7: Letter to Hydro Ottawa
- Attachment 8: Letter to City Manager
- Attachment 9: Email to City Clerk advising of leave-to-construct application.
- Attachment 10: St. Laurent Pipeline and GDS Integrity – Preliminary Update to the TSSA

**St. Laurent Pipeline Replacement Project**  
**Notice of Study Commencement and Public Information Session**  
 City of Ottawa, Ontario  
 Enbridge Gas Inc.

Enbridge Gas Inc. (Enbridge Gas) is proposing to replace its St. Laurent Pipeline System that is currently located along St. Laurent Boulevard in Vanier and Ottawa South. An analysis and safety evaluation completed by Enbridge Gas has demonstrated the need for the immediate replacement of the system to ensure the continued safe and reliable delivery of natural gas service.

The St. Laurent Pipeline Replacement Project (the Project) will involve the installation of approximately 13 km of new 6-inch, 12-inch, and 16-inch diameter extra high-pressure (XHP) steel pipeline segments to replace the existing St. Laurent Pipeline, as well as approximately 8 km of 2-inch, 4-inch, and 6-inch diameter intermediate pressure (IP) polyethylene pipeline segments after the XHP system has been replaced in a different location. The proposed pipeline routing is depicted in the adjacent figure.

In 2019, Enbridge Gas retained Dillon Consulting Limited (Dillon) to undertake a pipeline route selection, environmental assessment, and to complete an Environmental Report (ER) for the Project. The ER was originally completed in June 2020 and was subsequently amended in October 2020. Both reports were completed in accordance with the Ontario Energy Board (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7<sup>th</sup> Edition* (2016). Enbridge Gas has requested that Dillon complete an additional ER Amendment to account for the assessment of changes made to the pipeline routes presented in the original ER. The ER Amendment is being conducted in consideration of the OEB's *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8<sup>th</sup> Edition* (2023).

Building on the documentation previously completed by Dillon in 2020/2021, this ER Amendment will provide an updated analysis on the need and justification for the Project, describe any changes to the natural and socio-economic environment, gather input from Indigenous communities, regulatory agencies, the general public, and other interested persons, and provide an updated cumulative effects assessment. Once the ER Amendment is complete, Enbridge Gas plans to file a Leave-to-Construct application with the OEB in Q4 2023. Pending receipt of all approvals, construction is anticipated to begin in summer 2024.

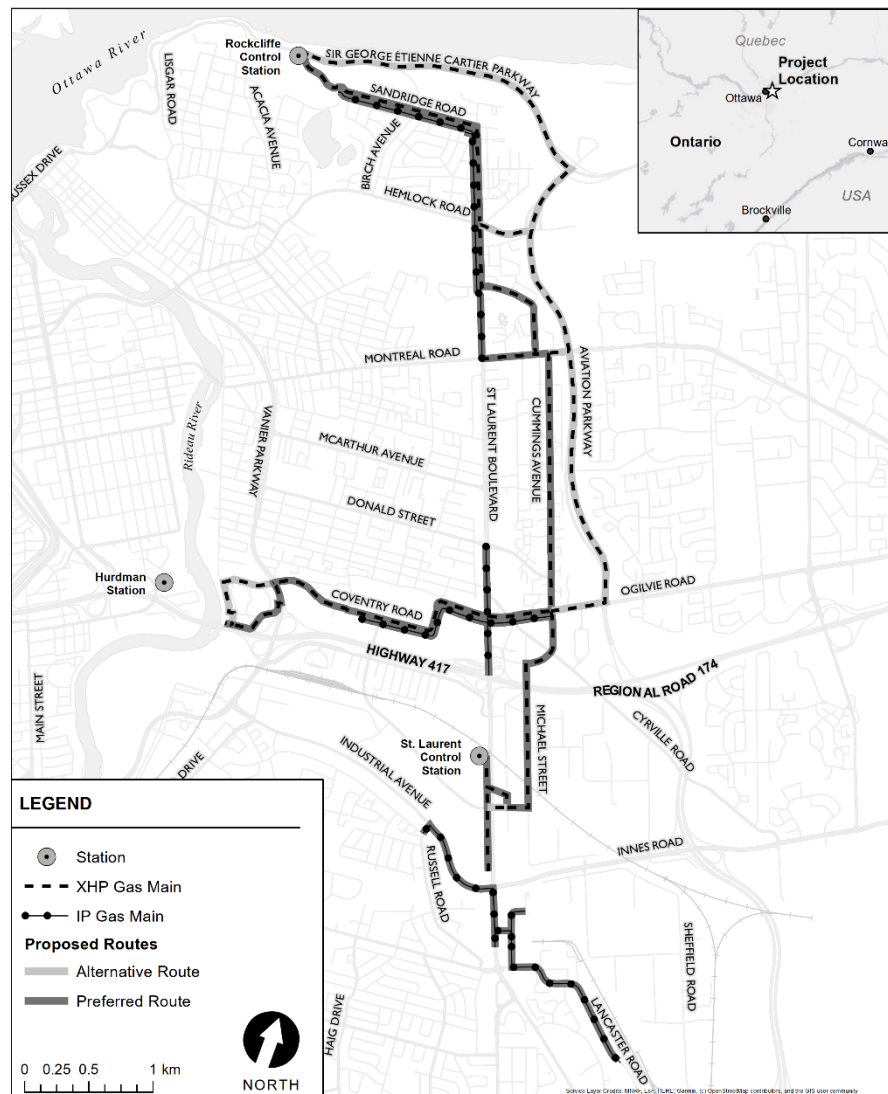
**Project Contacts**

**Greg Asmussen**  
**Advisor, Environment**  
**Enbridge Gas Inc.**  
 10 Surrey Street East  
 Guelph, ON N1H 3P5

**Tristan Lefler**  
**Environmental Assessment Project Manager**  
**Dillon Consulting Limited**  
 51 Breithaupt Street, Suite 200  
 Kitchener, ON N2H 5G5

**Email:** [StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca)

**Phone:** 416-229-4646 Ext. 2048



**Invitation to the Community**

Stakeholder engagement and Indigenous consultation are key components of this study. Members of the public, regulatory agencies, Indigenous communities, and other interested persons are invited to participate.

Enbridge Gas and Dillon are hosting a drop-in style public information session to provide you with an opportunity to review the St. Laurent Pipeline Replacement Project, ask questions, and provide input.

**Location:** Richelieu-Vanier Community Centre – 300 des Pères-Blancs Ave.

**Date and Time:** October 3, 2023, 5:00 pm – 8:00 pm

**Project Website:** [www.enbridgegas.com/StLaurentReplacement](http://www.enbridgegas.com/StLaurentReplacement)

Representatives from Enbridge Gas and Dillon will be in attendance to discuss the Project and answer questions. Your input will be used to confirm the preferred route and in the creation of mitigation plans that may be implemented during construction. If you are interested in participating, or would like to provide comments, please attend the meeting or contact one of the individuals listed. The last day to submit comments for consideration in the environmental study is October 13, 2023. After this date, comments will still be accepted and may be integrated into project planning, as applicable.



# Projet de remplacement du gazoduc de St-Laurent

## Avis de début de l'étude et séance d'information publique

Ville d'Ottawa, Ontario  
Enbridge Gas Inc.

Enbridge Gas Inc. (Enbridge Gas) propose de remplacer son réseau de gazoducs de St-Laurent, actuellement situé le long du boulevard Saint-Laurent à Vanier et Ottawa-Sud. Une analyse et une évaluation de la sécurité réalisées par Enbridge Gas ont démontré la nécessité de remplacer immédiatement le réseau afin d'assurer la continuité d'un service de gaz naturel sécuritaire et fiable.

Le projet de remplacement du gazoduc de St-Laurent (le Projet) comprendra l'installation d'environ 13 km de nouveaux tronçons de gazoduc en acier à très haute pression (XHP) de 6, 12 et 16 pouces de diamètre pour remplacer le gazoduc de St-Laurent existant, ainsi que d'environ 8 km de tronçons de gazoduc en polyéthylène à pression intermédiaire (IP) de 2, 4 et 6 pouces de diamètre après que le système XHP aura été remplacé à un autre endroit. Le tracé proposé pour le gazoduc est illustré dans la figure ci-contre.

En 2019, Enbridge Gas a retenu les services de Dillon Consulting Limited (Dillon) pour procéder à la sélection du tracé du gazoduc, à l'évaluation environnementale et à la rédaction d'un rapport environnemental (RE) pour le projet. Le RE a été initialement réalisé en juin 2020 et a ensuite été modifié en octobre 2020. Les deux rapports ont été rédigés conformément aux lignes directrices environnementales de la Commission de l'énergie de l'Ontario (CEO) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7<sup>th</sup> Edition* (2016). Enbridge Gas a demandé à Dillon de procéder à une modification supplémentaire de l'ER pour tenir compte de l'évaluation des changements apportés aux tracés des gazoducs présentés dans l'ER initial. La modification du RE est effectuée en tenant compte des *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8<sup>th</sup> Edition* (2023).

S'appuyant sur la documentation précédemment réalisée par Dillon en 2020/2021, la présente modification du RE fournira une analyse actualisée sur la nécessité et la justification du Projet, décrira toute modification de l'environnement naturel et socio-économique, recueillera les commentaires des collectivités autochtones, des organismes de réglementation, du grand public et d'autres personnes intéressées, et fournira une évaluation actualisée des effets cumulatifs. Une fois la modification de l'ER achevée, Enbridge Gas prévoit de déposer une demande d'autorisation de construire auprès de la CEO au cours du quatrième trimestre 2023. Sous réserve de l'obtention de toutes les autorisations, la construction devrait commencer dès l'été 2024.

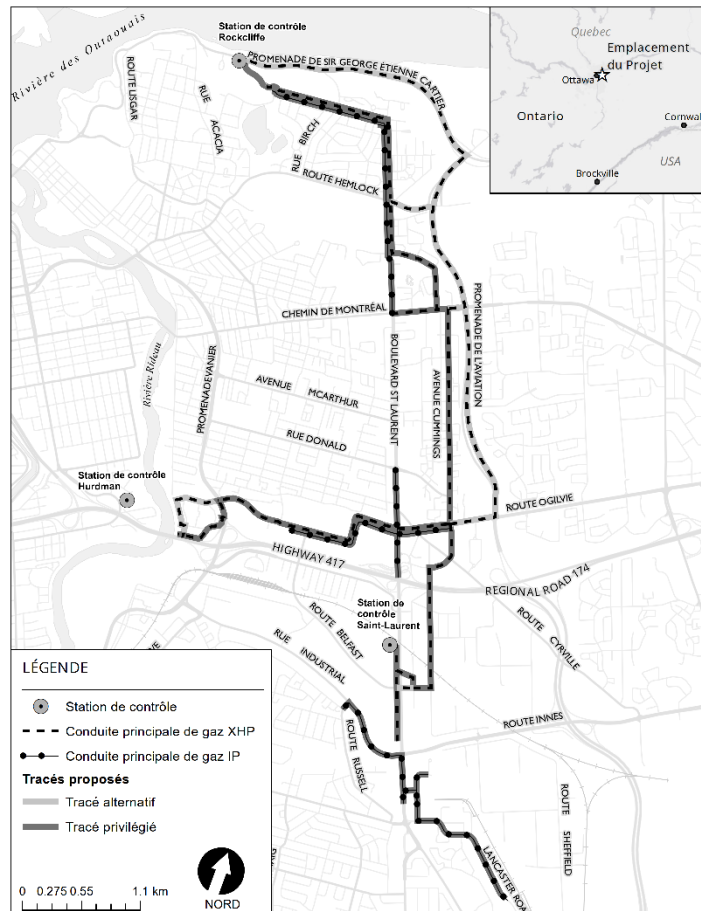
### Personnes-ressources du projet

**Greg Asmussen**  
Conseiller en environnement  
Enbridge Gas Inc.  
10 Surrey Street East  
Guelph, ON  
N1H 3P5

**Tristan Lefler**  
Gestionnaire du projet d'évaluation  
environnementale  
Dillon Consulting Limited  
51 Breithaupt Street, Suite 200  
Kitchener, ON  
N2H 5G5

**Courriel :**  
[StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca)

**Téléphone :**  
416-229-4646, poste 2048



### Invitation à la collectivité

L'engagement des parties prenantes et la consultation des populations autochtones sont des éléments clés de cette étude. Le public, les organismes de réglementation, les collectivités autochtones et les autres personnes intéressées sont invités à y participer.

Enbridge Gas et Dillon organisent une séance d'information publique sans rendez-vous pour vous donner l'occasion d'examiner le projet de remplacement du gazoduc de St-Laurent, de poser des questions et de faire part de vos commentaires.

**Lieu :** Centre communautaire de Richelieu-Vanier  
300 Avenue des Pères-Blancs

**Date et heure :** Le 4 octobre 2023, de 17 h à 20 h

**Site Web du Projet :** [www.enbridgegas.com/StLaurentRemplacement](http://www.enbridgegas.com/StLaurentRemplacement)

Des représentants d'Enbridge Gas et de Dillon seront présents pour discuter du projet et répondre aux questions. Vos commentaires seront utilisés pour confirmer le tracé privilégié et pour créer des plans d'atténuation d'urgence susceptibles d'être mis en œuvre pendant la construction. Si vous souhaitez participer ou faire part de vos commentaires, veuillez assister à la réunion ou communiquer avec l'une des personnes mentionnées. Le dernier jour pour soumettre des commentaires à prendre en compte dans l'étude environnementale est fixé au 13 octobre 2023. Après cette date, les commentaires seront toujours acceptés et pourront être intégrés dans la planification du Projet, le cas échéant.

# Pipelines are like your home, they need care

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Dear Citizens of Ottawa and Gatineau,

Safety and reliability are at the heart of everything we do, so we have an extensive plan to replace the St. Laurent pipeline.

This is a vital pipeline in our network, which spans about 1,000 kilometres throughout the City of Ottawa and serves three of every four homes. It provides heat and energy to one of the coldest capitals in the world. Even in the worst weather conditions, our pipelines deliver dependable comfort.

**We need to keep them in good condition.**

In a few months, we will apply to the Ontario Energy Board (OEB) for permission to work on this needed infrastructure replacement project. Most of the replacement pipeline will be the same size as the original pipe that serves our customers in Ottawa and Gatineau.

This is a big investment, but it also prepares the National Capital Region for the future integration of low-carbon gases, such as hydrogen, as part of Ontario's ongoing energy evolution.

Whether you use natural gas or not, its value to Ottawa and Gatineau's energy future is clear.

Preventative maintenance goes a long way when it comes to homes, cars and pipes. Think of it this way—cities take care of their watermains and sewage pipes, and Enbridge Gas takes care of its pipelines.

**Let's all keep building and caring for the city we love. We're in this together.**

Sincerely,  
Enbridge Gas

---

Write to us at: [municipalaffairs@enbridge.com](mailto:municipalaffairs@enbridge.com)

To learn more about the St. Laurent Pipeline Replacement visit:  
[enbridgegas.com/StLaurentReplacement](https://enbridgegas.com/StLaurentReplacement)



Proudly Serving Ontario | 175 YEARS



# Les pipelines sont comme votre maison, ils ont besoin d'être entretenus

Chers citoyens d'Ottawa et de Gatineau,

La sécurité et la fiabilité sont au cœur de tout ce que nous faisons, c'est pourquoi nous avons mis en place un vaste plan de remplacement du gazoduc de St-Laurent.

Il s'agit d'une canalisation essentielle de notre réseau, qui s'étend sur environ 1 000 kilomètres dans la ville d'Ottawa et qui dessert trois foyers sur quatre. Il fournit du chauffage et de l'énergie à l'une des capitales les plus froides du monde. Même dans les pires conditions météorologiques, nos pipelines offrent un confort fiable.

## **Nous devons les maintenir en bon état.**

Dans quelques mois, nous demanderons à la Commission de l'énergie de l'Ontario (CEO) l'autorisation de travailler sur ce projet de remplacement d'infrastructure nécessaire. La majeure partie de la canalisation de remplacement sera de la même taille que la canalisation d'origine qui dessert nos clients d'Ottawa et de Gatineau.

Il s'agit d'un investissement important mais il prépare également la région de la capitale nationale à l'intégration future de gaz à faible teneur en carbone, tels que l'hydrogène, dans le cadre de la évolution énergétique menée actuellement par l'Ontario.

Que vous utilisiez du gaz naturel ou non, sa valeur pour l'avenir énergétique d'Ottawa et de Gatineau est évidente.

La maintenance préventive est d'une grande importance pour les maisons, les voitures et les canalisations. Considérez les choses de la façon suivante : les villes s'occupent de leurs conduites d'eau et de leurs égouts, tandis qu'Enbridge Gas s'occupe de ses gazoducs.

## **Continuons tous à construire et à prendre soin de la ville que nous aimons. Cela nous concerne tous.**

Cordialement,  
Enbridge Gas

Écrivez-nous à [municipalaffairs@enbridge.com](mailto:municipalaffairs@enbridge.com)

Pour en savoir plus sur le remplacement du gazoduc de St-Laurent, visitez [enbridgegas.com/StLaurentReplacement](https://enbridgegas.com/StLaurentReplacement)



Fièrement au service de l'Ontario | 175 ANS

December 1, 2023

Your Worship Mayor Mark Sutcliffe and Members of Council  
Ottawa City Hall  
110 Laurier Avenue West  
Ottawa ON K1P 1J1

Your Worship and Members of Council,

My name is Matthew Wilson, and I am the Senior Advisor, Municipal and Stakeholder Engagement, in Ottawa for Enbridge Gas Inc (“Enbridge Gas”).

On December 2, 2023 Enbridge Gas will be communicating to the public, through advertisements in local newspapers, of our intention to apply for Leave to Construct (“LTC”) to the Ontario Energy Board in order to replace the St. Laurent pipeline. I have summarized below additional information related to the pipeline’s proposed replacement.

Ottawa is amongst the coldest capital cities in the world. Three of every four homes in Ottawa use natural gas. Enbridge Gas is committed to delivering safe and reliable natural gas to Ottawa residents, businesses and institutions in Ottawa and Gatineau. The St. Laurent pipeline serves 165,000 customers, almost half of Ottawa’s 400,000 Enbridge Gas customers. Additionally, the St. Laurent pipeline is located in a dense urban corridor and it supplies natural gas to critical infrastructure such as hospitals, Parliament Hill, RCMP Headquarters, City Hall, the Cliff Heating Plant, and the University of Ottawa. The proposed pipeline replacement would serve existing customers in Ottawa and Gatineau.

Replacing the pipe will ensure the safety and reliability of the broader 1,000 km natural gas network that services the City of Ottawa. Enbridge Gas has spent the last 16 months completing extensive analysis on the condition of the pipeline including inline inspection and integrity audits. The results of the inline inspection and integrity audits support the need to replace the existing pipeline.

If the LTC application is approved, most of the replaced pipeline would be the same size as that which is currently installed. The pipeline will be ready for the possible integration of low-carbon gases including hydrogen and the transportation of renewable natural gas from dairy farms, landfills, and wastewater treatment plants.

Enbridge hosted two public information sessions on October 3 and 4 for Ottawa residents in the St. Laurent catchment area. About 15 members of the public attended these sessions. The public reaction to the project’s purpose was favourable and included a number of questions related to construction. We pledge as smooth an operation as we can deliver with respect to construction.



We have had several discussions with Councillors King, Plante, Tierney, and Carr in whose wards the replacement would be taking place.

In September, Enbridge Gas wrote to the City Manager and Hydro Ottawa expressing our desire to establish an energy task force to serve as a venue of collaboration between the City, Enbridge, and Hydro Ottawa. In October, we provided draft terms of reference for consideration focused on promoting energy efficiency, delivering climate change progress, integrated resource planning, and a focus on collaboration. The task force would build on the cooperative work already undertaken by all three parties in the last year and a half.

Enbridge Gas continues to stand as a willing partner with Ottawa to advance shared climate change objectives. As Ottawa's Energy Evolution plan states, "Residents, business, utility companies, governments large and small. We are all in this together and together is how we will find success." Ottawans are relying on successful and productive relations between Enbridge Gas and the City to deliver the progress future generations will depend on.

Ottawa's Energy Evolution plan acknowledges there will be a need for natural gas in the future. Regardless of the quantity of natural gas used now, or in 2030 or in 2050, Enbridge's responsibility is to deliver that natural gas safely and reliably with a pipeline that is in a state of good repair.

Whether you use natural gas or not, you can still value a safe and reliable pipeline for your city. Just as the city cares for watermains and sewage pipes, Enbridge cares for its pipes too. Let's all keep building and caring for the city we love. We're in this together.

I've attached an English and a French copy of the ads which will appear starting tomorrow. Additional information related to the St Laurent pipeline replacement is available at:  
[www.enbridgegas.com/StLaurentReplacement](http://www.enbridgegas.com/StLaurentReplacement).

If you would like more information or have any questions, please feel free to be in touch.

Sincerely,

Matthew Wilson  
Senior Advisor, Municipal and Stakeholder Relations  
Enbridge Gas Inc.

SHARE:

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WHO'S WHO

STAY CONNECTED

**ADVOCACY AND POLICY MAKING**





Downtown Ottawa is critically important to the future of our city, our region and our country. Every business, resident and level of government has a vested interest in our city core. And a responsibility to ensure it thrives.

The Ottawa Board of Trade has declared the transformation of Downtown Ottawa as a top priority and a unique opportunity. We have been working with local leaders, economic partners and urban experts on a Downtown Ottawa Action Plan.

The final report will be released in early 2024. Meanwhile, we are launching a new campaign, Build Up Downtown, as a way to calibrate our collective contributions to create a more diverse, resilient and vibrant city core.

GET INVOLVED

# RESOURCES AND EVENTS



### A NIGHT TO REMEMBER!

Thank you to all our business and community leaders who attended the Best Ottawa Business Awards at the Westin in beautiful Downtown Ottawa. It was a wonderful night of celebration and community building.

Thank you to Rogers Ottawa for broadcasting the event for our whole community to enjoy. **Tune in to Rogers TV on December 1st at 7:00 PM** for Ottawa’s biggest celebration of local business, community contributions, and strong leadership.

**JUST IN! CLICK HERE FOR THE WHO'S WHO: GALA PHOTO GALLERY**



**CONGRATULATIONS TO THE 2023 RECIPIENTS**

<b>CEO of the Year:</b> Mike McGahan	CF Rideau Centre	Ottawa Tourism
<b>CFO of the Year:</b> Nathalie Cadieux	Dancia Susilo Services	Plantaform Technology Inc
<b>Lifetime Achievement:</b> Grant and Pam Hooker	Esprit-ai	Pleora Technologies
	Fullscript	Quantum Lifecycle Partners
<b>Newsmaker of the Year:</b> Michael Andlauer	GenesisLink Consulting Services	Rain Technologies
	Hot Shoe Productions	Siemens Healthineers Ottawa
Amsted Design-Build	KidsCanSwim Canada	Solink Corporation
Andlauer Group	Nokia Canada	Spiria
Calian	Ottawa International Airport Authority	TerraFixing Inc.
CBRE Limited		TryCycle Data Systems



**DECEMBER 5, 2023 | 11:00 AM - 2:00 PM | SHAW CENTRE**

**EXPERT PANEL**



**MAYOR SUTCLIFFE**  
City of Ottawa



**TREVIN STRATTON**  
National Leader & Partner,  
Economic Advisory, Deloitte  
Canada & Americas Leader,  
Economic Advisory, Deloitte Global



**SONYA SHOREY**  
Interim President & CEO,  
Invest Ottawa



**TAIMOOR NAWAB**  
Syntronic



**KEIRA TORKKO**  
Assent



**SOLOAN ANGEL**  
Fresh Founders



**Fahed Hassanet**  
Sensor Cortek








**LAST CHANCE TO JOIN THE ANNUAL OTTAWA'S ECONOMIC OUTLOOK**

*Join 200 business and community leaders to prepare for 2024.*

Agenda includes:

A message from **Mayor Sutcliffe** on city priorities

An economic update by top economic leader, **Trevin Stratton**

A strategy update for economic agency, Invest Ottawa, by Interim CEO, **Sonya Shorey**

A dynamic panel discussion with top business leaders:

**Taimoor Nawab**, Syntronic

**Keira Torkko**, Assent

**Solon Angel**, Fresh Founders

**Fahed Hassanet**, Sensor Cortek



Explore trends in our regional economy and insights on our unique Ottawa opportunity. Network. Learn. Plan for Success.

**Limited tickets available.**

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**OTTAWA BOARD OF TRADE** **OTTAWA BUSINESS JOURNAL**

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# Women

WIT & WISDOM

## #DIGGINGDEEP

December 7, 2023 | 5:30 PM | Fairmont Château Laurier



**KARLA BRIONES**  
ENTREPRENEUR, ADOVOCATE, & CONSULTANT  
Karla Briones Consulting



**JESSICA GREENBERG**  
VP OF ASSET MANAGEMENT  
Osgoode Properties



**MESERET HAILEYESUS**  
FOUNDER  
Canadian Center for Women's Empowerment

Moderated by:



**SUELING CHING**  
PRESIDENT & CEO  
Ottawa Board of Trade

A special evening designed to build relationships among Ottawa women leaders. Women of all backgrounds, sectors, and stages of life, will engage in raw and real conversations about leadership, life balance and legacy building.

Join us for a conversation about what it means to dig deep and cultivate the desire to make a difference. Enjoy a gourmet dinner, share real stories and be inspired by powerful women including:

- Jessica Greenberg**, VP, Asset Management, Osgoode Properties
- Meseret Haileyesus**, Founder, Canadian Center for Women's Empowerment
- Karla Briones**, Immigrant Entrepreneur and Advocate

**Registration deadline is December 3rd!**

**SAVE YOUR SPOT NOW!**



**HOLIDAY COCKTAIL**

DATE: December 13, 2023 | 5:00 PM to 7:00 PM  
 LOCATION: Oakwood Designers & Builders, 865 Taylor Creek Dr.  
 TICKETS: ottawabot.ca

PRESENTED BY:  OTTAWA BOARD OF TRADE

SPONSORED BY:  OakWood  THE HEART OF ORLÉANS  
LE COEUR D'ORLÉANS

**CELEBRATE WITH YOUR BUSINESS COMMUNITY!**

Join us at Oakwood's stunning showroom to celebrate all we have accomplished together this past year in the Ottawa business community. This will be a night to remember with delicious food, entertainment and connecting with local leaders.

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**MAYOR'S BREAKFAST SERIES**

OTTAWA BUSINESS JOURNAL  OTTAWA BOARD OF TRADE

LEAD SERIES SPONSOR  HydroOttawa



**December 14, 2023 | Ottawa City Hall | 7:00 AM to 9:00 AM**





Join us for the final **Mayor's Breakfast of 2023** with special guest **the Honourable Greg Fergus**, Speaker of the House of Commons of Canada. Connect with business and community leaders and discuss key issues impacting the economic growth and community prosperity of our city.

**REGISTER NOW**



**It's ALWAYS the season to #BuyLocalOttawa!**

When you buy from small businesses in our community everyone in Ottawa benefits.

This holiday season and beyond support the businesses that support us. Our local businesses provide jobs, support local causes and act as the heart and soul of our city and economy. They offer unique products and a high level of service. Many of them

offer online shopping and delivery. **Put your money where your heart is** and **#BuyLocalOttawa!**

CEO OBJ BLOG

MEMBER MARKETPLACE

BUY LOCAL CAMPAIGN



AN OPEN LETTER FROM ENBRIDGE TO OUR MEMBERS

*Sponsored by OBOT Pillar Partner: Enbridge Gas*

**Members of the Ottawa Board of Trade,**

My name is Matthew Wilson and I am the Senior Advisor, Municipal and Stakeholder Engagement, located here in Ottawa for Enbridge Gas Inc.

Enbridge is very proud to be strong supporter of the Ottawa Board of Trade. Our commitment to community building is reflected in our sponsorship of the Mayor’s Breakfast Series, the recent Best Ottawa Business Awards, the 2024 City Building Summit, and our 2024 Pillar Partnership. The Board and its members are city builders. So is Enbridge.

In the coming months, Enbridge Gas intends to apply for the Ontario Energy Board’s permission to replace the St Laurent pipeline. Here is why the project is so important to Ottawa’s residents, institutions, and businesses:

Replacing the northern section of the St Laurent pipeline ensures the safety and reliability of the broader natural gas network serving three of every four homes in the city. The St Laurent pipeline supplies 165,000 consumers, almost half of Ottawa’s 400,000 Enbridge Gas customers. We have spent the last 16 months completing integrity audits and deep inspection analysis, as encouraged by the Ontario Energy Board. The pipeline’s condition highlights the need for preventative maintenance.

READ MORE







CANADIAN TULIP FESTIVAL  
FESTIVAL CANADIEN DES TULIPES

### Canadian Tulip Festival Sponsorship Opportunities Available!

Time is running out to take advantage of connecting your brand to Ottawa’s longest-running and largest-attended event. Founded in 1953 by The Ottawa Board of Trade and photographer Malak Karsh, the Canadian Tulip Festival hosts over 400,000 every May, from all across Canada and the globe. Last May, the festival created over 58 million dollars in local economic impact.

Your business will be in good company, with partners such as Veterans Affairs Canada, the National Capital Commission, the Embassy of the Kingdom of the Netherlands, and the Royal Canadian Air Force in 2024. With unparalleled online reach and an exceptional database, sponsoring this certified sustainable tourism destination ensures your brand is seen, and aligns with Canada's Sustainable Development Goals.

A nationally registered charity, the Canadian Tulip Legacy's mission is to commemorate the Canadians who sacrificed for freedom and celebrate the gift of tulips with free admission for all, forever.

LEARN MORE



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- [Asign Inc.](#)
- [CVE Inc.](#)
- [Louis W. Bray Construction](#)
- [Troy Curtis](#)
- [The Vista on Sparks Retirement Residence](#)

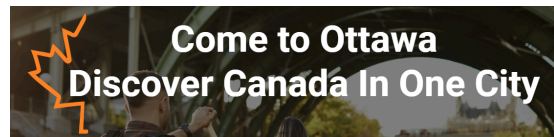


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## **Mayor's breakfast series – Ottawa Board of Trade, November 9, 2023**

### **Sponsor remarks (prior to Sir Terry Matthews)**

Bonjour, I am Jean-Benoit Trahan and I am the Regional Director of Eastern Ontario for Enbridge Gas.

I have heard Mayor Sutcliffe refer to Team Ottawa more than once. I love it, Team Ottawa. It says so much.

Nous sommes ici to hear from one of the very best of that team in Sir Terry Matthews.

I am delighted to stand before you to say that Enbridge is a proud member of Team Ottawa. Je suis heureux d'être parmi vous aujourd'hui pour vous dire que Enbridge est un fier membre de l'équipe Ottawa.

We all have a role to build and care for this city.

Enbridge shares that goal, to build and care. Let me tell you how.

Let's start with building. To me, that means bringing people together to talk about city issues, to chart a path for the future. That is why I am so pleased to announce that Enbridge is proud to be the title sponsor, Enbridge est fier d'être le commanditaire principal du 2024 City Building Summit.



Nous reconnaissons la grande valeur que le Ottawa Board of Trade plays in city-building, year-round. For this reason, it also gives me pleasure for Enbridge Gas to be a Pillar Partner to the Board in 2024.

Ensemble, avec la commandite du prix pour l'équité, la diversité et l'inclusion ; Together with our sponsorship of the Equity, Diversity, and Inclusion Award at the upcoming BOB Awards, we are community builders.

That's some of our building, now for some of the caring.

Caring means looking after old things. Often, they're things we never really see and yet we depend on them so dearly.

We have an old pipeline. Nous avons un pipeline vieillissant, installé entre 1958 et 1962.

The St Laurent pipeline was installed between 1958 and 1962. It's more than 60 years old. It needs care.

In a few months, Enbridge will be applying for permission to replace 21 km of the St Laurent pipeline, with the Ontario Energy Board. The Board will make its decision based on the technical evidence we have collected in the last year and a half. The Board will also consider the community's input.

Safety and reliability are our top priorities at Enbridge. The pipeline serves Parliament Hill, this magnificent City Hall, hospitals, and through

a 5,000 km network, three of every hour homes in this city. It provides heat and energy to one of the coldest capitals in the world.

If approved, it will mean construction and the disruption that comes with it. We pledge as smooth an operation as we can deliver. But you don't need to be a cardiologist to know, you've got to look after the pipes.

It is a big investment to maintain it in a state of good repair, but the benefits are clear. C'est un grand investissement qu'il est nécessaire de faire pour maintenir le service actuel, mais les bénéfices sont clairs.

It means we can blend and transport renewable natural gas from farms, landfills, and wastewater treatment. It readies the pipeline for the eventual integration of low carbon gases including hydrogen. This is part of the energy transition. C'est une partie importante de la transition énergétique.

We invite your support and your understanding as members of Team Ottawa. Write to us, the Board, or Council.

Let's all keep building and caring for the city we love. We're in this together. Thank you, merci.





Enbridge Gas Inc.  
400 Coventry Rd  
Ottawa Ontario  
K1K2C7

September 27, 2023

Bryce Conrad  
President and Chief Executive Officer  
Hydro Ottawa  
2711 Hunt Club Road  
PO Box 8700  
Ottawa, ON K1G 3S4

Bryce,

As Michele Harradence mentioned in your meeting earlier this summer, Enbridge Gas has been engaging the City of Ottawa on a host of topics, including energy system planning, gas infrastructure needs and resetting the relationship with the Mayor's office. Building on these discussions, I recently wrote to Ottawa's new City Manager, Wendy Stephanson, to express our interest in establishing a task force on energy issues.

As Ottawa's Energy Evolution plan states, "Residents, business, utility companies, governments large and small. We are all in this together and together is how we will find success." Ottawans are relying on successful and productive relations between the City and utilities like Hydro Ottawa and Enbridge Gas to deliver the progress future generations will depend on. Enbridge Gas sees the need to establish a forum and structure which centralizes consideration and action on energy issues. Our hope is to deliver the practical results Ottawans are seeking on energy and climate related issues. Having received a favourable reply from the City, I write to seek the participation of Hydro Ottawa to join in that discussion.

To that end, Enbridge Gas seeks to establish a task force between the City of Ottawa, Hydro Ottawa, and Enbridge Gas to advance our shared interests and climate change objectives. Together, we need to help citizens, stakeholders, regulators and customers understand how critical a diverse mix of energy sources is to the City's short and long-term energy needs. We invite a conversation about how we can continue discussions and structure work regarding integrated resource planning, demand side management, renewable natural gas development, the delivery of federally funded programs that support improved home energy efficiency, and the full range of issues which affect gas and electric utility operations. We note Hydro Ottawa's strategic plan and objectives to help consumers, businesses, governments, and communities to meet their sustainable energy objectives. Our hope is to build on the conversations that have taken place in the last year on the issues noted above, most particularly between Cara-Lynne Wade and Bradley Clarke from Enbridge and Laurie Heuff and her team from Hydro Ottawa on integrated resource planning.

Enbridge Gas remains committed to delivering safe and reliable natural gas to Ottawa residents, businesses and institutions in Ottawa and Gatineau. This includes hospitals, Parliament Hill, RCMP Headquarters, City Hall, the Cliff Heating Plant, and the University of Ottawa – all are serviced by the St Laurent pipeline. Three of every four homes in Ottawa use natural gas. In winter months, Ottawa is among the coldest capitals in the world.

I also write to let you know that later this year, Enbridge Gas will be applying to the Ontario Energy Board for permission to replace approximately 21 km of pipeline, the vast majority of which was installed between 1958-62, to ensure the safety and reliability of the broader 5,000 km natural gas network that

services the City of Ottawa. Enbridge Gas has spent the last 14 months completing integrity audits and deep analysis as encouraged by the Ontario Energy Board, related to the St. Laurent Pipeline Replacement project. The St. Laurent pipeline serves 165,000 customers, almost half of Ottawa's 400,000 Enbridge Gas customers.

If approved, most of the replaced pipeline would be the same size as that which is currently installed. It provides a key conduit through the city that could facilitate renewable natural gas production and blending from city facilities such as wastewater treatment plants and landfills. It readies the pipeline for the eventual integration of low carbon gases including hydrogen and other sources of renewable natural gas.

Enbridge Gas is engaging with ward councillors within the St. Laurent Project area, and we will be hosting public information sessions on October 3 and 4. We also intend to engage with as many interested stakeholders as possible in the broader Ottawa community. We would be pleased to brief you and your staff on the project if that would be helpful.

Our primary interest in establishing a task force with the City and Hydro Ottawa is to create transparency in our planning processes, highlighting the need for critical infrastructure, and to ensure a smooth regulatory review of this project. This degree of cooperation will be necessary to maximize the benefits to our collective customers and ensure reliable energy continues to flow into Ottawa.

If Hydro Ottawa is agreeable to joining this task force, we would be happy to continue those discussions on a more detailed basis with your staff. Please let me know who I can connect with.

Many thanks again for your consideration of the above.

Sincerely,

Matthew Wilson  
Senior Advisor, Municipal and Stakeholder Relations  
Public Affairs and Communications

[matthew.wilson@enbridge.com](mailto:matthew.wilson@enbridge.com)  
343-596-4605

Cc: Cara-Lynne Wade, Director Energy Transition Planning, Enbridge Gas Inc.  
Keith Boulton, Director Public Affairs and Ombudsman, Enbridge Gas Inc.





Enbridge Gas Inc.  
400 Coventry Rd  
Ottawa Ontario  
K1K2C7

September 8, 2023

Wendy Stephanson  
City Manager, City of Ottawa  
Ottawa City Hall  
110 Laurier Ave W, Ottawa ON  
K1P 1J1

Dear Wendy,

On behalf of Enbridge Gas Inc., I write to extend our sincere congratulations on your recent appointment as City Manager. Ottawa's City Council, its civil service, and its residents will be well served with you at the helm. It will be our pleasure to continue to work with you.

I also write to follow up on issues arising from City staff's filing of a letter dated July 21, 2023, with the Ontario Energy Board and the response from Enbridge Gas dated July 27, 2023, also filed with the Ontario Energy Board. These letters are now part of the public record. It is my hope that together we can establish a more productive and direct relationship between our organisations, rather than through a third party.

As you are aware from the Enbridge Gas reply, the City staff letter bore little relation to what has been happening on the ground and the ongoing engagement between Enbridge Gas and City staff, on an extremely broad range of topics, across multiple departments. Those discussions have been focused on delivering practical and positive outcomes related to integrated resource planning, demand side management, and delivering energy efficiency programs to residents and the City. It was dispiriting for Enbridge Gas staff to have those efforts cast in such a negative light. We have been focused on a committed partnership with the City in serving the interest of Ottawans. Our hope and the purpose of this letter is to refocus the relationship between the City of Ottawa and Enbridge Gas to deliver the practical results Ottawans are seeking on energy and climate related issues.

As Ottawa's Energy Evolution plan states, "Residents, business, utility companies, governments large and small. We are all in this together and together is how we will find success." Ottawans are relying on successful and productive relations between Enbridge Gas and the City to deliver the progress future generations will depend on. We see the need to establish a forum and structure which centralizes oversight of the City's relationship with Enbridge Gas, to ensure that we make progress together and that we are not working at cross purposes.

To that end, Enbridge Gas seeks to establish a task force between the City of Ottawa, Hydro Ottawa, and Enbridge Gas to advance our shared interests. Together, we need to do a particularly good job of helping people understand how critical a mix of energy sources is to the City's short and long-term energy needs. We invite a conversation about how we can establish productive discussions and structure work regarding integrated resource planning, demand side management, and the full range of issues which affect the ongoing relationship between our two organisations. This will build on the conversations that have taken place in the last year on the issues noted above.

Later this year, Enbridge Gas will be applying to the Ontario Energy Board for permission to install approximately 21 km of pipeline to ensure the safety and reliability of the broader 5,000 km natural

gas network that services the City of Ottawa. This installation would replace the existing St Laurent pipeline, the vast majority of which was originally installed between 1958-62. Enbridge Gas has spent the last 14 months completing integrity audits and deep analysis as encouraged by the Ontario Energy Board, related to the St. Laurent Pipeline Replacement project. The St. Laurent pipeline serves 165,000 customers, almost half of Ottawa's 400,000 Enbridge Gas customers.

If approved, most of the replaced pipeline would be the same size as that which is currently installed. It provides a key conduit through the city that could facilitate renewable natural gas production and blending from city facilities such as wastewater treatment plants and landfills. It readies the pipeline for the eventual integration of low carbon gases including hydrogen and other sources of renewable natural gas such as farms.

Enbridge Gas will be engaging directly with affected ward councillors in the St. Laurent area in the coming weeks. We also intend to engage with as many interested stakeholders as possible in the broader Ottawa community. Enbridge Gas welcomes engagement recommendations made by the City of Ottawa.

More specifically, Enbridge Gas is planning to host a Public Information Session on October 4, and we will keep you apprised of those details (including location and time) in the weeks ahead. Once that input is compiled, Enbridge Gas intends to file for permission to construct the pipeline replacement with the Ontario Energy Board by the end of 2023.

Our primary interest in establishing a task force with the City and Hydro Ottawa is to strengthen implementation of the eventual decision made by the Ontario Energy Board, regardless of what that decision might be. This degree of cooperation will be necessary to minimize any unnecessary disruption to the public. It will seek to ensure the safety, reliability, and the long-term energy security of the city.

Enbridge Gas remains committed to delivering safe and reliable natural gas to Ottawa residents, businesses and institutions in Ottawa and Gatineau. This includes hospitals, Parliament Hill, RCMP Headquarters, City Hall, the Cliff Heating Plant, and the University of Ottawa – all are serviced by the St Laurent pipeline. Three of every four homes in Ottawa use natural gas. In winter months, Ottawa is among the coldest capitals in the world.

Enbridge Gas continues to stand as a willing partner with the City of Ottawa to advance shared climate change objectives. This includes continued collaboration on demand side management, integrated resource planning, renewable natural gas development, hydrogen production and hydrogen blending, and the delivery of federally funded programs which support improved home energy efficiency.

Further to your input, I would be very pleased to commence discussions with Charmaine Forgie and Don Herweyer about how we can design a taskforce to lead a coordinated and productive relationship between Ottawa and Enbridge Gas, to advance our shared climate and energy objectives. I will also reach out separately to Hydro Ottawa to invite them to be a part of these discussions.

Sincerely,

Matthew Wilson  
Senior Advisor, Municipal and Stakeholder Relations  
Public Affairs and Communications

[matthew.wilson@enbridge.com](mailto:matthew.wilson@enbridge.com)  
343-596-4605

Cc: Scott Moffatt, Director of Outreach and Issues Management, Mayor's Office  
Charmaine Forgie, Manager, Business and Technical Support Services  
Don Herweyer, General Manager Planning Real Estate and Economic Development



**From:** [Kendra Black](#)  
**To:** [Chris Brennan](#)  
**Cc:** [Anik Benoit](#); [Lesley Hunter](#); [StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca)  
**Subject:** FW: Enbridge Gas Leave to Construct - St. Laurent Pipeline Replacement Project  
**Date:** Friday, July 26, 2024 10:12:00 AM  
**Attachments:** [Notice Enbridge s St Laurent LTC 20240712.PDF](#)

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For our records.  
Notification from EGI to City of Ottawa Clerk.

---

**From:** Kendra Black  
**Sent:** Tuesday, July 16, 2024 9:29 AM  
**To:** caitlin.salter-macdonald@ottawa.ca  
**Subject:** Enbridge Gas Leave to Construct - St. Laurent Pipeline Replacement Project

Good morning,

I am reaching out to advise that Enbridge Gas has filed a Leave-to-Construct with the Ontario Energy Board (OEB) for the St. Laurent Pipeline Replacement Project. This application seeks the OEB's approval to replace the St. Laurent Pipeline System, a vital part of our natural gas distribution network in the National Capital Region. We have received the Letter of Direction and Notice of a Hearing from the OEB, which outlines the next steps for the application. Please find the Notice of Hearing attached.

Please let me know if there are any questions.

With thanks,

Kendra

**Kendra Black**  
Manager, Municipal and Stakeholder Affairs

---

**ENBRIDGE GAS INC.**  
Tel: 416-806-7443  
500 Consumers Road, Toronto, ON, M2J 1P8

[enbridgegas.com](http://enbridgegas.com)

**Safety. Integrity. Respect. Inclusion. High Performance.**

# St. Laurent Pipeline and GDS Integrity – Preliminary Update

Privileged and Confidential



Heidi Bredenholler-Prasad, Tracey Teed-Martin, Mohamed Chebaro  
December 4, 2023





# Safety Moment

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## Odourization in Pipeline Systems

# Why Do We Odourize?



– 275 people (students and teachers) were killed in a school explosion, 300+ non-fatal injuries





# Enbridge Gas Inc.

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## Background

# What is truly important to us as a company

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Our **vision**, to provide energy, in a planet-friendly way, everywhere people need it—drives our **mission** to be the first-choice energy delivery company in North America and beyond.

Our **values** are key to our ongoing success.

- Safety
- Integrity
- Respect
- Inclusion
- High Performance



# Enbridge Gas Inc.



North America's largest natural gas storage, transmission and distribution company

**We deliver the energy that enhances people's quality of life.**

- **Values:** Safety, Integrity, Respect, Inclusion, High Performance.
- **Ambition:** To be your first choice for resilient, sustainable energy solutions.
- **Experience:** 175 years of experience in safe and reliable service.
- **Distribution business:** 3.9M customers, heating >75% of Ontario homes.
- **Dawn Storage Hub:** Canada's largest integrated underground storage facility and one of the top gas trading hubs in North America.
- **Leading Ontario's transition to net-zero emissions**  
Advancing conservation, renewable gases and clean technologies for heat, transportation and industrial processes.



# Safety is our #1 priority



We invested  
**US\$11.7B**  
2013-22 to maintain the  
integrity of our system

We monitor our lines  
**24-7**  
with people and computerized leak  
detection systems

We held/participated in  
**210**  
emergency exercises  
and drills in 2022



Above all else, we believe every incident can be prevented. We are always working to ensure the safety of our employees, neighbors, communities and the environment



# Integrity Management

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At Enbridge Gas Inc.

# Integrity Management Program Scope



## Transmission (TIMP)

- 3,678 km of transmission assets (typically, >30% SMYS)



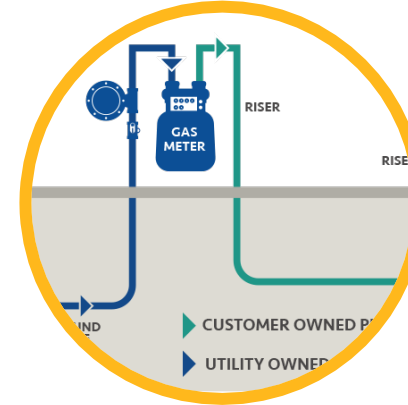
## Distribution (DIMP)

- 81,433 km of gas mains (41% steel and 59% plastic)
- Approx. 62,000 km of services (20% steel and 80% plastic)
- 35,353 district and customer stations
- 3,710,000 regulator sets, including meter manifolds



## Facilities (FIMP)

- 1,129 gate, feeder and some district stations
- 154 STO stations (compressors, production, LNG)
- 38 low carbon sites (CNG, RNG, hydrogen, carbon capture)



## Utilization (UIMP)

- ~3.9M customers (94% residential, 5% commercial, <1% industrial)



## Storage Downhole (SDIMP)

- 362 natural gas wells (including affiliates)
- 10 oil wells
- 35 underground storage reservoirs



# Integrity Core Process



## Integrity Management Core Process

### Background

- As per TSSA Code Adoption Document (CAD), CER Onshore Pipeline Regulation (OPR), and CSA Z662 – operators must have an Integrity Management program that anticipates, prevents, manages and mitigates conditions that could adversely affect safety or the environment over the lifecycle of the asset
- The Integrity Management Framework Standard (IMFS) provides the three BUs with a common Integrity Management core process using the PDCA lifecycle.

#### Plan

- Set safety targets & strategy
- Demonstrate fitness for service
- Determine controls to achieve targets

#### Do

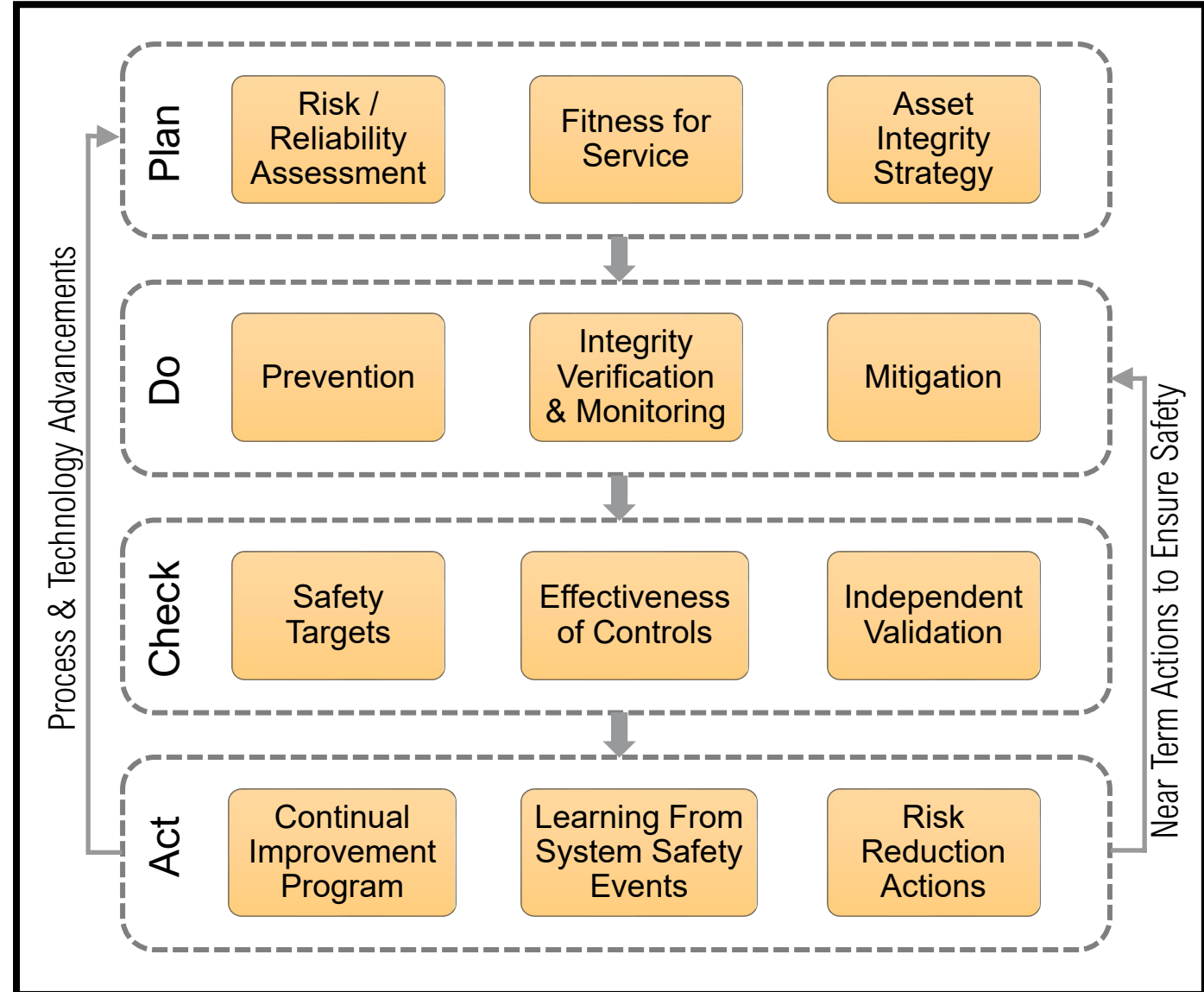
- Disciplined execution of Integrity Controls
- Communication with Stakeholders

#### Check

- Verify safety targets were met
- Verify effectiveness of controls
- Validate applicable hazards / controls

#### Act

- Apply additional mitigation to achieve safety targets
- Continually improve processes and practices



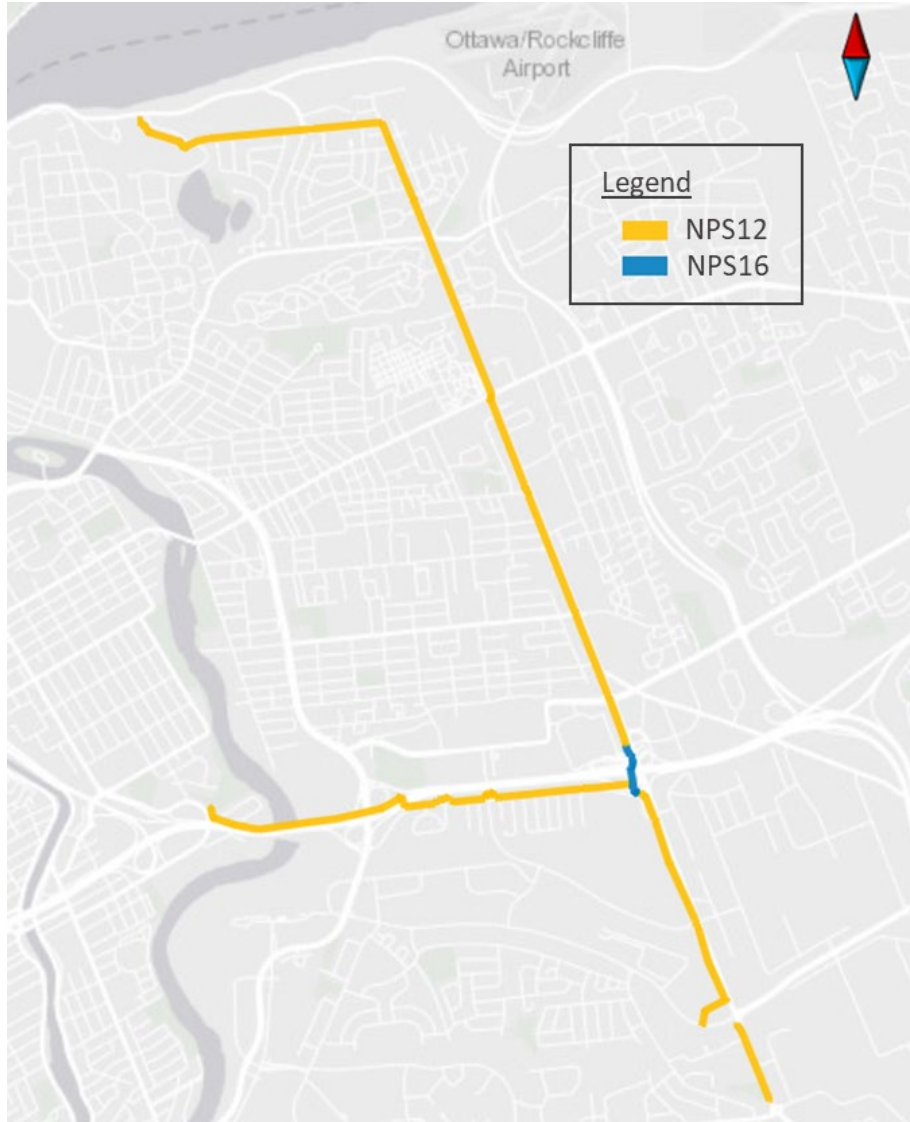
# St. Laurent Program

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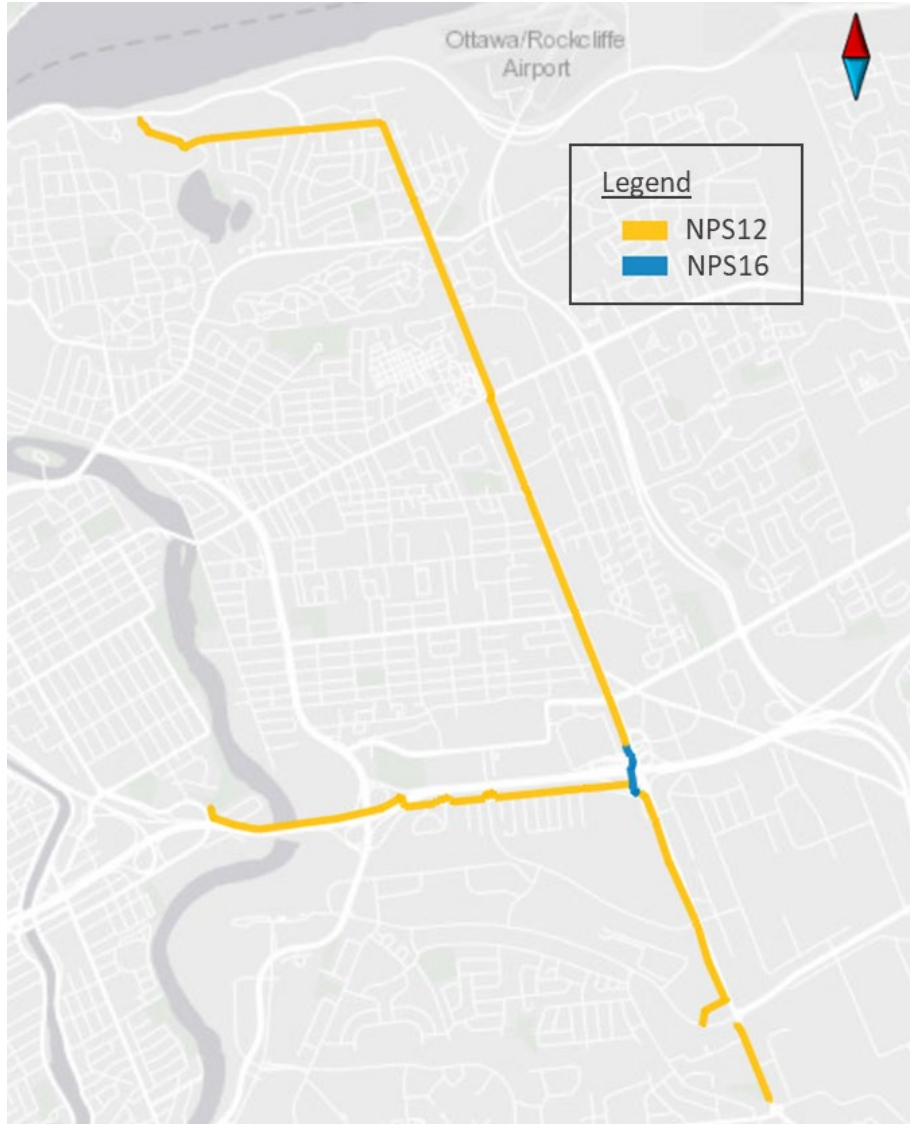
## Background & Assessments



# St. Laurent Pipeline Background



# St. Laurent Pipeline Background

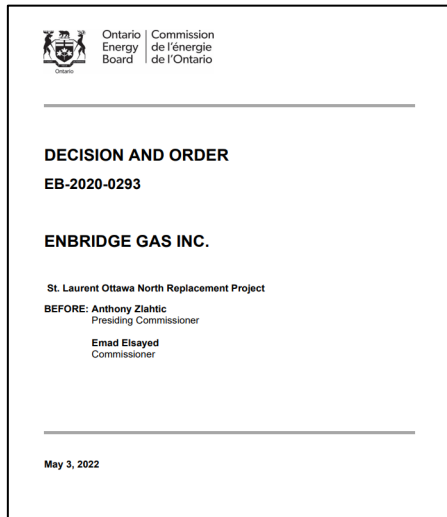




# OEB LTC Background



- **March 2, 2021** - Enbridge filed a Leave-to-Construct (LTC) application to replace the pipeline due to integrity concerns stemming from hazards associated with the vintage pipeline.
- **May 3, 2022** - OEB issued a Decision and Order denying Enbridge's LTC application.



- “...Enbridge Gas *has not demonstrated that the risk associated with the subject pipelines warrants complete replacement at this time.*”
- “...OEB suggests that Enbridge Gas take a *proactive approach to inspecting and maintaining the subject pipeline* until it can be demonstrated that pipeline replacement is necessary. This may include *development and implementation of an in-line inspection and maintenance program using available modern technology...*”
- “...OEB suggests that Enbridge Gas *work collaboratively with the City of Ottawa* and other stakeholders to proactively plan a course of action if and when pipeline replacement is required, including the *pursuit of Integrated Resource Planning (IRP) alternatives.*”

# Targeted SLP Objectives



In June 2022, Enbridge Gas started a targeted Integrity program for the St. Laurent pipeline system to gather additional information on the condition of the pipeline and its surroundings.



## Objectives



### Objective #1

Provide the necessary **evidence to confirm the operability** of the SLP from a safety and reliability perspective in its current condition, including defining immediate mitigations.



### Objective #2

**Re-assess the asset management requirement(s)** for the SLP system for remaining life alternatives, including safety, reliability, and economic assessment (e.g., digs, replacement, etc.).



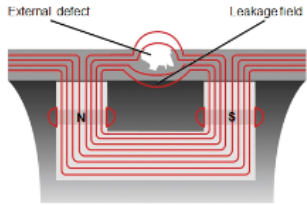
### Objective #3

Incorporate outcomes from the St. Laurent regulatory decision to **define/adapt EGI processes for future applicable OEB submissions** and the Asset Management Plan.



# Integrity Program Activities

## Data gathering and remediation efforts



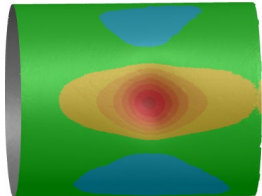
Robotic Crawler Tool –  
Magnetic Flux Leakage  
(MFL)



Close Interval  
Potential Survey  
(CIPS)



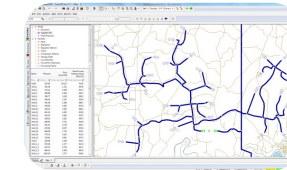
Capacity  
Planning  
Assessments  
(collaboration  
with main  
customers)



Robotic Crawler Tool –  
Laser Deformation  
Sensor (LDS)



Direct Current  
Voltage Gradient  
(DCVG)



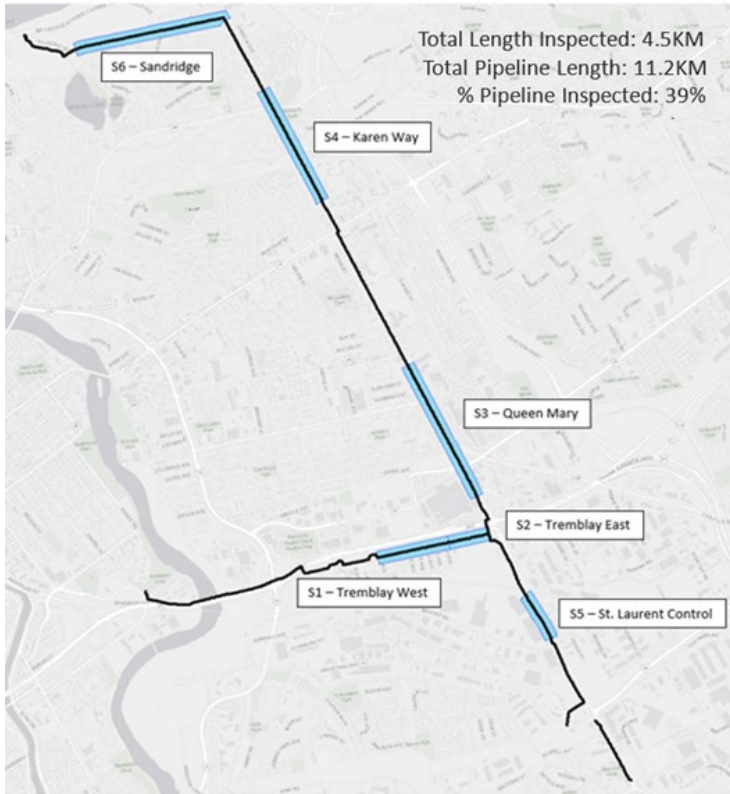
Opportunistic Excavations  
with Non-Destructive  
Examinations (NDE)



Depth of  
Cover Survey

# Integrity Program Activities

## Inline Inspection Tool (Robotic Crawler)



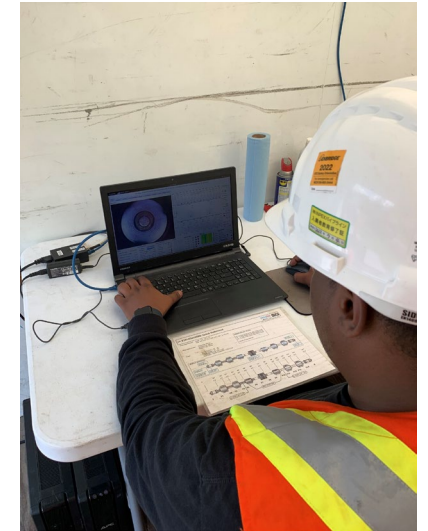
39% of pipeline system inspected with MFL/LDS technology



Tool Preparation – 3<sup>rd</sup> Party



Tool Loading



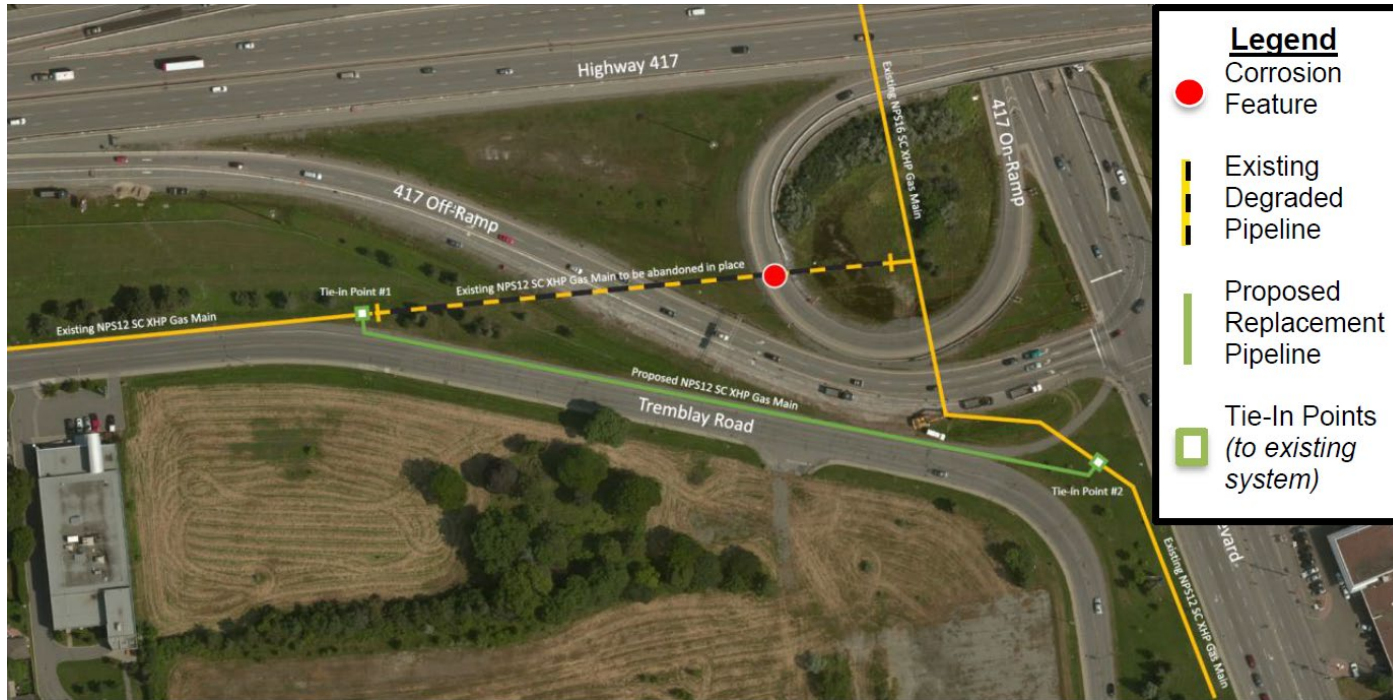
Tool Operation – 3<sup>rd</sup> Party



Tool Cleaning – 3<sup>rd</sup> Party



# Integrity Program Activities



- EOC established to address significant feature reported by ILI
- Metal loss anomaly reported by ILI as 80% or greater<sup>†</sup> in depth
- Challenging location (under Hwy 417 on-ramp) necessitated replacement
- High number of features reported in area of replacement were also mitigated through replacement (see Table for details)

Metal Loss				
<b>% Depth NWT</b>	10-30%	30-50%	>50%	<b>Total</b>
<b>Count</b>	125	10	2	<b>137</b>
Dent				
<b>% Depth OD</b>	0.50%-2%	2%-4%	>4%	<b>Total</b>
<b>Count</b>	9	2	1	<b>12</b>

<sup>†</sup> Inspection tool unable to size metal loss greater than 80% of NWT



# Integrity Program Activities

## Non-Destructive Examinations (NDE) and Repairs

Dig Number	Dig Site	Dig Reason	Arc Burn	Dent	Gouge/Scrape	Lamination	Corrosion	Scab	Total
1	Gaspé Ave	Operations Concern	17		11	3	10		41
2	Service North of Montreal	Operations Concern	2		5		3	1	11
3	Sandridge Launch Site	Launch Site							0
4	Karen Way Launch Site	Launch Site		1			3		4
5	Queen Mary Launch Site	Launch Site	8		37			5	50
6	Control Station Launch Site	Launch Site							0
7	Tremblay West Launch Site	Launch Site		1	56				57
8	Tremblay East Launch Site	Launch Site			5		2		7
9	133 St Laurent	Operations Concern	2				1		3
10	North of Montreal	Operations Concern	No NDE Assessment was completed (casing not found)						
11	Tremblay Rd Cloverleaf – East End	ILI Concern	1		2	1	5		9
12	Tremblay Rd Cloverleaf - West End	ILI Concern	9		2		6		17
13	Rockcliffe Control Station	Leak Concern	4		5		4	1	13
<b>TOTAL</b>			<b>42</b>	<b>2</b>	<b>123</b>	<b>4</b>	<b>34</b>	<b>7</b>	<b>212</b>

- Direct field evaluation (NDE) of the pipeline was performed at 13 specific, accessible locations
- Opportunistic sites included inspection launch points and other sites designated for inspection based on operational concerns
- Gained valuable insights on performance of ILI tool as well as assessment of features/hazards outside the capabilities of the tool (i.e., arc burns)
- Over 100 defects detected and rectified including corrosion, gouging, arc burns, weld anomalies, and more



# St. Laurent – Quantitative Risk Assessment



## Inputs

- ILI and NDE data to gather objective data on pipeline condition
- Excavation/repair costs based on project actuals, operational disruption estimates, digitized building footprints in right-of-way

## Assessment

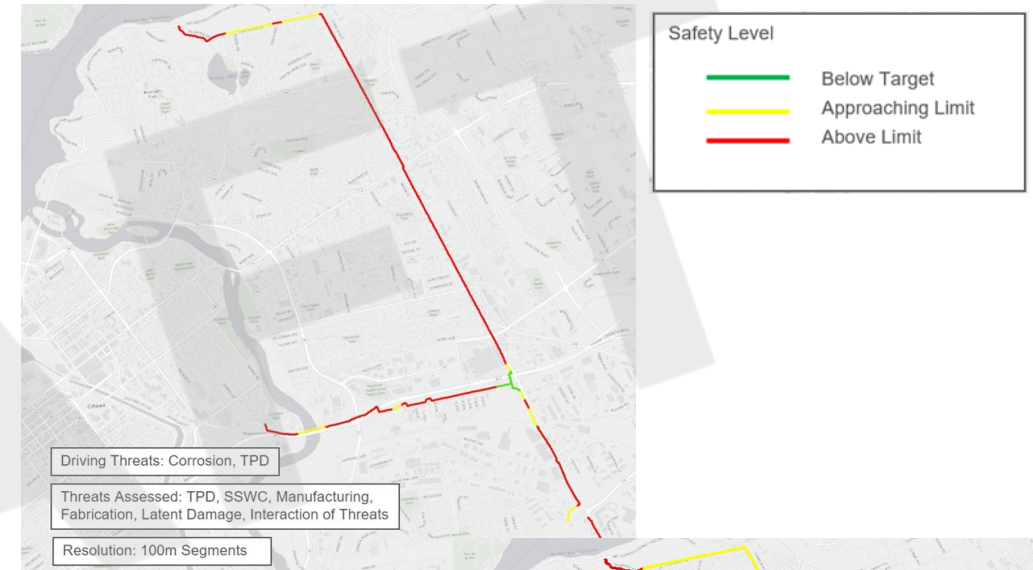
- Determine pipeline reliability based on all major threats (Corrosion, TPD, SSWC, Latent Damage, Manufacturing, Fabrication, etc.)
- Leverage existing industry-accepted modelling approaches
- Assess risk based on highest consequences categories (Financial, Operation Disruption, Health & Safety)
- Evaluate Risk level applying three unique perspectives:
  - ✓ CSA Z662 - Annex O Reliability Targets
  - ✓ Enterprise Operational Risk Matrix
  - ✓ PHMSA Significant Incidents<sup>1</sup> Benchmarking
- Risk Assessment reviewed and endorsed by DNV / GTM and approved by M. Chebaro and J. Sanders

## Results

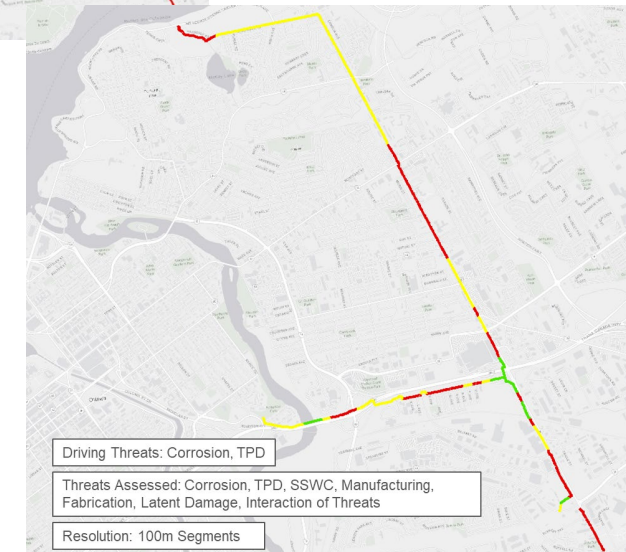
- Annex O - 8.8KM of 11.2KM pipeline exceed targets
- Operational Risk Matrix
  - High Risk - H&S Safety
  - Very High Risk – Financial, Operational Disruption
- PHMSA Significant Incidents<sup>1</sup> – SLP assessed significant incident rate orders of magnitude higher than historical average

<sup>1</sup> “Significant incident” is defined by PHMSA as >\$172K damage, fatality/injury, 3 MMcf gas loss

### Annex O Reliability Targets Lens



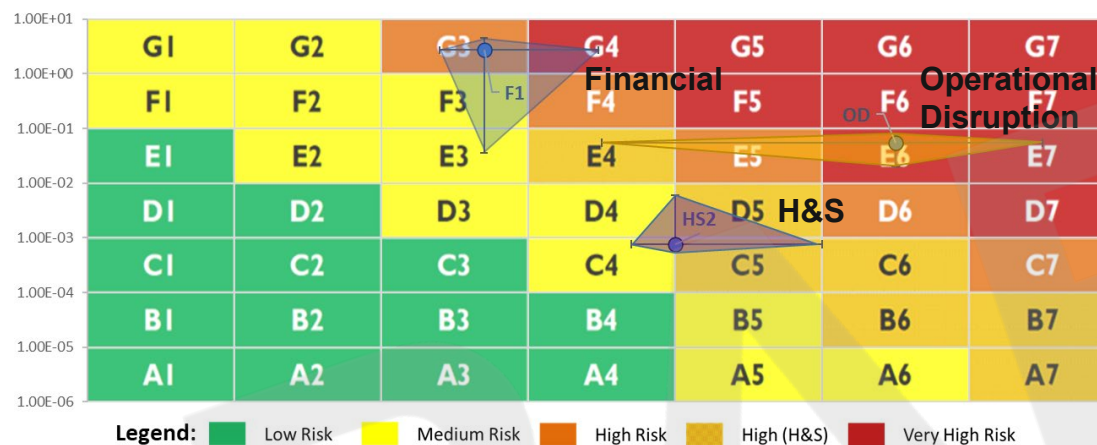
### Annex O Targets x3 (more lenient)



# St. Laurent – Risk Assessment

Assumptions varied and sensitivity analysis performed to determine the range of alternate results and possible impact to conclusions

*Enterprise Operational Risk Matrix\* (with confidence bounds)†*



- Sensitivity assessment used to quantify the range of possible values to supplement the best estimate of reliability or consequence.
- For most segments, the lower bound of the estimate continues to breach a risk or reliability limit.

† Failure defined as corrosion with 80% or deeper of wall thickness (past the sizing threshold of inspection tool)

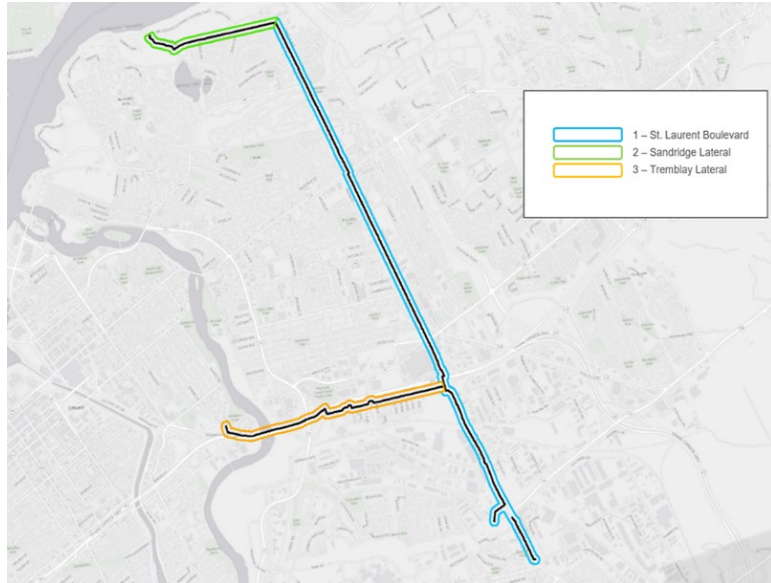
‡ Adopted by Enterprise S&R in Dec 2022. Currently undergoing MOC process for formal adoption at GDS



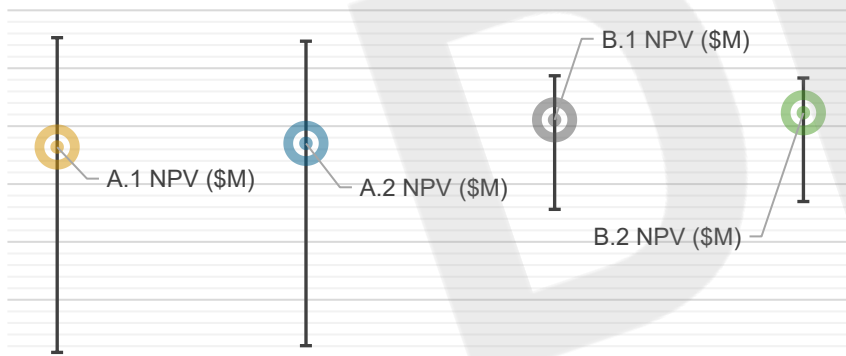


# St. Laurent – Risk Treatment Scenarios

PRELIMINARY



NPV Ranges



## Continued Integrity Inspections and Digs

- Scenario A.1 – Continue crawler tool inspections and mitigate risks through integrity digs/mitigations
- Scenario A.2 – Retrofit/inspect with free-flowing ILI and mitigate risks through integrity digs/mitigations

## Partial Replacement

- Scenario B.1 – Only replace St. Laurent and Tremblay Lateral sections (Blue & Orange). Continue crawler tool inspections and digs/mitigations on Sandridge Lateral (Green)

## Full Replacement

- Scenario B.2 – Replace full St. Laurent pipeline (including Tremblay and Sandridge Laterals)

## Risk Reduction

Health & Safety	Operational Reliability	Financial
0-5x	5-10x	50-100x
0-5x	5-10x	50-100x
5-10x	10-50x	>100x
50-100x	50-100x	>100x

# EDIMP

---

## Enhanced Distribution Integrity Management Program



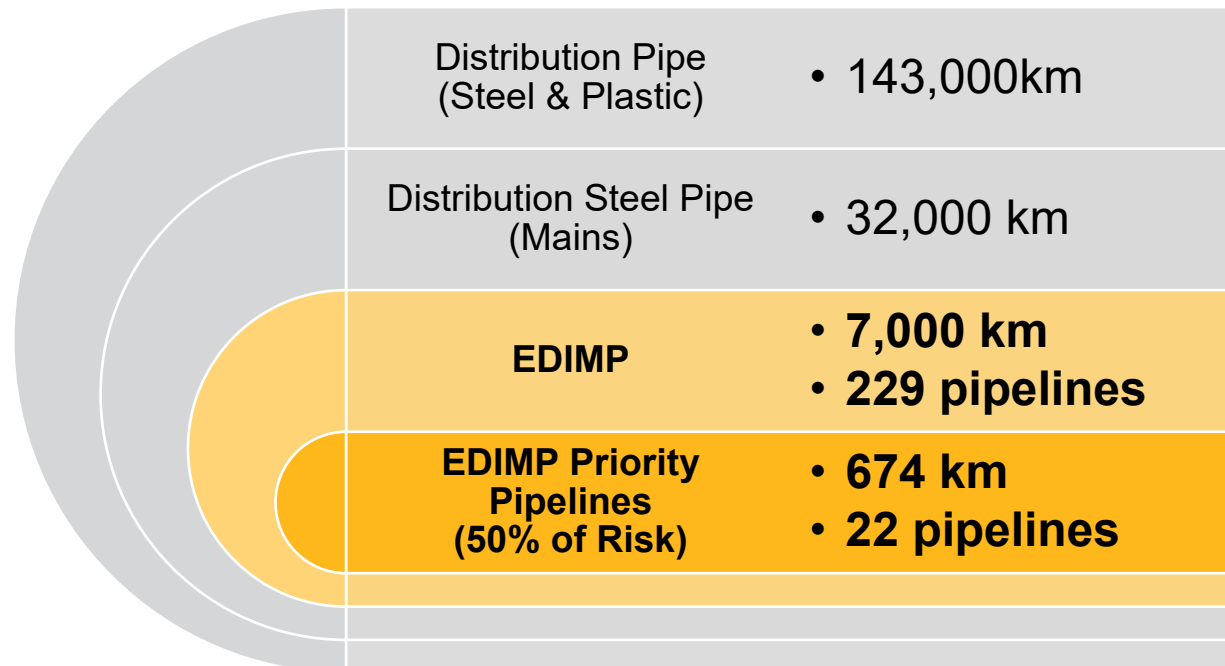
# EDIMP – Vision



## higher priority

distribution pipelines, by improving the understanding of the asset condition, fitness for service and risks associated to the operation of those assets.

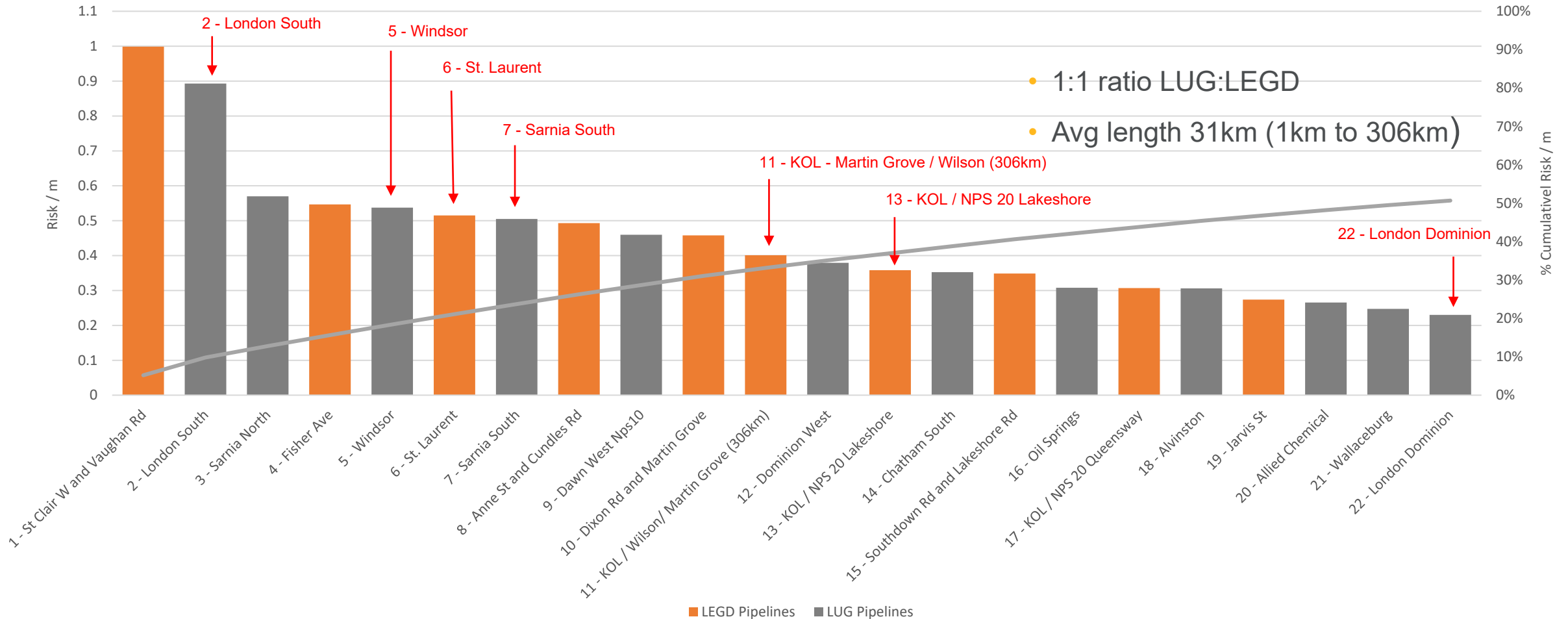
### Distribution Populations (Estimates)





# Enhanced DIMP – Preliminary Listing

Pipeline Distribution - Risk/meter





ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Reference:

St. Laurent Asset Health Index from 2022 [EB-2020-0293 B/1/1, Page 42]

Figure 17: St. Laurent Pipeline Asset Health Index



Question(s):

Please provide an updated version of the St. Laurent Asset Health Index or confirm this is the latest version.

Response:

The SLP Asset Health Index (AHI) provided in EB-2020-0293 is no longer applicable. A significant amount of pipeline-specific data was collected through the Targeted Integrity Program which informed the Quantitative Risk Assessment, making the AHI for the SLP obsolete. The assessment of the SLP's condition and asset health is now based on a fully quantitative risk assessment that incorporates more comprehensive and detailed pipeline-specific data. For more details on the limitations of the previous integrity assessment filed in EB-2020-0293 which included the AHI, please see response at Exhibit I.1-PP-5 part b).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

- a) Please provide details on the number, duration and scope of integrity digs along the SLP from 2022 – present.
- b) Please provide a copy of all complaints received from stakeholders (e.g. City, businesses, residents, commuters, etc.) impacted by the integrity digs from 2022 – present.

Response:

- a) Please see Exhibit B, Tab 1, Schedule 1, pages 26-27 for a summary of the digs completed on this pipeline since 2022, including the pipe replacement project completed at Hwy 417 and Tremblay Rd. in late 2022.

Most of these repairs spanned several days. The larger replacement project at Hwy 417 and Tremblay Rd. spanned multiple weeks despite being carried out on an expedited basis.

- b) There are a variety of ways public inquiries or complaints can be submitted by stakeholders, including discussion with Enbridge Gas staff on-site, project specific email addresses and phone numbers, the Enbridge Gas Call Centre, and direct emails or phone calls to project employees.

Depending on the project, incoming inquiries or complaints are either recorded by a third-party consultant or by the project team. In this case, the project team would have responded to any incoming inquiries (emails or voice mails) and recorded them, along with our response, within a project complaint tracker. One written complaint was recorded; please refer to Attachment 1. Any complaints expressed in person were not tracked and may have been dealt with on site.



**From:** [Andrew Murray](#)  
**To:** [Mark Cairns](#)  
**Subject:** [REDACTED]  
**Date:** Thursday, September 19, 2024 4:14:00 PM

---

---

**From:** Geoff Pollard <Geoff.Pollard@enbridge.com>  
**Sent:** Friday, September 16, 2022 6:57 AM  
**To:** Andrew Murray <Andrew.Murray@enbridge.com>  
**Subject:** [REDACTED]

Andrew

I went over and talked with [REDACTED] and explained that it was common practice and that we meant no disrespect and that we will be done and demobed by end of day today. Next time, I'll go in and talk with business myself at beginning of the job, like I did at the smoke shop.

Thanks

Geoff

---

**From:** Andrew Murray <[Andrew.Murray@enbridge.com](mailto:Andrew.Murray@enbridge.com)>  
**Sent:** Thursday, September 15, 2022 1:47 PM  
**To:** Geoff Pollard <[Geoff.Pollard@enbridge.com](mailto:Geoff.Pollard@enbridge.com)>  
**Subject:** [REDACTED]

Hey Geoff,

Could you please address complaint below. At min please give them call.

[REDACTED]

-Andrew

---

**From:** Chad Loveland <[Chad.Loveland@enbridge.com](mailto:Chad.Loveland@enbridge.com)>  
**Sent:** Thursday, September 15, 2022 1:10 PM  
**To:** Andrew Murray <[Andrew.Murray@enbridge.com](mailto:Andrew.Murray@enbridge.com)>  
**Subject:** [REDACTED]

As discussed. See the below e mail. This is the complaint that came in about some Enbridge equipment on site.

Chad

---

**From:** Luc Fournier <[luc.fournier@enbridge.com](mailto:luc.fournier@enbridge.com)>  
**Sent:** Thursday, September 15, 2022 12:22 PM  
**To:** Chad Loveland <[Chad.Loveland@enbridge.com](mailto:Chad.Loveland@enbridge.com)>  
**Subject:** [REDACTED]

Please see below.

Thanks in advance & Stay Safe.

## Luc Fournier

Sr. Advisor Utilization  
EGI Operations Ottawa

---

**ENBRIDGE GAS INC.**  
TEL 1(613)-742-4534 / MOBILE 1(343)-575-9438

400 Coventry Rd., Ottawa, ON K1K 2C7  
[www.enbridge.com](http://www.enbridge.com)  
**Safety. Integrity. Respect. Inclusion.**

For licensed HVAC technicians - Submit Safety Violations and clearances through our [online portal](#). Visit [www.enbridgegas.com/safetyviolation](http://www.enbridgegas.com/safetyviolation) to learn more and register today!

---

**From:** Luc Fournier  
**Sent:** Thursday, September 15, 2022 12:21 PM  
**To:** Rick Gazda <[Rick.Gazda@enbridge.com](mailto:Rick.Gazda@enbridge.com)>; David Godin <[David.Godin@enbridge.com](mailto:David.Godin@enbridge.com)>; Bernard Monette <[Bernard.Monette@enbridge.com](mailto:Bernard.Monette@enbridge.com)>  
**Subject:** [REDACTED]

Hi there,

Can we send crew back to clear equipment.

Thanks in advance & Stay Safe.

## Luc Fournier

Sr. Advisor Utilization  
EGI Operations Ottawa

---

**ENBRIDGE GAS INC.**  
TEL 1(613)-742-4534 / MOBILE 1(343)-575-9438

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---

**From:** OPSCENT <[OPSCENT@enbridge.com](mailto:OPSCENT@enbridge.com)>

**Sent:** Thursday, September 15, 2022 11:51 AM

**To:** Luc Fournier <[luc.fournier@enbridge.com](mailto:luc.fournier@enbridge.com)>; Tracey Jones <[Tracey.L.Jones@enbridge.com](mailto:Tracey.L.Jones@enbridge.com)>

**Subject:** [REDACTED]

Hello,

Customer called in stating crew left cones and ladders at property and they would like this removed ASAP.

Can someone please reach out to discuss?

[REDACTED]

Thank you,

122487158

2022/09/14 12:35 Wendy Randle

Customer name: [REDACTED]

Address (including city and grid): [REDACTED]

Phone numbers: [REDACTED]

Reason for escalation:

Details of the Problem/Situation:

[REDACTED] CALLED SAID HAVING LANDSCAPING  
DONE AND REPS DOING GAS LINE WORK HAVE LEFT EQUIPMENT-  
CONES, LADDERS  
ECT ON HIS PROPERTY THAT HE WANTS REMOVED ASAP

**Megan Asselin**

Ask Desk Clerk

VPC Dispatch

—

**ENBRIDGE GAS DISTRIBUTION**

TEL: 416-758-4368

500 Consumers Road North York, Ontario M2J 1P8

[enbridgegas.com](http://enbridgegas.com)

**Integrity. Safety. Respect.**

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Question(s):

- a) Please provide a copy of the public lobby registry for all Enbridge staff meetings with City of Ottawa officials from April 2022 to present. If any of the Enbridge meetings outlined in the Application are not part of the lobby registry, please explain which ones and why.
- b) Please provide details on any funding provided by Enbridge (directly or indirectly) to the City of Ottawa or its municipal entities (e.g. councilors, Mayor, community housing, etc.) from April 2022 to present. Please also include which Enbridge account was the source of the funding (e.g. IRP, DSM, Capital, O&M, etc.).

Response:

- a) The public lobby registry is an online portal maintained by the City of Ottawa, and so Enbridge Gas cannot provide a copy of it. The engagements Enbridge Gas has had with the City, Hydro Ottawa and the IESO related to the St. Laurent Pipeline Project can be found in Exhibit B, Tab 2, Schedule 1, Attachment 1.

Items that appear in the public lobby registry can be found in that attachment at lines 57, 62, 72, 75, and 80.

Enbridge Gas regularly engages with the City of Ottawa, other stakeholders like Hydro Ottawa, the IESO and many others on a variety of issues including normal course of business discussions. These engagements, some of which outline work on creating the energy task force, IRP and planning are provided in Exhibit B, Tab 2, Schedule 1, but are not included in the lobby registry as they were intended to support ongoing work.

b) Enbridge Gas has a long-standing tradition of contributing to the communities in which we operate, which includes participating in and supporting community events. Examples of these activities include:

### Community Events

Date	Event	Description	Funding
Sept 15, 2024	Alta Vista community Corn Roast	Enbridge provided BBQ and staff to cook food for community celebration	O&M
August 10, 2024	Overbrook Days celebration	Enbridge provided BBQ and staff to cook food for community celebration	O&M
July 1, 2024	Greely Community Centre Canada Day celebration	Enbridge provided BBQ and staff to cook food for community celebration	O&M
June 15, 2024	Findlay Creek park opening	Enbridge supplied BBQ and staff to cook food	O&M
June 1, 2024	Celebrate Summer Community pancake breakfast (beacon hill/Cyrville)	Enbridge supplied kitchen and staff to cook food	O&M
March 30, 2024	River Ward Spring Community Breakfast	Enbridge supplied kitchen and staff to cook food	O&M
February 17, 2024	Winterlude	Sparks Street event	O&M
September 17, 2023	Alta Vista Community BBQ	Enbridge supplied BBQ and staff	O&M
July 1, 2023	Osgoode Community Celebration	Enbridge supplied BBQ and staff	O&M
June 3, 2023	Beacon Hill Pancake breakfast	Enbridge supplied kitchen and staff	O&M
May 18, 2023	Ottawa police event	Enbridge kitchen	O&M
April 8, 2023	River Ward Community Breakfast	Enbridge supplied kitchen and staff to cook food	O&M
April 1, 2023	Vanier Sugar festival	Enbridge supplied staff to cook food	O&M



August 5, 2022	Carlington Community Event	Enbridge supplied BBQ and staff	O&M
June 11, 2022	Cyrville Community Event	Enbridge supplied BBQ and staff	O&M
May 7, 2022	Ward 20 Event	Enbridge supplied BBQ and staff	O&M

### Sponsorships

Date	Event	Amount	Funding Source
Q1 2024	Winterlude	\$20,000	\$5k Corporate Citizenship; 15k Municipal
2024	Ottawa Board of Trade – Mayor's breakfast sponsorship	\$11,300	Municipal
2023 and 2024	Ottawa Board of Trade – Annual Membership	\$4,520	Municipal
2024	Youth Ottawa Mayors Golf Classic	\$15,000	Municipal
2023	Youth Ottawa Mayors Golf Classic	\$15,000	Municipal

### Community Housing (DSM)

Enbridge Gas's active partnership with Ottawa Community Housing (OCH) demonstrates the positive results our demand side management programs provide to an established affordable housing provider in the City of Ottawa. Since 2022 Enbridge Gas has provided OCH with \$240K in incentives, totaling almost 250K m3 in gas savings through 13 projects, many of them custom. In 2024 the Company will continue its collaborative work with OCH in order to further decrease emissions within their portfolio and support energy efficiency for their buildings.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Reference:

In mid-October 2023, one of the four ward councilor's engaged by Enbridge Gas (Tim Tierney) advised that he was going to put forward a motion supporting the Project and the establishment of an energy task force to the City's Environment and Climate Change Committee, of which he is a member. Enbridge Gas proposed amendments to the councilor's motion.

CBC Article [CAFESOttawa\_IR\_AppendixA\_StLaurentArticle\_20240906]

CBC Interview – Councilor Tierney November 22, 2023 [\[What's at stake if Ottawa does not back the replacement of an aging natural gas pipeline? | Ottawa Morning with Robyn Bresnahan | Live Radio | CBC Listen\]](#)

Question(s):

- a) Please provide a copy of the amendments Enbridge proposed to the draft motion from Councilor Tim Tierney.
- b) Was the Motion passed by City Council? If yes, please provide a copy of the final Motion passed by City Council and record of it passing. If not, why not?
- c) The CBC article and interview referenced above indicates "Tierney said he supports the city's intentions, but after speaking with Enbridge he became concerned that stalling the pipeline replacement could put his residents at risk of a catastrophic power loss.". Please explain what information Councilor Tierney was given to suggest that there was a risk of catastrophic pipeline loss.
- d) The CBC article noted identified Enbridge spokesperson Leanne McNaughton concurred, saying "this does need to be replaced immediately just due to it being an operation for over 60 years.". Please provide the basis for Enbridge publicly

indicating that the existing St. Laurent pipeline does not need to be replaced in an urgent manner.

Response:

- a) Please refer to Attachment 1 for an email regarding suggested amendments.
- b) As indicated in Exhibit B, Tab 2, Schedule 1, par. 4, the motion was considered and passed on December 6, 2023. Council meeting minutes and agendas are available on the City of Ottawa's website.
- c) The St. Laurent Pipeline travels through Councilor Tierney's Ward, and therefore communications such as Exhibit I.1-CAFES Ottawa-10 parts c), d) and e), were brought to his attention. Enbridge Gas is unable to speak on Councilor Tierney's behalf to explain his choice of words.
- d) This is an inaccurate interpretation of Ms. McNaughton's comment. Ms. McNaughton's reference to the age of the pipeline was intended to underscore the importance of "immediately" investing in this ageing infrastructure in order to maintain safety and reliability. As outlined in Exhibit B, Tab 1, Schedule 1, the extensive condition assessment conducted by Enbridge Gas on this pipeline concluded that "immediate action is needed" to prevent "potentially significant consequences to health and safety and operational reliability" (p. 39).



Email

Date: October 23, 2023

To: Councillor Tierney

From: Matthew Wilson

Councillor Tierney,

It was good to meet you at the Mayor's breakfast and many thanks for reaching out in the past few weeks. I just tried your cell and I'd be happy to chat about the following.

City staff brought your motion to my attention, and I've been asked to provide some thoughts related to it. We really appreciate the support and sentiment that is evident in your motion. At the same time, we are also mindful of turning the page and not wanting to dwell on the past but rather focus on the future. Equally I'm not sure that the Ontario Energy Board is in the practice of striking submissions from the record so that might be a non-starter on their end. To that end, I might suggest a rewording of the motion to cut to the chase of why Enbridge is proceeding with an application to replace the pipeline. I'm going to suggest to staff a friendly amendment, if it makes sense to you, along the lines of the following:

Whereas the St Laurent natural gas pipeline was originally installed between 1958 and 1962 and is due for replacement;

Whereas pipeline integrity and risk studies carried out in the last year have highlighted the need for replacement;

Whereas the St Laurent pipeline directly serves almost half of Ottawa's 400,000 natural gas customers including Parliament Hill, City Hall, and three of every four homes;

Whereas Enbridge Gas seeks to maintain its 5,000 km of pipeline in the City of Ottawa in a state of good repair at all times;

Whereas a safe and reliable supply of natural gas is essential to one of the coldest capital cities in the world, especially in winter;

Whereas staff from the City of Ottawa, Hydro Ottawa, and Enbridge Gas will continue to meet on a regular basis to collaborate on integrated resource planning, promoting efficiency, and delivering progress on climate change in practical ways;

Now therefore be it resolved that Ottawa City Council (or Committee) supports Enbridge's application to the Ontario Energy Board to replace approximately 21 kilometers of pipeline in the St Laurent Boulevard corridor.

I'm hoping this gives you a sense that we're placing safety and reliability front and centre. My hope is the above captures your thoughts in a slightly broader way that is focused on next steps.

Of course I'd be happy to chat further, feel free to call at any time.

Many thanks again for your support.

Matthew Wilson (he/him)  
Senior Advisor, Municipal and Stakeholder Engagement

Public Affairs and Communications  
ENBRIDGE GAS INC.  
Cell: 343-596-4605  
400 Coventry Rd, Ottawa, ON K1K 2C7

enbridge.com <<http://www.enbridge.com/>>

Safety. Integrity. Respect. Inclusion.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Reference:

CAFESOttawa\_IR\_AppendixB\_EnbridgeAdvertisement\_20240906

Question(s):

The Enbridge advertisement noted above was published after the Councilor Tierney radio interview suggesting a catastrophic failure could occur in the St. Laurent pipeline in the winter of 2023/24. Was other advertisement in Ottawa done in relation to the St. Laurent pipeline or to support the proposed project. If yes, please provide a copy.

Response:

Advertisements were placed in local media outlets as part of an effort to raise awareness of the need for the St. Laurent Pipeline Replacement Project in December 2023. Please refer to I.1-CAFES Ottawa-10 Attachments 2 and 3 for Ottawa newspaper advertisements (English and French)

In September 2023, Enbridge Gas placed advertisements in local newspapers to provide the Notice of Study Commencement, which included details of public information sessions focused on the St. Laurent Pipeline Replacement Project. The Notice of Study Commencement was published in the Ottawa Citizen on Sept. 22, 2023 and in Le Droit on Sept. 23, 2023. The public information sessions were hosted on October 3 and 4 for Ottawa residents in the St. Laurent catchment area.

Please refer to I.1-CAFES Ottawa-10 Attachment 1 for the Notice of Study Commencement (English and French).



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Reference:

In late November 2023, Enbridge Gas gave a presentation to the Mayor's Breakfast Series that had 250 members of the public in attendance (and was also televised live) to more broadly discuss the need for the Project. The Mayor and three councillors were in attendance at this event. In early December 2023, Enbridge Gas sent a letter through the Ottawa Board of Trade's monthly newsletter to its 5,500 email recipients. At the same time, Enbridge Gas placed newspaper advertisements in the Ottawa Citizen, Ottawa Sun, and le Droit to help members of the public understand the rationale behind the Project. [B/2/1, Page 4]

Question(s):

Please provide copies of the materials (presentation, advertisements, letter, etc.) as referenced above.

Response:

For the text of the Enbridge Gas speech at the Mayor's Breakfast Series – Ottawa Board of Trade in November, 2023, please refer to Exhibit I.1-CAFES-Ottawa-10 Attachment 6.

For the Ottawa Board of Trade email communication in December 2023, please refer to Exhibit I.1-CAFES-Ottawa-10 Attachment 5.

For the Enbridge Gas newspaper advertisements, please refer to Exhibit I.1-CAFES-Ottawa-10 Attachments 2 and 3 (English and French).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

1

Reference:

Enbridge identified the need to replace the existing St. Laurent Pipeline through ongoing operations and maintenance (O&M) activities (i.e., inspection and monitoring). The pipeline was originally constructed in four phases in 1958, 1962, 1985, and 1992, and integrity monitoring indicates that the pipeline condition is deteriorating as a result of its age. Enbridge has determined that replacing the pipeline is the best option for maintaining safe and reliable natural gas service to existing customers. [Exhibit F, Tab 1, Schedule 1, Attachment 1, Page 19]

Question(s):

The SLP was originally commissioned between 1958 and 1959 at a pressure of 1,200 kPa (175 psi). [B/1/1, Page 4]

- a) Please reconcile the information indicating that SLP was built between 1959-1992, vs. 1958-1959.
- b) Please provide the lengths constructed during each period.

Response:

- a) The SLP was originally built and commissioned between 1958 and 1959. The pipeline has had various replacements and relocations over its operational lifespan, which are referred to as subsequent phases in Exhibit F.
- b) The lengths of the SLP by vintage are provided in Table 1. Note that the 1992 phase of construction mentioned in Exhibit F, Tab 1, Schedule 1, Attachment 1, p. 19 was for the feed to TransAlta, which is out of scope for the Project.

Table 1  
SLP Lengths Constructed by Vintage

Vintage	% of Pipeline	Length (m)
1958	60.9%	6818
1959	10.0%	1116
1962	10.6%	1186
1978	0.7%	75
1985	4.2%	466
1986	4.3%	486
1998	1.9%	213
2000	0.3%	34
2006	0.1%	12
2007	0.2%	22
2008	0.1%	15
2012	2.9%	322
2015	1.7%	186
2019	2.2%	243



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Page 5, Table 1 Status of Energy Evolution Priority Projects

Question(s):

- a) How many City of Ottawa municipal buildings were converted from natural gas to electric space and water heating since 2020?
- b) Please confirm that Ottawa City Hall at 110 Laurier Avenue West is heated by natural gas.
- c) Has the City of Ottawa requested that Enbridge stop providing natural gas to any of its building

Response:

a) – c)

Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the Board. Enbridge Gas will be providing the information to the OEB and requesting confidential treatment.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Page 7, Paragraph 18

Question(s):

- a) Please confirm the Cliff Street Heating and Cooling Plant that provides heat to Federal Government buildings on Parliament Hill uses natural gas fired boilers.
- b) Has Public Works requested that Enbridge stop providing natural gas to the Cliff Street Heating and Cooling Plant?

Response:

a) – b)

Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the OEB. Enbridge Gas will be providing the information to the OEB and requesting confidential treatment.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Page 11, Paragraph 21

Preamble:

“In February 2024, Enbridge Gas engaged Integral Engineering (Integral) to perform probabilistic modeling using a set of input assumptions supplied by Enbridge Gas.”

Question(s):

- a) Please provide the list of input assumptions supplied by Enbridge Gas to Integral.
- b) Please confirm that the rate of conversions from gas to electric space heating is sensitive to the relative cost of energy available to customers including its delivery costs.

Response:

- a) Please refer to Exhibit B, Tab 3, Schedule 1, paragraphs 24 through 29.
- b) Yes, as discussed in Exhibit B, Tab 3, Schedule 1, paragraph 29, the relative cost of energy is one of the factors that influences the relative cost-effectiveness of fuel switching from gas to electric space heating via heat pumps, which impacts how the rate of customer disconnection may change in the future. Other factors also noted as influencing the relative cost-effectiveness and the disconnection rate are the cost of equipment, incentives, the Federal Carbon Charge, and any potential building upgrades.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Page 13, Paragraph 37

Preamble:

“The Large Volume Contract Demand (LVCD) customers served by the SLP system generally fall into the institutional sector and include hospitals, medical research facilities, post-secondary institutions, and government. The gas supplied to these customers is critical for meeting their energy needs and the safe and reliable operation of their facilities. The operation of these facilities serves the public interest and is essential for the City.”

Question(s):

- a) How many large volume customers in Ottawa currently have the following gas fired equipment: emergency power generators, load displacement generators, and combined heat and power generators?
- b) How many large volume customers use their gas-powered generators to export power into the Hydro Ottawa grid?

Response:

- a) Based on available information, the LVC customers served by the SLP do not use natural gas fired emergency power generators, load displacement generators, and combined heat and power generators.
- b) Based on available information, the noted LVC customers served by the SLP are not generating behind the meter power.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit A, Tab 2, Schedule 2, pg. 6

Preamble:

*It is an integral part of the natural gas network that supplies, directly or indirectly, natural gas to approximately 168,000 customers in the City of Ottawa and in Gatineau, Quebec.<sup>7</sup>*

<sup>7</sup> *The St. Laurent Pipeline is a primary source of gas supply for Gazifere.*

Question(s):

Does Gazifere have any programs designed to reduce gas use? Please describe.

a) In any event, please provide the forecasted contract demand for Gazifere. How much of that contracted demand goes through the Rockcliffe Control station?

Response:

Gazifère has a DSM program in place that helps to reduce gas usage. This program has limited impact in gas usage reduction (around 0.3 % reduction of gas per year, all else being equal). Gazifère is also working with Hydro-Québec to implement a dual fuel program<sup>1</sup>. This program will have a more significant capacity to reduce the annual usage of gas (around 70% annual gas usage reduction per participant) but it will not affect the need for gas at the peak time (below -12°C), as gas furnaces will meet heating needs instead of electric heat pumps.

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<sup>1</sup> [How DT Tariff – Dual Energy Works | Hydro-Québec \(hydroquebec.com\),  
https://www.hydroquebec.com/residential/customer-space/rates/rate-dt-how-it-works.html](https://www.hydroquebec.com/residential/customer-space/rates/rate-dt-how-it-works.html)

- a) The contracted demand between Gazifère and Enbridge Gas is not differentiated by the point of entry. There are two points of entry, including Rockcliffe Control station. The actual contract demand (2024) is a daily maximum of  $1,631.1 \cdot 10^3 \text{m}^3$ . For the winter 2023-2024, the supply split is nearly equal between points of entry on a design day analysis.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit A, Tab 2, Schedule 1, Attachment 1 and Exhibit B, Tab 1, Schedule 1, pg. 3-4

Preamble:

*The St. Laurent Pipeline (SLP) system is comprised of 10.8 km of NPS 12 steel pipe and 0.4 km of NPS 16 steel pipe. The pipeline was primarily constructed between 1958 and 1959 with coated steel pipe with the following specifications:*

*i. Wall Thickness = 6.35 mm and 9.5 mm*

We would like to understand the location and length of these respective wall thicknesses.

Question(s):

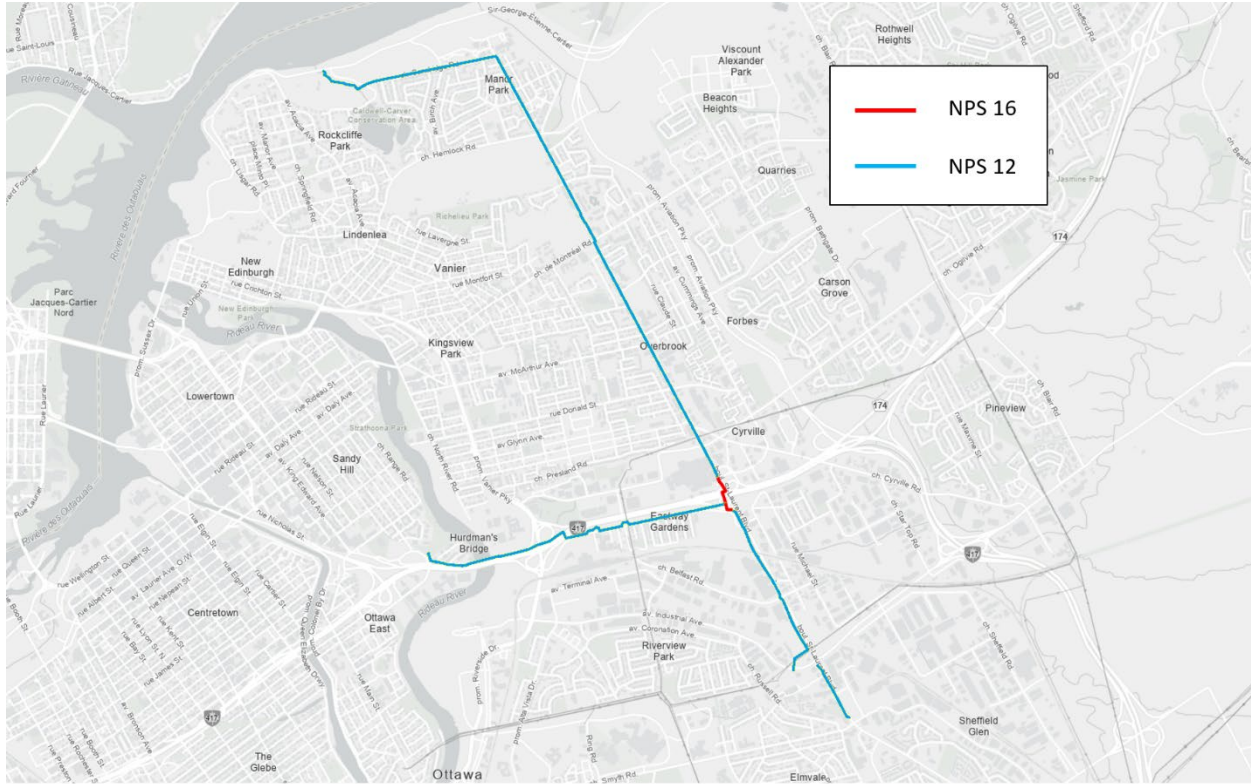
Using a map of similar scale to the first reference and colour for clarity, please show:

- a) The location of different pipe diameters (as provided in Figure 1)
- b) The location of the different wall thicknesses
  - i. Please provide the length of the respective sections of wall thicknesses

Response:

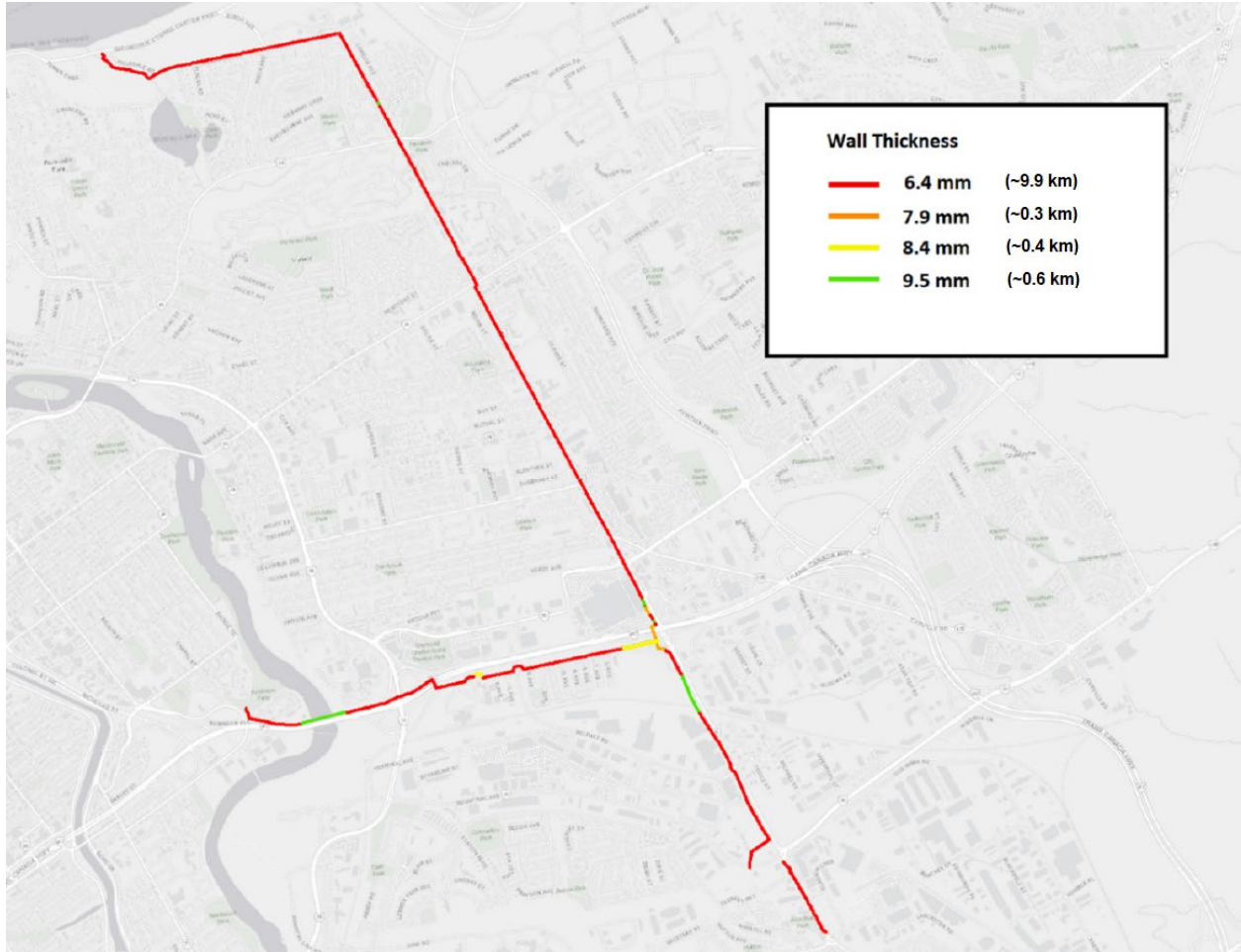
- a) Refer to Figure 1 for details on the location of different pipe diameters.

**Figure 1: St. Laurent Pipeline Diameters Map**



b) Refer to Figure 2 for details on the location of different pipe wall thicknesses. A summary of the lengths of each respective wall thickness is included in the legend.

Figure 2: St. Laurent Pipeline Wall Thicknesses Map





ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit A, Tab 2, Schedule 1, Attachment 1 and Exhibit B, Tab 1, Schedule 1, pg. 3-4

Preamble:

*Due to the increase in demand from new and existing customers fed by this pipeline, a pressure elevation was completed in 1985 to increase the pressure of the pipeline to 1,900 kPa (275 psi) based on Clause 9.13 of the 1983 edition of CSA Z184 Gas Pipeline Systems standard (CSA Z184-M1983). This clause permits the increase of a pipeline's Maximum Operating Pressure (MOP) to 80% of its design pressure, as opposed to relying on an established pressure test.*

We would like to understand this pressure elevation process.

Question(s):

What infrastructure components (pipe, valves, fittings, etc.) were removed and what were they replaced by?

Response:

The SLP was pressure elevated in 1985 from 1200 kPa (175psi) to 1900 kPa (275 psi). A formal engineering assessment was completed in order to raise the MOP of the pipeline to 1900 kPa. This resulted in some minor modifications to ensure all components were properly rated for the increased MOP. Steel pressure containment sleeves were installed over compression couplings. Rated fittings that did not meet the specifications of the elevated MOP were cut out or encapsulated with a pressure containing sleeve. Services with underrated service-tees were cut out or encapsulated and reconnected with a curb valve tee.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit A, Tab 2, Schedule 1, Attachment 1 and Exhibit B, Tab 1, Schedule 1, pg. 3-4

Preamble:

*Due to the increase in demand from new and existing customers fed by this pipeline, a pressure elevation was completed in 1985 to increase the pressure of the pipeline to 1,900 kPa (275 psi) based on Clause 9.13 of the 1983 edition of CSA Z184 Gas Pipeline Systems standard (CSA Z184-M1983). This clause permits the increase of a pipeline's Maximum Operating Pressure (MOP) to 80% of its design pressure, as opposed to relying on an established pressure test.*

We would like to understand this pressure elevation process.

Question(s):

Please clarify how the 80% was applied to establish the Maximum Operating Pressure (MOP).

- a) What test pressure was used?
- b) Is the MOP 1900 kPa or 1724 kPa?
  - i. If deemed to be 1724 kPa, what is inhibiting the pressure to that level?
  - ii. What components would need to be replaced to increase the MOP to 1900 kPa?

Response:

The application of Clause 9.13 of the 1983 edition of CSA Z184 allows for gas pipeline systems, where re-pressure testing is not practical, to limit the higher maximum operating pressure to 80% of the design pressure permitted for new piping having the same design and material.

- a) Records of the original pressure testing from the commissioning of the pipeline in 1958 and 1959 are not available. Re-pressure testing of the pipeline when raised to the new MOP of 1900kPa (275 psi) was not practical, based on Clause 9.13 of the 1983 edition of CSA Z184 (CSA Z184-M1983).
- b) The MOP of the SLP was established at 1900 kPa (275 psi).



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, pg. 6-11 including Table 1-2 and Figures 1, 2

Preamble:

We would like to understand the limitations of the respective Inspections and Surveys listed in Table 1.

Question(s):

For each Inspection or Survey, please provide:

- a) The limitation and location on the respective figures that inhibited expanding the application to a broader section of pipeline.
  - i. Please show locations of respective limitations on a map

Response:

- a) Inline Inspection - Exhibit B, Tab 1, Schedule 1, page 9, Figure 2 shows the segments of pipeline that were inspected with the robotic crawler ILI. The decision to assess 40% of the SLP length using ILI was not necessarily due to limitations along the SLP, but rather to optimize the use of the tool to provide a statistically significant sample size to assess the condition of the pipeline. Please see response at Exhibit I.1-STAFF-5 for an explanation of this cost-effective approach for inspecting a significant sample of the pipeline with ILI and extrapolating these results to uninspected segments.

Non-Destructive Examination – In-field examination of the pipeline corresponded with the ILI launch locations where pipeline exposure was required to launch the tool

and sites designated for inspection based on operational history or concerns. Sufficient data were collected through these NDE reports to assess and calibrate the accuracy of the ILI tool results to support the risk assessment. Additional NDE digs were not deemed necessary pending a decision on a final remediation plan. The scope of the NDE was also designed to minimize public disruption considering the high urban density of the St. Laurent system. Refer to Exhibit I.1-STAFF-5 for details.

CIPS/DCVG Surveys – The CIPS and DCVG surveys covered the entire accessible extent of the pipeline.

Depth of Cover Survey – The depth of cover survey covered the entire accessible extent of the pipeline.

Leak and Odourant Surveys – The leak and odourant surveys covered the entire accessible extent of the pipeline.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, pg. 6-11 including Table 1-2 and Figures 1, 2

Preamble:

We would like to understand the limitations of the respective Inspections and Surveys listed in Table 1.

Question(s):

What was the cost of each respective inspection or survey?

Response:

The costs for the inspection and survey work listed in Exhibit B, Tab 1, Schedule 1, Table 1 is as follows:

Item Description	Cost (\$)
Inline Inspection and Analysis	\$2,205,000
Non-Destructive Examination Assessments	\$96,000
CP Survey and Coating Assessment (CIPS and DCVG)	\$300,000
Depth of Cover, Leak and Odourant Surveys	See Note 1
Total	\$2,601,000

Note

1. The costs for the Depth of Cover survey were included in the scope of work for the CP Survey and Coating Assessment. Leak survey costs were small in comparison to the costs listed in Table 1. Similarly, Odourant Survey costs were incorporated into the general Operations odourant check program for all pipelines and were minor in comparison to the costs listed in Table 1.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, pg. 6-11 including Table 1-2 and Figures 1, 2

Preamble:

*Based on the ILI data, the calculated third-party interference hazard rate is within the highest 13% of hazard rates for mains within the Enbridge Gas distribution system.*

Question(s):

Please provide the background tables and information that led to the quantification in the above quoted reference.

Response:

While preparing a response to this interrogatory, Enbridge Gas noted a typographical error in its pre-filed evidence at the following exhibits:

- Exhibit A, Tab 2, Schedule 2, page 3, paragraph 3;
- Exhibit B, Tab 1, Schedule 1, page 11, paragraph 20; and
- Exhibit B, Tab 1, Schedule 1, Attachment 2, page 4,

whereby the calculated third-party interference hazard rate is incorrectly noted to be within the highest 13% of hazard rates for mains within the Enbridge Gas distribution system. This error was typographical only and the correct figure of 17% is included in the response below.

Enbridge Gas employs a quantitative risk model on the distribution system which calculates the risk from third party damage. Within the model, a system-wide prediction

of third party damage hit frequencies, derived from Enbridge Gas incident data and spanning the entire Ontario network, is predicted at a 2x2 km resolution (in units of hits / km.yr). The model provides 5 distinct levels (or “clusters”) of hit frequency predictions, ranging from 2.4E-3 to 2.9E-2 hits / km.yr. A summary of the hit rate predictions from the model are shown below.

Frequency of hit (hits / km.yr)						
Clusters	Auger / Vertical Drilling / Probing Device (Vertical Gas Escape)	Boring / Directional Drilling / Torpedo (Horizontal Gas Escape)	Excavator / Backhoe	Hand Tools	Other	Grand Total
1	2.61E-04	1.89E-04	1.76E-03	1.06E-04	1.04E-04	2.42E-03
2	2.57E-03	1.59E-03	2.02E-02	4.15E-03	5.84E-04	2.91E-02
3	4.83E-04	4.41E-04	3.49E-03	6.33E-04	5.35E-05	5.10E-03
4	1.84E-03	2.16E-03	2.06E-02	2.67E-03	6.94E-04	2.80E-02
5	5.83E-04	5.32E-04	4.53E-03	4.36E-04	1.29E-04	6.21E-03

The predicted hit rate from the SLP ILI data, as shown in Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 26, Table 3.6, is 0.518 hits per year / 11.2 km = 4.6E-2 hits per km.yr; this corresponds closely to the two highest levels of hit rates from the distribution risk model, i.e. Clusters 2 (red) and 4 (yellow). These two clusters span approximately 17% of the total length of distribution mains within the Enbridge Gas network. Thus, the predicted hit rate for the SLP is within the top 17% of hit rates predicted for mains within the Enbridge Gas distribution network.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Appendix B

Preamble:

We would like to understand better the quantifications of risk included in this section of evidence.

Question(s):

In Table 1, EGI provides an estimated Failure Rate (per km.yr). For Selective Seam Weld Corrosion (SSWC), please confirm that the estimated risk of 1.1 E-6 is representative of a risk of failure of 1.1 out of a million per km.yr).

- a) If not confirmed, please provide the estimated risk in terms of probability.
- b) What considerations went into the estimation and how were they quantified?
  - i. Please provide each of the considerations, the quantifications and how they were determined differentially between before and after.

Response:

- a) The best representation of the estimated risk is 1.1 ruptures per one million years per km.
- b) The details of the reliability assessment are provided in Exhibit B, Tab 1, Schedule 1, Attachment 2, page 28 to 29, Section 3.2.3.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Appendix B

Preamble:

We would like to understand better the quantifications of risk included in this section of evidence.

Question(s):

Using the LLS and ULS from Figure 1, please provide the safety level of St. Laurent reliability and the length of pipe in each level:

- a) With what was determined through assessments and diagnostics described in Exhibit B specifically before the repairs were undertaken.
- b) After the repairs were completed.

Response:

- a) The safety level with respect to the LLS and ULS thresholds before any repair activities is shown below.



b) Figure 1 in Exhibit B, Tab 1, Schedule 1, Appendix B showcases the safety level with respect to the LLS and ULS thresholds after repairs, as per the QRA. The figure is copied below for convenience with the respective lengths in each safety level shown. The repair only affects the segment of pipe near the 417 Highway on-ramp and thus has a relatively small effect on the overall safety level of the pipeline.





ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Appendix B

Preamble:

We would like to understand better the quantifications of risk included in this section of evidence.

Question(s):

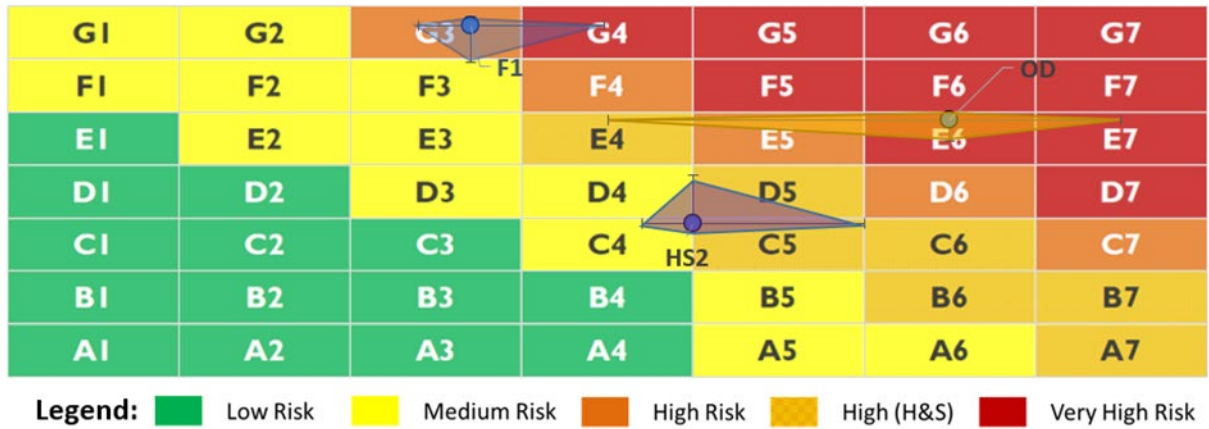
Using the Operation Risk Matrix in Figure 2, please provide the Financial, Operational Disruption and Health and Safety Risk level:

- a) With what was determined through assessments and diagnostics described in Exhibit B specifically before the repairs were undertaken.
- b) After the repairs were completed.
- c) Please provide examples for each of the evaluation methods showing the quantification of risk levels as depicted before and after the repairs.

Response:

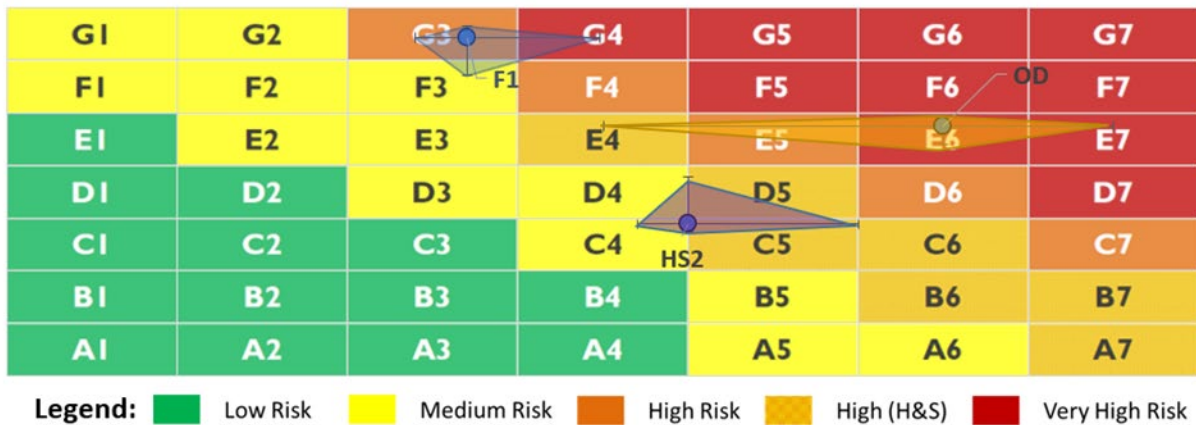
- a) The level of risk prior to the repair on Tremblay Road is shown below:

**Before Repairs**



b) The level of risk after the Tremblay replacement is the same as what is shown in Exhibit B, Tab 1, Schedule 1, Appendix B, Figure 2. It is copied below for convenience:

**After Repairs (As per QRA)**



The repair has a minor effect on the overall risk of the entire pipeline as it only affects a small length of pipe near the 417 Highway on-ramp.

c) An example of the evaluation method showing the quantification of risk for the Operational Disruption category is provided in Attachment 1 to this response. For an

explanation of this calculation, please see Exhibit B, Tab 1, Schedule 1, Attachment 2, page 55 to 56.



**Example of Operation Distruption Risk Calculations and Mapping**

**Before Repair**

Threat	Outcome	Upper Limit (/km.yr)	Best Estimate (/km.yr)	Lower Limit (/km.yr)	Pipeline Level			Conditional Probability of OD			Frequency of OD			Total OD Frequencies		
					Upper Limit	Best Estimate	Lower Limit	Upper Limit	Best Estimate	Lower Limit	Upper Limit	Best Estimate	Lower Limit	Upper Limit	Best Estimate	Lower Limit
Corrosion	Small Leak	5.56E-01	3.75E-01	7.33E-02	6.2E+00	4.2E+00	8.2E-01	0.01	0.01	0.01	6.23E-02	4.20E-02	8.21E-03	9.51E-02	7.13E-02	2.85E-02
	Large Leak	1.80E-03	3.25E-03	2.25E-03	2.0E-02	3.6E-02	2.5E-02	0.8	0.8	0.8	1.61E-02	2.91E-02	2.02E-02			
TPD	Rupture	1.45E-03	0	0	1.6E-02	0.0E+00	0.0E+00	1	1	1	1.63E-02	0.00E+00	0.00E+00	OD Consequences		
	SSWC	2.40E-06	1.10E-06	4.05E-07	2.7E-05	1.2E-05	4.5E-06	1	1	1	2.69E-05	1.23E-05	4.53E-06	Upper Limit	Best Estimate	Lower Limit
Manufacturing	Rupture	1.75E-05	9.18E-06	4.30E-06	2.0E-04	1.0E-04	4.8E-05	1	1	1	1.96E-04	1.03E-04	4.82E-05	7.5	6.5	4.5
Latent Damage	Rupture	1.06E-05	3.50E-06	7.25E-07	1.2E-04	3.9E-05	8.1E-06	1	1	1	1.19E-04	3.92E-05	8.12E-06			
Fabrication	Rupture	9.28E-07	2.57E-07	3.12E-08	1.0E-05	2.9E-06	3.5E-07	1	1	1	1.04E-05	2.88E-06	3.49E-07			
Interaction of Threats	Rupture	3.12E-06	2.30E-06	1.65E-06	3.5E-05	2.6E-05	1.9E-05	1	1	1	3.49E-05	2.58E-05	1.85E-05			

**After Repair**

Threat	Outcome	Upper Limit (/km.yr)	Best Estimate (/km.yr)	Lower Limit (/km.yr)	Pipeline Level			OD Conditional P			Frequency of OD			Total OD Frequencies		
					Upper Limit	Best Estimate	Lower Limit	Upper Limit	Best Estimate	Lower Limit	Upper Limit	Best Estimate	Lower Limit	Upper Limit	Best Estimate	Lower Limit
Corrosion	Small Leak	4.00E-01	2.40E-01	4.30E-02	4.5E+00	2.7E+00	4.8E-01	0.01	0.01	0.01	4.48E-02	2.69E-02	4.82E-03	7.61E-02	5.48E-02	2.46E-02
	Large Leak	1.70E-03	3.10E-03	2.20E-03	1.9E-02	3.5E-02	2.5E-02	0.8	0.8	0.8	1.52E-02	2.78E-02	1.97E-02			
TPD	Rupture	1.40E-03	0	0	1.6E-02	0.0E+00	0.0E+00	1	1	1	1.57E-02	0.00E+00	0.00E+00	OD Consequences		
	SSWC	2.30E-06	1.07E-06	4.00E-07	2.6E-05	1.2E-05	4.5E-06	1	1	1	2.58E-05	1.20E-05	4.48E-06	Upper Limit	Best Estimate	Lower Limit
Manufacturing	Rupture	1.70E-05	9.00E-06	4.20E-06	1.9E-04	1.0E-04	4.7E-05	1	1	1	1.90E-04	1.01E-04	4.70E-05	7.5	6.5	4.5
Latent Damage	Rupture	1.00E-05	3.40E-06	7.10E-07	1.1E-04	3.8E-05	8.0E-06	1	1	1	1.12E-04	3.81E-05	7.95E-06			
Fabrication	Rupture	9.10E-07	2.50E-07	3.00E-08	1.0E-05	2.8E-06	3.4E-07	1	1	1	1.02E-05	2.80E-06	3.36E-07			
Interaction of Threats	Rupture	3.00E-06	2.25E-06	1.60E-06	3.4E-05	2.5E-05	1.8E-05	1	1	1	3.36E-05	2.52E-05	1.79E-05			

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 2, pg. 16 and Appendix D

Preamble:

Figure 2.5 depicts a considerable bias between the ILI and Field Measurements. We would like to understand how this information was used in assessment of the pipeline.

Question(s):

Appendix D seems to present an adjustment to the ILI measurements to bring them into an adjusted tolerance. Please clarify the purposes of Appendix D.

- a) Given the above answer on adjustments in Appendix D, what measurements were used to develop the risk assessment estimated from the ILI measurements.

Response:

The purpose of Appendix D is to show the ILI-NDT validation analysis, following the guidelines of American Pipeline Institute Standard 1163 (API 1163). The trending analysis suggests that the ILI tool sizing and detection capabilities were lower when compared to the vendor specification.

- a) As per Exhibit B, Tab 1, Schedule 1, Page 15, Paragraph 29, there was an apparent under call bias of 14% where actual defect dimensions were more severe than reported by the ILI tool. These parameters were applied in the corrosion reliability calculations as outlined in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 81 to 88.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 2, pg. 18

Preamble:

*This pipeline has observed one corrosion leak failure over the past 15 years of failure record history over its length (11.2km).*

We would like to compare that frequency with recent replacement projects.

Question(s):

Please provide the number of corrosion leaks found over the 15 years prior to the LTC replacement applications and the total length of the pipeline for:

- a) The Windsor line
- b) The London lines

Response:

a - b)

The following table lists the number of corrosion leaks over the 15 years prior to LTC replacement applications and total the length for the respective pipelines.

Pipeline	Total Corrosion Leaks	Total Length (km)	Leaks/km
London Lines	5	134.6	0.037
Windsor Line	4	53.1	0.075

Although the St. Laurent Pipeline only had one corrosion leak in the past 15 years, by comparison, this represents a greater leak rate of 0.0892 leaks/km than the London



Lines and Windsor Line. When determining the overall risk of a pipeline, it is important to consider all hazards and the resulting consequences of a pipeline failure.

As noted in Exhibit B, Tab 1, Schedule 1, page 32, one of the key contributing factors to the high risk of the SLP stems from the urban environment it operates in, where the London Lines and Windsor Line are both primarily located in rural setting. Urban settings have higher population densities, wall-to-wall concrete, densely congested right of ways (beneath or adjacent to arterial roads) and, in the case of SLP, frequent latent third-party damages, all of which leads to a greater potential for catastrophic consequences (e.g. gas migration into nearby buildings, followed by ignition, which could result in a building explosion). These factors increase the potential for health and safety impacts and significant customer outages if a leak were to occur, whether by corrosion, third-party damage, or other causes. As such, the overall risk of each pipeline should be assessed individually, as it is not useful to look solely at one risk factor or historical consequences such as leak history when comparing pipelines operating under vastly different circumstances. Please see Exhibit I.1-STAFF-8 for further details on the inappropriateness of using solely the number of leaks to assess risk.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 2, pg. 18

Preamble:

*This pipeline has observed one corrosion leak failure over the past 15 years of failure record history over its length (11.2km).*

We would like to compare that frequency with recent replacement projects.

Question(s):

Please identify any and all measures undertaken to enhance leak detection since 2020.

- a) Please provide the cost of those measures for each year.
- b) Please provide the cost to repair, sleeve or replace these leaks for each of the years since 2020.

Response:

Please see Exhibit B, Tab 1, Schedule 1, page 2, paragraph 7 regarding additional leak surveys.

a) The estimated cost per year for leak surveys are included in Table 1.

Table 1: Annual Leak Survey Costs (2020-2024)

	2020	2021	2022	2023	2024 YTD
Cost <sup>[1]</sup>	0	0	\$12,800	\$10,034	\$3,200

Notes:

[1] Assumes a cost of \$3200 per survey.

However, as detailed in Exhibit I.1-STAFF-8 part c), Enbridge Gas's position is that it is not appropriate to assess the condition of the pipeline based solely on the number of leaks.

b) Please see response at Exhibit I.2-ED-10.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 2, pg.46-47 and Attachment 1

Preamble:

*Under the category **Highway Operations**: A leak and subsequent emergency repair on the St. Laurent pipeline would cause a severe disruption to the traffic flow in this area as any roadway would need to be shut down to access the pipeline...*

*Based on the above vehicle volume statistics on the adjacent roadways to St. Laurent, any failure would result in significant disruption to the vehicle traffic and access to residential areas, schools, retail, and commercial buildings.*

We would like to understand this claim.

Question(s):

For the detection and repair described in Attachment 1, please provide:

- a) The duration of time that traffic was stopped:
  - i. On any lane of Highway 417
  - ii. On the off-ramp proximate to the pipe being replaced

Response:

- a) For the repair described in Attachment 1 an Emergency Operations Center was formally established to manage the repair of the pipe. In this circumstance the location of the anomaly allowed Enbridge Gas to develop a mitigation plan which included relocating the pipeline thereby causing minimal disruption to traffic on the

highway and off-ramp. However, this may not be the case in every situation. If the Company had to perform an emergency leak repair at this exact location, Enbridge Gas would have immediately shut down the ramp and the highway to facilitate the repair and/or replacement required to make the situation safe.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 2, pg.46-47 and Attachment 1

Preamble:

*Under the category Highway Operations: A leak and subsequent emergency repair on the St. Laurent pipeline would cause a severe disruption to the traffic flow in this area as any roadway would need to be shut down to access the pipeline...*

*Based on the above vehicle volume statistics on the adjacent roadways to St. Laurent, any failure would result in significant disruption to the vehicle traffic and access to residential areas, schools, retail, and commercial buildings.*

We would like to understand this claim.

Question(s):

Has the replacement of this section of pipe been removed from all baseline analysis of continued risk of the St. Laurent pipeline project.

a) Please explain fully.

Response:

The 162 m replacement (including the 80% metal loss feature) spanning the on-ramp and off-ramp of the 417 highway that was completed in November 2022 was fully accounted for in the baseline analysis of the continued risk of the SLP. Therefore, the risk analysis reflected the actual reliability of the replaced section considering the new construction, as can be seen in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 42-



44, Figures 5.6-5.8.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 2, pg. 66

Preamble:

*Lastly, a sensitivity analysis was completed to determine the impact various input or key assumptions would have to the results of the three approaches in which the pipelines condition was evaluated against absolute thresholds. The results of the sensitivity analysis showed that the recommendation made will not substantially change by applying unconservative assumptions/inputs into the various models.*

Question(s):

Please file the sensitivity analysis.

Response:

Please see Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 60 to 66.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 3

Preamble:

EGL evidence provides a memo from DNV that includes a conclusion of:  
*DNV agrees with the Enbridge conclusion that additional remedial action to improve the reliability of 8.8 km of the pipeline should be considered.*

And a recommendation of:

*Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.*

We would request answers from DNV on the following questions:

Question(s):

Based upon DNV's assessment, please a prioritized list of recommended remedial actions that could improve the reliability of the 8.8 km of pipeline that should be considered.

Response:

The assessment of potential remedial actions falls outside the scope of DNV's engagement with Enbridge Gas and therefore they have not completed such an analysis. DNV was retained to evaluate the reliability and risk assessment methodologies used in the QRA and the application of various risk tolerance thresholds.



DNV concluded the methodologies applied were consistent with standard industry practice, and offered an independent and objective expert assessment on the validity of the QRA's findings.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 3

Preamble:

EGL evidence provides a memo from DNV that includes a conclusion of:  
*DNV agrees with the Enbridge conclusion that additional remedial action to improve the reliability of 8.8 km of the pipeline should be considered.*

And a recommendation of:

*Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.*

We would request answers from DNV on the following questions:

Question(s):

From the recommendation quoted above, what eventualities was DNV considering that may prompt further risk prioritization in the future.

- a) Please elaborate on the “more detailed consequence estimation than currently evaluated” with some specific steps that could be undertaken.

Response:

The following responses were provided by DNV:

Eventualities that may prompt future risk prioritization were theorized to be possible if decisions had to be made about which sections of the pipeline to remediate first. A more detailed approach to the consequence modeling would provide a more nuanced risk picture along the pipeline, but was not expected to change the overall conclusion of the initial assessment that additional remedial action should be considered.

- a) The current approach to the consequence estimation has not evaluated specific release scenarios with modeling, but instead generically assumed that a release event would result in either 0.5 (minimum) to 10 (maximum) people impacted and applied the estimate to all locations along the pipeline. A “more detailed consequence estimation” would entail evaluating specific release scenarios from the pipeline at specific release locations and performing consequence hazard modeling of the release scenarios to understand the potential extent of the flammable hazard zones and evaluate the potential impacted locations and potential number of people impacted based on population density estimates. The consequence modeling could be performed with simplified free-field models or with computational fluid dynamics (CFD) depending on the complexity of the scenario. A range of release scenario sizes, weather conditions and potential release orientations could be evaluated with different associated probabilities of occurrence. As noted in the response to the first question (un-numbered, above), it is not expected that the detailed approach would change the overall conclusion of the initial assessment.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 3

Preamble:

EGI evidence provides a memo from DNV that includes a conclusion of:  
*DNV agrees with the Enbridge conclusion that additional remedial action to improve the reliability of 8.8 km of the pipeline should be considered.*

And a recommendation of:

*Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.*

We would request from EGI the following:

Question(s):

Please identify the 8.8 km referred to by plotting on a map.

Response:

The 8.8 km of pipeline referred to by DNV corresponds to the red "Above Limit" sections of pipe shown in Exhibit B, Tab 1, Schedule 1, Attachment 2, page 44, Figure 5.8.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 3

Preamble:

EGI evidence provides a memo from DNV that includes a conclusion of:  
*DNV agrees with the Enbridge conclusion that additional remedial action to improve the reliability of 8.8 km of the pipeline should be considered.*

And a recommendation of:

*Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.*

We would request from EGI the following:

Question(s):

Please provide a description of any or all enhancements to cathodic protection on the pipeline undertaken since 2020.

- a) Please specify what was done.
- b) The location applied
- c) Pipe to soil readings before and after the enhancement was implemented.

Response:

As a standard practice, Enbridge Gas reviews the cathodic protection system annually for effectiveness and changes are made, as required.

a) The cathodic protection system for the pipelines identified in the St. Laurent Pipeline project is an impressed current cathodic protection system (ICCP). Enhancements made to the ICCP system since 2020 included the following:

i. Increased the existing individual rectifier outputs to enhance protection levels in areas localized to each rectifier's area of influence.

- In July 2023, the outputs of two rectifiers that influence the St. Laurent Pipeline system were increased. Datalogging technology was used to record pipe-to-soil readings within the area of influence of each rectifier. While the dataloggers were recording, the rectifier outputs were increased in steps and given time to settle after each increase. After enough steps were performed, the data were analyzed to determine the appropriate increase in rectifier output to implement an overall increase of the protection levels within the rectifier's area of influence of 100mV. Therefore, the pipe-to-soil data for the enhancement for the test points within the rectifier's area of influence will be approximately 100mV more negative than before the enhancement.

ii. Reduced the amount of steel that the ICCP system protects.

- On Tremblay and the lettered Avenues, older steel has been replaced with polyethylene pipe (PE). The existing ICCP system rectifiers have been allowed to operate at the same outputs after the steel replacement as they were operating at before the steel replacement. The pipe-to-soil readings in the area will be reviewed in 2025 with appropriate adjustments to be performed as necessary.

b) The two rectifiers identified in part a) i. are located at [REDACTED] (Rectifier 81), and on [REDACTED] (Rectifier 89).

c) Please see Table 1.

Table 1  
Rectifier Results Before and After

Rectifier	Date	Tap Coarse	Tap Fine	Voltage (VDC)	Current (ADC)
81	July 19, 2023	B	2	14.0	10.0
	July 26, 2023	B	3	16.9	11.9
89	July 19, 2023	B	5	22.0	3.3
	July 26, 2023	C	3	29.5	4.5



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

1

Reference:

Exhibit B, Tab 3, Schedule 1, Attachment 1. pg.16 and  
<https://natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/heat-pumps-uptake-glance/26081>

Preamble:

The first reference shows NRCan statistics presenting a very modest growth in heat pump adoption in the years 2016 to 2020 to extrapolate a 2024 rate of 8%. The second reference provides their actual provincial statistic of 64,055 heat pumps by 2024.

Question(s):

Please reconcile the extrapolation with the actual data.

Response:

The data from NRCan's Comprehensive Energy Use Dataset, referenced at Exhibit B, Tab 3, Schedule 1, Attachment 1, pg.16, (FRPO's first reference), indicates that in 2020, 394,600 or 6.8% of the 5.835 million heating systems in Ontario were heat pumps. Enbridge Gas linearly extrapolated the 2020 data to 2024, which results in approximately 430,600 heat pumps, or approximately 7.4% which was conservatively rounded up to 8% as explained at Exhibit B, Tab 3, Schedule 1, Attachment 1, pg.16. 8% of 5.835 million is approximately 466,800 heat pumps.

The second reference FRPO has provided represents the number of heat pumps installed as a result of the NRCan Greener Homes program, delivered in Ontario through the HER+ program by Enbridge Gas. At the time of the SLP application, 64,055 heat pumps were installed due to the program. These heat pumps would be considered incremental to the data provided above from NRCan, as they were installed after 2020.

Additionally, Enbridge Gas notes that the sum of the 2020 data (i.e., 394,600) and the number of incremental heat pumps installed through the NRCan greener homes program since 2020 (i.e. 64,055), results in 458,655 heat pumps estimated to be in Ontario in 2024, or approximately 7.9%, which is in line with the assumed value of 8%.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Question(s):

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.

Response:

Please see Table 1 and 2 for the Capital and O&M costs incurred to investigate, maintain (ie. vital main standbys, valve inspections, station inspections) and replace the SLP pipeline.

Table 1: Capital Costs 2021 - YTD Aug 2024 Actual

	2021	2022	2023	YTD 2024	Total
Capital – Replacement <sup>[1]</sup>	1,298,665	5,023,127	917,266	1,046,258	8,285,316
Capital – Investigative <sup>[2]</sup>	-	3,877,177	(245,900)	(26,351)	3,604,925
IDC	72,874	215,651	100,316	748,258	1,137,099
Overhead & Loadings	276,855	1,999,778	203,255	237,187	2,717,074
Total Capital Expenditures	1,648,394	11,115,732	974,936	2,005,352	15,744,414
Abandonment	3,216	25,521	-	-	28,737
Total	1,651,610	11,141,253	974,936	2,005,352	15,773,151

Notes:

[1] Costs for the Project (ie. design, material).

[2] Includes the repair on Tremblay Rd and capital portion of the ILI.



Table 2: O&M Costs 2021 - YTD Aug 2024 Actual

	2021	2022	2023	YTD 2024	Total
ILI and Repair Costs <sup>[1], [2]</sup>	0	2,476,899	105,627	17,053	2,599,580
Rockcliffe Leak <sup>[2]</sup>	0	0	107,309	8,639	115,948
Total O&M Costs	0	2,476,899	212,936	25,692	2,715,527

Notes:

[1] Includes the O&M portion of the ILI.

[2] Includes materials, labour and restoration.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

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.

Response:

The conclusion in the current application is fundamentally the same as and validates the original conclusion provided in EB-2020-0293: that urgent mitigation is required. Enbridge Gas’s conclusion is supported by significant additional evidence in this application and strengthened by its confidence in the quality of new evidence it has obtained since the last application. The following factors emphasize that urgent mitigation is required:

- Pipeline-Specific Inspection Data - The conclusion is derived from direct physical evidence (i.e. pipeline-specific inspection data) from Enbridge Gas’s Targeted Integrity Program initiated in 2022. The conclusion in EB-2020-0293 was primarily based on susceptibility factors derived from a larger population of distribution pipelines. As shown in the current Application, the Targeted Integrity Program gathered information on the condition of the pipeline through surveys, field inspections, and six in-line inspections using a robotic crawler tool. Please see Exhibit B, Tab 1, Schedule 1, page 6 to 28 for details of the Targeted Integrity Program and its findings.

- Quantitative Risk Assessment (“QRA”) - The conclusion in the current Application is based on an objective, data-driven risk assessment and evaluation against established risk thresholds, whereas the previous Application did not include pipeline-specific quantified risks. For example, the SLP’s computed risks were compared against defensible industry thresholds in order to evaluate their severity and determine where risk mitigation measures were necessary. These thresholds included the CSA Z662 Annex O Reliability Targets, PHMSA Distribution Pipeline Significant Incidents Benchmark, and the Enbridge Standard Operational Risk Assessment Matrix (ORAM). This comparative analysis was not completed in the previous evidence.

Specifically, the QRA in the current Application highlights that:

- 8.8 km of the 11.2 km (79%) of the pipeline fail the acceptable CSA Z662 – Annex O reliability thresholds. In fact, several segments fail these reliability thresholds by several orders of magnitude.
- The rate of estimated significant incidents on the SLP is 2500 times higher than the historical average observed in the industry.
- The pipeline risks plotted on Enbridge Inc.’s Standard Operational Risk Matrix show that the financial, health and safety, operational disruption risks meet the definition that the SLP is high risk/very high risk.

For further details on the QRA methodology and results, please see Exhibit B, Tab 1, Schedule 1, pages 33 to 38.

- Additional Threats - The current Application includes a calculated high threat level due to both corrosion and third-party damage, whereas the previous Application was primarily driven by corrosion alone. The heightened risks of third-party damage are attributed to excessive gouging and dents observed on the pipeline, with 86 dents per km, which indicate a high frequency of external impacts. Laboratory testing has also revealed low material toughness, indicating a high rate of failure per impact. The combination of these factors leads to an elevated third-party damage threat level, resulting in the pipeline exceeding both Annex O ULS limits and Enbridge’s risk tolerance thresholds. Similarly, the inspected section of the pipeline exhibited significant corrosion, with 138 metal loss anomalies per kilometer, resulting in corrosion risks that surpassed the Annex O LLS limits, benchmark of PHMSA’s significant incidents, and Enbridge’s risk tolerance thresholds across much of the system. Although corrosion and third-party damage were the primary drivers behind the risk, other threats (such as selective seam weld corrosion and manufacturing defects) were examined in the new evidence and were not in the previous evidence.



- Independent Expert Validation - The results of the Targeted Integrity Program and the subsequent Quantitative Risk Assessment (QRA) were provided to DNV, an internationally recognized consulting firm specializing in quantitative risk assessments. DNV concurred with the conclusion that risk mitigation is required. For DNV's detailed conclusions, please see Exhibit B, Tab 1, Schedule 1, Attachment 3.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Question(s):

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

Response:

Please see response at Exhibit I.2-ED-2.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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? If 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.



Response:

- a) Table 1 summarizes the comparison of Full Replacement versus Extensive Inspection and Repair against the five dimensions included in the analysis. The sources and details for the values provided in Table 1 are in Exhibit C, Tab 1, Schedule 1, under the heading “Evaluation of Risk Mitigation Alternatives,” pages 7 to 20.

Enbridge Gas has identified two typos in Table 1 related to the “3. Financial” dimension as described below:

- i. NPV of the Extensive Inspection and Repair alternative should be stated as (\$179), not (\$170) to match the correct NPV provided in Exhibit C, Tab 1, Schedule 1, page 17, Table 5.
  - ii. The footnotes on Case B and Case C should be referencing footnote 5, not footnote 4.
- b) The direct values provided in Table 1 were created or calculated by Enbridge Gas staff. However, Integral Engineering contributed to the energy transition probabilistic assessments and the pipeline’s remaining useful life, influencing the development of Case A, Case B, and Case C in the NPV analysis. Please see Exhibit C, Tab 1, Schedule 1, pages 15 to 18, Paragraphs 24, 25, 28, and 31 for the details of how the energy transition probabilistic assessments influenced the cases used in NPV. Additionally, DNV reviewed and validated the methodologies used in the Enbridge Gas QRA, which form the basis of the values in the Public Safety and Residual Risk assessments. Please see Exhibit B, Tab 1, Schedule 1, page 36, Paragraph 53 for additional details of DNV’s engagement.
- c) Please see response at Exhibit I.2-STAFF-17 part a).
- d) Please see Exhibit C, Tab 1, Schedule 1, pages 15 to 18, Paragraph 24, 25, 28 and 31. The documentation and back-up supporting those values is provided in Exhibit B, Tab 3, Schedule 1, pages 10 to 17.
- e) In addition to the cases presented in the evidence, Enbridge Gas also evaluated a continuous range of useful life scenarios spanning 0 to 40 years using a probabilistic NPV method, with the results provided in the response at Exhibit I.1-SEC-2, Attachment 2, page 8.
- f) The NPV analysis for Case C (31 years) is based on the modeled outcomes of Case 6 presented in the probabilistic analysis found at Exhibit B, Tab 3, Schedule 1. Case 6 is the most aggressive and unlikely scenario considered in that analysis and is

predicated on the most aggressive disconnection assumption of 100% disconnection as soon as a customer adopts a heat pump (i.e., starting tomorrow). As described at Exhibit B, Tab 3, Schedule 1, paragraph 35, the most likely year in which no general service customers would be present under this scenario is 2055, and the earliest year, representing the 5th percentile (i.e., sooner than 95% of all the simulations), is 2052. Said another way less than 5% of modeled outcomes resulted in zero general service customers before 2052.

In addition, based on the response provided at Exhibit I.2-ED-11 part c), the years 2039 (15-year life) and 2049 (25-year life) occurred as a modeled outcome for Case 6, 0 times out of 1000 simulations. This indicates that assuming a 15 or 25-year life as requested for these hypothetical NPV analysis scenarios are extremely unlikely and unrealistic assumptions, and that the results of these additional scenarios would provide little to no value.

Further, both requested scenarios have end of lives within the modeled range of years for the Pan Canadian Framework coming into force, between 2035 and 2050. It is highly improbable that consumers would replace their equipment in advance of the end of life. These scenarios imply that not only are consumers disconnecting at a rate of 100% upon heat pump adoption, but they are also disconnecting from the gas system while not having replaced their heating or cooling equipment with a heat pump. These assumptions again are unrealistic. On this basis, Enbridge Gas declines to provide the requested analysis.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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 through 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.



Response:

- a) As noted in Exhibit B, Tab 1, Schedule 1, page 6, the goal of the Targeted Integrity Program was to determine the operability of the St. Laurent Pipeline (SLP) from a safety and reliability perspective, and to assess alternatives to extend the life of the asset. This program work pre-dated and evolved into the establishment of the Enhanced Distribution Integrity Management Program (EDIMP) and Asset Life Extension (ALE) approach, which started in 2024 and share the same objectives for the subset of critical distribution pipelines.

Going forward, Targeted Integrity Programs on distribution pipelines will be within the scope of EDIMP. EDIMP will collect the asset condition data through inline inspection, non-destructive examination, and other surveys, to support a risk assessment. If risk mitigation actions are required, alternatives will be evaluated through an ALE assessment to determine the optimal approach.

Charges relating to the SLP Targeted Integrity Program were assigned to the annual Integrity Department O&M workplan account. O&M costs related to EDIMP have been assigned a \$12.5 million annual O&M budget with variances assigned to the DIMP/EDIMP variance account (as agreed to in the Partial Settlement Agreement in EB-2022-0200 Phase 1 Rebasing)<sup>1</sup>.

- b) The previous integrity assessment filed in EB-2020-0293 partially relied on a statistical approach that was developed to report on the reliability of a broad asset population, which was then applied to the St. Laurent system. Specifically, it incorporated failure data from over 12,000 km of steel pipe across the entire distribution system which spans a diverse range of pipe attributes (i.e. size, age, soil type, etc.). This macro view of asset reliability is useful for understanding the overall system reliability to forecast generic failure frequencies at the system level. However, using asset specific data when available (e.g. ILI, direct assessments, etc.) yields a much more specific condition assessment of the asset itself.

As noted in Exhibit B, Tab 1, Schedule 1, Table 1, a significant amount of additional data on the St. Laurent system was collected in 2022 through the Targeted Integrity Program. These data provided a more thorough understanding of the actual condition of the pipeline and supported the completion of the Quantitative Risk Assessment, ultimately confirming the Company's previous conclusion that additional and timely mitigation actions are required to meet safety/reliability thresholds for the SLP.

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<sup>1</sup> EB-2022-0200 Decision on Settlement Proposal, August 17, 2023, p. 31.

- c) No. Enbridge Gas has two applicable programs with targeted integrity work: the Transmission Integrity Management Program (TIMP) and the Enhanced Distribution Integrity Management Program. The TIMP system, which is composed of approximately 3,700km of transmission pipelines has been subject to inline inspection, excavations, repairs, and risk assessments for many years. EDIMP was stood up in 2024 and aims to collect asset condition data on approximately 3-5 high priority distribution pipelines each year, out of a total of approximately 7,700km. The assessments from the 2024 data collection are still in progress. The recommended actions, if any, from these assessments have not been determined yet.
- d) The Targeted Integrity Program applied to the St. Laurent Pipeline in 2022 was guided by the principles outlined in the Company's Integrity Management Program (IMP) within the Integrated Management System (IMS), established in 2015. The objective of the IMP is to ensure Company assets are fit-for-service and operate in a safe, reliable, and compliant manner. Please refer to Attachment 1 for excerpts from the Enbridge Gas IMP documentation that provided guidance for the Targeted Integrity Program applied to the St. Laurent Pipeline (specifically the Introduction on pages 4-9, and section 2. Risk Management on pages 11-14).
- e) The cost consequences of EDIMP, which resulted from the development of the Targeted Integrity Program described in this evidence, were approved in the OEB Partial Settlement Agreement for EB-2022-0200 with a \$12.5 million annual budget, with variances to be recovered from or credited to ratepayers through a DIMP Variance Account.<sup>2</sup> Additionally, EGI proposed new cost recovery mechanisms for Asset Life Extension projects resulting from EDIMP work in EB-2024-0111 (Rebasing Phase 2).<sup>3</sup> An OEB decision in EB-2024-0111 is pending at the time of this response.

The content and technical aspects of these programs, however, are not subject to approval by the OEB. The technical regulator governing these aspects of Enbridge Gas's business is the Technical Standards and Safety Authority (TSSA).

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<sup>2</sup> EB-2022-0200 Decision on Settlement Proposal, August 17, 2023, p. 31.

<sup>3</sup> EB-2024-0111 Phase 2, Exhibit 1, Tab 17, Schedule 1, pages 11-17.

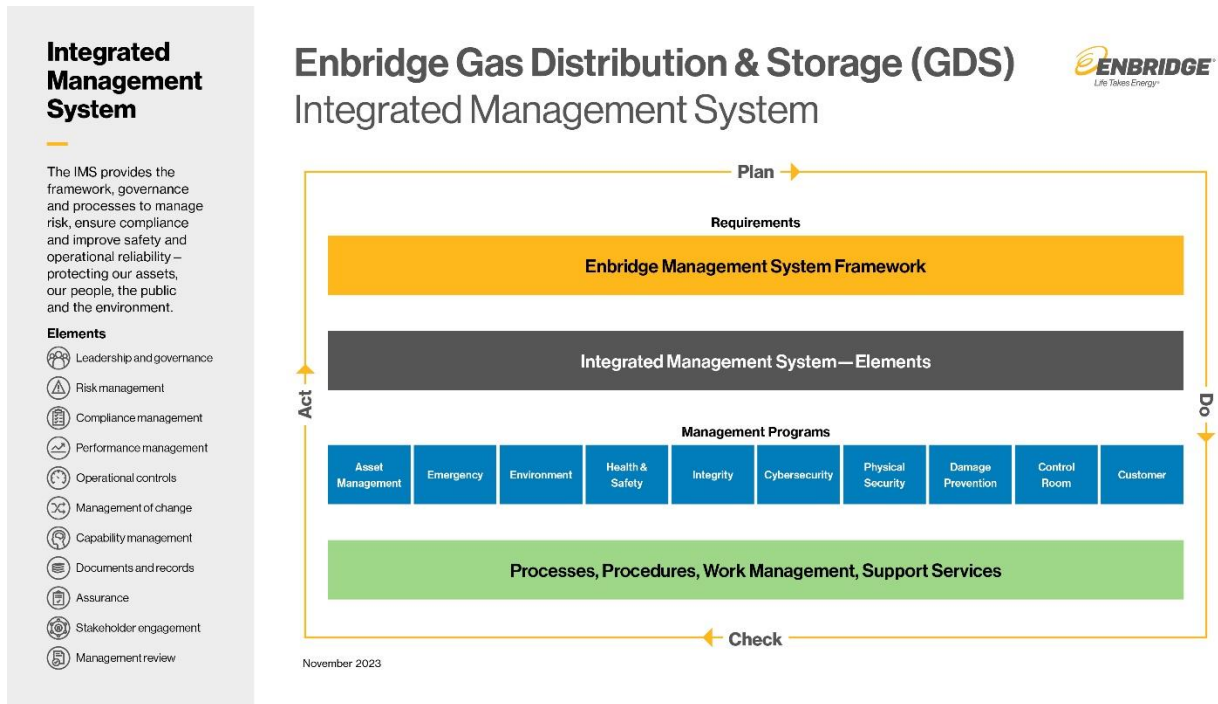
# Integrity Management Program

## Introduction

### Purpose

The Integrity Management Program (IMP) is one of the Management Programs within the GDS Integrated Management System (IMS) (Figure 1) designed to meet our obligations for the protection of people, property, and the environment. It is comprised of 5 sub-programs: Transmission IMP (TIMP), Distribution IMP (DIMP), Facilities IMP (FIMP), Storage Downhole IMP (SDIMP), and Utilization (UIMP). This document is designed to demonstrate how the IMP meets the Enbridge Management System Framework and other Compliance Requirements as noted in Section 3 – Compliance Management.

This document outlines the main components and processes used by the IMP; however other IMP supporting documents are linked within each Reference section and common IMS supporting documents are linked within Appendix – A.References. This document reflects current state and will be reviewed and updated annually to reflect changes and continual improvement opportunities.



**Figure 1 GDS Integrated Management System Structure**

### Management Program Scope

The oversight of the IMP and its sub-programs is summarized in Table 1.

**Table 1 Management Program Governance**

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## Integrity Management Program Document



**Integrity Management Program**

VP Level Sponsor: Vice President, Engineering & Integrity

Owner: Director, Integrity & Risk

Lead: Manager, System Integrity & Governance

Administrator: Specialist Integrity Compliance and Governance

TIMP	DIMP	FIMP	SDIMP	UIMP
Sub-Program Lead: Manager, Integrity Programs – Transmission and Enhanced Distribution Integrity Management Program	Sub-Program Lead: Manager, Integrity Programs – Distribution, Facilities and Low Carbon		Sub-Program Lead: Manager, Underground Storage & Reservoir Engineering	Sub-Program Lead: Manager, Pipeline Engineering & MOC

As outlined in the Integrated Management System Document, this program applies to<sup>1</sup>:

- All GDS employees and contractors
- Activities and operations within the complete lifecycle of assets from design, construction, operations and maintenance to abandonment. For UIMP, this includes activities and operations within the lifecycle of applicable customer assets.
- Assets owned by Enbridge Gas Inc., as well as assets that are operated and/or maintained by Enbridge Gas Inc. through various service agreements (includes several Canada Energy Regulator (CER) regulated assets).
- Enbridge Gas Inc.’s affiliate companies where the IMS is implemented on a fit-for-purpose basis depending on the regulatory requirements, operational size and complexity.

As outlined in the Enbridge Management System Framework (MSF) and the Integrity Management Framework Standard (IMFS), the goal of the IMP is to anticipate, prevent, manage, and mitigate integrity conditions that could adversely affect safety or the environment during the design, construction, operation, maintenance, or abandonment of an asset. The IMFS applies business unit practices currently in place, supplemented by industry and internal learnings to produce a set of leading industry integrity management program objectives. The IMFS currently applies to TIMP; however, at business discretion the relevant principles are applied to the other sub-programs. The IMP leverages the Integrity Management Core Process (Figure 2) as derived from the IMFS. It is utilized in principle across the IMP to demonstrate the sequence of key processes.<sup>2</sup>

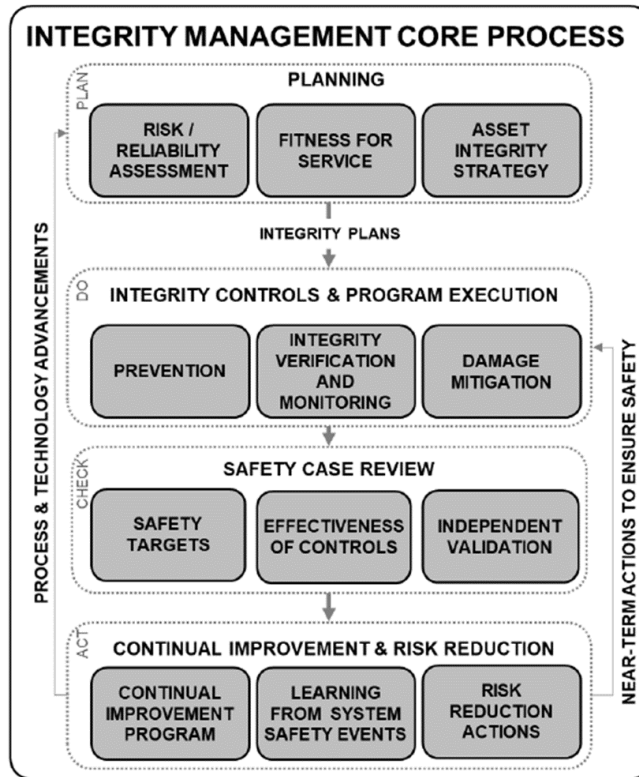
<sup>1</sup>Exclusions to the Integrity Management Program:

– A plan is under development for the inclusion of Gazifère, an EGI affiliate, in the IMP. For integration in DIMP/FIMP, a gap analysis and planning will occur in 2024 with further integration activities to be completed in 2025 and beyond.

<sup>2</sup>For programs where safety case is not applied, alternate methods are used to analyze program effectiveness

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**Integrity Management Program Document**



**Figure 2 Integrity Management Core Process**

The IMP includes the following sub-programs outlined in Table 2.

**Table 2 IMP Sub-Programs**

Integrity Management Sub-Programs	Description
<ul style="list-style-type: none"> <li>TIMP<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Pipelines with a maximum operating pressure (MOP) resulting in hoop stress levels greater than or equal to 30% of the Specified Minimum Yield Strength (SMYS) of the pipe</li> <li>Storage and Transmission Operations (STO) pipelines</li> <li>Canada Energy Regulator (CER) regulated pipelines</li> <li>Pipelines that carry unodourized gas, unless downstream of an Enbridge-owned pressure regulating station</li> </ul>
<ul style="list-style-type: none"> <li>DIMP<sup>4</sup></li> </ul>	<p>All gas carrying distribution assets from upstream custody transfer points (i.e., gate stations) to downstream customer meters:</p> <ul style="list-style-type: none"> <li><b>Pipe:</b> Gas distribution mains &lt;30% SMYS, headers, services, risers, valves, fittings</li> </ul>

<sup>3</sup>TIMP does not apply to:

- Pipe located in a station
- Wellhead assemblies
- Assets carrying fluids other than natural gas
- Pipelines that meet the TIMP description that are managed by other IMP sub-programs, as mutually agreed upon

<sup>4</sup>DIMP does not apply to customer owners gas carrying assets downstream of the customer gas meter

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**Integrity Management Program Document**

Integrity Management Sub-Programs	Description
	<ul style="list-style-type: none"> <li>• <b>Stations:</b> Distribution system stations (excluding FIMP scope) and customer stations</li> <li>• <b>Utilization:</b> Farm taps, commercial and residential meter sets, service extensions</li> </ul> <p>Note: The Integrity team has stood up an Enhanced Distribution Management Program (EDIMP) focused on steel distribution pipelines with the highest risk and criticality. These pipeline assets are currently covered within the DIMP.</p>
<ul style="list-style-type: none"> <li>• FIMP<sup>5</sup></li> </ul>	<p><b>Scope of FIMP applies to:</b></p> <ul style="list-style-type: none"> <li>• Facilities connected to GDS TIMP pipelines</li> <li>• Custody transfer facilities where the connected system is another transmission, distribution, or production company that supplies gas to or receives gas from EGI. This includes facilities connecting to GDS affiliate sites and facilities for receiving or producing renewable natural gas (RNG), compressed natural gas (CNG), liquified natural gas (LNG), or hydrogen.</li> <li>• Station Classes A, B, and C1, as defined in the <a href="#">Facilities Terms and Definitions</a></li> <li>• Stations that contain any of the following equipment:             <ul style="list-style-type: none"> <li>• Glycol-based Heating System (Heat Exchanger or Line Heater)</li> <li>• Odourization</li> <li>• Filtration (Liquid removal or custom designed dry gas filter<sup>6</sup>), where the filter is deemed to be a pressure vessel as per ASME Boiler Pressure Vessel Code</li> </ul> </li> </ul> <p><b>Scope of FIMP Responsibility:</b></p> <p>For the stations meeting</p> <ul style="list-style-type: none"> <li>• The portions of the station from the inlet to outlet valves including station bypass piping</li> <li>• For stations connected to a TIMP pipeline or another transmission company:             <ul style="list-style-type: none"> <li>• The piping upstream of the inlet valve to a maximum of 100m in length, starting at the branch of the tee(s) on the TIMP pipeline or custody transfer point</li> </ul> </li> </ul>

<sup>5</sup>FIMP does not apply to:

- Valve sites that are not part of a transmission pipeline
- Instrumentation or electrical system components
- All rotating equipment (including compressors, turbines and engines)
- Compressed air systems, compressor lubrication oil systems and piping, fittings, or components on the compressor skid that are part of the compressor package (except for pressure vessels that are not exempt by API 510 Annex A)
- Station piping upstream of the inlet valve or downstream of outlet valve, connected to a TIMP pipeline or another transmission company, where the length is greater than 100m.
- Heating system components aside from the heat exchanger

<sup>6</sup>Excludes: Canister style dry gas filters including Canadian/American Meter CFR, Peco Type 30, or similar and any other filters with connection sizes smaller than NPS 2

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## Integrity Management Program Document

Integrity Management Sub-Programs	Description
	<ul style="list-style-type: none"> <li>The piping downstream of the outlet valve to a maximum of 100m in length, ending at the branch of the tee(s) on the TIMP pipeline or the custody transfer point</li> <li>Launchers and receivers, including the valve located between the start/end of the TIMP pipeline and the launcher/receiver</li> </ul> <p><b>Equipment Types in FIMP Scope:</b> The following equipment types are in scope of the FIMP, independent of whether the facility is in scope of the FIMP:</p> <ul style="list-style-type: none"> <li>Heat Exchangers or Line Heaters that transfer heat to natural gas using glycol</li> <li>Pressure Vessels, as defined by the ASME Boiler Pressure Vessel Code</li> <li>Tanks within GDS facilities, inclusive of tank style heat exchangers</li> <li>Overpressure protection devices used to protect pressure vessels</li> </ul>
<ul style="list-style-type: none"> <li>SDIMP<sup>7</sup></li> </ul>	<ul style="list-style-type: none"> <li><b>Wells:</b> Natural gas storage wells, observation wells, and oil producing wells *For wells in SDIMP, the program applies to the wellbore (including cement and casing) and wellhead (attached components up to and including the master valve or emergency shutdown valve where installed)</li> <li><b>Reservoirs:</b> Gas storage reservoirs</li> </ul> <p>Note: SDIMP affiliate scope is inclusive of Sarnia Airport Storage L.P. and Market Hub Partners Canada L.P..</p>
<ul style="list-style-type: none"> <li>UIMP<sup>8</sup></li> </ul>	<p>All natural gas appliances, equipment, and accessories downstream of the EGI-owned meter and regulator set:</p> <ul style="list-style-type: none"> <li><b>Residential Appliances:</b> Furnaces, Hot Water Boilers, Storage and Instantaneous Water Heaters, Fireplaces, Standby Generators, Residential Gas Ranges and Cooking Appliances, Pool Heaters, Room Heaters, Decorative Appliances and Gas Log, Unit Heaters, Space Heating Boilers, Unvented Residential Small Appliances, Domestic Clothes Dryers</li> <li><b>Commercial Appliances:</b> Commercial Cooking Appliances, Steam Boilers and Steam Generators, Unit Heaters, Makeup Air Units, Rooftop HVAC Units, Space Heating Boilers, Emergency Generators, Commercial Clothes Dryers, Infrared Heaters</li> <li><b>Industrial Appliances:</b> Makeup Air Units, Including Industrial Air Heaters, Rooftop HVAC Units, Space Heating Boilers, Hot Water</li> </ul>

<sup>7</sup>SDIMP does not apply to:

- Piping and other equipment downstream of the wellhead or emergency shut-off valve (ESV)
- Brine wells
- Disposal wells

<sup>8</sup>UIMP does not apply to:

- EGI affiliates (Gazifère)
- Customer gas piping system sizing or configuration
- Appliance's manufacturer's defect(s) that can result in public risk
- Appliance's design and construction characteristics

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## Integrity Management Program Document



Integrity Management Sub-Programs	Description
	<p>Boilers, Emergency Generators, Infrared Heaters, Process equipment</p> <ul style="list-style-type: none"> <li>• <b>Equipment Piping:</b> Gas piping systems (physical operation and condition only) and valves</li> <li>• <b>Equipment Regulators:</b> Customer Line Pressure Regulators</li> <li>• <b>Accessories:</b> Appliance’s air Supply and venting systems</li> </ul> <p>Note: UIMP scope includes efforts that although do not represent GDS direct maintenance activities of customer’s assets, do influence the safety of the customer and their gas appliances and installations</p>

The IMP is supported by controls that are managed by the Integrity, Engineering, Operations, and Energy Services as illustrated in Figure 3.

Those accountable for controls provide updates on their execution activities, which are reviewed by management as required to ensure that applicable targets are being met. Further trending and assessment of metrics are integrated into Integrity hazard assessments and input to Integrity planning as required.

### Integrity Management & Engineering/Operational Controls Structure

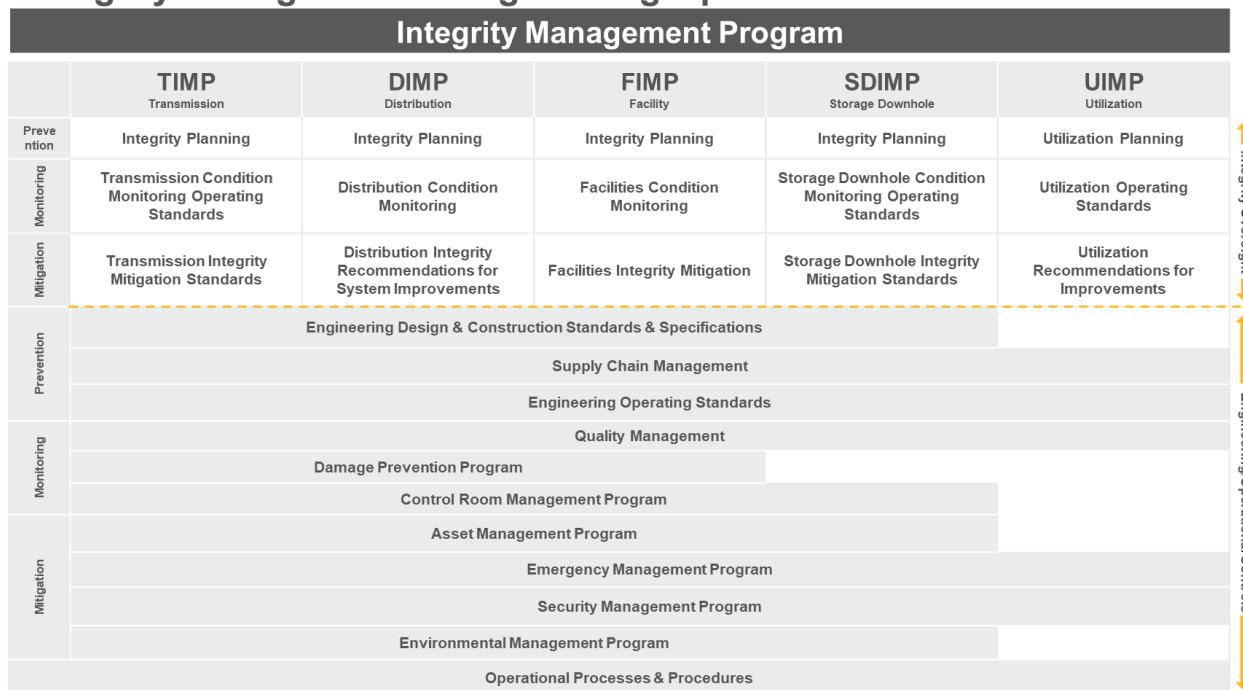


Figure 3 Integrity Management and Engineering/Operational Controls Structure

### References

- [Facilities Terms and Definitions](#)

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Roles	Responsibilities
<p><b>IMP Sub-Program Lead</b> Refer to Table 1</p>	<ul style="list-style-type: none"> <li>Establish, implement and maintain applicable controls to meet compliance requirements, GOTs and for continual improvement of sub-program</li> </ul>
<p><b>Management Program Stakeholders and Subject Matter Experts (SME)</b> Enbridge Safety &amp; Reliability Engineering Asset Management STO Operations Distribution Operations Distribution Protection Gas Control &amp; Management Sub-Program Supervisors</p>	<ul style="list-style-type: none"> <li>As outlined in Integrated Management System Document and IMS Governance Standard.</li> </ul>

### 1.3 Evaluation of Resources

The IMP annually follows the IMS Resource Plan Process (RPP) and IMS Resource Plan Guide to ensure adequate resources are in place to deliver program goals, objectives, metrics and targets, meet compliance requirements and continually improve.

A confirmation of adequate resources and any gaps and mitigation plans is reported annually in the Management Review and Top Management Review materials.

### References

Refer to **Appendix - A.References**.

## 2. Risk Management

Effective risk management contributes to the achievement of GDS overall safety and reliability goals. The identification of hazards and assessment of risk provides a realistic picture of the types of operational challenges that may impact the ability to conduct business in a safe, reliable, and socially responsible manner.

The IMP follows the GDS Risk Management processes as outlined in the Hazard Identification and Risk Assessment (HIRA) Procedure for the identification, assessment, and treatment of program risks. Any deviations from this procedure, must be discussed with GDS Risk Services and approved by GDS Risk Governance.

As part of the IMP Core Process, Integrity hazard and risk related data, analysis and integrity assessment outcomes are reviewed on a regular basis by each sub-program to identify any new or updates to integrity-based hazards and potential hazards that are used as inputs to the IMP Hazard Management Process.

The IMP Hazard Management Process is facilitated for all sub-programs to bring forward any updates, provide input to develop standard definitions and document the applicable

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## Integrity Management Program Document

hazards as part of the combined IMP Hazard Definitions document. Sub-Programs utilize the IMP Hazard Definitions to further identify active hazards through the assessment of hazard attributes that can include sub-hazard categories, asset classes, and causes of failure. Applicable and active hazards are then utilized as inputs to the GDS Risk Intake Tool.

When unique or additional Integrity assessments or controls are developed and/or utilized, the required information is gathered to support proposed new hazards and related risk elements.

See Table 4 for sub-program-specific risk management practices.

**Table 4 Sub-Program Risk Management Practices**

Integrity Management Sub-Program	Risk Management Practices
TIMP/DIMP	<p>Operational risk and risk management are used as part of the decision-making process to keep operational risks at an acceptable level, using a consistent and structured methodology that results in a logical and defensible process.</p> <p>The basis for formulating estimates of risk along a Pipeline System depends on the following two critical issues:</p> <ul style="list-style-type: none"> <li>• An understanding of which hazards are considered to contribute in a significant manner to the overall failure likelihood of pipelines within the system.</li> <li>• An understanding of which of the various impacts best represent the Company's corporate value system with respect to losses arising from a potential pipeline failure.</li> </ul> <p>The calculated risk for each component is the product of probability of failure multiplied by the cost of the consequences of the failure:</p> $Risk = Probability\ of\ Failure * Consequence\ of\ Failure$ <p>The types of consequences resulting from failures on pipelines can include public safety impacts, financial loss, environmental impact, regulatory impacts, customer impacts, and impact to corporate image.</p> <p>The TIMP operational risk is calculated on a quarterly basis using the Pipeline Risk Integrity Management Software (PRIM), and risk results are provided to internal stakeholders. Recommendations to mitigate risk can be suggested and modeled using "what-if" scenarios within PRIM as required.</p> <p>Detailed information of the models, including scope and methodologies, can be found in the PRIM TIMP Risk Algorithm Document and the PRIM Distribution Risk Model Document, for TIMP and DIMP respectively.</p>
FIMP	<p>The FIMP uses qualitative approaches to estimate relative risk ranking associated with facilities piping, pressure vessels and heat exchangers and are used as inputs to prioritize piping inspections.</p> <p>Integrity Assessment team is developing a quantitative risk model for FIMP to quantify both Probability of Failure (POF) and Consequence of Failure (COF) components suitably to get quantitative risk values for FIMP assets.</p>

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**Integrity Management Program Document**

Integrity Management Sub-Program	Risk Management Practices
SDIMP	Operational risks are used as part of the decision-making process to keep risks at an acceptable level, using a consistent and structured methodology; one that results in a logical and defensible process. An SDIMP quantitative risk model is currently under development.
UIMP	UIMP relies on the identification of field related hazards by those staff working on the field and conducting customer assets inspections, to ensure safe operations.

The sub-programs apply several prevention strategies and propose mitigation methods on a situational basis that may include:

- Increased inspection or monitoring frequency
- Targeted inspections
- Scheduled inspections (UIMP)
- Operational changes (e.g. pressure restrictions, communication approach, increased monitoring, procedural changes)
- Recommendation for repairs and remediation
- Recommendation for asset replacement or abandonment
- Data analysis (e.g., inspection results, simulations, statistical)
- Issuing safety violation forms and Statistical Analysis of Unique Re-inspections (UIMP)
- Stakeholder communications (e.g., customer communication/campaigns)

Integrity representatives and those responsible for engineering and operational controls participate in applicable risk assessment activities as part of the HIRA procedure on a regular basis as information and conditions change.

Emerging and Significant risks, as defined in the GDS HIRA, for the IMP are confirmed with the GDS Risk Services team and reported in both Management and Top Management Reviews. At the Enterprise level, aspects specific to the IMP can be incorporated into the Corporate Risk Assessment (CRA) and Top Operational Risk (TOR) processes, which are initiated by the Enterprise as needed.

## References

- [GDS Integrity Document Library](#)
- [IMP Hazard Management Process](#)
- [IMP Hazard Definitions](#)
- [Hazard Inventory – TIMP](#)
- [PRIM TIMP Risk Algorithm Document](#)

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## Integrity Management Program Document



- [PRIM Distribution Risk Model Document](#)
- [Hazard Inventory – FIMP](#)
- [Hazard Assessment Process – FIMP](#)
- [Hazard Identification Procedure - FIMP](#)
- [Piping RBI Methodology Procedure](#)
- [Hazard Inventory - DIMP](#)
- [DIMP Asset Guide](#)
- [Hazard Assessment Procedure – DIMP](#)
- [Asset Health Review Process – DIMP](#)
- [Asset Health Review Procedure - DIMP](#)
- [Asset Inventory Standard - SDIMP](#)
- [Hazard Inventory - SDIMP Wells](#)
- [Hazard Inventory - SDIMP Reservoirs](#)
- Hazard Assessment Procedure – SDIMP Wells
- [Hazard Assessment Procedure – SDIMP Reservoirs](#)
- [Field Level Hazard Assessment Form - UIMP](#)

### 3. Compliance Management

#### 3.1 Regulatory Requirements and Best Practices

In addition to the Enbridge Management System Framework and Integrated Management System requirements, there are key regulatory requirements that govern the development and implementation of the IMP:

**Table 5 Regulatory Requirements**

Integrity Management Sub-Program	Regulatory Requirement
TIMP	<ul style="list-style-type: none"> <li>• O. Reg 210/01 – Oil and Gas Pipeline Systems (Current TSSA adopted version CSA Z662 – Oil and Gas Pipeline Systems)</li> <li>• SOR/99-294 – CER Onshore Pipeline Regulations (Current CER adopted version CSA Z662 – Oil and Gas Pipeline Systems)</li> </ul>
DIMP	<ul style="list-style-type: none"> <li>• O. Reg 210/01 – Oil and Gas Pipeline Systems (Current TSSA adopted version CSA Z662 – Oil and Gas Pipeline Systems)</li> </ul>
FIMP	<ul style="list-style-type: none"> <li>• O. Reg 210/01 – Oil and Gas Pipeline Systems (Current TSSA adopted version CSA Z662 – Oil and Gas Pipeline Systems)</li> </ul>

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### Integrity Management Program Document

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) Please refer to Attachment 1 (St. Laurent Integrity Actions Report - October 30, 2023), Table 2 which summarizes the integrity related reports that were produced from 2013 to 2022.

The following activities were completed prior to the original filing of the St. Laurent Pipeline replacement project (EB-2020-0293):

- i. NPS 16 Bridge Crossing Inspection (2020)
- ii. Indirect Cathodic Protection and Coating Condition Inspection (2018)
- iii. Depth of Cover Survey (2017)

- iv. Bi-Annual Leak Survey
- v. Targeted Integrity Excavation with Non-Destructive Examination (2013/2014)

The following new activities were completed on the St. Laurent Pipeline in 2022:

- i. NPS 16 Bridge Crossing Inspection (updated)
- ii. Indirect Cathodic Protection and Coating Condition Inspection (updated)
- iii. Depth of Cover Survey (updated)
- iv. Bi-Annual Leak Survey updated with Enhanced Leak Survey
- v. Targeted Integrity Excavations with Non-Destructive Examination
- vi. Inline Inspection Robotic Crawler – Magnetic Flux Leakage and Laser Deformation Sensor

Please see response at Exhibit I.1-STAFF-4 for an explanation on why these new activities were not completed prior to the original filing.

This application and the additional activities completed represent the most thorough asset condition assessment and quantitative risk assessment completed on a distribution pipeline to date at Enbridge Gas.

- b) The original filing (EB-2020-0293) determined that it was not feasible/practical to inspect the SLP with a conventional free-flow inline inspection tool (i.e. tool that is propelled by gas flow from a launch point and recovered at a receiver point) due to the cost required to retrofit the line and remove obstructions that would prevent the tool from traversing the pipeline. In the original filing, the inspection of the pipeline refers to a full inspection for the purpose of maintaining the pipeline similar to inspections conducted on transmission assets. However, the 2022 ILI campaign was performed to partially inline inspect the pipeline using a non-traditional robotic crawler ILI for the purpose of assessing the condition of the entire pipeline using statistical samples. For discussion on the rationale for this inspection approach, please see response at Exhibit I.1-STAFF-5 part c).

The advancement of robotic crawler inline inspection technologies in recent years has made it possible to obtain reliable results by inspecting the pipeline in multiple short sections. These tools can enter the pipeline through welded hot-tap fittings and allow more flexibility to inspect the line without replacing all obstructions that would prevent a conventional tool from passing.

# St. Laurent

Integrity Actions Report by the Distribution Integrity Management Program (DIMP)

October 30, 2023

## Report

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Company: Enbridge Gas Distribution

Owned by: DIMP Department







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## Executive Summary

This report prepared by the Distribution Integrity Management Program (DIMP) team summarizes the relevant Integrity information and activities completed on the St. Laurent Pipeline.

St. Laurent Pipeline is part of the Enbridge Gas Inc. (Enbridge) natural gas distribution system for the City of Ottawa and Gatineau. It consists of over 11.1 km of coated steel pipelines of NPS 12 and NPS 16, primarily installed in 1958, and operating at 275 psi/1900 kPa (Extra High Pressure).

A summary of repairs between 2007 and May 2022 shows 15 repaired leaks, not including repairs completed because of the in-line inspection (ILI) or integrity digs occurred between August and November of 2022. Of those 15 repairs, nine were due to leaks and six due to damages.

Inspections on the pipelines include integrity digs (2013), Non-destructive testing (2014), depth of cover (2017), bridge crossing inspection (2020 and 2022), integrity digs (2022), cathodic protection survey (2022) which included depth of cover, close interval potential survey and direct current voltage gradient, and nine ILI runs using Intero NPS 12 crawler with Magnetic Flux Leakage sensors to detect metal loss and a laser deformation sensor for dent detection (2022).

The cathodic protection survey in 2022 reported that 1.8 km with no adequate cathodic protection readings. Additionally, there were 33 potential coating holiday per kilometer based upon the direct current voltage gradient (DCVG) survey. Corrosion area 60-A05-T was highlighted as not provided adequate cathodic protection in relation to the other corrosion areas. This was confirmed through the feature density found on both the distribution and transmission lines associated with 60-A05-T.

The 2022 ILI discovered 327 clustered metal loss features of 10% or more and 386 dents of 0.5% depth or more. An 80% wall loss feature was identified, and it was removed from service in November of 2022. Currently there is no Enbridge approved in-line inspection dig criteria for distribution pipelines. Enbridge is in the process of standing up a team that will focus on high priority distribution pipelines.

A total of 12 integrity digs were performed in 2022. One integrity dig was performed at each launch site as excavation was needed at each site, and additional six digs were performed to investigate the condition of the pipeline at locations which were not in-line inspected.

Data from ILI and field investigations were analysed using API 1163. Refer to *St. Laurent Pipeline – 2022 MFL Inspection Validation Report* for further details. A piece of pipe, which was removed as part of the repair of the 80% feature, was sent to the ILI vendor to increase the deterministic understanding of the tool. Considering the limitations of the current practices to evaluate discrete distribution pipelines based the results from ILI tools, the Integrity Assessment team was engaged to conduct a reliability and risk model to assess the St Laurent pipeline.

Based upon the finding of the integrity activities, the immediate recommendations include:

1. The Corrosion Prevention department should investigate the recommendations provided by Corrosion Services to increase current output of the rectifier systems to improve cathodic protection along the St. Laurent pipeline.
2. Implement the crossing inspection results for the bridge crossing along St. Laurent Blvd at Highway 417, that recommended mitigation disbonded coating. Repair is currently scheduled for 2023.
3. Work with the Integrity Assessment team who was engaged to conduct a reliability and risk assessment for the pipelines using the inspection information. Refer to the *Quantitative Risk Assessment (QRA) - St. Laurent North Pipeline* report for further analysis and recommendations



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## List of Acronyms

API	American Petroleum Institute
CA	Corrosion Area
CIPS	Close Interval Potential Survey
CP	Cathodic Protection
CSA	Canadian Standard Association
CVT	Curve Valve Tee
DC	Direct Current
DCVG	Direct Current Voltage Gradient
DIMP	Distribution Integrity Management Program
ERW	Electric resistance welding
GDS	Gas Distribution and Storage
ILI	In Line Inspection
LDS	Laser Deformation Sensor
MFL	Magnetic Flux Leakage
MOP	Maximin Operating Pressure
NDE	Non-Destructive Examination
NPS	Nominal Pipe Size
OD	Outside Diameter
POD	Probability of Detection
QRA	Quantitative Risk Assessment
SMYS	Specified minimum yield strength
TIMP	Transmission Integrity Management Program
UT	Ultrasonic Thickness



# 1 Overview

This report was completed to document the integrity actions conducted on the St. Laurent Pipeline for the purpose of improving the understanding of its condition and to facilitate a reliability and risk assessment, risk mitigation and pipeline maintenance planning.

## 1.1 DESCRIPTION/BACKGROUND

The St. Laurent Pipeline is part of the Enbridge Gas Inc (Enbridge) natural gas distribution system for the City of Ottawa and Gatineau and consists of steel mains primarily installed in 1958.

The main pipeline characteristics are summarized in Table 1 below. Specific pipe details are referring to the predominant length of oldest pipe segments and may not be the properties for the entire pipeline due to previous replacements and retrofit work. The 1985 Pressure Elevation Report for St. Laurent was utilized to assume a nominal wall thickness of 6.35 mm and a SMYS of 207 MPa.

**Table 1. Pipeline Summary**

Pipeline name	St. Laurent		
Region	Eastern	Nominal Wall thickness	6.35 mm
Length	11,113 m	Pipe grade	207 MPa
NPS	12/16	Seam type	ERW
Install year	1958 (primarily)	Pipe body coating	Coal Tar
MOP	1900 kPa/ 275 psi	Joint coating	Unknown
Operating Pressure	1900 kPa/ 275 psi	Max. % SMYS	23%
Other details	Comprises of 363 m installed in 1985 of NPS 16		

## 1.2 INTEGRITY INSPECTIONS SUMMARY

Table 2 summarizes the available historical reports that were produced up to date.

**Table 2. Historical Inspection Reports**

Title	Author	Year Completed
2022 CIPS + DCVG Report + Depth of Cover	CSCCL	2022
2022 MFL St. Laurent Robotic In-Line Inspection Report	Intero	2022
2022 NPS 12 St Laurent Integrity Dig Reports	NDT Group	2022
2022 NPS 16 Bridge Crossing Inspection	Acuren	2022
2020 NPS 16 Bridge Crossing Inspection	Acuren	2020
2017 Depth of Cover Survey	G-Tel Engineering	2017
2014 Integrity Digs Feature Assessment	Acuren	2014
Non-destructive Testing – 12” St. Laurent Pipeline	Acuren	2013

The 2022 CIPS + DCVG Report summarizes findings from the close interval potential survey (CIPS) and DC voltage gradient (DCVG) completed along the entire St Laurent pipeline segments in scope of

this integrity assessment. The report includes depth of cover (DoC) readings. Results from this survey are described in later sections of this report.

The 2022 St. Laurent Robotic In-Line Inspection (ILI) Reports summarize findings from the inspection of nine ILI runs completed from six separate launcher locations on the St Laurent Pipeline. Findings from the ILI are described in detail in the later sections of this report.

The 2022 NPS 12 St Laurent Validation Dig Reports summarize findings from non-destructive examination of 12 separate excavations on St. Laurent pipeline, including 9 validation digs and 3 targeted digs.

The 2022 Bridge Crossing Inspection report summarizes findings from the latest inspection completed on NPS 16 pipe crossing at O.T.C Transitway and St. Laurent as part of the regular bridge crossing inspection program. The only observation identified as part of this inspection was misaligned alignment guides and fiber-reinforced polymer pads. No visible corrosion was reported.

The 2020 Bridge Crossing Inspection report summarizes the finding on the inspection completed in October 2020. It was recommended the mitigation of disbonded coating of 3.77 m long from the south end of the pipe to Pipe Joint 1. Currently the repair is scheduled for 2023.

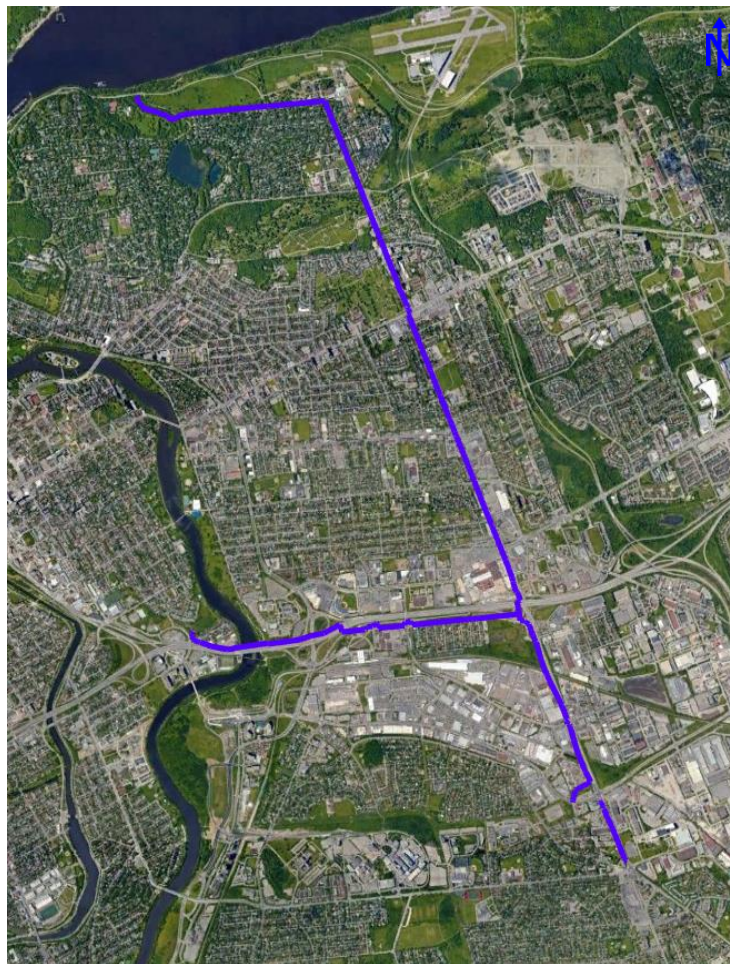
The 2017 Depth of Cover (DoC) survey completed along the entire St. Laurent pipeline. For distribution pipelines the code CSA Z662-19 establishes the requirement for DoC when designing a new installation; however, there are no DoC requirements for existing distributions pipelines.

The 2014 Integrity Dig assessment was completed following latent third-party damages that were reported by third party. As part of this inspection, less than 28 m was inspected where 5 dents, of which 3 had cracks, and 11 damage features (gouges/ scratches) were identified. Additionally, guided wave was performed on site to identify the extent of the damage within the excavation and one additional deformation was found upon assessment. All features were reported as repaired.

In 2013 Acuren was hired to conduct an inspection of a St Laurent pipe segment following the discovery of a leak on the main along Tremblay Rd. Approximately 4.5 m of pipe was exposed around the area where the leak was detected and nine spots with corrosion pits were identified and repaired.

## 2 Population

The St. Laurent Pipeline is comprised of over 11.1 km of coated steel mains of NPS 12 and NPS 16 predominantly installed in 1958. The St Laurent Pipeline is shown in Figure 1.



**Figure 1. Map of St. Laurent Pipeline**

Table 3 shows the nominal pipe size (NPS) and length of St. Laurent Pipeline installed per decade.

**Table 3. St. Laurent Pipeline Population**

Installation Year	NPS 12 (m)	NPS 16 (m)	Total (m)
1958	6,729		6,729
1959	1,054		1,054
1962	1,212		1,212
1978	77		77
1985	149	363	511
1986	495		495
1998	212		212
2000	30		30
2006	5		5
2007	34		34
2008	7		7
2012	292	34	326
2015	198		198
2019	244		244
<b>Total</b>	<b>10,738</b>	<b>396</b>	<b>11,134</b>





### 3 Failure History

The Failure History is shown in Table 4 which includes the summary of 15 repairs between 2007 and 2022, not including repairs completed because of the 2022 MFL run or the integrity digs conducted in 2022. Reporting of failures started in 2007, therefore any previous failure reports on this pipeline are unavailable.

Nine (9) repairs were due to Leak and six (6) repairs due to Damage/Potential Hazard. Table 4 contains a summary of repairs per asset type: one leak in the pipe body, three leaks in Service Line Connections and five leaks in Valve stems, and six Damages/Potential Hazards. Table 5 contains descriptions of each failure or repair.

**Table 4. Leak and Repair Summary**

Incident Category	Asset Type			
	Main	Service Connection	Valve	Total
Leak	1	3	5	9
Damage/ Potential Hazard	6	0	0	6

**Table 5. Leak and Repair Description**

Date	Incident Category	Description	Hazard Category
Feb 23, 2007	Potential Hazard	Sleeve welded on corroded section of pipe on St Laurent south of Tremblay Rd.	External Corrosion
Jun 11, 2012	Damage	Sleeve welded over dent on the main on Tremblay Rd	External Interference
Sept 25, 2013	Failure Incident (Leak)	Corrosion Class A Leak on the main on Tremblay Rd asset 77857	External Corrosion
Nov 10, 2013	Damage	Sleeve welded over damaged main asset 3577741 on Hwy 417	External Interference
Nov 18, 2013	Damage	Repaired damaged main asset 76852 on Tremblay Rd and Hwy 417	External Interference
Mar 28, 2014	Damage	Three sleeves welded on dents with corrosion on the main at St Laurent NPS 16 Hwy crossing	External Interference
Mar 12, 2016	Failure Incident (Leak)	Leak on valve stem on asset 499271	Equipment Malfunction
Feb 23, 2017	Failure Incident (Leak)	Leak on valve stem on asset 499283	Equipment Malfunction
Apr 12, 2017	Failure Incident (Leak)	Class A Leak at CVT on Tremblay Rd asset 751388	Equipment Failure
Aug 23, 2017	Damage	St Laurent and Cote Rd, coating repaired after 3 <sup>rd</sup> Party Damage	External Interference
May 29, 2019	Failure Incident (Leak)	Leak on valve stem on asset 8519960	Equipment Malfunction
Apr 22, 2020	Failure Incident (Leak)	Leak on valve stem on asset 1417068	Equipment Malfunction
May 18, 2022	Failure Incident (Leak)	Leak at CVT service connection on main asset M119218349	Equipment Malfunction
May 05, 2022	Failure Incident (Leak)	Leak on valve stem on asset 501309	Equipment Malfunction
May 19, 2022	Failure Incident (Leak)	Leak at CVT service connection on main asset 101782	Equipment Malfunction



## 4 2022 CP, DCVG and DoC Surveys

### 4.1 CATHODIC PROTECTION SURVEY

The entire St Laurent pipeline was surveyed in 2022 including DoC measurements, CIPS readings to determine cathodic protection levels and DCVG readings to determine the presence of coating holidays.

The St Laurent Pipeline is protected by 5 separate corrosion areas (CA). Table 6 identifies the corrosion area, type of protection, length protected and cathodic protection history percentage of good readings.

**Table 6. Cathodic Protection Summary**

Corrosion Area	Protection Type	Length (m)	Percentage of Adequate Cathodic Protection Readings
60-A05-034	Rectifier	2525.5	96%
60-A05-042	Rectifier	1794.6	93%
60-A05-747	Rectifier	1137.5	96%
60-A05-T	Rectifier	5247.8	96%
90-W01-064	Anode	428.5	100%

Typically, rectifier protected systems have more consistent protection over anode systems. The only anode protected part of the St Laurent pipeline is the 428.5 m on the west end of Sandridge Rd between Rockcliffe Control Station and Sandridge Rd. All corrosion areas show greater than 90% adequate cathodic protection readings.

Table 7 is a summary of the CP Survey results by corrosion area.

**Table 7. Cathodic Protection Survey Results by Corrosion Area**

Corrosion Area	DCVG Readings			CIPS Readings (count)			CIPS Readings (m)		
	Minor	Moderate	Severe	Minor	Moderate	Severe	Minor	Moderate	Severe
60-A05-034	33	3	1	142	39	25	261.7	69.5	182.9
60-A05-042	87	13	2	123	31	3	227.8	59.4	5
60-A05-747	4	0	0	0	0	0	0	0	0
60-A05-T	164	45	13	306	107	40	721.3	234.9	105.4
90-W01-064	1	0	0	2	0	0	1.7	0	0
Total	289	61	16	573	177	68	1212.5	363.8	293.3

Based upon the results, Corrosion Services, the contractor who completed the CP survey, recommended the increase the current output of the rectifiers for all the St Laurent rectifier protected corrosion areas due to the inadequate CIPS readings discovered on all the rectifier protected corrosion areas. The Corrosion Prevention department confirmed current outputs can be increased at those corrosion areas. Corrosion Prevention will perform test readings and rectifier adjustments in 2023 to confirm the level of output required to ensure adequate protection on the entire line.

Steel pipe is protected when pipe is either coated or has adequate cathodic protection. When both layers of protection are missing then there is the potential for corrosion to take place. A combination of



both inadequate CIPS readings and inadequate DCVG readings at the same site signify the potential for corrosion. Three corrosion areas (CA) had readings below adequate levels for both DCVG and CIPS: 60-A05-034, 60-A05-042 and 60-A05-T. The counts of overlapping inadequate CIPS and DCVG readings are summarized in Table 8,

Table 9 and Table 10, respectively.

**Table 8. CA 60-A05-034 Inadequate Reading Overlap Summary**

Corrosion Area		DCVG			Total
60-A05-034		Minor	Moderate	Severe	
CIPS	Minor	7	5	0	12
	Moderate	0	8	0	8
	Severe	3	0	0	3
<b>Total</b>		10	13	0	23

**Table 9. CA 60-A05-042 Inadequate Reading Overlap Summary**

Corrosion Area		DCVG			Total
60-A05-042		Minor	Moderate	Severe	
CIPS	Minor	34	4	0	38
	Moderate	11	0	1	12
	Severe	0	0	0	0
<b>Total</b>		45	4	1	50

**Table 10. CA 60-A05-T Inadequate Reading Overlap Summary**

Corrosion Area		DCVG			Total
60-A05-T		Minor	Moderate	Severe	
CIPS	Minor	41	21	2	64
	Moderate	12	7	8	27
	Severe	13	3	1	17
<b>Total</b>		66	31	11	108

Corrosion Area (CA) 60-A05-T has the most points of inadequate CIPS and DCVG readings. The CA also was reported as one of the highest below adequate DCVG readings per meter and percent of total length with below adequate CP levels. The 2022-MFL-Intero run also reported a higher density of metal loss features for this CA.

CA 60-A05-T is additionally connected to the NPS 12 Ottawa North TIMP line. This TIMP line has shown a higher density of corrosion features greater than 30% wall loss, when compared to other local TIMP lines as per the pipelines ILI history.



All inspections point to corrosion area 60-A05-T as the pipeline segment with higher density of corrosion features for distribution and transmission pipelines lines with a sections of below adequate CP readings.

#### 4.2 DEPTH OF COVER SURVEY

A depth of cover (DoC) survey was performed in 2022. Table 11 summarizes the number of points and main length which was measured. CSA Z662-19 establishes the requirement for DoC when designing a new installation; however, there are no DoC requirements for existing distributions pipelines.

There is no exposed piping reported along the St. Laurent pipeline. The only pipe exposed to atmospheric condition is at the bridge crossing north of Hwy 417 along St. Laurent Blvd, but is specifically designed, coated, maintained, and inspected as such.

This information will be used, along with in-line inspection data, by the Integrity Assessment team to assess the risk of 3rd Party Hit Damage

**Table 11. Depth of Cover Survey Summary**

Type Of Depth	Count Of Readings	Length Of Pipe (m)	Percentage Of Pipe
< 0.6 m	3	120	1.1%
0. 61 to 0.9 m	27	742	6.7%
0.91 m to 1.2 m	70	1,791	16.1%
Greater than 1.2 m	262	8,478	76.2%

## 5 2022-MFL-Intero Run

### 5.1 INSPECTION COVERAGE

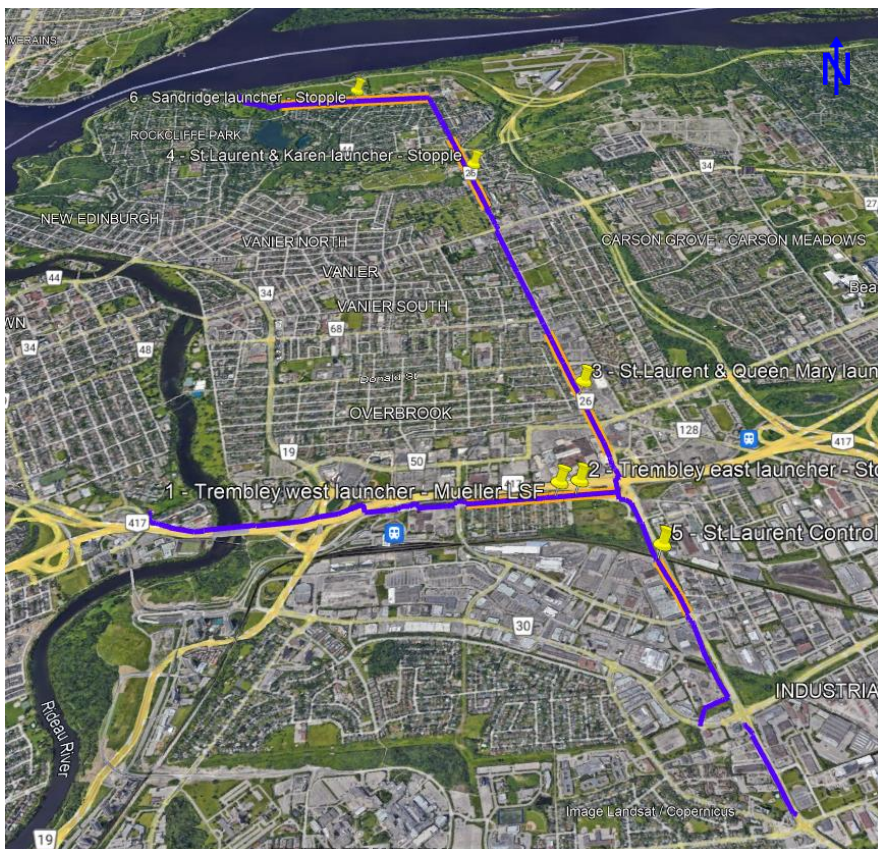
The ILI was performed in August 2022, with the Intero NPS 12 crawler inspection tool which uses a Magnetic Flux Leakage (MFL) to detect metal loss and a Laser Deformation Sensor (LDS) is used for dent detection. A video camera is used to determine general pipeline condition and whether corrosion is internal versus external.

Nine ILI runs across six launch sites were completed. Table 12 summarizes the locations, number of runs and total distance inspected per launch site. Figure 2 shows the pipeline sections that were inspected highlighted in orange; the yellow pins identify the launch point locations. The sections inspected were selected based on the following pipeline characteristics zones, instal year, corrosion areas, fitting density class, and coating type, to aim for a sample size that represents most of the pipeline, including the non-inspected portions, with a target confidence level of least 95 %.

**Table 12. 2022–MFL-Intero Inspection Launch Sites and Inspected Distance**

Launch Site	Runs	Distance (m)
Tremblay East	1	315
Tremblay West	1	545
Queen Mary	2	1,116
Karen Way	2	953
Control Station	1	393
Sandridge	2	1,157
Total	9	4,479





**Figure 2. 2022–MFL-Interro Inspections Sections**

**5.2 INSPECTION RESULTS**

Table 13 and Table 14 show a summary of the features reported by 2022-MFL-Interro for metal loss (using a cluster rule 6T x 6T) and dents, respectively. The 80% metal loss on the Trembley lateral was repaired in November of 2022 as part of the replacement of 162 m of NPS 12 pipe from St Laurent and Tremblay Rd.

**Table 13 2022-MFL-Interro Summary of Results – Metal Loss**

Pipeline Segment	ILI Run Length (m)	Clustered Metal Loss Features (% Wall Loss)								TOTAL
		10% ≤ Depth < 20%	20% ≤ Depth < 30%	30% ≤ Depth < 40%	40% ≤ Depth < 50%	50% ≤ Depth < 60%	60% ≤ Depth < 70%	70% ≤ Depth < 80%	≥80%	
Tremblay East	315	65	15	11	1	1	0	0	1	94
Tremblay West	545	19	0	0	0	0	0	0	0	19
Queen Mary	1,116	101	8	5	4	1	0	0	0	119
Karen Way	953	13	0	0	0	0	0	0	0	13
Control Station	393	63	8	3	1	0	0	0	0	75
Sandridge	1,157	5	1	1	0	0	0	0	0	7
<b>TOTAL</b>	<b>4,479</b>	<b>266</b>	<b>32</b>	<b>20</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>327</b>



**Table 14. 2022-MFL-Intero Summary of Results – Dents**

Pipeline Segment	ILI Run Length (m)	Dents (% of OD)				Dents of Interest		
		<2%	2-4%	>4%	TOTAL	Tops Side Dents	Dents With Metal Loss	Sharp Dents
Tremblay East	315	18	2	1	21	14	6	5
Tremblay West	545	57	3	0	60	39	3	6
Queen Mary	1,116	99	4	1	104	76	4	9
Karen Way	953	84	4	0	88	57	0	18
Control Station	393	20	0	0	20	16	1	4
Sandridge	1,157	93	0	0	93	72	0	4
<b>TOTAL</b>	<b>4,479</b>	<b>371</b>	<b>13</b>	<b>2</b>	<b>386</b>	<b>274</b>	<b>14</b>	<b>46</b>

Out of the 386 dents reported, 274 were considered to be top side dents, occurring between the 8 o'clock to the 4 o'clock position on the piping. The Queen Mary section had the highest concentration of dents and top side dents. In the absence of a code to assess dents detected from ILI in distribution pipelines and the lack of internal company's standards, the results from the ILI are still being reviewed to determine the need for additional integrity digs to mitigate the threat of delayed failure of mechanical damage. Refer to *Quantitative Risk Assessment (QRA) - St. Laurent North Pipeline* report for further analysis on dents and recommendations.

## 6 Integrity Digs prior to the ILI

Currently, there is no approved dig criteria based on in line inspections for distribution pipelines in the Enbridge Gas Inc network since this type of inspection has not been a common practice for assessing the condition of distribution pipelines. However, Enbridge is in the process of standing up a targeted program with a dedicated team that will focus on assessing the integrity of high priority distribution pipelines.

Nonetheless, twelve integrity digs were performed in 2022 to inspect the field condition of the pipeline. Also, in the absence of a dig criteria for distribution pipelines, the Integrity Assessment team was assigned to conduct a reliability and risk assessment of the pipeline. Refer to *Quantitative Risk Assessment (QRA) - St. Laurent North Pipeline* document for additional information.

### 6.1 INTEGRITY DIGS - INSPECTION COVERAGE

A total of 12 integrity digs were performed in 2022:

- One integrity dig was performed at each launch site, and
- Six digs were performed to investigate the condition of the pipeline at locations that were not in-line inspected during the 2022 MFL Interoperability run.

Figure 3 identifies the location of the integrity digs. Yellow pins represent launch sites, green and blue pins represent digs at points of interest.



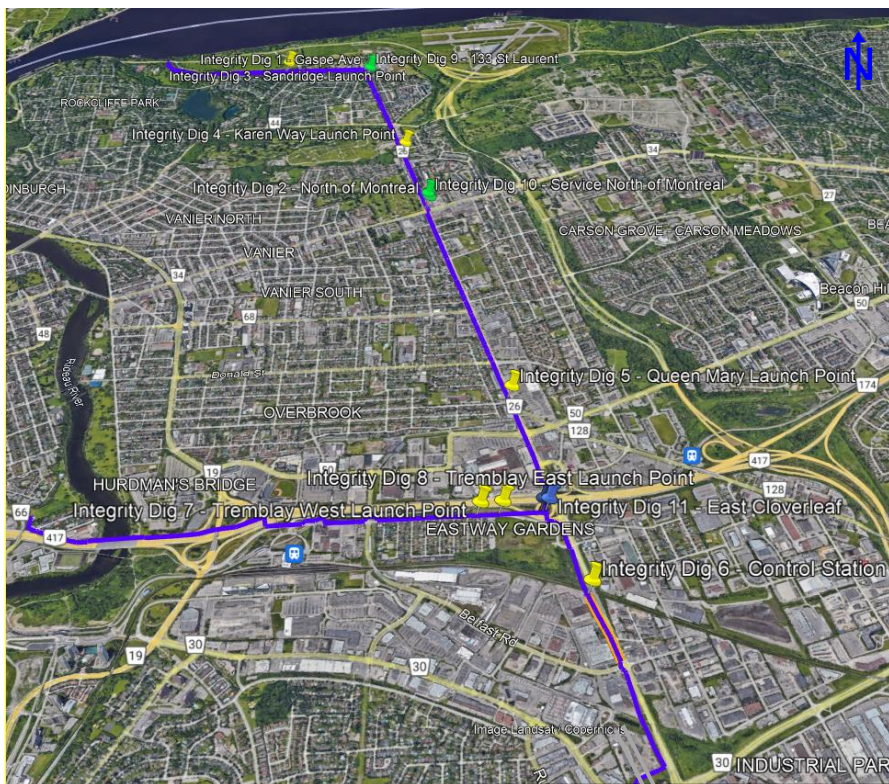


Figure 3. Map of St. Laurent Pipeline Integrity Digs

## 6.2 INTEGRITY DIGS – FIELD INSPECTION RESULTS

NDT Group Inc. performed the field direct assessments at the twelve integrity digs. Wall loss at a feature was determined by using a pit gauge and Ultrasonic Thickness (UT) pencil probe. Table 15 summarizes the features discovered at those digs.

Table 15. Count of Integrity Dig Feature Findings

Dig Number	Row Labels	Arc Burn	Dent	Gouge/Scrape	Lamination	Metal Loss	Scab	Total
1	Gaspé Ave	17		11	3	10		41
2	Service North of Montreal	2		5		3	1	11
3	Sandridge Launch Site							0
4	Karen Way Launch Site		1			3		4
5	Queen Mary Launch Site	8		37			5	50
6	Control Station Launch Site							0
7	Tremblay West Launch Site		1	56				57
8	Tremblay East Launch Site			5		2		7
9	133 St Laurent	2				1		3
10	North of Montreal							0
11	Tremblay Rd Cloverleaf	1		2	1	5		9
12	Tremblay Rd Cloverleaf West End	9		2		6		17
<b>TOTAL</b>		<b>39</b>	<b>2</b>	<b>118</b>	<b>4</b>	<b>30</b>	<b>6</b>	<b>199</b>



Dig 10 was executed to collect condition information on a casing, which was not present at the location of the excavation; therefore, no field report was issued, hence no features were reported at that location.

All features were assessed and repaired as per the Enbridge Gas Distribution Steel Pipeline Repair Standard. One cut-out was required at Gaspe Ave as the welds did not meet standards, and therefore 2.6 m of pipeline was removed.

During the integrity digs the long seam was inspected using the magnetic particle examination and no relevant indications were reported in the inspected locations.

## 7 2023 Integrity Dig

In March 2023, an integrity dig was completed on the line near Rockcliffe Control station. The dig was executed as part of a leak investigation on the pipeline, after the leak was remediated an investigation of the pipeline directly where initially readings were recorded was conducted. No leak was found and a coating assessment, X-ray and NDE were conducted. This integrity dig is identified as Dig Site 13. A summary of features reported as a result of the non destructive examination (NDE) is shown in Table 16.

Additional to those features, the NDE reported one scab on ERW long seam, three OD connected linear indications in the long seam with a maximum depth of 6% of the actual wall thickness, and one grith weld defect.

**Table 16. Count of Integrity Dig Feature Findings for Rockcliffe Control station**

Dig Number	Row Labels	Arc Burn	Dent	Gouge/Scrape	Lamination	Metal Loss	Scab	Total
13	Rockcliffe Control station	3	-	5		4	1	

All defects were assessed for repair as per GDS Distribution Steel Pipeline Repair Standard. For details on repairs executed refer to the NDE report.

## 8 Deterministic analysis of the data

### 8.1 CORROSION GROWTH RATE

All features were grown to failure using a linear growth methodology from year of installation. Based upon this deterministic approach only a single corrosion feature would grow to full wall loss in the next forty years. In the absence of a code or internal company’s standard with an excavation criteria for distribution pipelines, refer to *Quantitative Risk Assessment (QRA) - St. Laurent North Pipeline* report for further analysis on metal loss features and recommendations.

The current practice for distribution pipelines follows the Distribution Steel Mains reliability model which applies a marco view of reliability using a statistical approach. Although this model works to forecast leak rate frequencies across the entire distribution system, its application for discrete assets requires more specific localized data which has not been established.



Considering these limitations of current practices for assessing features detected by ILI for distribution pipelines, the Integrity Assessment team was engaged to conduct a reliability and risk model to assess the St Laurent pipeline in particular.

## 8.2 2022 IN-LINE INSPECTION VS 2022 INTEGRITY DIGS

With both, the ILI report and Integrity Dig reports, the data reported from the ILI was compared against the ILI as per API 1163. Refer to *St. Laurent Pipeline – 2022 MFL Inspection Validation Report* for the analysis.

## 9 Crossings Inspections

The following crossings are present along the St. Laurent pipeline, as shown in Figure 4.

### Water Crossings:

There is a single water crossing at Rideau River along Highway 417. There are no currently available inspection details of the water crossing.

### Bridge Crossings:

There is a single bridge crossing along St. Laurent Blvd at Highway 417. An inspection of the bridge crossing completed in 2022 did not identify any visible signs of corrosion. The inspection conducted in 2020 recommended the mitigation of disbanded coating of 3.77 m long from the south end of the pipe to Pipe Joint 1. Repair is scheduled for 2023.

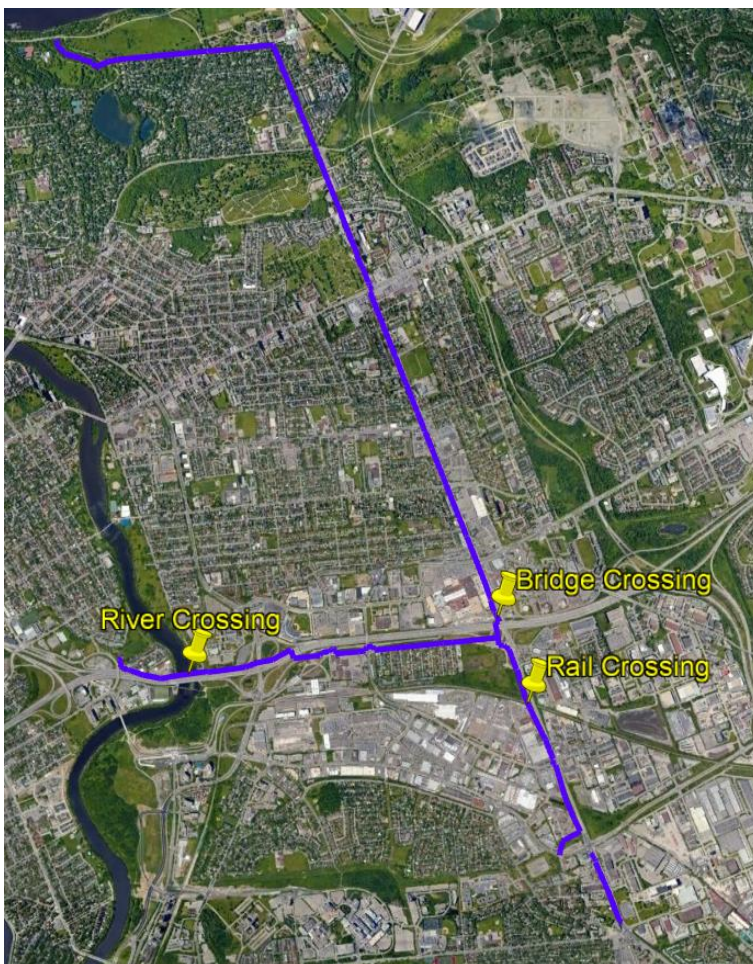
### Rail Crossings:

There is a single rail crossing with Canadian Pacific Railway along St. Laurent Blvd between Tremblay Rd and Belfast Rd. There are no currently available inspection details of the rail crossing.

There is an LRT crossing at north of Tremblay Rd and Pickering Pl.

### Highway Crossings:

The St. Laurent pipeline crosses HWY 417 at two points, one crossing at St. Laurent Blvd and the second at Pont Max Keeping pedestrian bridge.



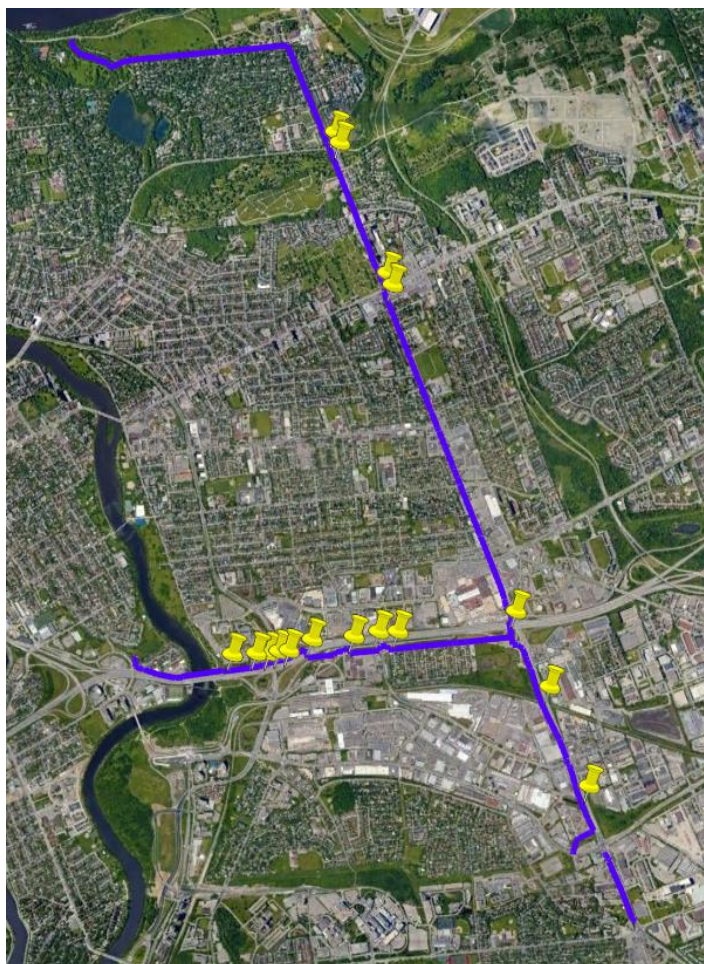
**Figure 4. Map of St. Laurent Pipeline Crossings**

## 10 Casings and Compression Couplings Investigation

### 10.1 CASINGS INVESTIGATION

There are 16 casings identified on the St. Laurent line, as shown in Figure 5

Casings can potential short with the pipeline due to spacer degradation which would cause a loss of adequate cathodic protection. There have been no reported shorts at known casings detected at this time as of Dec 2022 by the Corrosion Prevention department. Additionally casing seals at either end of the casing can degrade over time allowing water to enter the casing, potentially pool and accelerating corrosion of the pipeline within the casing.

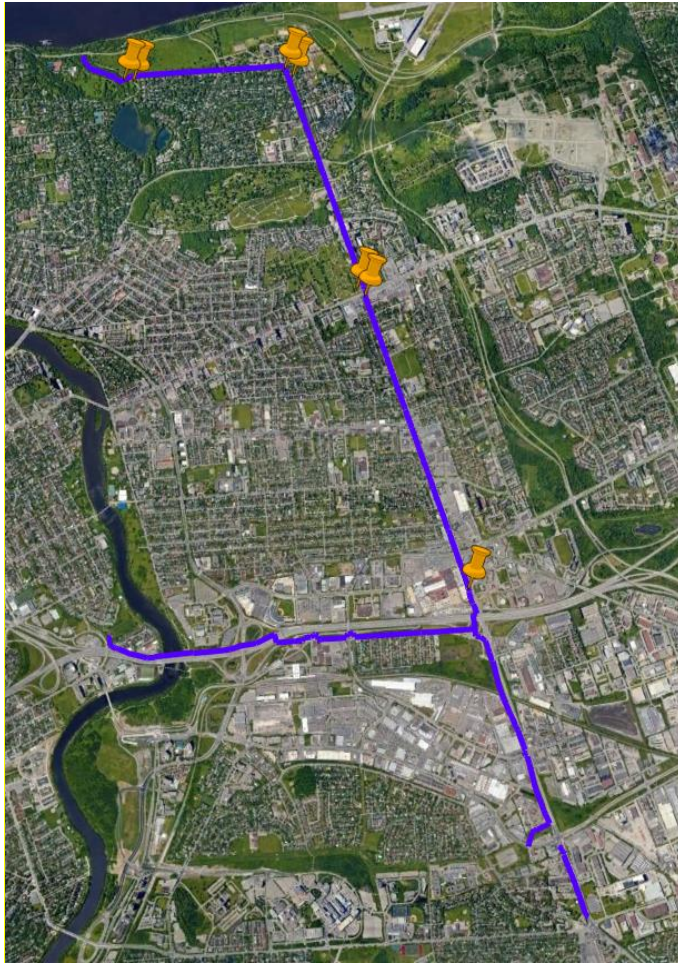


**Figure 5. Map of St. Laurent Casings.**

## 10.2 COMPRESSION COUPLINGS INVESTIGATION

Based upon electronic records review, there are 7 compression couplings on the St. Laurent line as shown in Figure 6, all of which have been restrained as per Enbridge records. Compression couplings are known to provide minimal pull-out resistance, have the potential to catholically isolate pipeline depending on design, and are a source of leaks due to ground movement or large temperature fluctuations such as freeze/thaw cycles. However, restraining the compression couplings typically mitigate all the above noted issues.





**Figure 6. Map of Restrained Compression Couplings**

## 11 Recommendations

The following is a summary of recommendations from this report:

- 1) The Corrosion Prevention group should investigate the recommendations provided by Corrosion Services to increase current output of the rectifier systems to improve cathodic protection along the St. Laurent pipeline.
- 2) Implement the crossing inspection results for the bridge crossing along St. Laurent Blvd at Highway 417, that recommended mitigation of the disbonded coating of 3.77 m long from the south end of the pipe. Repair is currently scheduled for 2023.
- 3) Work with the Integrity Assessment team which was engaged to conduct a reliability and risk assessment for the pipeline using the new inspection information, considering the limitations of current practices to evaluate discrete distribution pipelines based ILI tools. Refer to *Quantitative Risk Assessment (QRA) - St. Laurent North Pipeline* report for further analysis on different threats (e.g., crack, dents, manufacturing defects, etc.) and recommendations.





## 12 Revision History

Release Date	Version	Description	Prepared By	Approved By
2023-05-05	1.0	First version	Johana Gomez, Technical Manager DIMP	Ryan Werenich, Manager Integrity Program Pipelines
2023-10-10	1.1	Update numbers and totals on Table 15	Johana Gomez, Technical Manager DIMP	Ryan Werenich, Manager Integrity Program Pipelines
2023-10-31	1.2	Include references to the recently issued <i>St. Laurent Pipeline – 2022 MFL Inspection Validation Report</i>	Johana Gomez, Technical Manager DIMP	Ryan Werenich, Manager Integrity Program Pipelines

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Question(s):

- 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.

Response:

- a) Please see response at Exhibit I.1-STAFF-12 part a) for correspondence from the TSSA requiring Enbridge Gas to remediate the condition of the St. Laurent pipeline. The CSA's mandate does not include corresponding with pipeline operators on specific issues and no such correspondence has taken place.
- b) The TSSA is the technical regulator for the gas distribution systems in Ontario. Ontario Regulation 210/01 (Oil and Gas Pipeline Systems) and the TSSA Oil and Pipeline Systems Code Adoption Document Amendment FS-253-20 collectively adopt and enforce the CSA Z662-19 standard, with certain modifications and additions, as the primary technical standard for the design, construction, operation, and maintenance of oil and gas pipeline systems within Ontario.

Enbridge Gas employs Integrity Management Programs (IMPs) as a component of its Safety and Loss Management Systems to proactively anticipate, prevent, manage and mitigate conditions that could adversely affect safety, operational reliability, or the environment throughout an asset's lifecycle. The integrity assessments and actions carried out on the SLP pipeline align with the IMP mandate and adhere to the following prescriptive requirements of the CSA Z662-19 standard:

- i. Clause 3.1.1 (Safety and loss management system) states: *“Operating companies shall develop and implement a documented safety and loss management system for the pipeline system that provides for the protection of people, the environment, and property.”*
- ii. Clause 3.1.2 (Safety and loss management system) states: *“The safety and loss management system shall cover the life cycle of the pipeline system and shall include the following elements: ...*
  - f) controls for ...
    - i) risk management; ...
    - iv) operations and maintenance;
    - v) pipeline system integrity management;
    - vi) engineering assessments; ...”
- iii. Clause 3.3 (Pipeline system integrity management) states: *“The controls required by Clause 3.1.2 f) v) shall be in the form of an integrity management program that addresses the life cycle of the pipeline system, as applicable.*

Notes:

  - 1) *Guidelines for pipeline system integrity management programs are contained in Annex N. ...”*
- iv. Clause 10.3 (Integrity of pipeline systems) states: *“The pipeline system integrity management program required by Clause 3.3 shall include procedures to monitor for conditions that can lead to failures, to eliminate or mitigate such conditions, and to manage integrity data. ....”*
- v. Clause 10.3.2.1 (Integrity of existing pipeline systems) states: *“Where the operating company becomes aware of conditions that can lead to failures in its pipeline systems, it shall conduct an engineering assessment to determine which portions can be susceptible to failures and whether such portions are suitable for continued service.*

Notes:

  - 1) *Examples of conditions that can lead to failures include*
    - a) *mechanical damage that can develop into failures under sustained operation;*
    - b) *mill defects not detected during the manufacturing process;*
    - c) *corrosion;*
    - d) *stress corrosion cracking;*
    - e) *unstable slopes;*
    - f) *the presence of low-frequency (less than 1 kHz) electric resistance welded pipe in areas with significant cyclic loading; and*
    - g) *loss or reduction of cover*

2) *Guidelines for pipeline system integrity management programs are contained in Annex N. ...*”

vi. Clause N.1.1 (Pipeline integrity management scope) states: “... *The safety and loss management system shall cover the life cycle of the pipeline system and shall include the following elements: ...The program shall include methods for collecting, integrating, and analyzing information related to the following, as appropriate for the type of pipeline system:*

- a) design and construction;*
- b) condition monitoring,*
- c) maintenance and repair;*
- d) operating conditions;*
- e) failure incidents;*
- f) damage incidents;*
- g) damage and deterioration (e.g., corrosion);*
- h) manufacturing imperfections;*
- i) environmental protection; and*
- j) safety.”*



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) Please see Exhibit A, Tab 2, Schedule 2, page 1, paragraph 1 for the specific wording from the OEB Decision on EB-2020-0293 where “[the] OEB urges Enbridge Gas to thoroughly examine other alternatives such as the development and

implementation of an in-line inspection and maintenance program using available modern technology, and propose appropriate action based on its finding.”

- b) Please see Exhibit A, Tab 2, Schedule 2, page 1, paragraph 2 for a description of Enbridge Gas’s interpretation of the additional integrity activities required to evaluate the most appropriate approach for this pipeline.
- c) Please see response at Exhibit I.1-PP-5 part a).
- d) Please see response at Exhibit I.1-PP-5 part d).
- e) The Targeted Integrity Program described in this evidence for the St. Laurent Pipeline is a new and more thorough process for assessing the condition of a distribution pipeline asset and evaluating the risk using a Quantitative Risk Assessment methodology. As described in the response at Exhibit I.1-PP-5 part a), this process will now comprise the key elements of EDIMP.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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

Question(s):

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

Response:

Please see response at Exhibit I.1-STAFF-9 parts b-c).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) An RFP was not conducted for this work as there was only one vendor in the market that could feasibly carry out this work. Enbridge Gas does not have permission from the vendor to share the ILI tool proposal, which contains proprietary information that could harm the vendor's competitive position.
- b) Please see Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 11 to 16 for the results of the ILI inspections. Please see Attachment 1 to this response for the presentation



that highlights the ILI results and the establishment of an Emergency Operations Centre.

- c) Gas flow can bypass the robotic crawler tool keeping the pipeline in-service during the inspection. Additionally, inspections are typically scheduled in warmer months when gas demand is below the maximum capacity of the pipeline. Prior to running an ILI tool, the demand is estimated and the feasibility is confirmed by Enbridge Gas's Distribution Optimization Engineering department considering the specifications of the tool.
- d) A similar ILI crawler tool was used for the Cherry to Bathurst pipeline; however, the approach and analysis performed with the results are different. The analysis for the SLP Application is more comprehensive and quantitative. The major differences to note are the integrity digs, validation of the tool results, and the Quantitative Risk Assessment that were completed for the St. Laurent Pipeline.

Table 1 provides a summary of the ILI results for the two pipelines.

Table 1  
Summary of ILI Results from St. Laurent and Cherry to Bathurst Pipelines

Metric	St. Laurent	Cherry to Bathurst
Pipeline Length (km)	11.1	4.4
Pipeline Major Vintage	1958	1954
Pipeline Major Size (NPS)	12	20
% Inspected	40	43
Metal Loss $\geq$ 80% wall thickness (wt)	1	0
Metal Loss > 70% wt	1	1
Metal Loss Density (>30% wt) per km	7	57
Deformations > 2% OD	11	2
Deformation Density (> 1% OD) per km	8	2
Pipe Mill Anomalies	851	44
Pipe Mill Anomalies Density per km	190	23

# St. Laurent Ottawa North Pipeline – EOC Update

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Update #1

**Privileged and Confidential**

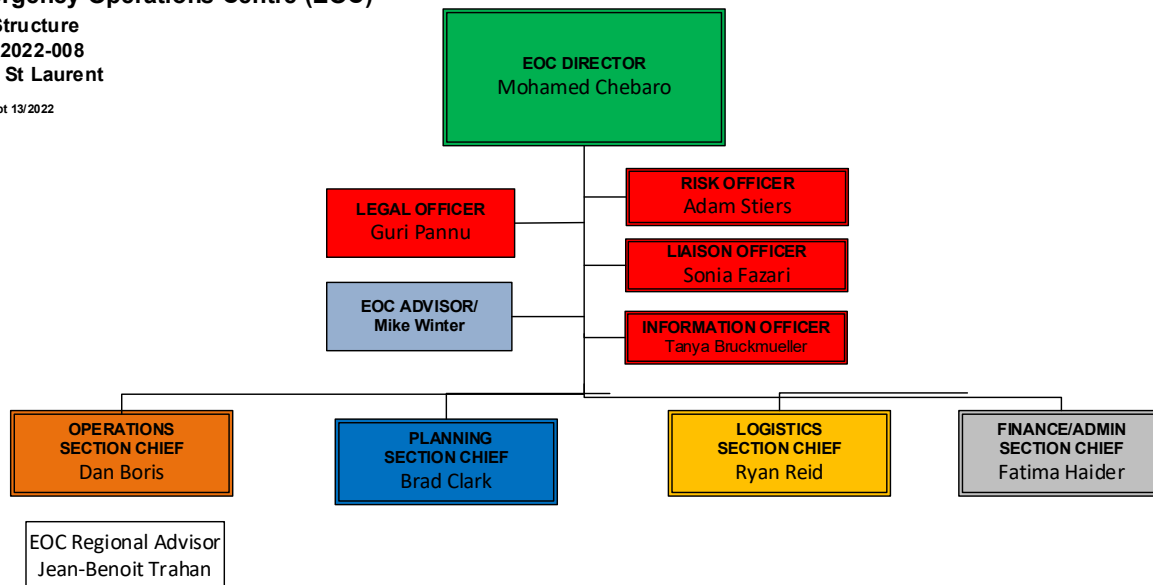


- All 9 preliminary ILI run results (~4.4 km) have been received as of Sept. 13. Approximately 10 potential significant features were reported to date (excluding NDE findings), including the potentially deep corrosion feature under the 417 on-ramp. Exact location is being confirmed
- An EOC structure has been established on Sept. 13 with Command and Section Chiefs to address the potentially-significant ILI findings (see initial high-level structure below).
- First EOC meeting held on Sept. 13, with an operational period of 24 hours. EOC # is 2022-008
- A capacity analysis/pressure reduction plan, a repair plan, and a leak detection supplemental plan are being developed by the Section Chiefs
- A communication plan (internal and external) is under development (e.g., Ottawa, MTO, councillors). Internal staff have been notified
- Regulatory and Legal engaged to ensure that EOC actions align with the larger SLP strategy
- Next EOC meeting is on Sept. 14, 15:00 ET

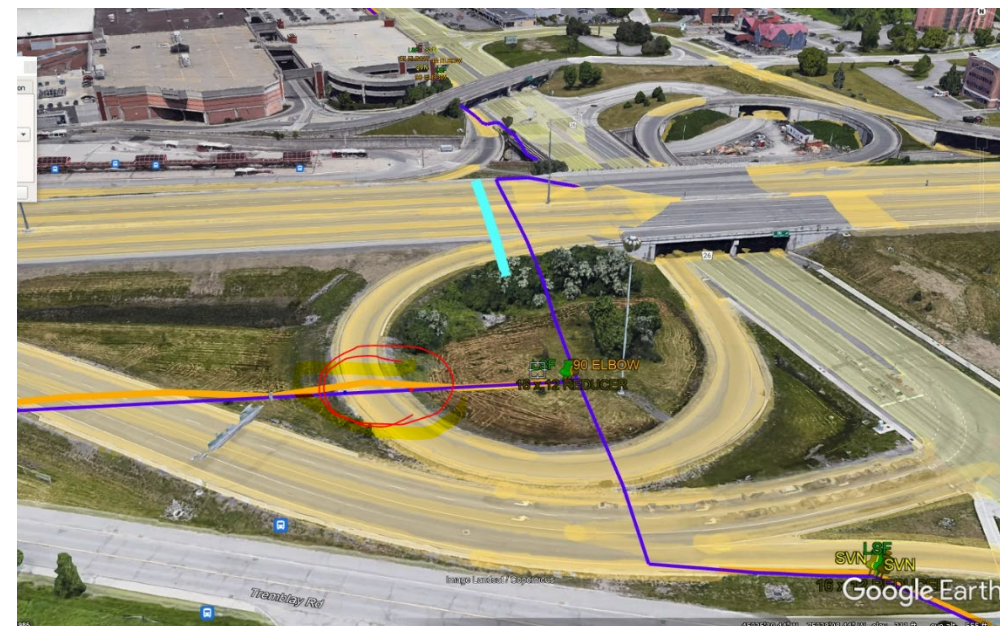
**Emergency Operations Centre (EOC)**

ICS Structure  
EOC 2022-008  
Title: St Laurent

Date: Sept 13/2022

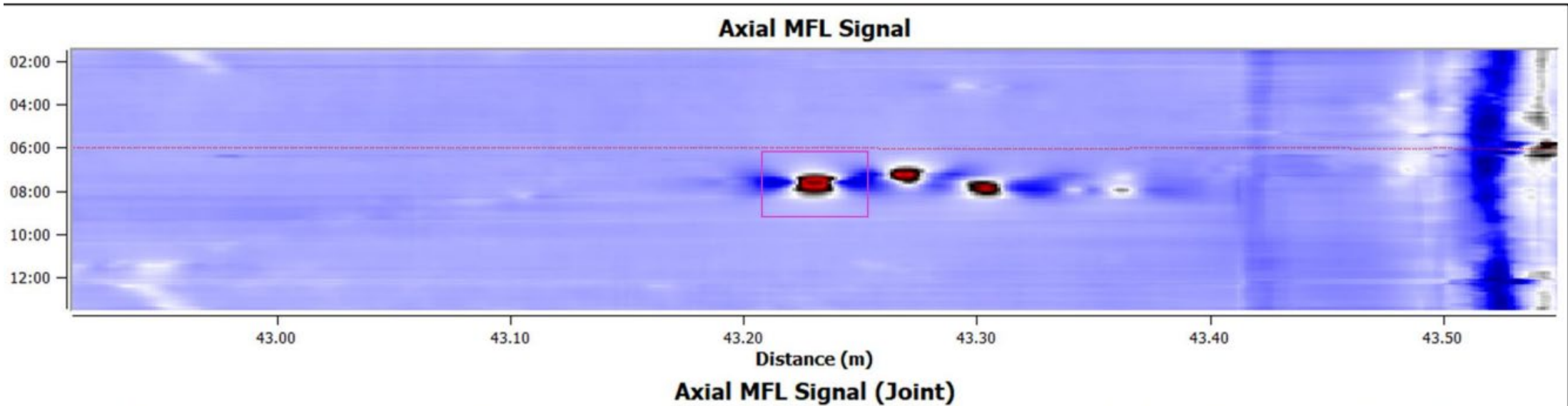


EOC Structure at the Command and Section Chief level



Potential Location of the Corrosion Feature



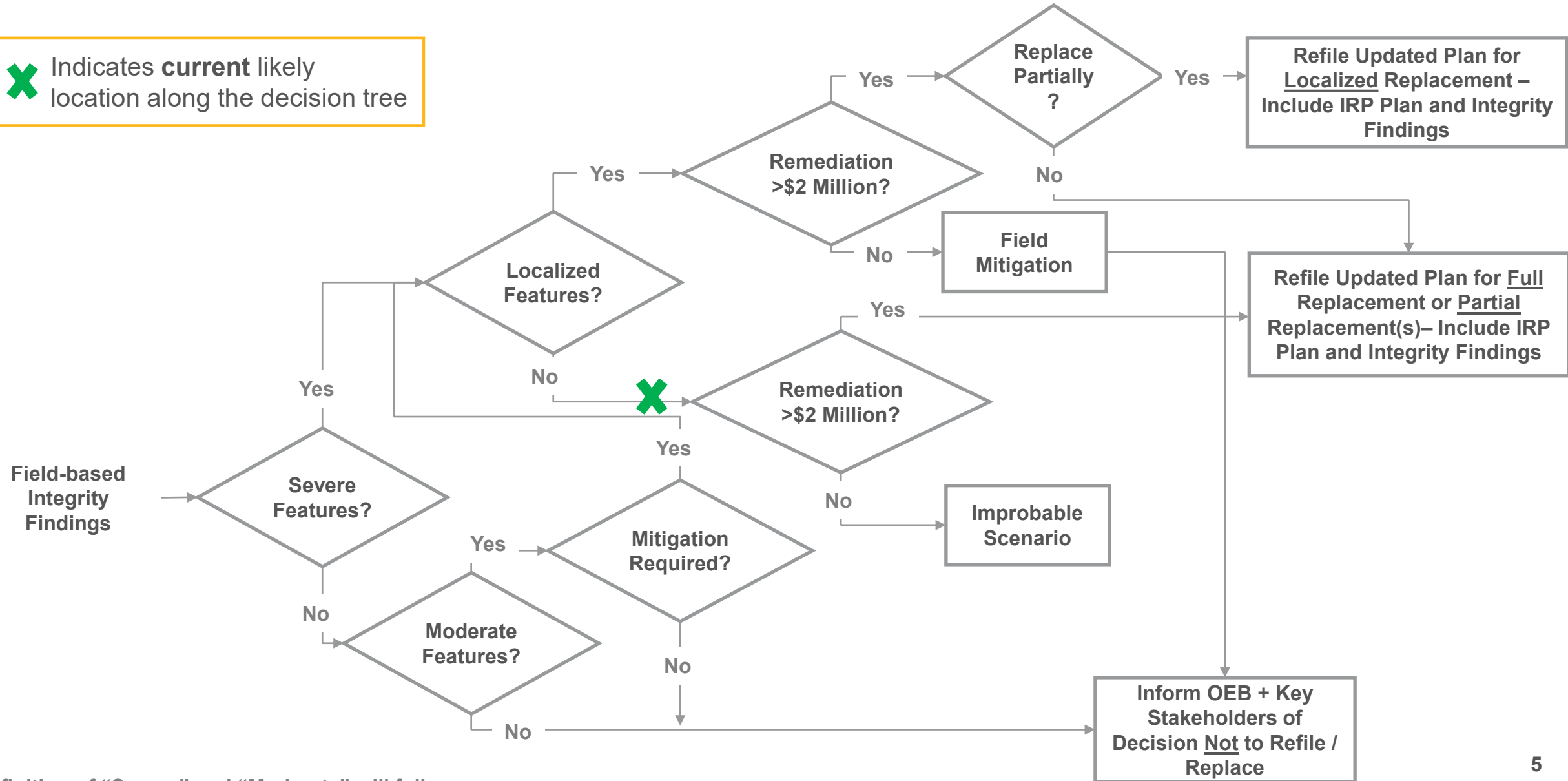


Potential Corrosion Feature MFL signal  
(80%+ wt) with adjacent  
potentially-interacting features



# SLP Decision Tree – Potential Scenarios

**X** Indicates **current** likely location along the decision tree



Definition of “Severe” and “Moderate” will follow.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) The St. Laurent Pipeline operates <30% of the specified minimum yield strength (SMYS) and is therefore classified as a distribution pipeline by the TSSA.

- b) Enbridge Gas’s “Distribution Steel Pipeline Repair Standard” (dated October 2021) provides the criteria to evaluate anomalies and the approved repair options. Please see response at Exhibit I.1.Staff-6 for relevant excerpts from this Standard.
- c) No. Enbridge Gas was aware of the poor condition of the pipeline based on field experience, tacit knowledge, and previous integrity assessments; however, it did not know the exact characteristics or locations of the anomalies.
- d) Please see response at Exhibit I.1.PP-5 part c) for a description of the other targeted inspection work that is completed on similar pipelines. The analysis of the 2024 EDIMP pipelines is still in progress. However, there are pipelines within the scope of TIMP that are comparable to the St. Laurent Pipeline. As an example, details of the NPS 12 Ottawa North pipeline and corresponding integrity work are included below:

Table 1 – NPS 12 Ottawa North Pipeline Characteristics

Pipeline name	NPS 12 Ottawa North - OGS to St Laurent District		
Region	Eastern	Nominal Wall thickness	6.35 mm, 9.5mm
Length	6.0 km	Pipe grade	207, 241, 359 MPa
Install year	1958, 1983	Seam type	LF-ERW
MOP	3,240 kPa	Pipe body coating	Coal Tar, Yellow Jacket, FBE
Max. % SMYS	40%	Joint coating	Coal Tar & PE Tape
Launcher location	Ottawa Gate Station (3534283)		
Receiver location	St Laurent Control Station (6B282A)		
Other details	2086 m of pipeline (35 % length) has been built with Grade 290 MPa and 28% SMYS. The segments replaced in 2013 have FBE pipe body coating.		



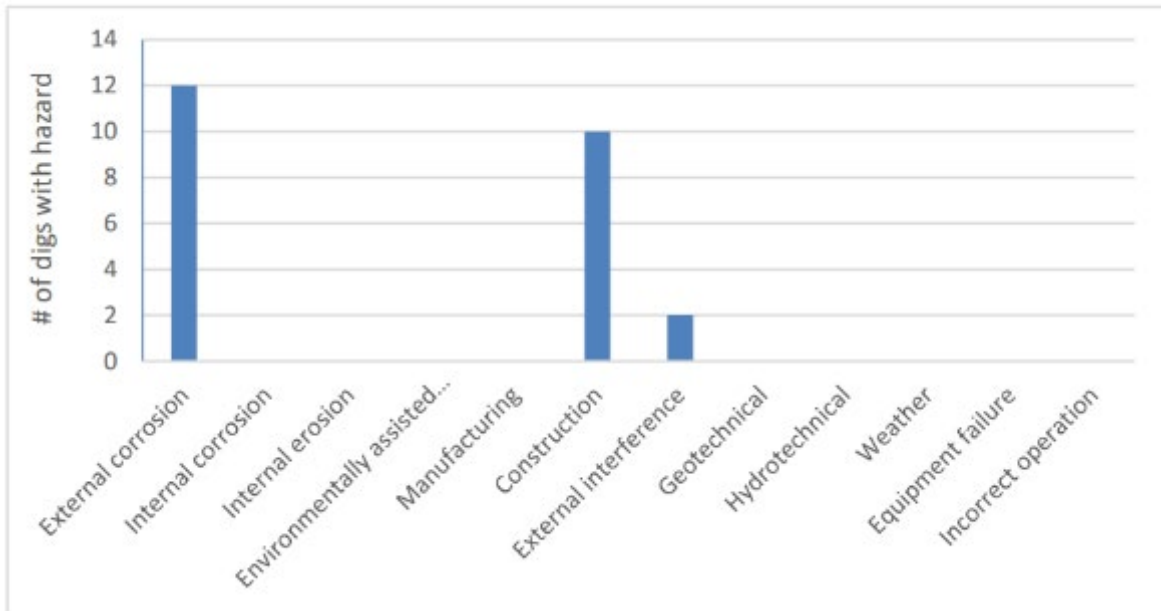
Figure 1 – NPS 12 Ottawa North Pipeline Route



Table 2: NPS 12 Ottawa North Pipeline – Inspection Summary

Year	Inspection Technologies	Immediate Digs	Scheduled Digs
2009	MFL/Geometry	5	10
2016	MFL/Geometry, CMFL, EMAT	0	2
2023	MFL/Geometry, CMFL	0	5

Figure 2: Integrity Dig Summary by Hazard



Note: Digs shown in Figure 2 can be counted more than once if multiple hazards were found in the same dig.

Additionally, all TIMP pipelines are included in a quarterly risk analysis that calculates risk levels based on several factors, including manufacturing defects, internal/external corrosion, stress corrosion cracking, third-party damage, and geohazards. The risk results are compared against reliability targets outlined in CSA Z662 Annex O to determine if mitigation actions are required. There are currently 2km of the NPS 12 Ottawa North pipeline that were identified as having a high risk due to a potential manufacturing defect. An integrity dig is currently underway to investigate and mitigate this hazard.

- e) Please see Exhibit B, Tab 1, Schedule 1, page 17, Table 3 and page 27, Table 5 for a summary of the anomalies and corresponding repairs at each dig site.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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]

Question(s):

- 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.

Response:

a-c) Please see the responses at Exhibit I.1-STAFF-5 part c) and Exhibit I.1-PP-14 part c).

d) The term “Like-in-kind” describes a broad concept that underpins many engineering analyses and thus does not have a universal definition. The term simply refers to the process of defining systems, components, or objects (in the case of pipelines, segments of pipe) where key causal attributes which influence the target variable are sufficiently similar to one another such that it can be reasonably expected that the systems exhibit similar characteristics in the target variable.

The assumption of a like-in-kind concept can be seen in the application of numerous pipeline industry-accepted risk and reliability models, where segments with the same key causal characteristics (i.e. inputs to a model) will arrive at the same final reliability estimate (model output).

In the case of SLP, the primary factors judged to be influential to corrosion susceptibility for like-in-kind extrapolation were the cathodic protection levels, coating, age, and (implicitly) the fact that the SLP pipeline is located in the same geographic location and would therefore be subject to similar physical and environmental factors.

e) Please see Exhibit B, Tab 1, Schedule 1, Appendix A for information on Cathodic Protection (CP) Surveys. CP was judged to be an influential factor in extrapolating corrosion condition as it is one of the two primary barriers preventing corrosion (the other being the pipeline coating). Cathodic protection is an integral part of corrosion control and is a requirement of operating pipelines as per the CSA Z662-19 standard.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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]

Question(s):

- 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 projects for the SLP or adjacent facilities.

Response:

- a) There was some flexibility in choosing excavation locations for launching the ILI tools. Where possible, launch locations were selected to limit public disruption by remaining outside of travelled portions of the road, away from intersections, or within travelled portions of the road but in areas where a plan could be implemented to maintain traffic flow.

Targeted excavations selected based on ILI-data or operational history needed to be completed at the site of concern. Therefore, there was limited opportunity to minimize public disruption for these sites.

- b) The ILI tool is able to inspect 500 m in either direction from the launch points. This, in combination with the methodology described in the response at Exhibit I.1.STAFF-5 parts b) and c), allowed for a thorough assessment of the full extent of the pipeline. Identified anomalies requiring repairs were mitigated independent of location.
- c) The additional project that was leveraged for the integrity digs was the SLP repair bypass around the Highway 417 ramp where the tool found a significant anomaly. As part of the repair project, there were two excavations at the tie-in locations that were leveraged to collect more field data through Non-Destructive Examination (NDE).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) Due to the inaccessible location of this feature, the feature could not be excavated and examined via direct examination methods. Thus, Enbridge Gas is unable to confirm the exact cause of the metal loss. However, such severe metal loss is a clear indication that at least one protective barrier of the pipeline has failed (coating) and must therefore be treated as actively growing corrosion. No signs of deformation were associated with this particular feature in the ILI report, also indicating that corrosion is likely the root cause of the metal loss.
- b) Please refer to Exhibit I.1-PP-25 part c).

c) Condition information (i.e., a population of features including but not limited to the 80% metal loss feature) was extrapolated from the inspected segments on the SLP to the uninspected segments on the basis that data gathered on the SLP is the most representative sample dataset of the rest of the pipeline. This is especially the case for the SLP as, being a relatively short pipeline located in the same geographic region, the overall SLP would have been exposed to similar factors that influence condition (e.g., third party activity history, soil characteristics, installation practices, coating, and other environmental factors). Although there is always uncertainty in extrapolation and a possibility of localized differences along the right of way of an asset, the QRA has aimed to minimize any bias in this regard by testing a variety of extrapolation methods, as described in Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 60 to 61. The results show that the conclusion of poor reliability on the SLP is robust and not affected various methods of extrapolation. By using information from 40% of the SLP to extrapolate the full asset condition, Enbridge Gas relied on a very high sample size from the total population.

Extrapolating condition from the SLP to other pipelines in general would not be appropriate at this stage of the EDIMP program development as the exact physical conditions and operating history that exist on the SLP may not be representatives of other pipelines (e.g., third party activity history, soil characteristics, installation practices, coating condition, cathodic protection history, etc.). Refer to Exhibit I.1-PP-5 for additional details on the EDIMP program.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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 pipelines 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?

Response:

- a) Enbridge Gas operates approximately 7,800 km of steel distribution pipelines at 1,200 kPa (175 psig) or greater. (Note: 1,200 kPa has been used to report this data since it aligns with a pressure class category, making the data more readily available).
- b) Please see response at Exhibit I.1-PP-5, parts a) and c).
- c) Please see response at Exhibit I.1-PP-5 part c).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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]

Question(s):

- 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%.

Response:

- a) The break was assumed to be located downstream of the outlet of [REDACTED]  
[REDACTED]  
[REDACTED] To determine the customer impact, the system was simulated in the Company's hydraulic model with this segment of main (and downstream mains/stations) isolated utilizing isolation valves. Under these conditions, the model was unable to produce a feasible solution (i.e. model did not balance).

Under both the 0 HDD ION Summer and 47 HDD IOFF Winter design conditions, a forward trace from [REDACTED] was run to determine the customers who have their demand served entirely or partially by the SLP system. The results of the forward trace returned customer counts of 18,000 (all in Ontario) and 65,000 (~50% in Ontario, 50% in Quebec) for the stated conditions, respectively.

It was assumed that all customers included in the forward trace results would be impacted in each scenario.

- b) There are no days in the last 10 years where the wind-compensated daily temperature in Ottawa reached a 47 Degree Day (-32°C) or colder. In February of 2023 a 45.8 Degree Day (-30.8°C) was reached. Please also see response at Exhibit I.2-PP-54.
- c) Please see Exhibit B, Tab 1, Schedule 1, Attachment 2, page 49, Table 6.5.
- d) Enbridge Gas has records of the damage history of the SLP from 2007 to 2024. In this period, five instances of third-party damage occurred on the pipeline. None of these incidents resulted in a loss of containment, so there was no impact on customers.
- e) If a failure due to third-party damage occurred on the new proposed pipeline, the operational disruption consequences would be similar. However, the probability of failure due to third-party damage on the new proposed pipeline will be significantly lower than the current pipeline, as detailed in the response at Exhibit I.1-SEC-6.
- f) An additional analysis was completed under the 0 HDD ION Summer condition where all loads were reduced by 50%. The estimated customer impact remains unchanged from the previous assessment at 0 HDD ION Summer conditions, with approximately 18,000 customers impacted within Ontario in the area served by SLP.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) For references to the industry-standard reliability methods, please see response at Exhibit I.1-STAFF-1 part c). Failure rate data cited in the QRA are publicly available at <https://www.phmsa.dot.gov/data-and-statistics/pipeline/source-data>.
- b) The TSSA Code Adoption Document (FS-253-20) and CSA Z662 do not provide prescriptive requirements on reliability models or failure rates to be used in Quantitative Risk Assessments.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Question(s):

- 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.

Response:

- a) Clause 1.5 of CSA Z662-19 states: "The requirements of the Standard are applicable to the operation, maintenance, and upgrading of existing installations".
- b) The assessment, calculations, and report that describe the methodology used to assess the SLP are described in full in Exhibit B, Tab 1, Schedule 1, Attachment 2. In particular, Section 5.3 provides segment reliability details.
- c) Enbridge Gas performs assessment against the CSA Z662 Annex O reliability thresholds for pipelines within its transmission system. Similar assessments may be conducted on other pipelines within the EDIMP Program as required. Refer to Exhibit I.1-PP-5 for details on the EDIMP Program. Enbridge Gas does not agree to produce the assessments against the CSA Z662 Annex O reliability thresholds, as these

assessments are for transmission pipelines and are not relevant to assessing the risk mitigation for the SLP pipeline.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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?

Response:

- a) The referenced paper is a paper published at the 2020 13th International Pipeline Conference which summarizes PHMSA incident data and failure rates. The paper summarizes the rate of significant incidents per km-year and is thus cited for convenience; however, the paper itself is not integral to the conclusion being drawn. The intent is to compare the rate of significant incidents on the SLP to the rate observed in the US distribution system, which can be derived from PHMSA incident data without the paper.
- b) The US Code of Federal Regulations is not enforced in Canada.
- c) The intent of comparing the predicted failure rate on SLP to the rate observed in the US distribution system is to provide broader context to the condition of the SLP in relation to the rest of North America, not exclusively to the Enbridge Gas distribution system. The conclusion does not hinge on any particular theory or unique method described in the paper. Using a larger database helps ensure that comparisons and conclusions are objective and statistically valid. To enhance Enbridge Gas's level of confidence in the results, the Company sought the expertise of DNV to evaluate the reliability and risk assessment methodologies employed in the QRA. DNV's review concluded that the methodologies were consistent with standard industry practices. Please see Exhibit B, Tab 1, Schedule 1, page 36, paragraph 53 for details.
- d) No, Enbridge Gas does not yet have comprehensive failure rate data for its own system that would be readily available to conduct a comparative analysis. The comparative analysis with PHMSA data yields a verifiable and robust comparison to a system that is significantly larger (more than twenty times) than the Enbridge Gas network. All US operators of pipelines under PHMSA jurisdiction must report incidents meeting a certain threshold; the database is therefore an accurate and reliable database describing North America's pipeline safety track record.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

a, c)

A full description of the sensitivity analysis is presented in Section 8 of the QRA. Please see Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 60-66.

- b) The TSSA and CSA do not provide explicit requirements or guidelines to define confidence bounds for a QRA. The confidence bounds discussed in Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 60-66 are provided for greater transparency and to demonstrate the robustness of the final risk estimate.
  
- d) The QRA was conducted by Enbridge Gas staff and validated by DNV, an internationally recognized consulting firm with specialization in QRA.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) Please see footnote 32 at Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 61.
- b) The TSSA and CSA do not specify explicit requirements or guidelines to define unrealistic input ranges for a QRA.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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

Question(s):

- 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.

Response:

- a) The estimated failure rates by threat, as outlined in Table 1, were calculated as part of the QRA. Details of the reliability calculations are provided in Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 17 to 36.



- b) The methodology for calculating third-party damage risk on the SLP is included in the QRA, with further details available in Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 21 to 28.
- c) The failure rates in Table 1 represent the average per kilometer across the entire SLP. However, reliability may vary significantly between segments, potentially differing by several orders of magnitude. The overall expected failure rate for the SLP can be determined by multiplying the provided rates by the total pipeline length. It is important to note that the overall failure rates are primarily influenced by the 8.8 km segment identified as presenting intolerable risks.
- d) The failure rates by threat shown in Table 1 are only applicable to the SLP, as they incorporate pipeline-specific condition data and material properties obtained through the “Targeted Integrity Program” detailed in Exhibit B, Tab 1, Schedule 1, pages 6 to 26.
- e) Enbridge Gas performs similar reliability and risk assessments for XHP pipelines as part of its Transmission system, based on condition data gathered through in-line inspection. Enbridge Gas also carries out these analyses for high-risk Distribution pipelines as part of its EDIMP program, which targets distribution assets that are similar to St. Laurent. Additional details of TIMP and EDIMP are available in the response at Exhibit I.1-PP-5 part c). Enbridge Gas is not prepared to disclose the reliability and risk levels of all of its XHP pipelines in Ontario, as this does not impact the immediate need for risk mitigation on the SLP.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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].

Response:

a - b)

The x axis of the Operational Risk Assessment Matrix (ORAM) represents the consequence of an event and may take on different units depending on the consequence category (e.g., Financial (\$), Health & Safety (fatalities and injuries)).

The y axis represents the likelihood of an event occurring. A full description of the ORAM can be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 89-90.

- c) Figure 2 is an excerpt from the QRA showcasing the risk of the SLP on the ORAM and is not directly related to the definition of an “incident” in PP’s reference included in this interrogatory. Context for the definition of an “incident” in PP’s reference and how it was used in the assessment may be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 45.
- d) The ORAM was developed by Enbridge and is an example of a risk matrix commonly used by Enbridge Gas<sup>1</sup> and in industry to assess and report risk, as described in Annex B of CSA Z662-23. Details of the matrix can be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 89 to 90.
- e) The 2,500 comparator is in relation to the PHMSA incident average as described in Lyons, S. & Modarres. Please see response at Exhibit I.1-PP-19 part a) for relevance of Lyons, S. & Modarres. Context for this number may be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, Page 45.

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<sup>1</sup> EB-2022-0200, Exhibit 2, Tab 6, Schedule 2, p. 50-52.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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.

Response:

- a) Please see the following Attachments.
  - Attachment 1: RFP - email with subject line "New Piece of work"
  - Attachment 2: RFP – email with subject line "Next Steps for SLP Review"
  - Attachment 3: Proposal – Enbridge Gas – DNV Proposal – Redacted
  - Attachment 4: Contract – PO 69737 - Redacted
- b) In addition to the DNV St. Laurent Pipeline Risk Review Memo (2023) filed at Exhibit B, Tab 1, Schedule 1, Attachment 3, please see Attachment 5 to this response for the full report entitled "St. Laurent Pipeline – Risk Review 10429064-RISK, Rev. 0,



May 11, 2023". This full report is the basis for the DNV St. Laurent Pipeline Risk Review Memo (2023) .

- c) Revisions were completed through a series of meetings between DNV and Enbridge Gas, which were captured in the response to part a). Please see Attachment 6 to this response for additional correspondence between Enbridge Gas and DNV.

**From:** [Mike Hildebrand](#)  
**To:** [Johnson, Jeremy](#)  
**Subject:** New Piece of work  
**Date:** Wednesday, January 25, 2023 1:43:24 PM

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Hi Jeremy,

I hope you are well.

We have a piece of work that we would like to discuss with you. It is for support on providing an independent review of a risk/reliability study that we have done for a distribution pipeline asset. This is a 1950s era pipe in fairly populated urban area of Ottawa. The focus of the assessment is to identify the expected reliability of the pipeline based on some ILI data (gathered in 2021 specifically to understand the current state) as well as third party damage threats. We are proposing some evaluation criteria in this assessment to assist with determining the urgency of the risk. Primary outcomes of concern are loss of containment resulting in public health and safety incident and operational interruptions impacting customers.

We will be looking for a relatively short turnaround on this work. We will clarify scope with you, but I would say at a high level we are looking for review of the approach and methodology including what would be seen as reasonable from the standpoint of evaluation criteria.

Can we set a meeting to discuss within the next week?

Thanks,

**Mike Hildebrand, P.Eng** (he/him)  
Manager Integrity Assessments and Asset Information  
**Integrity and Asset Management**

**ENBRIDGE GAS**

TEL: 519-436-4600 x5005282 | CELL: 519-365-0458 | [mike.hildebrand@enbridge.com](mailto:mike.hildebrand@enbridge.com)  
50 Keil Drive, Chatham ON N7M 5M1

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**Safety. Integrity. Respect. Inclusion**

**From:** [Mike Hildebrand](#)  
**To:** [Johnson, Jeremy](#)  
**Subject:** Next steps for SLP Review  
**Date:** Wednesday, February 8, 2023 10:07:31 AM

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Good morning Jeremy,

Let me know if we DNV is on track to complete a draft by end of week. I think that likely the next steps after are (dates approximate):

- Feb 10-17 GDS to review draft document and compile comments
- Feb 20 - Set meeting to review comments and issues with DNV
- Feb 24 – DNV to deliver final report

Let me know if you think that this is reasonable.

**Mike Hildebrand**, P.Eng (he/him)  
Manager Integrity Assessments and Asset Information  
**Integrity and Asset Management**

**ENBRIDGE GAS**

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**Safety. Integrity. Respect. Inclusion**



**To:**  
Mike Hildebrand  
Enbridge Gas Inc.

**From:** DNV Canada Ltd.  
Energy Systems  
Bow Valley Square 4  
Suite 1710, 250 – 6th Avenue SW  
Calgary, AB T2P 3H7  
403 702 5679

**Date:** February 6, 2023  
**Prepared By:** Jeremy Johnson

## DNV Proposal – Review of Risk and Integrity Reports for St. Laurent Pipeline (2023)

### 1 OVERVIEW

Enbridge Gas Inc. (Enbridge) has requested that DNV prepare a proposal to review the St. Laurent Pipeline Risk and Integrity Assessments, as prepared by Enbridge, to evaluate the technical nature and approaches contains within.

### 2 PROPOSED APPROACH

DNV’s approach is to review the technical details and the approaches taken as contained within:

- *St. Laurent – Report DSI Integrity Assessment - Draft*
- *St. Laurent Pipeline – Risk Assessment Summary DRAFT*
- *St. Laurent – Risk Assessment Appendix - DRAFT*

Two high-level memo reports outlining the review and DNV’s associated recommendations will be prepared (one report for the integrity assessment and a separate report for the risk assessment).

The input information required to complete this project are the reports and associated appendices.

### 3 COST ESTIMATE AND SCHEDULE

DNV proposes to complete the scope of work on a time and materials basis.

**Table 1 – Estimate of Hours and Cost**

Role	Hours	
Senior Engineer (CAN)	21	
Principal Consultant (US)	21	





The total cost to complete the review and provide a memo report is [REDACTED]

The memo reports will be delivered by February 10, 2023, as drafts for review by Enbridge. Final reports will be delivered by February 17, 2023, pending Enbridge’s timely review and comment.

## 4 KEY PERSONNEL

The following key personnel will comprise the project team for the proposed scope of work.

**Table 2 – Key Personnel**

	Title	Role
[REDACTED]	Senior Engineer (Canada)	Project Manager
[REDACTED]	Principal Consultant (US)	Subject Matter Expert (Risk)
[REDACTED]	Principal Consultant (Canada)	Project Sponsor and Team Member (Integrity)
[REDACTED]	Senior Engineer (Canada)	Project Team Member (Integrity)

## 5 DNV PURPOSE, VISION, AND VALUES

Since 1864, our Purpose has been to safeguard life, property and the environment. Our Vision is to be a trusted voice to tackle global transformations. Our Values are beliefs that shape our performance; these ideals are the behaviors expected of all employees in DNV:

**We care** for each other, our customers, our planet, and we take care of ourselves.

**We dare** to explore, to experiment, to be different, and to be courageous, curious and creative.

**We share** our experience and knowledge. We collaborate with each other and our customers, and we continue to grow and develop as a result.

## 6 DNV MANAGEMENT SYSTEM

Projects are conducted according to the DNV Management System (DMS). The following paragraphs are taken directly from the DMS:

*Quality Policy*

*We will never compromise on quality or integrity.*

*We commit ourselves to:*

- *deliver in accordance with the industry’s expectations*
- *continually improve our performance and professionalism*

DNV's approach and strengths for project execution, management and control of projects is based on the primary objective to align people, processes, and technology to meet the ongoing needs of customers. We believe that this is key to delivering successful projects and achieving high levels of customer satisfaction. The three pillars of this approach include:

1. Process: Driving projects in a structured repeatable fashion helps to improve efficiency, reduce significant risks and



provides a platform for the lessons learned to improve our business;

2. People: A project manager and a project team with the right skills, knowledge, and training in the areas of communication, leadership, technical competence and commercial awareness is key for a successful Project Management; and
3. Technology: Suitable software solutions, used globally to streamline and improve our processes, reduce duplication of information, ensure knowledge reuse and provide a common place to do projects.

DNV's project management process is a documented process under our ISO-certified Quality Management Process.

## 7 CONTRACTUAL

DNV proposes that the Enbridge Employee Services Master Services agreement (expiring February 19, 2024) shall form the contractual basis for this project.

Thank you again for the opportunity to provide you a proposal and cost estimate for this work.

Sincerely,

For DNV Canada Ltd.

A handwritten signature in black ink, appearing to read "Jeremy Johnson".

Jeremy Johnson, P.Eng.

Team Lead

**OU2510 EGDI**  
**500 CONSUMERS RD**  
**NORTH YORK, ON M2J 1P8**  
**Canada**

Type	<b>Standard Purchase Order</b>
Order	<b>69737</b>
Revision	<b>0</b>
Order Date	<b>14-FEB-2023</b>
Created By	<b>VANDERWOUDE, DAVID</b>
Revision Date	
Current Buyer	<b>VANDERWOUDE, DAVID</b>

Supplier: **DNV CANADA LTD**  
**2618 HOPEWELL PL NE STE 150**  
**CALGARY, AB T1Y 7J7**  
**Canada**

Ship To: **500 CONSUMERS ROAD**  
**DOCK 2**  
**NORTH YORK, ON M2J 1P8**  
**Canada**

Bill To: **Enbridge Gas Inc.**  
**ENBRIDGE GAS INC.**  
**PO BOX 650**  
**SCARBOROUGH, ON M1K 5E3**  
**Canada**

The Purchase Order number must be prefaced with a 'P' for Materials and "W" for Services on all invoices. For invoice requirements, visit <https://www.enbridge.com/work-with-enbridge/doing-business-with-enbridge/current-suppliers-tools-and-resources>. Failure to follow the requirements may cause a delay in invoice payment.

Customer Account No.	Supplier No.	Payment Terms	Freight Terms	INCOTERM	Transportation	Ship Via
	<b>77876</b>	<b>NET 60</b>				
Confirm To/Telephone				Requester		
()				<b>HILDEBRAND, MIKE</b>		

**Notes:** Req # 41401 M.Hildebrand, M.Hildebrand, Toronto, ON. Engineering Consulting Services

**SCOPE OF SERVICES AND PRICING**

Consultant shall, on a Time and Material basis provide Engineering Consulting services for independent review of integrity and risk assessment as per Proposal (attached).

Please acknowledge your acceptance of this order by confirming via email to Company's Buyer that you accept the order.

Invoices must be addressed and submitted as described in the INVOICING INSTRUCTIONS section below.

**DOCUMENTS INCORPORATED BY REFERENCE**

The following documents form part of this Work Order Contract and are either attached as noted below or are otherwise incorporated by reference:

1. Master Services Agreement also known as # 2-210863, as referenced on each line item below;
2. Company's Lifesaving Rules
3. Company's Statement on Business Conduct
4. Company's Supplier Code of Conduct

OU2510 EGDI

Standard Purchase Order 69737, 0

- 5. Company's Operator Qualification Requirements, as applicable
- 6. Company's Environmental Guidelines, as applicable.
- 7. Proposal dated Feb 06, 2023. (attached)

Please visit the following link to read and retain a copy of our Policies;

<https://www.enbridge.com/work-with-enbridge/doing-business-with-enbridge/policies>

In the event of a conflict or inconsistency among any of the above documents, the documents shall take priority in the order in which they are listed.

**SUPPLIER'S CONTACT INFORMATION**

Supplier Name: Jeremy Johnson  
 Supplier Phone Number: 403-702-5679  
 Supplier Email Address: Jeremy.johnson@dnv.com

**COMPANY'S CONTACT INFORMATION**

Buyer Name: David Vanderwoude  
 Buyer Phone Number: (519) 436-4600 ext. 5002212  
 Buyer Email Address: David.vanderwoude@enbridge.com

Requestor Name: Mike Hildebrand  
 Requestor Email Address: Mike.Hildebrand@enbridge.com

**INVOICING INSTRUCTIONS**

The order number must be prefaced with a 'W' on all invoices.  
 For invoice requirements, visit <https://www.enbridge.com/work-with-enbridge/doing-business-with-enbridge/current-supplier-s-tools-and-resources>. Failure to follow the requirements may cause a delay in invoice payment.  
 Invoice Contact Personnel Name: Mike Hildebrand  
 Reference Documents: Enbridge Gas - Risk and Int Review (2023) - Proposal - Feb 2023.pdf  
 All prices and amounts on this order are expressed in CAD

Line	Part Number / Description	Delivery Date/Time	Quantity	UOM	Unit Price (CAD)	Tax	Amount (CAD)
1	<p>Work Start/Goods Promised: 14-FEB-2023                      Work End/Goods Needed: 30-APR-2023</p> <p>Engineering Consulting Services to provide independent review of integrity and risk assessment</p> <p>Ship To: Use the ship-to address at the top of page 1</p> <p>Requester: HILDEBRAND, MIKE</p>						
						<b>Total:</b>	





ST. LAURENT PIPELINE

# St. Laurent Pipeline – Risk Review

Enbridge Gas Inc.

**Document No.:** 10429064-RISK, Rev. 0

**Date:** May 11, 2023



Project name:	St. Laurent Pipeline	DNV Canada Ltd.
Report title:	St. Laurent Pipeline – Risk Review	Energy Systems
Customer:	Enbridge Gas Inc.	Bow Valley Square 4
Customer contact:	Mike Hildebrand	Suite 1710, 250 – 6 Ave SW
Date of issue:	May 11, 2023	Calgary AB T2P 3H7
Project No.:	10429064	Tel: 403 250 9041
Organization unit:	Energy Systems	
Document No.:	10429064-RISK, Rev. 0	

Applicable contract(s) governing the provision of this Report:  
*Master Services Agreement Between DNV Canada Ltd. and Enbridge.*

Objective:

To review the Risk Assessment Report prepared by Enbridge for the St. Laurent Pipeline.

Prepared by:

Cynthia Spitzenberger  
Principal Consultant (DNV USA)

Reviewed by:

Jeremy Johnson, P.Eng.  
Senior Engineer

Approved by:

Mark Klages  
Head of Section

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Rev. No.	Date	Reason for Issue	Prepared by	Reviewed by	Approved by
A	February 10, 2023	Draft for Review	Cynthia Spitzenberger	Jeremy Johnson	Mark Klages
B	March 30, 2023	Draft #2	Cynthia Spitzenberger	Jeremy Johnson	Mark Klages
C	April 12, 2023	Draft #3	Cynthia Spitzenberger	Jeremy Johnson	Mark Klages
0	May 11, 2023	Final	Cynthia Spitzenberger	Jeremy Johnson	Mark Klages



## EXECUTIVE SUMMARY

Enbridge Gas Inc. (Enbridge) has completed a quantitative risk assessment (QRA) for the St. Laurent Pipeline, which is located in Ottawa, Canada. Enbridge engaged DNV to review the *Quantitative Risk Assessment (QRA) – St. Laurent North Pipeline* (referred to as the Risk Assessment Report, dated April 24, 2023).

Based on the review by DNV, it has been found that Enbridge has conducted a comprehensive and reasonable risk evaluation of the St. Laurent Pipeline. Enbridge is following a defined and reasonable risk assessment approach to understand the risks across the pipeline.

The Risk Assessment Report provides detailed explanation and documentation of the potential loss of containment frequency estimates and documents the detailed benchmark comparison and risk assessment. The applied approaches are considered in line with industry practice and appropriate comparisons for the St. Laurent pipeline segment. The application of summed-scenario pipeline frequencies for use in the risk matrix may be considered conservative. Sub-segmentation of the pipeline into sub-scenarios may give more nuance to the risk evaluation but is unlikely to change the overall risk evaluation from falling in the categories of High / Very High Risk. Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.

It is noted that the St. Laurent Pipeline is deemed to be a distribution pipeline by Enbridge. As such, only pertinent clauses of CSA Z662 that apply to distribution pipeline systems are applicable to the pipeline (as well as the internal requirements set by Enbridge for the integrity management of distribution pipelines).



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## 1 INTRODUCTION

Enbridge Gas Inc. (Enbridge) has completed a quantitative risk assessment (QRA) for the St. Laurent Pipeline located in Ottawa, Canada. Enbridge engaged DNV to review the *Quantitative Risk Assessment (QRA) – St. Laurent North Pipeline* (referred to as the Risk Assessment Report, dated April 24, 2023). A number of additional reference documents were considered including in-line inspection (ILI) data and a Corrosion Service (contractor) report for the pipeline. It is noted that DNV's review is a qualitative review in nature.

The Enbridge report was prepared to document risk analyses performed for the 11.2 km NPS 12 / NPS 16 St. Laurent Pipeline, located in Ottawa, Ontario and originally constructed in 1958/1959. The analyses are based on historical assessments as well as inspections and analysis undertaken in 2022. Enbridge notes in its reports that the pipeline is a distribution line and is therefore subject to the requirements of CSA Z662 Clause 12 Gas distribution systems. Per Clause 12, certain requirements of the standard are in or out of effect based on this designation. The internal requirements set by Enbridge for the integrity and risk management of distribution pipelines are also applicable to the pipeline.

## 2 RISK ASSESSMENT

DNV completed a review of the Risk Assessment Report. It is noted that a comprehensive review of the Enbridge DIMP approach to integrity management (inclusive of the company anomaly repair criteria) was not completed.

### 2.1 Loss of Containment Mechanisms

Overall, the risk assessment methodology deployed by Enbridge is valid and in line with standard practice. A range of loss of containment mechanisms are considered with quantitative frequency evaluation. As only a portion of the pipeline system (39%) has been inspected, the findings are extrapolated to analogous sections (like-in-kind) of the remaining uninspected pipeline sections.

Detailed explanation and documentation of the potential loss of containment frequency estimates is provided in the report discussion. The analysis of the threat mechanisms and likelihoods is reviewed and commented in the separate DNV report reviewing the Enbridge Integrity Actions. The following is a summary of the potential loss of containment mechanisms quantitatively assessed:

- Corrosion – evaluated based on system's historical failure rate and inspection data.
- Third-Party mechanical damage (TPD) – evaluated with industry accepted framework based on estimated hit rate from third-part equipment, depth of cover and probability of hit results in loss of containment.
- Selective Seam Weld Corrosion (SSWC) – evaluated based on system's susceptibility to mechanism and industry historical failure data.
- Manufacturing – evaluated based on system's susceptibility to mechanism and industry historical failure data.
- Delayed failure of mechanical damage – evaluated based on system's susceptibility to mechanism and industry historical failure data.
- Fabrication – evaluated based on system's susceptibility to mechanism and industry historical failure data.
- Interaction of threats – evaluated based on industry interacting threat matrix system's historical data.



The quantified failure mechanisms are related to representative releases sizes of rupture, large leak, and small leak (pinhole leaks were not considered further in the assessment due to low associated consequences). These representative release sizes were further categorized into the CSA Z662 Annex O categories of:

- Ultimate Limit State (ULS) – rupture and large leaks.
- Leakage Limit State (LLS) – small leak.

Note that the following potential loss of containment mechanisms were considered and/or excluded from further quantification:

- Equipment failure – quantitatively evaluated based on system historical failure data however not considered further in the risk assessment on basis that pinhole leaks are typical outcome.
- Other threats – the system was determined to be non-susceptible to stress corrosion cracking (SCC), geotechnical, and hydrotechnical threats.
- Incorrect Operations, Human Error, Sabotage/Vandalism threats were not assessed as they were noted as not specific to this pipeline system.

## 2.2 Risk Evaluation

Several benchmark evaluations and risk assessments were performed to evaluate the estimated frequencies. The following is a summary of the evaluations:

- Failure rate comparison to LLS and ULS thresholds in Annex O of CSA Z662.
- Failure rate comparison to PHMSA historical significant incident rate.
- Risk evaluation applied to Enbridge’s Enterprise Operational Risk Matrix.

The benchmark and risk evaluations are also well documented and considered in line with industry practice and appropriate comparisons for the St. Laurent pipeline segment. DNV agrees with the analysis that the St. Laurent pipeline “meets industry standard definitions of a transmission pipeline and that the LLS and ULS thresholds in Annex O can serve as a reasonable reliability benchmark.”

The risk evaluation applies the analysis to the Enbridge Enterprise Operational Risk Matrix. By Enbridge definition the risk matrix is intended to be applied “to the assessment of scenarios or events” with a health and safety impact to workers or the public. Usually a scenario based approach evaluates the frequency and consequence of each scenario with the resulting risk mapped within the matrix. For linear assets such as pipelines, it can be difficult to apply a scenario based approach given that there is usually a long length of the pipeline that may expose surrounding areas – so there could be high estimates of both frequency and consequence if the entire pipeline length is treated as one scenario. There is currently no standard industry guidance on the evaluation of linear assets / pipelines for a scenario based approach. Several practices have evolved for this application:

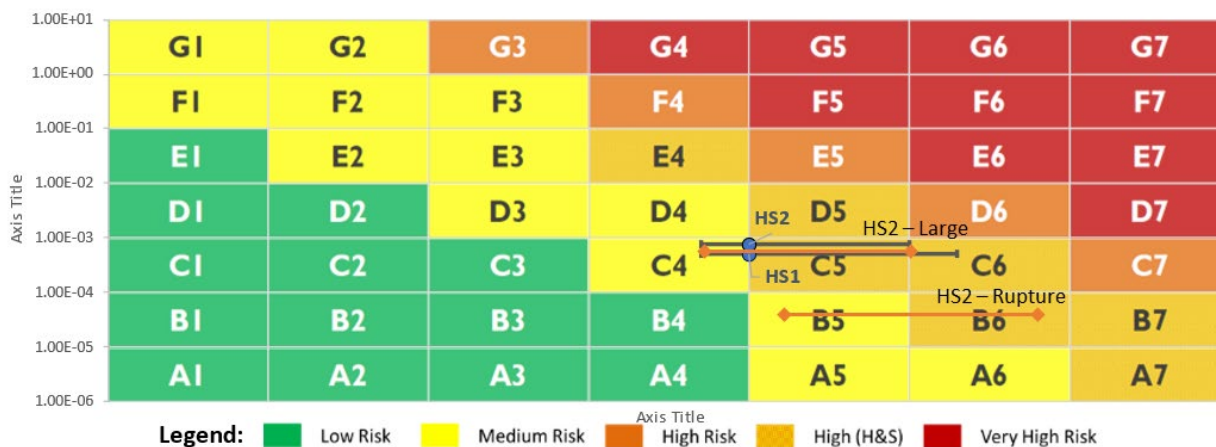
1. One option is to evaluate the pipeline based on defined segment lengths – such as 1 km or 1 mi. This approach recommends that the analysis ensures that the maximum consequence is included undiluted – meaning that the segmentation ensures evaluation of the “worst” segment with the greatest exposure to people / environment and does not attempt to artificially dilute or break up the segment to result in a lower risk rank.
2. Another option is to define “homogenous” pipeline segments – where characteristic features of the pipeline are the same and that can impact specific population centers. If the distance (d) to the vulnerable target is known, and the hazard consequence distance (R) is known, then an estimate of the homogenous pipeline segment length (L) to use



for the scenario evaluation can be made:  $L = 2 \times (R^2 - d^2)^{1/2}$ . Where L is then used for the frequency estimate of the scenario.

The Enbridge study has evaluated the 11.2 km pipeline as one segment with respect to frequency and then coarsely evaluated the range of potential consequence impacts. It could be argued that this is conservative for the frequency evaluation. However, the overall annual frequency is averaged over the length of the pipeline; in a detailed evaluation with sub-segments there would be segments with greater than average frequencies that would rank higher than others (with respect to frequency). The risk analysis must also be careful to not artificially sub-segment the pipeline into smaller scenarios that gives a false impression of frequency dilution.

An example is used for the HS2 (Health & Safety Outcome 2) case for discussion. The ignited event frequency estimated for a large leak along the St. Laurent pipeline is  $7.0E-4$  per year ( $0.02 \times 3.5E-2$ ) and the ignited rupture leak estimated frequency is  $6.3E-5$  per year ( $0.35 \times 1.8E-4$ ); the total estimated ignited event frequency is  $7.6E-4$  per year. The HS2 total ignited event frequency for the pipeline was plotted in the risk matrix with a fatality impact estimate range of 0.5 to 10. If the Large and Rupture scenarios are presented separately, they would have different frequency estimates and should likely have different consequence estimates with the Rupture case potentially having more than the estimated 10 fatality impact depending on the scenario location. A demonstration of the potential variation of the HS2 scenarios (split by Large and Rupture) is presented in the following figure – note that the figure is only for demonstration (no detailed consequence evaluation has been performed). The HS2 Large and Rupture scenarios could be divided further with sub-segments representing homogenous pipeline segments with similar physical conditions but then detailed consequence impact would need to be performed for estimation of impact to nearby population centers.



**Figure 2-1 Demonstration of Alternate Risk Evaluation for HS2 Case**

Similar evaluations using the Enterprise Operational Risk Matrix were performed for other hazard consequences, including operational disruption and financial impact. The resulting risk outcomes were ranged from Medium to Very High Risk.

Although more detailed analysis could be performed and provide more nuance to the risk evaluation, the question of effort should be considered with respect to the overall outcomes. Additional analysis would likely result with the scenarios remaining in the High / Very High Risk categories.

Conclusion of the analysis is that consideration of the Leakage Limit State (LLS) and Ultimate Limit State (ULS) approaches, 8.8 km of the 11.2 km pipeline (75%) fails one or both reliability limits (it is noted that reliability limits are based on CSA Z662



Annex O, which is a non-mandatory annex). Additional conclusion is based on the risk analysis with the matrix resulting in scenarios with “High Risk” or “Very High Risk”. These conclusions are valid and in line with the presented data. DNV agrees with the Enbridge conclusion that additional remedial action to improve the reliability of 8.8 km of the pipeline should be considered.

## 2.3 Recommendations

The following recommendations are made by DNV with respect to the Enbridge risk assessment:

1. Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.

## 3 CONCLUSIONS

The results of the review demonstrate Enbridge has completed risk analysis of its St. Laurent pipeline in a manner consistent with thorough engineering and risk analysis.

The Risk Assessment Report provides detailed explanation and documentation of the potential loss of containment frequency estimates and documents the detailed benchmark comparison and risk assessment. The applied approaches are considered in line with industry practice and appropriate comparisons for the St. Laurent pipeline segment. The application of summed-scenario pipeline frequencies for use in the risk matrix may be considered conservative. Sub-segmentation of the pipeline into sub-scenarios may give more nuance to the risk evaluation but is unlikely to change the overall risk evaluation from falling in the categories of High / Very High Risk. Additional detailed risk assessment is not considered necessary at this time or to significantly alter the risk categorization. Detailed risk evaluation may be conducted in future if risk prioritization is needed to guide priority of remedial actions; however, this may require more detailed consequence estimation than currently evaluated.

DNV notes that as the asset is deemed a distribution pipeline, and as such, only pertinent and applicable clauses of CSA Z662 apply for maintenance and integrity management.





## **APPENDIX A – LIST OF DOCUMENTS REVIEWED**

DIMP Risk Algorithm Doc – TPD POD  
ENB (22STLAU) CD-REP-SVY-002\_D1  
Quantitative Risk Assessment (QRA) – St. Laurent North Pipeline  
S1 – Tremblay West – MFL – 05102022 – Final Report v1  
S2 – Tremblay East – MFL – 05102022 – Final Report v1  
S3 – Queen Mary – MFL 25102022 – Final Report v1  
S4 – Karen Way – MFL – 26102022 – Final Report v1  
S5 – St. Laurent Control – MFL - 26102022  
S6 – Sandridge – MFL – 27102022 – Final Report v1  
St. Laurent – Report – DSI Integrity Assessment – Draft  
St. Laurent Integrity Actions Report by the Distribution Integrity Management Program (DIMP)  
St. Laurent Pipeline – Risk Assessment Summary DRAFT  
St. Laurent Pipeline – Risk Assessment Appendix – DRAFT  
TIMP Risk Algorithm Doc - Manufacturing



## **About DNV**

DNV is the independent expert in risk management and assurance, operating in more than 100 countries. Through its broad experience and deep expertise DNV advances safety and sustainable performance, sets industry benchmarks, and inspires and invents solutions.

Whether assessing a new ship design, optimizing the performance of a wind farm, analyzing sensor data from a gas pipeline or certifying a food company's supply chain, DNV enables its customers and their stakeholders to make critical decisions with confidence.

Driven by its purpose, to safeguard life, property, and the environment, DNV helps tackle the challenges and global transformations facing its customers and the world today and is a trusted voice for many of the world's most successful and forward-thinking companies.

**From:** [Mike Hildebrand](#)  
**To:** [Johnson, Jeremy](#)  
**Subject:** RE: Privileged and Confidential: SLP Review with DNV  
**Date:** Friday, April 14, 2023 10:41:59 AM

---

## CONFIDENTIAL

Yes understood...I just couldn't find where and when I had sent that report...all good now.

In terms of item 4 below the details that were removed from the Jan 20<sup>th</sup> report will be added back in to the report and that is what should be referenced in your final review. We are going to send through updated final reports for both the integrity actions report and the risk assessment (mostly minor editorial updates) shortly. Your review report can then essentially just reference in the introduction the integrity report that is the subject of the review.

Mike

## CONFIDENTIAL

---

**From:** Johnson, Jeremy <Jeremy.Johnson@dnv.com>  
**Sent:** Friday, April 14, 2023 9:27 AM  
**To:** Mike Hildebrand <Mike.Hildebrand@enbridge.com>  
**Subject:** [External] RE: Privileged and Confidential: SLP Review with DNV

### **CAUTION! EXTERNAL SENDER**

**Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate?  
DO NOT click links or open attachments unless you are 100% sure that the email is safe.**

That's the point we are making. When we look at Feb 10 version we see you deleted the content (content that is in the Jan 20 version).

Jeremy

---

**From:** Mike Hildebrand <[Mike.Hildebrand@enbridge.com](mailto:Mike.Hildebrand@enbridge.com)>  
**Sent:** Friday, April 14, 2023 7:24 AM  
**To:** Johnson, Jeremy <[Jeremy.Johnson@dnv.com](mailto:Jeremy.Johnson@dnv.com)>  
**Subject:** RE: Privileged and Confidential: SLP Review with DNV

## CONFIDENTIAL

Jeremy,

I am just looking back at the files that I had sent. Did you receive the Integrity Actions report dated Feb 10, 2023? I cannot seem to see it in the file transfer system. This is the updated version of the

Jan 20 report that you have referenced.

mike

## CONFIDENTIAL

---

**From:** Johnson, Jeremy <[Jeremy.Johnson@dnv.com](mailto:Jeremy.Johnson@dnv.com)>  
**Sent:** Tuesday, April 11, 2023 12:19 PM  
**To:** Mike Hildebrand <[Mike.Hildebrand@enbridge.com](mailto:Mike.Hildebrand@enbridge.com)>  
**Subject:** [External] RE: Privileged and Confidential: SLP Review with DNV

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Mike,

I am working on this today. What would you like us to do about #4?

Jeremy

---

**From:** Mike Hildebrand <[Mike.Hildebrand@enbridge.com](mailto:Mike.Hildebrand@enbridge.com)>  
**Sent:** Thursday, April 6, 2023 10:40 AM  
**To:** Kai Ji <[Kai.Ji@enbridge.com](mailto:Kai.Ji@enbridge.com)>; Fred Butrico <[Fred.Butrico@enbridge.com](mailto:Fred.Butrico@enbridge.com)>; Johana Gomez <[Johana.Gomez@enbridge.com](mailto:Johana.Gomez@enbridge.com)>; Ryan Werenich <[Ryan.Werenich@enbridge.com](mailto:Ryan.Werenich@enbridge.com)>; Tara Kuuskman <[Tara.Kuuskman@enbridge.com](mailto:Tara.Kuuskman@enbridge.com)>; Miaad Safari <[Miaad.Safari@enbridge.com](mailto:Miaad.Safari@enbridge.com)>; Angela Wong <[Angela.Wong@enbridge.com](mailto:Angela.Wong@enbridge.com)>; Johnson, Jeremy <[Jeremy.Johnson@dnv.com](mailto:Jeremy.Johnson@dnv.com)>; Spitzenberger, Cynthia M <[Cynthia.Spitzenberger@dnv.com](mailto:Cynthia.Spitzenberger@dnv.com)>  
**Subject:** Privileged and Confidential: SLP Review with DNV

## CONFIDENTIAL

All,

Here are the action items that we discussed today

1. DNV to rename *Integrity Assessment* report to *Integrity Actions* report
2. DNV to separate the *Integrity Actions* and *Risk Assessment* reviews into two reports
3. Where the *Integrity Actions* report should only comment on the assessment in that report. Additional context from the *Risk Assessment* report can be included but it should be clear that it is just for reference – DNV



4. There is a reference to original information submitted dated Jan 2023 in the deformation threat section – Enbridge to review appropriateness of this reference
5. DNV to adjust the wording on page 11 where it reads “High/High Risk/Very high” to “High/Very High”
6. DNV to comment on appropriateness of the threat assessment - summarize these pieces similar to how the evaluation methods are summarized
7. DNV to create a Summary memo for the risk assessment report

Thanks,

**Mike Hildebrand, P.Eng** (he/him)  
Manager Integrity and Risk Assessment  
**Integrity and Asset Management**

**ENBRIDGE GAS**  
TEL: 519-436-4600 x5005282 | CELL: 519-365-0458 | [mike.hildebrand@enbridge.com](mailto:mike.hildebrand@enbridge.com)  
50 Keil Drive, Chatham ON N7M 5M1  
[enbridge.com](http://enbridge.com)  
**Safety. Integrity. Respect. Inclusion**

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\*\*\*\*\*

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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

Question(s):

- 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?

Response:

- a) There was no requirement for Enbridge Gas to notify the OEB of its planned emergency repair on the SLP because the repair work met the criteria for an LTC exemption as outlined in the OEB Act subsection 90(2); i.e. the size of the line was not being changed and no additional land or authority to use additional land was required. Enbridge Gas informed the OEB to demonstrate the known integrity

concerns on the pipeline, the urgency and potential significant consequences of not repairing the pipeline in this area, and Enbridge Gas's plan for remediating the pipeline.

- b) Yes. The repair of the significant corrosion features in November 2022 required consultation and approval (i.e. permits) from the City of Ottawa (the City) and the Ministry of Transportation (MTO).

Enbridge Gas notified the MTO of the proposed repair and met with the MTO virtually and by telephone. Please see Attachments 1 and 2 for the two MTO permits that resulted from this correspondence.

Enbridge Gas notified the City as soon as the issue was known, and worked with the City on construction and traffic impacts throughout the process. Permits and construction coordination with the City were executed onsite. Please see Attachment 3 for the City of Ottawa Cut Permit that resulted from this correspondence. Once the construction was completed, Enbridge Gas notified the City of completion of the work.

- c) The repair included the abandonment of approximately 162 m of NPS 12 that contained significant corrosion features and the installation of approximately 270 m of new NPS 12 pipe to reconnect the pipeline on Tremblay Rd. with the pipeline on St. Laurent Blvd. The repair was completed in November 2022. The total cost for the replacement was approximately \$3.4 million. All costs relating to this pipe replacement were capital.
- d) The following attachments have been included which contain content and updates related to the 2022 emergency repair on the SLP:
- i. Attachment 4: Presentation to Senior Leadership re: SLP Emergency Operations Centre (EOC) (dated 09-15-2022)
  - ii. Attachment 5: Presentation to Senior Leadership re: SLP Emergency Operations Centre (EOC) (dated 09-19-2022)
  - iii. Attachment 6: Presentation to Senior Leadership re: SLP Emergency Operations Centre (EOC) (dated 11-10-2022)
- e) No. Employing a comprehensive and robust integrity management program manages pipeline related risk. Enbridge Gas has used such an integrity management program for the SLP and has described it in Exhibit B, Tab 1, Schedule 1. The use of this program allowed for the identification and immediate remediation of the risk identified in the referenced letter to the OEB. This comprehensive and robust integrity management program would continue to be effective in managing pipeline related risks, regardless of how the energy transition unfolds in Ontario.

Ministry of Transportation

Highway Corridor Management Section - Ottawa Office  
347 PRESTON ST, 4TH FLOOR  
OTTAWA, ON K1S 3J4



September 21, 2022

Alicja Pagaduan, Enbridge Gas Inc./Permitting  
3840 RHODES DR  
WINDSOR, ON  
N9A 6N7

Dear Alicja:

Re: EC-2022-420-00000102 V1

---

Please find attached your Encroachment Permit, which has been issued in accordance with the **PUBLIC TRANSPORTATION AND HIGHWAY IMPROVEMENT ACT, R.S.O. 1990, P50.**

It is the responsibility of the permit holder to ensure that all employed/contracted personnel performing the work are aware of and adhere to all conditions of the permit.

If you have any questions or require further assistance, please contact the undersigned.

Sincerely,

A rectangular box containing a handwritten signature in cursive script that reads "Brian Hickey".

-----  
Brian Hickey  
CMO

347 PRESTON ST, 4TH FLOOR  
OTTAWA, ON K1S 3J4

Attach.



MINISTRY OF TRANSPORTATION



**Highway Corridor Management  
Encroachment Permit  
EC-2022-420-00000102 V1**

**ISSUED TO**

**APPLICANT/TENANT:** ENBRIDGE GAS INC., PERMITTING

**LOCATION OF WORK**

**HIGHWAY:** 417

**STREET ADDRESS:** LOT LOT 10, CON GORE,

**GPS CO-ORDINATES:** Start: 45.419524, -75.636189 End: N/A

**LOT/SECTION:** LOT 10      **CON:** GORE      **GEOGRAPHIC TOWNSHIP:** GLOUCESTER      **LOT/BLOCK:** N/A      **PLAN NO:** N/A      **MUNICIPALITY:** N/A  
**REFERENCE PLAN PART:** N/A      **REFERENCE PLAN NO:** N/A

**PERMIT DETAILS**

**TYPE OF ACTIVITY ON HIGHWAY:** Utility Work      **PURPOSE OF APPLICATION:** Alter/Repair existing

**TYPE OF SIGN:** N/A      **TOTAL PERMITTED AREA OF SIGN:** N/A  
**USE OF SERVICE:** Commercial      **TYPE OF SERVICE:** Topo Survey Work

**DESCRIPTION:** Commercial Encroachment: Enbridge has identified a significant feature on existing NPS 12 pipeline. Complete a topo survey to confirm exact location of the feature and determine repair.

**EXPIRY DATE:** 12/21/2022

**DATED AT:** Ottawa Office

**DATED ON:** September  
21, 2022

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**Authorized Signatory**

**THIS PERMIT IS ISSUED UNDER THE AUTHORITY VESTED IN THE MINISTER BY THE PUBLIC TRANSPORTATION AND HIGHWAY IMPROVEMENT ACT AND THE REGULATIONS PURSUANT THERETO AND IN SUBJECT TO THE CONDITIONS ATTACHED TO THE PERMIT, INCLUDING ANY AGREEMENT APPLICABLE TO THE SIGN AUTHORIZED BY THE PERMIT**

## Highway Corridor Management Permit Conditions

**Permit Number:** EC-2022-420-00000102

**Permit Version:** 1

**Date Approved:** September 21, 2022

**The permit is subject to the following conditions:**

1. In addition to the conditions of this permit, the Applicant/Tenant must meet all of the requirements of the local municipality and any other agency having jurisdiction.
2. The work for which this permit is issued must commence within 6 months of the date that the permit is issued, or the permit shall be void and cancelled by the Ministry.
3. All work authorized by this permit shall be carried out in accordance with the approved plans, specifications and agreements and subject to the approval of the Ministry. The Applicant/Tenant must bear all expenses related thereto
4. Vegetation on the right of way must not be cut or trimmed without the written permission of the Ministry. Any cutting or trimming permitted must only be done under the supervision of the Ministry or its authorized agent at the expense of the Applicant/Tenant. Any cutting or trimming of vegetation adjacent to the highway right-of-way requires the permission of the land owner.
5. During construction the Applicant/Tenant shall ensure that the operation of the highway is not interfered with, and that the right-of-way remains free of debris, earth or other materials.
6. If there is an expiry date on this permit and a further term is required, a request shall be made to the Ministry before the expiry date. An extension may be approved, approved with additional conditions, or denied by the Ministry.
7. If during the life of this permit any Acts are passed or regulations adopted which affect the rights herein granted, the said Acts and regulations shall be applicable to this permit from the date on which they come into force.
8. The Applicant/Tenant holds harmless the Ministry for all damages and liabilities caused as a result of the works undertaken pursuant to this permit.
9. This permit may be cancelled at any time for breach of the regulations or conditions of this permit, or for such other reasons as the Ministry at its sole discretion deems proper. When a permit is cancelled for any reason, the Applicant/Tenant shall not be entitled to any compensation or damages by reason of or arising from the cancellation of the permit.
10. The Ministry shall be notified 48 hours prior to the commencement of construction.
11. The Applicant/Tenant shall protect all survey markers and monuments in the vicinity of the work, and will replace any markers or monuments that are damaged.
12. The Applicant/Tenant is responsible for the construction, marking and maintenance of any detours required and maintaining the applicable safety measures for the protection of the public during the construction of any works in respect of this permit.
13. If this permit expires, all works constructed, maintained or operated under this permit, if the Ministry so requests, shall be

## Highway Corridor Management Permit Conditions

**Permit Number:** EC-2022-420-00000102

**Permit Version:** 1

**Date Approved:** September 21, 2022

**The permit is subject to the following conditions:**

- removed at no cost to the Ministry and the right-of-way shall be left in as good a condition as it was before the said works were installed or constructed. If, at the end of six months after the expiry of this permit, the said works have not been removed, they shall become the property of the Ministry as damages for trespass after expiration of this permit.
14. The location, design and specifications of an approved encroachment may not be changed without the approval of the Ministry.
  15. The Applicant/Tenant shall maintain the encroaching works in accordance with the requirements of the Ministry.
  16. The Applicant/Tenant at its own expense, at any time on the receipt of 60 days' notice, shall suspend operations, remove, alter or relocate any or all of the works of an encroachment as may be required by the Ministry; or the Ministry may on 60 days' notice remove the works at the expense of the Applicant/Tenant.
  17. Where the Ministry requires the relocation or alteration of a facility included in the Public Service Works on Highway Act, the Ministry will share the cost of such relocation or alteration in accordance with the Act.
  18. The Applicant/Tenant must provide basic uniform requirements for traffic control during roadway and utility work on or adjacent to the ministry's highway right-of-way in accordance with the Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions.
  19. The Applicant/Tenant or their representative is responsible to obtain all utility locates and confirm requirements for working around/under utilities prior to working within the ministry highway right-of-way. Locates are available through Ontario One Call and by contacting owners of infrastructure who are not members. The Applicant/Tenant is responsible to contact MTO to request locates for MTO owned infrastructure a minimum of five (5) business days prior to working within the highway right-of-way
  20. **The applicant must notify the Ministry of Transportation, Maintenance Coordinator Geoff Johnston , at telephone number 613-297-9908 at least 48 hours before beginning work.**

**The**

**Applicant must notify Ferrovial Services at 1-888-554-5344, at least 5 days in advance**

## Highway Corridor Management Permit Conditions

Permit Number: EC-2022-420-00000102

Permit Version: 1

Date Approved: September 21, 2022

The permit is subject to the following conditions:

**notice for underground MTO electrical cable locates, prior to any work being initiated. Contact Ontario1 1-800-400-2255 for other locates.**

**The Applicant must notify Eastern Region Advanced Traffic Management System office at 613-742-5319 at least 5 business days in advance for ATMS and Fiber locates, prior to any work being initiated.**

**The Applicant must submit a ROW form to the Ministry of Transportation, Ottawa Traffic Operations Centre at 613-748-5296, at least 3 days prior to work date.**

**Trees within the right-of-way must not be trimmed, cleared or interfered with unless approved by the Ministry of Transportation with a least 48 hours advance notice.**

- 21. Proposed work is in active construction zone 2022-4009, and will therefore have to be coordinated with Louis Bray Mark Butzer at 613-277-2496 [m.butzer@lwbray.com](mailto:m.butzer@lwbray.com) and McInstosh Perry Consulting Engineers Ltd Karen Forbes at 613-223-4509 [k.forbes@mcintoshperry.com](mailto:k.forbes@mcintoshperry.com)**



## Highway Corridor Management Permit Conditions

**Permit Number:** EC-2022-42O-00000102

**Permit Version:** 1

**Date Approved:** September 21, 2022

**The permit is subject to the following conditions:**

Ministry of Transportation

Highway Corridor Management Section - Ottawa Office  
347 PRESTON ST, 4TH FLOOR  
OTTAWA, ON K1S 3J4



October 05, 2022

Alicja Pagaduan, Enbridge Gas Inc./Permitting  
3840 RHODES DR  
WINDSOR, ON  
N9A 6N7

Dear Alicja:

Re: EC-2022-420-00000114 V1

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Please find attached your Encroachment Permit, which has been issued in accordance with the ***PUBLIC TRANSPORTATION AND HIGHWAY IMPROVEMENT ACT, R.S.O. 1990, P50.***

It is the responsibility of the permit holder to ensure that all employed/contracted personnel performing the work are aware of and adhere to all conditions of the permit.

If you have any questions or require further assistance, please contact the undersigned.

Sincerely,

A rectangular box containing a handwritten signature in cursive script that reads "Brian Hickey".

-----  
Brian Hickey  
CMO

347 PRESTON ST, 4TH FLOOR  
OTTAWA, ON K1S 3J4

Attach.

MINISTRY OF **TRANSPORTATION**



**Highway Corridor Management  
Encroachment Permit  
EC-2022-420-00000114 V1**

**ISSUED TO**

**APPLICANT/TENANT:** ENBRIDGE GAS INC., PERMITTING

**LOCATION OF WORK**

**HIGHWAY:** 417

**STREET ADDRESS:** LOT LOT 10, CON GORE,

**GPS CO-ORDINATES:** Start: 45.419635, -75.635718 End: N/A

**LOT/SECTION:** LOT 10      **CON:** GORE      **GEOGRAPHIC TOWNSHIP:** GLOUCESTER      **LOT/BLOCK:** N/A      **PLAN NO:** N/A      **MUNICIPALITY:** N/A  
**REFERENCE PLAN PART:** N/A      **REFERENCE PLAN NO:** N/A

**PERMIT DETAILS**

**TYPE OF ACTIVITY ON HIGHWAY:** Utility Work      **PURPOSE OF APPLICATION:** Alter/Repair existing

**TYPE OF SIGN:** N/A      **TOTAL PERMITTED AREA OF SIGN:** N/A

**USE OF SERVICE:** Commercial      **TYPE OF SERVICE:** Gas

**DESCRIPTION:** Commercial Encroachment: Due to a feature identified under the ramp, the section under the ramp will be abandoned in place and the pipe will be rerouted in the municipal ROW.

**EXPIRY DATE:** 1/5/2023

**DATED AT:** Ottawa Office

**DATED ON:** October 05,  
2022

-----  
**Authorized Signatory**

**THIS PERMIT IS ISSUED UNDER THE AUTHORITY VESTED IN THE MINISTER BY THE PUBLIC TRANSPORTATION AND HIGHWAY IMPROVEMENT ACT AND THE REGULATIONS PURSUANT THERETO AND IN SUBJECT TO THE CONDITIONS ATTACHED TO THE PERMIT, INCLUDING ANY AGREEMENT APPLICABLE TO THE SIGN AUTHORIZED BY THE PERMIT**

## Highway Corridor Management Permit Conditions

**Permit Number:** EC-2022-42O-00000114

**Permit Version:** 1

**Date Approved:** October 05, 2022

**The permit is subject to the following conditions:**

1. In addition to the conditions of this permit, the Applicant/Tenant must meet all of the requirements of the local municipality and any other agency having jurisdiction.
2. The work for which this permit is issued must commence within 6 months of the date that the permit is issued, or the permit shall be void and cancelled by the Ministry.
3. All work authorized by this permit shall be carried out in accordance with the approved plans, specifications and agreements and subject to the approval of the Ministry. The Applicant/Tenant must bear all expenses related thereto
4. Vegetation on the right of way must not be cut or trimmed without the written permission of the Ministry. Any cutting or trimming permitted must only be done under the supervision of the Ministry or its authorized agent at the expense of the Applicant/Tenant. Any cutting or trimming of vegetation adjacent to the highway right-of-way requires the permission of the land owner.
5. During construction the Applicant/Tenant shall ensure that the operation of the highway is not interfered with, and that the right-of-way remains free of debris, earth or other materials.
6. If there is an expiry date on this permit and a further term is required, a request shall be made to the Ministry before the expiry date. An extension may be approved, approved with additional conditions, or denied by the Ministry.
7. If during the life of this permit any Acts are passed or regulations adopted which affect the rights herein granted, the said Acts and regulations shall be applicable to this permit from the date on which they come into force.
8. The Applicant/Tenant holds harmless the Ministry for all damages and liabilities caused as a result of the works undertaken pursuant to this permit.
9. This permit may be cancelled at any time for breach of the regulations or conditions of this permit, or for such other reasons as the Ministry at its sole discretion deems proper. When a permit is cancelled for any reason, the Applicant/Tenant shall not be entitled to any compensation or damages by reason of or arising from the cancellation of the permit.
10. The Ministry shall be notified 48 hours prior to the commencement of construction.
11. The Applicant/Tenant shall protect all survey markers and monuments in the vicinity of the work, and will replace any markers or monuments that are damaged.
12. The Applicant/Tenant is responsible for the construction, marking and maintenance of any detours required and maintaining the applicable safety measures for the protection of the public during the construction of any works in respect of this permit.
13. If this permit expires, all works constructed, maintained or operated under this permit, if the Ministry so requests, shall be



## Highway Corridor Management Permit Conditions

**Permit Number:** EC-2022-420-00000114

**Permit Version:** 1

**Date Approved:** October 05, 2022

**The permit is subject to the following conditions:**

- removed at no cost to the Ministry and the right-of-way shall be left in as good a condition as it was before the said works were installed or constructed. If, at the end of six months after the expiry of this permit, the said works have not been removed, they shall become the property of the Ministry as damages for trespass after expiration of this permit.
14. The location, design and specifications of an approved encroachment may not be changed without the approval of the Ministry.
  15. The Applicant/Tenant shall maintain the encroaching works in accordance with the requirements of the Ministry.
  16. The Applicant/Tenant at its own expense, at any time on the receipt of 60 days' notice, shall suspend operations, remove, alter or relocate any or all of the works of an encroachment as may be required by the Ministry; or the Ministry may on 60 days' notice remove the works at the expense of the Applicant/Tenant.
  17. Where the Ministry requires the relocation or alteration of a facility included in the Public Service Works on Highway Act, the Ministry will share the cost of such relocation or alteration in accordance with the Act.
  18. The Applicant/Tenant must provide basic uniform requirements for traffic control during roadway and utility work on or adjacent to the ministry's highway right-of-way in accordance with the Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions.
  19. The Applicant/Tenant or their representative is responsible to obtain all utility locates and confirm requirements for working around/under utilities prior to working within the ministry highway right-of-way. Locates are available through Ontario One Call and by contacting owners of infrastructure who are not members. The Applicant/Tenant is responsible to contact MTO to request locates for MTO owned infrastructure a minimum of five (5) business days prior to working within the highway right-of-way
  20. **Proposed work is in active construction zone 2022-4009, and will therefore have to be coordinated with Louis Bray Mark Butzer at 613-277-2496 [m.butzer@lwbray.com](mailto:m.butzer@lwbray.com) and McInstosh Perry Consulting Engineers Ltd Karen Forbes at 613-223-4509 [k.forbes@mcintoshperry.com](mailto:k.forbes@mcintoshperry.com)**
  21. **No open cutting of a provincial highway (within the Controlled Access Highway Designation) will be permitted.**

## Highway Corridor Management Permit Conditions

Permit Number: EC-2022-420-00000114

Permit Version: 1

Date Approved: October 05, 2022

The permit is subject to the following conditions:

22. **The applicant must notify the Ministry of Transportation, Maintenance Coordinator Geoff Johnston , at telephone number 613-297-9908 at least 48 hours before beginning work.**

**The Applicant must notify Ferrovial Services at 1-888-554-5344, at least 5 days in advance notice for underground MTO electrical cable locates, prior to any work being initiated. Contact Ontario1 1-800-400-2255 for other locates.**

**The Applicant must notify Eastern Region Advanced Traffic Management System office at 613-742-5319 at least 5 business days in advance for ATMS and Fiber locates, prior to any work being initiated.**

**The Applicant must submit a ROW form to the Ministry of Transportation, Ottawa Traffic Operations Centre at 613-748-5296, at least 3 days prior to work date.**

**Trees**

## Highway Corridor Management Permit Conditions

**Permit Number:** EC-2022-42O-00000114

**Permit Version:** 1

**Date Approved:** October 05, 2022

The permit is subject to the following conditions:

**within the right-of-way must not be trimmed, cleared or interfered with unless approved by the Ministry of Transportation with a least 48 hours advance notice.**

 	<h2 style="margin: 0;">Road Cut Permit</h2> <p style="margin: 0;">Not Transferable</p>	City of Ottawa Planning, Real Estate & Economic Development Right of Way, Heritage & Urban Design 100 Constellation Dr, 6th Floor Ottawa, Ontario K2G 6J8 (613) 580-2400 ext.16000
<p><b>Date:</b> 05 Oct 2022      <b>Permit Issued By:</b> ROADCUT52 POS      <b>Permit Number:</b> RC223262</p>		
<p><b>Municipal Address:</b></p>		<p><b>Ward:</b> 18</p>
<p><b>Location of cut:</b> On: TREMBLAY ROAD</p>	<p>From/at ST. LAURENT BOULEVARD</p>	<p>To: AVENUE U</p>
<p><b>Description of Proposed Work:</b> EMERGENCY BYPASS ON TREMBLAY RD - 39260241</p>		
<p><b>Permit Holder:</b> ENBRIDGE GAS DISTRIBUTION INC. 400 COVENTRY ROAD OTTAWA, ON, K1K 2C7 cutpermitsottawa@enbridge.com EMERGENCY TELEPHONE NUMBER: ( 833 ) 872 - 3477</p>		<p><b>Contractor:</b> AECON UTILITIES INC. 4949 BANK ST OTTAWA, ON, K1X1G7 TELEPHONE NUMBER: ( 613 ) 296 - 2223</p>
<p><b>NOTIFICATION</b></p>		
<p><b>BEFORE STARTING WORK notice must be given to the City at <a href="mailto:inspection_office@ottawa.ca">inspection_office@ottawa.ca</a>, and written bilingual notice must be given to residents and businesses beside or near the work. In certain instances, the Ward Councillor must also be notified.</b></p>		
<p><b>Ten (10) working days' notice must be provided if</b> the work involves either 1) temporarily closing the road, 2) rerouting OC Tranpsobuses, 3) closing the sidewalk, or 4) is anticipated to last 7 calendar days. Where any of these apply, the Ward Councillor must also be notified.</p>		
<p><b>In all other cases, two (2) working days' notice must be provided.</b></p>		
<p><b>When notifying the City identify</b> 1) the location of the work, 2) the scheduled start date and estimated duration of the work, 3) the Road Cut Permit number, and 4) any changes to the Traffic Management Plan, or if work is on a local road, the closure of any vehicle lane, bicycle lane or sidewalks.</p>		
<p><b>When notifying residents and business, and if applicable the Ward Councillor, provide</b> 1) a brief description of the work and its location, 2) the anticipated start date and duration, 3) the name of the Permit holder and contractor, 4) a description of any mobility or access impacts, AND 4) a 24/7 maintained telephone number. Visit <a href="http://Ottawa.ca/roadactivity">Ottawa.ca/roadactivity</a> for bilingual notice templates.</p>		



 	<h2 style="margin: 0;">Road Cut Permit</h2> <p style="margin: 0;">Not Transferable</p>	City of Ottawa Planning, Real Estate & Economic Development Right of Way, Heritage & Urban Design 100 Constellation Dr, 6th Floor Ottawa, Ontario K2G 6J8 (613) 580-2400 ext.16000
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**Date:** 05 Oct 2022

**Permit Issued By:** ROADCUT52 POS

**Permit Number:** RC223262

**ADDITIONAL FEES**

Item	Quantity (m2/segments)	Description	Rate	Cost
1	5	TREMLBAY ROAD	\$16.91 /m2	84.55
2	1	STREET SEGMENT	\$236.00 /m2	236.00

**FEE SUMMARY**

Additional Fees:	\$84.50
Street Segment Fees:	\$236.00
RC Temporary Road Closure Fees:	\$0.00
Balance Owing:	\$320.50
Balance Added to Monthly Invoicing:	\$320.50

**DISCLAIMER**

THE CITY OF OTTAWA MAKES NO REPRESENTATIONS OR WARRANTIES AS TO THE STATE OF ANY PART OF THE HIGHWAY, AND THE HOLDER OF THIS PERMIT ACCEPTS THE HIGHWAY ON AN "AS IS" BASIS FOR THE PURPOSE OF CARRYING OUT THE WORK UNDER THIS PERMIT.

THE CITY OF OTTAWA IS NOT RESPONSIBLE OR LIABLE FOR, INDIRECT OR DIRECT, DAMAGES, COSTS, LOSSES, CLAIMS WHATSOEVER, ARISING FROM THE STATE OF THE CITY'S HIGHWAYS AS WELL AS FOR THE CITY'S ADMINISTRATION OF THE ROAD ACTIVITY BY-LAW NO. 2003-445, INCLUDING BUT NOT LIMITED TO ISSUING CORRECTIVE WORK ORDERS, STOP WORK ORDERS OR A CERTIFICATE OF OFFENSE AND / OR MODIFYING, SUSPENDING OR REVOKING A PERMIT

THE HOLDER OF THIS PERMIT SHALL INDEMNIFY THE CITY AND EACH OF ITS OFFICERS, AGENTS, SERVANTS AND WORKMEN FROM ALL CAUSES OF ACTION, LOSS, COSTS OR DAMAGES ARISING FROM THE EXECUTION, NON-EXECUTION OR IMPERFECT EXECUTION OF ANY WORK AUTHORIZED UNDER THIS PERMIT AND THE ROAD ACTIVITY BY-LAW NO. 2003-445 WHETHER WITH OR WITHOUT NEGLIGENCE ON THE PART OF THE HOLDER OF THIS PERMIT, OR THE OFFICERS, AGENTS, SERVANTS OR WORKMEN OF THE HOLDER OF THIS PERMIT.

**STANDARD CONDITIONS**



# Road Cut Permit

Not Transferable

City of Ottawa  
Planning, Real Estate & Economic Development  
Right of Way, Heritage & Urban Design  
100 Constellation Dr, 6th Floor  
Ottawa, Ontario K2G 6J8  
(613) 580-2400 ext.16000

**Date:** 05 Oct 2022

**Permit Issued By:** ROADCUT52 POS

**Permit Number:** RC223262

A ROAD CUT PERMIT SHALL BECOME VOID IF THE WORK AUTHORIZED BY THE PERMIT IS NOT COMMENCED WITHIN SIXTY (60) CALENDAR DAYS OF THE DATE OF ISSUE. AFTER WHICH TIME A NEW PERMIT AND ASSOCIATED STREET SEGMENT FEES WOULD BE REQUIRED.

TRAFFIC SIGNING TO BE IN ACCORDANCE WITH BOOK 7 OF THE ONTARIO TRAFFIC MANUAL - TEMPORARY CONDITIONS. ACCESS FOR EMERGENCY VEHICLES MUST BE MAINTAINED AT ALL TIMES.

TRAFFIC MANAGEMENT INSPECTOR TO BE ADVISED OF CHANGES TO TRAFFIC PLANS INCLUDING PEDESTRIAN ACCESS OR FOR EMERGENCY SITUATIONS, CONTACT 311 FOR APPROPRIATE TRAFFIC MANAGEMENT ZONE INSPECTOR

WITH RESPECT TO TREES, NO WORK SHALL TAKE PLACE WITHIN THE CRITICAL ROOT ZONE OF A CITY TREE, OR A PROTECTED TREE ON PRIVATE PROPERTY (SEE THE TREE PROTECTION BY-LAW 2020-340) WITHOUT APPROVAL BY FORESTRY SERVICES. VISIT [OTTAWA.CA/ROADACTIVITY](http://OTTAWA.CA/ROADACTIVITY) FOR MORE INFORMATION, AND CONTACT 311 TO REQUEST A REVIEW OF THE PROPOSED WORK.

ANY WORK OR ACTIVITY THAT OCCURS ON A ROAD WITHIN 2KM OF AN AT-GRADE RAIL CROSSING ON THE SAME ROAD OR ANY WORK OR ACTIVITY THAT MAY IMPACT AN AT-GRADE RAIL CROSSING, REGARDLESS OF PROXIMITY TO THE CROSSING, REQUIRES THAT THE CONTRACTOR NOTIFY THE APPLICABLE RAIL AUTHORITY OF THE DETAILS OF THE WORK OR ACTIVITY. ONCE NOTIFIED, THE RAIL AUTHORITY MAY IMPOSE CONDITIONS ON THE WORK OR ACTIVITY TO PROTECT THE SAFETY OF RAIL OPERATIONS. SHOULD THE RAIL AUTHORITY IMPOSE SUCH CONDITIONS, THE WORK OR ACTIVITY MUST NOT COMMENCE UNTIL THE PROTECTION IS IN PLACE.

TO RELOCATE A BIKE RACK IN THE ROAD ALLOWANCE, PLEASE CONTACT VELOCITY MEDIA AT 613-899-7160 - [Chris@velocity-media.com](mailto:Chris@velocity-media.com)

ALL WORK TAKING PLACE ON NCC LANDS REQUIRE A 'LAND ACCESS PERMIT'. PLEASE CONTACT THE NCC AT [INFO@NCC-CCN.CA](mailto:INFO@NCC-CCN.CA).

**SPECIAL CONDITIONS:**



# Road Cut Permit

**Not Transferable**

City of Ottawa  
 Planning, Real Estate & Economic Development  
 Right of Way, Heritage & Urban Design  
 100 Constellation Dr, 6th Floor  
 Ottawa, Ontario K2G 6J8  
 (613) 580-2400 ext.16000

**Date:** 05 Oct 2022

**Permit Issued By:** ROADCUT52 POS

**Permit Number:** RC223262

1. Coordinate with Joe Mojsej, who has a project off of Tremblay and with Lei Gong who has a project on Belfast that includes Tremblay as part of the detour route.
    - Always maintain a minimum of one lane (3.5m minimum); provide traffic control persons as required.
    - Where feasible work should be done outside of peak periods (AM (7:00am to 9:00am) and PM (3:30pm to 6:00pm)).
    - Monitor traffic conditions and adjust work schedule and/or location to minimize any unreasonable delay to traffic-this is important given AFADs might be used and if peak hour work is happening.
    - Traffic Control Persons are to provide priority to transit vehicles when flagging traffic.
    - Should it be necessary to close a bike lane, the contractor is to install a TC-68 "Bike Lane Closed" at a location where cyclists can safely merge with traffic, and provide the following signage:
      - For lane widths greater than 4.3m: a WC-19 and WC-19S "Car and Bike Share the Road"
      - For lane widths 4.3m or less: a WC- 24 and WC-24T 'Shared Use Lane Single File'
    - Maintain pedestrian access and provide pedestrian detours if necessary. If the closure of a sidewalk is required and pedestrians must be detoured, the contractor is required to provide ten (10) business days' notice to adjacent home/business owners and contact the local area Councillor's office.
    - Additional details can be found at [Ottawa.ca/roadactivity](http://Ottawa.ca/roadactivity)
    - At all times, all travel lanes, including bike and pedestrian facilities, are not obstructed by signage, equipment, or materials.
    - During all times, all turning movements at intersections are to be accommodated. This includes all protected auxiliary turn lanes.
    - All travel lanes to be available during non-work times.
    - Local access must always be maintained.
    - If the proposed work will interfere with bus or pedestrian access to/from a transit stop, contact OC Transpo (Anise Samimi - 613 580 2424 ext. 52743) at least 5 working days prior to starting construction to arrange for the potential temporary relocation of the affected transit stop(s)
- Police may be required to direct traffic at signalized intersections, when those intersections are adversely affected by construction operations. At a minimum, Police are required in the following scenarios identified below. Contractor is to note that Traffic Control Plans are a required submission in the request to retain Ottawa Police Service Paid Duty. Contact 613-236-1222 Ext 2476 a minimum of five days prior to request assistance.
1. Police are required if there is a need to direct traffic within 30 m of a signalized intersection. Traffic Control Persons are not permitted to direct traffic within 30m of a signalized intersection.
  2. Police are required if any traffic signal display is visually obstructed by equipment or materials.
  3. Police may be required where a lane re-alignment or lane use requires traffic to travel contrary to the existing pavement markings and/or signage.
- If travel lane reductions are required within 75m of a signalized intersection; the contractor is to contact the City of Ottawa Traffic Control Unit (613 580-2424 ext. 23192) at least 5 working days prior to construction to determine and coordinate any necessary changes to the traffic signal operation. At any time during the work, the City Traffic Management Inspector, at his/her discretion, may instruct the contractor to undertake portions of the work after 6:30 PM or on weekends. He/she may also require the contractor to supply and install additional traffic control devices (signs, barrels etc) and/or retain point duty police to control traffic. The contractor is responsible for all costs.
- Contractor is to remove all associated Traffic Control Devices from site within 48hrs of completion of works.

# St. Laurent Ottawa North Pipeline – EOC Update

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Update #3

Privileged and Confidential

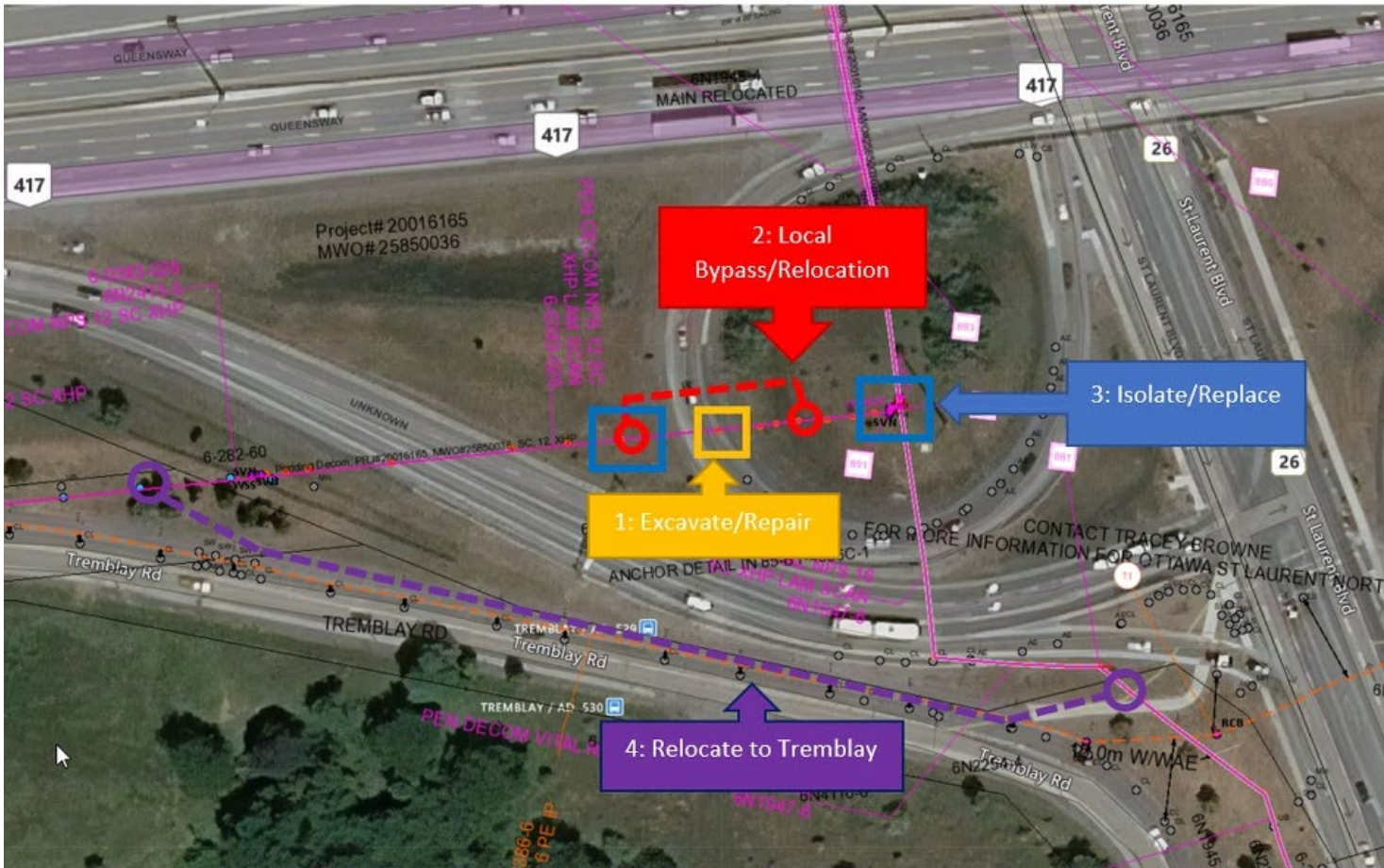


- Third EOC meeting held on Sept. 15, with an operational period of 24 hours. EOC # is 2022-008 (Decision record justifying activating EOC completed)
- EOC Structure continues to evolve based on requirements (see structure below)
- Four (up from three) repair options have been analyzed. A memo was produced for approval by the Planning Section to weigh pros and cons for each scenario, along with the proposed recommendation. Efforts are made to perform (most) repairs off MTO property to expedite activities and minimize complexity (see slide below for preliminary options)
- Integrity issued a decision record (re)confirming leak (not rupture) threat at current pressure
- Localized leak detection is expected to commence on Sept. 16, with a weekly frequency
- Reached out to TransAlta for pressure requirement validation; lower pressures may be acceptable as long as flow levels are maintained. Planning Section is computing different pressure profiles to confirm the above, should a restriction be needed





- Planning Section is deriving costs and schedules for the best two construction scenarios
- Confirming that necessary materials are available for repairs, initial confirmation indicates that a portion of required materials is available and stored in Niagara
- Applied for expedited MTO permits, MTO informed us that they will expedite issuance
- A communication plan (internal and external) is under development (e.g., Ottawa, MTO, councillors, potential OEB) once timelines are clear for field work
- Postponed Picarro's field work until further notice to focus on EOC efforts
- Discussing with Regulatory on Sept. 16 the best timing and method(s) of engaging OEB
- Regulatory and Legal continue to guide the EOC's direction in line with the SLP strategy
- Next EOC meeting is on Sept. 16, 11:00 ET



Option 1:

- Potential significant permit delays
- Significant impact on traffic
- Potentially expanded excavation scope

Options 2/3:

- Both options similar, deep digs (3-5 m)
- Complex drawings required
- Potential significant permit delays
- Complex work with traffic impact
- Option 3 could result in interruptions or need for CNG

Option 4:

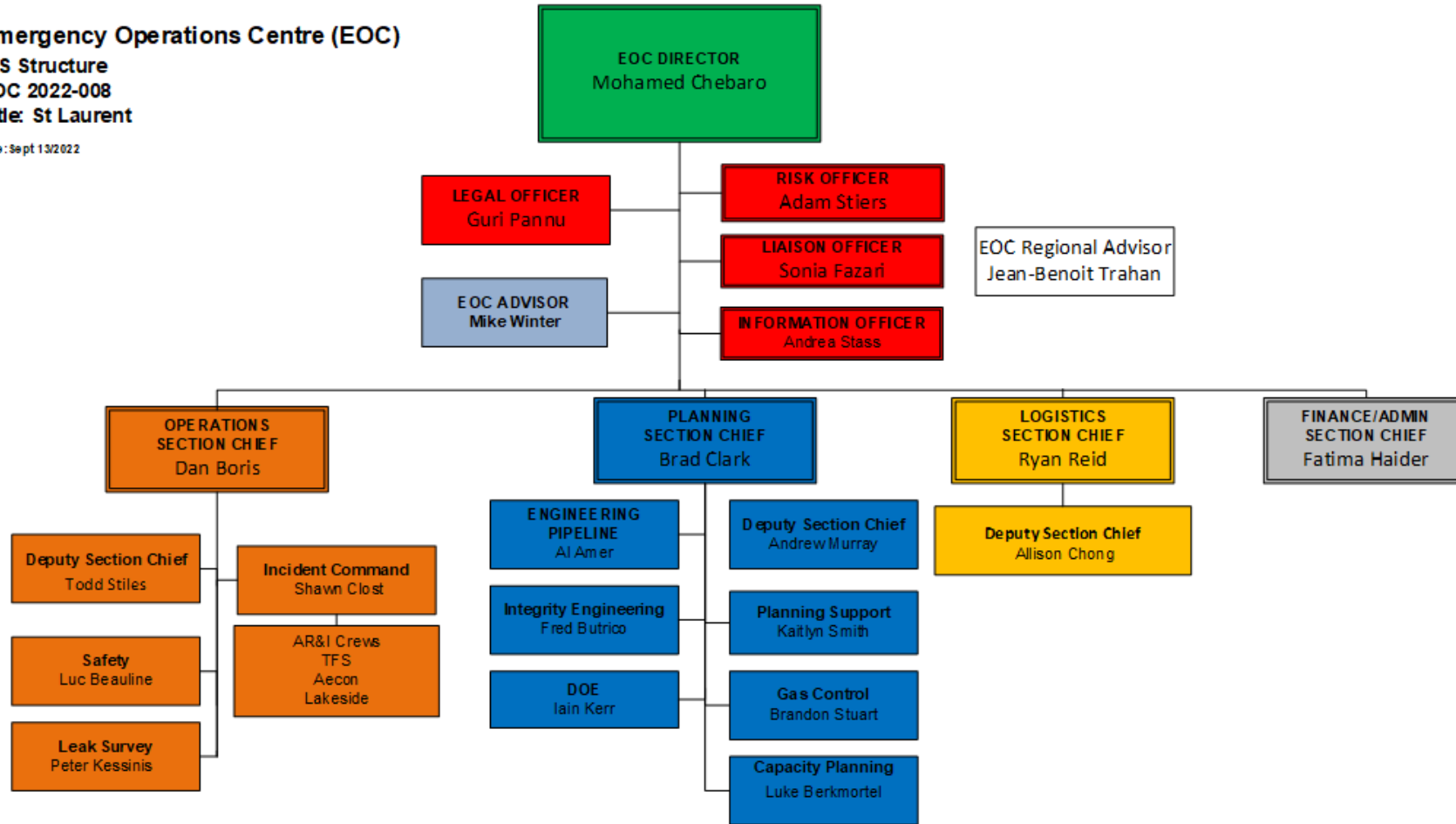
- Avoids MTO corridor, except for the isolation valve location
- Materials mostly available
- Longer replacement but on municipal land
- Work away from the ramp and in soft cover



**Emergency Operations Centre (EOC)**

ICS Structure  
EOC 2022-008  
Title: St Laurent

Date: Sept 13/2022



# St. Laurent Ottawa North Pipeline – EOC Update

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**Update #5**

**Privileged and Confidential**



# EOC Update

## Incident Command and Management Staff

- Fifth EOC meeting held on Sept. 19, with an updated operational period of 48 hours. EOC # is 2022-008. Updated EOC Structure is included below
- A communication plan (internal and external) is under development (e.g., Ottawa, MTO, councillors, potential OEB) once timelines are clear for field work, expect by Sept. 23
- Discussed with Regulatory/Legal engaging the OEB at this stage, a recommendation is being finalized internally by the IC and Jim S.
- Next EOC meeting is on Sept. 21, 13:30 ET

## Operations

- Localized leak detection has commenced, with a weekly frequency. No leak readings have been identified during the first inspection on Sept. 16
- Informed on-call personnel of ongoing EOC #2022-008 and for them to reach out EOC staff in case of an emergency
- Postponed Picarro's field work until further notice to focus on EOC efforts, will be addressed outside this EOC





# EOC Update

## Planning

- Repair Scenario 4 (see sketch below) has been approved (as primary, Scenario 2 as secondary) by the IC and Jim Sanders on Sept. 16, design and engineering have commenced
- Preliminarily confirmed with TransAlta that a reduction to 220 psi (20%) may be possible (TBC)
- Deriving preliminary costs and schedules for the best two construction scenarios by Sept. 21
- Applied for expedited MTO permits, MTO informed us that they will expedite issuance
- Expect to receive MTO permits required to confirm feature location (survey) by Sept. 21
- ILI final report for Tremblay to be received by 1<sup>st</sup> week of October, working to expedite the rest

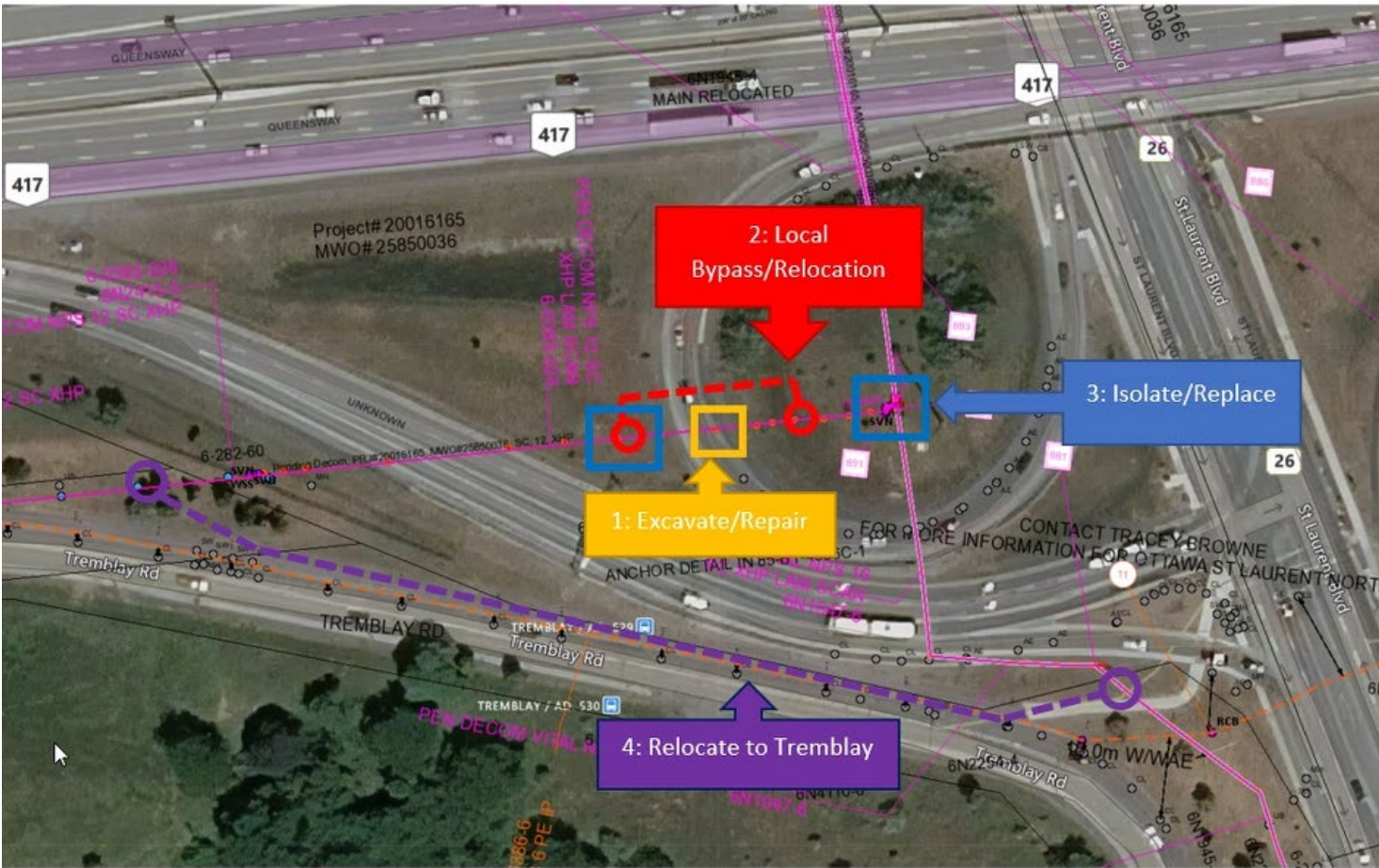
## Logistics

- Confirming that necessary materials are available for repairs, initial confirmation indicates that a portion of required materials is available and stored in Niagara and Ottawa

## Finance

- Looking into capitalization of EOC activities since they resulted from ILI inspection findings, working with Finance on this item. Meeting with Finance VP on Sept. 21

# EOC Update – Preliminary Repair Options



## Option 4: Approved as Primary Option

- Avoids MTO corridor, except for the isolation valve location
- Longer replacement but on municipal land
- Remediates other known features
- Materials mostly available
- Work away from the ramp and in soft cover
- Less risk to the public during construction
- Relies on internal resources primarily
- Tapping and Stopping required (EGI Crews)
- Does not provide direct visual and NDE assessment of pipe to validate tool findings



# EOC Update – Latest EOC Structure

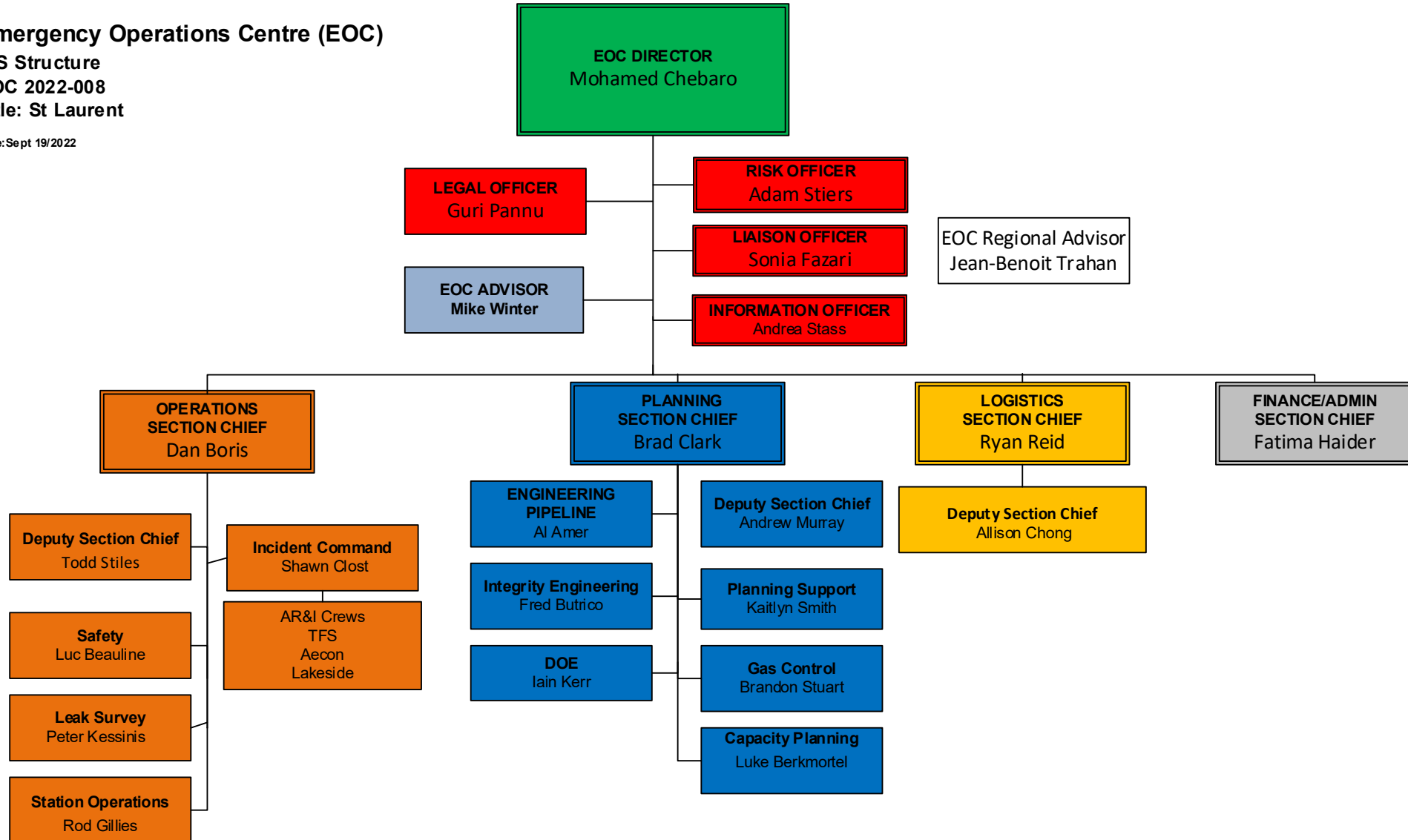
## Emergency Operations Centre (EOC)

ICS Structure

EOC 2022-008

Title: St Laurent

Date: Sept 19/2022



# St. Laurent Ottawa North Pipeline – EOC #2022-008

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Update #14

**Privileged and Confidential**



# EOC Update

## Incident Command and Management Staff

- 14<sup>th</sup> EOC meeting held on Nov. 10, with an operational period of 1 week
- EOC director re-emphasized the need to maintain 100% focus on safety even after isolation
- Internal Audit/S&R visited EOC site in late Oct., provided positive feedback, requested standard documentation
- Next EOC meeting is on Nov. 17, 14:05 ET – Expect to be Final EOC
- Planning a recognition event for key EOC personnel and SteerCo in Dec. 2022 in Ottawa

## Operations

- NPS 12 bypass on Tremblay has been energized and the significant feature under the 417 on-ramp has been made safe on Nov. 9
- 271 m of pipe installed (100% of the scope); 71 welds completed/inspected
- The 9<sup>th</sup> localized leak inspection on Nov. 7 identified no leak – item concluded
- Successfully pressure-tested remaining sections/fittings and Clover Leaf location on Nov. 5
- Two preliminary incident investigations completed, the third is ongoing
- Ops. is working on obtaining two more cut-outs and reinstating the work site





# EOC Update

## Planning

- Integrity received Final ILI reports for all segments, data is being analyzed including sharp dents by a third-party consultant
- Risk Assessment initiated by Integrity, with support from GTM
- Working on submitting required documentation by the S&R team

## Logistics

- No logistics items updates to report

## Finance

- O&M: Released \$250k (from contingency funds) on Nov. 1, and another \$200k on Nov. 10 – cumulative is \$450k
- Looking into releasing capital funds over the next 2 weeks, if possible

# EOC Update – Construction on Tremblay



Cut and Cap West End (from On-ramp) – Nov. 9



Cut and Cap East End (from On-ramp) – Nov. 9



# EOC Update – Construction on Tremblay



Weld being Completed near Tie-in Location  
(Earlier this Week)



Final Tie-in Location  
(Earlier this Week)



# EOC Update – Construction on Tremblay



East Tie-in During my Visit on Nov. 2



Same East Tie-in Site on Nov. 7



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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

Question(s):

- 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.

Response:

a - d)

The examples of transmission pipeline ruptures were selected by the Engineering and Integrity department at Enbridge Gas.

As described in the introduction to the list of examples,<sup>1</sup> the provided cases were meant to showcase the public safety concerns of a significant hazard near a public roadway in line with a significant feature near Hwy 417 in Ottawa (a busy public highway). While the causes and modes of the failures may differ, the examples provide valuable context to the significance of the feature's critical location in relation to public roads.

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<sup>1</sup> Exhibit B, Tab 1, Schedule 1, Attachment 1, p. 3.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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

Question(s):

- 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.).

Response:

- a) Enbridge Gas labeled this internal document as “Confidential” to make recipients aware of the sensitive nature of the material and to prevent sharing without prior approval.
- b) Please see Attachment 1 to this response for the email requests sent to the reviewers and approvers of the Quantitative Risk Assessment (QRA). Upon completion of the risk assessment, a formal request for sign-off was sent to the reviewers on April 26, 2023 and all reviewers provided their sign-off by May 4, 2023.

Following their approval, the report was forwarded to the final approvers for sign-off and completion.

- c) The QRA was provided for review on April 26, 2023 and reviewers were requested to provide their sign-off by May 4, 2023. In light of the requested timing, four of the reviewers provided their sign-off on May 4, 2023.

## Miaad Safari

---

**From:** Mohamed Chebaro  
**Sent:** Wednesday, May 17, 2023 8:23 AM  
**To:** Miaad Safari  
**Subject:** FW: SLP Decision Record and Risk Assessment - Final Approval

Approved. Good work.

Regards,  
Mohamed  
*Please do not feel obliged to reply to this email outside of your working hours.*

---

**From:** Jim Sanders <[Jim.Sanders@enbridge.com](mailto:Jim.Sanders@enbridge.com)>  
**Sent:** Wednesday, May 17, 2023 7:43 AM  
**To:** Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>  
**Cc:** Malini Giridhar <[Malini.Giridhar@enbridge.com](mailto:Malini.Giridhar@enbridge.com)>; Mark Boyce <[Mark.Boyce@enbridge.com](mailto:Mark.Boyce@enbridge.com)>  
**Subject:** RE: SLP Decision Record and Risk Assessment - Final Approval

Reviewed and approved.

---

**From:** Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>  
**Sent:** Tuesday, May 16, 2023 3:04 PM  
**To:** Jim Sanders <[Jim.Sanders@enbridge.com](mailto:Jim.Sanders@enbridge.com)>  
**Subject:** FW: SLP Decision Record and Risk Assessment - Final Approval

Hi Jim,

Please approve when you can, thanks.

Regards,  
Mohamed  
*Please do not feel obliged to reply to this email outside of your working hours.*

---

**From:** Mohamed Chebaro  
**Sent:** Friday, May 12, 2023 5:45 PM  
**To:** Jim Sanders <[Jim.Sanders@enbridge.com](mailto:Jim.Sanders@enbridge.com)>  
**Subject:** FW: SLP Decision Record and Risk Assessment - Final Approval

Forgot to remind you: please approve this report. Thx.

Regards,  
Mohamed  
*Please do not feel obliged to reply to this email outside of your working hours.*

---

**From:** Mohamed Chebaro  
**Sent:** Friday, May 5, 2023 9:26 PM  
**To:** Jim Sanders <[Jim.Sanders@enbridge.com](mailto:Jim.Sanders@enbridge.com)>; Jean-Benoit Trahan <[Jean-Benoit.Trahan@gazifere.com](mailto:Jean-Benoit.Trahan@gazifere.com)>  
**Cc:** Heidi Bredenholler-Prasad <[heidi.bredenholler-prasad@enbridge.com](mailto:heidi.bredenholler-prasad@enbridge.com)>; Malini Giridhar



<[Malini.Giridhar@enbridge.com](mailto:Malini.Giridhar@enbridge.com)>; Mark Boyce <[Mark.Boyce@enbridge.com](mailto:Mark.Boyce@enbridge.com)>; Sherif Hassanien <[Sherif.Hassanien@enbridge.com](mailto:Sherif.Hassanien@enbridge.com)>

**Subject:** SLP Decision Record and Risk Assessment - Final Approval

Privileged and Confidential

Good evening,

I am happy to announce that the Integrity team has finalized the Risk Assessment for the St. Laurent Program.

This effort was initiated in November 2022 and relied on the contributions on many. Much of the effort is a precedent for GDS; relying on a combination of innovative probabilistic approaches to analyze the integrity and reliability of a complex asset. I would like to particularly highlight the efforts and ingenuity of Miaad Safari, Kai Ji, and Vincent Iacobellis from GDS Integrity, and Smitha Koduru from GTM Integrity. We will be recognizing the main contributors over the next weeks to thank them for their technical leadership.

The risk approach and results were also endorsed by a third-party consultant, DNV (attached), and by our colleagues at GTM. Since there are no industry-recognized risk targets for distribution assets, the team worked on a multi-faceted approach to compare risk outcomes to three different targets (CSA Z662 Annex O, PHMSA incident data for DIMP, and Enbridge's Operational Risk Assessment Matrix) to increase the credibility and defensibility of our results when we publish them. This risk assessment is a direct input to the Net Present Value Assessment that will drive the Final Decision on next steps for St. Laurent – that recommendation will be presented to the Steering Committee on May 12.

Action Items:

**Jean-Benoit**, as asset owner for the SLP, could you please endorse the need to mitigate the risk? Please review the attached Decision Record. Email approval is acceptable.

**Jim**, as interim VP of Engineering and Integrity, could you please approve the Risk Report and Decision Record? Email approval is acceptable.

I completed my final review this evening with the team. I have approved the attached document (.pdf).

FYI:

Heidi, Malini, Mark – As SteerCo members, this is an FYI ahead of our meeting on May 12. I will summarize the risk report then in a couple of slides.

Sherif – Looping you in to thank you and team for your excellent support and collaboration over the past 6 months.

Regards,

**Mohamed R. Chebaro**, P.Eng., PMP, M.A. (Lead)  
Director, Integrity  
Engineering and Integrity

ENBRIDGE GAS INC.

TEL: 416-495-5656

500 Consumers Rd, North York, Ontario, M2J 1P8

[enbridge.com](http://enbridge.com)

**Safety. Integrity. Respect. Inclusion.**

*Please do not feel obliged to reply to this email outside of your working hours.*

## Miaad Safari

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**From:** Mohamed Chebaro  
**Sent:** Friday, May 5, 2023 9:11 PM  
**To:** Miaad Safari  
**Cc:** Kaitlyn Smith  
**Subject:** Re: St. Laurent Pipeline QRA Report - Privileged & Confidential

Approved.

Regards,  
Mohamed

---

**From:** Miaad Safari <Miaad.Safari@enbridge.com>  
**Sent:** Friday, May 5, 2023 3:36:52 PM  
**To:** Mohamed Chebaro <Mohamed.Chebaro@enbridge.com>  
**Cc:** Kaitlyn Smith <kaitlyn.smith@enbridge.com>  
**Subject:** FW: St. Laurent Pipeline QRA Report - Privileged & Confidential

Hey Mohamed,

I have received the approval from all reviewers and updated the document governance section to reflect the email approvals.

Did you want another copy of the report with the email sign-offs included or just wait for your approval and Jim's approval and create the final PDF in one shot.

Once complete, I will send the report and email records to Kaitlyn to put in the project folder.

Kind Regards,

Miaad

---

**From:** Miaad Safari  
**Sent:** Wednesday, April 26, 2023 6:31 AM  
**To:** Vincent Iacobellis <vincent.iacobellis@enbridge.com>; Mike Hildebrand <Mike.Hildebrand@enbridge.com>; Ryan Werenich <Ryan.Werenich@enbridge.com>; Kenneth Ocean <Ken.Ocean@enbridge.com>; Bob Wellington <Bob.Wellington@enbridge.com>; Smitha Koduru <smitha.koduru@enbridge.com>; Sherif Hassanien <Sherif.Hassanien@enbridge.com>  
**Cc:** Mohamed Chebaro <Mohamed.Chebaro@enbridge.com>; Kai Ji <Kai.Ji@enbridge.com>; Kaitlyn Smith <kaitlyn.smith@enbridge.com>  
**Subject:** St. Laurent Pipeline QRA Report - Privileged & Confidential

**CONFIDENTIAL**

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Hi All,

Please find attached the final Quantitative Risk Assessment Report for the St. Laurent North Pipeline system. We have had various reviewers provide comments and feedback on the draft report over the past couple of months and have integrated much of the feedback where possible.

As a key reviewer of the report, I would like to request a formal confirmation of your review to include in the report governance section (I will be noting the email approval in lieu of signature).

Thank you all for your support and thoughtful feedback over the past couple of months.

Kind regards,

**Miaad Safari P. Eng** ~~دكتور~~,

~~مهندس~~ ~~دكتور~~ ~~دكتور~~

**ENBRIDGE GAS INC**

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**Integrity. Safety. Respect. Inclusion.**

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

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).

Response:

Following the OEB's Decision and Order denying Enbridge Gas's LTC application in EB-0200-0293, a Targeted Integrity Program was initiated for the St. Laurent pipeline system to gather additional field information on the pipeline's condition and its surroundings, in response to the OEB's finding that “Enbridge Gas has not demonstrated that the pipeline integrity is compromised.”<sup>1</sup> The primary objective of this program was to provide the necessary evidence to evaluate the operability of the SLP from safety and reliability perspectives in its current condition, including defining immediate mitigations. As part of this Targeted Integrity Program, a Quantitative Risk

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<sup>1</sup> EB-0200-0293 Decision and Order, p. 3



Assessment (QRA) on the SLP was completed to provide a data-driven, objective assessment supporting the pipeline's fitness-for-service evaluation.

Moving forward, Enbridge Gas will continue to perform similar risk assessments within a broader integrity context as part of the EDIMP. For more information, please see the response at Exhibit I.1-PP-5 parts a) and c). Please note that similar assessments are also conducted situationally on other asset classes such as facilities and transmission.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

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).

Response:

Please see response at Exhibit I.2-ED-10.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

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

Question(s):

- 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.

Response:

- a) Pipelines similar to the SLP will be risk assessed within EDIMP. Currently, no other pipelines in EDIMP have been risk assessed in a similar fashion. For more details on EDIMP, please see response at Exhibit I.1-PP-5 parts a) and c).

- b) In its application, Enbridge Gas does not indicate that “Small Leaks” are not a significant concern. As noted in Exhibit B, Tab 1, Schedule 1, p. 32, “the number of sensitive customers and receptors, including residential areas, schools, hospitals and commercial establishments, along St. Laurent Boulevard magnifies the severity of a leak. Any release of any size or disruptions in services could have devastating material impacts on the health, well-being, and livelihoods of a significant number of people.” Please see response at Exhibit I.1-STAFF-8 for additional details on the significant concerns that can be posed by excessive small leak failure rates.

The corresponding mapping on the matrix was not a choice but was determined by the condition of the pipeline and data obtained from the Targeted Integrity Program. The mapping on the matrix is a calculation based on the pipeline's reliability and the assessed failure rates." For a complete explanation of the derivation of the frequency and consequences and their subsequent mapping to the matrix, please see Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 52 to 59.

- c) The Enbridge Standard Operational Risk Assessment Matrix (ORAM) has been reviewed by the OEB in previous filings. However, Enbridge Gas has not submitted the ORAM to the OEB for approval, understanding that establishing appropriate levels of safety and risk for pipeline operators falls outside the OEB's mandate. Please note that the ORAM is an Enbridge-wide matrix that applies to all applicable Enbridge business units.
- d) Enbridge Gas is regularly audited by the TSSA to ensure that it is managing its assets in compliance with the requirements of the TSSA Oil and Pipeline Systems Code Adoption Document Amendment FS-253-20 and CSA Z662.

As per CSA Z662-19, Section 3,

“Operating companies shall develop and implement a document safety and loss management system that provides for the protection of people, the environment, and property.”

The “Risk management” requirements of the safety and loss management system are further detailed in CSA Z662-19, Section 3.2,

“The control required by Clause 3.1.2 f) i) shall be in the form of a risk management process that identifies, assesses, and manages the hazards and associated risks for the life cycle of the pipeline system. The risk management process shall include the following:

- a) risk acceptance criteria;
- b) risk assessment, including hazard identification, risk analysis, and risk evaluation;
- c) risk control;
- d) risk monitoring and review;

- e) communication process; and
- f) documentation requirements.”

The Enbridge ORAM is part of Enbridge Gas’s Safety and Loss Management System and is reviewed and confirmed to be appropriately establishing safety as a result of regular TSSA audits.

Also, as described in Exhibit I.1-STAFF-12 part a), the TSSA has communicated to Enbridge Gas that it requires Enbridge Gas to remediate the condition of the St. Laurent Pipeline. The TSSA letter can be found at Exhibit I.1-STAFF-12 Attachment 2.

- e) The CSA does not review or approve risk matrices, or, for that matter, Company-specific documents. For more details on the role of the CSA in the pipeline industry, please see the Frequently Asked Questions on the SA Group website<sup>1</sup> and the TSSA Code Adoption Document Amendment FS-253-20.

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<sup>1</sup> <https://www.csagroup.org/faq/>



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

- 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 not conducted.
- b) Please confirm what other standards were benchmarked against.
- c) Please confirm that benchmarking against a standard is different than applying a standard directly and please explain why Enbridge chose a benchmarking approach.

Response:

a, c)

In this context, the wording “benchmarking with CSA Z662 [Annex O]” is synonymous with “applying the CSA Z662 [Annex O] reliability thresholds”. Enbridge Gas uses the term “benchmarking” to clarify that these thresholds are not mandatory code requirements. A discussion on the application of these thresholds in relation to SLP can be found in Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 38 to 40.

- b) Please see Exhibit B, Tab 1, Schedule 1, pages 36 to 37, paragraph 54.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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]

Question(s):

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

Response:

The defense-in-depth approach cited in the QRA is in reference to the multi-layered approach taken to assess the SLP risk and reliability, namely the inclusion of 3 separate risk and reliability acceptability criteria and the sensitivity analysis used to assess the robustness of the reliability estimate. The term is borrowed from the nuclear industry and is described in “Defence in Depth in Nuclear Safety” (INSAG-10):

*“All safety activities, whether organizational, behavioural or equipment related, are subject to layers of overlapping provisions, so that if a failure should occur it would be compensated for or corrected without causing harm to individuals or the public at large. This idea of multiple levels of protection is the central feature of defence in depth...”<sup>1</sup>*

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<sup>1</sup> [https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1013e\\_web.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1013e_web.pdf) , p. 1.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

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.

Question(s):

- 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.

Response:

a, c)

This type of statistical sampling evaluation is not possible without assuming a homogeneous population within each strata. Enbridge Gas is confident that the stratification process underpinning the “like-in-kind” method follows a prudent engineering approach and that this assumption is valid. For more details of the like-in-kind methods and the factors applied for stratification, please see response at Exhibit I.1-PP-12.

- b) The confidence level would not change if Enbridge Gas were to assume that the inspections were biased to convenient locations, as there is no direct link between inspection convenience and corrosion susceptibility.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

PollutionProbe\_IR\_AppendixB\_PP11\_20240906 [Response to EB-2020-0293 Exhibit I.PP.11]

Question(s):

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

Response:

The values from EB-2020-0293 Exhibit I.PP.11 have not changed significantly since that IR response was filed.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

1

Reference:

PollutionProbe\_IR\_AppendixC\_PP3\_20240906 [Enbridge response to EB-2020-0293 Exhibit I.PP.3]

Question(s):

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.

Response:

For an updated customer count and breakdown, please refer to Exhibit I.1-STAFF-2 part a).

Of the total peak demand for the winter 23/24 condition approximately 105,000 m<sup>3</sup>/hr (3,988 GJ) serves Ontario and 41,000 m<sup>3</sup>/hr (1,557 GJ) serves Quebec at a 47 HDD IOFF Winter Condition.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[A-2-1]

Question(s):

Please detail all differences in the project compared to that proposed in EB-2020-0243.

Response:

Please see response at Exhibit I.1-STAFF-1.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[A]

Question(s):

Please provide a copy of all material provided to Enbridge's senior management and Board of Directors related to the proposed project, or the EB-2020-0243 version of the project, since the issuance of the OEB's decision in EB-2020-0243.

Response:

The following attachments are material presented to senior management at various points during the process, in connection with (and for purposes of) making a decision regarding bringing this Application. The attachments reflect information and analysis at the time of their presentation. Certain information or analysis in the May 2023 presentation was then superseded by subsequent information or analysis reflected in the March and April 2024 presentations.

- i. Attachment 1: Presentation to Steering Committee - St. Laurent Ottawa North Pipeline – OEB Decision (dated 05-12-2023)
- ii. Attachment 2: Presentation to Steering Committee - St. Laurent Pipeline Project (dated 03-19-2024)
- iii. Attachment 3: Presentation to the Investment Review Committee – St. Laurent Pipeline Replacement Project (dated 04-10-2024)

The Steering Committee is comprised of the project's Executive Sponsor and select senior leadership team members.

The Investment Review Committee is comprised of the Enbridge Inc. CEO and select executive leadership team members.

# St. Laurent Ottawa North Pipeline – OEB Decision

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**Steering Committee Meeting #8**

**Privileged and Confidential**



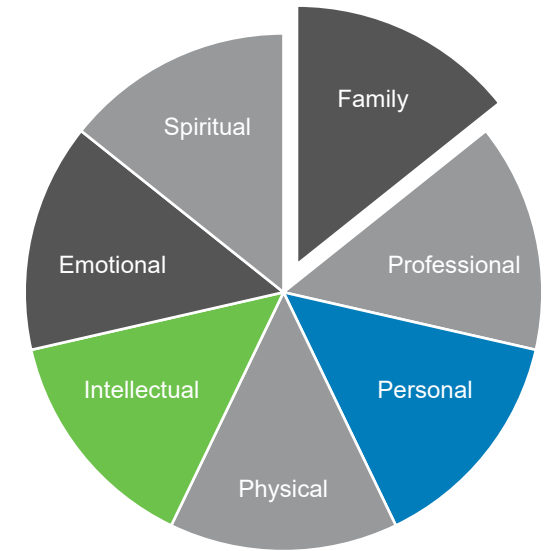


# Agenda

- Values Moment – Mental Health
- Milestones' Timelines – High-level
- Miscellaneous Updates (Intero, Picarro, IRP)
- Risk Assessment and NPV Outcome
- Recommendation
- Discussion

# Safety Moment – Burnout is Real

- Is Idea of Work-Life balance outdated?
  - Breaking our identity into either work or life is oversimplification
- Finding Mindfulness to Fight Burnout
  - Find True North
  - Put Your Oxygen Mask On First
  - Recharge and Nourish Your Body
  - **Master the Monkey Mind**
  - Grow A Resilient and Courageous Heart
  - Be Your Authentic Self
  - Create a Roadmap to Success and Happiness



[Locating Yourself Video](#)



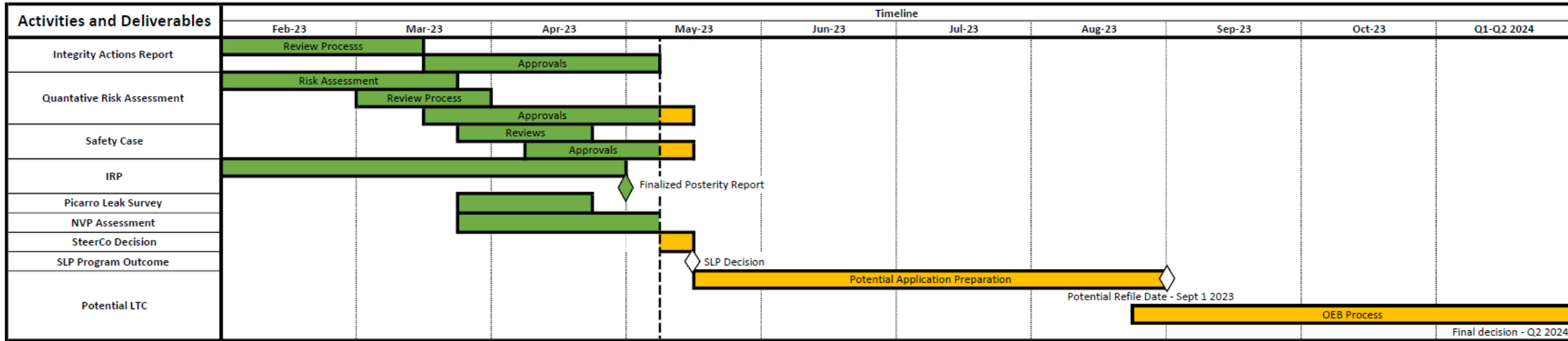
# SLP – Workstream Schedule

Stream Description	Timeline																
	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	
Governance and Transition to Program	█																
Integrity Monitoring Program	█	█	█	█	█	█	█	█	█	█	█						
Integrity Assessment (including Risk)	█	█	█	█	█	█	█	█	█	█	█	█	█				
Capacity Analysis and Modeling		█	█	█	█	█	█	█	█	█	█	█	█				
Municipal Engagement		█	█	█	█	█	█	█	█	█	█	█	█				
Field Work (NDE, ILI)		█	█	█	█	█	█	█	█	█	█	█	█				
IRP and Energy Transition		█	█	█	█	█	█	█	█	█	█	█	█				
DIMP System Treatment and Regulatory Plan			█	█	█	█	█	█	█	█	█	█	█				
EOC - 417 Feature Remediation				█	█	█	█	█	█	█	█	█	█				
ILI Validation Testing and Analysis					█	█	█	█	█	█	█	█	█				
Field Remediation Measures & Cut-outs						█	█	█	█	█	█	█	█				
Potential Refiling Plan Exploration (if applicable)							█	█	█	█	█	█	█	█	█	█	█
Interrogatories, Tech. Conference (If applicable)																	█

To Q2 2024



# SLP – Potential Re-file Schedule



NOTES REGARDING POTENTIAL REFILE:

- Sept 1 - Potential LTC Re-file
- Sept 15 - Completeness Letter
- Sept 25 - Notice of Application
- Oct 18 - Last day for intervention requests
- Nov 6 - Procedural Order No 1 Issued
- Dec 1 - Interrogatories Issued
- Dec 15 - File Responses
- Dec 27 - Technical Conference
- Jan 15 - Argument in Chief
- Jan 29 - OEB Staff and Intervenor Submissions
- Feb 12 - Reply Argument
- Apr 18 - Decision from OEB

# Interro, Picarro and IRP

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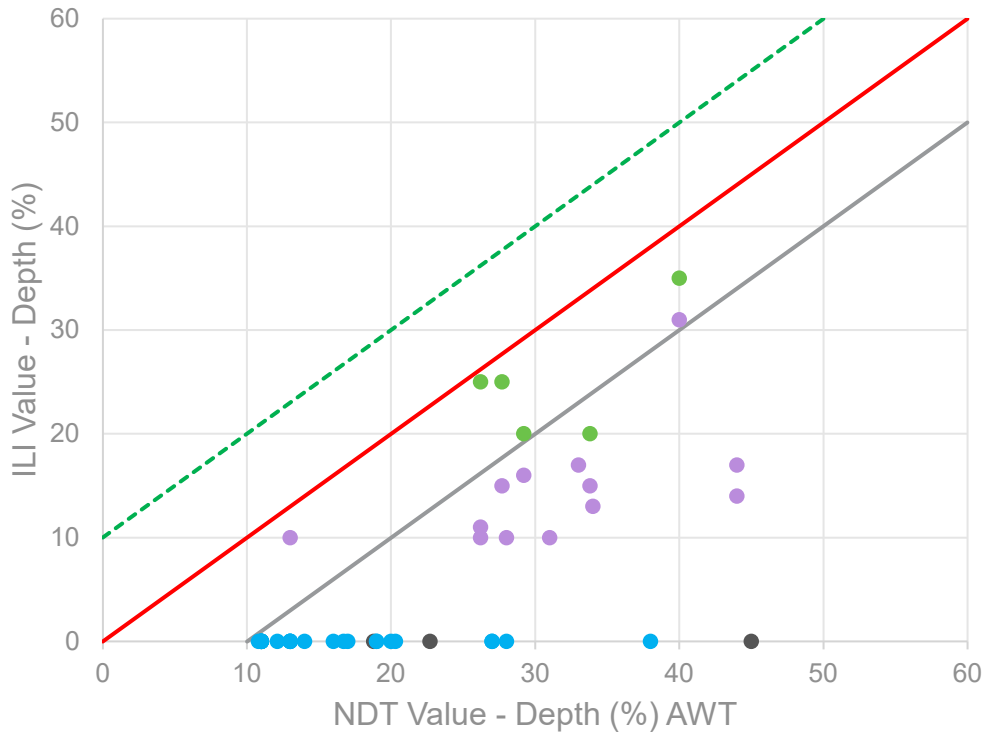
- Lab testing to validate the performance of the Crawler MFL tool took place in Dec. 2023
- Covered the external features
- Obtained NDE from field prior to shipping to vendor





# St. Laurent Pipeline – Unity Plot (Draft)

Metal Loss Data Comparison Plot



- True Positive (Within Spec)
- False Negative (Within Spec)
- False Negative (Outside Spec)
- ILI Validation Points

- **Purple points** represent features identified by the ILI tool where actual depth was confirmed via integrity digs (13 data points)
- **Black points** represent features found during integrity digs which should have been identified by the ILI tool (4 data points)
- **Blue points** represent features that may not be found by the ILI tool (i.e., pitting < 20% depth) as their sizes are out of tool specification (25 data points)
- **Green points** represent the reported updates to the percent wall loss based on the ILI validation run (5 data points)

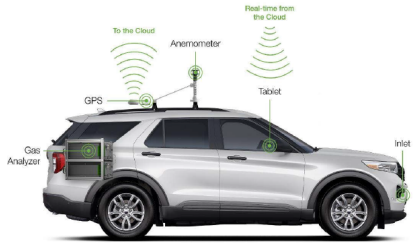
	ILI Spec	Calculated	# Data Points
POD (Probability of Detection)	90%	76.5%	17
POS Depth (Probability of Sizing)	80%	15.4%	13



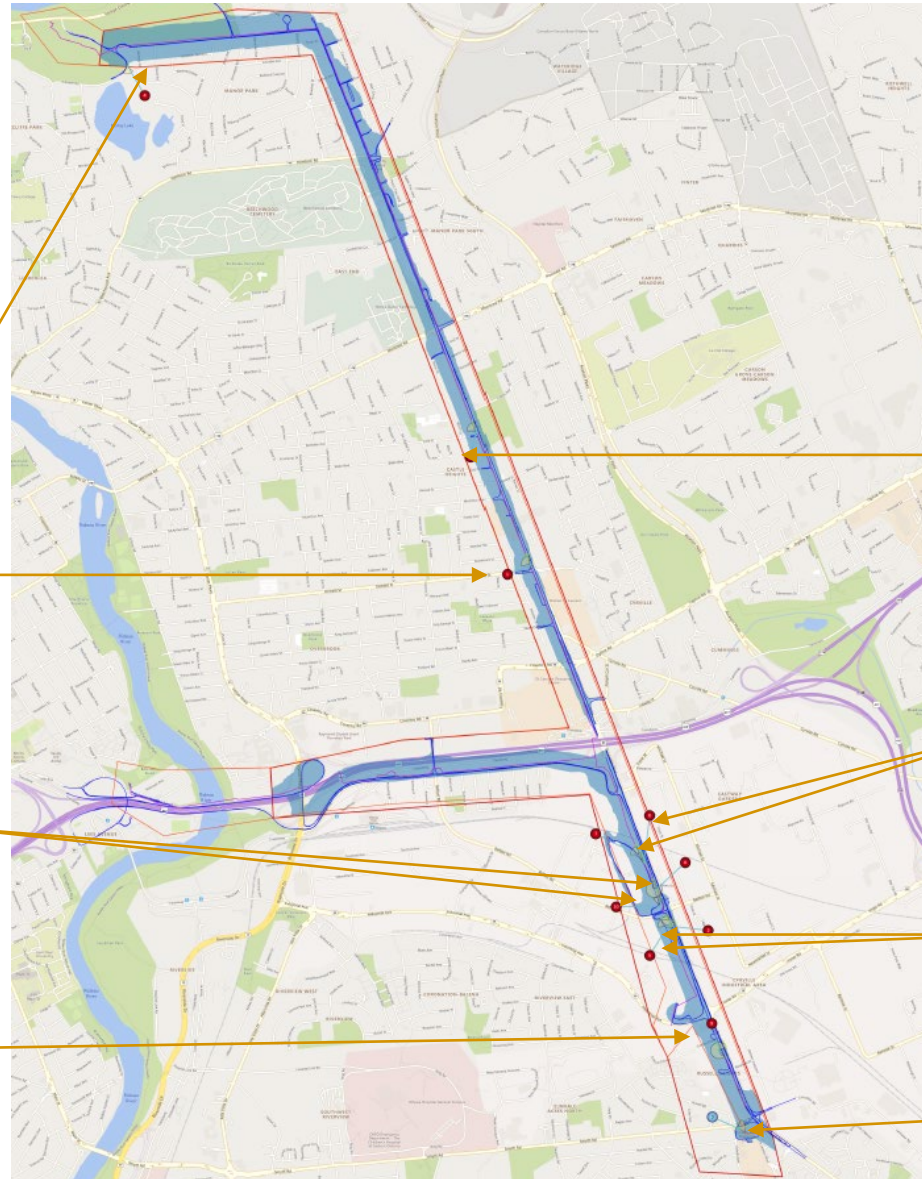


- Picarro leak-surveyed the St. Laurent Pipeline on March 26<sup>th</sup> and 27<sup>th</sup> presenting their initial findings to Enbridge on March 28<sup>th</sup>
- Enbridge and Picarro conducted leak investigations on March 29<sup>th</sup>
- Picarro identified 11 leak indications:  
5 were false positives (45%), 6 were traced to 5 above-ground leaks
- No leaks associated with the St. Laurent Pipeline were identified
- All leak indications were between 2-3 ppm in initial report; field investigations yielded a range of 10 ppm to 5% gas readings
- Further analyses regarding applicability and effectiveness to be conducted by the Energy Transition team as more details become available
- Effectiveness between rural and urban settings needs to be further investigated by Operations
- Leak Detection RFP process to be held in the second half of 2023 - Picarro and satellite-based providers will be invited to participate





- Hardware**
- All Weather gas inlet system
  - PPB methane/ethane sensor
  - Anemometer – wind-speed / direction
  - iGPS
  - Cloud connected
  - Driver UI tablet
- Software & Analytics**
- Multi-pass data collection protocols
  - Atmospheric and methane plume modeling
  - Source discrimination to avoid false positives
  - Risk assessment and flow rate quantification



**Legend:**

- SLP Boundary Area
- Coverage Zone
- Leak Investigation Search Area

**Leak Investigation 1:**  
1 above ground leak found at farm tap

**Leak Investigation 3:**  
2 above ground leaks found at meter sets

**Leak Investigation 6 & 7:**  
1 above ground leak found at station piping

**Leak Investigation 10:**  
No leak found

**Leak Investigation 2:**  
No leak found

**Leak Investigation 4 & 5:**  
1 above ground leak found in station building

**Leak Investigation 8 & 9:**  
No leak found

**Leak Investigation 11:**  
No leak found

# IRP Update



- Posterity estimated the potential peak hour savings of an enhanced targeted energy efficiency (ETEE) program in the St. Laurent area to be **13,273 m<sup>3</sup>/hr at a cost of \$68 million**
- The existing St. Laurent pipeline configuration has a capacity of **166,300 m<sup>3</sup>/hr** and proposed configuration in the OEB LTC was **155,500 m<sup>3</sup>/hr**
- The ETEE peak hour impact estimated by Posterity would reduce the existing configuration by **8.0%** and from the proposed LTC configuration by **8.5%**
- The ETEE alternative does not provide a technically feasible option as a peak hour reduction target of **~26,000 m<sup>3</sup>/hr** is required to reduce the pipe size from **NPS 16 to NPS 12** (cost savings of ~ \$1MM) based on forecasted demand out to 2042
- Demand from the affiliate Gazifère rate zone is assumed to be constant as Enbridge looks to ETEE its own franchise area, but growth is being forecasted by Gazifère (conservative analysis)
- Consultation log and engagements with City of Ottawa and Hydro Ottawa compiled
- IRP preliminary analysis completed for complete St. Laurent replacement
- The City of Ottawa has not provided Enbridge with sufficient EEP details required for Enbridge to assess and include impacts in its demand forecast



# Risk Assessment and NPV

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# Assessment Brief St. Laurent – Quantitative Risk Assessment



## Inputs

- ILI and NDE data to gather objective data on pipeline condition
- Excavation/repair costs based on project actuals, operational disruption estimates, digitized building footprints in right-of-way

## Assessment

- Determine pipeline reliability based on all major threats (Corrosion, TPD, SSWC, Latent Damage, Manufacturing, Fabrication, etc.)
- Leverage existing industry-accepted modelling approaches
- Assess risk based on highest consequences categories (Financial, Operation Disruption, Health & Safety)
- Evaluate Risk level applying three unique perspectives:
  - ✓ CSA Z662 - Annex O Reliability Targets
  - ✓ Enterprise Operational Risk Matrix
  - ✓ PHMSA Significant Incidents<sup>1</sup> Benchmarking
- Risk Assessment reviewed and endorsed by DNV / GTM and approved by M. Chebaro and J. Sanders

## Results

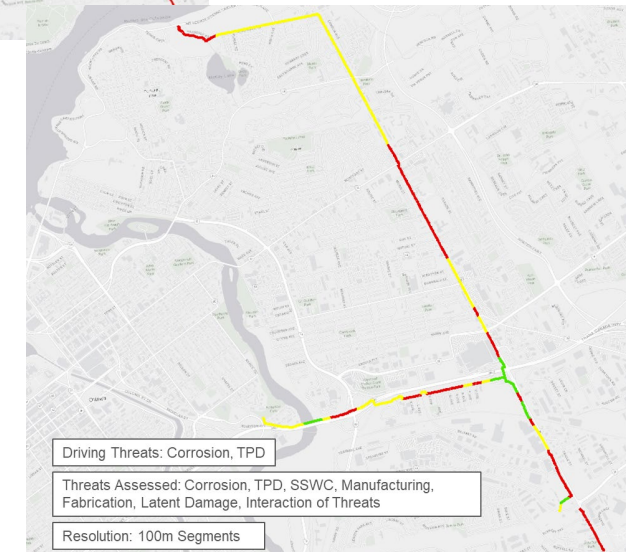
- Annex O - 8.8KM of 11.2KM pipeline exceed targets
- Operational Risk Matrix
  - High Risk - H&S Safety
  - Very High Risk – Financial, Operational Disruption
- PHMSA Significant Incidents<sup>1</sup> – SLP assessed significant incident rate orders of magnitude higher than historical average

<sup>1</sup> “Significant incident” is defined by PHMSA as >\$172K damage, fatality/injury, 3 MMcf gas loss

*Annex O Reliability Targets Lens*



*Annex O Targets x3  
(more lenient)*

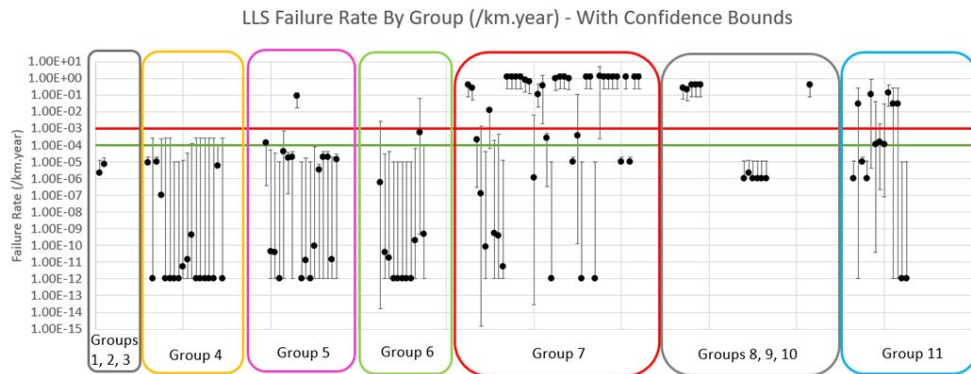




# St. Laurent – Quantitative Risk Assessment

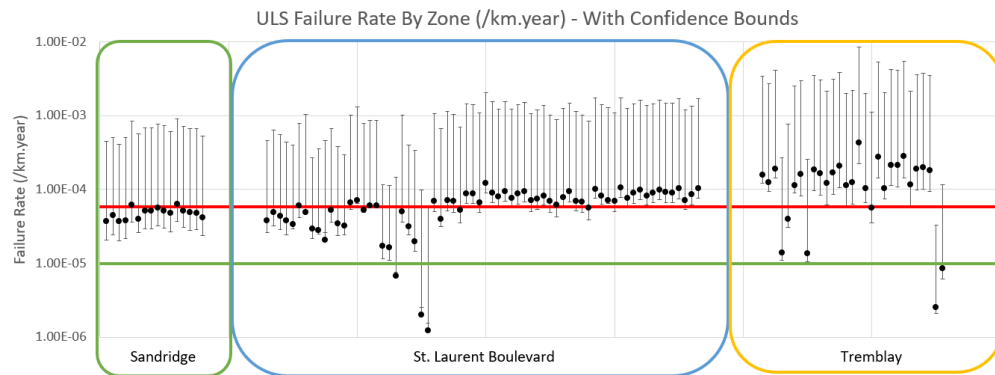
Assumptions varied and sensitivity analysis performed to determine the range of alternate results and possible impact to conclusions

## Annex O Reliability Targets Lens – LLS (Small Leaks - Corrosion)<sup>†</sup>



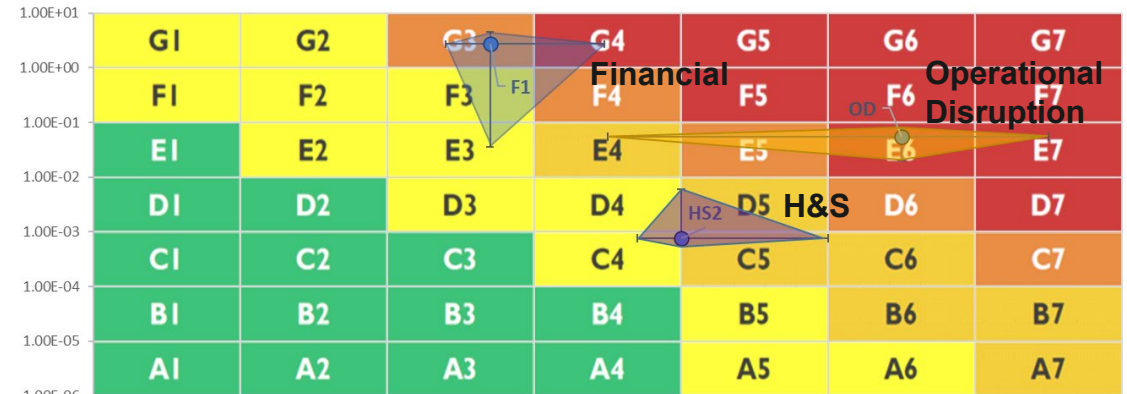
Groups = "like-in-kind" corrosion segments based on unique Corrosion Area and Coating combination  
 \*Each point represents unique 100m length segment  
 \*\*Ordering of points within a group is arbitrary and not representative of actual location

## Annex O Reliability Targets Lens – ULS (Equivalent Ruptures - TPD)



\*Each point represents unique 100m length segment  
 \*\*Ordering of points within a zone is arbitrary and not representative of actual location

## Enterprise Operational Risk Matrix\* (with confidence bounds)<sup>‡</sup>



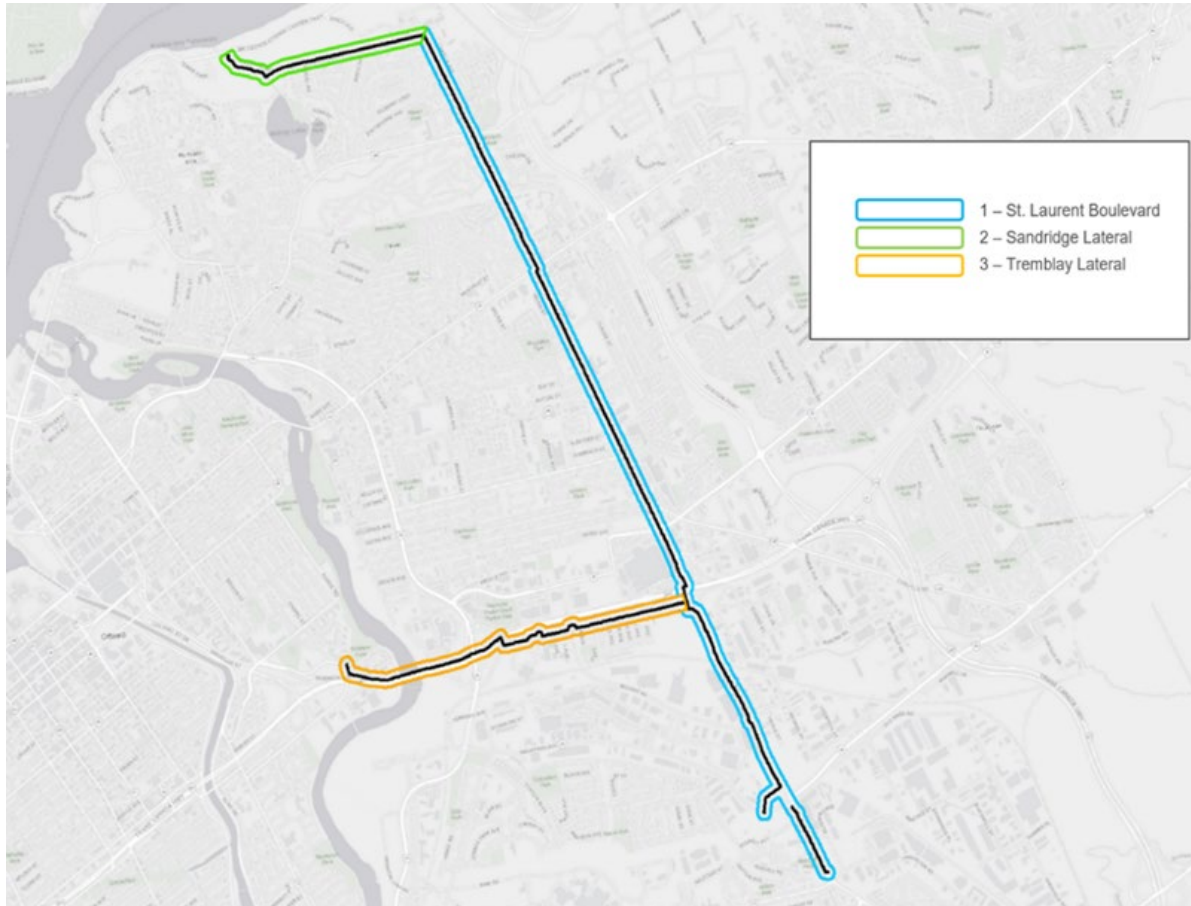
Legend: Low Risk (Green), Medium Risk (Yellow), High Risk (Orange), High (H&S) (Light Yellow), Very High Risk (Red)

- Sensitivity assessment used to quantify the range of possible values to supplement the best estimate of reliability or consequence.
- For most segments, the lower bound of the estimate continues to breach a risk or reliability limit.

<sup>†</sup> Failure defined as corrosion with 80% or deeper of wall thickness (past the sizing threshold of inspection tool)

<sup>‡</sup> Adopted by Enterprise S&R in Dec 2022. Currently undergoing MOC process for formal adoption at GDS

# NPV Assessment of Treatment Options St. Laurent – Risk Treatment Scenarios



## Continued Integrity Inspections and Digs

- Scenario A.1 – Continue crawler tool inspections and mitigate risks through integrity digs/mitigations
- Scenario A.2 – Retrofit/inspect with free-flowing ILI and mitigate risks through integrity digs/mitigations

## Partial Replacement

- Scenario B.1 – Only replace St. Laurent and Tremblay Lateral sections (Blue & Orange). Continue crawler tool inspections and digs/mitigations on Sandridge Lateral (Green)

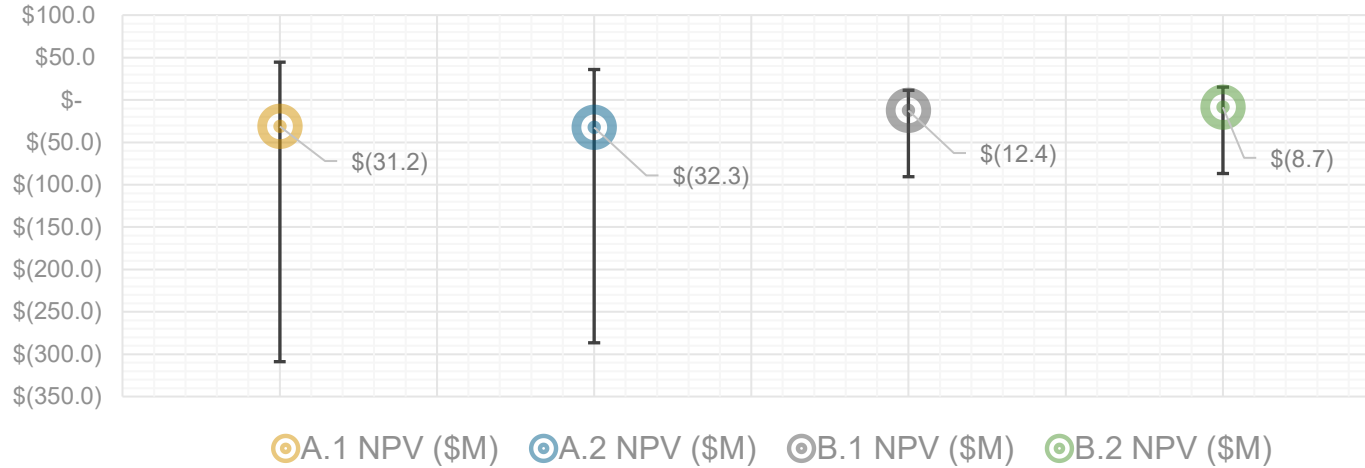
## Full Replacement

- Scenario B.2 – Replace full St. Laurent pipeline (including Tremblay and Sandridge Laterals)

# NPV Assessment of Treatment Options - Draft St. Laurent – Risk Treatment Scenarios



## NPV Ranges



Type	A.1 – Maintain with Crawler ILI	A.2 – Maintain with Free-flow ILI	B.1 – Partial Replacement	B.2 – Full Replacement
Total Costs as of 2023 (\$M)*	168	162	174	170
Total Cost Breakdown	87% Capital / 13% O&M	96% Capital / 4% O&M	99% Capital / 1% O&M	100% Capital
Net Present Value (\$M)**	\$(31.2)	\$(32.3)	\$(12.4)	\$(8.7)
NPV – LB/UB (\$M)	45 / (309)	36 / (287)	11 / (91)	10 / (65)

## Other Decision Factors:

- Residual Health & Safety Risks to Public and Enbridge workers significantly higher in A.1 / A.2 scenarios
- A.1 / A.2 scenarios will require continued construction on roadway potentially impacting relationship with municipality and residents
- A.1 / A.2 / B.1 scenarios will be unlikely to support future Hydrogen blending opportunities
- Scenario A.1 / A.2 assume desired Safety levels will be achievable with continued Integrity activities
- Scenario A.2 will likely pose challenges with inspection effectiveness and results

\* All costs/benefits discounted to 2023 (timing may impact NPV)

\*\* Based on 40-year value horizon



# NPV Assessment of Treatment Options St. Laurent – Risk Treatment Scenarios



## Assumptions:

- Proposed future integrity digs assessed based on 49 CFR 192 and ASME B31.8S which are applicable in the US for pipelines operating >20% SMYS. Consideration given of required validation digs.
- Number of proposed additional locations for Scenario A.1 determined based on high-level review by DIMP of remaining uninspected pipeline scope.
- Replacement estimates have been updated with some assumed cost escalation rates from 2020. The replacement options also assume that the original pipeline running line is still possible.
- Historical costs (i.e., sunk costs) have been included in NPV assessment for related scenarios (e.g., 2022 inspection/mitigation costs associated with A.1/A.2 scenarios, 2019-2022 replacement design costs associated with B.1/B.2 scenarios)
- Yearly discount rate of 5.87% applied as per 2024 Enbridge WACC. Inflation rate of 3% applied broadly for all costs/benefits. Integrity dig/mitigation costs escalated with an estimated rate of 6% +/- 2% (instead of 3%) as per the 10-year trending of Integrity dig related costs
- Uncertainties associated with the various scenarios quantified by applying confidence bounds (LB/UB) on assessed values
- All scenarios assume a 15% cost contingency and +60%/-30% uncertainty in the construction related costs
- Indirect costs (i.e., interest, overheads) excluded from all scenarios

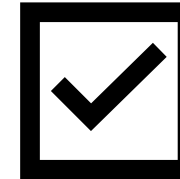
# Recommendations

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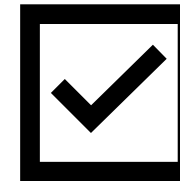
# Progress on Objectives

**Objective #1:** Provide the necessary evidence to **confirm the operability** of the SLP from a safety and reliability perspective in its current condition, including defining immediate mitigations.

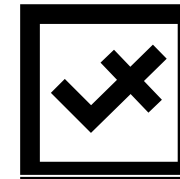


- ILI
- Digs/NDE
- Various Surveys
- EOC/Replacement

**Objective #2:** Re-assess the **asset management requirement(s)** for the SLP system for remaining life alternatives, including safety, reliability, and economic assessment (e.g., digs, replacement, etc.).



**Objective #3:** Incorporate outcomes from the St. Laurent regulatory decision to define/adapt EGI processes for **future applicable OEB submissions**. This goal generally applies to Growth, Replacement, Relocation, and/or Reinforcement projects. Part of this goal will be to understand the implications from this file on the Asset Management Plan to better position future projects.



- Stronger partnership with AM, IRP and Ops. on LTCs (for ex. Sparks and Wilson Ave.)
- EDIMP Team
- Finalized DIMP Risk Model and Prioritized DIMP System

Distribution Pipe (Steel & Plastic)	• 143,000km
Distribution Steel Pipe (Mains)	• 32,000 km
EDIMP	• 7,000 km • 229 pipelines
EDIMP Priority Pipelines (50% of Risk)	• 674 km • 22 pipelines



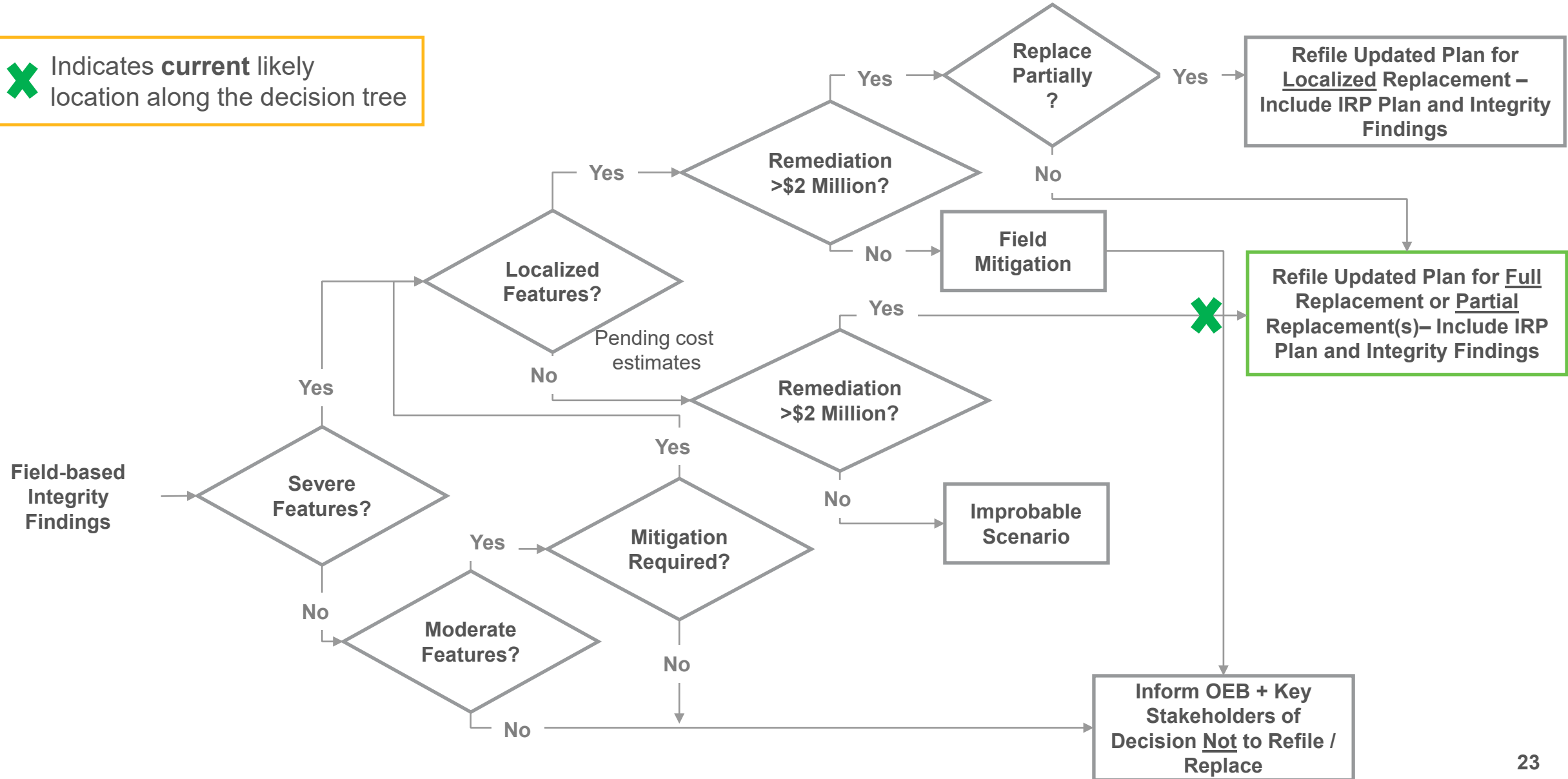
# Recommendations

- File a Leave-to-Construct with the intent to replace full St. Laurent pipeline (including Tremblay and Sandridge Laterals)
- Minimize plastic pipe replacement to what is needed for continuity of supply
- Prioritize replacement schedule, starting with Tremblay or portions of St. Laurent, ending with Sandridge (currently looking at start date in 2024, 2%)
- Inform impacted internal stakeholders about this decision (e.g., ULT, Regional Ops., Ops. Governance, Legal, Regulatory, PAC, Integrity, Engineering)
- Inform impacted councillors and the City of Ottawa about this decision



# SLP Decision Tree – Potential Scenarios

**X** Indicates **current** likely location along the decision tree





# Discussion and Q&A

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# St. Laurent Pipeline Project

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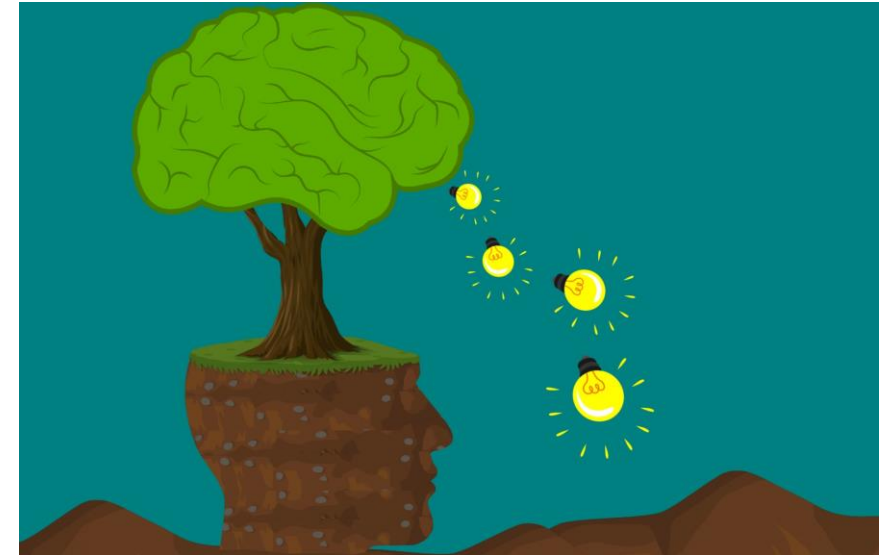
## Steering Committee Meeting

# Your brain needs rest!

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# Why Rest Your Brain?

- Less active mental focus activates our Default mode network (DMN)
- DMN = Creative Thinking
- Creative Thinking = change acceptance, efficiencies, improvements





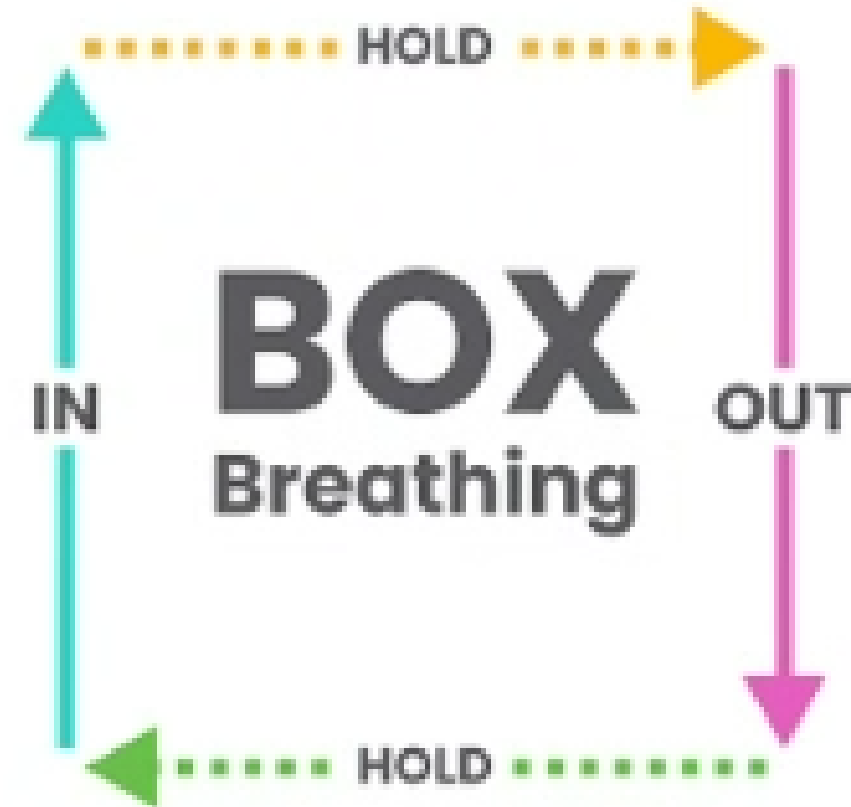
# Work more $\neq$ Achieve more

- The more creatively you can see and solution pending or acute situations, the more valuable you are
- Days away from the desk can increase your value when you return –ultimate ROI
- Constant challenges without a break can dull our senses
- We aren't machines, we can break down when we don't take time to go offline



# Ways to Build Sustainable Rest Habits

1. Active Rest
2. Get a Hobby
3. Take a Break
4. Avoid Long Days
5. Micro Pauses
6. Tech Breaks
7. Regular Vacations



[What is Box Breathing?](#)

# Executive Summary

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In January, the team embarked on a re-evaluation of alternatives in consideration of *stranded asset risk*, a topic of focus for the OEB in their Decision and Order on Enbridge Gas' Application for 2024 Rates – Phase 1.

This entailed:

- Reviewing alternatives to full replacement from an integrity, risk and constructability perspective
- Updating cost estimates for both full replacement and the (revised) primary alternative
- Completing NPV and asset life analyses

The outcome of this review is a recommendation to continue pursuing full replacement of the St. Laurent Pipeline. Endorsement for such is being sought from this Steering Committee.

# Principal Alternatives Comparison



	Crawler ILI + Targeted Replacements (A.1)	Full Replacement (B.2)
<b>Risk</b>	<ul style="list-style-type: none"> <li>Designed to maintain residual risk<sup>1</sup> at or below the threshold; however, with uncertainty could exceed limits</li> </ul>	<ul style="list-style-type: none"> <li>Greatest reduction in residual risk with most certainty</li> </ul>
<b>NPV</b>	<ul style="list-style-type: none"> <li>Most favourable in the short-term</li> <li>Least cost certainty - uncertainty grows over time</li> </ul>	<ul style="list-style-type: none"> <li>Most favourable in the long-term</li> <li>Most cost certainty</li> </ul>
<b>Asset Life Analysis<sup>2</sup></b>	<ul style="list-style-type: none"> <li>Based on a probabilistic distribution of useful asset life (aggressive electrification case – mass market heating), the NPV favours full replacement (B.2) with at minimum a 74.5% probability.</li> <li>The mean year for full electrification based on probabilistic modelling is no sooner than 2056.</li> </ul>	
<b>Near-term Capital Requirement<sup>3</sup></b>	<ul style="list-style-type: none"> <li>\$85.05 million</li> </ul>	<ul style="list-style-type: none"> <li>\$150.50 million</li> </ul>
<b>Near-term O&amp;M Requirement</b>	<ul style="list-style-type: none"> <li>\$4.06 million</li> </ul>	
<b>Qualitative Factors</b>	<ul style="list-style-type: none"> <li>Ability to maintain residual risks at the threshold is underpinned by integrity, constructability, and cost assumptions that become less certain over time</li> <li>Doesn't avoid risk of significant incidents as well as full replacement</li> </ul>	<ul style="list-style-type: none"> <li>Minimizes adverse effects<sup>4</sup> on the public</li> </ul>
<b>Ancillary Information</b>	<ul style="list-style-type: none"> <li>LTC required for targeted replacements – earliest target July / Aug 2024</li> </ul>	<ul style="list-style-type: none"> <li>Target LTC filing late May 2024<sup>5</sup></li> </ul>

Footnotes:

- Residual Risk includes financial, operational reliability, and health & safety. Both scenarios designed to meet CSA Z662 Annex O reliability thresholds, industry benchmarks for significant incidents based on the PHMSA incident database for distribution pipelines, and the Enbridge Standard 7x7 Operational Risk Matrix.
- Asset Life Analysis – estimate of when the asset would no longer be used based only on mass market/general service customer choice to replace a gas furnace with non-gaseous heating
- Near-term Capital Requirement - 2024-2027 direct capital costs including abandonment and contingency, but NOT Indirect Overheads or IDC in 2024 dollars.
- Adverse Effects include incident significance (including H&S affects) and frequency / extent / timing of disruption.
- Target filing date under review in consideration of necessary evidence updates



# Principal Alternatives Summary (2024 Reframing)

## Scenario Design / Feasibility



## Residual Risk Acceptance



## Net Present Value

### Scenario A.1

*Crawler ILLI + Targeted Replacements*

- Confirmed Constructability
- Detailed Inspection Plan
- Tolerable Residual Risks

- 7.8KM (70%) to be maintained with 19 Crawler runs to address Corrosion risks
- Slabbing + 1.9KM (17%) targeted replacements to address Third-Party Damage risks
- 1.4KM (13%) does not require additional mitigation or monitoring

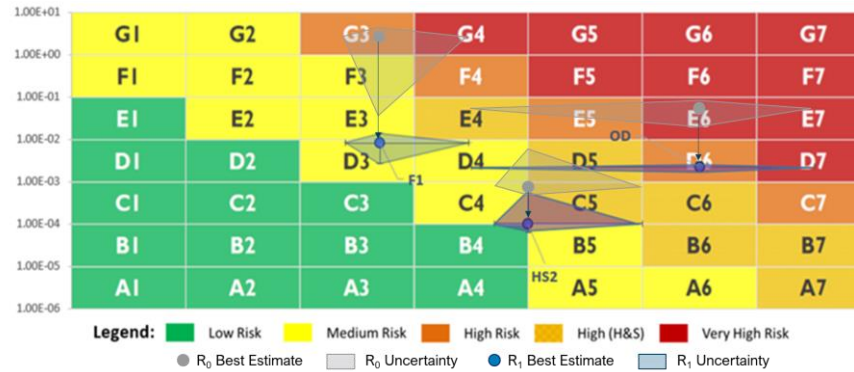
### Scenario B.2

*Full Replacement*

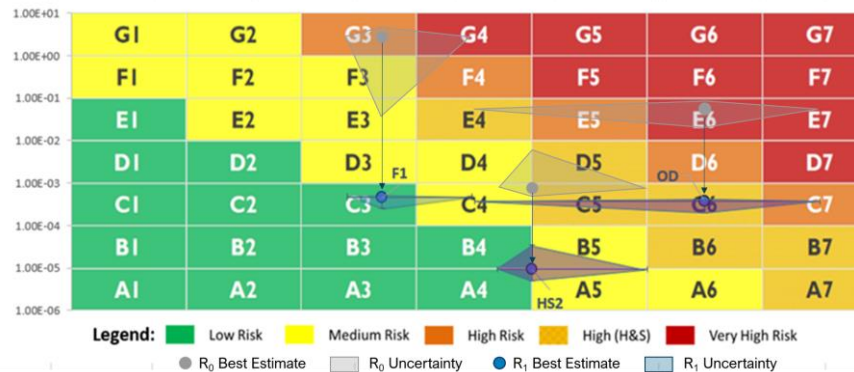
- Class 3 Cost Estimates
- Optimal Residual Risks

- 0.4km NPS16, 10.2km NPS12 replaced with approximately 2.5km NPS16, 10.0km NPS12

### A.1 Mitigation Scenario

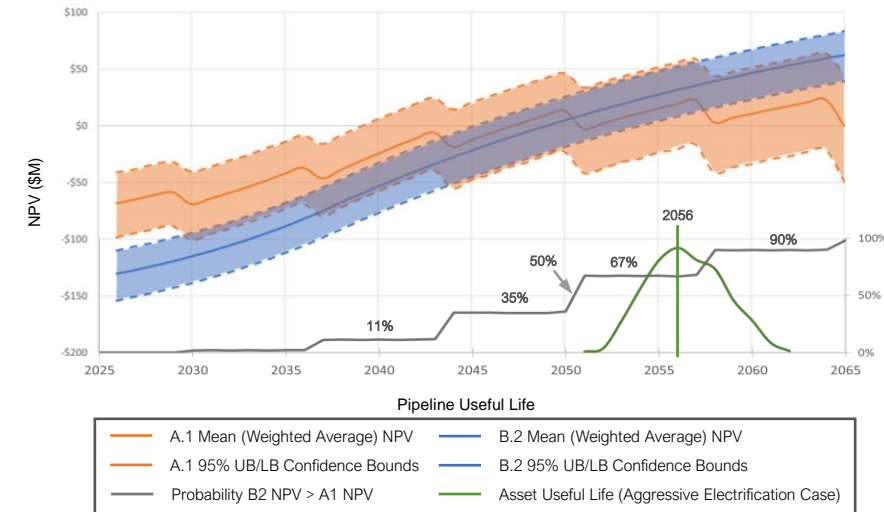


### B.2 Mitigation Scenario



A.1 best estimates meet 7x7 ORM risk limits; however, uncertainty could exceed limits. B.2 fully meets 7x7 ORM risk limits

### A.1 & B.2 Probabilistic NPV vs. Asset Life Horizon



### Key Conclusion:

- Replacement (B.2) has a higher NPV 74.5% of the time when considering a range of uncertainties, including useful asset life projections.

### Assumptions:

- Indirect overheads excluded, abandonment and IDC included
- B.2 – Includes Refined Feb. 2024 CD cost estimates (Class 3)
- A.1 – Includes Feb. 2024 CD accessibility and cost estimates (capital) for slabbing, replacements, and digs (Class 4/5) and Integrity inspection requirements (O&M) and future dig projections
- A.1 – Assumes 7-year re-inspection schedule



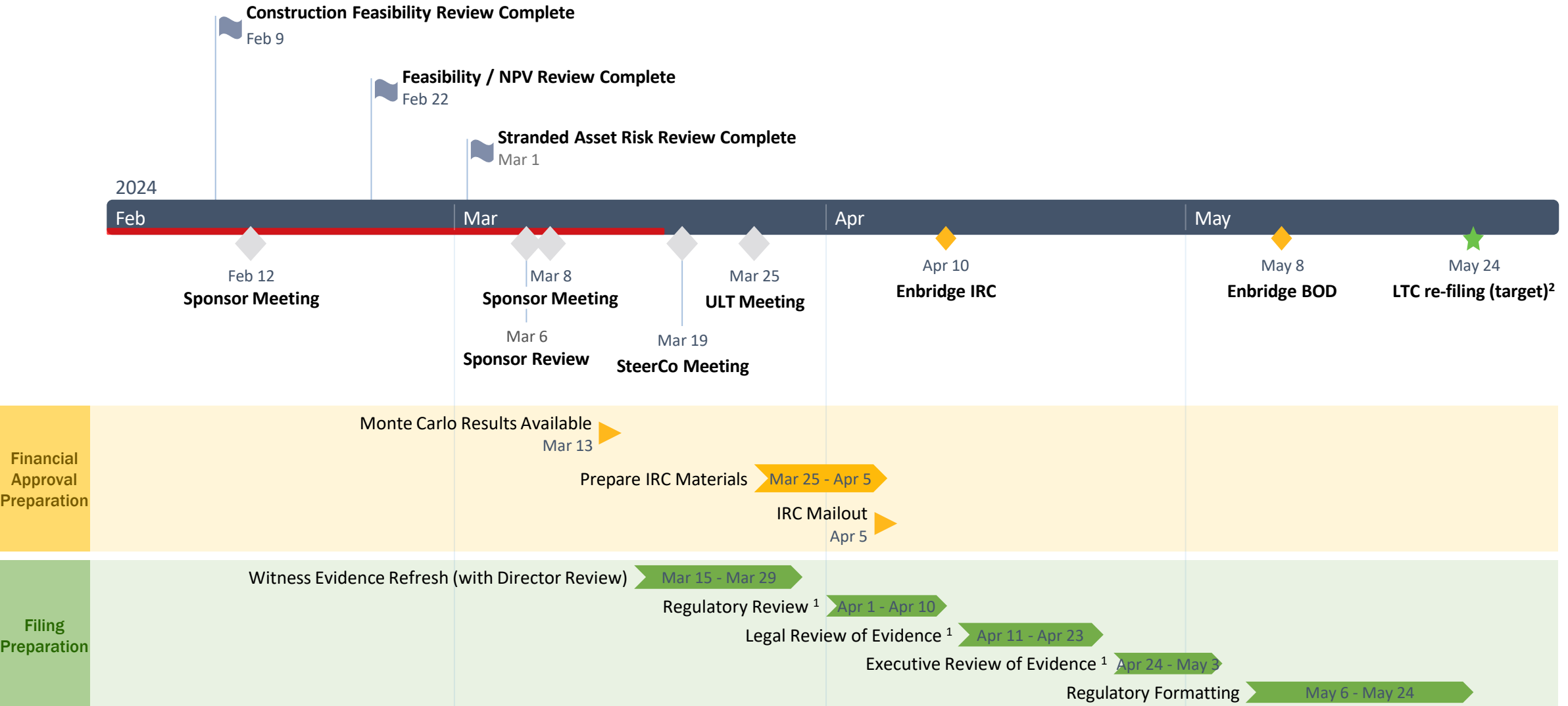
# SLP LTC Recommendation

- Recommend GDS continue to pursue **full replacement** for the St. Laurent LTC application based on the following:
  - Results in the greatest and most certain integrity risk reduction.
  - Most favourable NPV at least 74.5% of the time given an aggressive case probability of useful asset life.
  - Minimizes adverse effects on the public including H&S affects and frequency, extent, and timing of disruption.
- Additional factors to be considered going forward:
  - Depreciation proposal
  - Rate treatment proposal





# SLPRP – Application Timeline



1. Timing includes evidence updates stemming from review.  
 2. Target filing date under review in consideration of necessary evidence updates

# APPENDIX

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# Alternatives NPV Assumptions



## Financial/NPV Assumptions

- Includes Abandonment costs, IDC, Property/Income taxes
- Excludes Indirect Overheads to ensure equitable comparison of scenarios
- IDC/Property Taxes/Income Taxes/CCA have not been refreshed with latest Feb 2024 updates (negligible difference to overall NPV)
- Based on future project expenditures (2024+)
- Assume Risk Benefits do not incur income taxes (Cost avoidance, not revenue)
- Assume constant after-tax 2024 WACC of 5.75% and pre-tax 2024 WACC of 6.56% (calculated using standard LTC formula)
- Assume constant inflation of 3% (Non-Residential Construction CPI = 3.34% average over last 40 years)
- Assume constant integrity dig costs inflation of 6% (Dig cost escalation of 8-10% observed in TIMP over past 10 years)

## Probabilistic NPV Assumptions

- Uses probabilistic methodology (Monte Carlo simulations) to incorporate uncertainty/rangeability of inputs
- Uncertainty of quantity of work assumed to be a triangle distribution with UB/LB representing the 95% confidence level
- Uncertainty of costs assumed with be triangle distribution with UB/LB representing the 95% confidence level
- Similar work types are assumed to be co-related over time (i.e., integrity dig quantities co-related, integrity dig costs co-related, inspection costs co-related, replacement costs co-related)

## Integrity Work/Costs Assumptions

- Dig costs derived from actual costs observed from SLP pipeline digs
- Assume costs for purple regions (Extensive Utility Congestion in Intersections) are average of yellow (Extensive Traffic Control) and orange (Inaccessible) - costs estimate not provided by CD
- Assume dig cost estimates are Class 4
- Assume 7 year re-inspection cycle is required to account for degraded POS and 70+ year old pipe
- Assume 10% increase in digs per ILL campaign (7 years) as per TIMP dig history on similarly corroded lines
- Assume probability of sizing (i.e., ILL tool performance/capability) remains as-is after additional validation digs
- Assume costs of additional line markers and increased ROW patrol are negligible compared to slabbing costs
- Assume it's possible to add St. Laurent into Vital Main program (Vital main standby) and increase response time to notifications to same day, and locate pipeline using mechanical methods (probe bars)
- Assume slabbing on all possible areas marked as "feasible" by CD (Note - City of Ottawa is not supportive of slabbing along St. Laurent street.)
- Slabbing considered not to be feasible where pipeline parallels other utilities in close proximity. Other utility crossings considered feasible.
- Assume repair methods will be similar to historic repairs performed on the line (25% cutouts, 75% sleeves/clocksprings/grind repairs)

# St. Laurent Pipeline Replacement Project

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## Investment Review Committee

April 10, 2024

*Last Presented: April 27, 2021 (Board of Directors of Enbridge Inc.)*

*Purpose: Requesting CEO approval for project cost increase from \$132.4 MM to \$208.7 MM*

*Next Steps: BOD approval, if required*

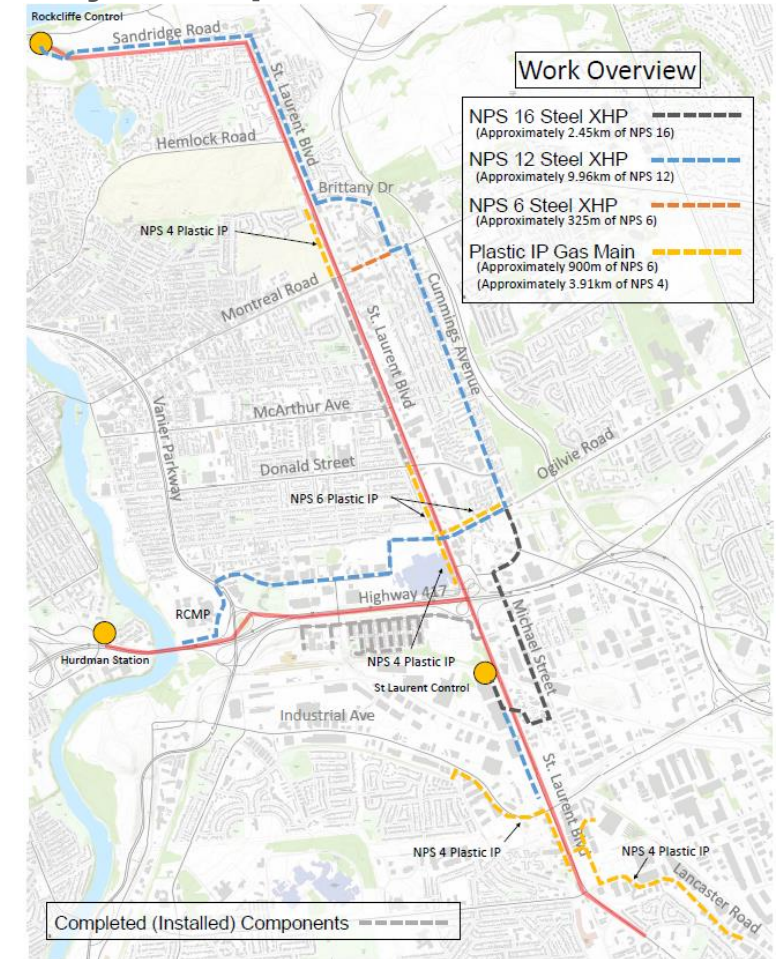




# Background and Executive Summary

- Management is seeking CEO approval for the St. Laurent Pipeline Replacement Project due to the increase in capital costs (\$76.3 MM) related to the OEB's denial of the Leave to Construct ("LTC") application in 2022.
- Majority of the St. Laurent North Line was built in 1958 and supplies gas to over 168,000 customers in the cities of Ottawa and Gatineau.
  - Integrity assessments identified that replacement is required for 12.7 km of NPS 12 pipeline.
- In April 2021, the BoD approved the St. Laurent Pipeline Replacement Project for \$132.4 MM.
- Updated cost estimate reflects increased capital to account for OEB-driven requirements, project delays, and new scope:
  - New risk assessment criteria (OEB-driven) resulting in additional pipe replacement, project preservation and rework, material and labour rate escalation, reroute driven by approval authorities, unanticipated permit conditions.
- The project cost, including capital increase, is expected to be supported by base rates and earn a cost of service return.
- Total capex for the project is estimated to be \$208.7 MM (including \$4.1 MM of IDC and \$35.5 MM of capitalized overhead, Class 3 estimate with \$21.8 MM contingency), which is \$76.3 MM increase from April 2021 approval. Includes \$10.1 MM sunk costs incurred from 2019-2023.
- Project is best solution for ratepayers over the life of the asset with consideration for energy transition.

## Project Map



Distribution pipeline replacement to continue serving the Cities of Ottawa and Gatineau



# Project Description



<b>Scope</b>	<ul style="list-style-type: none"> <li>Installation of 12.7 km of NPS 16, NPS 12 &amp; NPS 6 steel gas main</li> <li>Installation of 4.8 km of NPS 6, NPS 4 &amp; NPS 2 polyethylene gas main</li> <li>Abandonment of 14.9 km of existing NPS 4, NPS 6, NPS 8, NPS 12 &amp; NPS 16 steel gas main</li> <li>Transfer ~500 customers from the existing system to the proposed system</li> </ul>
<b>Capex</b>	<ul style="list-style-type: none"> <li>C\$208.7 MM (including C\$4.1 MM of IDC and C\$35.5 MM of capitalized overhead) – Class 3 estimate</li> </ul>
<b>Commercial Terms</b>	<ul style="list-style-type: none"> <li>100% of capital is classified as base capital and recovered through base rates and will earn a cost of service return</li> </ul>
<b>Key Dates</b>	<ul style="list-style-type: none"> <li>Construction Start Date: April 1, 2025</li> <li>In-Service Dates: December 31, 2025 &amp; December 31, 2026</li> </ul>
<b>Capacity</b>	<ul style="list-style-type: none"> <li>~163,500 m3/hr (no net change)</li> </ul>
<b>Customers</b>	<p>Existing:</p> <ul style="list-style-type: none"> <li>~168,000 direct and indirect customers (attached downstream of a district/feeder station fed from the main pipe being replaced)</li> </ul>

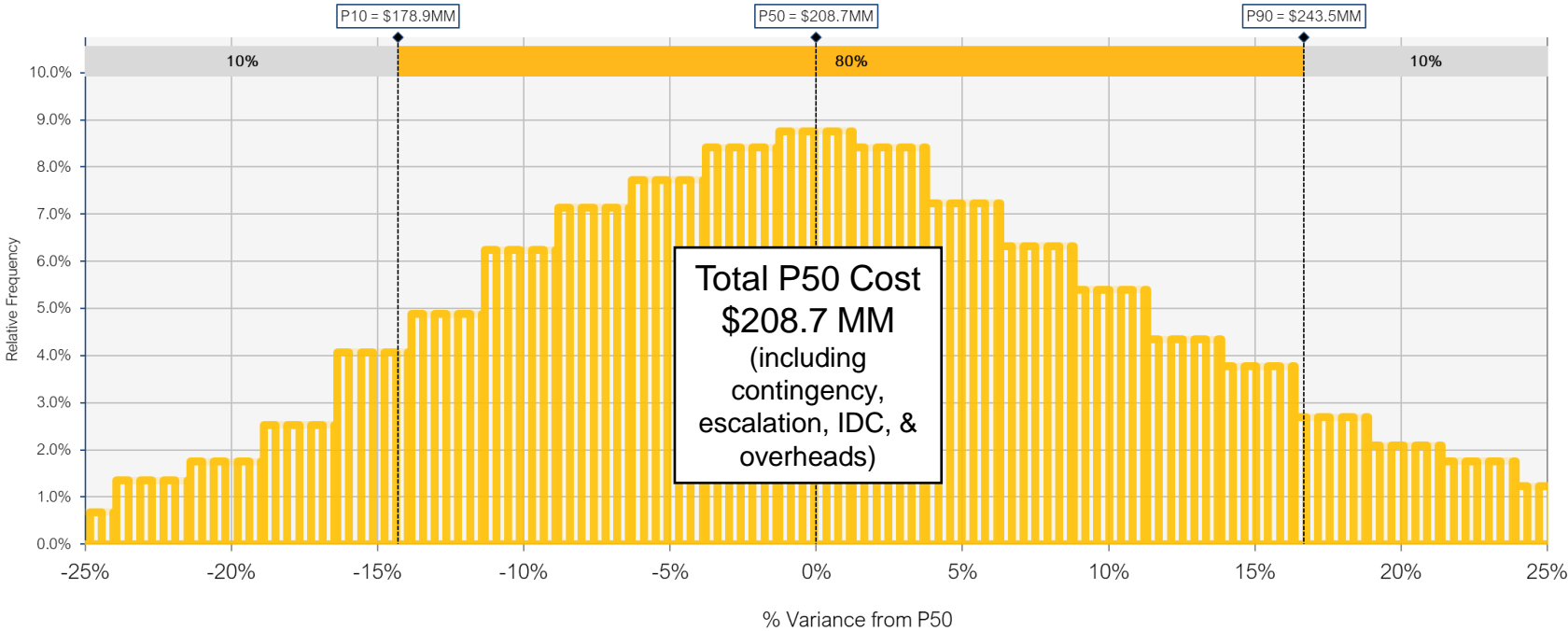
Project Scorecard		Low	Medium	High
Key Attribute	Rank	Considerations		
<b>Strategic</b>		<ul style="list-style-type: none"> <li>Ensures continued safe and reliable operation of utility business</li> </ul>		
<b>Commercial</b>		<ul style="list-style-type: none"> <li>OEB regulated project</li> <li>All prudently incurred costs are expected to be eligible for rate recovery</li> </ul>		
<b>Financial</b>		<ul style="list-style-type: none"> <li>Strong DCFROE (9.6%) with low risk commercial model</li> </ul>		
<b>Ability to Execute</b>		<ul style="list-style-type: none"> <li>Permit and LTC approval risk. Detailed mitigation plans in place to manage potential cost increases and schedule delays</li> <li>Enhanced stakeholder engagement ongoing</li> </ul>		
<b>ESG</b>		<ul style="list-style-type: none"> <li>Expected to result in a slight decrease in emissions</li> </ul>		

Safe and reliable natural gas delivery to Enbridge customers

# CAPEX Monte Carlo – Range of Cost Outcomes



<b>Project Name</b>	St. Laurent Replacement	<b>Rev.</b>	1
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Estimate Classification	Class 3
Project Definition	21.9%
P50 Contingency	14.8%
Escalation	0.0%
GDS Overheads	21.0%
Estimate Accuracy	+17%
Range (P90 / P10)	-14%

Metrics	
Pipeline \$/km	\$14.0 MM / km
Base Lay	100% urban
Construction Start	April 2025
In-Service Date	December 2026

\$MM CAD	P25	P50	P75
<b>TOTAL</b>	\$192 MM	\$209 MM	\$226 MM



# Incremental Capital Breakdown

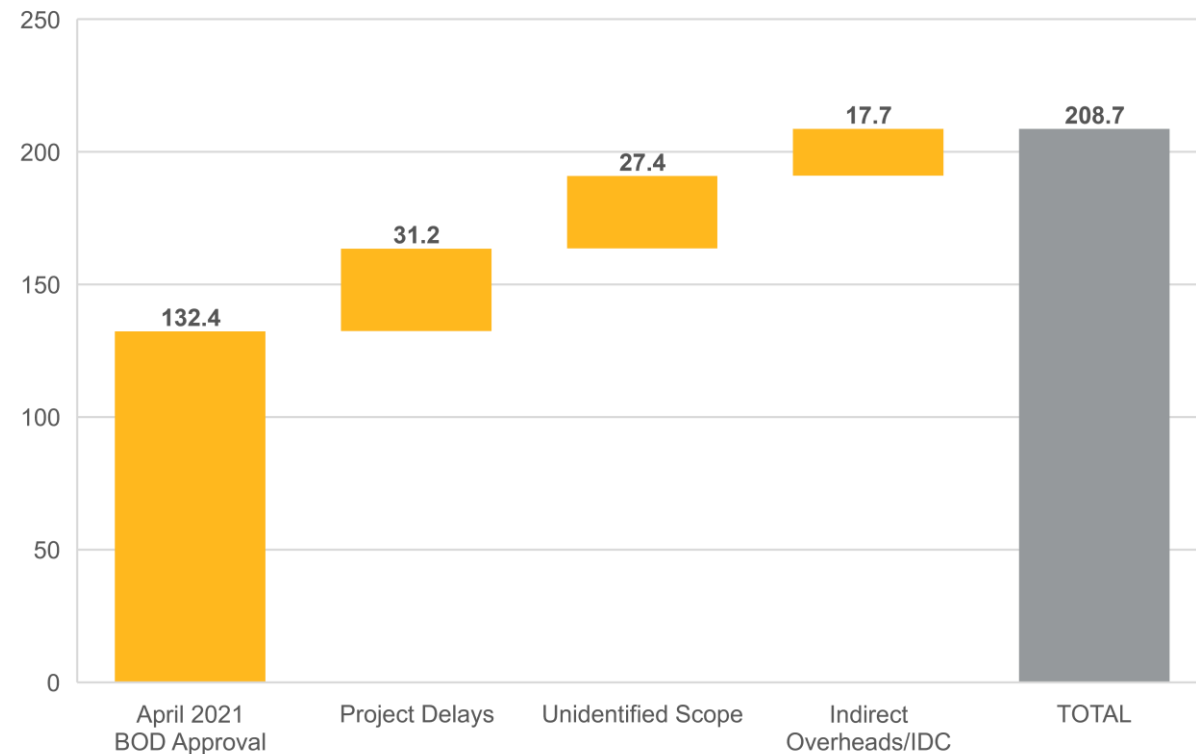
## Changes since 2021 approval:

- **OEB-driven requirements and project delay (\$31.2 MM):**
  - Material and labour rate escalation (\$16.4 MM)
  - New risk assessment criteria resulting in additional 925m pipe replacement (\$7.7 MM)
  - Rework, contract cancellations, material storage, easements, and legal/regulatory LTC filing costs (\$7.0 MM)
- **New scope (\$27.4 MM):**
  - Pipeline reroute driven by approval authorities (NCC, MTO, City of Ottawa) and additional pre-engineering studies/details (~\$16.4 MM)
  - Unanticipated permit conditions (working hour restrictions, traffic control plans, intersection crossing requirements) (~\$11.0 MM)
- **Indirect Overheads and IDC (Interest During Construction) (\$17.7 MM)**

## Summary of Incremental Capital Approvals (C\$ MM)

Original Board Approval – April 2021	132.4
<b>Incremental Capital Appropriation Request</b>	<b>76.3</b>
Revised Total Capital	208.7

Cost Increase Breakdown (C\$ MM)



# GHG Reduction Strategy



- Enbridge has aligned its capital allocation and investment criteria to meet its 2030 emissions reduction target and net zero by 2050.
- The methodology consists of demonstrating a plan to achieve the targets, including purchasing carbon offsets, if required.
- The St. Laurent Pipeline Replacement Project, is a replacement project and effectively results in no incremental emissions sources.
- This project is not expected to result in an increase in EGI's emissions or emissions intensity and as such, it is not expected that there will be any requirement to purchase carbon offsets.
- Emissions mitigation of current emissions is addressed holistically as part of Enbridge Gas' scope 1 and 2 emissions reduction plan.

Investment will not have an impact on the GDS emissions intensity

# Financial Evaluation



## Project Description

- **Capital:** Project capital included in core capital and to be recovered through base rates.
- **Updated Allowed ROE and Capital Structure:** The revenue requirement for the total project is assumed as annual cost of service, with an allowed ROE of 9.21% for 2024 – 2028, and 9.32%<sup>1</sup> for each subsequent period.
- Evaluation parameters include:
  - C\$208.7MM CAPEX<sup>2</sup> (including \$4.1MM IDC, \$35.5MM overhead, and \$8.7MM abandonment cost), Class 3 estimate including \$21.8MM contingency
  - 40-year evaluation horizon
  - 26.5% Tax Rate
  - Debt to equity ratio 62:38 consistent with Application decision
  - 4.75% cost of debt
  - In-service date: December 2025 & December 2026
  - No terminal value included

## Financial Outlook

in C\$MM	2019-23	2024	2025	2026	2027	2028	2029
Equity Cash Flow	(0.2)	(0.5)	(36.8)	(31.2)	2.6	8.8	8.7
EBITDA	(0.3)	(0.3)	(4.5)	4.3	14.9	18.4	18.3
Earnings	0.0	0.0	0.1	3.6	6.8	7.0	6.9
DCF	0.0	0.0	0.1	5.9	11.4	11.7	11.6
D/EBITDA				27.5x	8.4x	6.6x	6.5x
Annual ROE			9.2%	9.2%	9.2%	9.2%	9.3%

**DCFROE 9.6%**

EV/ 2028 EBITDA<sup>3</sup> 11.3x

ROCE (5yr avg.) 6.7%

Unlevered IRR 5.6%

Investment realizes a strong return from low-risk cost of service investment

1/ Assumption reflects the latest forecast of allowed ROE for EGI

2/ Includes \$10.1MM sunk costs incurred from 2019 to 2023

3/ 2028 used as it is the first year reflecting a normalized EBITDA. First full year EBITDA (2027) reflects flow through of one-time income tax impact attributed to \$7.4MM in abandonment costs.



# Risk Summary



High Medium Low

Base Case DCFROE 9.6%

Risk	Mitigation	Assessment	Sensitivity	ΔDCFROE
<p><b>Capital Cost</b> <i>Unanticipated cost overruns</i></p>	<ul style="list-style-type: none"> <li>Majority of Capital will not be deployed until Leave to Construct (LTC) approval from OEB, expected in Q1 2025.</li> <li>Prudently incurred additional capital is eligible for recovery in 2029.</li> </ul>		<ul style="list-style-type: none"> <li>P10 / P90 Capital Sensitivity</li> </ul>	0.6% / (0.5%)
<p><b>Permitting Delays</b> <i>Construction may be delayed by OEB LTC approval and other regulatory reviews</i></p>	<ul style="list-style-type: none"> <li>Ongoing discussions with the City of Ottawa, NCC and MTO throughout the design phase. Early submission for permitting to receive feedback and adjust accordingly.</li> <li>Completed additional integrity work to address OEB requirements from previous denied LTC application.</li> <li>Senior Leader Committee formed and strong engagement by the Public Government Relations group with external stakeholders has been deployed, to mitigate the risks.</li> </ul>		<ul style="list-style-type: none"> <li>6 month in-service delay</li> </ul>	(0.1%)
<p><b>Stakeholder Trust</b> <i>Risk of public, stakeholders, or indigenous communities not supporting the project</i></p>	<ul style="list-style-type: none"> <li>EGL's approved stakeholder plan will be executed, including outreach to potential project champion stakeholder groups including indigenous communities.</li> <li>Early engagement with government agencies, regulatory bodies, and local communities to build support and cooperation.</li> </ul>		NA	
<p><b>Regulatory</b> <i>OEB may approve lower than forecasted Allowed ROE in 2029 re-basing period</i></p>	<ul style="list-style-type: none"> <li>A structured and documented rate application justifying the current ROE methodology supported by Enbridge's internal forecast of Canada long bond and Utility spreads.</li> </ul>		<ul style="list-style-type: none"> <li>~25bps reduction in project allowed ROE rate post 2028</li> </ul>	(0.2%)
<p><i>Change in Regulatory Outcome</i></p>	<ul style="list-style-type: none"> <li>Project economic parameters aligned with OEB decision on EGL's 2024 Phase 1 Rates application.</li> </ul>			

# Risk Matrix Signoffs



Team/Area	Responsibilities	Signoff
Project Execution	Dean Dalpe	
Integrity	Tracey Teed Martin	
Asset Utilization & Revenue Risk	Malini Giridhar	
Operating Costs	Brian Johnson	
Land	Dean Dalpe	
Environmental	Dean Dalpe	
Stakeholder Trust	Malini Giridhar	
Indigenous Trust	Mike Fernandez	
Operations / Safety / Security	Brian Johnson	

Team/Area	Responsibilities	Signoff
Market Price Risk	Jonathan Gould	
Credit	Jonathan Gould	
Regulatory	Malini Giridhar	
Insurance	Cathy Ward	
Taxation	Leslie O'Leary	
Accounting	Adrian Cupido	
Treasury	Jonathan Gould	
GHG Emissions	Malini Giridhar	
Investment Review	Juan Miguel Bermudez	



# Recommendation

**Management recommends that the Board of Directors of Enbridge Inc. (the “Board”) (a) take no exception to, and (b) defer to the Board of Directors of Enbridge Gas Inc. (the “Corporation”) with respect to the approval of the following:**

- St. Laurent Replacement Project (the “Project”), including the authority of the Corporation and the officers of the Corporation to take all such action, and to cause the subsidiaries of the Company to take all such action, necessary or advisable to effectuate the Project consistent with the project materials provided to the Board (the “Project Memo”); and

**Management recommends that the Board approve funding for the Project, including:**

- An additional capital appropriation of up to \$76.3 MM for the Project, including AIDC, for an aggregate capital expenditure for the Project not to exceed \$208.7 MM;
- A corresponding increase to the applicable budgets, to the extent necessary or appropriate; and
- Entry by Enbridge Inc. or its subsidiaries into such funding arrangements as may be required on terms as approved by the Executive Vice President & Chief Financial Officer or the Vice-President, Treasury of Enbridge Inc.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[B-1-1, p.16]

Question(s):

Please provide a copy of the report or final work product of the NDE vendor.

Response:

Please see Attachment 1 to this response for summaries of all 11 vendor NDE reports from the direct assessment digs.



**Pipeline Integrity Field Report**

NPS12 St. Laurent Validation St. Laurent Blvd and Gaspé Ave

Dig Site 1

Field Report Summary

Client: Enbridge Gas Inc.

Date: September 24, 2022

Girth Weld: TJ

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a sandy clay texture. Slight gleying was noted and the soil colour was brown. Soil particles bound well together when trying to form a worm. Soil formed short ribbons of 35-45mm in length. A 10% HCL was completed on the soil sample and moderate amount of bubbling was noted with no rotten egg smell. The coating type was coal tar. Coating was found to be in fair condition (25%) in the main joint and also in fair condition (15%) in the Tee section area. Areas with coating damages (holidays) were identified in the exposed pipe. Corrosion deposits (FeO and FeCO3 type) were located in the missing coating areas.

**ILI Target Defect**

None Reported.

**Corrosion Assessment Summary:**

Two (2) external corrosion features were found in the NDE area of the Tee joint section. The corrosion features were located in the base metal of the pipe body and the deepest one had maximum depth of 0.7mm (RWT of 6.0mm, 10.4% of the AWT). Note that the zero axial reference for both features was the east end of the main line pipe. The Reference Girth shown on the table above was only used to illustrate in which joint the features were located.

**Metal Loss Assessment Summary:**

Eight (8) external metal losses were found the Tee joint of the NDE area. All metal losses were identified as previously performed grind repairs. Note that the zero axial reference for all features was the centerline of the Tee section. ML-05 interacted with DF-16. The Reference Girth shown on the table above was only used to illustrate in which joint the features were located.

**Mechanical Damage Summary:**

A total of 28 mechanical damage features were found in the NDE assessment area. The features consisted of 17 arc burns and 11 gouges/scrapes. The majority of the arc burns interacted with a girth weld and/or the long seam. The deepest gouge (DF-14) had a maximum depth of 1.2mm (18% of the AWT). DF-16 interacted with ML-05 and DF-26 interacted with COR-01. Note that the Reference Girth shown on the table above was only used to illustrate in which joint the features were located. The zero axial reference of all features located in TJ, TJ+1 and TJ+2 was the centerline of the Tee section. The zero axial reference of all features located in TJ+3 was the east end of the main line pipe.

**Manufacturing Anomalies Summary:**

Three (3) stringer/lamination like areas were identified in the TJ+2 joint during the lamination scan. MA-01 was located 4.0 below the OD surface. MA-02 was 4.6mm from the OD. MA-03 was located 4.4 from the OD. The stringer areas were non-sloping and had maximum heights of 0.5mm.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

None Reported.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

None Reported.

**NDT Components Summary:**

None to report.

**Remediation Summary:**

Client indicated cut-out replacement for remediation, installation details not available.

**Additional Comments:**

The zero axial reference in the main line (south to north pipe) was chosen at the centerline of the existing Tee running to the east. The zero axial reference in the Tee section running to the east was chosen at the east end of the main line pipe. GPS coordinates were taken at the Tee centerline. Visual, MT and PAUT (in the accessible long seam) inspections were performed at the exposed NDE area of the Tee section (0m to 0.195m, 1.6m to 2.04m from 8 o'clock to 3 o'clock). Note that the entire circumference of the pipe in the Tee section was not blasted from 1.6 to 2.04m. The Tee section had three girth welds: TJ+1 and TJ+2 from south to north and TJ+3 to the east. A pumpkin and a fitting were found in the section of pipe running to the east after GW TJ+3.





**Pipeline Integrity Field Report**  
 NPS12 St. Laurent Validation St. Laurent Blvd and Montreal Road  
 Dig Site 2  
 Field Report Summary

Client: Enbridge Gas Inc.  
 Date: October 30, 2022  
 Girth Weld: TJ

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a sandy texture. No gleying was noted and the soil colour was mostly brown. Soil particles did not bind together when trying to form a worm. A 10% HCL was completed on the soil sample and moderate amount of bubbling was noted with no rotten egg smell. The coating type was coal tar in the main joint and yellowjacket was present in the service line. Coating was found to be in fair condition (30%) in the main joint and in good condition in the service line. Areas with coating damages (holidays) were identified in the exposed pipe of the main joint. The worst area was predominantly located surrounding the connection between the main and the service line. Corrosion deposits (FeO type) were identified in the missing coating areas. It was not possible to perform a soil water pH test due to the absence of water inside the excavation.

**ILI Target Defect**

None Reported.

**Corrosion Assessment Summary:**

Three (3) external corrosion features were found in the NDE area. The corrosion features were located in the base metal of the pipe body and the deepest one had a maximum depth of 0.6mm (RWT of 5.9mm, 9.2% of the AWT). COR-01 interacted with gouge DF-04 and arc burns DF-05 and DF-06. The location of COR-01 correlated with the location of the holiday defect found during the coating assessment in the area connecting the main line with the service line.

**Metal Loss Assessment Summary:**

See Corrosion Sheet

**Mechanical Damage Summary:**

A total of seven (7) mechanical damage features were found in the NDE assessment area. The features consisted of five (5) gouges located the pipe body and two (2) arc burns interacting with the weld connecting the main line with the service line. Gouge DF-04 and arc burns DF-05 and DF-06 interacted with COR-01.

**Manufacturing Anomalies Summary:**

One (1) scab was found interacting with the ERW long seam.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

None Reported.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

Eight (8) grind repairs were created within the NDE assessment area. All the grinds successfully repaired the seven (7) damage features and one (1) manufacturing anomaly feature. No crack-like indications or hard spots were noted on the ground surfaces.

**NDT Components Summary:**

None to report.

**Remediation Summary:**

Grind repairs were performed on reported anomalies per client request. No linear indications were detected after final NDE with magnetic particle examination and no localized hard microstructures were noted after 5% Nital Etch. Refer to Grind Summary above and Grind Sheet for further details

**Additional Comments:**

The zero axial reference in the main line (south to north pipe) was chosen at the centerline of the joint between the main line and the service line. The GPS coordinates were taken at the zero axial reference centerline.



**Pipeline Integrity Field Report**  
 St. Laurent Validation NPS12 190 Sandridge Road  
 Dig Site 3  
 Field Report Summary

**Client:** Enbridge Gas Inc.  
**Date:** August 15, 2022  
**Girth Weld:** TJ

***Soil, Coating, Groundwater, and Environmental***

Soil type was classified as till (moraine) with a clay loam texture. Slight gleying was noted and the soil colour was brown. Soil particles fairly bound together when trying to form a worm. Soil formed short ribbons of 40-55mm in length. A 10% HCL was completed on the soil sample and very small amount of bubbling was noted with no rotten egg smell. Coating condition was good throughout the entire exposure. One coating damage (holiday) was noted at 2.7m. A corrosion deposit (FeO type) was located in the missing coating area. No existing girth weld was located within the exposed NDE area.

***ILI Target Defect***

None Reported.

***Corrosion Assessment Summary:***

None Reported.

***Metal Loss Assessment Summary:***

None Reported.

***Mechanical Damage Summary:***

None Reported.

***Manufacturing Anomalies Summary:***

None Reported.

***Linear Indication Assessment Summary:***

None Reported.

***Dent Summary:***

None Reported.

***SCC Assessment Summary:***

None Reported.

***Grind Assessment Summary:***

One (1) grind feature was created in the assessment area. GF-01 was performed to smooth out the CE Sample Test area of the exposed joint. No hard microstructures or other indications were found in the final grind area after completing Nital etching and MPI.

***NDT Components Summary:***

Landings for one (1) stopple and two (2) SVNs were mapped out on the pipe; stopple and SVNs were installed and found to be acceptable after final NDE assessment.

***Remediation Summary:***

Client indicated the exposed section was to be cleaned, recoated and backfilled.

***Additional Comments:***

No girth welds were exposed in the NDE area. The zero axial reference was chosen at the upstream start of the NDE area. GPS coordinates were taken at the zero location. Landings for one stopple fitting and two NPS2 SVNs (one upstream and one downstream of the stopple) were confirmed and mapped out.



**Pipeline Integrity Field Report**  
**St. Laurent Validation NPS12 St. Laurent Blvd and Karen Way**  
**Dig Site 4**  
**Field Report Summary**

**Client:** Enbridge Gas Inc.  
**Date:** August 22, 2022  
**Girth Weld:** TJ

***Soil, Coating, Groundwater, and Environmental***

Soil type was classified as till (moraine) with a clay loam texture. Slight gleying was noted and the soil colour was brown. Soil particles bound well together when trying to form a worm. Soil formed short ribbons of 34-45mm in length. A 10% HCL was completed on the soil sample and strong bubbling was noted with no rotten egg smell. Coating condition was fair (30%) throughout the entire exposure. Multiple coating damage areas (holidays) were noted in the entire joint. Corrosion deposits (FeO type) were located in the majority of the missing coating areas. No existing girth weld was located within the exposed NDE area.

***ILI Target Defect***

None Reported.

***Corrosion Assessment Summary:***

A total of three (3) external corrosion features were noted in the NDE area. COR-01 was the deepest corrosion with a maximum depth of 12% of the AWT. COR-02 and COR-03 had both a maximum depth equal to 6% of the AWT.

***Metal Loss Assessment Summary:***

See Corrosion Sheet

***Mechanical Damage Summary:***

None Reported.

***Manufacturing Anomalies Summary:***

None Reported.

***Linear Indication Assessment Summary:***

None Reported.

***Dent Summary:***

One (1) dent was identified in the assessment area. D-01 had a a maximum depth of 0.9mm (0.3%) and interacted with the ERW long seam of the exposed joint. No other indications were found interacting with the dent. The dent will be enclosed within the stopple fitting .

***SCC Assessment Summary:***

None Reported.

***Grind Assessment Summary:***

One (1) grind feature was created in the assessment area. GF-01 was performed to smooth out the CE Sample Test area of the exposed joint. No hard microstructures or other indications were found in the final grind area after completing Nital etching and MPI.

***NDT Components Summary:***

None to report.

***Remediation Summary:***

Stopple fittings were used for repair, refer to Sleeve Sheet for installation and NDE details. Client indicated the exposed section was to be cleaned, recoated and backfilled.

***Additional Comments:***

No girth welds were exposed in the NDE area. The zero axial reference was chosen at the upstream start of the NDE area. GPS coordinates were taken at the zero meter location. Landings for one stopple fitting and two NPS2 SVNs (one upstream and one downstream of the stopple) were confirmed and mapped out.



**Pipeline Integrity Field Report**  
 St. Laurent Validation NPS12 St. Laurent Blvd and Queen Mary St  
 Dig Site 5  
 Field Report Summary

Client: Enbridge Gas Inc.  
 Date: September 12, 2022  
 Girth Weld: TJ

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a sandy clay texture. Minor amount of gleying was noted and the soil colour was brown. Soil particles bound well together when trying to form a worm. Soil formed short ribbons of 30-40 mm in length. A 10% HCL was completed on the soil sample and strong bubbling was noted with no rotten egg smell. Coating condition was good throughout the entire exposure. Two small coating damage areas (holidays) were noted. Corrosion deposits (FeO type) were located on the missing coating areas. No girth weld was visible to NDT crew during coating assessment. Axial locations from coating assessment are offset by -0.71m from the axial positions of the final NDE assessment.

**ILI Target Defect**

None Reported.

**Corrosion Assessment Summary:**

None Reported.

**Metal Loss Assessment Summary:**

None Reported.

**Mechanical Damage Summary:**

A total of 45 mechanical damage features were found in the NDE assessment area. The features consisted of eight (8) arc burns next to the exposed girth weld and 37 gouges/scrapes in the pipe body. The deepest gouge had a maximum depth of 0.4mm (6% of the AWT). DF-10 to DF-18 will be repaired with pressure containment sleeve SL-01. DF-23 to DF-33 were sleeved with the installed stopple fitting. DF-01 to DF-09, DF-19 to DF-22 and DF-34 to DF-45 were successfully removed by grind repair.

**Manufacturing Anomalies Summary:**

A total of five (5) scabs were identified in the NDE area. Scab MA-05 was located in the ERW long seam. MA-01 to MA-04 were located in the base metal of the pipe body. MA-04 was the deepest scab with a maximum depth of 1.0mm. MA-01 and MA-02 were sleeved with the installed stopple fitting. MA-03 to MA-05 were successfully removed by grind repair.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

None Reported.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

A total of 29 grind features were created in the assessment area. GF-01 and GF-02 were performed to smooth out the CE Sample Test areas of the exposed joints. GF-03 to GF-29 successfully repaired gouges and scabs found during the NDE assessment. No hard microstructures or other indications were found in the final grind features after completing Nital etching and MPI.

**NDT Components Summary:**

One (1) pressure containment sleeve were installed and no relevant indications were noted after the final NDE assessment.

**Remediation Summary:**

Grind repairs were performed on reported anomalies per client request, refer to Grind Summary above and Grind Sheet for further details. Client indicated Steel Pressure Containment Sleeve for repair, tentative landing areas were mapped out. Actual installation details not available.

**Additional Comments:**

During the coating assessment NDT crew was not able to identify any girth weld in the exposed pipe. The girth weld was noted after the sandblasting was completed. Note that there is an offset of -0.79m between the axial locations from the coating assessment and the actual locations of the NDE assessment. The zero axial reference was chosen at the center of the exposed girth weld. GPS coordinates were taken at the girth weld location. Landings for one stopple fitting and two NPS2 SVNs (one upstream and one downstream of the stopple) were confirmed and mapped out. Refer to post-48h MPI inspection report of fittings for more information.



**Pipeline Integrity Field Report**  
 St. Laurent Validation NPS12 925 Belfast Road  
 Dig Site 6  
 Field Report Summary

**Client:** Enbridge Gas Inc.  
**Date:** July 28, 2022  
**Girth Weld:** GW100

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a sandy loam texture. No gleying was noted and soil colour was brown. Soil particles did not bind together when trying to form a worm. Soil did not form any ribbons. A 10% HCL was completed on the soil sample and bubbled strongly with a rotten egg smell. Note: coating was removed and sandblasting was completed prior to arrival, a partial coating assessment was completed on the upstream and downstream NDE area. Upstream coating was tapecoat which was in fair condition. Downstream coating was Yellow Jacket which was in good condition.

**ILI Target Defect**

None Reported.

**Corrosion Assessment Summary:**

None Reported.

**Metal Loss Assessment Summary:**

None Reported.

**Mechanical Damage Summary:**

None Reported.

**Manufacturing Anomalies Summary:**

None Reported.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

None Reported.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

One (1) grind was completed within the exposed NDE area. GF-01 was done to acquire a CE sample which was taken at the 12 o'clock position within the center of the proposed stopple fitting location.

**NDT Components Summary:**

Landings for one (1) stopple and two (2) 2"SVN's were mapped out on the pipe; Stopples and SVN's were installed and they were found to be acceptable after final NDE assessment.

**Remediation Summary:**

Client indicated the exposed section was to be cleaned, recoated and backfilled.

**Additional Comments:**

NDE Assessment complete on exposed NDE area. An downstream girth weld which was arbitrarily named 100 was located under tapecoat and used as the primary reference. One (1) Stopples fitting FT-01 and two (2) 2"SVN's were mapped out at areas specified by client. A full UT lamination scan was performed on the exposed NDE area which included MT 100% on the pipe body. PAUT was completed on the ERW long seam weld. No relevant indications were located within the exposed NDE area. One (1) CE sample was taken within proposed stopple location at the 12 o'clock position. Additional coating was removed upstream and downstream of the original NDE area (- 2.130m to -0.390m) to land (2) 2" SVN's.





**Pipeline Integrity Field Report**  
 St. Laurent Validation NPS12 450 Tremblay Road  
 Dig Site 7 (Tremblay West Location)  
 Field Report Summary

**Client:** Enbridge Gas Inc.  
**Date:** August 15, 2022  
**Girth Weld:** TJ

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a loam texture. No gleying was noted and soil colour was brown. Soil particles fairly bound together when trying to form a worm. Soil formed short ribbons of 35-55mm in length. A 10% HCL was completed on the soil sample and bubbled strongly with no rotten egg smell. Coating condition was poor throughout the entire exposure. No coating was present in the top half of the exposed pipe from -1.4m to 2.3m. One coating damage at the downstream end (2.5m) had a visible dent associated. Corrosion deposits (FeO type) were located in multiple areas with missing coating. Denso tape was visible on the two existing fittings and in most of the upstream area of the excavation. No existing girth weld was located within the exposed NDE area.

**ILI Target Defect**

None Reported.

**Corrosion Assessment Summary:**

None Reported.

**Metal Loss Assessment Summary:**

None Reported.

**Mechanical Damage Summary:**

A total of 54 gouges were located in the NDE area. All gouges were located in areas where coating damages were observed during the coating assessment. The deepest gouge had a maximum depth of 2.9mm (45% of the AWT). DF-12 interacted with dent D-01. Note that one additional gouge inside a dent was visually confirmed at 2.5m approximately. To perform the assessment of this gouge more coating needs to be removed.

**Manufacturing Anomalies Summary:**

None Reported.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

One (1) dent was identified in the assessed NDE area. D-01 had a maximum depth of 1.0mm and interacted with gouge DF-12. No other indications were located inside D-01. A second dent was visually noted at the end of the NDE area, next to the downstream tape. The dent appears to continue under the tape and had a visible gouge associated. To complete the assessment of these two features more coating needs to be removed.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

One (1) grind feature was created in the assessment area. GF-01 was performed to smooth out the CE Sample Test area of the exposed joint. No hard microstructures or other indications were found in the final grind area after completing Nital etching and MPI.

**NDT Components Summary:**

None to report.

**Remediation Summary:**

Client indicated cut-out replacement for remediation, installation details not available.

**Additional Comments:**

One stopple (Muller fitting) and one NPS4 top hat were found in the assessment area. The center line of the top hat was used as the zero axial reference. No girth welds were exposed in the NDE area. The GPS coordinates were taken at the center line location of the top hat. Landings for two NPS2 SVN's (one upstream and one upstream of the existing stopple) were confirmed and mapped out. Note that the downstream landing area was confirmed as valid during the initial inspection and mapped out after the welding of the SVN.



**Pipeline Integrity Field Report**  
 St. Laurent Validation NPS12 Tremblay Road. East  
 Dig Site 8  
 Field Report Summary

Client: Enbridge Gas Inc.  
 Date: October 4, 2022  
 Girth Weld: TJ

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a loam texture. No gleying was noted and soil colour was brown. Soil particles lightly bound together when trying to form a worm. Soil formed short ribbons of 40-50mm in length. A 10% HCL was completed on the soil sample and bubbled strongly with no rotten egg smell. Coating condition was poor throughout the entire exposure with visible coating damages. A corrosion deposit was located near the 5 o'clock position 1.5m upstream from the existing TOR reference. Dense tape was visible on the downstream existing fittings. No existing girth weld was located within the exposed NDE area.

**ILI Target Defect**

None Reported.

**Corrosion Assessment Summary:**

Two (2) external corrosion features were found in the NDE area. COR-01 was located in the same area where the corrosion deposit was observed during the coating assessment. COR-01 was also the deepest of the two (2) corrosion features with a maximum depth of 1.5mm (23% of the AWT).

**Metal Loss Assessment Summary:**

See Corrosion Sheet

**Mechanical Damage Summary:**

A total of five (5) gouges were identified in the pipe body. The deepest gouge (DF-05) had a maximum depth of 0.3mm.

**Manufacturing Anomalies Summary:**

None Reported.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

None Reported.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

One (1) grind feature was created in the assessment area. GF-01 was performed to smooth out the CE Sample Test area of the exposed joint. No hard microstructures or other indications were found in the final grind area after completing Nital etching and MPI. Update 10-04-2022: Five (5) grind repairs were performed on the damage features (gouges). No relevant indications or hard spots were noted on the ground areas after the final NDE assessment.

**NDT Components Summary:**

Landings for 1 composite sleeve have been mapped out on the pipe and no relevant indications were noted in the landing locations.

**Remediation Summary:**

Grind repairs were performed on reported anomalies per client request. No linear indications were detected after final NDE with magnetic particle examination and no localized hard microstructures were noted after 5% Nital Etch. Refer to Grind Summary above and Grind Sheet for further details. Client indicated Composite Reinforcement Sleeves for repair, tentative landing areas were mapped out. Actual installation details not available.

**Additional Comments:**

One (1) stopple and two (2) NPS2 SVNs were found in the downstream half of the excavation. The center line of the upstream SVN was used as the zero (0) axial reference. No girth welds were exposed in the NDE area.



**Pipeline Integrity Field Report**  
**St. Laurent Validation NPS12 133 St. Laurent Blvd**  
**Dig Site 9**  
**Field Report Summary**

**Client:** Enbridge Gas Inc.  
**Date:** August 17, 2022  
**Girth Weld:** TJ

***Soil, Coating, Groundwater, and Environmental***

Soil type was classified as till (moraine) with a sandy clay texture. Slight gleying was noted and the soil colour was brown. Soil particles bound well together when trying to form a worm. Soil formed short ribbons of 30-40mm in length. A 10% HCL was completed on the soil sample and minor bubbling was noted with no rotten egg smell. Coating condition was fair (35%) throughout the entire exposure. One coating damage (holiday) was identified in the area where the service line and the main line connected. Corrosion deposits (FeO type) were located in the missing coating area. The coating of the service line was yellowjacket and was found in good condition. No existing girth weld was located within the exposed NDE area.

***ILI Target Defect***

None Reported.

***Corrosion Assessment Summary:***

One (1) external corrosion feature was found in the NDE area. The corrosion feature was located in the base metal of the pipe body and had a minimum RWT of 6.1mm.

***Metal Loss Assessment Summary:***

See Corrosion Sheet

***Mechanical Damage Summary:***

Two (2) arc burns were found in the NDE area interacting with the fillet weld joining the service line and the NPS12 main line. Axial start position of DF-02 was referenced from the middle of the fillet weld. Both arc burns were successfully removed by grinding repairs.

***Manufacturing Anomalies Summary:***

None Reported.

***Linear Indication Assessment Summary:***

None Reported.

***Dent Summary:***

None Reported.

***SCC Assessment Summary:***

None Reported.

***Grind Assessment Summary:***

Two (2) grind repairs were performed in the assessment area. Arc burns were successfully removed by grinding. No relevant indications or hard spots were noted on the ground areas after the final NDE assessment.

***NDT Components Summary:***

None to report.

***Remediation Summary:***

Grind repairs were performed on reported anomalies per client request. No linear indications were detected after final NDE with magnetic particle examination and no localized hard microstructures were noted after 5% Nital Etch. Refer to Grind Summary above and Grind Sheet for further details. Client indicated the exposed section was to be cleaned, recoated and backfilled.

***Additional Comments:***

No girth weld was exposed in the NDE area. The zero axial reference was chosen at the centerline of an existing service line running 90 degrees to the east. GPS coordinates were taken at the zero meter location. Visual and MT inspections were performed at the exposed NDE area of the service line (0.85m to 1.12m) and no indications were found.



**Pipeline Integrity Field Report**  
 / Road Emergency Replacement St. Laurent Blvd to Highway 417 East Bou  
 North Site  
 Field Report Summary

Client: Enbridge Gas Inc.  
 Date: November 2, 2022  
 Girth Weld: TJ

**Soil, Coating, Groundwater, and Environmental**

Soil type was classified as till (moraine) with a clay loam texture. Slight gleying was noted and the soil colour was dark brown. Soil particles bound well together when trying to form a worm. Soil formed short ribbons of 30-40mm in length. A 10% HCL was completed on the soil sample and moderate amount of bubbling was noted with strong rotten egg smell. No coating assessment was performed. The pipe was already sandblasted when the NDT crew arrived to site. No girth welds were located within the exposed NDE area.

**ILI Target Defect**

Three (3) ILI Target Features, from the 2022 MFL inspection, were exposed in the candidate area for the pipe replacement west landing. No girth weld or other references were visible within the NDE area. The visible top end of a fitting located in the upstream end of the trench box, was found to be 0.4m upstream of the chosen zero axial reference for the NDE assessment. The fitting axial location as per the target sheet was 0.929m. The axial location of the targets and their correlated features do not match due to the use of different references. Correlation was achieved after conversion of the axial positions from a reference system to another.

**Corrosion Assessment Summary:**

A total of five (5) external corrosion features were noted in the NDE area. COR-01 and COR-04 were the deepest corrosions with maximum depths of 26.2% and 34.4% of the AWT respectively. COR-02, COR-03 and COR-05 had maximum depths equal to 18.8%, 20.3% and 7.8% of the AWT respectively. COR-01 to COR-03 correlated with the three target features exposed in the assessment area. COR-04 and COR-05 were found after a 360 degrees sandblasting was performed in the upstream area of the excavation and were not correlated with any target feature. Landings for a 22 inches stopple were found and mapped out. COR-02, COR-04 and COR-05 will be tentatively covered with the stopple. COR-01 will be part of the replaced pipe.

**Metal Loss Assessment Summary:**

See Corrosion Sheet

**Mechanical Damage Summary:**

Three (3) mechanical damage features were identified in the NDE area. The features consisted of two gouges and one arc burn. DF-02 and DF-03 were found after a 360 degrees sandblasting was performed in the upstream area of the excavation DF-01 interacted with the ERW long seam and had a maximum depth 0.5mm (8% of the AWT). All the damage features were successfully removed by grind repairs. Repaired DF-02 and DF-03 will be tentatively covered by a 22" stopple.

**Manufacturing Anomalies Summary:**

One (1) lamination/stringer area was identified in the ODO 2086 target feature location. MA-01 was located 4.5mm from the OD surface, was planar and was not sloping. MA-01 will be tentatively covered by a 22" stopple.

**Linear Indication Assessment Summary:**

None Reported.

**Dent Summary:**

None Reported.

**SCC Assessment Summary:**

None Reported.

**Grind Assessment Summary:**

A total of four (4) grind features were created in the NDE area. GF-01 was done to smooth out the CE Sample area of the exposed joint. GF-02 to GF-04 were performed to successfully remove the gouges DF-01, DF-02 and arc burn DF-03. No hard microstructures or other indications were located in the final grind areas after completing 5% Nital etching and MPI. GF-03, GF-04 will be tentatively covered by a 22" stopple.

**NDT Components Summary:**

None to report.

**Remediation Summary:**

Grind repairs were performed on reported anomalies per client request. No linear indications were detected after final NDE with magnetic particle examination and no localized hard microstructures were noted after 5% Nital Etch. Refer to Grind Summary above and Grind Sheet for further details

**Additional Comments:**

No girth welds were exposed in the NDE area. The zero axial reference was chosen at the upstream start of the NDE area. GPS coordinates were taken at the zero meter location. Complete NDE was performed in the target features and DF-01 and their adjacent areas (4 inches on both ends and both directions circumferentially and axially). The ERW long seam was 100% inspected. Landings for one 22" stopple, one NPS2 SVN and one tie-in were found and mapped out in the pipe. Please refer to NGI Landings Report: N-221028-RG-01 for further details. The final inspection of the stopple component's welds was not conducted by NGI.



**Pipeline Integrity Field Report**  
**NPS12 St. Laurent Validation St. Laurent Blvd to Highway 417 East Bou**  
**Dig ID 12**  
**Field Report Summary**

**Client:** Enbridge Gas Inc.  
**Date:** November 18, 2022  
**Girth Weld:** TJ

***Soil, Coating, Groundwater, and Environmental***

Soil type was classified as till (moraine) with a clay loam texture. Slight gleying was noted and the soil colour was dark brown. Soil particles bound well together when trying to form a worm. Soil formed short ribbons of 30-40mm in length. A 10% HCL was completed on the soil sample and moderate amount of bubbling was noted with strong rotten egg smell. No coating assessment was performed. The pipe was already sandblasted when the NDT crew arrived to site. Soil pH was taken during a visit to the site post-pipe replacement.

***ILI Target Defect***

Five (5) ILI Target Features were exposed for assessment in the NDE area. The ILI target joint length at the downstream girth weld was the reference used for axial location. Target Feature (TF) ID 7 was a predicted metal-loss with a maximum depth 31%, TF ID 7 correlated with COR-01, an external corrosion feature with a maximum depth of 2.6mm (40% of the AWT). TF ID 8 was a predicted metal-loss with a maximum depth 11%, TF ID 8 correlated with COR-02, an external corrosion feature with a maximum depth of 1.7mm (26% of the AWT). TF ID 9 was a predicted metal-loss with a maximum depth 15%, TF ID 9 correlated with COR-03, an external corrosion feature with a maximum depth of 2.2mm (34% of the AWT). TF ID 10 was a predicted metal-loss with a maximum depth 16%, TF ID 10 correlated with COR-04, an external corrosion feature with a maximum depth of 1.9mm (29% of the AWT). TF ID 11 was a predicted metal-loss with a maximum depth 15%, TF ID 11 correlated with COR-05, an external corrosion feature with a maximum depth of 1.8mm (28% of the AWT).

***Corrosion Assessment Summary:***

A total of six (6) external corrosion features were noted in the NDE area. COR-01 was the deepest corrosion with a maximum depth of 2.6mm (40% of the AWT) and correlated with target feature ID 7. COR-02 to COR-05 correlated with the other four (4) target features exposed in the NDE area: target feature ID 8 to 11. COR-06 did not correlate with any predicted ILI target feature.

***Metal Loss Assessment Summary:***

See Corrosion Sheet

***Mechanical Damage Summary:***

A total of 11 mechanical damage features were identified in the NDE area. The features consisted of two (2) gouges and nine (9) arc burns that interacted with GW TJ+1. DF-01 and DF-04 interacted with the ERW long seam.

***Manufacturing Anomalies Summary:***

None Reported.

***Linear Indication Assessment Summary:***

None Reported.

***Dent Summary:***

None Reported.

***SCC Assessment Summary:***

None Reported.

***Grind Assessment Summary:***

None Reported.

***NDT Components Summary:***

None to report.

***Remediation Summary:***

None to report

***Additional Comments:***

A section of the first 5 meters of this joint was assessed during the Tremblay Road Emergency Replacement. Please refer to NDT Report: Tremblay Road Emergency Replacement (North Side)\_Remediation Report, from November 2, 2022 for further details. The NDE assessment of a section of the cut-out pipe (6.104m from to 10.140m) was performed in the South Merivale Operations Center facilities.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[B-1-1]

Question(s):

Please provide a copy of:

- a) [p.18] CSA Z662
- b) [p.36] CSA Z662, Annex O
- c) [p.18] Excerpts of the company's 'operating standards' (including any introduction or overview sections that would assist in understanding the standards) relevant to issues regarding the St. Laurent North pipeline.
- d) [p.36] PHMSA Distribution Pipeline Significant Incident Benchmark
- e) [p.37] Complete internal copy of the Enbridge Standard Operational Risk Assessment Matrix, including any internal guides or reference documents.
- f) [Attach 2, p.68] St. Laurent Integrity Actions Report

Response:

- a – b) Enbridge Gas cannot provide a copy of the CSA Z662 due to the document terms of use. It is available for download at [csagroup.org](http://csagroup.org).
- c) Below are excerpts from the Enbridge Gas operating standards relevant to the maintenance of the St. Laurent Pipeline:
  - i) Leak Operating Standard

The Leak Operating Standard requires leak survey to be completed once every four years for a cathodically protected steel pipeline installed prior to 2000 and operating < 30% SMYS.

Section 4.5 of the Standard notes that Special Leak Surveys are to be conducted for known integrity deficiencies. Following the results from the inline inspection, the leak survey frequency for this pipeline has been increased to twice per calendar year.

ii) Corrosion Operating Standard

The Corrosion Operating Standard requires steel pipelines to have a Direct Current (“DC”) and Alternating Current (“AC”) pipe-to-soil reading completed once every calendar year. Rectifiers are inspected once every two months, with a more detailed inspection completed once per calendar year.

Cathodic protection faults discovered during inspections have varying timelines to resolve based on the criticality of the fault. For example, galvanic anodes must be installed within 12 months of the determination they are required.

iii) Pipeline Patrol – Scope and Frequency Standard

The St. Laurent Pipeline does not meet the current criteria (e.g. Transmission piping > 30% SMYS, or pipelines greater than or equal to NPS 16 diameter) to be in-scope for a pipeline patrol program.

Following the inline inspection results, additional steps were taken to minimize third-party damage risks by designating SLP as a “Vital Main” and increasing pipeline surveillance to a daily frequency. Please see Exhibit B, Tab 1, Schedule 1, pages 38-39 for a summary of the temporary mitigation measures.

- d) Please see Exhibit B, Tab 1, Schedule 1, Attachment 2, Pages 45-46. Additional PHMSA Distribution Pipeline Significant Incident Benchmark data can be found at <https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-flagged-files>.
- e) Please see Exhibit I.1-STAFF-10 part d).
- f) Please see response at Exhibit I.1-PP-6 for a copy of the St. Laurent Integrity Actions Report.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[B-1-1, Appendix B]

Question(s):

Please provide a copy of any internal guides or reference documents regarding the undertaking of a QRA.

Response:

Enbridge Gas does not have internal guides on the undertaking of a QRA. Reliability and Risk Engineers complete QRAs considering industry guidance provided in references such as:

- i. CSA Z662 – Annex B
- ii. PHMSA Pipeline Risk Modelling – Overview of Methods and Tools for Improved Implementation (Feb 1, 2020)
- iii. API RP 580 – Risk-Based Inspection
- iv. ASME B31.8S – Managing System Integrity of Gas Pipelines
- v. TNO “Yellow Book” (CPR-14)
- vi. TNO “Green Book” (CPR-16)
- vii. TNO “Red Book” (CPR-12)
- viii. TNO “Purple Book” (CPR-18)
- ix. Various papers provided in journals or conferences

Enbridge Gas has confirmed the QRA was performed in line with industry standards as described in Exhibit B, Tab 1, Schedule 1, Page 36, Paragraph 53.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[B-1-1, Appendix B, p.4]

Question(s):

Please explain how the proposed project is going to improve reliability related to third-party damage.

Response:

Material testing on pipe samples from the SLP has shown that the pipeline has low material toughness (i.e., low measured Charpy CVN toughness)<sup>1</sup>, averaging less than 10 J from 5 tests on pipe. In contrast, the proposed pipeline will be constructed using modern steel, which offers significantly higher toughness, often exhibiting Charpy toughness well in excess of 100 J. Additionally, the new pipeline will have wall thicknesses of 9.53 mm and 8.4 mm (Exhibit D, Tab 1, Schedule 1, Tables 4 and 5), compared to the SLP's primary thickness of 6.4 mm. This increase in wall thickness further enhances its structural integrity, making it more resilient against external forces. Furthermore, the proposed Project would mitigate current depth of cover issues and would have a consistent depth of cover that meets current code requirements. Moreover, the pipeline's relocation to a less congested area and the elimination of latent mechanical damage on the existing pipeline (i.e., dents, gouges) will provide additional safeguards and further reduce the third-party damage threat. Together, these improvements will significantly reduce the third-party damage occurrences while increasing the pipeline's ability to withstand any potential damage, ensuring it meets all established reliability and risk thresholds.

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<sup>1</sup> EB-2024-0200, Exhibit B, Tab 1, Schedule 1, Attachment 2, p. 4.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[B-1-1, Attachment 2, p.2]

Question(s):

The QRA received final approval in May of 2023, please explain why it took the company over a year to file this Application.

Response:

Completion and approval of the SLP QRA confirmed that urgent remedial action is required to meet industry risk acceptance benchmarks and Enbridge Inc. acceptable risk levels. It prompted the immediate implementation of temporary supplemental third-party damage protection measures as described in Exhibit B, Tab 1, Schedule 1, page 38, paragraph 58 and further development of the Project including alternative evaluation, scope refinement, environmental assessment, land matters, stakeholder and Indigenous community consultations, and permitting. In early 2024, being responsive to the OEB's decision in EB-2022-0200 (Rebasing Phase 1), Enbridge Gas refined its alternative evaluation to more explicitly consider the potential impacts of energy transition and stranded asset risk. These activities were pursued expeditiously while being fully responsive to the most current recommendations and findings of the OEB.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

1

Reference:

[B-1-1, Attachment 3]

Question(s):

With respect to the DNV, St. Laurent Pipeline Risk Review Memo:

- a) Please provide a copy of all instructions provided to the DNV.
- b) Does the memo represent the entirety of DNV's work regarding the St. Laurent project? If not, please provide a copy of its full work product.
- c) Please provide a list of all information and documents provided to the DNV as part of its review, and provide a copy of all material information and documents that have not been filed on the record.

Response:

- a) Please see response at Exhibit I.1-PP-24 part a).
- b) Please see response at Exhibit I.1-PP-24 part b).
- c) Please see response at Exhibit I.1-PP-24 part a) and c).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1, page 8, Table 2: Work Requirements; Exhibit C, Tab 1, Schedule 1, page 19, Table 7: Summary of NPVs for Alternative A and B with Various Useful Lives; Exhibit B, Tab 1, page 8

Preamble:

Enbridge describes the work requirements associated with Alternative A (Full Replacement) and Alternative B (Extensive Inspection and Repair), one of which is of continued and expanded use of the Crawler in-line inspection tool and discusses its financial assessment (net present value or NPV assessment) of Alternative A and Alternative B under three different time horizons.

To address risk of stranded assets within scenarios of energy and electrification transition, Enbridge compared NPVs under three assumptions for useful life of the SLP: Case A (63 years), Case B (42 years) and Case C (31 years). Enbridge noted that abandonment costs were not included in the NPV analysis, as both alternatives would require a similar level of pipeline abandonment and incur comparable costs.

Table 7  
Summary of NPVs for Alternative A and B with Various Useful Lives

NPV (\$ millions)	A – Full Replacement	B - Extensive Inspection and Repair	\$ Difference (A – B)
Case A (63 years)	\$(134)	\$(253)	+\$119
Case B (42 years)	\$(134)	\$(179)	+\$45
Case C (31 years)	\$(134)	\$(140)	+\$6

Question(s):

- a) Please provide the NPV analyses that underpin this discussion.
- b) Please describe the key assumptions and rationale as to the costs used in the NPV analysis (e.g., the assumed costs associated with the work requirements described in Table 2: Works Requirements).
- c) What are the costs that were incurred to date using the Crawler in-line inspection tool to capture condition data on 4.5 km (40%) of the total pipeline system?
- d) Why does Alternative B entail inspection of 70% of the total pipeline system using the Crawler in-line inspection tool, and not 100% (e.g., are there technical challenges associated with inspecting the remaining 30% of the system, are these segments determined to be low-risk, etc.)?

Response:

- a) Please see Attachments 1 to 3 to this response for excel versions of the Discounted Cash Flow schedules that form the basis for the NPV results for Case A, Case B, and Case C.
- b) Please see Attachment 4 to this response for the key assumptions and the rationale behind the estimated quantities and costs of the work in each given year associated with each alternative.
- c) The costs incurred to date to inspect 4.5 km of the SLP with the Crawler in-line inspection tool are \$2.2M.

- d) The Extensive Inspection and Repair option ("Alternative B") includes 1.9 km of immediate targeted replacements to reduce the current significant risk levels, as outlined in Exhibit C, Tab 1, Schedule 1, Table 2, page 8. Following these initial replacements, a non-continuous 3.3 km of the pipeline will have been installed in 1978 or later and will not require immediate inspections. However, 7.8 km (70% of the pipeline), consisting of older vintage sections, will still require ongoing inspections and repairs. While the projected work in Alternative B only includes future inspections for these 7.8 km, it is likely that other segments from the 1970s and 1980s will also require inspections within 20 years. This simplification may therefore understate the long-term costs of the Extensive Inspection and Repair option.









St. Laurent Replacement Project

DCF Analysis - Case B (42 Years)

Alternative B - Extensive Inspection & Repair

Project Year	(\$000's)	Project Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066			
<b>Operating Cash Flow</b>																																																
Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Expenses:																																																
O & M Expense	(65,274)	-	(3,841)	(149)	-	-	(5,725)	-	-	-	-	-	-	-	(7,041)	-	-	-	-	-	-	(8,660)	-	-	-	-	-	#####	-	-	-	-	-	#####	-	-	-	-	-	-	-	-	-	-	#####	-	-	
Municipal Tax	(1,625)	-	(4)	(14)	(16)	(17)	(17)	(18)	(20)	(20)	(21)	(21)	(22)	(23)	(24)	(26)	(27)	(28)	(29)	(29)	(30)	(32)	(35)	(36)	(37)	(38)	(39)	(40)	(43)	(47)	(48)	(49)	(51)	(52)	(54)	(57)	(62)	(64)	(66)	(68)	(70)	(72)	(76)	(83)				
Income Tax	17,728	-	1,019	43	4	4	1,522	5	5	5	6	6	6	1,872	6	7	7	7	8	8	2,303	8	9	10	10	10	10	2,833	11	12	13	13	13	14	3,485	15	16	17	17	18	19	4,288	20	22				
Net Operating Cash Flow	(49,171)	-	(2,826)	(119)	(12)	(12)	(4,220)	(13)	(14)	(15)	(15)	(15)	(16)	(16)	(5,192)	(18)	(19)	(20)	(20)	(21)	(22)	(6,387)	(24)	(26)	(26)	(27)	(28)	(29)	(7,858)	(31)	(34)	(35)	(36)	(37)	(38)	(9,667)	(42)	(46)	(47)	(48)	(50)	(51)	#####	(56)	(61)			
<b>Capital</b>																																																
Incremental Capital	(598,861)	-	#####	#####	-	-	-	#####	-	-	-	-	-	-	-	-	#####	-	-	-	-	#####	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	-	-	
Change in Working Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total Capital	(598,861)	-	#####	#####	-	-	-	#####	-	-	-	-	-	-	-	-	#####	-	-	-	-	#####	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	-	-
<b>CCA Tax Shield</b>																																																
CCA Tax Shield	114,749	-	1,087	1,359	1,278	1,201	1,129	1,192	1,252	1,177	1,106	1,040	977	919	1,084	1,239	1,165	1,095	1,029	967	909	1,221	1,513	1,422	1,337	1,257	1,182	1,111	1,647	2,150	2,021	1,900	1,786	1,679	1,578	2,468	3,305	3,107	2,920	2,745	2,581	2,426	3,939	48,250				
<b>Net Present Value</b>																																																
PV of Operating Cash Flow	(16,174)	-	(2,749)	(110)	(10)	(10)	(3,282)	(10)	(10)	(10)	(9)	(9)	(9)	(9)	(2,730)	(9)	(9)	(9)	(9)	(8)	(8)	(2,270)	(8)	(8)	(8)	(8)	(8)	(7)	(1,889)	(7)	(7)	(7)	(7)	(7)	(1,571)	(6)	(7)	(6)	(6)	(6)	(6)	(1,307)	(6)	(6)				
PV of Capital	(188,687)	-	#####	#####	-	-	#####	-	-	-	-	-	-	-	-	-	#####	-	-	-	-	#####	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(22,075)	-	
PV of CCA Tax Shield	26,130	-	1,057	1,250	1,111	988	878	877	870	774	688	611	543	483	539	582	518	460	409	364	323	410	481	428	380	338	300	267	374	462	411	365	325	289	256	379	480	427	380	337	300	267	409	4,741				
Total NPV	(178,731)	-	#####	#####	1,101	978	(2,404)	#####	860	764	678	602	534	(2,247)	#####	573	509	452	401	355	(1,947)	#####	473	420	372	330	293	(1,622)	#####	455	404	358	318	282	(1,315)	(19,013)	474	420	373	331	294	(1,040)	(21,671)	4,735				
Project NPV	(178,731)																																															







**Scenario Details**

**Project Alternative: Scenario A - Full Replacement**

The scenario cost analysis covers up to 61 years asset life starting from In-Service date: **2026**

Costs are based on **2024 dollars**

NPV as of: **2024**

Scenario Details
This scenario involves the replacement of the SLP pipeline with: - Approximately 10.0 km of Nominal Pipe Size (NPS) 12 Extra High Pressure (XHP) Steel Coated (ST) natural gas pipeline; - Approximately 2.5 km of NPS 16 XHP ST natural gas pipeline; - Approximately 0.3 km of NPS 6 XHP ST natural gas pipeline; - Approximately 0.9 km of NPS 6 Intermediate Pressure (IP) Polyethylene (PE) natural gas pipeline; and - Approximately 3.9 km of NPS 4 IP PE natural gas pipeline.
- Discount rate is based on 2024 Enbridge WACC
- Cost escalation of 4% based on estimated provided by construction contractor

Cost/Benefit Category	Cost/Benefit Type	Scenario Tasks	Assumptions	Type	Activity	Year	Quantity	Unit Cost (2024 \$)	Cost (2024 \$)	Discount Rate (%)	Cost Escalation (%)	Cost in year spent (\$)
Cost	Upfront	Full Replacement of the SLP	Class 3 estimate prepared by Capital Development	Capital	Replacement Work	2024	1	\$ 2,515,000	\$ (2,515,000)	5.75%	4.00%	\$ (2,515,000)
Cost	Upfront			Capital	Replacement Work	2025	1	\$ 68,699,826	\$ (68,699,826)	5.75%	4.00%	\$ (71,447,819)
Cost	Upfront			Capital	Replacement Work	2026	1	\$ 67,110,044	\$ (67,110,044)	5.75%	4.00%	\$ (72,586,224)
Cost	Upfront			Capital	Replacement Work	2027	1	\$ 12,996,943	\$ (12,996,943)	5.75%	4.00%	\$ (14,619,793)
Cost	Upfront	Interest During Construction	Based on estimates prepared by Capital Development	Capital	IDC	2024	N/A	\$ 483,725	\$ (483,725)	N/A	N/A	\$ (483,725)
Cost	Upfront			Capital	IDC	2025	N/A	\$ 1,814,188	\$ (1,814,188)	N/A	N/A	\$ (1,886,756)
Cost	Upfront			Capital	IDC	2026	N/A	\$ 1,352,295	\$ (1,352,295)	N/A	N/A	\$ (1,462,642)

**Scenario Details**

**Project Alternative: Scenario B - Extensive Inspection and Repair**

The scenario cost analysis covers up to 61 years asset life starting from In-Service date: 2026

Costs are based on 2024 dollars

NPV as of: 2024

Scenario Details
<ul style="list-style-type: none"> <li>Expand Crawler Inspection and Integrity Dig activities to mitigate current corrosion risks on the St. Laurent pipeline (where required)</li> <li>This includes 13 additional ILI runs through 12 additional launch points</li> <li>4.6km needs short-term inspection, 7.8km will be inspected indefinitely.</li> </ul>
<p>Add additional TPD barriers to mitigate TPD risk including:</p> <ul style="list-style-type: none"> <li>- Adding SLP to Vital Mains program providing on-site supervision during third-party excavation activities</li> <li>- Increasing response time notifications to same day</li> <li>- Locating pipeline using mechanical methods</li> <li>- Installation of High Visibility Slabbing, where feasible</li> </ul>
- 1.9KM targeted replacements to address immediate Third-Party damage risks
- Accelerated ROW Patrol required until slabbing and replacements completed
- Discount rate is based on 2024 Enbridge WACC
- General inflation rate of 3% applied broadly for most cost categories. Integrity Dig costs increased at an escalation rate of 6% based on cost trending over the previous 10 years

Cost/Benefit Category	Cost/Benefit Type	Scenario Tasks	Assumptions	Type	Activity	Year	Quantity	Unit Cost (2024 \$)	Cost (2024 \$)	Discount Rate (%)	Cost Escalation (%)	Cost in year spent (\$)
Cost	Upfront	Inspect and mitigate remaining critical features identified from the inspected sections of the pipeline (40% of pipeline)	Integrity has identified the need for 19 additional digs based on the proposed EDIMP dig criteria and probability of sizing of the inspection tool. Based on the 2 year timeframe for Phase 2 digs in the proposed Dig Criteria, these dig would be required to be completed by 2025. Dig costs is determined based the weighted average of the 19 known dig sites and their specified accessibility through Engineering Construction review.	Capital	Integrity Digs + Mitigation	2025	19	\$ 657,895	\$ (12,500,000)	5.75%	6.00%	\$ (13,250,000)
Cost	Upfront	Replacement @ NPS16 LRT crossing with identified corrosion issue	Estimate based on a cut out and replacements of the above grade NPS16 pipe with Corrosion that requires repair. Based on the Engineer Assessment of corrosion on this segment, mitigation must occur by 2027. Estimate provided by Capital Development (CD).	Capital	Replacement	2026	1	\$ 2,741,043	\$ (2,741,043)	5.75%	3.00%	\$ (2,907,973)
Cost	Upfront	Inspect the uninspected portion of the pipeline with crawler inspection tool (only where required - 4.56km)	Integrity has created an inspection plan for remaining segments of SLP that will require inspection. CD has assessed the feasibility and costs of launch points in the plan.	O&M	Launch Site Retrofits	2025	12	\$ 200,000	\$ (2,400,000)	5.75%	3.00%	\$ (2,472,000)
Cost	Upfront			Capital	Launch Site Retrofits	2025	12	\$ 40,000	\$ (480,000)	5.75%	3.00%	\$ (494,400)
Cost	Upfront			O&M	Crawler Tool Inspection	2025	13	\$ 81,500	\$ (1,059,500)	5.75%	3.00%	\$ (1,091,285)
Cost	Upfront	ROW Patrol for pipeline and public awareness campaign as temporary TPD mitigation measures	Assume daily patrol to reduce TPD risks (as per CFER TPD Fault tree model). Cost is based on 2023 actual costs related to daily patrols and additional targeted public awareness campaign.	O&M	Row Patrol + Public Awareness	2025	1	\$ 140,000	\$ (140,000)	5.75%	3.00%	\$ (144,200)
Cost	Upfront	ROW Patrol for pipeline and public awareness campaign as temporary TPD mitigation measures	Assume daily patrol to reduce TPD risks (as per CFER TPD Fault tree model). Cost is based on 2023 actual costs related to daily patrols and additional targeted public awareness campaign.	O&M	Row Patrol + Public Awareness	2026	1	\$ 140,000	\$ (140,000)	5.75%	3.00%	\$ (148,526)
Cost	Upfront	Implement additional TPD barriers to reduce the TPD threat. Install protective slabbing with high visibility marker tape on portions of the pipeline that are deemed feasible.	Based on slabbing feasibility assessment and updated costs estimates provided by CD in Feb 2024	Capital	Install High Visibility Slabs	2025	4.937	\$ 2,329,350	\$ (11,500,000)	5.75%	3.00%	\$ (11,845,000)
Cost	Upfront	Inspect and mitigate critical features identified from the uninspected portion of the pipeline	Assumed that the uninspected portion of the pipelines will require similar post-inspection mitigation as the inspected portion. Inspected and uninspected sections have same proportions, hence, 1:1 multiplier used for uninspected sections.	Capital	Integrity Digs + Mitigation	2026	24	\$ 680,420	\$ (16,330,081)	5.75%	6.00%	\$ (18,348,479)
Cost	Upfront	Additional Replacements required to meet risk criteria	2 segments have been identified for replacement to meet Risk targets. These segments were strategically selected to also remove any uninspected segments of vintage pipe.(1828m)	Capital	Replacement	2025	1	\$ 41,500,000	\$ (41,500,000)	5.75%	3.00%	\$ (42,745,000)
Cost	On-going	Uncertainty where continued inspections can result in stuck ILI tools	Assume 1 in 500 chance of the tool getting stuck and requiring a cut-out to retrieve.	O&M	Stuck Crawler Tool Retrieval	2025	13	\$ 10,000	\$ (130,000)	5.75%	3.00%	\$ (133,900)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2029	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (220,262)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2036	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (270,895)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2043	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (333,166)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2050	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (409,752)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2057	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (503,944)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2064	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (619,787)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2071	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (762,260)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2078	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (937,484)
Cost	On-going			O&M	Stuck Crawler Tool Retrieval	2085	19	\$ 10,000	\$ (190,000)	5.75%	3.00%	\$ (1,152,987)
Cost	On-going			O&M	Crawler Tool Inspection	2029	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (1,795,136)
Cost	On-going			O&M	Crawler Tool Inspection	2036	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (2,207,791)
Cost	On-going			O&M	Crawler Tool Inspection	2043	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (2,715,304)
Cost	On-going	O&M	Crawler Tool Inspection	2050	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (3,339,482)		
Cost	On-going	O&M	Crawler Tool Inspection	2057	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (4,107,141)		
Cost	On-going	O&M	Crawler Tool Inspection	2064	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (5,051,266)		
Cost	On-going	O&M	Crawler Tool Inspection	2071	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (6,212,419)		
Cost	On-going	O&M	Crawler Tool Inspection	2078	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (7,640,492)		
Cost	On-going	O&M	Crawler Tool Inspection	2085	19	\$ 81,500	\$ (1,548,500)	5.75%	3.00%	\$ (9,396,842)		
Cost	On-going	Continued inspection of the St. Laurent pipeline system to maintain a risk/reliability that meets our thresholds	Assume a 7-year re-inspection interval (consistent with company standards) with additional construction costs to excavate and prepare launch locations.	O&M	Launch Site Preparation	2029	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (3,709,677)
Cost	On-going			O&M	Launch Site Preparation	2036	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (4,562,435)
Cost	On-going			O&M	Launch Site Preparation	2043	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (5,611,219)
Cost	On-going			O&M	Launch Site Preparation	2050	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (6,901,092)
Cost	On-going			O&M	Launch Site Preparation	2057	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (8,487,473)
Cost	On-going			O&M	Launch Site Preparation	2064	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (10,438,521)
Cost	On-going			O&M	Launch Site Preparation	2071	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (12,838,064)
Cost	On-going			O&M	Launch Site Preparation	2078	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (15,789,200)
Cost	On-going			O&M	Launch Site Preparation	2085	16	\$ 200,000	\$ (3,200,000)	5.75%	3.00%	\$ (19,418,724)
Cost	On-going					Capital	Integrity Digs + Mitigation	2030	17	\$ 683,420	\$ (11,618,141)	5.75%

Cost	On-going	Inspect and mitigate identified critical features identified from the IU tool inspections	Digs in second inspection campaign estimated based on growth of IU data. Digs in 3rd and later IU campaign estimated based on TIMP IU campaign trending.	Capital	Integrity Digs + Mitigation	2037	19	\$	683,420	\$	(12,984,981)	5.75%	6.00%	\$	(27,696,033)
Cost	On-going			Capital	Integrity Digs + Mitigation	2044	21	\$	683,420	\$	(14,351,821)	5.75%	6.00%	\$	(46,028,234)
Cost	On-going			Capital	Integrity Digs + Mitigation	2051	23	\$	683,420	\$	(15,718,661)	5.75%	6.00%	\$	(75,800,821)
Cost	On-going			Capital	Integrity Digs + Mitigation	2058	25	\$	683,420	\$	(17,085,501)	5.75%	6.00%	\$	(123,887,401)
Cost	On-going			Capital	Integrity Digs + Mitigation	2065	28	\$	683,420	\$	(19,135,761)	5.75%	6.00%	\$	(208,634,545)
Cost	On-going			Capital	Integrity Digs + Mitigation	2072	31	\$	683,421	\$	(21,186,052)	5.75%	6.00%	\$	(347,321,425)
Cost	On-going			Capital	Integrity Digs + Mitigation	2079	34	\$	683,422	\$	(23,236,350)	5.75%	6.00%	\$	(572,783,489)
Cost	On-going			Capital	Integrity Digs + Mitigation	2086	37	\$	683,422	\$	(25,286,616)	5.75%	6.00%	\$	(937,247,637)
Cost	Upfront	Interest During Construction	Assume 8 months of construction per year (construction period) and all work will be completed in the given year. 5.48% interest rate on debt.	Capital	IDC	2025	N/A	\$	1,205,235	\$	(1,205,235)	N/A	N/A	\$	(1,248,242)
Cost	Upfront			Capital	IDC	2026	N/A	\$	348,366	\$	(348,366)	N/A	N/A	\$	(388,285)
Cost	On-going			Capital	IDC	2030	N/A	\$	212,225	\$	(212,225)	N/A	N/A	\$	(301,045)
Cost	On-going			Capital	IDC	2037	N/A	\$	237,192	\$	(237,192)	N/A	N/A	\$	(505,914)
Cost	On-going			Capital	IDC	2044	N/A	\$	262,160	\$	(262,160)	N/A	N/A	\$	(840,782)
Cost	On-going			Capital	IDC	2051	N/A	\$	287,128	\$	(287,128)	N/A	N/A	\$	(1,384,628)
Cost	On-going			Capital	IDC	2058	N/A	\$	312,095	\$	(312,095)	N/A	N/A	\$	(2,263,010)
Cost	On-going			Capital	IDC	2065	N/A	\$	349,547	\$	(349,547)	N/A	N/A	\$	(3,811,058)
Cost	On-going			Capital	IDC	2072	N/A	\$	386,999	\$	(386,999)	N/A	N/A	\$	(6,344,405)
Cost	On-going			Capital	IDC	2079	N/A	\$	424,451	\$	(424,451)	N/A	N/A	\$	(10,462,845)
Cost	On-going			Capital	IDC	2086	N/A	\$	461,902	\$	(461,902)	N/A	N/A	\$	(17,120,390)

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1, page 20

Preamble:

Enbridge states that Alternative B (Extensive Inspection and Repair), by retaining original sections of the pipeline, could significantly constrain future low-carbon initiatives, like hydrogen blending, in comparison with Alternative A (full replacement).

Question(s):

What level of hydrogen blending does Enbridge understand to be technically feasible under Alternative A (full replacement)?

Response:

Enbridge Gas has proposed a Hydrogen Blending Grid Study (Grid Study)<sup>1</sup> to help identify and prioritize the sections of the gas grid most suitable for hydrogen blending and to identify associated costs and benefits. Until the completion of the Grid Study, the extent to which hydrogen may be able to serve this community is not yet known.

Enbridge Gas began the Grid Study in 2023 with the objective of determining the technical feasibility of blending up to 100% hydrogen into the existing natural gas infrastructure in Ontario.

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<sup>1</sup> EB-2022-0200, Exhibit 4, Tab 2, Schedule 6, pages 16 to 18.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1, pages 21-25; [EB-2022-0200 – 2024 Rates Application, Response to City of Ottawa Letter of Comment \(Letter of July 27, 2023\)](#)

Preamble:

Enbridge describes its consideration of non-facility alternatives to the Project, including Integrated Resource Planning alternatives (IRPAs).

Previously, in its July 27, 2023, response to a City of Ottawa letter that noted concerns with Enbridge's consideration of IRPAs, Enbridge indicated that "the Better Homes Loan Program was and will be considered as an IRPA in relation to the St. Laurent project, and it may also be considered as an IRPA in conjunction with future infrastructure needs being considered in the City of Ottawa".

Question(s):

Please describe the intent of Enbridge's statement in this letter (e.g., was Enbridge considering supplemental funding for incentives or promotion of these programs?). How was the Better Homes Loan Program (or other City of Ottawa programs) considered as part of Enbridge's consideration of IRPAs in relation to the Project?

Response:

The intent of the statement was that if an Enhanced Targeted Energy Efficiency (ETEE) IRPA was determined to be technically feasible through the IRP evaluation process for the St. Laurent project, or a future infrastructure need, Enbridge Gas would consult with the City of Ottawa on potential coordination opportunities with City of Ottawa program(s) to drive cost efficiencies, synergies in channels for public outreach and a more



seamless customer experience. However, for the Project the assessment of non-facility alternatives determined that there were no technically feasible alternatives as noted in Exhibit C, Tab 1, Schedule 1, paragraphs 41 to 53.

The Better Homes Loan program was not factored into the technical feasibility assessment as the Posterity analysis was completed using Scenario B from the Achievable Potential Study (APS), which assumes unconstrained potential where incentives are set at 100% of incremental cost of each measure. Therefore, the results provided would illustrate the maximum achievable potential assuming no program cost or incentive constraints.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

2

Question(s):

Enbridge suggests that Hydro Ottawa is not prepared for fuel switching for space heat to replace gas demand. Has Enbridge evaluated the costs and benefits of upgrading the electricity systems relative to the costs and benefits of the pipeline project? If no, why not. If yes, please provide a copy.

Response:

Enbridge Gas has not suggested that Hydro Ottawa is not prepared for fuel switching for space heat to replace gas demand. Enbridge Gas did not evaluate the costs and benefits of upgrading the electricity system relative to the costs and benefits of the pipeline project, as an IRP electrification alternative is not an approved alternative within the IRP Framework Decision. In addition, Enbridge Gas does not have the necessary electric system insights or data, such as the distribution costs associated with upgrading the electricity system, required to perform such an analysis.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

2

Question(s):

What share of existing natural gas demand in Ottawa does Enbridge believe can be enabled by renewable natural gas? Where does Enbridge intend to source this renewable natural gas? Please provide any supporting documentation Enbridge has to support the volumes and sources that could be leveraged.

Response:

Enbridge Gas does not have an annual demand forecast for the City of Ottawa. The 2024 annual demand forecast for the Enbridge EDA delivery area, which the City of Ottawa is a part of, is approximately 73 PJ.

Based on current estimates of renewable natural gas (RNG) capacity a portion of the Enbridge EDA delivery area's natural gas demand could be served with RNG. The Canadian Energy Regulator (CER) estimates that RNG capacity in Canada will be approximately 17.1 PJ by 2025.<sup>1</sup> The Canadian Gas Association (CGA) estimates RNG production capacity in Canada at approximately 21 PJ by 2025.<sup>2</sup> These estimates are consistent with Enbridge Gas's current estimate of approximately 19 PJ of RNG by 2025. The RNG supply estimate is based on information found at EB-2024-0111 Phase 2, Exhibit 4, Tab 2, Schedule 7, Attachment 3, and sources such as the CGA and news releases. Enbridge Gas anticipates that supply will increase to approximately 30 PJ by 2029. The estimates of RNG capacity include planned and under-construction RNG projects, and Enbridge Gas notes that production estimates may change as projects are placed in service. Enbridge Gas has not estimated RNG supply from the U.S. market;

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<sup>1</sup> Canadian Energy Regulator. (2023 Apr 19). CER – Market Snapshot: Two Decades of Growth in Renewable Natural Gas in Canada. <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2023/market-snapshot-two-decades-growth-renewable-natural-gas-canada.html>.

<sup>2</sup> Canadian Gas Association. (2024 Feb 9). Canadian Gas Association Pre-Budget Submission. <https://www.cga.ca/wp-content/uploads/2024/02/Canadian-Gas-Association-PreBudget-RNG-ITC.pdf>.

however, the Company is aware of opportunities in the U.S. market that align with the procurement approach. Enbridge Gas intends to procure RNG supply consistent with the procurement of conventional natural gas, aligning with the existing gas supply guiding principles and sourcing supply in Ontario, Canada, and potentially across North America.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

2

Question(s):

Please provide the level of DSM and IRP results in Ottawa by year out to 2050 included in the Application's assumptions.

Response:

Impacts from Demand Side Management (DSM) are indirectly included in the design hour demand forecast that was used in this Application.

Enbridge Gas's design hour demand forecast incorporates an Energy Transition (ET) Adjustment Factor. The ET Adjustment Factor was derived as part of Enbridge Gas's ET Scenario Analysis (ETSA project)<sup>1</sup> and considers impacts from not only DSM, but carbon price, natural gas commodity price, and Enbridge Gas's customer forecasts. Consequently, Enbridge Gas cannot currently isolate the specific DSM impacts to the design hour demand forecast for Ottawa.

As noted in Exhibit C, Tab 1, Schedule 1, paragraphs 41 to 53, the assessment of non-facility alternatives determined there were no technically feasible IRP alternatives; therefore, IRP impacts are not included in the Application's assumptions.

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<sup>1</sup> EB-2022-0200, Exhibit 1, Tab 10, Schedule 5, Attachment 1



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

2

Reference:

A/2/1, Page 3, Table 1

Question(s):

Please explain why the risk to property damage is cited for maintaining the existing pipeline but not for constructing the proposed pipeline. Is Enbridge able to correct the oversight in Table 1?

Response:

The risk of property damage is included in the risk assessments of both alternatives, and is measured as “Risk Reduction from Status Quo.” Property damage in this context refers to any property damage resulting from a failure of containment on the pipeline. Please see Exhibit B, Tab 1, Schedule 1, Attachment 2, pages 45, 48-49 for details on actual incidents within the PHMSA incident record and their associated property damage costs.

The financial risk reduction from status-quo metric of the “Public Safety and Residual Risk” dimension in Exhibit A, Tab 2, Schedule 2, Table 1, which encompasses the financial impacts of failures including property damage, is 5,000x lower than operating the existing pipeline without taking any mitigation action. This is a significant improvement on what would be achieved by the “Extensive Inspection and Repair” option which demonstrates a financial risk reduction of 300x.

In the “Other Considerations” row, the higher potential for property damage is cited for the Extensive Inspection and Repair option because the residual risk is still significant. The residual property damage risk for the Full Replacement alternative is insignificant, and therefore not cited in Table 1.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit A, Tab 2, Schedule 2

Question(s):

On page 3 Enbridge states: “Extensive Inspection and Repair alternative may reduce the risks to the pipeline at a particular point in time; however, in the long term this option carries significant uncertainties, as new conditions and circumstances could arise that make it inadequate at mitigating those risks.” Please define “long term” as used in this sentence, including a reference to a year or range of years.

Response:

While the Extensive Inspection and Repair alternative offers some risk reduction from the status quo, to be clear: the risk reduction from this alternative is orders of magnitude inferior to Full Replacement on key risk metrics (as illustrated by the Risk Reduction Comparison in Exhibit A, Tab 2, Schedule 2, Table 1), from year 1 of implementation. Given that the risk reduction from this alternative is barely tolerable and transitory at the outset, the uncertainties associated with Extensive Inspection and Repair make it an inadequate alternative to Full Replacement measured over any time period.

This transitory nature of the risk reduction from the Extensive Inspection and Repair alternative makes it extremely difficult to predict when new conditions could arise that would require additional mitigations; they could arise at any time, and the risk of them arising increases over time. In this context, “long term” refers to a timeline extending beyond 2026, which is when the immediate known risks would be adequately mitigated. After this time, conditions arising from the uncertainty of the Extensive Inspection and Repair alternative could impose substantial challenges in maintaining this approach, impairing the Company’s ability to measure and mitigate risk.

Furthermore, there is considerable uncertainty about whether threats, such as Selective Seam Weld Corrosion, manufacturing defects, latent damages, or fabrication defects, could accelerate and pose new risks, particularly given the industry's limited experience with distribution pipelines operating for such lengths of time beyond their intended physical life.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit A, Tab 2, Schedule 2

Question(s):

- a) If SLP is approved and ICM recovery is not approved, would Enbridge proceed with the project regardless?
- b) If yes, how would it adjust its capital spending accordingly.

Response:

- a) Enbridge Gas will proceed with construction of the Project if the OEB grants the Company LTC.

Enbridge Gas is not seeking incremental capital funding as part of this application. Enbridge Gas expects that, upon rebasing, the capital costs associated with the Project will be included within rate base.

Further, as noted in Exhibit A, Tab 2, Schedule 2, page 8, in Rebasing Phase 2<sup>1</sup>, Enbridge Gas has proposed to advance the request for Incremental Capital Module (ICM) recovery to the LTC application for a project to increase certainty of cost recovery by approving ICM at the same time the LTC is granted and before investments are made. Although Enbridge Gas is making this proposal in the Rebasing Phase 2 proceeding, it is not proposing to advance ICM recovery for the St. Laurent Project at this time. If the Project is approved and it qualifies for ICM recovery, Enbridge Gas will bring forward a request for approval in the rate year in which the project goes into service (2025 or 2026).

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<sup>1</sup> EB-2024-0111.

b) Enbridge Gas will follow its Asset Management process for any capital spending decisions.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 1, Schedule 1

Question(s):

- a) Please provide full details on all robotic in-line inspection (ILI) used.
- b) What robotic ILI options were not used?

Response:

- a) Please see Exhibit B, Tab 1, Schedule 1, pages 6-7, Table 1 for a description of the robotic inline inspection technology and the types of features it is able to detect. Please also see Exhibit B, Tab 1, Schedule 1, Attachment 2, Appendix C for the ILI vendor tool specifications.
- b) The selected robotic ILI technology (axially Magnetic Flux Leakage (MFL) and Laser Dent Sensor) is capable of detecting the primary threats (i.e. general corrosion and dents) on this pipeline. Circumferential MFL, capable of assessing pipe seam flaws, may also be available on some robotic crawler tools. This technology requires a separate tool to be run, and was not used for these inspections because of the limited benefit compared with the additional cost of doubling the number of ILI runs.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 1, Schedule 1

Question(s):

Please list the adjoining pipelines in a table indicating: (i) the kms, (ii) the vintage, (iii) the likelihood of whether Enbridge will propose replacing them within the next decade, and (iv) a comparison between the testing on those adjoining pipelines versus the ones that Enbridge plans to replace.

Response:

With the exception of two river crossings, the adjoining pipelines are Intermediate Pressure (IP) subsystems fed by multiple regulation stations. It would be impracticable to physically inspect these plastic or steel IP subsystems with the same technique such as in-line inspection. These intermediate pipelines are smaller in diameter, partially comprised of plastic piping, and often span hundreds of kilometers; instead, Enbridge Gas relies on leak data and failure factors (such as cathodic protection measurements and soil types) to inform the Company on the condition and reliability of these pipeline systems. Enbridge Gas uses these data to develop reliability models for leak projections and risk assessments to help determine scope and prioritize replacement of these subsystems, as required.

Please see Attachment 1 to this response for the table requested, including the two river crossings, smaller diameter XHP gas mains, and the subsystems mentioned above.

Pipeline Description	Approximate Length in Kilometers	Vintage	Likelihood of Replacement in the next 10 years	Inspection Notes
NPS 16 SC HP Ottawa River Crossing downstream of Rockcliffe Control Station	1	1959	Not Likely	This river crossing was in-line inspected by way of Remote Crawler Tool in 2018 and its condition was favourable.
NPS 4 SC XHP on Hillsdale Rd	0.4	1994	Not Likely	Newer vintage pipeline with corrosion protection, due to size and non Vital status this gas main would not be inline inspected.
NPS 1¼ SC XHP on Finter St	0.1	1982	Not Likely	Due to size and non vital status, this gas main would not be inline inspected. It would fall under leak data and failure modelling to project anticipated replacement needs.
NPS 12 SC XHP Ottawa River Crossing to Hurdman Station on Queensway	0.6	2012	Not Likely	Newer vintage pipeline with corrosion protection. There are no plans to in-line inspect this crossing in the immediate future.
District Station 6B882 - Hillsdale Road	5+	1994	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 6B979A - Sandridge & Birch	5+	1977	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
Header Station 6B413A - Glasgow & St Laurent	1	1981	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 61976A - Claremont & St Laurent	2	2005	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 62106A - Karen Way & St Laurent	1	1977	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 6B719B - Dunbarton & St Laurent	1	1989	Not Likely	Plastic Low Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 6B768A - Montreal & St Laurent	5+	1990	Not Likely	Plastic/Steel Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
Header Station 6B742A - Coventry & St Laurent	0.2	1989	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 3843404 - Belfast & St Laurent	5+	2014	Not Likely	Plastic/Steel Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
Header Station 6B591A - Industrial Avenue	0.2	1985	Not Likely	Plastic Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 62637A - Coventry & Belfast	5+	2011	Not Likely	Plastic/Steel Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.
District Station 6B467A - Cummings & Ogilvie	5+	1983	Not Likely	Plastic/Steel Intermediate Pressure Subsystem. Enbridge would rely on reliability models, leak projections and risk assessments to monitor these systems.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1

Question(s):

(a) Please provide a table listing the in one column excerpts from each part of the rebasing phase 1 decision that is relevant to this application and in the second column a description of how Enbridge has followed that guidance. Please indicate any OEB guidance that Enbridge has been unable to follow.

(b) Please provide a table listing the in one column excerpts from each part of the IRP decision that is relevant to this application and in the second column a description of how Enbridge has followed that guidance. Please indicate any OEB guidance that Enbridge has been unable to follow.

(c) Page 26 provides an excerpt from the Electrification and Energy Transition Panel Report. Please provide a copy of the report as an attachment so it can be appropriately referred to in evidence.

(d) Please provide a copy of all correspondence from Enbridge employees to members of the panel.

Response:

a) Please see Table 1 for a listing of Rebasing Phase 1 Key Determinations<sup>1</sup> that are relevant to the St. Laurent Pipeline Replacement project application and how Enbridge Gas has followed the OEB direction.

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<sup>1</sup> EB-2022-0200 Decision and Order, pages 1-4

Table 1

Item No.	EB-2022-0200 Decision and Order Key Determination Number	EB-2022-0200 Decision and Order Key Determinations	EGI Response
1	1	The energy transition poses a risk that assets used to serve existing and new Enbridge Gas customers will become stranded because of the energy transition. Enbridge Gas has not provided an adequate assessment of this risk to demonstrate that its capital spending plan is prudent. The stranded asset risk affects all aspects of Enbridge Gas's system and its proposals for capital spending on system expansion and system renewal.	As described in Exhibit C, Tab 1, Schedule 1, Enbridge Gas has assessed the stranded asset risk of the proposed Full Replacement and the Extensive Inspection and Repair alternative using a probabilistic modeling approach, and concluded that the Full Replacement proposal results in a lower undepreciated capital balance than the Extensive Inspection and Repair option at multiple end of life periods, demonstrating that the proposed Project offers the greatest stranded asset risk reduction given all plausible energy transition scenarios.
2	2	The OEB is reducing the overall proposed capital budget for 2024 by \$250 million. Enbridge Gas is expected to utilize its project prioritization process to accommodate this envelope reduction. The current Asset Management Plan is not accepted as a basis to support the proposed capital investments.	As described in Exhibit A, Tab 2, Schedule 2, pages 7-8, Enbridge Gas is not proposing any unique rate recovery treatment for the capital costs of the Project at this time. If the SLP replacement is approved and it qualifies for ICM recovery, Enbridge Gas will bring forward a request for approval in the rate year in which the project goes into service. Capital costs will be managed within the reduced capital envelope until that time.
3	4	For the proposed system renewal capital spending plan, the OEB has determined that Enbridge Gas needs to put more emphasis on monitoring, repairing and life extension of its system so that replacement projects are only implemented where absolutely necessary in order to address the stranded asset risk in that context.	After a significant investment in a comprehensive assessment of the condition of the SLP (as described in Exhibit B, Tab 1, Schedule 1) Enbridge Gas conducted a thorough examination of all reasonable alternatives to the full replacement of the SLP, including maintenance, repair and life extension alternatives to extend the life of existing assets. Details of the Project alternatives are



Item No.	EB-2022-0200 Decision and Order Key Determination Number	EB-2022-0200 Decision and Order Key Determinations	EGI Response
			described extensively in Exhibit C, Tab 1, Schedule 1, and conclude that full replacement is the best solution to mitigate the significant risks associated with the current condition of the pipeline, and is the option that offers the greatest stranded asset risk reduction given all plausible energy transition scenarios.
4	5	<p>To address the issue of stranded asset risk further, the OEB requires Enbridge Gas to carry out a risk assessment and to consider a range of risk mitigation measures, including:</p> <ul style="list-style-type: none"> <li>a. How Enbridge Gas would prune its existing system to avoid the replacement of assets</li> <li>b. What role Enbridge Gas's depreciation policy should play in reducing the stranded asset risk</li> <li>c. How Enbridge Gas will identify maintenance, repair and life extension alternatives to extend the life of existing assets instead of long-lived replacements that increase the stranded asset risk</li> </ul>	<ul style="list-style-type: none"> <li>a. As noted in Rebasing Phase 2 <a href="#">(EB-2024-0111)</a> Exhibit 1, Tab 17, Schedule 1 page 23 – 24, Enbridge Gas will need to develop processes to identify and evaluate segments of the Company's system that are candidates for system pruning, and the SLP application predates this work. However, due to the density and diversity of customers on the SLP system it is not likely a suitable candidate for system pruning. Based on its preliminary review Enbridge Gas understands utilities are currently reporting or anticipating success with decommissioning pipe segments that serve only a small number of customers.</li> <li>b. Enbridge Gas will file a depreciation study as part of the next rebasing application, which will include the proposed Project assets, pending approval of this LTC application.</li> <li>c. After a significant investment in a comprehensive assessment of the condition of the SLP (as described in Exhibit B, Tab 1, Schedule 1) Enbridge Gas conducted a thorough</li> </ul>

Item No.	EB-2022-0200 Decision and Order Key Determination Number	EB-2022-0200 Decision and Order Key Determinations	EGI Response
			examination of all reasonable alternatives to the full replacement of the SLP (as described extensively in Exhibit C, Tab 1, Schedule 1), concluding that full replacement is the best solution to mitigate the significant risks associated with the current condition of the pipeline, and is the option that offers the greatest stranded asset risk reduction given all plausible energy transition scenarios.
5	9	The OEB approves the proposed harmonized depreciation methodology, except for the capitalization of indirect overheads.	Please refer to responses in items #10 & 11.
6	10	The OEB approves the Average Life Group depreciation procedure, the Traditional Method for net salvage calculations and updated asset life parameters to calculate depreciation expense.	The NPV calculations for the project as shown in Exhibit C-1-1 are based on the depreciation rates as approved in the Phase 1 decision.
7	11	The OEB approves the proposed overhead harmonization methodology, except for the capitalization of indirect overheads. The OEB does not approve the proposal to capitalize \$292 million in 2024. Recognizing that a requirement to expense the entire \$292 million in 2024 would have a large impact on 2024 rates, the OEB directs Enbridge Gas to expense \$50 million of the indirect overhead amount in 2024, and capitalize the remainder. In subsequent years during the IRM term, Enbridge Gas shall reduce the capitalized amount by expensing a further \$50 million in each year.	The indirect overheads applied to the Project are consistent with the OEB's EB-2022-0200 Decision, where the OEB approved the harmonized overhead methodology to allocate overheads based on forecasted capital additions. The overhead rate applied to the Project is reflective of the OEB's decision to reduce the capitalized overheads by \$50M starting in 2024 and throughout the IRM term.

b) Please see Table 2 for a listing of the IRP Framework key elements<sup>2</sup> that are relevant to the St. Laurent Pipeline Replacement project application and how Enbridge Gas has followed the OEB direction.

Table 2

Item No.	EB-2020-0091 Decision and Order Key elements	EGI Response
1	<p><b>IRP Assessment Process: Identification of Constraints</b>            Enbridge Gas will identify potential system needs/constraints up to ten years in the future in its Asset Management Plan, allowing time for a detailed examination of the potential for IRP Alternatives to meet these needs. The Asset Management Plan will provide the status of consideration of IRP Alternatives in regards to meeting system needs, and an updated version will be filed on an annual basis. The first version reflecting this updated process will be filed in Fall 2022.</p>	<p>The St Laurent Pipeline (SLP) Replacement project was included in the Asset Management Plan.</p>
2	<p><b>IRP Assessment Process: Binary Screening Criteria</b>            The IRP Framework includes screening criteria to select which system needs require further IRP consideration, in order to focus on those situations where there is a reasonable expectation that an IRP Alternative could efficiently and economically meet the need. This will include facility expansion/reinforcement projects where growth is the main driver.</p>	<p>Binary screening was completed, and the project passed binary screening.</p>
3	<p><b>IRP Assessment Process: Two-stage Evaluation</b>            For system needs progressing past the binary screening, Enbridge Gas will undertake a technical evaluation to first determine if the IRP Alternatives considered can meet the identified need. If so, then Enbridge Gas will compare one or more IRP Plans to the baseline Facility Alternative, using an economic test, to determine the optimum solution to meet the system need.</p>	<p>The assessment of non-facility alternatives was completed and described in Exhibit C, Tab 1, Schedule 1, and it was determined that there were no technically feasible non-facility alternatives.</p>
4	<p><b>Stakeholder Outreach and Engagement Process</b>            Enbridge Gas will use a three-component stakeholder engagement process for IRP. This will involve: (1) gathering stakeholder insight from existing channels; (2) holding regional stakeholder days on an annual basis focused on system needs identified in the Asset Management Plan and options to address these needs through IRP; and (3) project-specific consultation for</p>	<p>Stakeholder engagement was completed, and described in Exhibit B, Tab 2, Schedule 1.</p> <ol style="list-style-type: none"> <li>1) Existing stakeholdering channels are used on an on-going basis to gather insights from key stakeholders.</li> <li>2) The regional stakeholdering webinar that was conducted</li> </ol>

<sup>2</sup> EB-2020-0091 Decision and Order

Item No.	EB-2020-0091 Decision and Order Key elements	EGI Response
	specific proposed IRP Alternatives or IRP Plans in a specific geographic region.	for the Eastern Region on Dec 11, 2023 highlighted key system needs identified in the AMP, including SLP, and discussed the potential options that could be used to address these needs through IRP..  3) Project specific consultation for SLP was conducted, including engagement with the City of Ottawa, local LDC, and IESO throughout the development of the project.
5	<b>Indigenous Engagement and Consultation:</b> When Enbridge Gas requests approval for an IRP Plan or a Leave to Construct, it will be necessary for Enbridge Gas to follow the requirements in the Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario regarding Indigenous consultation, if applicable.	Indigenous engagement and consultation were completed and described in Exhibit H, Tab 1, Schedule 1.

c) The “Ontario’s Clean Energy Opportunity: Report of the Electrification and Energy Transition Panel” document is publicly available at the following website:

<https://www.ontario.ca/document/ontarios-clean-energy-opportunity-report-electrification-and-energy-transition-panel>

d) Enbridge Gas does not see how submissions provided by Enbridge Gas or other stakeholders to the Electrification and Energy Transition Panel (EETP) would be relevant to the issues to be determined by the OEB in this application. The findings of the EETP and basis for them (or considerations that panel took into account) are not at issue here. As such, Enbridge Gas declines to provide the requested document.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1

Question(s):

- a) Please provide a table with a complete breakdown of the costs for the “extensive inspection and repair” option by cost category and year.
- b) Please provide a detailed description of how Enbridge calculated the cost of the “extensive inspection and repair” option.
- c) For the “extensive inspection and repair” option, please indicate how many repairs are forecast to be required each year and the cost of each. Please provide an annual breakdown.

Response:

a - c)

Please see response at Exhibit I.2-STAFF-17 part b).



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1

Question(s):

- a) Please provide a costing of “Alternative 6: Partial Replacement” shown in page 5.
- b) Please provide a table with a complete breakdown of the costs for this option by cost category and year.
- c) Please provide a detailed description of how Enbridge calculated the cost of this option.
- d) For this option, please indicate how many repairs are forecast to be required each year and the cost of each. Please provide an annual breakdown.

Response:

a - d)

In May 2023, as part of Enbridge Gas’s preliminary assessment of alternatives to mitigate the risks on the St. Laurent Pipeline, a Class 5 cost estimate was produced for 4 replacement options. Please see Attachment 1 for the high-level cost estimates and assumptions associated with each. All Class 5 cost estimates were completed following Enbridge’s Cost Estimating and Management Standard. As these were preliminary cost estimates done at an early stage of alternative development, the scope and cost details of these options do not match any of those filed in the current Application.

Option 4 in Attachment 1 corresponds to Alternative 6 (Partial Replacement), and Option 3 corresponds to Alternative 5 (Full Replacement) in the current Application. The cost estimates show that Partial Replacement saves only 4.8% from the cost of Full Replacement.

Shortly after these estimates were produced, Enbridge Gas eliminated Alternative 6 (Partial Replacement) from consideration for reasons described in Exhibit C, Tab 1, Schedule 1, pages 6-7, Paragraph 7, specifically that the potential cost savings of 4.8% for this Partial Replacement scenario were too small to justify a 15% reduction in pipeline replacement. Due to the requirement of this alternative to incur ongoing additional costs to mitigate residual risks (e.g., inline inspection of the remaining 15% of the pipeline) for the remaining life of the asset, preliminary financial assessments indicated that Alternative 5 would consistently provide better value than Alternative 6, so Alternative 6 was removed from consideration.

Detailed repair forecasts with associated costs are not available for the Partial Replacement alternative, as this alternative was not advanced to a stage where these activities had been completed.

	Option 1	Option 2	Option 3	Option 4
Description	All ST All PE	No ST on Sandridge All PE	All ST PE to Brittany, No PE on Coventry Steel Services on Sandridge and Coventry	No ST on Sandridge PE to Brittany, No PE on Coventry Steel Services on Sandridge and Coventry
2024	\$ 123,200,278	\$ 113,225,335	\$ 109,063,934	\$ 100,543,310
2025	\$ 56,150,331	\$ 56,150,331	\$ 58,259,035	\$ 58,259,035
2026	\$ 9,586,924	\$ 9,586,924	\$ 9,586,924	\$ 9,586,924
<b>Total</b>	<b>\$ 188,937,533</b>	<b>\$ 178,962,589</b>	<b>\$ 176,909,894</b>	<b>\$ 168,389,269</b>

**ASSUMPTIONS:**

**Date: May 4, 2023**

Option 1 – No change to project scope filed to OEB as part of the original LTC application. All steel and PE components to be installed (refer to map below). Note: this scope is slightly different than what was highlighted in the original email, as we did not include the southern-most portion of St. Laurent in our replacement.

Option 2 – No steel will be installed on Sandridge, but the PE scope is consistent with what was filed to the OEB as part of the original LTC application (refer to map below).

Option 3 – The steel scope is consistent with what was filed to the OEB as part of the original LTC application, but the PE components were removed north of Brittany, and removed on Coventry/Ogilvie between Belfast to Cummings (refer to map below). This option maximized the number of services that could be relayed to the new steel main, but would need to be confirmed as a feasible solution by DOE. The remaining PE is required as the proposed steel pipeline has a different running line than the existing steel main for portions of the project.

Option 4 - No steel will be installed on Sandridge, and the PE components were removed north of Brittany, and removed on Coventry/Ogilvie between Belfast to Cummings (refer to map below). This option maximized the number of services that could be relayed to the new steel main, but would need to be confirmed as a feasible solution by DOE. The remaining PE is required as the proposed steel pipeline has a different running line than the existing steel main for portions of the project.

Cost estimates are based on the pipeline routes previously designed.

The NPS 12 steel replacement on St Laurent from Belfast to Industrial is NOT included in the scope.

Cost estimates were informed by Aecon’s most recently submitted quotes (2021)

15% contingency has been applied and is included within the cost estimates

Costs have been escalated at the following rates: 7% in 2022; 5% in 2023; 5% in 2024; 2% in 2025; 2% in 2026.

Cost estimates do not include abandonment/dismantlement costs.

Cost estimates do not include indirect overheads or interest during construction (IDC)

It is assumed that construction sequencing would match Enbridge’s most recent LTC filing. Phase 3 would be constructed in 2024 and includes all North-South steel components and PE installations along Coventry, along St. Laurent from Donald to HWY 417, and along St. Laurent from Montreal to Sandridge. Phase 4 would be constructed in 2025 and includes all East-West steel components and PE installations in Lower Sections 1 & 2. Routes would be modified as applicable by Option according to descriptions above and maps below.

DOE must complete an analysis on the IP system to see if proposed PE scope reductions along Sandridge/St. Laurent from Brittany can be eliminated as currently proposed in Options 3 & 4.

DOE must complete an analysis on the IP system to see if proposed PE scope reductions on Coventry/Ogilvie between Belfast to Cummings can be eliminated as currently proposed in Options 3 & 4.

Contractor cost assumes that yard previously secured for the project will be available again. The yard was ideally situated close to the project site, maximizing productivity for crews.

Cost savings from removing the steel components from Sandridge were informed by previous location-specific quotes from contractor, and escalated to 2024 costs.

Costs for reduced PE scope were based on a blended rate of PE installation that includes NPS 2, NPS 4 and NPS 6 pipe, but the pipe installation is NPS 6. Therefore the cost for Options 3 & 4 are likely

UNDERSTATED.

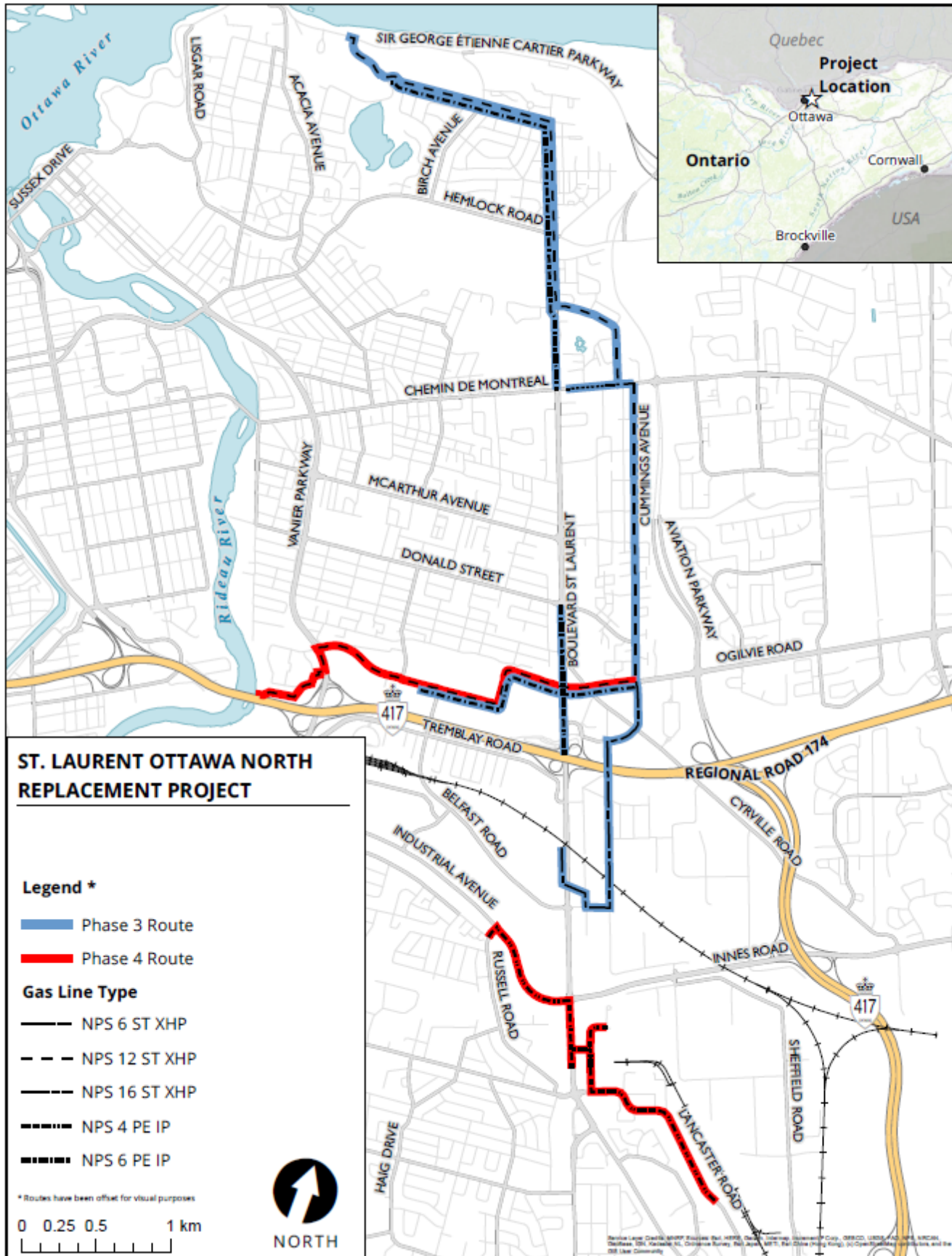
Costs for commercial services are based on previous project estimates and escalated to the year(s) of installation.

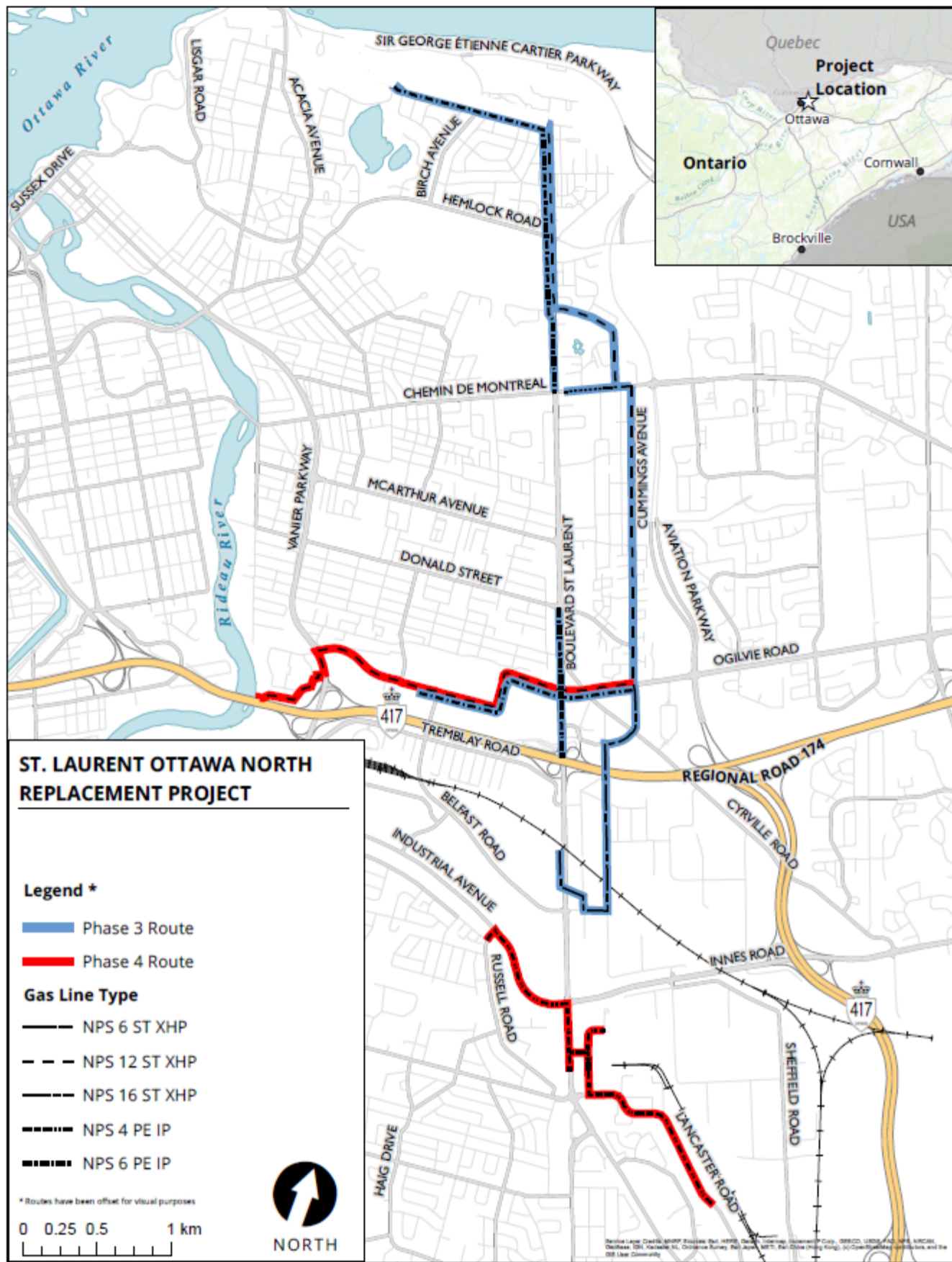
For Options 3 & 4, it was assumed services could be reconnected to the proposed steel main only when the proposed steel main and existing steel main shared a similar running line. Assumptions for services include:

- No analysis was completed to determine if service connections would be long or short.
- NDE would be required on steel pipeline at connection point.
- Welder inspection would be necessary.
- Testing requirements would follow XHP standards instead of IP standards (7 minute dragnet).
- Additional reinstatement costs would be required for hard surface restoration.
- More complex traffic plans would be required to connect to steel pipeline, as the original proposed PE pipelines were installed in the boulevard, whereas the steel pipeline is primarily installed within the road.
- Increased costs for materials (steel vs. PE) would be required.
- Corrosion protection would be necessary.
- Overall, it was assumed a 40% premium would be required to switch from a PE service to a steel service.

It was assumed that 50% of incurred project costs are sunk costs, and 50% would be able to be reused for Options 1-4. Total incurred project costs to date are \$7,033,303.

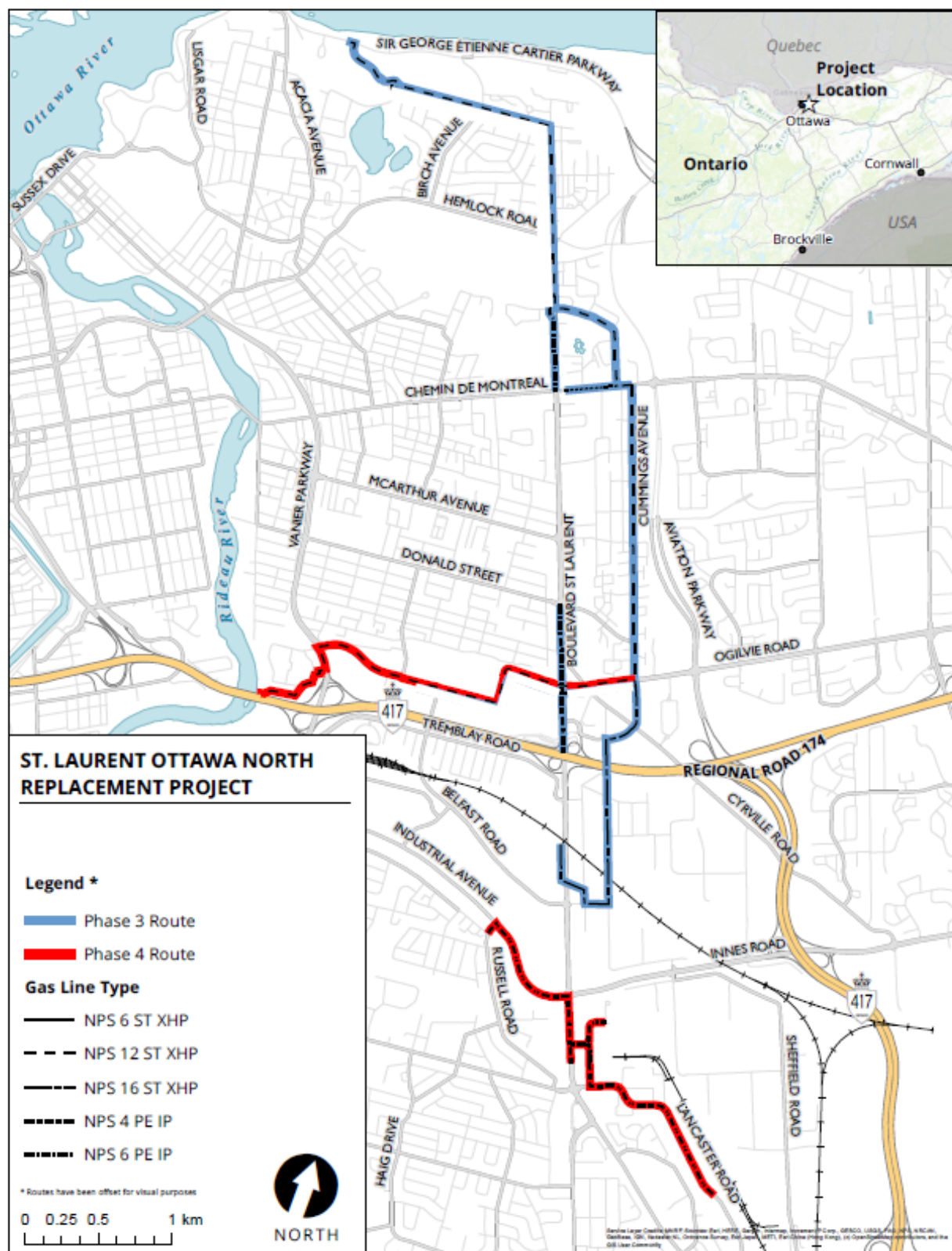
Option 1 - All originally planned ST and PE



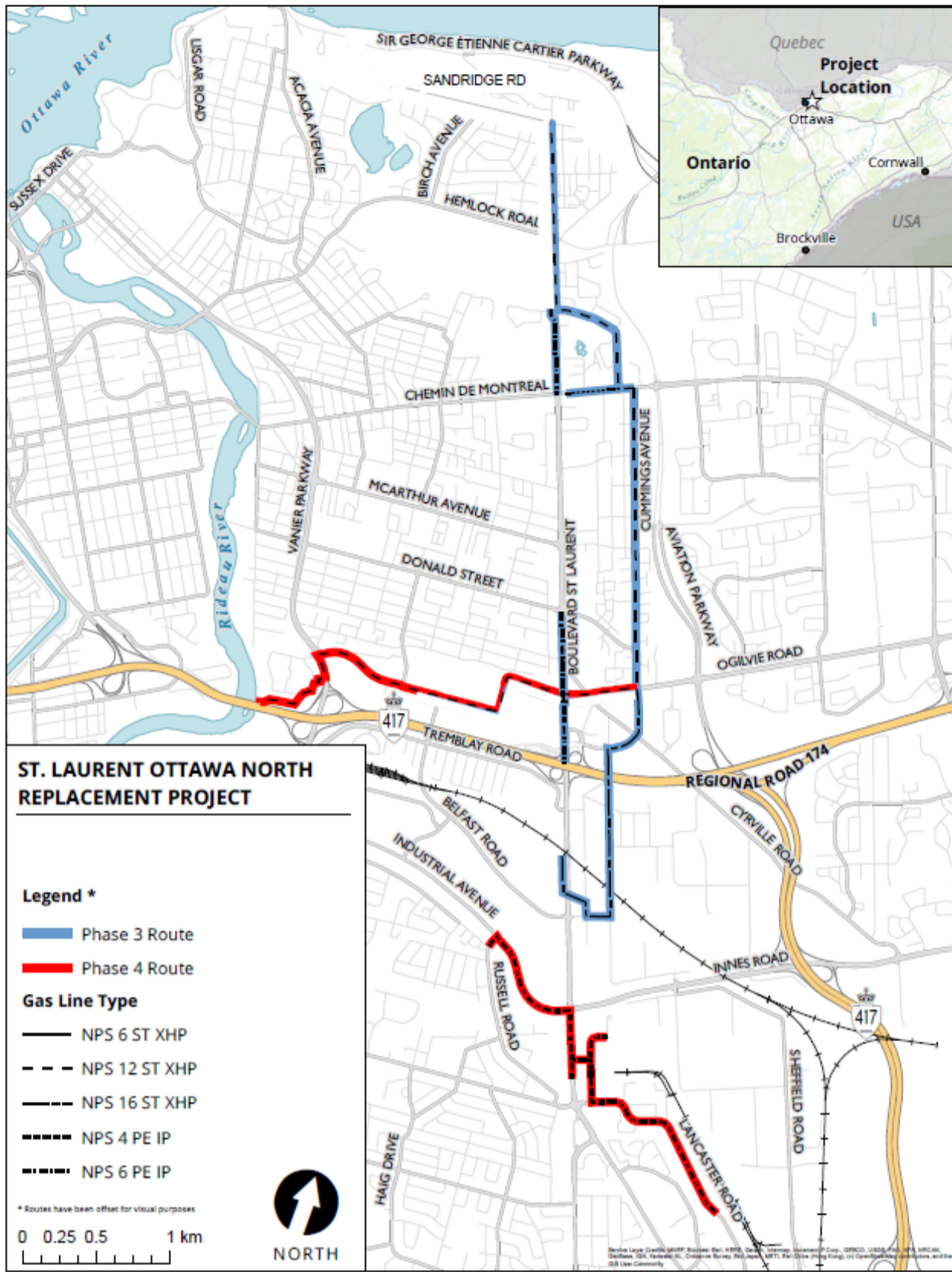


Option 2 - All Steel except for Sandridge & All PE





Option 3 - All the Steel, Plastic on St Laurent from Montreal to Brittany, all other services will come off the steel on St Laurent from Brittany to Sandridge and on Sandridge, no plastic on Coventry and Ogilvie, services to come off the Steel on Coventry and Ogilvie in the following year, PE on St Laurent Donald to 417 and Lower Section 1 & 2



Option 4 - All the Steel except for Sandridge, Plastic on St Laurent from Montreal to Brittany, all other services will come off the steel on St Laurent from Brittany to Sandridge and on Sandridge, no plastic on Coventry and Ogilvie, services to come off the Steel on Coventry and Ogilvie in the following year, PE on St Laurent Donald to 417 and Lower Section 1 & 2

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1

Question(s):

- a) Please provide a table showing the profit (i.e. return on equity) that Enbridge would earn from the options of (i) full replacement, (ii) extensive inspection and repair, and (iii) partial replacement up until the date the assets are fully depreciated. Please make and state any assumptions as needed (e.g. depreciation rates and capital parameters remaining static).
- b) Please provide a copy of Table 7 from page 19 with a breakdown of the costs that are capital versus O&M.
- c) Please provide a copy of Table 7 from page 19 that includes the cost of capital that will be incurred for each option over the financial lifetime of the assets in question. Please provide all calculations.
- d) Please provide a copy of Table 7 from page 19 that includes the cost of capital that will be incurred for each option over the financial lifetime of the assets in question on the assumption that all inspection costs are treated as O&M, not capital.

Response:

- a) The after tax return on equity that Enbridge Gas will earn on this Project up until the date the assets are fully depreciated under the three scenarios are listed below:
  - i. Full Replacement \$155 million
  - ii. Extensive Inspection and Repair \$256 million
  - iii. Partial replacement – Enbridge Gas has not forecasted a scenario where only partial replacement would occur. Please see the response to Exhibit I.2-ED-7.

The assumptions that were made in order to derive the estimates in parts i) and ii) above are as follows:

- OEB approved return on equity of 9.21% and other cost of debt and capital components held static through life of asset as approved in Phase 1 of the EB-2022-0200 DRO;
- Assets were depreciated on a stand-alone asset basis and depreciation rates held static (as opposed to as part of group depreciation) and were forecasted out to 2068 where the net book value of the SLP assets approached zero;
- The return noted in scenario (ii) above was determined over the same period as scenario (i), through the end of the depreciable life ending in 2068.

b - c)

Table 1 below provides a copy of Exhibit C, Tab 1, Schedule 1, page 19, Table 7 with a breakdown of the costs that are Capital and O&M. The O&M cost category includes O&M Expenses, Municipal Taxes, and Income Taxes. The Capital cost category includes direct Capital costs, abandonment costs, and Interest During Construction (IDC). For clarity, Capital Cost Allowance (CCA) tax shield is provided as a separate category. For more details of the NPV calculations with the breakdown of these categories, please see response at Exhibit I.2-STAFF-17 part a).

Table 1

Summary of NPVs for Alternative A and B with Various Useful Lives  
(adding a breakdown of Capital, O&M, and CCA)

NPV (\$millions)	Cost Category	A – Full Replacement	B – Extensive Inspection and Repair
Case A (63 years)	Capital	\$(155.1)	\$(271.9)
	O&M	\$(1.8)	\$(19.0)
	CCA	\$22.6	\$37.5
	Total	\$(134)	\$(253)
Case B (42 years)	Capital	\$(155.1)	\$(188.7)
	O&M	\$(1.5)	\$(16.2)
	CCA	\$22.6	\$26.1
	Total	\$(134)	\$(179)
Case C (31 years)	Capital	\$(155.1)	\$(147.2)
	O&M	\$(1.3)	\$(13.2)
	CCA	\$22.6	\$20.5
	Total	\$(134)	\$(140)

- d) All inspection-related costs are already classified as O&M in the NPV analysis provided in Exhibit C, Tab 1, Schedule 1, page 19, Table 7 and Table 1 in this response. For a complete breakdown of the O&M and Capital classifications of the various work completed in the alternative, please see response at Exhibit I.2-STAFF-17 part b).



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1

Question(s):

(a) Please reproduce Table 7 from page 19 including site restoration costs (incl. abandonment), both included in the NPV of each option and separated out for each option in an additional row.

(b) Please reproduce Table 7 from page 19 including all costs set out in Table 1 of Exhibit E, Tab 1, Schedule 1.

Response:

- a) Table 7 in Exhibit C, Tab 1, Schedule 1 summarizes the Net Present Value (NPV) assessments for both alternatives, with the costs of abandonment and site restoration already included. Performing an NPV comparison that separates out abandonment and site restoration costs is not possible because the cost estimates for "Extensive Inspection & Repair" are based on historical excavation and replacement actual costs that include all components.
- b) Table 7 in Exhibit C, Tab 1, Schedule 1 already includes all costs provided in Exhibit E, Tab 1, Schedule 1, page 2, Table 1, except for "Indirect Overheads & Loadings" and "Incremental Investigation Costs". The rationale for excluding "Indirect Overheads & Loadings" from the NPV analysis is provided in Exhibit C, Tab 1, Schedule 1, page 14, paragraph 22. The rationale for excluding "Incremental Investigation Costs" from the NPV analysis is provided in Exhibit C, Tab 1, Schedule 1, page 14, paragraph 20. Please see response at Exhibit I.3-PP-55 part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1

Question(s):

Please list all repairs that have been undertaken on the stretch of pipe that would be replaced over the past 10 years. Please provide this in a table with columns for the date of the repair, the cost of the repair, and a description of the repair (e.g. length of pipe remediated or replaced).

Response:

Table 1 below summarizes the date and description of major repairs on the St. Laurent Pipeline from 2014 to 2024 (not including repairs completed due to the 2022 Targeted Integrity Program). Please note that shorter duration repairs are difficult to track because the repairs are combined with other work. For example, the costs for internal resources to complete these repairs are charged to general O&M task numbers (e.g. main repair, valve repair) and as such, the specific costs for the individual repairs to this pipeline are challenging to extract in a short timeframe.

Table 1 – Summary of Repairs on St. Laurent Pipeline (2014 – 2024)

Date	Incident Category	Description
28-Mar-14	Damage	Three sleeves welded on dents with corrosion on the main at St Laurent NPS 16 Hwy crossing
12-Mar-16	Failure Incident (Leak)	Leak on valve stem on asset 499271
23-Feb-17	Failure Incident (Leak)	Leak on valve stem on asset 499283
12-Apr-17	Failure Incident (Leak)	Class A Leak at service connection on Tremblay Rd asset 751388

23-Aug-17	Damage	St Laurent and Cote Rd, coating repaired after 3rd Party Damage
29-May-19	Failure Incident (Leak)	Leak on valve stem on asset 8519960
26-Feb-19	Failure Incident (Leak)	Leak at intersection of Industrial Ave. and St. Laurent (Leak location inaccessible resulting in pipeline replacement in a new location). Total replacement cost of \$3.2M.
22-Apr-20	Failure Incident (Leak)	Leak on valve stem on asset 1417068
18-May-22	Failure Incident (Leak)	Leak at service connection on main asset
5-May-22	Failure Incident (Leak)	Leak on valve stem on asset 501309
19-May-22	Failure Incident (Leak)	Leak at service connection on main asset
20-March-23	Failure Incident (Leak)	Leak at Rockcliffe Control Station (Line Stopper Fitting) and integrity inspection – Total repair cost of \$115,948.

Please see Exhibit B, Tab 1, Schedule 1, pages 26-27 for a summary of the additional repairs completed as part of the Targeted Integrity Program initiated in 2022. The total capital cost for these repairs in 2022 was approximately \$4.0M.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Attachment 1

Question(s):

- a) Please provide the live spreadsheets used by Integral.
- b) The attachment is merely a slide deck. Please provide a copy of any reports or other more detailed results provided by Integral to Enbridge.
- c) Please provide the full data outcomes for all scenarios, including the number and proportion of houses with and without a gas furnace as their main heating source.
- d) How much did the Integral report cost?

Response:

- a) The modeling undertaken by Integral Engineering relied upon python scripts, as such there are no "live spreadsheets" to provide.
- b) Enbridge Gas confirms that Exhibit B, Tab 3, Schedule 1, Attachment 1 is the report with results delivered by Integral Engineering, on which Enbridge Gas relies in this application. No further reports or more detailed results exist.
- c) Please see Attachment 1 to this response for the proportion of current customers connected to the gas system in each year, for each simulation, for each case.

- d) While the Company does not see the particular relevance of this question, Enbridge Gas confirms that the analysis provided by Integral Engineering cost approximately \$49,000 including taxes.



This page is intentionally left blank. Due to size, this Attachment has not been included.

Please see Exhibit I.2-ED-11\_Attachment 1.xlsx on the OEB's RDS.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Attachment 1

Question(s):

Please provide the outcome of a scenario where 100% of customers switch to an all-electric heat pump from their gas furnace as of 2030 (e.g. pursuant to a government mandate) and each of those customers is assumed to exit the gas system in 5 years of installing the heat pump. If this exact scenario cannot be modelled due to model limitations, please model a scenario that as closely resembles this as possible. Please provide the outcome in tabular format and in a figure equivalent to that shown on page 23.

Response:

Enbridge Gas declines to model the scenario ED has requested for the following reasons:

The scenario proposed by ED is only slightly different than Case 6 (the most aggressive disconnection case) in Enbridge Gas's probabilistic analysis and therefore the results would not be meaningfully different than those of Case 6. The distinctions between Case 6 and ED's proposed scenario are moving up the implementation of the assumed Pan-Canadian Framework requirement for space heating systems to be greater than 100% efficient to 2030 and that 100% of customers that adopt a heat pump disconnect from the gas system 5 years after they do so. Case 6 assumed a distribution (i.e. starting in 2035, but no later than 2050) in the assumption related to the Pan Canadian Framework as opposed to only using a deterministic assumption as proposed by ED. Case 6 also assumed a constant 100% disconnection rate at the time of heat pump adoption as opposed to the delayed disconnection assumption proposed by ED. This means that any

result from ED's proposed scenario would fall between the boundary cases (Case 1, and Case 6), Enbridge Gas described in Exhibit B, Tab 3, Schedule 1, pages 15 to 17.

The assumptions proposed by ED are deterministic in that they prescribe a specific year when 100% of consumers would have to adopt a heat pump. Enbridge Gas's analysis is probabilistic in that it allows for uncertainty in how the adoption rate will develop and the year in which 100% adoption would be required. As noted at Exhibit B, Tab 3, Schedule 1, Attachment 1, page 6, 1000 Monte Carlo simulations were performed per case to generate a robust distribution of possible outcomes.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Attachment 1

Question(s):

- a) Please reproduce the figures on pages 23 to 26 replacing CER 2023 with the most cost-effective pathway found in the following report from the Canadian Climate Institute: <https://climateinstitute.ca/reports/building-heat/>.
- b) Please confirm that the CER 2023 scenario plotted on pages 23 to 26 is not a prediction?
- c) Please confirm that the CER 2023 scenario plotted on pages 23 to 26 is not based on a calculation of the most cost-effective pathway?

Response:

- a) Enbridge Gas declines to add the scenario(s) from the referenced Canadian Climate Institute report for a number of reasons. There are no data available with which to perform such a request. Additionally, the costs for the scenario(s) reported in the Canadian Climate Institute report are not provided; therefore, it is not possible to determine if this scenario is the "most cost-effective" pathway to net zero or simply a scenario that has been cost-optimized based on the input assumptions. Based on this, Enbridge Gas believes that even if the data were available and the request could be performed, adding this scenario to the figures on pages 23 to 26 would only be of limited (if any) value to the OEB.
- b) Confirmed.
- c) It is Enbridge Gas's understanding that the CER Canada's Energy Future (EF) 2023 report and scenarios are based on an iterative approach that refines their future climate policy assumptions until an outcome consistent with net-zero by 2050 is

achieved.<sup>1</sup> The main drivers of the CER EF 2023 scenarios achieving net-zero are adjustments to an aggregate cost of carbon.<sup>2</sup> The CER iterated the aggregate cost of carbon while keeping other assumptions related to technologies, international markets, and behaviour constant<sup>3</sup>. The eventual scenario can be considered cost-effective relative to the modeled cost of carbon.

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<sup>1</sup> Canada Energy Regulator, Canada's Energy Future 2023: Energy Supply and Demand Projections to 2050, page 30 available at <https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2023/canada-energy-futures-2023.pdf>

<sup>2</sup> Ibid, p. 31.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Attachment 1

Question(s):

- (a) Please work with Enbridge confirm what the average annual total gas distribution cost for Enbridge residential customers is, including fixed and variable charges?
- (b) Please provide a simplified analysis to provide an indication of the increases in average annual total distribution charges that would occur as customers leave the gas system. Please calculate the average annual total gas distribution charges for 100%, 90%, 80%, ... 10% of customers exiting the gas system. When customers leave the system, please assume that the distribution charges they were once paying are evenly distributed among the remaining customers. Please provide the results in a table.
- (c) Please reproduce figure 24 with the results of (b) shown on the vertical axis (to the left or right of the figure).

Response:

- a) The annual gas distribution cost for an average Rate 1 EGD Rate Zone residential customer consuming 2,400 m<sup>3</sup> per year is approximately \$521<sup>1</sup>, consisting of approximately \$297 of fixed monthly charges and approximately \$224 of variable charges.

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<sup>1</sup> Based on OEB approved rates per EB-2024-0166 (July 2024 QRAM).

b) As framed, this question is beyond the scope of the relevant issues the OEB will need to determine in this application, as it relates to the gas system in general and is not specific to the St. Laurent system or its customers. This broad and general request could not reasonably be answered with any precision in any event.

c) See response to part b) above.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1

Question(s):

Please reproduce Table 7 on page 19, adding a 26-year case (consistent with the useful life of the asset ending in 2050) and adding the “Alternative 6: Partial Replacement” from page 5 as an additional column.

Response:

The NPV analysis for Case C (31 years) is based on the modeled outcomes of Case 6 presented in the probabilistic analysis found at Exhibit B, Tab 3, Schedule 1. Case 6 is the most aggressive and unlikely scenario considered in that analysis and is predicated on the most aggressive disconnection assumption of 100% disconnection as soon as a customer adopts a heat pump (i.e. starting tomorrow). As described at Exhibit B, Tab 3, Schedule 1, paragraph 35, the most likely year in which no general service customers would be present under this scenario is 2055, and the earliest year, representing the 5th percentile (i.e., sooner than 95% of all the simulations), is 2052. Said another way, less than 5% of modeled outcomes resulted in zero general service customers before 2052. In addition, based on the response provided at Exhibit I.2-ED-11 part c), the year 2050 occurred as a modeled outcome for Case 6, 4 times out of 1000 simulations. This indicates that assuming a 26-year life as requested for this hypothetical NPV analysis scenario is an extremely unlikely and unrealistic assumption, and that the result of this additional scenario would provide little meaningful value. On this basis, Enbridge Gas declines to provide the requested 26 year NPV analysis.

Enbridge Gas is unable to produce an NPV assessment for the “Partial Replacement” alternative because it has not advanced to a stage where feasibility, constructability,

residual risks, and short- and long-term work and costs are fully detailed. The rationale for not progressing with the Partial Replacement alternative is outlined in Exhibit C, Tab 1, Schedule 1, pages 6–7, Paragraph 7. Alternative 6 only offered a 5% reduction in project costs for avoiding the replacement of 15% of the pipeline length in Alternative 5 “Full Replacement”, and therefore ongoing additional costs would be incurred to mitigate residual risks (e.g., inline inspection of the remaining 15% of pipeline).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1

Question(s):

- (a) Please reproduce Table 7 on page 19, adding a 26-year case (consistent with the useful life of the asset ending in 2050) and adding an alternative whereby inspection and repair is pursued for 3 years, followed by a full replacement.
- (b) How much would it cost (NPV) in additional inspection and repair costs to defer the project by 3 years? What savings would accrue (NPV) by deferring the full replacement costs? What is the net of those figures?
- (c) How much would it cost (NPV) in additional inspection and repair costs to defer the project by 5 years? What savings would accrue (NPV) by deferring the full replacement costs? What is the net of those figures?

Response:

- a) The NPV analysis for Case C (31 years) is based on the modeled outcomes of Case 6 presented in the probabilistic analysis found at Exhibit B, Tab 3, Schedule 1. Case 6 is the most aggressive and unlikely scenario considered in that analysis and is predicated on the most aggressive disconnection assumption of 100% disconnection as soon as a customer adopts a heat pump (i.e starting tomorrow). As described at Exhibit B, Tab 3, Schedule 1, paragraph 35, the most likely year in which no general service customers would be present under this scenario is 2055, and the earliest year, representing the 5th percentile (i.e., sooner than 95% of all the simulations), is 2052. Said another way less than 5% of modeled outcomes resulted in zero general service customers before 2052.



In addition, based on the response provided at Exhibit I.2-ED-11 part c), the year 2050 occurred as a modeled outcome for Case 6, 4 times out of 1000 simulations. This indicates that assuming a 26-year life as requested for this hypothetical NPV analysis scenario is an extremely unlikely and unrealistic assumption, and that the result of this additional scenario would provide little meaningful value. On this basis, Enbridge Gas declines to provide the requested 26 year NPV analysis.

Table 7 below presents the NPV for the Full Replacement and Extensive Inspection and Repair alternatives with an added column for an alternative whereby inspection and repair is pursued for 3 years, followed by a full replacement.

Table 7

Summary of NPVs for Alternative A and B with Various Useful Lives  
(adding a delayed replacement scenario)

NPV (\$millions)	A – Full Replacement	B – Extensive Inspection and Repair	C – Delayed Replacement
Case A (63 years)	\$(134)	\$(253)	\$(207)
Case B (42 years)	\$(134)	\$(179)	\$(206)
Case C (31 years)	\$(134)	\$(140)	\$(206)

- b) As shown in Table 7 to this response, the net increase in cost (NPV) of Alternative C – “Delayed Replacement” compared to Alternative A – “Full Replacement” is \$73 million for Case A and \$72 million for Cases B and C.

It will cost (NPV) an additional \$79 million or \$78 million in additional inspection, mechanical protection, and repair costs to defer the project by 3 years. This is partially offset by accrued savings (NPV) of \$6 million for deferring the full replacement costs by 3 years.

- c) As per the response to b), pursuing additional inspection, mechanical protection, and repair costs to defer the “Full Replacement” project is not a financially viable alternative. This is due to the significant upfront inspection, mechanical protection, and repair work required to bring the current risks of the pipeline to tolerable levels first.

Enbridge Gas does not see value in performing another iteration of this NPV analysis with a 5-year delay, as the results would be similarly poor from a financial viability standpoint.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1

Question(s):

Page 24 describes the Posterity results. This question is for Posterity. What would the lifetime savings be from the ETEE discussed on paragraph 49 of page 24 (e.g. energy savings from more efficient homes and equipment)?

Response:

The following response was provided by Posterity:

Posterity interprets the question to ask about the lifetime annual natural gas volume savings of the ETEE measures included within the study. The lifetime annual natural gas volume savings across the study period are 393,697,619 m<sup>3</sup>.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1

Question(s):

- a) Please provide a breakdown of the peak demand on the SLP by sector (residential, commercial, and industrial).
- b) Approximately what percent of the peak demand on the SLP is for building heat? Please provide all calculations.
- c) Approximately what percent of the peak demand on the SLP is from customers whose primary use of gas is for building heat?
- d) What percent of the peak demand on the SLP is for hard-to-decarbonize high-heat processes?

Response:

a) Please refer to Exhibit I.1-CAFES Ottawa-2 for peak demand and breakdown by sector for the general service forecast. For Large Volume Contract Demand (LVCD) customers, please see responses at Exhibit I.1-CAFES Ottawa-6 and Exhibit I.2-ED-21 part c).

b - c)

A breakdown of peak demand on the SLP for building heat is not available. In lieu of the requested data, the percentage split for regular rate customers is approximately 77% heat sensitive and 23% base demand. The data was obtained from the Company's hydraulic model for the system at Winter design conditions.

It can reasonably be assumed that for residential customers and many commercial customers that the primary use of heat-sensitive demand is for building heating, but the approximate percentage is not available.

- d) Enbridge Gas is not aware of any customers fed from the SLP system that use natural gas for high-heat demands such as ore, petroleum, or chemical processes.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1

Question(s):

- a) In what year would the proposed capital costs be fully depreciated according to the current depreciation rates?
- b) How much of the cost of the project would be undepreciated as of 2050?
- c) How much would Enbridge earn in return on equity from the increase in rate base associated with this project. Please make and state simplifying assumptions as necessary.

Response:

- a) According to the current depreciation rates approved by the OEB in Rebasing Phase 1<sup>1</sup>, steel mains, which represent the largest cost to the Project, will be fully depreciated by 2068. As of 2068, \$6.4 million would be undepreciated with the last remaining assets being fully depreciated by 2086.
- b) \$84.5 million would be undepreciated as of 2050.
- c) Please refer to Exhibit I.2-ED-8 part a).

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<sup>1</sup> EB-2022-0200



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1

Question(s):

What load forecasts did Enbridge use for the different scenarios they analyzed (of the different useful lives of the pipe, with the shortest being 31 years). In particular, what did Enbridge forecast, by year, for both annual throughput and peak hour demand for each scenario. Is there any scenario where Enbridge forecast declining sales and/or peak.

Response:

The referenced analysis was conducted based on customer disconnections from the gas system and did not include input assumptions related to demand. For more information, please refer to Exhibit I.2-PP-46 part b).

Enbridge Gas continually updates models and forecasting based on the best available information. Separately from the referenced analysis, Enbridge Gas has performed peak hour modeling analysis of the customers on the gas system and those served by the St. Laurent Project. This analysis shows that peak hour demand in the near term is rising. Please refer to Exhibit I.1-CAFES Ottawa-2 for details on the forecast and demands.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1, Attachment 2

Preamble:

Question(s):

- (a) Please provide a copy of the Posterity “mirror” model and all spreadsheets used.
- (b) Please indicate the percent of peak demand included and excluded in the Posterity study.
- (c) Who decided that contract customers should be excluded from the study – Posterity or Enbridge?
- (d) Please provide the names and CVs of the authors of the Posterity study.
- (e) Please provide all inputs and all outputs of the Posterity study.
- (f) Please re-run the Posterity study including contract customers.
- (g) Please provide a breakdown of the peak demand from contract customers by customer type (to the extent possible, please mirror the sectors used in the APS).
- (h) Has Posterity seen a copy of the latest draft APS?
- (i) Has Enbridge seen a copy of the latest draft APS?
- (j) How does Posterity believe the latest APS would likely change the results of this study? Please describe the main potential drivers for change and the likely direction of

those changes. Please provide Posterity with a copy of the draft APS if they do not already have it.

(k) For the potential savings, please provide a table showing the potential peak demand reductions per year broken by sector and measure.

(l) Does the Posterity report include heat pumps as a measure? If it did not and they were included, how might that change the results?

Response:

a) The following response was provided by Posterity:

Posterity Group conducts the analysis of the “mirror model” via its Navigator modelling platform. The code that comprises Posterity Group’s model, Posterity Group Navigator, is confidential proprietary information. Users can hire Posterity Group to run the Navigator or license it for their own use, but we are unable to provide a copy of the model because the Navigator model consists of confidential intellectual property in the form of the model’s software stack and code. Providing the confidential intellectual property may harm Posterity Group’s business operations or expose our operations to unacceptable risk.

Posterity interprets the intent of the question as a request to explain how Navigator works and what data inputs, assumptions, and methodology the “mirror model uses”. Please see EB-2021-0002, Exhibit E, Tab 4, Schedule 7, Attachment 1 which details the data inputs, assumptions and methodology of Posterity’s “mirror model”. To explain how Navigator works and how its parameters interact with each other, a functional specification document entitled “Navigator Energy and Emissions Simulation Suite – Functional Specification Document”<sup>1</sup> has been written as a guide for technical client staff, and to support our client’s regulatory filings.

b) Approximately 57% of the peak demand was included in the Posterity Report, with 43% excluded. All demands in Gazifère were excluded from the report, as were contract customers in both Ottawa and Gazifère.

c) Enbridge Gas decided that contract customers should be excluded from the study. As noted in Exhibit C, Tab 1, Schedule 1, paragraphs 50 to 53, the contract customers within the proposed project service area were engaged through an

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<sup>1</sup> EB-2022-0200, Exhibit I.I.10-SEC-29 Attachment 1.  
(<https://www.rds.oeb.ca/CMWebDrawer/Record/780997/File/document>)

expression of interest (EOI) and reverse open season (ROS) process to provide the opportunity for customers to adjust their contracted demand. Additionally, Enbridge Gas also engaged in direct discussions with contract customers on their energy requirements as described in Exhibit B, Tab 3, Schedule 1, Section C. Enbridge obtained the information directly from the customers, which provides more accurate information regarding their demand usage and peak hour savings. Based on the results of the EOI, ROS and discussions with Large Volume Contract Demand (LCVD) customers, Enbridge Gas expects minimal change in these contract customers' peak hour demand.

- d) The author of the Posterity study is Dave Shipley. Please see Attachment 1 of this response for his CV.
- e) Enbridge Gas interprets the question to mean "provide" the inputs and outputs of the Posterity study. As noted in part a), details on the data inputs, assumptions and methodology of Posterity model can be found at the references provided. Please see Attachment 2 of this response for the Enbridge Gas's growth assumptions, which were provided to Posterity as an input to the analysis for this project. Customer data for individual general service customers was also provided to Posterity as an input, however, has not been included in Attachment 2. Enbridge Gas submits that individual customer details and consumption volumes are not relevant to the request. Please see Attachment 3 of this response for the Posterity output file.
- f) As noted in part c), Enbridge Gas has engaged directly with the contract customers within the proposed project service area to confirm their energy requirements. This provides more accurate customer-specific information regarding their demand usage and peak hour savings potential, compared to an analysis by Posterity. As such, Enbridge Gas sees no useful basis to, and declines to, re-run the Posterity study with contract customers.
- g) Any further breakdown of the list of accounts would reveal individual customer information and would not meet the required level of aggregation as required by Gas Distribution Access Rule (GDAR).
- h) Posterity has not seen a copy of the latest draft APS.
- i) Enbridge Gas has seen a copy of the latest draft APS results but not a draft of the full report.
- j) Posterity cannot comment on this without having seen a draft of the APS. The APS is being led by OEB staff and is not a work product of Enbridge Gas, so Enbridge

Gas cannot share the results without permission from OEB staff. Enbridge Gas has requested permission to share the draft results of the APS with Posterity. OEB staff has indicated that they are not willing to share draft APS results with a 3rd party outside of the Stakeholder Advisory Group at this time, as the results are in draft form and are not yet final.

- k) Please see Attachment 3 to this response.
- l) Posterity's analysis does not include electric heat pumps as a measure, as electrification measures are not included within the current IRP Framework. To determine the impact of the inclusion of electric heat pumps as a measure in the analysis, there are a number of assumptions and variables that would need to be considered, such as but not limited to, whether full or partial fuel-switching is occurring, use of simultaneous hybrid-heating, and the penetration and adoption of these options over time. Without completing a more comprehensive measure characterization to account for all these assumptions, it would be difficult to comment on how the results may change.





## David F. Shipley

### Director

#### Experience Overview

David Shipley has over 25 years of experience as an energy engineer. His areas of expertise include: stock-and-flow models for energy efficient buildings and technologies, load forecasting, CDM potential estimates, building energy modelling, building commissioning, building energy systems, energy efficiency, renewable energy, energy and environmental systems modelling, and demand-side management. Mr. Shipley recently served on the expert panel for the 2019 Ontario Achievable Potential Study, as a recognized national expert on these studies.

In recent years, Mr. Shipley has coordinated the residential sector analysis for conservation potential studies for electric and gas utilities in six provinces, and has developed modeling tools used for analysis by the commercial and industrial teams in these studies. This has led to the development of Posterity Group's Navigator™ suite of energy and emissions simulation tools. He has also conducted market studies on building commissioning, HVAC and lighting technologies for commercial buildings, and efficient equipment for industry. Before joining Posterity Group, Mr. Shipley was a Senior Consultant in energy efficiency with ICF/Marbek, and Project Manager with the Energy Center of Wisconsin.

#### Select Project Experience

##### *Conservation Potential and High Efficiency Buildings*

Conservation Potential Review 2024: FortisBC (May 2024 – ongoing). FortisBC Energy Inc. (FEI) and FortisBC Inc. (FBC) (the Utilities) hired Posterity Group to complete their 2024 Conservation Potential Review. The Study scope includes energy efficiency, demand management, electrification, and electric vehicle technology assessment, and stakeholder engagement within the residential, commercial, industrial and transportation sectors.

PG will deliver the following study outputs:

- A transparent and thoroughly documented **electronic technical reference manual** (eTRM) that includes the inputs, assumptions, and calculation algorithms for the energy efficiency, demand management and electrification measures in scope.
- Technical, economic, and achievable **potential assessments** of energy efficiency, demand response, electrification for the Utilities' service territory. This work will be completed in Navigator, PG's Energy and Emissions Suite.
- Complete potential study reporting and method documents so that the inputs can be easily updated as new information emerges over time.

In addition to these outputs, Posterity Group will consult with external (market) stakeholders to inform the achievable potential. The Utilities will use the results of the Study to support conservation and demand management planning and supply resource planning. Dave is the Technical Director.

Newfoundland Energy Solutions Potential Study: Newfoundland Power Inc. (Nov. 2023 – ongoing). Newfoundland Power and Newfoundland Hydro (the Utilities) hired Posterity Group to complete their 2025-2040 Energy Solutions Potential Study. The Study scope includes the residential, commercial,





industrial and transportation sectors for the Island Interconnected System (IIC). Posterity Group (PG) brings expertise in the following areas to the Study: energy efficiency, demand management, electrification, and electric vehicle technology assessment; baseline development and potential study analysis; stakeholder consultation; and project management. PG will deliver the following Study following outputs:

- A transparent and thoroughly documented **electronic technical reference manual (eTRM)** that includes the inputs, assumptions, and calculation algorithms for the energy efficiency, demand management and electrification measures in scope.
- Technical, economic, and achievable **potential assessments** of energy efficiency, demand response, electrification for the IIC. In addition, PG will complete an electric vehicle potential assessment under various scenarios. This work will be completed in Navigator, PG's Energy and Emissions Suite.
- Complete potential study reporting and method documents so that the inputs can be easily updated as new information emerges over time.

In addition to these outputs, Posterity Group will consult with large industrial sector customers and complete achievable potential workshops to strengthen the high-level analysis completed for the 2020-2035 Potential Study. The Utilities will use the results of the Study to assist in conservation and demand management planning and supply resource planning. Dave is the Technical Director for this project.

Achievable Potential Study (Ad Hoc) Support: Enbridge Gas (September 2023 - ongoing). Enbridge hired Posterity Group to perform ad hoc tasks to support the review of the Achievable Potential Study prior to filing. Dave is a Project Advisor.

APS Engagement Workshop: Enbridge Gas (June 2023). Posterity Group prepared and conducted a workshop to better enable EGI staff to provide input into and review outputs from Ontario's 2023 Achievable Potential Study. Dave was the Technical Director for this project.

Measure Library Development and Maintenance: FortisBC (May 2023 – March 2024). Posterity Group developed a new measure library for FortisBC's gas and electric DSM measures and is conducting ongoing upkeep and maintenance.

FortisBC pursued a review and update of its internal measure library, accounting for new and updated measures included in the recent Conservation Potential Review and Demand Side Management Expenditure Plan. FortisBC also wanted to optimize the organization of the measure library for ease of maintenance and usability.

PG is in the process of executing upkeep and maintenance of the measure library on an ongoing and long-term basis. Dave was a Senior Advisor for this project.

2022 Long Term Gas Resource Plan IR Support: FortisBC (September 2022 – November 2022). After successful completion of the load forecast and scenario analysis for the 2022 LTGRP, Posterity Group worked with FortisBC Energy Inc (FEI) to support the information request (IR) process for the LTGRP filing. PG helped respond to IRs from the BCUC and intervenors and conducted project management support to FEI for this IR process. Dave was the Lead Analyst.

Potential Study Meta-Analysis: NRCan (August 2022 – October 2022). The Canada's Green Building Strategy Secretariat within the Office of Energy Efficiency (OEE) will act as the "gatekeeper" for the 2023 budget submission to the Department of Finance for the Canada's Green Building Strategy which will be





underpinned by various policy measures, programs, codes, regulations. As OEE is developing the first phase of the Canada's Green Building Strategy, they are tasked with assessing the impact of the programs administered by various departments in preparation of the 2023 budget process.

This task requires estimates of energy efficiency and GHG emission mitigation potential in the built environment but lacks suitable information of this type. In the short term, NRCAN has hired Posterity Group to address this gap by collecting and summarizing the results of past energy efficiency potential studies conducted in Canada. This meta-analysis will serve as a high-level estimate of technical and economic potential until more detailed modelling and analysis is conducted. Dave was an Advisor for this project.

Conservation Potential Study: Pacific Northern Gas (August 2021-November 2021). Posterity Group developed a Conservation Potential Review study for Pacific Northern Gas. This analysis built on resource planning and conservation potential work Posterity Group has recently completed in BC, including FortisBC's 2021 CPR. It has been used to support adjustments to PNG's current portfolio of DSM programs and PNG's 2023 DSM Plan and Resource Plan filing. Dave was Technical Lead and Residential Advisor.

2021 Conservation Potential Review: FortisBC Energy Inc. (January 2020-September 2021). FortisBC's 2021 Conservation Potential Review Study (CPR) supported two of FortisBC's major regulatory filings in 2022: the long-term gas resource plan (LTGRP) and the demand side management plan. Posterity Group estimated BC's technical, economic and market potential savings over a 20-year period for natural gas using its Navigator Energy and Emissions Simulations Suite™, which enables complex, multi-variable modelling, detailed scenario exploration and solution optimization. The CPR is an important guiding document for ongoing conservation and energy management program development and support at FortisBC. Posterity Group proposed a transparent, well-documented approach to develop the CPR and facilitated the engagement of internal and external stakeholders. Posterity Group completed end-use modelling and scenario development for FortisBC's 2022 Long Term Gas Resource Plan (LTGRP) in parallel with the CPR, to ensure technical consistency across the projects. Dave was Technical Director and Residential Sector Lead.

2022 Long Term Gas Resource Plan Demand Forecast and Resource Planning: FortisBC Energy Inc. (February 2020-July 2021). Following a successful engagement in 2017, FortisBC again engaged Posterity Group to generate a natural gas end-use forecast in support of their 2022 Long Term Gas Resource Plan (LTGRP) filing. The analysis uses baseline end-use energy intensities for over 40 customer segments across 5 provincial regions developed by Posterity Group through the 2021 Conservation Potential Review. Forecasting analysis incorporates multiple data sources including customer end-use surveys, customer energy use data, and price and commodity forecasts. In addition to the reference case forecast, Posterity Group conducted scenario analysis to estimate the impact on gas demand from a number of policy drivers including anticipated federal, provincial and municipal codes and standards, carbon pricing, efficiency activity, natural gas transportation, liquefied natural gas production, renewable natural gas production, and availability of district energy. Dave was Technical Director for the project.

Integrated Resource Planning and Achievable Potential Study Support: Enbridge (2019-Present). Technical lead on modeling and analysis to support Enbridge Gas in their planning and DSM activities. Building on the results of the provincial Achievable Potential Study (APS), used the Navigator™ Energy and Emissions Simulation Suite to construct a model of Enbridge's service territory to estimate DSM potential and peak demand impacts. The detailed model will permit the client-consultant team to better understand the outputs from the 2019 APS, identify limitations in the underlying dataset, and integrate additional data to estimate program potential and budgets. The Navigator™ Energy and Emissions Simulation Suite enables





complex, multi-variable modelling, detailed scenario exploration and solution optimization. It also has an 8760 peak analysis module, which we are using to develop full annual load shape profiles for the gas end uses relevant to Enbridge's service territory.

Greenhouse Energy Profile Study: Ontario IESO (2018-2019). Technical lead on modeling and analysis of economic and achievable potential for energy conservation in covered agricultural facilities in Ontario, including greenhouses and indoor agriculture. Developed the stock-and-flow model for three different scenarios of sector expansion, for technical, economic, and achievable energy savings potential, and for peak demand reduction. Provided full 8760-hour profiles of demand before and after the application of energy and demand reduction measures.

2019 Ontario Achievable Potential Study Technical Advisory Panel: IESO (2018-2019). Acted as an Expert Panel Member to the Independent Electricity System Operator (IESO) and the Ontario Energy Board (OEB) for the 2019 Ontario Achievable Potential Study (APS). Provided advice on the integrated electricity and natural gas APS, which will seek to identify and quantify energy savings, GHG emission reductions, and associated costs from demand side resources for 2019-2038. Helped the IESO and OEB ensure that the APS is conducted using industry best practices. Reviewed and provided guidance on all aspects of the APS including the methodology and workplan, base case and reference forecast, energy efficiency and conservation measures, technical and economic potential analysis, achievable potential analysis, and final report.

Conservation Potential Study: Ontario Energy Board (2015-2016). Technical lead on modeling and analysis of economic and achievable potential for energy conservation in Ontario, covering the service territories of both natural gas companies. Led the residential analysis and was principal model developer, including development of stock-and-flow models, economic screening models, and achievable adoption models.

Conservation and Demand Management Study: Newfoundland Power and Newfoundland Labrador Hydro (2014-2015). Technical lead on modeling and analysis of economic and achievable potential for conservation and demand management in Newfoundland and Labrador. Led the residential analysis and was principal model developer.

Tailored Achievable Potential Studies for Ontario LDCs: Hydro One Networks, NPEI, Powerstream, Horizon Utilities, Thunder Bay Hydro, Waterloo North Hydro, Entegrus, Canadian Niagara Power, Algoma Power, Brantford Power, Milton Hydro, Oakville Hydro, Oshawa PUC, Haldimand County Power, Halton Hills Hydro, Burlington Hydro, Brant County Power (2014-2015). Developed tailored versions of the OPA achievable potential model (see the project immediately below), to provide detailed conservation potential estimates for the service territories of several Ontario LDCs.

Achievable Potential Study: Ontario Power Authority (2013). Led the analysis of conservation potential for all sectors, deriving much of the economic potential from outputs of OPA's End Use Forecaster model, but applying data from ICF Marbek's internal databases to estimate achievable potential. After a market characterization phase targeting the application of measures in Ontario, produced a fine-tuned estimate of achievable potential.

Conservation Potential Study for Yukon Government: YEC, and YECL (2011-2012). Led residential analysis of conservation potential, including developing detailed end-use baseline profiles calibrated to utility data, deriving economic potential for cost-effective actions in the residential sector, and forecasting 20-year economic and achievable savings.

Conservation Potential Study: SaskPower (2010-2011). Led residential analysis of conservation potential, including developing detailed end-use baseline profiles calibrated to utility data, deriving economic





potential for cost-effective actions in the residential sector, and forecasting 20-year economic and achievable savings.

Conservation Potential Study: Terasen Gas (2010-2011). Led residential analysis of conservation potential, including developing detailed end-use baseline profiles calibrated to utility data, deriving economic potential for cost-effective actions in the residential sector, and forecasting 20-year economic and achievable savings.

DSM Potential Study: Enbridge Gas (2008). Led residential analysis of conservation potential, as part of a major update to the DSM study Marbek did in 2004. Developed detailed end-use baseline profiles calibrated to utility data, derived economic potential for cost-effective actions in the residential sector, and forecast 10-year economic and achievable savings.

DSM Potential Study: Enbridge Gas Inc. (formerly Union Gas) (2008). Led residential analysis of conservation potential for Union Gas, as part of a project similar to Enbridge project above.

CPR 2007: BC Hydro (2007). Led analysis of residential savings potential for BC Hydro, as part of a project to estimate potential for all sectors. Derived detailed end-use baseline profiles calibrated to utility data, derived economic potential for cost-effective actions in the residential sector, and forecast 20-year savings. This was an update to an earlier CPR Marbek performed for BC Hydro in 2002.

CPR: Newfoundland Power and Newfoundland and Labrador Hydro (2007). Led analysis of residential savings potential for Newfoundland and Labrador, as part of a project to estimate potential for all sectors. Project included same elements as the BC Hydro study.

Fuel Switching Potential: Ontario Power Authority (2006). Developed the residential fuel switching potential estimate as part of a full fuel switching potential study for Ontario.

DSM Potential Study: Terasen Gas (2005). Developed the residential energy savings and fuel switching potential estimate as part of a full DSM potential study for the Terasen service territory. Conducted part of the commercial energy savings and fuel switching potential analysis.

DSM Potential Study: Enbridge Gas (2004). Developed the residential energy savings potential estimate as part of a full DSM potential study for the Enbridge service territory.

DSM Study: Manitoba Hydro (2003). Led residential analysis for DSM study.

Statewide Technical and Economic Potential: Consortium of Wisconsin Utilities (1993). While at Energy Center of Wisconsin, managed the completion phase of the estimate of conservation, fuel switching and load management potential, as part of IRP filing.

### *End-Use Energy Efficiency and GHG Mitigation Modelling & Load Forecasting*

Regional Scenario Analysis: Enbridge Gas Inc. (June 2024 – ongoing). Enbridge Gas Inc. (EGI) hired Posterity Group to prepare a Regional Scenario Analysis of how changes in EGI's future operating environment (energy policy, economics, customer energy end use behavior) may impact EGI's customer count, annual consumption, peak hour and peak day demand, as well as Scope 3 greenhouse gas emissions (from customers using EGI energy supply). The deliverables from this project help inform EGI's asset management planning, infrastructure growth capital planning, and ratebasing applications to the Ontario Energy Board.







Posterity Group used the following tools and expertise to produce these outputs:

- We used our Navigator modelling platform and expertise about Ontario energy end use behavior to prepare a calibrated simulation of EGI's customer count and annual consumption in the 2023 base year and to examine how these metrics might change across a forecast horizon of more than 30 years.
- We used our Navigator modelling platform and our data pipeline for accessing and calibrating public load profiles to prepare a calibrated simulation of EGI's peak demand by customer type in the 2023 base year and how such peak demand may evolve across a forecast horizon of over 30 years.
- We used our experience in scenario analysis and stakeholder engagement to craft multiple plausible scenarios of future energy use in Ontario and gathered stakeholder input to prepare a probabilistic assessment of these scenarios. Dave is the Technical Director.

Integrated Gas and Electric Heating System Study: FortisBC (March 2024-ongoing). FortisBC Energy Inc (FEI) and FortisBC Inc. (FBC) (collectively, "FortisBC") is analyzing the impacts on gas and electric infrastructure and rates from the implementation of dual fuel (gas/electric) hybrid heating systems. The Integrated Gas and Electric (IGEH) System Study is evaluating how gas and electric energy delivery systems can be increasingly integrated, with the goal of decarbonization while providing the greatest value of shared ratepayer assets against other capacity acquisition options. FEI and FBC's shared service territory (SST) is the scope of the analysis, serving as the initial 'playground' for how to integrate province-wide strategies for combined electric and gas planning.

FortisBC asked Posterity Group to provide model inputs and advice to the IGEH System Study. PG will help FortisBC to understand the potential ranges of adoption for customers switching their space heating equipment from gas to electric. Specifically, PG is:

- Characterizing of fuel switching and distributed energy resource (DER) load drivers, and gas DSM activity, under different decarbonization pathways.
- Developing 8760 load profiles.

PG is well positioned to support FEI on this project based on our extensive experience working with FEI and FBC on several projects that involved characterizing energy use, forecasting load at a granular level, assessing impacts to peak from changes to building stock and energy choices, technology characterization, and demand-side management measures and programming. PG will use the Navigator model to assess energy savings potential and peak demand impacts from adoption of measures under different decarbonization pathways. The Navigator model will also be used to develop 8760 load profiles for gas end-uses that can switch to electricity. Key outputs from PG's work include:

- Adoption levels by customer type under different decarbonization scenario
- Measure characterization details for heat pump with gas backup, air-source heat pumps, and distributed energy resource measures.
- Gas 7660 load shapes for heating end uses by customer type

Dave is the Technical Director.





2024 LTERP and LTGRP: FortisBC (March 2024 – ongoing). FortisBC hired Posterity Group to help develop the 2026 Long-Term Gas Resource Plan (LTGRP) and Long-Term Electric Resource Plan (LTERP). PG is developing end-use models of FortisBC's gas and electric service territories and will develop demand forecasts of annual consumption, peak demand, and GHG emissions under various scenarios. The scenarios will estimate the impact on FortisBC's systems and customers from changes to building codes and equipment standards, adoption of technologies like solar PV and electric vehicles, uptake of low-carbon fuels like hydrogen and renewable natural gas, the impact of provincial and federal regulations, and changes to the province's building stock. PG is working closely with FortisBC's Integrated Resource Planning team to engage with internal subject-matter experts and external stakeholders to develop scenarios that address a variety of unknowns about the future of energy use and use a robust analysis approach to treat uncertainty.

PG's end-use models will support FortisBC to plan their energy systems under these possible futures by informing system infrastructure plans, rate impact analysis, gas supply planning, and electricity supply portfolio optimization. PG will provide FortisBC with model results via an interactive data visualization platform to communicate the results of the scenario modelling and a detailed method document explaining the data inputs and analysis approach.

Posterity Group will support FortisBC to file the 2026 LTGRP and LTERP with the British Columbia Utilities Commission (BCUC) and respond to information requests from intervenors, including the BCUC and several energy stakeholders in the province of B.C. Dave is the Technical Director.

Resource Plan and Long-Term DSM Plan: Pacific Northern Gas (Feb. 2023-ongoing). Pacific Northern Gas selected Posterity Group to help develop PNG's 2023 Consolidated Resource Plan and Long-Term DSM Plan. The resource plan development involves the development, analysis, and reporting of energy consumption forecasts (for 20 years from 2023-2042) under various scenarios and modeling different critical uncertainties. The project also involves developing and incorporating into the resource plan a long-term DSM plan including draft sector DSM portfolios. Dave is acting as Senior Advisor for this project.

DSM Plan 2024-2027: FortisBC Energy Inc. (September 2022-September 2023). FortisBC assigned the development of its next five-year DSM Expenditure Plan (for both FortisBC natural gas and electricity utilities) to Posterity Group. The scope of work involved program and portfolio development, cost effectiveness modelling and reporting and filing of the 2024 – 2027 DSM plans. Dave was the Senior Advisor as well as the lead analyst for this project.

Long Term Resource Planning Support and Navigator Implementation: Southern California Gas Company (April 2022 – ongoing). Posterity Group is developing an end use model to support SoCal Gas with ongoing long term planning activities in both SoCal Gas' and SDG&E's service territories. PG will build a model that "mirrors" the results from the current End Use Forecaster (EUF) model and then add enhanced capability allowing users to accomplish modeling tasks that are either not currently possible (e.g., scenario analysis) or completed outside of the EUF model (e.g., policy impact analysis or electrification analysis).

With an end use model to support regulatory reporting and internal analysis, SoCal Gas will:

- ✓ Have a flexible platform to assess the impacts of various policies/actions/future states, and to assess pathways to reach specific performance or GHG targets





- ✓ Be using the same model that is being leveraged by two of North America's largest gas utilities (Enbridge and FortisBC), and is actively supported by Posterity Group's dedicated, ongoing R&D investments
- ✓ Be able to develop outputs that are more clearly understood because Navigator is a transparent end use model rather than a black box model
- ✓ Avoid using the end use forecast as an intermediate forecast, through the integration of functions such as efficiency impact that are housed outside of the current end use modeling tool
- ✓ Have the flexibility to update key input data when new market information is available (e.g., when residential and commercial saturation studies are updated, or when changes to building codes/minimum energy performance standards occur)

Dave is the Technical Director for this project.

2022 Long Term Resource Plan Load Forecast Additional Analysis: FortisBC (March 2022-August 2022): Posterity Group continued to support FortisBC Energy Inc (FEI's) 2022 Long-term Gas Resource Plan (LTGRP) filing by conducting additional analysis related to the load forecast scenarios. PG provided several demand-side management setting options for FEI's Diversified Energy Planning scenario, reviewed calculation methods for the provincial GHG reduction requirements, and modelled impacts of FEI's system from BC Hydro's resource planning scenarios. Erika was the project manager and analyst for this project. She worked closely with the FEI client team, BC Hydro and their consultants, and PG's project team to execute the analysis on the tight schedule. Dave was the technical director for this project.

Renewable Gas Program Review – Cost Recovery: FortisBC Energy Inc. (July 2021-October 2021). FortisBC Energy Inc (FEI) reassessed the pricing scheme of their voluntary renewable gas (RG) program, including how to recover supply costs from customers who did not volunteer to pay a premium for RNG. Posterity Group (PG) focused on assessing how non-participants may respond to changes in their annual gas bill from RG-related costs. Posterity Group estimated impacts to annual demand and customer defection from price signals. The results of this project helped inform FEI's proposed design of the RG program to minimize impact on customers. Dave acted as Advisor.

DSM Planning Support: Enbridge Gas Inc. (January 2021-January 2022). In 2019 and 2020, Posterity Group worked with EGI to develop a Navigator end-use energy model to support DSM planning. The model aligns closely to the Ontario Energy Board's 2019 Achievable Potential Study but includes adjustments that better reflect Enbridge's input and experience, and to correct for identified limitations. Model outputs are housed within Power BI to provide an interactive means to support future EGI planning efforts. In 2021, Posterity Group worked with EGI to update and enhance the end-use model dataset to support its next multi-year DSM plan submission. Priorities include: Developing evidence to position the APS in a context that more accurately reflects EGI's knowledge and experience; Make further adjustments to the APS dataset to address deficiencies and enable sensitivity analysis; and Interrogatory and Witness Support. Dave was Technical Director and Lead Analyst.

Load Forecasts for the Southwest Ontario Greenhouse Sector: IESO (February 2021-August 2021). Greenhouse energy demand continues to expand in the Windsor-Essex and Chatham-Kent regions. To support planning efforts in these regions, the IESO developed three load forecast scenarios (a low growth, reference case, and high growth scenario) for greenhouse non-coincident winter-peak load. Posterity Group was hired to review the information and assumptions used by the IESO and provide additional information to validate the IESO's forecast scenarios or identify possible areas for adjustment. The main activities included in this project were data collection, review and analysis, scenario development,





modelling, and a comparison of the data and model results to the IESO's assumptions and models. Dave acted as Expert Advisor.

Energy Transition Scenario Analysis: Enbridge (July 2020-September 2022). Posterity Group supported Enbridge's Energy Transition Planning team to conduct scenario analysis of the consider the financial and operational impacts of the range of climate policy related impacts Enbridge could face over the next 30 years. Posterity Group modeled future load at the granular level of energy end uses, different building types, rate classes, and regions, and undertaking scenario analysis to explore several possible economic and policy scenarios under which Enbridge may operate in the future. The goal of the project was for Posterity Group to provide Enbridge with a comprehensive end-use level dataset that reflects several possible futures and a user-interface tool that allows decision makers to explore this dataset and distill quantitative impacts (e.g., how gas use and GHG emissions will change) under different forecast scenarios. Dave was Technical Director and Residential Sector Lead.

Energy Management Best Practices for Cannabis Greenhouses and Warehouses: CEATI International Inc. (November 2019-May 2020). Posterity Group, in partnership with Cultivate Energy Optimization and D+R International, assessed and documented best practices of energy management for cannabis production in both greenhouse and warehouse facilities. The study developed a five-year forecast of energy use in three regions (Ontario, British Columbia and the Pacific Northwest) for the sector and assessed energy saving opportunities. The outcome of this work formed an important base of industry knowledge and bridge the gap to provide current and comprehensive information regarding energy use in cannabis facilities, from which future conservation activities might be developed. Dave acted as Senior Analyst.

Long Term Resource Plan Model Enhancement: FortisBC Gas (November 2018-February 2020). Posterity Group added several new features to the Long Term Resource Plan model used to support FortisBC's regulatory filings. New features included the ability to output avoided cost and customer cost of energy, ability to vary short-term and long-term elasticity of energy demand based on the latest research, and the ability to run hundreds of stochastically-generated scenarios with inputs varying probabilistically.

Long Term Resource Plan Regulatory Support: FortisBC Gas (March 2018-November 2018). Posterity Group supported FortisBC in responding to BC Utilities Commission and intervener Information Requests (IRs) regarding its 2017 Long Term Gas Resource Plan (LTGRP). Posterity Group provided FortisBC with information and analysis in support of such inquiries related to the load forecast and subsequent scenario analysis conducted by Posterity Group for inclusion in FortisBC's LTGRP.

Analysis of Fenestration Products in Support of Canadian Market Transformation Activities: NRCan (July 2017-June 2018). Posterity Group provided analysis of the current market for low-rise residential fenestration products, including windows, doors, and skylights and developed estimates of the energy savings potential from changing performance levels in ENERGY STAR or introducing national performance standards. Dave was the technical lead on this project. To produce the estimate, he developed a detailed model of HVAC consumption in different types and vintages of low-rise housing in 22 regions, and modeled the application of several different fenestration energy performance improvements. Developed from publicly available data, this model can be applied for other future projects.

Low Carbon Heating Options for Ontario: Ontario Ministry of the Environment and Climate Change (November 2017-June 2018). Posterity Group estimated the GHG reduction impact potential of strategies targeting low carbon space, water and process heating technologies and fuels in Ontario's residential, commercial and industrial sectors. The project included four main activities: Development of energy and GHG Inventory and accompanying business as usual forecast for Ontario's thermal end-uses by fuel, sector/subsector, and end use; Development of a long list of fuels and technologies with abatement potential, and an evaluation matrix to build a short list of the 10





preferred, most promising technologies and fuels for detailed analysis; Detailed analysis of the short list of fuels and technologies to understand their current market structure, barriers, and applicability; and, development of illustrative deployment scenarios to estimate the potential impacts of the shortlisted fuels. Dave developed the inventory model and the illustrative deployment scenario models.

Natural Gas Demand Scenarios: FortisBC (July 2017-November 2017). Posterity Group provided demand scenario analysis to support FortisBC demand forecasting, with Dave acting as Technical Director and Residential sector lead. This work involved analysis of six scenarios that built on the core end-use forecast completed in June 2017. The project results helped FortisBC assess the impact of various policies, including the City of Vancouver zero emissions plan and the BC Step Code. As part of this work, Posterity Group added new features to the processing software at the heart of the forecasting model. These features allow users to dynamically select the municipalities that are expected to opt into new energy efficiency requirements.

Long Term Resource Plan Model and Forecast: FortisBC Gas (October 2016-June 2017). FortisBC turned to Posterity Group to develop a new end-use forecasting model to enhance their current end-use resource forecasting approach, and to generate a new 2017 forecast. The model provides value to the load forecasting, integrated resource planning, system planning, and conservation potential teams at FortisBC. Enhancements include: a full integration of energy efficiency impacts at the individual measure level, improved transparency of the model; features to allow casual users to vary parameters and review the effects on the results; outputs for every year in the forecast period (rather than milestone years); closer linkage between the annual demand and peak demand forecasting approaches; the ability to analyze the impact of changes such as municipal policy activity, ability to analyze the impact of liquefied natural gas and natural gas transportation initiatives. Dave was technical director and lead model developer.

End Use Load Forecast: FortisBC (2012-2014). Developed an end-use based load forecasting system for FortisBC, using detailed customer data and models built for an earlier conservation potential study. The model could forecast account growth and consumption of five fuels under five economic scenarios, over a twenty-year period, for three sectors, six regions, 33 rate classes, 36 building types, and 29 end uses. The model also estimated potential for conservation programs and reported on the sensitivity of the potential to different economic scenarios.

Integrated Resource Plan: NB Power (2009). Led residential analysis as part of a project to provide input data to NB Power's integrated resource planning process.

Conservation Potential Review and 20 Year Load Forecast: Ontario Power Authority (2009-2010). Led residential analysis of conservation potential for OPA, as part of project to develop a model combining forecasting and DSM potential.

Market Characterization of the Commercial/Institutional and Residential Sectors in Yukon: YEC and YECL (2012). Prepared initial program focus assessment documents, based on results from the Conservation Potential Study. Assisted in planning and preparing interview guides for market research, and conducted interviews. Provided input to program concept documents, which will lead to commercial and residential programs offered by the Yukon utilities.

Residential Market Segmentation Study: Enbridge Gas Inc. (formerly Union Gas) (2010). Led this analysis to assess the potential for DSM technologies in specific niche markets. In a mature market for DSM activities such as Union's service territory, many measures no longer pass the TRC test in a typical or average application, but often will pass in niche applications. We provided a strategic assessment of potential niche markets, to target DSM program activities.







**REGULATORY EXPERIENCE**

- EB-2022-0200-2024 Rates Application: Enbridge Gas Inc.
  - Interrogatory responses and filed evidence
  - Expert witness testimony at Technical Conference and responses to undertakings
  - Expert witness testimony at Oral Hearing and responses to undertakings
- EB-2021-0002 - Multi-Year Natural Gas DSM Plan: Enbridge Gas Inc.
  - Interrogatory responses and filed evidence
  - Expert witness testimony at Technical Conference and responses to undertakings
  - Expert witness testimony at Oral Hearing and responses to undertakings
- EB-2022-0157 - 2023 Panhandle Regional Expansion Project: Enbridge Gas Inc.
  - Interrogatory responses and filed evidence
- EB-2022-0157 - 2022 Panhandle Regional Expansion Project: Enbridge Gas Inc.
  - Interrogatory responses and filed evidence
- G-371-22 - 2023- 2027 Demand-Side Management Expenditures Plan: Fortis BC Inc. (Electric)
  - Interrogatory responses and filed evidence
- G-17-23 - 2022 Long-Term Gas Resource Plan: FortisBC Energy Inc.
  - Interrogatory responses and filed evidence
- 2017 Long-Term Gas Resource Plan: FortisBC Energy Inc.
  - Interrogatory responses and filed evidence

**EDUCATION**

M.Sc., Energy Studies, University of Sussex - Brighton, Sussex, United Kingdom, 1987

B.A.Sc., Mechanical Engineering, Minor: Management Science, University of Waterloo – Waterloo, Ontario, Canada, 1986

**CERTIFICATIONS**

Licensed Professional Engineer (Ontario)

**PROFESSIONAL AFFILIATIONS**

American Society of Heating, Refrigeration, and Air-conditioning Engineers

**EMPLOYMENT HISTORY**

Posterity Group	Senior Consultant	2016-Present
ICF International	Senior Technical Specialist	2011-2016
Marbek Resource Consultants	Senior Consultant	2000-2010
Energy Center of Wisconsin	Project Manager	1993-2000
Resource Management Associates	Energy Engineer	1991-1993





University of Waterloo

WATSUN Engineer

1987-1991

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St Laurent Pipeline Project - Customer Growth Forecast  
 City Location – Legacy EGD – Ottawa Region

Year	Customers										Load (m3/h)										Total Customers	Total Load (m3/h)					
	Total from Existing/CMM					Incremental from Future/Tracker					Total from Existing/CMM					Incremental from Future/Tracker											
	Apt	Com	Ind	Res	Special Customer	Apt	Com	Ind	Res	Special Customer	Apt	Com	Ind	Res	Special Customer	Apt	Com	Ind	Res	Special Customer							
2022	142	3336	12	29062							5345	62379	1026	32259													
2023	142	3336	12	29062		29		147	3		5351	62452	1027	32132						1017						32731	103098
2024	142	3336	12	29062	1	23		91	1		5357	62521	1028	32111	77	1475		185	228							32848	105117
2025	142	3336	12	29062		11		167			5370	62679	1031	32123		396		133								33025	105832
2026	142	3334	12	29047		0		219			5384	62838	1034	32135		3		203								33228	106225
2027	142	3331	12	29018		1		468			5398	63006	1036	32156		64		436								33665	106932
2028	142	3326	12	28975		0		402			5414	63185	1039	32168		3		375								34018	107519
2029	141	3319	12	28917		27		140			5429	63364	1042	32168		292		130								34120	108139
2030	141	3311	12	28845		26		50			5446	63558	1045	32157		282		46								34115	108670
2031	141	3301	12	28758		24		153			5458	63706	1048	32123		258		143								34195	109200
2032	140	3290	12	28657		23		362			5471	63848	1050	32069		245		337								34467	109884
2033	139	3276	12	28543		21		407			5482	63983	1052	32014		231		378								34767	110587
2034	139	3262	12	28414		20		378			5492	64094	1054	31971		216		352								35021	111234
2035	138	3245	12	28272		19		353			5499	64181	1056	31938		202		328								35233	111826
2036	137	3228	12	28117		17		327			5503	64232	1056	31914		187		304								35403	112349
2037	137	3208	12	27948		16		301			5505	64249	1057	31897		173		280								35531	112804
2038	136	3187	11	27766		15		275			5503	64232	1056	31888		158		256								35618	113189
2039	135	3165	11	27572		13		250			5503	64232	1056	31875		143		232								35663	113551
2040	134	3141	11	27365		12		224			5503	64232	1056	31862		129		208								35667	113875
2041	133	3116	11	27146		10		199			5503	64231	1056	31849		114		185								35631	114161
2042	132	3090	11	26916		9		175			5503	64231	1056	31835		99		163								35556	114410
2043	130	3062	11	26673		8		152			5503	64231	1056	31822		85		141								35445	114622



Res   Adaptive Thermostat	0	0	0	0	0	1	1	1	1	2	2	3	3	4	4	5	5	5	6	6	6
Res   Advanced BAS/Controllers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Air Sealing	0	297	669	1,034	1,315	1,495	1,595	1,646	1,670	1,681	1,684	1,683	1,680	1,676	1,671	1,664	1,657	1,648	1,639	1,628	1,617
Res   Attic Insulation	0	30	81	134	168	183	188	190	190	190	189	189	188	187	186	185	184	183	182	180	179
Res   Basement Wall Insulation	0	66	135	191	228	249	259	265	267	267	267	267	266	265	263	262	261	259	257	255	253
Res   Ceiling Insulation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Condensing Boiler	0	6	20	45	90	143	194	249	316	400	491	583	676	768	857	944	1,027	1,106	1,180	1,250	1,316
Res   Condensing Make Up Air Unit	0	2	4	7	10	13	16	18	21	25	28	31	34	37	41	44	47	50	53	56	59
Res   Condensing Storage Water Heater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Demand Control Ventilation	0	35	71	102	126	142	152	159	164	167	170	172	174	176	178	180	182	183	184	185	186
Res   DHW Recirculation Systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Drain Water Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Early Hot Water Heater Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Energy Star Clothes Dryer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Energy Star Windows	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Floor Insulation	0	3	8	14	20	25	28	30	31	32	32	32	32	31	31	31	31	31	30	30	30
Res   Furnace Tune Up	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Heat Recovery Ventilator	0	1	3	8	23	40	46	48	56	73	94	112	130	146	161	175	187	199	209	218	226
Res   Heat Recovery Ventilator 0% Baseline	0	152	394	714	1,045	1,311	1,484	1,581	1,630	1,652	1,659	1,660	1,657	1,651	1,644	1,636	1,627	1,617	1,605	1,593	1,580
Res   Heat Recovery Ventilator 55% Baseline	0	51	143	264	376	449	486	502	508	510	510	508	507	505	502	500	497	494	490	486	483
Res   High Efficiency Condensing Furnace	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   High Efficiency Gas Pool Heater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Solar Water Preheat (Pools/DHW)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Tankless Water Heater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Res   Wall Insulation	0	54	139	252	368	462	523	557	575	582	585	585	584	582	579	577	573	570	566	561	557
Res   Whole Home Building Envelope	0	132	342	620	907	1,137	1,287	1,371	1,413	1,458	1,478	1,485	1,485	1,481	1,475	1,468	1,461	1,451	1,441	1,430	1,419
Shift Heating Off Peak	0	14	43	86	141	207	280	355	429	495	553	601	637	664	683	695	704	708	711	712	712
<b>Grand Total</b>	<b>0</b>	<b>1,033</b>	<b>2,417</b>	<b>4,012</b>	<b>5,522</b>	<b>6,702</b>	<b>7,507</b>	<b>8,034</b>	<b>8,402</b>	<b>8,721</b>	<b>8,974</b>	<b>9,185</b>	<b>9,677</b>	<b>10,070</b>	<b>10,383</b>	<b>10,631</b>	<b>10,828</b>	<b>10,977</b>	<b>11,091</b>	<b>11,181</b>	<b>11,248</b>



Sector	End Use	Peak Hour Reduction (m3/hr)																				
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Commercial	Space Heating	0	154	288	405	491	549	588	617	639	659	676	696	1,027	1,283	1,477	1,621	1,727	1,803	1,856	1,893	1,917
Commercial	Cooking	0	4	10	16	22	28	35	41	47	52	57	61	66	70	73	76	79	82	84	86	87
Commercial	Misc Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	Water Heating	0	15	27	35	42	47	54	60	66	72	79	84	90	96	101	106	110	115	118	125	131
Industrial	HVAC	0	11	25	51	94	148	198	236	260	275	284	289	293	296	299	301	303	306	308	309	311
Industrial	Process Heating (Water and Steam)	0	1	3	6	11	18	26	34	40	45	48	51	53	55	56	58	59	60	62	63	64
Industrial	Process Heating (Direct)	0	7	15	29	45	57	66	73	79	84	88	91	94	97	100	102	105	107	110	112	114
Industrial	Other Process	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Residential	Space Heating	0	841	2,051	3,470	4,817	5,855	6,539	6,973	7,270	7,534	7,742	7,911	8,052	8,173	8,277	8,366	8,443	8,503	8,553	8,592	8,622
<b>Grand Total</b>		<b>0</b>	<b>1,033</b>	<b>2,417</b>	<b>4,012</b>	<b>5,522</b>	<b>6,702</b>	<b>7,507</b>	<b>8,034</b>	<b>8,402</b>	<b>8,721</b>	<b>8,974</b>	<b>9,185</b>	<b>9,677</b>	<b>10,070</b>	<b>10,383</b>	<b>10,631</b>	<b>10,828</b>	<b>10,977</b>	<b>11,091</b>	<b>11,181</b>	<b>11,248</b>

Sector	Segment	Peak Hour Reduction (m3/hr)																				
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Residential	Attached or Row House	0	283	692	1,166	1,608	1,941	2,160	2,300	2,397	2,503	2,583	2,646	2,699	2,745	2,784	2,818	2,847	2,872	2,892	2,908	2,921
Residential	Detached House	0	446	1,107	1,902	2,663	3,249	3,631	3,863	4,011	4,118	4,200	4,266	4,321	4,367	4,407	4,441	4,470	4,491	4,507	4,518	4,525
Residential	Low Income: MF	0	22	50	79	106	127	139	146	152	160	168	175	182	188	194	199	204	209	213	217	220
Residential	Low Income: SF	0	50	116	189	262	318	352	371	384	397	408	418	426	434	441	447	452	456	459	462	464
Residential	Multi-Res: High Rise	0	9	17	26	35	45	55	65	75	84	93	101	107	113	118	122	126	129	132	135	138
Residential	Multi-Res: Low Rise	0	31	69	107	143	174	202	228	251	272	290	305	317	327	334	340	344	348	351	353	355
<b>Residential Total</b>		<b>0</b>	<b>841</b>	<b>2,051</b>	<b>3,470</b>	<b>4,817</b>	<b>5,855</b>	<b>6,539</b>	<b>6,973</b>	<b>7,270</b>	<b>7,534</b>	<b>7,742</b>	<b>7,911</b>	<b>8,052</b>	<b>8,173</b>	<b>8,277</b>	<b>8,366</b>	<b>8,443</b>	<b>8,503</b>	<b>8,553</b>	<b>8,592</b>	<b>8,622</b>
Commercial	Food Retail	0	1	1	2	3	3	3	4	4	4	4	4	8	11	14	17	19	21	23	24	25
Commercial	Hospital	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	2	2
Commercial	Large Hotel	0	37	80	120	154	180	200	217	231	244	256	267	289	308	325	339	350	361	369	376	382
Commercial	Large Non-Food Retail	0	2	3	4	4	4	5	5	5	6	6	6	19	29	37	43	47	50	53	55	56
Commercial	Large Office	0	39	66	83	91	94	95	96	97	97	97	97	204	285	344	387	417	437	449	457	460
Commercial	Long Term Care	0	6	13	19	25	29	33	36	38	41	45	47	56	64	70	75	79	83	86	88	90
Commercial	Other Commercial	0	16	23	27	29	30	32	33	34	34	35	36	102	152	189	216	235	248	256	261	264
Commercial	Other Non-Food Retail	0	4	6	7	9	11	13	15	18	20	22	24	58	85	105	120	131	139	145	149	151
Commercial	Other Office	0	1	1	1	1	1	2	2	2	2	2	2	3	4	5	5	5	6	6	6	6
Commercial	Restaurant	0	9	19	29	38	47	55	63	70	77	83	93	107	120	131	140	149	156	163	168	173
Commercial	School	0	18	29	37	42	46	49	53	56	59	61	64	96	122	142	157	169	178	185	190	194
Commercial	University_College	0	4	7	9	11	11	12	13	13	14	14	14	18	21	24	26	27	28	29	33	36
Commercial	Warehouse	0	34	75	117	149	168	177	182	185	187	188	188	221	246	264	277	286	291	295	296	296
<b>Commercial Total</b>		<b>0</b>	<b>172</b>	<b>324</b>	<b>456</b>	<b>555</b>	<b>624</b>	<b>677</b>	<b>718</b>	<b>752</b>	<b>783</b>	<b>812</b>	<b>842</b>	<b>1,183</b>	<b>1,448</b>	<b>1,651</b>	<b>1,803</b>	<b>1,917</b>	<b>2,000</b>	<b>2,059</b>	<b>2,104</b>	<b>2,135</b>
Industrial	Agriculture	0	0	0	0	1	1	2	3	3	4	4	5	5	5	6	6	6	6	6	6	6
Industrial	Fabricated Metals Mfg	0	0	1	1	1	2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4
Industrial	Food and Beverage Mfg	0	1	1	2	4	5	7	8	9	9	10	10	11	11	11	11	11	12	12	12	12
Industrial	Non-metallic Minerals Product Mfg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Industrial	Other Industrial	0	18	40	82	144	214	279	329	364	387	402	413	421	428	434	440	446	451	457	462	467
Industrial	Pulp, Paper, and Wood Products Mfg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	Transportation and Machinery Mfg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	Water & Wastewater Treatment	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
<b>Industrial Total</b>		<b>0</b>	<b>19</b>	<b>43</b>	<b>86</b>	<b>150</b>	<b>223</b>	<b>291</b>	<b>343</b>	<b>380</b>	<b>404</b>	<b>420</b>	<b>432</b>	<b>441</b>	<b>449</b>	<b>455</b>	<b>462</b>	<b>468</b>	<b>474</b>	<b>480</b>	<b>485</b>	<b>490</b>
<b>Grand Total</b>		<b>0</b>	<b>1,033</b>	<b>2,417</b>	<b>4,012</b>	<b>5,522</b>	<b>6,702</b>	<b>7,507</b>	<b>8,034</b>	<b>8,402</b>	<b>8,721</b>	<b>8,974</b>	<b>9,185</b>	<b>9,677</b>	<b>10,070</b>	<b>10,383</b>	<b>10,631</b>	<b>10,828</b>	<b>10,977</b>	<b>11,091</b>	<b>11,181</b>	<b>11,248</b>

Measure Name	Annual Consumption Reduction (m3)																				
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Com   Adaptive Thermostats	0	1,689	3,665	5,289	6,282	6,785	7,017	7,118	7,160	7,168	7,160	7,143	7,118	7,083	7,041	6,989	6,930	6,862	6,797	6,708	6,625
Com   Air Curtains	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Boilers - Advanced Controls (Steam Systems)	0	7,846	13,117	15,947	17,290	17,892	18,155	18,264	18,305	18,295	18,260	18,207	18,138	18,049	17,937	17,806	17,653	17,482	17,290	17,090	16,879
Com   Building Recommissioning; Operations and Maintenance (O&M) Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   CEE Tier 2/Energy Star Clothes Washers	0	1,875	4,511	7,420	10,455	13,506	16,697	19,834	22,943	25,883	28,770	31,566	34,264	36,843	39,299	41,625	43,809	45,853	47,744	49,511	51,151
Com   Condensing Boiler (84% eff)	0	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239	52,239
Com   Condensing Make Up Air Unit	0	1,889	4,602	7,397	10,556	13,905	19,232	24,549	29,743	34,828	39,726	44,496	49,128	53,517	57,723	61,731	65,456	68,890	72,159	75,162	77,950
Com   Condensing Storage Water Heater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Demand Control Kitchen Ventilation	0	15,114	25,008	30,308	33,509	35,854	38,276	40,514	42,619	44,582	46,418	48,143	49,755	51,220	52,549	53,739	54,774	55,668	56,404	57,031	57,547
Com   Demand Control Kitchen Ventilation	0	9,294	18,432	26,826	34,910	40,825	45,218	48,518	50,820	52,300	53,027	53,627	54,097	54,457	54,727	54,926	55,077	55,193	55,277	55,339	55,387
Com   Demand controlled Circulating Systems	0	8,041	8,156	9,897	10,814	11,278	11,503	11,603	11,639	11,635	11,608	11,568	11,517	11,454	11,378	11,292	11,194	11,086	10,967	10,842	10,712
Com   Destratification	0	25,868	64,216	105,006	135,668	153,272	161,877	165,728	167,369	167,837	167,776	167,413	166,846	166,059	165,006	163,860	162,466	160,883	159,116	157,261	155,321
Com   Dock Door Seals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Drain Water Heat Recovery (DWHR)   Retro	0	3,602	6,050	7,359	7,968	8,228	8,330	8,361	8,361	8,342	8,314	8,279	8,239	8,191	8,136	8,073	8,002	7,925	7,841	7,752	7,659
Com   Drain Water Heat Recovery (DWHR)   New	0	68	124	134	130	130	129	129	129	129	128	128	128	128	128	128	128	128	128	128	128
Com   Duct Insulation; RB	0	597	1,147	1,559	1,823	1,975	2,056	2,098	2,118	2,126	2,126	2,122	2,115	2,105	2,092	2,077	2,059	2,039	2,017	1,994	1,969
Com   Energy Efficient Laboratory Fume Hood	0	44,096	88,437	115,025	126,440	130,656	132,129	132,595	132,692	132,535	132,230	131,811	131,288	130,621	129,805	128,843	127,738	126,493	125,112	123,662	122,143
Com   Energy Recovery Ventilation and Ventilation (Enhanced)	0	46,154	106,245	168,089	221,637	262,509	298,458	327,406	351,915	373,523	393,243	420,731	446,895	473,965	499,506	523,476	545,996	566,045	584,550	601,642	617,265
Com   ENERGY STAR Dishwasher	0	8,927	15,305	18,652	21,251	23,064	25,039	26,863	28,564	30,144	31,605	32,967	34,230	35,366	36,389	37,298	38,079	38,747	39,287	39,738	40,098
Com   ENERGY STAR Fryer (84% eff)	0	9,077	23,456	38,996	54,904	70,131	87,038	104,722	120,403	134,986	148,432	160,890	172,396	182,750	192,117	200,503	207,796	214,148	219,451	223,988	227,764
Com   ENERGY STAR Griddle (74% eff)	0	3,374	9,257	15,944	22,947	29,696	37,669	45,190	52,201	58,714	64,708	70,255	75,366	79,966	84,118	87,831	91,053	93,856	96,189	98,180	99,831
Com   ENERGY STAR Steam Cooker	0	8,261	19,187	30,344	41,539	52,354	64,384	75,901	86,848	97,191	106,914	116,075	124,674	132,604	140,811	148,593	152,558	157,500	162,628	166,780	170,407
Com   Furnace Tune-Up	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Gas Convection Oven	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Gas Fired Heat Pump	0	9,815	26,248	46,215	72,461	103,179	156,343	213,846	273,628	335,053	396,419	457,806	518,602	577,380	633,991	688,666	739,939	788,254	833,247	875,370	914,605
Com   Gas Fired Roof Top Units	0	3,145	8,117	13,220	18,995	24,973	33,807	42,625	51,258	59,710	67,873	75,827	83,553	90,896	97,935	104,647	110,907	116,803	122,211	127,294	132,025
Com   Heat Recovery Ventilator	0	21,547	49,607	78,816	108,968	139,421	179,211	229,211	279,409	329,817	380,446	431,295	482,364	533,663	585,192	636,941	688,909	741,088	793,479	846,083	898,902
Com   High Efficiency Condensing Furnace AFUE 95% from 80% code	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   High Efficiency Underfired Boilers	0	60	120	180	240	300	360	420	480	540	600	660	720	780	840	900	960	1,020	1,080	1,140	1,200
Com   HOTEL OCCUPANCY CONTROLS (HVAC + LIGHTING)	0	60	16,038	25,236	34,480	43,405	53,613	63,396	72,695	81,492	89,761	97,566	104,889	111,647	117,883	123,591	128,709	133,297	137,295	140,850	143,968
Com   Ice Rink Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Infrared Heaters	0	87	250	458	719	1,006	1,451	1,903	2,349	2,786	3,207	3,616	4,012	4,387	4,744	5,083	5,397	5,690	5,957	6,207	6,436
Com   Low Flow Pre-Rinse Spray Nozzle	0	7,498	18,257	29,284	39,410	48,244	56,103	62,782	68,516	73,345	77,411	80,802	83,596	85,832	87,562	88,838	89,706	90,380	90,866	91,205	91,515
Com   Onsite Laundry Treatment	0	38,557	66,603	79,697	84,880	86,749	89,678	92,405	94,218	96,087	97,716	99,155	100,526	101,950	102,463	103,144	103,549	103,761	103,697	103,502	103,158
Com   Roof Insulation/Ceiling Insulation (R25 Code to R35)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Solar Preheat Make up Air	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Solar Water Preheat (Pools/DHW)	0	3,930	10,914	19,963	32,051	46,437	69,339	94,329	120,544	147,594	174,772	202,011	229,015	255,120	280,432	304,775	327,660	349,316	369,298	401,272	431,328
Com   Steam System Optimization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Super High Perf Glazing   New	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Super High Perf Glazing   RET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Com   Super-High Efficiency Furnaces (Emerging Tech)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ind   Wall Insulation	26,433	43,654	52,560	57,584	60,241	61,668	62,292	62,625	62,705	62,664	62,511	62,300	62,035	61,726	61,381	60,968	60,497	59,918	59,241	58,476	58,002
Ind   Air Compressor Heat Recovery	0	580	1,121	2,105	3,770	6,259	9,374	12,503	15,052	16,794	17,859	18,478	18,839	19,061	19,204	19,310	19,395	19,472	19,544	19,613	19,681
Ind   Boiler Tune Up	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ind   Boiler Tune Up - Direct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ind   Boiler Tune Up - HVAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ind   Boiler Upgrade	0	5,148	10,341	20,182	37,294	63,415	95,078	127,718	155,486	176,355	191,390	202,521	211,242	218,847	225,609	231,939	237,992	243,868	249,584	255,174	260,653
Ind   Direct Contact Water Heaters	0	707	1,421	2,774	5,126	8,662	13,068	17,554	21,371	24,239	26,305	27,836	29,048	30,079	31,009	31,879	32,711	33,517	34,303	35,072	35,825
Ind   Gas Turbine Optimization	0	167	422	852	1,285	1,544	1,656	1,734	1,786	1,822	1,843	1,854	1,861	1,865	1,868	1,870	1,871	1,871	1,871	1,871	1,871
Ind   Greenhouse Envelope Improvements	0	28	60	118	221	381	596	837	1,070	1,276	1,455	1,613	1,756	1,888	2,013	2,131	2,243	2,350	2,452	2,550	2,644
Ind   HVAC Controls	0	3,659	8,282	17,455	32,360	50,306	65,463	74,961	79,951	82,990	84,325	84,810	85,327	85,869	86,417	86,944	87,444	87,918	88,366	88,791	89,199
Ind   HE HVAC Units	0	9,399	58	110	327	490	653	817	982	1,148	1,316	1,486	1,658	1,831	2,006	2,181	2,356	2,531	2,706	2,881	3,056
Ind   HE Stock Tank	0	92	187	370	769	1,171	1,769	2,379	2,992	3,608	4,226	4,846	5,468	6,091	6,715	7,340	7,965	8,590	9,215	9,840	10,465
Ind   High Efficiency Burners	0	5,498	14,017	28,648	44,243	55,248	62,121	66,956	70,966	74,610	78,054	81,366	84,573	87,683	90,677	93,578	96,385	99,106	101,747	104,308	106,790
Ind   High Efficiency Furnaces	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ind   High Efficiency HVAC Fans (Gas)	0	1,017	2,018	3,893	7,115	11,973	18,018	24,147	29,394	33,822	35,609	37,400	38,741	39,582	40,235	40,735	41,128	41,518	41,905	42,289	42,664
Ind   Improved Controls - Process Heating Gas	0	1,582	4,010	8,105	12,330	17,419	15,811	16,236	16,41												

Sector	End Use	Annual Consumption Reduction (m3)																				
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Commercial	Space Heating	0	265,995	504,524	718,420	890,570	1,020,716	1,152,467	1,269,462	1,377,791	1,483,188	1,584,098	1,691,117	2,291,318	2,773,290	3,158,522	3,465,443	3,706,537	3,898,199	4,046,797	4,165,748	4,260,072
Commercial	Cooking	0	27,650	67,938	110,521	153,871	195,586	243,593	289,209	332,147	372,883	409,815	444,781	477,316	506,967	534,029	558,519	580,144	599,250	615,563	629,798	641,959
Commercial	Misc Commercial	0	1,875	4,511	7,420	10,455	13,506	16,697	19,834	22,904	25,883	28,770	31,566	34,264	36,843	39,299	41,625	43,809	45,853	47,744	49,511	51,151
Commercial	Water Heating	0	67,623	125,409	165,296	196,547	224,231	260,310	296,546	332,514	367,982	402,411	435,950	468,387	498,938	527,860	555,030	579,893	602,830	623,327	655,333	684,947
Industrial	HVAC	0	16,927	37,542	78,126	144,495	226,315	299,812	351,022	382,037	399,720	409,928	416,256	420,678	424,139	427,125	429,861	432,421	434,894	437,310	439,670	441,985
Industrial	Process Heating (Water and Steam)	0	12,089	25,966	52,780	97,024	155,504	216,606	269,336	309,307	337,294	356,645	370,655	381,630	390,940	399,332	407,198	414,740	422,062	429,219	436,226	443,098
Industrial	Process Heating (Direct)	0	31,943	79,001	161,261	256,555	336,649	397,325	442,867	477,341	503,819	525,042	543,154	559,422	574,556	588,788	602,442	615,560	628,265	640,594	652,556	664,169
Industrial	Process Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	Other Process	0	523	1,288	2,625	4,178	5,433	6,246	6,686	6,905	7,008	7,062	7,096	7,119	7,139	7,157	7,176	7,193	7,209	7,225	7,241	7,257
Residential	Washing/Drying Appliances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential	Space Heating	0	1,261,947	3,032,596	5,084,191	7,015,484	8,494,621	9,464,459	10,071,072	10,478,834	10,840,982	11,122,116	11,349,725	11,542,857	11,710,777	11,858,196	11,987,669	12,100,695	12,190,164	12,263,873	12,322,636	12,366,978
Residential	Cooking	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential	Misc Residential	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential	Water Heating	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>		<b>0</b>	<b>1,686,572</b>	<b>3,878,775</b>	<b>6,380,640</b>	<b>8,769,179</b>	<b>10,672,562</b>	<b>12,057,517</b>	<b>13,016,036</b>	<b>13,719,779</b>	<b>14,338,257</b>	<b>14,845,887</b>	<b>15,290,300</b>	<b>16,182,993</b>	<b>16,923,589</b>	<b>17,540,308</b>	<b>18,054,962</b>	<b>18,480,991</b>	<b>18,828,727</b>	<b>19,111,652</b>	<b>19,358,719</b>	<b>19,561,616</b>

Sector	Segment	Annual Consumption Reduction (m3)																				
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Residential	Attached or Row House	0	479,015	1,153,911	1,929,229	2,645,652	3,184,477	3,533,907	3,751,974	3,899,458	4,058,768	4,176,069	4,268,140	4,345,128	4,411,873	4,470,701	4,522,742	4,568,557	4,605,659	4,636,695	4,661,895	4,681,398
Residential	Detached House	0	609,999	1,495,978	2,552,272	3,560,366	4,334,103	4,836,260	5,138,418	5,325,843	5,457,810	5,556,815	5,635,148	5,700,566	5,756,743	5,805,417	5,847,431	5,883,208	5,909,337	5,929,193	5,942,982	5,950,839
Residential	Low Income: MF	0	34,514	79,181	125,610	167,966	199,400	218,103	229,536	239,374	251,075	262,612	273,130	282,898	292,025	300,564	308,542	315,969	322,701	328,857	334,463	339,522
Residential	Low Income: SF	0	65,395	150,281	245,786	339,351	411,939	455,821	480,018	496,074	511,631	525,365	536,857	546,868	555,719	563,554	570,431	576,376	581,006	584,682	587,451	589,329
Residential	Multi-Res: High Rise	0	16,376	32,120	46,914	61,454	75,963	90,401	104,750	118,870	132,582	145,459	157,288	168,042	177,774	186,587	194,604	201,948	208,436	214,401	219,921	225,054
Residential	Multi-Res: Low Rise	0	56,649	121,125	184,381	240,695	288,740	329,967	366,376	399,214	429,116	455,797	479,162	499,355	516,643	531,373	543,919	554,637	563,024	570,045	575,924	580,837
Residential Total		0	1,261,947	3,032,596	5,084,191	7,015,484	8,494,621	9,464,459	10,071,072	10,478,434	10,840,982	11,122,116	11,349,725	11,542,857	11,710,777	11,858,196	11,987,669	12,100,695	12,200,164	12,286,873	12,322,636	12,366,978
Commercial	Food Retail	0	1,789	3,198	4,601	5,944	7,138	8,637	10,076	11,454	12,791	14,078	15,333	16,576	17,716	18,754	19,691	20,528	21,265	21,902	22,439	22,876
Commercial	Hospital	0	274	446	552	624	686	786	892	1,004	1,121	1,155	1,587	2,438	3,153	3,763	4,286	4,728	5,112	5,435	5,718	5,962
Commercial	Large Hotel	0	107,788	222,974	327,563	415,000	483,170	550,511	609,340	662,927	713,187	760,859	806,858	884,184	952,212	1,012,865	1,066,953	1,114,033	1,155,571	1,191,392	1,223,086	1,250,863
Commercial	Large Non-Food Retail	0	3,695	5,624	7,285	8,948	10,620	13,114	15,673	18,245	20,815	23,338	25,828	28,334	30,822	33,301	35,771	38,233	40,687	43,133	45,571	47,992
Commercial	Large Office	0	72,368	129,374	170,726	200,886	226,698	264,216	303,495	343,842	384,899	425,719	466,369	680,305	849,742	983,320	1,088,312	1,170,204	1,234,498	1,284,358	1,323,947	1,355,317
Commercial	Long Term Care	0	19,586	38,870	56,357	71,486	83,734	96,655	108,229	118,924	131,482	143,522	155,203	184,574	209,700	231,498	250,462	266,005	280,663	292,484	302,841	311,804
Commercial	Other Commercial	0	27,810	39,549	47,075	51,764	54,696	57,357	59,511	61,372	63,016	64,507	65,892	167,491	244,281	301,075	342,188	371,213	391,079	404,014	411,991	416,296
Commercial	Other Non-Food Retail	0	7,785	12,236	16,982	22,516	28,457	37,753	47,324	56,921	66,498	75,874	85,109	134,759	174,881	206,567	231,539	251,054	266,441	278,407	287,971	295,607
Commercial	Other Office	0	826	1,462	2,310	2,470	2,612	2,744	2,868	2,985	3,097	4,708	5,941	6,869	7,556	8,055	8,412	8,658	8,825	8,933	9,033	9,126
Commercial	Restaurant	0	45,697	102,894	159,881	215,495	267,763	325,465	379,595	430,018	476,750	519,829	568,790	629,810	683,921	732,163	775,031	812,395	845,172	873,097	897,489	918,465
Commercial	School	0	26,168	43,856	56,399	66,521	75,409	87,390	97,544	111,181	122,883	134,295	145,494	203,533	251,518	291,711	325,467	353,078	376,307	395,011	410,824	423,990
Commercial	University, College	0	13,993	23,954	30,576	35,230	38,743	42,553	46,052	49,334	52,485	55,463	58,320	69,376	78,524	86,184	92,615	97,885	102,313	105,885	122,060	137,083
Commercial	Warehouse	0	35,365	77,945	121,759	154,883	174,624	186,161	192,909	197,389	200,641	203,271	205,535	241,038	267,931	288,506	303,507	314,062	321,224	325,662	328,220	329,312
Commercial Total		0	363,143	702,382	1,001,657	1,251,443	1,454,040	1,673,067	1,875,052	2,065,355	2,249,435	2,425,094	2,603,414	3,271,285	3,816,038	4,259,711	4,620,616	4,910,382	5,146,132	5,333,431	5,500,390	5,638,129
Industrial	Agriculture	0	537	1,166	2,393	4,437	7,112	9,816	12,039	13,677	14,813	15,608	16,198	16,673	17,083	17,460	17,814	18,154	18,484	18,805	19,119	19,426
Industrial	Fabricated Metals Mfg	0	957	2,261	4,603	7,552	10,364	12,646	14,289	15,480	16,338	16,937	17,479	17,971	18,350	18,723	19,089	19,448	20,700	20,485	20,794	20,794
Industrial	Food and Beverage Mfg	0	4,990	10,779	22,063	37,286	53,132	66,774	76,899	83,806	88,340	91,432	93,690	95,464	97,013	98,412	99,736	100,991	102,202	103,379	104,523	105,637
Industrial	Non-metallic Minerals Product Mfg	0	170	405	829	1,374	1,906	2,338	2,647	2,854	2,993	3,091	3,166	3,229	3,285	3,337	3,386	3,433	3,478	3,521	3,563	3,604
Industrial	Other Industrial	0	55,139	128,974	264,469	450,868	650,350	827,124	962,558	1,058,167	1,123,670	1,169,879	1,204,867	1,233,727	1,259,238	1,282,596	1,304,717	1,325,958	1,346,542	1,366,579	1,386,092	1,405,121
Industrial	Pulp, Paper, and Wood Products Mfg	0	24	57	115	191	263	322	363	389	405	414	420	425	428	430	432	434	436	438	440	442
Industrial	Transportation and Machinery Mfg	0	13	31	63	104	142	174	197	214	225	233	238	244	248	251	255	258	262	266	270	274
Industrial	Water & Wastewater Treatment	0	53	125	258	439	631	796	919	1,004	1,056	1,083	1,102	1,117	1,130	1,143	1,154	1,166	1,177	1,189	1,200	1,211
Industrial Total		0	61,481	143,797	294,792	502,252	723,901	919,990	1,069,911	1,275,590	1,347,840	1,388,677	1,337,161	1,368,850	1,396,774	1,422,401	1,446,677	1,469,914	1,492,430	1,514,348	1,535,693	1,556,509
Grand Total		0	1,686,572	3,878,775	6,380,640	8,769,179	10,672,562	12,057,517	13,016,036	13,719,779	14,338,257	14,845,887	15,290,300	16,182,993	16,923,589	17,540,308	18,054,962	18,480,991	18,828,727	19,111,652	19,358,719	19,561,616

Year	Incentive Costs	Non Incentive Costs
2023	\$ -	\$ -
2024	\$ 3,112,411	\$ 1,244,973
2025	\$ 4,393,595	\$ 1,757,447
2026	\$ 5,179,260	\$ 2,071,722
2027	\$ 4,884,225	\$ 1,953,708
2028	\$ 3,729,260	\$ 1,491,729
2029	\$ 2,457,099	\$ 982,862
2030	\$ 1,477,338	\$ 590,961
2031	\$ 881,625	\$ 352,671
2032	\$ 775,599	\$ 310,261
2033	\$ 492,983	\$ 197,207
2034	\$ 397,412	\$ 158,979
2035	\$ 3,409,677	\$ 1,363,878
2036	\$ 2,651,893	\$ 1,060,765
2037	\$ 2,065,711	\$ 826,286
2038	\$ 1,599,510	\$ 639,808
2039	\$ 1,211,811	\$ 484,726
2040	\$ 928,456	\$ 371,383
2041	\$ 696,807	\$ 278,724
2042	\$ 574,820	\$ 229,929
2043	\$ 436,634	\$ 174,654

\*all spending is in net terms



Measure Name	Incentive Costs					
	2023	2024	2025	2026	2027	2028
Com   Air Curtains	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Com   Boilers - Advanced Controls (Steam Systems)	\$ -	\$ 3,925	\$ 2,651	\$ 1,416	\$ 656	\$ 276
Com   Condensing Boiler   Std	\$ -	\$ 55,716	\$ 0	\$ -	\$ -	\$ -
Com   Condensing Make Up Air Unit	\$ -	\$ 1,254	\$ 1,805	\$ 1,849	\$ 2,120	\$ 2,187
Com   Demand Control Kitchen Ventilation	\$ -	\$ 15,284	\$ 9,244	\$ 4,203	\$ 1,879	\$ 978
Com   Demand Control Ventilation	\$ -	\$ 10,223	\$ 10,885	\$ 9,756	\$ 7,756	\$ 5,748
Com   Demand controlled Circulating Systems	\$ -	\$ 1,926	\$ 1,190	\$ 663	\$ 346	\$ 172
Com   Destratification	\$ -	\$ 83,896	\$ 124,135	\$ 131,584	\$ 98,145	\$ 55,367
Com   Drain Water Heat Recovery (DWHR)   Retro	\$ -	\$ 2,406	\$ 1,636	\$ 874	\$ 404	\$ 170
Com   Drain Water Heat Recovery (DWHR)   New	\$ -	\$ 46	\$ 37	\$ -	\$ 4	\$ -
Com   Energy Efficient Laboratory Fume Hood	\$ -	\$ 114,455	\$ 114,854	\$ 68,415	\$ 28,722	\$ 9,903
Com   Energy Recovery Ventilation and Ventilation (Enhanced)	\$ -	\$ 97,813	\$ 125,825	\$ 127,718	\$ 107,765	\$ 78,575
Com   ENERGY STAR Dishwasher	\$ -	\$ 11,129	\$ 7,928	\$ 4,494	\$ 2,844	\$ 2,120
Com   ENERGY STAR Fryer (84% eff)	\$ -	\$ 12,190	\$ 19,278	\$ 20,765	\$ 21,166	\$ 20,162
Com   ENERGY STAR Griddle (74% eff)	\$ -	\$ 5,971	\$ 10,392	\$ 11,780	\$ 12,287	\$ 11,785
Com   ENERGY STAR Steam Cooker	\$ -	\$ 2,741	\$ 3,618	\$ 3,680	\$ 3,676	\$ 3,534
Com   Gas Fired Rooftop Units	\$ -	\$ 1,637	\$ 2,436	\$ 2,607	\$ 2,979	\$ 3,085
Com   Heat Recovery Ventilator	\$ -	\$ 58,167	\$ 75,580	\$ 78,397	\$ 64,385	\$ 43,324
Com   High Efficiency Underfired Broilers	\$ -	\$ 2,321	\$ 2,977	\$ 2,932	\$ 2,941	\$ 2,819
Com   Infrared Heaters	\$ -	\$ 165	\$ 295	\$ 349	\$ 442	\$ 480
Com   Low Flow Pre-Rinse Spray Nozzle	\$ -	\$ 3,581	\$ 5,129	\$ 5,237	\$ 4,783	\$ 4,193
Com   Ozone Laundry Treatment	\$ -	\$ 58,615	\$ 42,472	\$ 19,567	\$ 7,421	\$ 2,340
Com   Solar Water Preheat (Pools/DHW)	\$ -	\$ 4,209	\$ 7,469	\$ 9,675	\$ 12,845	\$ 15,275
Com   Super High Perf Glazing   New	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Com   Super High Perf Glazing   RET	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Com   Wall Insulation	\$ -	\$ 10,444	\$ 6,538	\$ 3,675	\$ 1,930	\$ 962
Ind   Air Compressor Heat Recovery	\$ -	\$ 485	\$ 450	\$ 821	\$ 1,387	\$ 2,071
Ind   Boiler Upgrade	\$ -	\$ 7,922	\$ 7,967	\$ 15,094	\$ 26,237	\$ 39,398
Ind   Direct Contact Water Heaters	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Ind   Gas Turbine Optimization	\$ -	\$ 96	\$ 146	\$ 246	\$ 247	\$ 147
Ind   Greenhouse Envelope Improvements	\$ -	\$ 13	\$ 14	\$ 26	\$ 45	\$ 71
Ind   HE HVAC Controls	\$ -	\$ 7,827	\$ 9,862	\$ 19,561	\$ 31,799	\$ 38,111
Ind   HE HVAC Units	\$ -	\$ 64	\$ 59	\$ 108	\$ 182	\$ 272
Ind   HE Stock Tank	\$ -	\$ 31	\$ 32	\$ 61	\$ 107	\$ 161
Ind   High Efficiency Burners	\$ -	\$ 8,199	\$ 12,674	\$ 21,759	\$ 23,111	\$ 16,196
Ind   High Efficiency HVAC Fans (Gas)	\$ -	\$ 902	\$ 930	\$ 1,780	\$ 3,115	\$ 4,681
Ind   Improved Controls -Process Heating Gas	\$ -	\$ 1,070	\$ 1,638	\$ 2,762	\$ 2,772	\$ 1,657
Ind   Insulation - Steam	\$ -	\$ 350	\$ 441	\$ 875	\$ 1,423	\$ 1,705
Ind   Loading Dock Seals	\$ -	\$ 6,621	\$ 8,342	\$ 16,547	\$ 26,899	\$ 32,239
Ind   Process Heat Improvements	\$ -	\$ 17,464	\$ 27,073	\$ 46,478	\$ 49,364	\$ 34,594
Ind   Process Heat Recovery (Gas)	\$ -	\$ 2,307	\$ 2,219	\$ 4,122	\$ 7,100	\$ 10,776
Ind   Process Optimization (Gas)	\$ -	\$ 11	\$ 13	\$ 27	\$ 43	\$ 52
Ind   Solar Walls	\$ -	\$ 219	\$ 82	\$ 112	\$ 151	\$ 202
Ind   Steam Trap Repair	\$ -	\$ 494	\$ 756	\$ 1,273	\$ 1,277	\$ 763
Ind   Steam Turbine Optimization	\$ -	\$ 112	\$ 171	\$ 288	\$ 289	\$ 173
Ind   VAV Conversion Project (Gas)	\$ -	\$ 2,695	\$ 2,500	\$ 4,557	\$ 7,704	\$ 11,507
Ind   Ventilation Optimization (Gas)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Res   Air Sealing	\$ -	\$ 663,673	\$ 834,857	\$ 822,406	\$ 635,443	\$ 403,317
Res   Attic Insulation	\$ -	\$ 163,440	\$ 282,259	\$ 297,078	\$ 186,283	\$ 81,171
Res   Basement Wall Insulation	\$ -	\$ 119,677	\$ 125,842	\$ 103,223	\$ 68,461	\$ 38,973
Res   Condensing Boiler	\$ -	\$ 9,928	\$ 24,610	\$ 43,024	\$ 75,851	\$ 90,430
Res   Heat Recovery Ventilator 0% Baseline	\$ -	\$ 455,471	\$ 726,150	\$ 957,792	\$ 990,128	\$ 794,973
Res   Heat Recovery Ventilator 55% Baseline	\$ -	\$ 106,761	\$ 189,400	\$ 252,017	\$ 232,136	\$ 151,204
Res   Wall Insulation	\$ -	\$ 339,618	\$ 541,607	\$ 714,693	\$ 739,207	\$ 593,795
Res   Whole Home Building Envelope	\$ -	\$ 636,439	\$ 1,014,504	\$ 1,337,910	\$ 1,382,878	\$ 1,110,218
Shift Heating Off Peak	\$ -	\$ 2,409	\$ 2,620	\$ 4,987	\$ 5,088	\$ 6,951
<b>Grand Total</b>	<b>\$ -</b>	<b>\$ 3,112,411</b>	<b>\$ 4,393,595</b>	<b>\$ 5,179,260</b>	<b>\$ 4,884,225</b>	<b>\$ 3,729,260</b>

2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,270	\$ 5,508	\$ 5,108
\$ 102	\$ 23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 0	\$ 0	\$ -	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ -	\$ -
\$ 3,605	\$ 3,586	\$ 3,482	\$ 3,408	\$ 3,269	\$ 3,175	\$ 3,074	\$ 2,914	\$ 2,800	\$ 2,682
\$ 835	\$ 733	\$ 697	\$ 667	\$ 629	\$ 598	\$ 566	\$ 527	\$ 495	\$ 462
\$ 4,666	\$ 3,735	\$ 3,163	\$ 2,827	\$ 2,647	\$ 2,570	\$ 2,485	\$ 2,379	\$ 2,283	\$ 2,182
\$ 79	\$ 31	\$ 5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 25,933	\$ 10,434	\$ 3,125	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 63	\$ 14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 128	\$ 124	\$ 115	\$ 110	\$ 101	\$ 96	\$ 91	\$ 82	\$ 77	\$ 72
\$ 2,718	\$ 95	\$ -	\$ 101	\$ 33	\$ 10	\$ 3	\$ 0	\$ -	\$ -
\$ 66,117	\$ 50,160	\$ 40,019	\$ 34,184	\$ 30,757	\$ 61,686	\$ 59,715	\$ 66,254	\$ 63,717	\$ 54,089
\$ 2,364	\$ 2,198	\$ 2,067	\$ 1,955	\$ 1,822	\$ 1,711	\$ 1,601	\$ 1,470	\$ 1,362	\$ 1,255
\$ 23,528	\$ 22,095	\$ 20,486	\$ 19,059	\$ 17,497	\$ 16,148	\$ 14,841	\$ 1,169	\$ 1,319	\$ 2,608
\$ 13,903	\$ 13,052	\$ 12,085	\$ 11,228	\$ 10,290	\$ 9,483	\$ 8,704	\$ 1,631	\$ 880	\$ 1,604
\$ 3,925	\$ 3,741	\$ 3,532	\$ 3,340	\$ 3,128	\$ 2,938	\$ 2,749	\$ 58	\$ 134	\$ 312
\$ 4,714	\$ 4,692	\$ 4,564	\$ 4,465	\$ 4,289	\$ 4,162	\$ 4,026	\$ 3,820	\$ 3,668	\$ 3,510
\$ 25,147	\$ 13,039	\$ 5,970	\$ 10,470	\$ 8,238	\$ 8,034	\$ 7,803	\$ 7,550	\$ 7,279	\$ 6,995
\$ 3,408	\$ 3,254	\$ 3,070	\$ 2,909	\$ 2,721	\$ 2,560	\$ 2,400	\$ 85	\$ 177	\$ 406
\$ 869	\$ 878	\$ 857	\$ 839	\$ 801	\$ 775	\$ 747	\$ 703	\$ 672	\$ 639
\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,511	\$ 1,228	\$ 978	\$ 757	\$ 563
\$ 3,934	\$ 3,292	\$ 3,054	\$ 2,937	\$ 2,690	\$ 2,569	\$ 2,447	\$ 2,195	\$ 2,069	\$ 1,942
\$ 24,333	\$ 26,476	\$ 27,668	\$ 28,553	\$ 28,622	\$ 28,627	\$ 28,325	\$ 27,409	\$ 26,652	\$ 25,740
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 221,416	\$ 204,638	\$ 197,232	\$ 188,113
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,831,607	\$ 2,128,607	\$ 1,565,479	\$ 1,127,297
\$ 447	\$ 176	\$ 32	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 2,587	\$ 2,555	\$ 2,097	\$ 1,415	\$ 844	\$ 467	\$ 247	\$ 64	\$ 66	\$ 33
\$ 49,009	\$ 49,752	\$ 42,020	\$ 31,262	\$ 22,161	\$ 16,067	\$ 12,429	\$ 10,352	\$ 9,161	\$ 8,446
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 63	\$ 23	\$ 8	\$ 3	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$ 82	\$ 92	\$ 76	\$ 44	\$ 36	\$ 27	\$ 16	\$ 8	\$ 8	\$ 12
\$ 32,041	\$ 19,731	\$ 10,086	\$ 4,611	\$ 2,006	\$ 854	\$ 355	\$ 0	\$ 51	\$ 24
\$ 339	\$ 340	\$ 275	\$ 186	\$ 111	\$ 61	\$ 32	\$ 14	\$ 8	\$ 4
\$ 200	\$ 204	\$ 173	\$ 131	\$ 95	\$ 71	\$ 56	\$ 47	\$ 42	\$ 39
\$ 9,964	\$ 6,495	\$ 5,641	\$ 5,078	\$ 4,766	\$ 4,543	\$ 4,354	\$ 4,007	\$ 4,018	\$ 3,863
\$ 5,809	\$ 5,889	\$ 5,024	\$ 3,800	\$ 2,757	\$ 2,053	\$ 1,624	\$ 1,336	\$ 1,219	\$ 1,124
\$ 705	\$ 221	\$ 88	\$ 29	\$ 10	\$ 3	\$ 1	\$ 0	\$ 0	\$ 0
\$ 1,433	\$ 887	\$ 451	\$ 206	\$ 90	\$ 38	\$ 16	\$ 7	\$ 3	\$ 1
\$ 27,104	\$ 16,690	\$ 8,532	\$ 3,900	\$ 1,697	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 21,283	\$ 13,889	\$ 12,048	\$ 10,845	\$ 10,179	\$ 9,702	\$ 9,298	\$ 8,564	\$ 8,581	\$ 8,249
\$ 13,586	\$ 13,462	\$ 10,895	\$ 7,231	\$ 4,229	\$ 2,293	\$ 1,193	\$ 311	\$ 306	\$ 153
\$ 44	\$ 27	\$ 14	\$ 6	\$ 3	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0
\$ 265	\$ 340	\$ 427	\$ 518	\$ 604	\$ 672	\$ 712	\$ 710	\$ 680	\$ 615
\$ 324	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0	\$ 0	\$ 0
\$ 73	\$ 27	\$ 9	\$ 3	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$ 14,371	\$ 14,389	\$ 11,641	\$ 7,857	\$ 4,683	\$ 2,588	\$ 1,368	\$ 625	\$ 354	\$ 179
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 222,983	\$ 111,251	\$ 49,425	\$ 16,763	\$ 399	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 28,695	\$ 8,093	\$ 510	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 19,995	\$ 9,341	\$ 3,727	\$ 823	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 88,828	\$ 97,528	\$ 118,634	\$ 145,185	\$ 156,693	\$ 159,773	\$ 160,379	\$ 158,676	\$ 155,094	\$ 150,047
\$ 516,361	\$ 287,456	\$ 142,407	\$ 61,581	\$ 18,929	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 76,841	\$ 33,174	\$ 12,115	\$ 2,664	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 385,828	\$ 214,841	\$ 106,456	\$ 46,051	\$ 14,175	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 721,147	\$ 401,567	\$ 199,103	\$ 292,351	\$ 126,998	\$ 47,566	\$ 21,808	\$ 9,257	\$ 3,116	\$ 70
\$ 6,320	\$ 7,245	\$ 5,754	\$ 6,003	\$ 3,982	\$ 3,980	\$ 1,960	\$ 2,175	\$ 445	\$ 1,071
\$ 2,457,099	\$ 1,477,338	\$ 881,625	\$ 775,599	\$ 492,983	\$ 397,412	\$ 3,409,677	\$ 2,651,893	\$ 2,065,711	\$ 1,599,510

		Non Incentive Costs									
2039	2040	2041	2042	2043	2023	2024	2025	2026	2027		
\$ 4,406	\$ 4,057	\$ 3,375	\$ 3,035	\$ 2,623	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,570	\$ 1,060	\$ 566	\$ 262	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 22,286	\$ 0	\$ -	\$ -	\$ -	
\$ 2,505	\$ 2,378	\$ 2,193	\$ 2,060	\$ 1,913	\$ -	\$ 501	\$ 722	\$ 739	\$ 848	\$ -	
\$ -	\$ 18	\$ 73	\$ 58	\$ 56	\$ -	\$ 6,114	\$ 3,697	\$ 1,681	\$ 752	\$ -	
\$ 1,341	\$ 611	\$ 187	\$ 125	\$ 119	\$ -	\$ 4,089	\$ 4,354	\$ 3,902	\$ 3,103	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 770	\$ 476	\$ 265	\$ 138	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 33,559	\$ 49,654	\$ 52,634	\$ 39,258	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 962	\$ 654	\$ 350	\$ 162	\$ -	
\$ 63	\$ 58	\$ 48	\$ 43	\$ 37	\$ -	\$ 19	\$ 15	\$ -	\$ 2	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 45,782	\$ 45,942	\$ 27,366	\$ 11,489	\$ -	
\$ 45,173	\$ 39,996	\$ 36,774	\$ 35,069	\$ 29,176	\$ -	\$ 39,125	\$ 50,330	\$ 51,087	\$ 43,106	\$ -	
\$ 1,128	\$ 15	\$ 26	\$ 191	\$ 144	\$ -	\$ 4,452	\$ 3,171	\$ 1,798	\$ 1,137	\$ -	
\$ 2,093	\$ 2,088	\$ -	\$ -	\$ -	\$ -	\$ 4,876	\$ 7,711	\$ 8,306	\$ 8,466	\$ -	
\$ 1,288	\$ 1,284	\$ -	\$ -	\$ -	\$ -	\$ 2,388	\$ 4,157	\$ 4,712	\$ 4,915	\$ -	
\$ 250	\$ 250	\$ -	\$ -	\$ -	\$ -	\$ 1,097	\$ 1,447	\$ 1,472	\$ 1,470	\$ -	
\$ 1,575	\$ 578	\$ 615	\$ 499	\$ 478	\$ -	\$ 655	\$ 974	\$ 1,043	\$ 1,192	\$ -	
\$ 6,698	\$ 6,392	\$ 6,076	\$ 5,757	\$ 5,435	\$ -	\$ 23,267	\$ 30,232	\$ 31,359	\$ 25,754	\$ -	
\$ 325	\$ 325	\$ -	\$ -	\$ -	\$ -	\$ 928	\$ 1,191	\$ 1,173	\$ 1,176	\$ -	
\$ 591	\$ 557	\$ 335	\$ 165	\$ 116	\$ -	\$ 66	\$ 118	\$ 140	\$ 177	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,432	\$ 2,051	\$ 2,095	\$ 1,913	\$ -	
\$ 364	\$ 468	\$ 1,294	\$ 1,039	\$ 1,006	\$ -	\$ 23,446	\$ 16,989	\$ 7,827	\$ 2,968	\$ -	
\$ 19,938	\$ 15,424	\$ 11,587	\$ 51,217	\$ 45,322	\$ -	\$ 1,684	\$ 2,988	\$ 3,870	\$ 5,138	\$ -	
\$ 165,037	\$ 153,636	\$ 128,742	\$ 116,314	\$ 100,828	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
\$ 793,447	\$ 542,868	\$ 356,719	\$ 219,456	\$ 118,524	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,178	\$ 2,615	\$ 1,470	\$ 772	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 194	\$ 180	\$ 328	\$ 555	\$ -	
\$ 7,982	\$ 7,649	\$ 7,386	\$ 7,160	\$ 6,956	\$ -	\$ 3,169	\$ 3,187	\$ 6,037	\$ 10,495	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 38	\$ 58	\$ 98	\$ 99	\$ -	
\$ 19	\$ 28	\$ 33	\$ 32	\$ 26	\$ -	\$ 5	\$ 6	\$ 10	\$ 18	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,131	\$ 3,945	\$ 7,824	\$ 12,720	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25	\$ 24	\$ 43	\$ 73	\$ -	
\$ 34	\$ 29	\$ 20	\$ 7	\$ -	\$ -	\$ 12	\$ 13	\$ 25	\$ 43	\$ -	
\$ 3,714	\$ 3,572	\$ 3,434	\$ 3,303	\$ 3,176	\$ -	\$ 3,280	\$ 5,070	\$ 8,704	\$ 9,244	\$ -	
\$ 974	\$ 843	\$ 593	\$ 194	\$ -	\$ -	\$ 361	\$ 372	\$ 712	\$ 1,246	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 428	\$ 655	\$ 1,105	\$ 1,109	\$ -	
\$ 0	\$ 0	\$ 0	\$ 0	\$ -	\$ -	\$ 140	\$ 177	\$ 350	\$ 569	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,648	\$ 3,337	\$ 6,619	\$ 10,760	\$ -	
\$ 7,932	\$ 7,626	\$ 7,333	\$ 7,052	\$ 6,781	\$ -	\$ 6,986	\$ 10,829	\$ 18,591	\$ 19,746	\$ -	
\$ 76	\$ 38	\$ 19	\$ 9	\$ 5	\$ -	\$ 923	\$ 888	\$ 1,649	\$ 2,840	\$ -	
\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ -	\$ 4	\$ 5	\$ 11	\$ 17	\$ -	
\$ 532	\$ 443	\$ 356	\$ 279	\$ 214	\$ -	\$ 87	\$ 33	\$ 45	\$ 61	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 197	\$ 302	\$ 509	\$ 511	\$ -	
\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ -	\$ 45	\$ 68	\$ 115	\$ 116	\$ -	
\$ 94	\$ 48	\$ 24	\$ 12	\$ 6	\$ -	\$ 1,078	\$ 1,000	\$ 1,823	\$ 3,081	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 265,469	\$ 333,943	\$ 328,962	\$ 254,177	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 65,376	\$ 112,903	\$ 118,831	\$ 74,513	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 47,871	\$ 50,337	\$ 41,289	\$ 27,384	\$ -	
\$ 143,900	\$ 136,874	\$ 129,311	\$ 121,514	\$ 113,513	\$ -	\$ 3,971	\$ 9,844	\$ 17,210	\$ 30,340	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 182,188	\$ 290,460	\$ 383,117	\$ 396,051	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,705	\$ 75,760	\$ 100,807	\$ 92,854	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 135,847	\$ 216,643	\$ 285,877	\$ 295,683	\$ -	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 254,575	\$ 405,802	\$ 535,164	\$ 553,151	\$ -	
\$ 330	\$ 304	\$ 250	\$ 228	\$ 179	\$ -	\$ 972	\$ 1,058	\$ 2,012	\$ 2,053	\$ -	
\$ 1,211,811	\$ 928,456	\$ 696,807	\$ 574,820	\$ 436,634	\$ -	\$ 1,244,973	\$ 1,757,447	\$ 2,071,722	\$ 1,953,708	\$ -	

2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,308	\$ 2,203
\$ 110	\$ 41	\$ 9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ 0	\$ 0	\$ -	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ -
\$ 875	\$ 1,442	\$ 1,434	\$ 1,393	\$ 1,363	\$ 1,308	\$ 1,270	\$ 1,230	\$ 1,165	\$ 1,120
\$ 391	\$ 334	\$ 293	\$ 279	\$ 267	\$ 252	\$ 239	\$ 227	\$ 211	\$ 198
\$ 2,299	\$ 1,866	\$ 1,494	\$ 1,265	\$ 1,131	\$ 1,059	\$ 1,028	\$ 994	\$ 951	\$ 913
\$ 69	\$ 32	\$ 12	\$ 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 22,147	\$ 10,373	\$ 4,174	\$ 1,250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 68	\$ 25	\$ 6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ 51	\$ 49	\$ 46	\$ 44	\$ 40	\$ 38	\$ 37	\$ 33	\$ 31
\$ 3,961	\$ 1,087	\$ 38	\$ -	\$ 40	\$ 13	\$ 4	\$ 1	\$ 0	\$ -
\$ 31,430	\$ 26,447	\$ 20,064	\$ 16,008	\$ 13,673	\$ 12,303	\$ 24,674	\$ 23,886	\$ 26,502	\$ 25,487
\$ 848	\$ 946	\$ 879	\$ 827	\$ 729	\$ 729	\$ 684	\$ 640	\$ 588	\$ 545
\$ 8,065	\$ 9,411	\$ 8,838	\$ 8,195	\$ 7,624	\$ 6,999	\$ 6,459	\$ 5,937	\$ 468	\$ 527
\$ 4,714	\$ 5,561	\$ 5,221	\$ 4,834	\$ 4,491	\$ 4,116	\$ 3,793	\$ 3,482	\$ 652	\$ 352
\$ 1,414	\$ 1,570	\$ 1,496	\$ 1,413	\$ 1,336	\$ 1,251	\$ 1,175	\$ 1,099	\$ 23	\$ 54
\$ 1,234	\$ 1,886	\$ 1,877	\$ 1,826	\$ 1,786	\$ 1,716	\$ 1,665	\$ 1,610	\$ 1,528	\$ 1,467
\$ 17,330	\$ 10,059	\$ 5,216	\$ 2,388	\$ 4,188	\$ 3,295	\$ 3,214	\$ 3,121	\$ 3,020	\$ 2,912
\$ 1,128	\$ 1,363	\$ 1,302	\$ 1,228	\$ 1,164	\$ 1,088	\$ 1,024	\$ 960	\$ 34	\$ 71
\$ 192	\$ 348	\$ 351	\$ 343	\$ 336	\$ 321	\$ 310	\$ 299	\$ 281	\$ 269
\$ 1,677	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 604	\$ 491	\$ 391	\$ 303
\$ 936	\$ 1,574	\$ 1,317	\$ 1,221	\$ 1,175	\$ 1,076	\$ 1,028	\$ 979	\$ 878	\$ 828
\$ 6,110	\$ 9,733	\$ 10,591	\$ 11,067	\$ 11,421	\$ 11,449	\$ 11,451	\$ 11,330	\$ 10,964	\$ 10,661
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 88,566	\$ 81,855	\$ 78,893
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,132,643	\$ 851,443	\$ 626,192
\$ 385	\$ 179	\$ 70	\$ 13	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 829	\$ 1,035	\$ 1,022	\$ 839	\$ 566	\$ 338	\$ 187	\$ 99	\$ 26	\$ 26
\$ 15,759	\$ 19,603	\$ 19,901	\$ 16,808	\$ 12,505	\$ 8,865	\$ 6,427	\$ 4,972	\$ 4,141	\$ 3,664
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 59	\$ 25	\$ 9	\$ 3	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$ 28	\$ 33	\$ 37	\$ 30	\$ 18	\$ 14	\$ 11	\$ 6	\$ 3	\$ 3
\$ 15,244	\$ 12,816	\$ 7,892	\$ 4,035	\$ 1,844	\$ 802	\$ 341	\$ 142	\$ 0	\$ 20
\$ 109	\$ 136	\$ 136	\$ 110	\$ 74	\$ 44	\$ 24	\$ 13	\$ 6	\$ 3
\$ 65	\$ 80	\$ 81	\$ 69	\$ 52	\$ 38	\$ 28	\$ 22	\$ 19	\$ 17
\$ 6,478	\$ 3,986	\$ 2,598	\$ 2,256	\$ 2,031	\$ 1,907	\$ 1,817	\$ 1,742	\$ 1,603	\$ 1,607
\$ 1,872	\$ 2,324	\$ 2,356	\$ 2,010	\$ 1,520	\$ 1,103	\$ 821	\$ 650	\$ 534	\$ 488
\$ 663	\$ 282	\$ 88	\$ 35	\$ 12	\$ 4	\$ 1	\$ 0	\$ 0	\$ 0
\$ 682	\$ 573	\$ 355	\$ 180	\$ 82	\$ 36	\$ 15	\$ 6	\$ 3	\$ 1
\$ 12,896	\$ 10,842	\$ 6,676	\$ 3,413	\$ 1,560	\$ 679	\$ -	\$ -	\$ -	\$ -
\$ 13,837	\$ 8,513	\$ 5,556	\$ 4,819	\$ 4,338	\$ 4,072	\$ 3,881	\$ 3,719	\$ 3,426	\$ 3,433
\$ 4,310	\$ 5,435	\$ 5,385	\$ 4,358	\$ 2,892	\$ 1,692	\$ 917	\$ 477	\$ 124	\$ 122
\$ 21	\$ 17	\$ 11	\$ 5	\$ 3	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0
\$ 81	\$ 106	\$ 136	\$ 171	\$ 207	\$ 242	\$ 269	\$ 285	\$ 284	\$ 272
\$ 305	\$ 130	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0	\$ 0
\$ 69	\$ 29	\$ 11	\$ 4	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$ 4,603	\$ 5,748	\$ 5,756	\$ 4,656	\$ 3,143	\$ 1,873	\$ 1,035	\$ 547	\$ 250	\$ 142
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 161,327	\$ 89,193	\$ 44,500	\$ 19,770	\$ 6,705	\$ 160	\$ -	\$ -	\$ -	\$ -
\$ 32,468	\$ 11,478	\$ 3,237	\$ 204	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 15,589	\$ 7,998	\$ 3,736	\$ 1,491	\$ 329	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 36,172	\$ 35,531	\$ 39,011	\$ 47,453	\$ 58,074	\$ 62,677	\$ 63,909	\$ 64,151	\$ 63,470	\$ 62,037
\$ 317,989	\$ 206,544	\$ 114,982	\$ 56,963	\$ 24,632	\$ 7,572	\$ -	\$ -	\$ -	\$ -
\$ 60,481	\$ 30,736	\$ 13,269	\$ 4,846	\$ 1,065	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 237,518	\$ 154,331	\$ 85,937	\$ 42,582	\$ 18,421	\$ 5,670	\$ -	\$ -	\$ -	\$ -
\$ 444,087	\$ 288,459	\$ 160,627	\$ 79,641	\$ 116,940	\$ 50,799	\$ 19,027	\$ 8,723	\$ 3,703	\$ 1,246
\$ 2,805	\$ 2,550	\$ 2,924	\$ 2,322	\$ 2,423	\$ 1,607	\$ 1,606	\$ 791	\$ 878	\$ 179
\$ 1,491,729	\$ 982,862	\$ 590,961	\$ 352,671	\$ 310,261	\$ 197,207	\$ 158,979	\$ 1,363,878	\$ 1,060,765	\$ 826,286

	2038	2039	2040	2041	2042	2043
\$	2,043	\$ 1,763	\$ 1,623	\$ 1,350	\$ 1,214	\$ 1,049
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	1,073	\$ 1,002	\$ 951	\$ 877	\$ 824	\$ 765
\$	185	-	7	29	23	23
\$	873	\$ 537	\$ 245	\$ 75	\$ 50	\$ 48
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	29	\$ 25	\$ 23	\$ 19	\$ 17	\$ 15
\$	-	-	-	-	-	-
\$	21,636	\$ 18,069	\$ 15,998	\$ 14,710	\$ 14,028	\$ 11,670
\$	502	\$ 451	\$ 6	\$ 11	\$ 76	\$ 58
\$	1,043	\$ 837	\$ 835	-	-	-
\$	642	\$ 515	\$ 514	-	-	-
\$	125	\$ 100	\$ 100	-	-	-
\$	1,404	\$ 630	\$ 231	\$ 246	\$ 199	\$ 191
\$	2,798	\$ 2,679	\$ 2,557	\$ 2,431	\$ 2,303	\$ 2,174
\$	162	\$ 130	\$ 130	-	-	-
\$	256	\$ 236	\$ 223	\$ 134	\$ 66	\$ 46
\$	225	-	-	-	-	-
\$	777	\$ 146	\$ 187	\$ 518	\$ 416	\$ 402
\$	10,296	\$ 7,975	\$ 6,170	\$ 4,635	\$ 20,487	\$ 18,129
\$	75,245	\$ 66,015	\$ 61,454	\$ 51,497	\$ 46,526	\$ 40,331
\$	450,919	\$ 317,379	\$ 217,147	\$ 142,688	\$ 87,782	\$ 47,410
\$	-	-	-	-	-	-
\$	13	-	-	-	-	-
\$	3,378	\$ 3,193	\$ 3,060	\$ 2,954	\$ 2,864	\$ 2,782
\$	-	-	-	-	-	-
\$	0	-	-	-	-	-
\$	5	\$ 8	\$ 11	\$ 13	\$ 13	\$ 10
\$	10	-	-	-	-	-
\$	2	-	-	-	-	-
\$	16	\$ 13	\$ 12	\$ 8	\$ 3	-
\$	1,545	\$ 1,486	\$ 1,429	\$ 1,374	\$ 1,321	\$ 1,270
\$	450	\$ 390	\$ 337	\$ 237	\$ 78	-
\$	0	-	-	-	-	-
\$	0	\$ 0	\$ 0	\$ 0	\$ 0	-
\$	-	-	-	-	-	-
\$	3,300	\$ 3,173	\$ 3,051	\$ 2,933	\$ 2,821	\$ 2,712
\$	61	\$ 31	\$ 15	\$ 8	\$ 4	\$ 2
\$	0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$	246	\$ 213	\$ 177	\$ 142	\$ 112	\$ 86
\$	0	-	-	-	-	-
\$	0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$	72	\$ 38	\$ 19	\$ 10	\$ 5	\$ 2
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	60,019	\$ 57,560	\$ 54,750	\$ 51,725	\$ 48,606	\$ 45,405
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	-	-	-	-	-	-
\$	28	-	-	-	-	-
\$	432	\$ 133	\$ 123	\$ 101	\$ 92	\$ 72
\$	<b>639,808</b>	<b>\$ 484,726</b>	<b>\$ 371,383</b>	<b>\$ 278,724</b>	<b>\$ 229,929</b>	<b>\$ 174,654</b>

		Peak Hour Reduction (m <sup>2</sup> /hr)																				
Measure Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	
DR Measures	-	14	43	86	141	207	280	355	429	495	553	601	637	664	683	695	704	708	711	712	712	712
Other Measures	-	1,019	2,374	3,926	5,381	6,495	7,227	7,678	7,973	8,226	8,421	8,584	9,039	9,406	9,700	9,936	10,124	10,268	10,380	10,469	10,536	10,536
<b>Total</b>	-	<b>1,033</b>	<b>2,417</b>	<b>4,012</b>	<b>5,522</b>	<b>6,702</b>	<b>7,507</b>	<b>8,034</b>	<b>8,402</b>	<b>8,721</b>	<b>8,974</b>	<b>9,185</b>	<b>9,677</b>	<b>10,070</b>	<b>10,383</b>	<b>10,631</b>	<b>10,828</b>	<b>10,977</b>	<b>11,091</b>	<b>11,181</b>	<b>11,248</b>	<b>11,248</b>

		Incentive Costs																				
Measure Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	
DR Measures	\$ -	\$ 2,409	\$ 2,620	\$ 4,987	\$ 5,088	\$ 6,951	\$ 6,320	\$ 7,245	\$ 5,754	\$ 6,003	\$ 3,982	\$ 3,980	\$ 1,960	\$ 2,175	\$ 445	\$ 1,071	\$ 330	\$ 304	\$ 250	\$ 228	\$ 179	\$ 179
Other Measures	\$ -	\$ 3,110,002	\$ 4,390,974	\$ 5,174,274	\$ 4,879,137	\$ 3,722,309	\$ 2,450,779	\$ 1,470,094	\$ 875,871	\$ 769,596	\$ 489,000	\$ 393,432	\$ 3,407,717	\$ 2,649,718	\$ 2,065,267	\$ 1,598,439	\$ 1,211,481	\$ 928,152	\$ 696,557	\$ 574,592	\$ 436,455	\$ 436,455
<b>Total</b>	\$ -	\$ <b>3,112,411</b>	\$ <b>4,393,595</b>	\$ <b>5,179,260</b>	\$ <b>4,884,225</b>	\$ <b>3,729,260</b>	\$ <b>2,457,099</b>	\$ <b>1,477,338</b>	\$ <b>881,625</b>	\$ <b>775,599</b>	\$ <b>492,983</b>	\$ <b>397,412</b>	\$ <b>3,409,677</b>	\$ <b>2,651,893</b>	\$ <b>2,065,711</b>	\$ <b>1,599,510</b>	\$ <b>1,211,811</b>	\$ <b>928,456</b>	\$ <b>696,807</b>	\$ <b>574,820</b>	\$ <b>436,634</b>	\$ <b>436,634</b>

		Non Incentive Costs																				
Measure Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	
DR Measures	\$ -	\$ 972	\$ 1,058	\$ 2,012	\$ 2,053	\$ 2,805	\$ 2,550	\$ 2,924	\$ 2,322	\$ 2,423	\$ 1,607	\$ 1,606	\$ 791	\$ 878	\$ 179	\$ 432	\$ 133	\$ 123	\$ 101	\$ 92	\$ 72	\$ 72
Other Measures	\$ -	\$ 1,244,001	\$ 1,756,390	\$ 2,069,709	\$ 1,951,654	\$ 1,488,923	\$ 980,311	\$ 588,037	\$ 350,348	\$ 307,838	\$ 195,600	\$ 157,373	\$ 1,363,087	\$ 1,059,887	\$ 826,107	\$ 639,376	\$ 484,592	\$ 371,261	\$ 278,623	\$ 229,837	\$ 174,582	\$ 174,582
<b>Total</b>	\$ -	\$ <b>1,244,973</b>	\$ <b>1,757,447</b>	\$ <b>2,071,722</b>	\$ <b>1,953,708</b>	\$ <b>1,491,729</b>	\$ <b>982,862</b>	\$ <b>590,961</b>	\$ <b>352,671</b>	\$ <b>310,261</b>	\$ <b>197,207</b>	\$ <b>158,979</b>	\$ <b>1,363,878</b>	\$ <b>1,060,765</b>	\$ <b>826,286</b>	\$ <b>639,808</b>	\$ <b>484,726</b>	\$ <b>371,383</b>	\$ <b>278,724</b>	\$ <b>229,929</b>	\$ <b>174,654</b>	\$ <b>174,654</b>

\*all spending is in net terms



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Environmental Defence (ED)

Interrogatory

Issue:

2

Reference:

Exhibit E, Tab 1, Schedule 1

Question(s):

- (a) Does Table 1 on page 2 include site restoration costs, including abandonment? If not, please add that to the table and provide the revised copy.
- (b) Please reconcile the \$134 million full replacement cost figure in table 7 in Exhibit C, Tab 1, Schedule 1, page 19 with the total costs of \$216 million in Exhibit E, Tab 1, Schedule 1. Please provide a list of costs included in one but not the other and a justification for doing so.

Response:

- a) Table 1 on page 2 of Exhibit E, Tab 1, Schedule 1 includes the costs of abandonment and all restoration costs (new installation and abandonment).
- b) The \$(134 million) referenced in Exhibit C, Tab 1, Schedule 1, Table 7 is the result of the NPV analysis for Alternative A, Cases A-C, based on a total expenditure of \$155 million over the time horizons, as shown in Exhibit C, Tab 1, Schedule 1, Tables 4-6.

As noted in Exhibit E, Tab 1, Schedule 1, Page 1, Paragraph 1, the total estimated cost of the Project is \$216.1 million, of which \$208.7 million is attributed to facilities which the Company is seeking leave to construct via the current Application. The Company is not including the difference of \$7.3 million, which is attributed to investigation costs incurred as a result of the Targeted Integrity Program detailed in Exhibit B, Tab 1, Schedule 1.

Please see response at Exhibit I.3-PP-55 part a) for an explanation on the key differences between the costs outlined in Exhibit C, Tab 1, Schedule 1, Table 7 (\$155 million) and the Estimated Project Costs in Exhibit E, Tab 1, Schedule 1, Table 1 (\$208.7 million).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Page 22, Paragraph 53

Preamble:

“General service customers leaving the gas system in Ottawa would need to have their energy needs accommodated by other forms of energy, primarily assumed to be electricity.”

Question(s):

- a) How many general service customers left the gas system in Ottawa by converting to electricity since 2020?
- b) How many Ottawa Carleton District School Board schools have left the gas system in Ottawa by converting to electricity since 2020?
- c) Is the Ottawa Carleton District School Board office building at 133 Greenbank Road, Ottawa, heated with natural gas? If the answer is yes, has the Ottawa Carleton District School Board requested that Enbridge stop providing natural gas to the building?
- d) Is the building housing the offices of CAFES Ottawa at 166 Glebe Avenue heated by natural gas? If the answer is yes, has CAFES Ottawa requested that Enbridge stop providing natural gas to the building?

Response:

- a) Enbridge Gas does not track specific reasons for account closures or if a customer is converting to an alternative fuel source. Enbridge Gas is also unable to confirm

whether a customer has permanently left the gas system as customers may have a gas meter removed temporarily for various reasons including property demolition/rebuild, renovation, line relocation, vacant property or seasonal gas use. In these instances, customers will notify Enbridge Gas when they are ready to resume service and have a new gas meter installed. Enbridge Gas can confirm that 335 customers in the City of Ottawa have had their gas meter removed and associated account closed since 2020. In the same period, the total number of general service customers has increased.

b) – d)

Enbridge Gas does not have the written consent of the consumer to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the OEB. Enbridge Gas will be providing the information to the OEB and requesting confidential treatment.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Page 22, Paragraph 54

Preamble:

“The current seasonal peak electricity demands in Ottawa are similar and differ by less than 10%, indicating that Ottawa is already very close to being a dual peaking region, with little “room” to accommodate incremental winter peak demand, without triggering the need for additional infrastructure beyond the \$650 million that is currently planned.”

Question(s):

- a) EV charging can have a significant impact on peak load where a home with Level 2 charger has a peak load of about three average homes without an EV charger. Does the current seasonal peak electricity demand in Ottawa take into account the impact of EV charging with Level 2 home chargers?
- b) Please confirm that when considering peak load capacity on an electricity distribution system one must not only consider the aggregate load, but also the load on each feeder and on each distribution transformer.

Response:

- a) It is Enbridge Gas' understanding that the measured peak demands as reported to the OEB by Hydro Ottawa (referred to as the “current seasonal electricity demands” in referenced paragraph above) would include contributions from all electrical devices using power from the electricity distribution system at the time peak demand is measured. If there were electric vehicles charging using Level 2 home chargers at

the time of the measured peak demand, then their contribution would be accounted for in the peak demand.

- b) Although peak load analysis in the electricity system is not Enbridge Gas' area of expertise and therefore cannot confirm the question as asked, Enbridge Gas understands that electricity demands at levels more granular than the aggregate electricity system peak must be considered when assessing the capacity of an electricity distribution system to meet peak demands. If this is correct, it can be assumed that this would be analogous to the capacity of a gas system regulation station which varies from station to station and must be considered when assessing the peak demands for the gas system.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

2

Reference:

Exhibit B, Tab 3, Schedule 1, Page 24, Paragraph 56c

Preamble:

“\$375 billion to \$425 billion in new transmission and supply infrastructure investment would be required, resulting in an annual total system cost of approximately \$60 billion by 2050.”

Question(s):

- a) Please confirm that electricity distribution and transmission rates would have to increase to pay for the new transmission and supply infrastructure.
- b) Is the \$60 billion annual system cost the approximate amount that would have to be recovered from electricity ratepayers?

Response:

a-b) It is Enbridge Gas’s understanding that the costs noted account for incremental generation and transmission assets identified to support the modelled scenario demand presented by the IESO in their Pathways to Decarbonization report. In the report, the IESO notes that the \$60 billion annual system cost is their estimate of the cost to operate the supply and transmission assets they identified, which would need to be recovered annually from consumers. The IESO also indicated that the 2050 system cost can be considered on a unit rate basis of \$200 to \$215/MWh, an increase of 20-30% from current unit rates.<sup>1</sup> How increased costs due to increased investments in supply and transmission infrastructure are recovered from consumers

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<sup>1</sup> IESO, Pathways to Decarbonization, pg. 32

depends on OEB regulatory approvals and the energy policies of the government of Ontario (i.e. electricity rebates like the OER currently set at 19.3%). Further, any impact related to distribution rates resulting from incremental distribution assets to accommodate increased demand would depend upon an LDC's distribution system plan and their proposed investments, which would be subject to OEB approval.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1 and EB-2020-0293 Exhibit I.ED.16 & I.FRPO.2

Preamble:

We would like to understand the current conditions in the Ottawa HP system. From the map found in ED.16 referenced above, we are interested in the network that runs North and between from Rideau Heights and Ottawa North Gate through to the two pipelines that cross the Ottawa River into Gatineau.

Question(s):

Please provide a map for those pipelines showing the MOP of each of the pipelines.

Response:

Please see Attachment 1 to this response.

Attachment 1 has been filed confidentially with the OEB.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1 and EB-2020-0293 Exhibit I.ED.16 & I.FRPO.2

Preamble:

We would like to understand the current conditions in the Ottawa HP system. From the map found in ED.16 referenced above, we are interested in the network that runs North and between from Rideau Heights and Ottawa North Gate through to the two pipelines that cross the Ottawa River into Gatineau.

Question(s):

Please present the network analysis results for this system for the Winter of 2023/24 providing:

- a) Inlet pressures to all of the stations noted in FRPO.2 and Rockcliffe Control station
- b) The flow in the pipe between the respective stations
- c) The flow in the pipe between Hurdman station and St. Laurent pipeline.

Response:

a - c)

Please see Table 1 for the inlet pressures and flow for the stations noted in EB-2020-0293 Exhibit I.FRPO.2 and Rockcliffe Control station.

Table 1  
Station Inlet Pressures and Flow

STN #	Stations	Winter 2023-2024		<i>Below Minimum Inlet?</i>
		Inlet Pressure (kPa)	Flow (m <sup>3</sup> /h)	
[REDACTED]	[REDACTED]	1591	3165	No
[REDACTED]	[REDACTED]	1703	61571	No
[REDACTED]	[REDACTED]	1661	500	No
[REDACTED]	[REDACTED]	1669	317	No
[REDACTED]	[REDACTED]	1755	6938	No
[REDACTED]	[REDACTED]	1766	9277	No
[REDACTED]	[REDACTED]	1615	41098	No
[REDACTED]	[REDACTED]	1671	217	No
[REDACTED]	[REDACTED]	1684	19800	No
[REDACTED]	[REDACTED]	1608	3091	No
[REDACTED]	[REDACTED]	1614	926	No

Notes:

1. Inlet pressures for stations are for the winter of 2023/24 design conditions.
2. Flow in the pipe between respective stations is assumed to be at the inlet of each station noted.
3. Flow between Hurdman station and St. Laurent pipeline is the flow for Hurdman & Queensway District station.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1 and EB-2020-0293 Exhibit I.ED.16 & I.FRPO.2

Preamble:

We would like to understand the current conditions in the Ottawa HP system. From the map found in ED.16 referenced above, we are interested in the network that runs North and between from Rideau Heights and Ottawa North Gate through to the two pipelines that cross the Ottawa River into Gatineau.

Question(s):

Please provide the network analysis results with the proposed piping substituting for the existing pipeline providing:

- a) Inlet pressures to all of the stations noted in FRPO.2 and Rockcliffe Control station
- b) The flow in the pipe between the respective stations
- c) The flow in the pipe between Hurdman station and St. Laurent pipeline.

Response:

a - c)

Please see Table 1 for the inlet pressures and flow for the stations noted in EB-2020-0293 Exhibit I.FRPO.2 and Rockcliffe Control station assuming the system was replaced with the proposed piping sizes and layout.

Table 1  
 Station Inlet Pressures and Flow

Line No.	STN #	Stations	Winter 2023-2024 Proposed		<i>Below Min Inlet?</i>
			Inlet P (kPa)	Flow (m3/h)	
1	[REDACTED]	[REDACTED]	1586	3079	No
2	[REDACTED]	[REDACTED]	1579	61563	No
3	[REDACTED]	[REDACTED]	1625	500	No
4	[REDACTED]	[REDACTED]	1635	317	No
5	[REDACTED]	[REDACTED]	1667	5589	No
6	[REDACTED]	[REDACTED]	1735	12202	No
7	[REDACTED]	[REDACTED]	1577	41098	No
8	[REDACTED]	[REDACTED]	(To be Abandoned)	0	N/A
9	[REDACTED]	[REDACTED]	1619	18539	No
10	[REDACTED]	[REDACTED]	1571	2995	No
11	[REDACTED]	[REDACTED]	1575	926	No

Notes:

1. Inlet pressures for stations are for the winter of 2023/24 design conditions.
2. Flow in the pipe between respective stations is assumed to be at the inlet of each station noted.
3. Flow between Hurdman station and St. Laurent pipeline is the flow for Hurdman & Queensway District station.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1 and EB-2020-0293 Exhibit I.ED.16 & I.FRPO.2

Preamble:

We would like to understand the current conditions in the Ottawa HP system. From the map found in ED.16 referenced above, we are interested in the network that runs North and between from Rideau Heights and Ottawa North Gate through to the two pipelines that cross the Ottawa River into Gatineau.

Question(s):

Please provide the network analysis results with the proposed piping except NPS 12 instead of NPS 16 substituting for the existing pipeline providing:

- a) Inlet pressures to all of the stations noted in FRPO.2 and Rockcliffe Control station
- b) The flow in the pipe between the respective stations
- c) The flow in the pipe between Hurdman station and St. Laurent pipeline.

Response:

a - c)

Please see Table 1 for the inlet pressures and flow for the stations noted in EB-2020-0293 Exhibit I.FRPO.2 and Rockcliffe Control station assuming the system was replaced with all proposed piping sizes except the NPS 16 substituting with NPS 12.

As shown, with NPS 12 pipe used instead of NPS 16 for the extra length due to the pipeline routing, the [REDACTED] station is below required minimum inlet pressure.

Table 1  
Station Inlet Pressures and Flow

STN #	Stations	Winter 2023-2024 NPS 12 Option		<i>Below Minimum Inlet?</i>
		Inlet Pressure (kPa)	Flow (m <sup>3</sup> /h)	
[REDACTED]	[REDACTED]	1586	3079	No
[REDACTED]	[REDACTED]	1222	61563	No
[REDACTED]	[REDACTED]	1301	500	No
[REDACTED]	[REDACTED]	1311	317	No
[REDACTED]	[REDACTED]	1332	5589	No
[REDACTED]	[REDACTED]	1416	12202	No
[REDACTED]	[REDACTED]	1253	36694	Yes
[REDACTED]	[REDACTED]	(To be Abandoned)	0	N/A
[REDACTED]	[REDACTED]	1287	18539	No
[REDACTED]	[REDACTED]	1243	2995	No
[REDACTED]	[REDACTED]	1244	926	No

Notes:

1. Inlet pressures for stations are for the winter of 2023/24 design conditions.
2. Flow in the pipe between respective stations is assumed to be at the inlet of each station noted.
3. Flow between Hurdman station and St. Laurent pipeline is the flow for Hurdman & Queensway District station.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

Exhibit C, Tab 1, Schedule 1, pg.14-19 , Tables 4-7

Preamble:

We are interested in understanding the costs and assumptions that went into the above referenced evidence and tables.

Question(s):

Please provide a comprehensive breakdown of costs that contribute to Alternative B including:

- a) Costs of each annual diagnostic
- b) Assumed costs of mitigation
- c) Assumptions of cost reductions which come from moving up the learning curve.

Response:

a-b) Please see response at Exhibit I.2-STAFF-17 part b).

- c) Enbridge Gas has decades of relevant construction experience applicable to the pipeline replacement, integrity dig, and mechanical protection activities outlined in Alternative B. Enbridge Gas has been In-line Inspecting pipelines for over two decades, including using Crawler ILI technology since 2011. There are no perceived cost reductions from moving up the learning curve.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

EB-2020-0293 Exhibit I.FRPO.3

Preamble:

In the last proceeding, we asked about the analysis to consider eventuality of a break that included steps of mitigation: *Steps to mitigate customer loss e.g., increase other feeder stations set pressure, interrupting interruptible customers, shedding Emergency Control Areas, etc.* Instead EGI went back to the original catastrophic failure scenario.

Question(s):

Please specify the location of the break assumed to answer FRPO.3

Response:

a) Please see response at EB 2020-0293 Exhibit I.FRPO.3 part a) (i).



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

2

Reference:

EB-2020-0293 Exhibit I.FRPO.3

Preamble:

In the last proceeding, we asked about the analysis to consider eventuality of a break that included steps of mitigation: *Steps to mitigate customer loss e.g., increase other feeder stations set pressure, interrupting interruptible customers, shedding Emergency Control Areas, etc.* Instead EGI went back to the original catastrophic failure scenario.

Question(s):

Please assume the break is between the St. Laurent Control station and the pipeline connection that comes from Hurdman & Carling station and is mitigated by closing the isolating valve between St. Laurent Control and the pipeline connection.

- a) Please answer the questions in FRPO.3 assuming a break that allows time for the above step of mitigation.
  - i. For a 47HDD day
  - ii. For a 27 HDD day (average January day)
  
- b) The pertinent questions from FRPO.3 include:
  - i. What is the cost for each scenario?
  - ii. What steps are taken to mitigate customer loss e.g., increase other feeder stations set pressure, interrupting interruptible customers, shedding Emergency Control Areas, etc.
  - iii. Assumptions regarding the type of repair and the determination of that cost
  - iv. The determination of customers lost in Gazifere territory.
  - v. The cost of make safe and relight.

Response:

a - b)

Please note – the station referenced (Hurdman & Carling station) does not exist. For the purpose of responding, it has been assumed that the question is meant to reference the Hurdman & Queensway station. The analysis for both a 47 HDD (-32 C) and 27 DD (-12 C) assumes the same break location as outlined in EB 2020-0293 Exhibit I.FRPO.3 part a) (i).

i) For a 47 HDD day:

i.

This response assumes the same estimated cost of \$54 million referred to in EB-2020-0293 Exhibit I.FRPO.3.

ii.-v.

Per the assumption noted above, these questions have previously been answered. Please see response at EB 2020-0293 Exhibit I.FRPO.3 part a) (ii) – (v).

ii) For a 27 HDD day:

i.-v.

In the worst-case scenario, customer and cost impacts similar to those outlined in the 47 HDD Scenario could potentially occur if the pipeline(s) needed to be isolated; however, due to the severity and instability of such a large outage, conclusive modeling data isn't available.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

a) Natural gas (at this time).

b) No (not at this time).

c - e), g)

Please see response at Exhibit I.2-STAFF-18.

f) Enbridge Gas is not currently blending hydrogen in other pipelines in Ontario.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

Question(s):

- 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.

Response:

- a) The pipelines in “Figure 1: Map of the St. Laurent Replacement Project” represent what the newly proposed gas system will look like. The pipelines in “Figure 2: Robotic Crawler ILI Extents and Location” are a representation of the existing gas system, which Enbridge Gas plans to abandon, with the inspected locations highlighted. Please see the Project Map<sup>1</sup> showing the proposed and existing pipeline (to be abandoned) on one map.
- b) The preferred route in some cases had to detour from the existing gas mains right of way due to congestion of utilities, complex highway and rail crossings, and MTO requirements. Please see the Project Map for the variations between the two alignments.

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<sup>1</sup> Exhibit A, Tab 2, Schedule 1, Attachment 1.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

- a) Confirmed.
- b) As noted in Exhibit C, Tab 1, Schedule 1, paragraphs 41 to 53, the assessment of non-facility supply side and demand side IRP alternatives included a review of the following, where it was determined there were no feasible non-facility alternatives:
  - Incremental gas supply – there are no interconnects in the area that could be used and therefore incremental gas supply is not technically feasible.
  - Compressed natural gas (CNG) – a minimum of 1.5 trailers per hour would be required, costing \$1.2 million per year compared to the one-time cost savings



- of \$1.3 million associated with downsizing the pipe. Therefore, the CNG alternative is not a viable solution.
- Enhanced targeted energy efficiency (ETEE) – there is insufficient technical potential from ETEE to meet the required peak hour reduction required to downsize the pipe, therefore ETEE is not technically feasible.
  - Reverse open season (ROS) and geo-targeted negotiable interruptible rates for contract customers – no bids were received through the ROS process, and through discussions with the customers on their energy requirements, Enbridge Gas expects minimal change in the customers' peak hour demand and therefore unable to achieve the peak hour reductions required to downsize the pipe.

As a result of the above analysis, no IRP implementation plans were created.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

Question(s):

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 Enbridge has and enable Net Zero to be reached in the City of Ottawa?

Response:

a-b) No, Enbridge Gas did not state that achieving net zero by 2050 is not possible. Enbridge Gas provided an overview of the City's climate plan and status, including whether the priority projects within the plan are 'on track' or not (Exhibit B-3-1, paras. 8-17).

Enbridge Gas believes that the optimal way to achieve net zero, including in the City of Ottawa, is through a diversified pathway. A diversified pathway recognizes that a mix of solutions, including solutions that leverage the existing gas system, can provide reliable and resilient energy in an affordable manner while also maintaining consumer choice.

Enbridge Gas believes that a coordinated approach to energy planning involving the City, Enbridge Gas, the local distribution companies (LDCs), and the IESO is critical to enabling a net zero future for the City of Ottawa. Planning energy systems collaboratively, with a commitment to align with government's climate and natural gas policy, as well as to model the benefits and costs of each system, would support

achieving the goal of reducing emissions, maintaining consumer choice, and maintaining a safe, reliable, and resilient energy system at the least cost.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

a - b)

Exhibit C, Tab 1, Schedule 1, paragraph 41 to 53 describes the assessment of non-facility alternatives for this Project which determined there were no technically feasible alternatives for implementation and, therefore, no IRP programs (which would have included demand-side options if feasible) have been delivered in the

City of Ottawa. Additionally, please see Exhibit B, Tab 3, Schedule 1, for probabilistic analysis of customer disconnection.

- c) Enbridge Gas has performed peak hour modeling analysis of the customers in the system and those served by the St Laurent Project. Please refer to Exhibit I.1-CAFES Ottawa-2 for details on the forecast and demands of general service customers.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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?

Response:

- a) No lifecycle assessment has been completed for the use of RNG or hydrogen to replace natural gas in the proposed pipeline. Please see Exhibit I.2 STAFF-18 regarding Enbridge Gas's plans to study the use of hydrogen in the natural gas grid.
- b) No, blending RNG or hydrogen in Enbridge Gas pipelines is not a critical element for the SLP Project. The Low-Carbon Energy Program proposed in EB-2024-0111 Exhibit 4, Tab 2, Schedule 7 will not impact the SLP project. RNG is a fuel already in the broader pipeline system and used today. Please see Exhibit I.2-STAFF-18 regarding Enbridge Gas's plans to study the use of hydrogen in the natural gas grid.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

Reference:

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]

Question(s):

- 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.

Response

- a) Please see Attachment 1 of this response for additional City of Ottawa IRP presentations and correspondence.
- b) As noted in the referenced slide deck, on page 8 to 10, Enbridge Gas summarizes how the Energy Evolution Plan would be used in its IRP Evaluation, where any impacts to the demand forecast would be informed by discussions with City of Ottawa and subsequently impact the IRP alternatives analyzed. As noted on page 9, Enbridge Gas continued to seek details on the Energy Evolution Plan from the City of Ottawa to determine if any changes to the demand forecast were required. The City of Ottawa provided best available information, but noted the information would be limited in informing changes to the demand forecast due to the extent in which the Energy Evolution Plan had funding and authority.

As noted in Exhibit B, Tab 3, Schedule 1, paragraphs 8 to 17, the status of the priority projects within the Energy Evolution Plan that could impact natural gas demand shows that the majority are currently off track and, therefore, the timing of when the reductions could occur cannot be determined. As a result, no further adjustments to the demand forecast were completed.

- c) Please see response to Exhibit I.PP-38 part b).
- d) The referenced \$124 million project cost refers to the costing included in the previous St. Laurent application (EB-2020-0293). Please see response to Exhibit I.3-SEC-14 for details on the cost variance and Exhibit I.STAFF-1 a) for details on the changes to the project scope between applications.

## Eric VanRuymbeke

---

**From:** Sonia Fazari  
**Sent:** Monday, October 3, 2022 1:35 PM  
**To:** Fletcher, Mike  
**Subject:** RE: IRP Meeting  
**Attachments:** Ottawa Hydro Meeting\_Sept 2022.pdf

Good afternoon Mike,

The meeting was very productive and a good start to what I hope will be the beginning of many positive discussions and working group sessions regarding integrated resource planning.

We mutually agree the value of setting up time with members from our teams to continue the discussion. I am working with Jacinta to schedule a follow up meeting this month.

In the meantime, we can begin scoping topics of discussion and drafting a meeting agenda.

Also, as promised, please see attached a copy of the presentation that Cara-Lynne walked through and link to the audio file. (Please let me know if you have any issues with the link). With regards to the Pathways to Net Zero Emissions in Ontario report, we can add this to the agenda for our next meeting to further discuss the approach and assumptions. As well as, your thoughts regarding the scenarios for solar and heat pumps outlined in the report.

 [https://enbridge-my.sharepoint.com/:u:/p/fazaris/EQuXHutQUGVPv0HKHR\\_Q9wQBu5IkP9TiYviF3DUnKdMajg?e=PU3fFd](https://enbridge-my.sharepoint.com/:u:/p/fazaris/EQuXHutQUGVPv0HKHR_Q9wQBu5IkP9TiYviF3DUnKdMajg?e=PU3fFd)

Regards,  
Sonia

---

### Sonia Fazari

Sr. Advisor, Municipal and Stakeholder Engagement, Eastern Region  
Public Affairs and Communications

#### ENBRIDGE GAS INC.

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Integrity. Safety. Respect. Inclusion.

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**From:** Fletcher, Mike <Mike.Fletcher@ottawa.ca>  
**Sent:** Monday, September 26, 2022 10:41 AM  
**To:** Sonia Fazari <Sonia.Fazari@enbridge.com>  
**Subject:** [External] IRP Meeting

### CAUTION! EXTERNAL SENDER

Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate?

DO NOT click links or open attachments unless you are 100% sure that the email is safe.

I was off on Friday, but I was still thinking of our meeting a little. Thanks to you and your team for carving out some time and coming to see us!

I look forward to getting rolling on multi-resource IRP and was glad to see the enthusiasm around the table about getting this going. The early ending of the meeting didn't allow us to get into more detail. As I mentioned in the City presentation, in addition to some of the technical aspects, I'm also wondering what setting up a program will look like and want to get working on this. It seems to me we can even advance this between meetings.

With regards to the pathways to net zero report, although I think there is value in this report Guidehouse may have missed a bit of an opportunity by not consulting as they developed the report. A more consultative approach such as what's done by municipalities and the IESO, would have avoided some of the errors and omissions that I noted for example.

Finally, you had the good sense to record the meeting; could you please send me a copy of the audio file? – thank you.

Onwards, Mike

**Mike Fletcher** (he/him) – Born at 320ppm  
Project Manager, Climate Change and Resiliency Unit  
Planning, Infrastructure and Economic Development Department

-----  
City of Ottawa, 110 Laurier Avenue West - 4th Floor, Ottawa, ON K1P 1J1  
T. 613.580.2424 x29201 | C. 613-880-3688 | [mike.fletcher@ottawa.ca](mailto:mike.fletcher@ottawa.ca)

**The City of Ottawa unanimously approved its community energy transition strategy, Energy Evolution, on October 28<sup>th</sup>, 2020.**

**Information on Energy Evolution can be found [here](#)**

**The City of Ottawa declared a climate emergency on April 24<sup>th</sup>, 2019.**

**Information on the climate crisis can be found [here](#) and [here](#)**

**Note: I'm generally working remotely during the COVID 19 pandemic. If you wish to speak with me please call my cell.**

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

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# Enbridge Gas & City of Ottawa Discussion

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September 21, 2022



# Pathways to Net Zero Emissions for Ontario

Report Summary

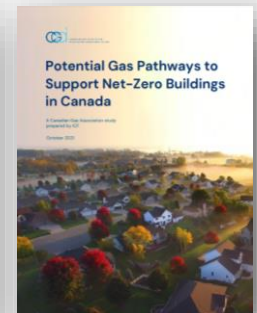
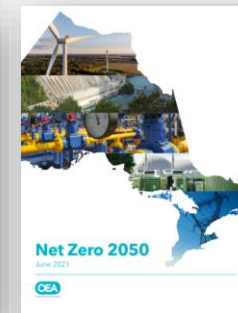
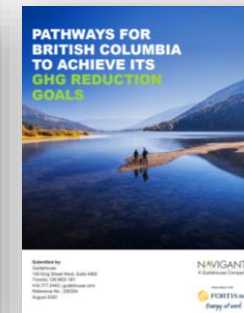
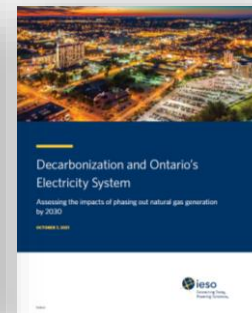
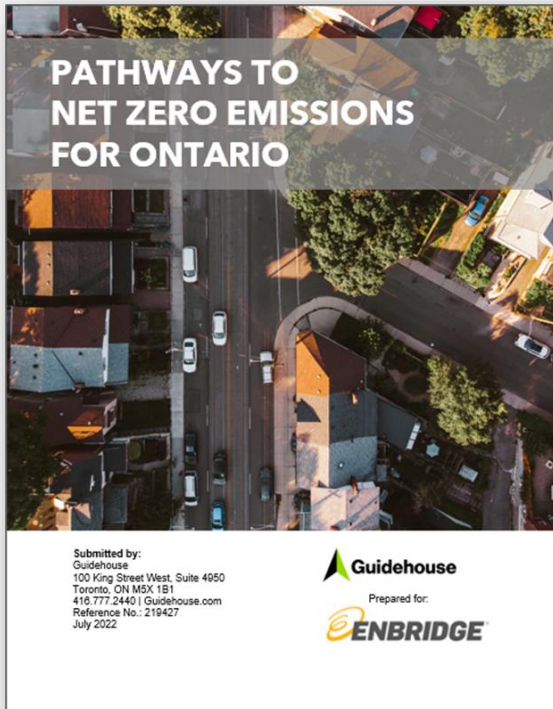


## Executive summary

- With approximately 30 percent of Ontario's emissions coming from the use of natural gas, Enbridge understands it will have an important role in the energy transition.
- Enbridge Gas is committed to supporting the province and municipalities with the achievement of their clean energy plans.
  - Actively working on solutions to help meet Ontario's energy needs, while reducing emissions cost effectively.
  - Proactively engaged a consultant to evaluate energy system pathways to net zero.
- The gas distribution system in Ontario is a resource that can be leveraged to enable further GHG reductions beyond 2030, including net zero.

# Executive summary

- Enbridge commissioned a study to evaluate two energy system pathways to net zero; Diversified & Electrification
- The study showed both pathways are expensive, and that **a diversified pathway, with pipes and wires, is a more cost effective and reliable pathway to net-zero.**
- Regardless of the pathway chosen, there are “safe bet” actions that should be taken immediately for Ontario to reach net zero.
- This is further supported by studies conducted across North America and Europe.



# Study approach

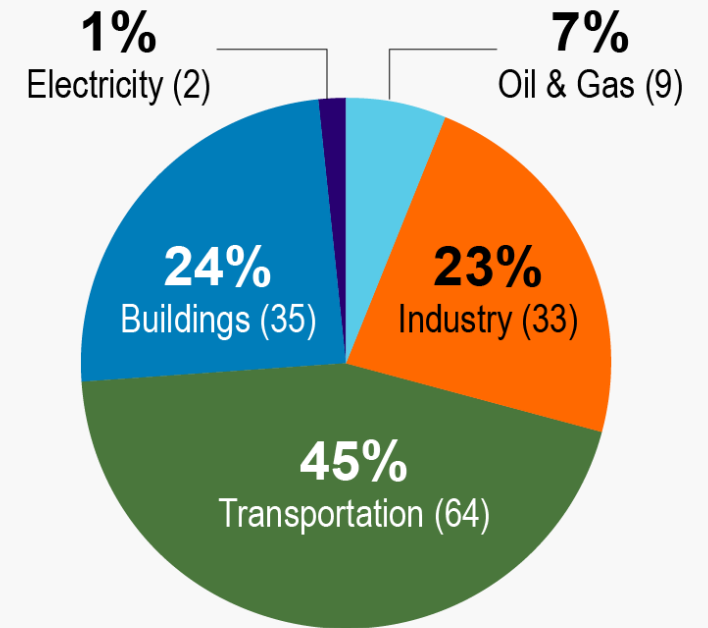
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## STUDY APPROACH

# Two scenarios for Ontario's energy sector

- Enbridge Gas engaged Guidehouse to evaluate two pathways to net zero:
  - **Diversified pathway\***—end use electrification used in balance with low- and zero-carbon gases and natural gas paired with carbon capture.
  - **Electrification pathway**—deep electrification of all sectors with low- and zero-carbon gases and carbon capture used only where no reasonable alternative energy source exists.
- For each, the study assessed the overall feasibility based on costs, GHG emission reductions, system reliability and resiliency.
- The study also identifies what investments are needed in electricity, hydrogen and methane supply capacity, storage and infrastructure.

### Emissions mix studied (143 MT)






Figures in brackets represent MT of CO<sub>2</sub>e.

\*The study included sensitivity analysis which looked at how various changes in assumptions impacted the scenarios. The Diversified scenario with hybrid heating was found to be the most optimal approach to a Diversified pathway, therefore all results in this presentation are based on this Diversified scenario.

STUDY APPROACH

Pathway assumptions:

Sector	Diversified scenario	Electrification scenario	Shared assumptions
 Buildings	<ul style="list-style-type: none"> <li>Gas heating transitions to low- or zero-carbon gas, including hydrogen and RNG</li> <li>A large portion of residential buildings adopt hybrid heating</li> <li>Some heating switches to air source and ground source heat pumps</li> </ul>	<ul style="list-style-type: none"> <li>Electric heat pumps replace most natural gas heating in buildings</li> <li>Remainder shifts to low- or zero-carbon gas</li> </ul>	<ul style="list-style-type: none"> <li>Energy efficiency and building codes reduce heating energy demand</li> </ul>
 Transport	<ul style="list-style-type: none"> <li>Hydrogen and RNG fuel most heavy transport</li> </ul>	<ul style="list-style-type: none"> <li>Biofuels, such as renewable diesel, fuel some heavy transport</li> <li>Hydrogen limited to aviation via synthetic kerosene</li> </ul>	<ul style="list-style-type: none"> <li>Battery-electric vehicles power light- and medium-duty transportation</li> </ul>
 Industry	<ul style="list-style-type: none"> <li>Medium- and high-temperature processes use hydrogen or methane gas with carbon capture and storage (CCS)</li> </ul>	<ul style="list-style-type: none"> <li>Medium-temperature processes are electrified</li> <li>High-temperature processes use hydrogen or methane gas with CCS</li> </ul>	<ul style="list-style-type: none"> <li>Low-temperature processes are electrified</li> </ul>

# Study findings

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## STUDY FINDINGS

# A diversified pathway that leverages both Ontario's gas and electric systems can achieve net zero, with greater:



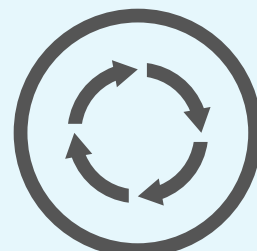
### Affordability

Achieves the same outcome as the electrification pathway at \$202 billion less cost



### Reliability

Meets the energy needs of Ontario homes and businesses, even on the hottest and coldest days of the year



### Resiliency

Protects against impacts from extreme events, such as weather and cybersecurity incidents



### Consumer choice

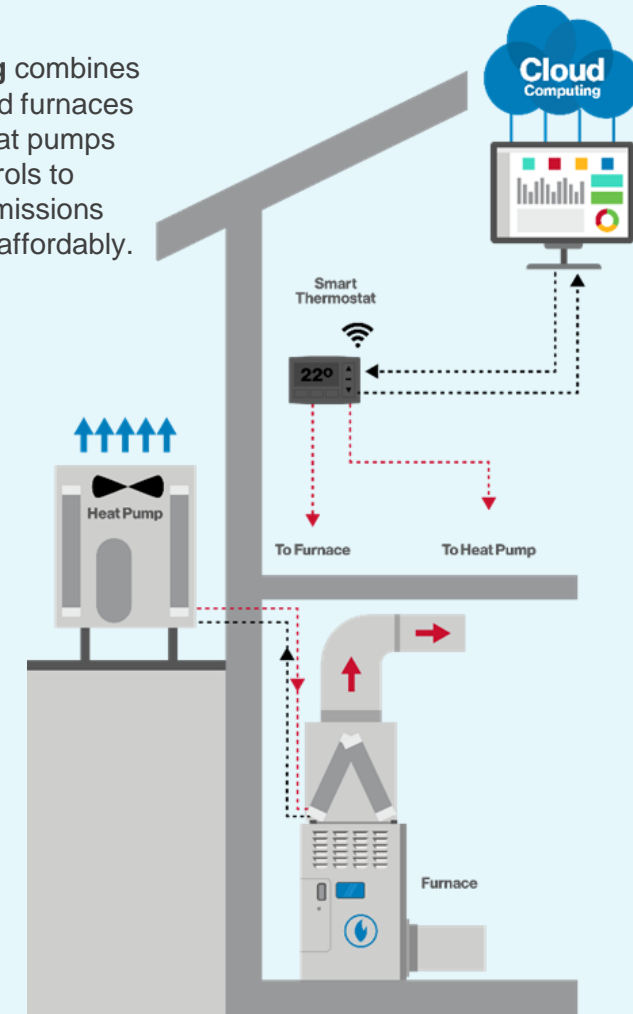
Allows Ontario energy consumers the flexibility to make choices on the path to net zero

## STUDY FINDINGS

### The lowest-cost pathway includes hybrid heating

- Increasing the amount of hybrid heating in the diversified pathway to 55 percent leads to lower peak electric system demand, reducing costs to achieve net zero.
- Hybrid heating uses both the electric and gas systems, increasing energy system reliability by having energy systems working together.
- Retrofitting equipment, rather than replacing it, is simpler and reduces costs for Ontarians
- Hybrid heating provides Ontarians confidence that they will have the energy they want, when they need it.

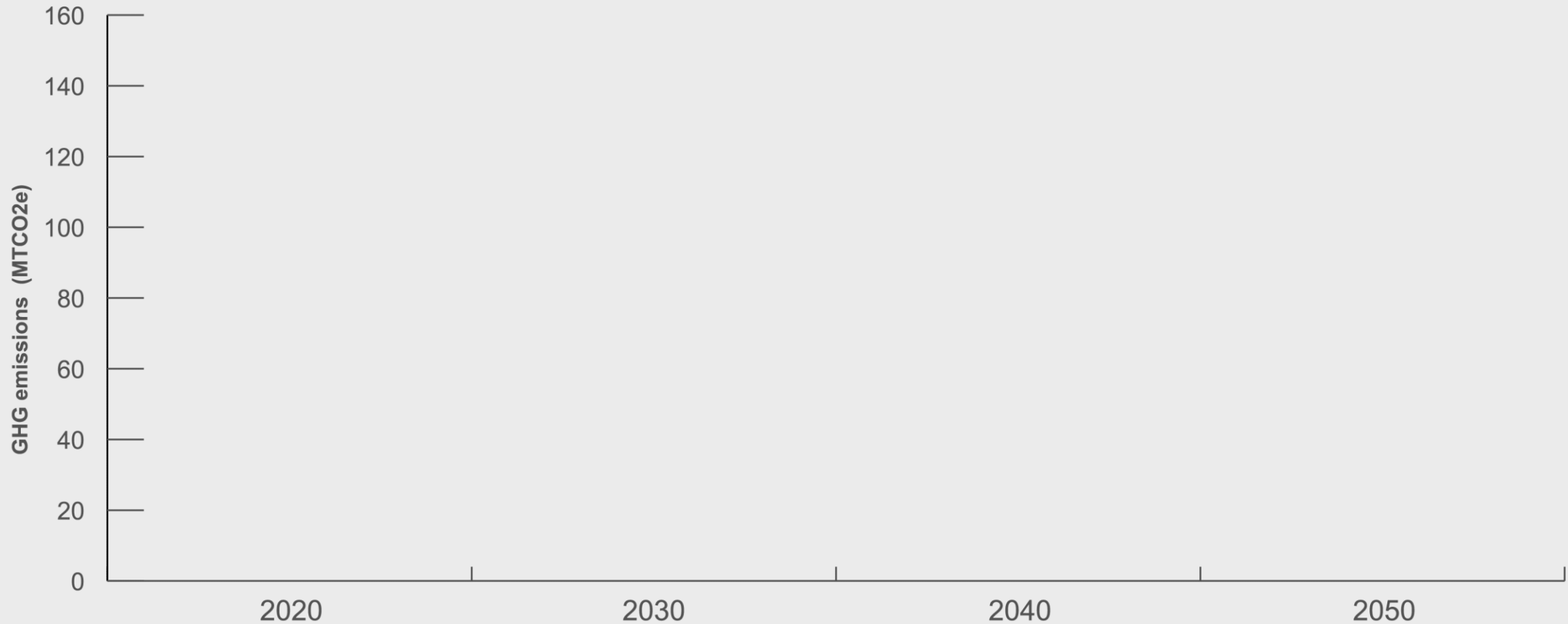
Hybrid heating combines natural gas-fired furnaces with electric heat pumps and smart controls to reduce GHG emissions practically and affordably.



Integrating the gas and electric heating systems is the lowest-cost pathway and increases system reliability.

## STUDY FINDINGS

# Feasibility and cost: both scenarios can achieve net zero by 2050

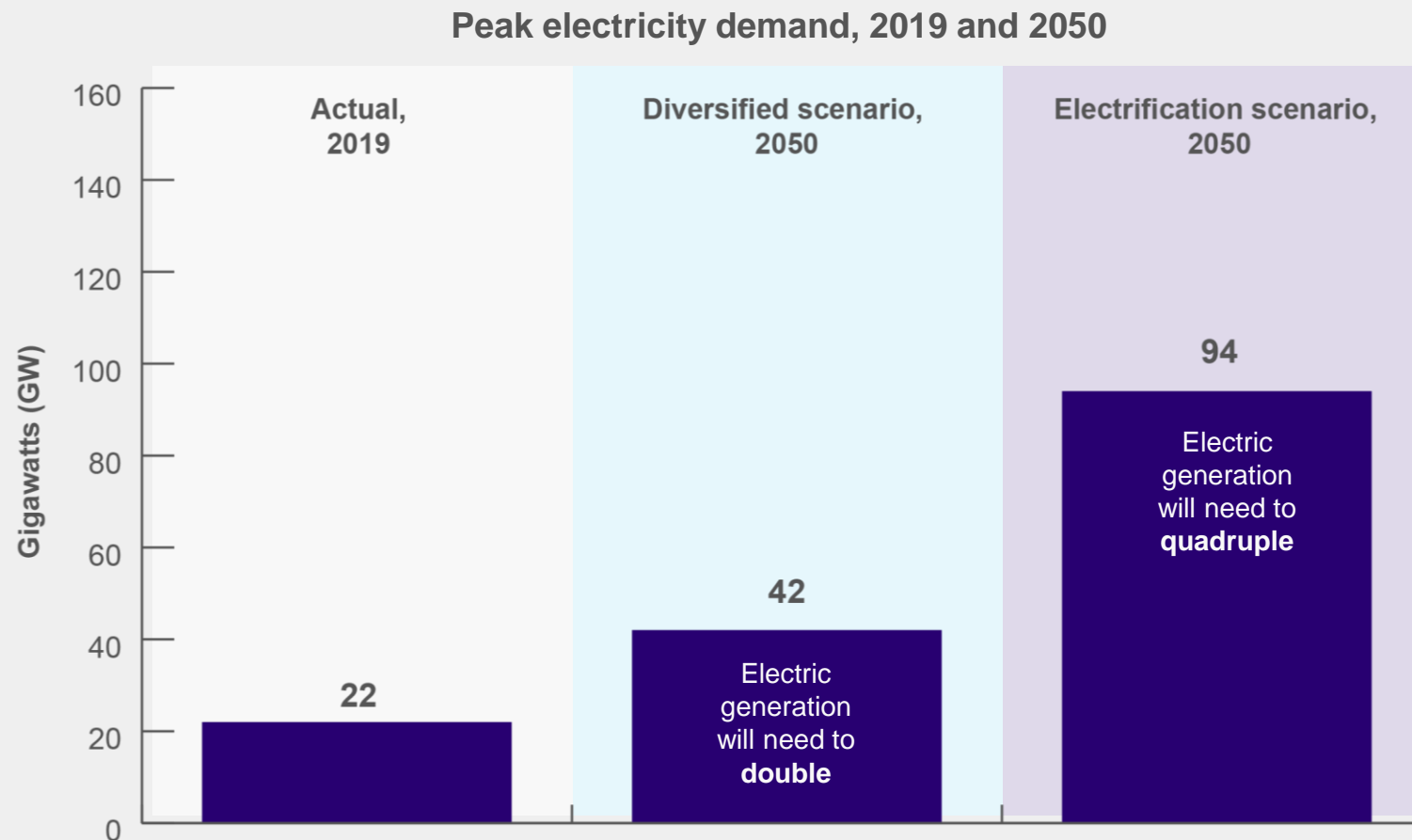


The electrification pathway will cost 27% more (\$202 billion) than the diversified pathway.

## STUDY FINDINGS

# Meeting Ontario's peak energy needs: electric system

- In either scenario, Ontario will need to significantly scale up electrical generation and infrastructure to meet increased demand as sectors are electrified.
- Both scenarios include energy efficiency, renewable generation and switching gas-fired generation to hydrogen to maintain reliability.

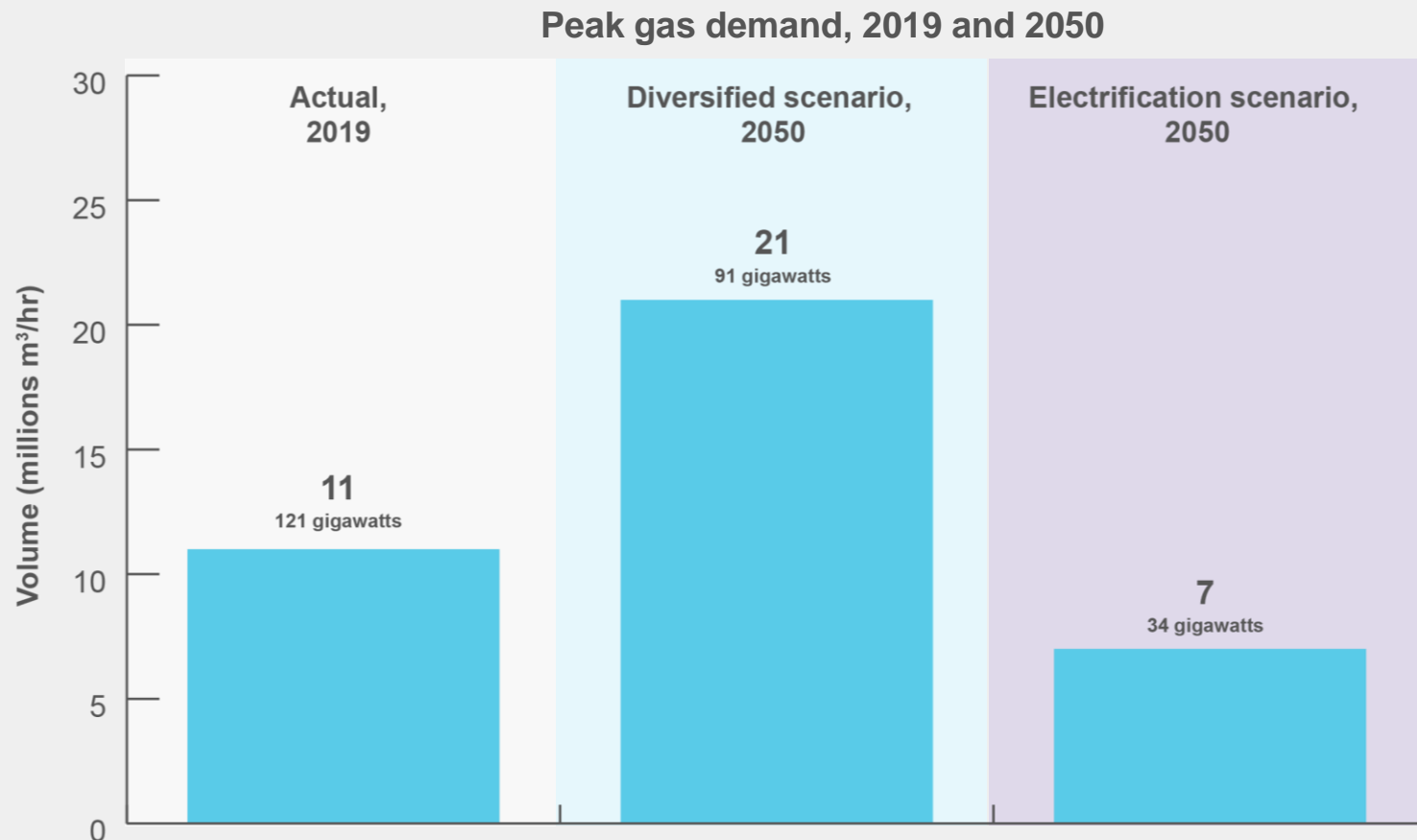


The diversified pathway lowers peak electricity demand, requiring less investment in the electricity system.

## STUDY FINDINGS

# Meeting Ontario's peak energy needs: gas system

- In either scenario, energy efficiency, building and equipment upgrades and fuel switching lead to a decrease in gas peak on an energy basis.
- Both scenarios include hydrogen to decarbonize high-temperature industrial processes.
- The diversified scenario includes a larger amount of hydrogen, resulting in an increase in gas system peak on a volume basis.



Ontario's gas system must evolve to meet increased demand for hydrogen in both scenarios.

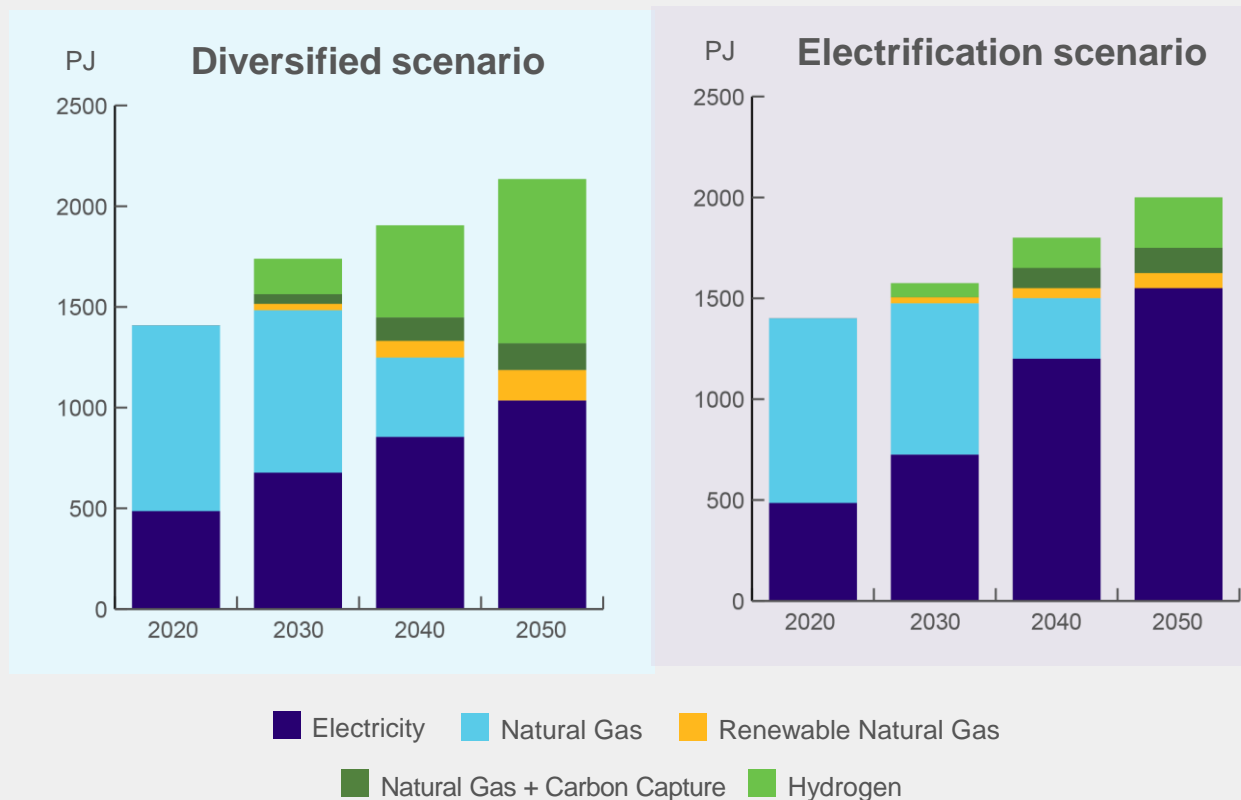


## STUDY FINDINGS

# Low-carbon gases, carbon capture are key to net zero

- Both scenarios rely on low-carbon gases such as RNG and hydrogen, and natural gas with CCS, particularly in sectors that are difficult to electrify.
- The diversified pathway uses low-carbon gasses, predominantly hydrogen, to:
  - Heat buildings
  - Provide peak energy supply, which costs less than the electrification pathway
  - Enhance grid reliability, as it acts as a storage asset for peak period power generation

Energy supply mix by decade



The diversified pathway, with a greater mix of low-carbon gases, provides reliability and lower cost.



## STUDY FINDINGS

### Optimizing the diversified scenario

- Modeling sensitivities show that changing the mix of energy solutions also changes the outcomes including the cost to achieve net zero.
- Further savings could be achieved by:
  - Decentralizing electricity generation by moving some renewable generation behind the meter, paired with battery storage.
  - Anticipated reduction in costs of wind and solar generation, battery storage, and hydrogen production and storage.
- Technological innovation will also be needed to achieve net zero more affordably.



Optimizing the diversified scenario requires integrated gas and electric system planning.

# Actions / Next Steps

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## ACTIONS TO ACHIEVE NET ZERO

### “safe-bet” actions to take today to reach net zero:



#### Maximize energy efficiency

Reduce energy use.



#### Optimize and integrate energy system planning

Coordinate electric and gas system planning.



#### Invest in low-carbon gases

Transition to increasing amounts of RNG and hydrogen over time.



#### Utilize carbon capture and storage

Invest in CCS for heavy industry and blue hydrogen production.

## Working together to achieve Ottawa's Net-Zero Goal

- Modeling completed at provincial level; however, significant opportunity to work with the Hydro Ottawa and City of Ottawa to create a regional pathway that supports achievement of Net-Zero targets
- An optimized pathway to net-zero requires an integrated approach to energy planning
- OEB Natural Gas Integrated Resource Planning Framework (IRP) supports energy transition – Enbridge Gas is:
  - Implementing planning process changes within the organization
  - Reviewing all Ottawa specific projects to identify which could be delayed and/or avoided using a supply or demand side alternative
  - Looking to work closely with Hydro Ottawa and City of Ottawa on IRP plans

# Q&A

---

## Eric VanRuymbeke

---

**From:** Sonia Fazari  
**Sent:** Wednesday, October 26, 2022 5:02 PM  
**To:** Stevenson, Dale; Fletcher, Mike; rob.maclachlan@ottawa.ca; Andrea.Flowers@ottawa.ca; Cara-Lynne Wade; Mohamed Chebaro; Chris Ripley; trevorfreeman@hydroottawa.com; ankitabhowmick@hydroottawa.com; Bradley Clark; Jean-Benoit Trahan; Ashworth, Janice; Loker, Brad; Hagen, Rebecca; Ahmed Maria; Megan Lund (IESO); Kennan Ip  
**Subject:** IRP Meeting Agenda for Tomorrow  
**Attachments:** Meeting Agenda\_Enbridge\_City of Ottawa\_Hydro Ottawa\_IESO Oct 26 (002).pdf

Hi All,

Please find attached a copy of the agenda for tomorrow's meeting. Please don't hesitate to reach out with any question you may have.

Kind regards,  
Sonia

---

### Sonia Fazari

Sr. Advisor, Municipal and Stakeholder Engagement, Eastern Region  
Public Affairs and Communications

#### **ENBRIDGE GAS INC.**

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North York, ON M2J 1P8

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# Enbridge Gas & City of Ottawa, Hydro Ottawa, IESO

Thursday, Oct 26, 2022

8:00 a.m. – 9:00 a.m.

## Integrated Resource Planning Meeting

Virtual

### Meeting Attendees:

#### Enbridge Gas:

Jean-Benoit, Director, Eastern Region  
 Cara-Lynne Wade, Dir. Energy Transition & Planning  
 Chris Ripley, Manager, IRP & Energy Transition  
 Bradley Clark, Manager, Distribution Optimization  
 Mohamed Chebaro, Project Manager  
 Sonia Fazari, Municipal & Stakeholder Engagement  
 Brad Locker, Climate Change Intern

#### City of Ottawa:

Andrea Flowers, Manager, Climate Change & Resiliency Teams  
 Mike Fletcher, Climate Change Unit  
 Becca Haggan, Manager, Environmental Programs  
 Janice Ashworth, Climate Change Unit  
 Rob Maclachlan, Right of Way & Utility Approvals  
 Dale Stevenson, Right of Way & Utility Approvals

#### Hydro Ottawa:

Trevor Freeman, Supervisor, Key Accounts  
 Ankita Bhowmick, Supervisor, Asset Planning

#### IESO:

Ahmed Maria  
 Megan Lund  
 Kennan Ip

Time	Presenter		
8:00 a.m.	<ul style="list-style-type: none"> <li>Welcome &amp; Roundtable Introductions</li> </ul>	City of Ottawa/Hydro Ottawa/ IESO/Enbridge	5 min.
8:05 a.m.	St. Laurent Project <ul style="list-style-type: none"> <li>Overview / Review</li> <li>Proactive Analysis of Capacity Scenarios</li> <li>Translating the Energy Evolution Plan – Adjusting Capacity Scenario as needed</li> <li>IRP Alternatives Being Analyzed</li> </ul>	Enbridge/Group Discussion	25
8:30 a.m.	<ul style="list-style-type: none"> <li>Overview of Enbridge Gas Projects</li> </ul>	Enbridge/Group Discussion	20
8:50 a.m.	<ul style="list-style-type: none"> <li>Deliverables &amp; Next Steps</li> </ul>	All	10
9:00 a.m.	<ul style="list-style-type: none"> <li><b>MEETING ADJOURNED</b></li> </ul>		

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# Agenda



- Welcome / introduction
- St. Laurent Project
  - Overview / Review
  - Preliminary Capacity Scenarios
  - Translating the Energy Evolution Plan – Adjusting Capacity Scenario as needed
  - IRP Alternatives Being Analyzed
  - Next Steps
- Overview of Enbridge Gas Ottawa Projects
- Close Out / Next Steps

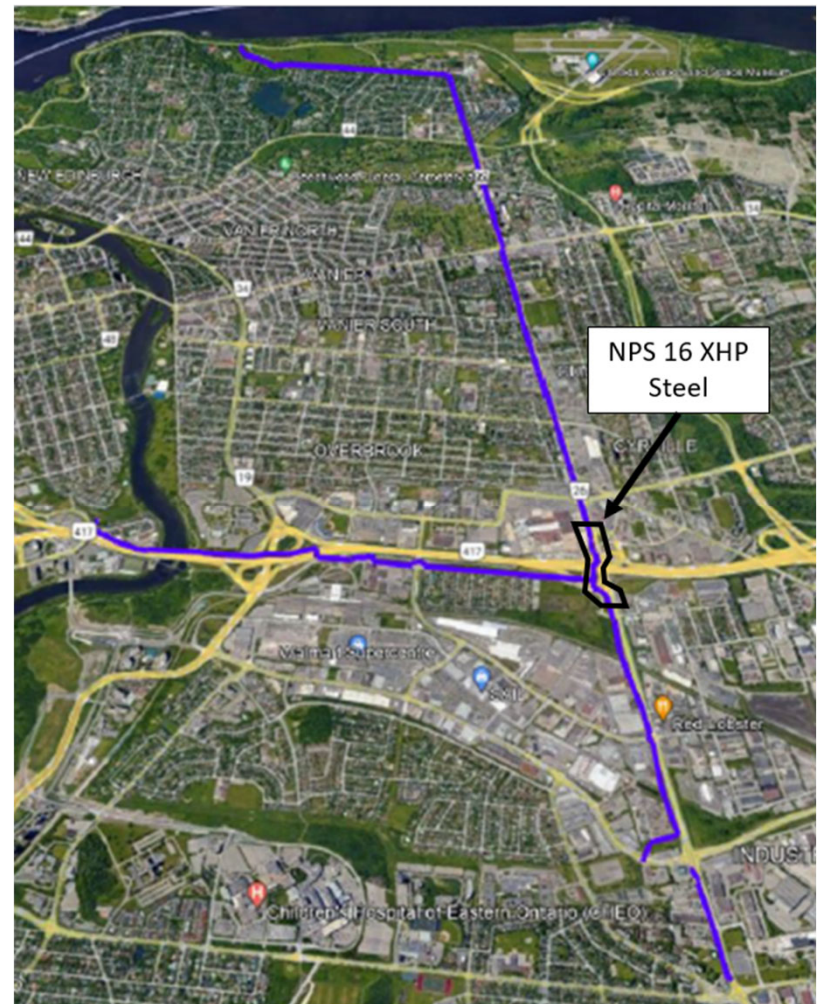
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# St. Laurent Pipeline (SLP) - Overview



- 12 km of NPS 12 XHP Distribution Pipe
- 400 m of NPS 16 XHP Distribution Pipe
- Wall thickness: 0.25" Operating Pressure: 275 psi (< 30% SMYS)
- Grade: 207 MPa (30 ksi)
- Vintage: 1958-1962
- N/S on St Laurent, predominately installed under hard cover, service connections throughout the SLP
- GDS Application Date: March 2021
- OEB Decision Date: May 2022

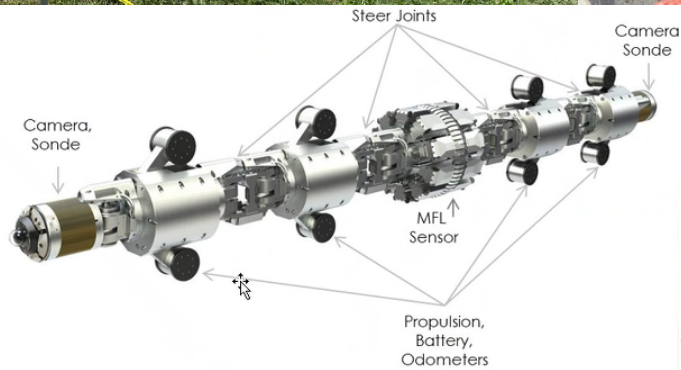
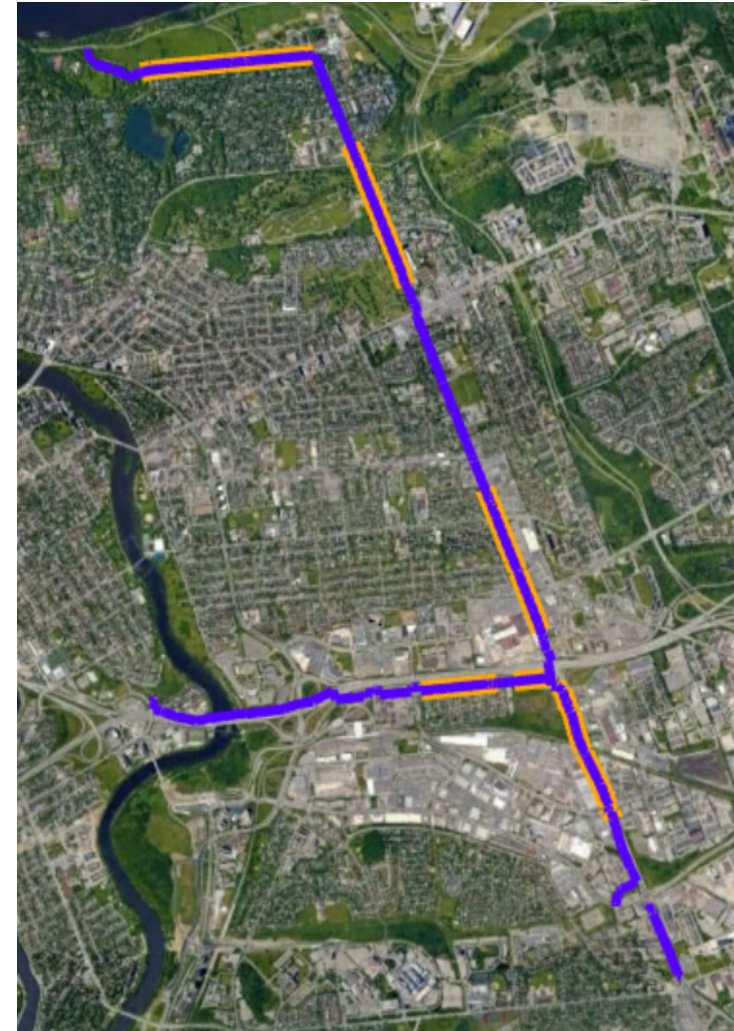


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# Integrity Plan



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# SLP Path Forward - Options



Option	General IRP Requirements
No Replacement	N/A
Partial Replacement(s)	IRP requirements dependent upon partial replacement(s) - to be evaluated once the location is confirmed
Full Replacement	Evaluation of IRP alternatives - determine if full replacement can be delayed, avoided or downsized

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# Preliminary Capacity Scenarios (Illustration Only)



Scenario	Description	Total Cost (Millions)	Savings (Millions)	Capacity (m <sup>3</sup> /h)**	Capacity Loss	Loss - Residential Customer Equivalent	Energy Loss Equivalent <sup>1</sup> (GW)**
0	Existing pipeline Configuration	N/A	N/A	166,300	N/A	N/A	N/A
1	Design outlined in OEB Application	\$123.68	N/A	155,500	N/A	N/A	0
2	Replace all with 12" XHP ST	\$122.39	\$1.3	133,800	14%	18,870	0.23
3*	Replace all with 10" XHP ST	\$121.04	\$2.6	91,500	41%	55,652	0.67
4*	Replace all with 8" XHP ST	\$119.57	\$4.1	58,000	63%	84,783	1.03

\*Scenarios are not "constructable"

\*\*Capacity and Energy values are approximate (straight energy conversion) and for illustrative purposes only

<sup>1</sup> (155,300 m<sup>3</sup>/h × 1h × 37.98 MJ/m<sup>3</sup>) ÷ 3,600 MJ/MWh = 1,638.415 MW -or- 1.64 GW

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# Translating the Energy Evolution Plan



- The project need is determined using Enbridge's forecast for the region which is based on Enbridge's harmonized planning models and incorporates the Energy Transition assumptions
- Enbridge requests assistance from the City of Ottawa to translate the Energy Evolution Plan into forecast energy needs
- Enbridge will complete its IRP assessment on both forecasts to determine the potential for IRP alternatives

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# IRP Alternatives Being Analyzed



- Enbridge will review all potential IRP alternatives including supply-side (e.g. incremental gas supply, CNG) and demand-side (e.g. energy efficiency programs)
- In its analysis, Enbridge will consider a range of options including downsizing the pipeline solution and deferring the project

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# Overview of Enbridge Ottawa Growth Projects



- Enbridge has several growth projects in the Ottawa area that are included in Enbridge's 2023-2032 Asset Management Plan including:
  - Quincy Avenue
  - Orville Street
  - Stevenage Drive
  - Barrhaven
  - Bunker Road
  - Carp Pressure Increase
  - Bank Street
  - Sherwood Drive
  - Ottawa Reinforcement from Richmond Gate

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## Next Steps

- City of Ottawa to assist with the translation of the Energy Evolution Plan
- Enbridge to assess IRP alternatives
- City of Ottawa and Enbridge to have additional meetings to review/discuss the St. Laurent project needs and IRP alternatives
- Enbridge develops and files its application with the OEB

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## Eric VanRuymbeke

---

**From:** Chris Ripley  
**Sent:** Wednesday, November 30, 2022 11:53 AM  
**To:** Fletcher, Mike; Cara-Lynne Wade; Flowers, Andrea  
**Cc:** Sonia Fazari; Mohamed Chebaro; Bradley Clark  
**Subject:** RE: IRP Material

Hi Mike,

Thank you for the email. We have pulled together most of the information that you are looking for, and the rest will be completed soon; however, it is our preference to pick a meeting date with the City of Ottawa and Ottawa Hydro to discuss these items together on a call. We believe dialogue on what we have to present would be very beneficial and would continue to align perspectives. Also, without a meeting Enbridge won't have the opportunity to hear and discuss what additional information the City of Ottawa has related to our demand forecast that should be considered by Enbridge when confirming the project scopes and IRP alternative assessments. This information and discussion with the City of Ottawa will help greatly to ensure that our analysis is as comprehensive as possible. Our concern is that if we do not pick a date soon then our calendars may fill up or people may depart for the Holiday Season.

In your note below, you have requested Enbridge to provide information regarding the St. Laurent project area, including how the capacity is determined and to define the development areas Enbridge is considering. These questions will be addressed in the two meetings per my earlier note. Our first proposed meeting was/is to discuss Enbridge's natural gas demand forecast process more broadly and for the Ottawa region specifically. This overview will include a list of the inputs/assumptions that Enbridge Gas has used in this demand forecast for the City of Ottawa. We will then provide a list of all the resulting "needs"/projects that Enbridge Gas has included for Ottawa in our Asset Management Plan. This would include specific details for the St. Laurent project area, as well as for the other Ottawa area projects. In this same meeting, we would like to discuss the City of Ottawa's thoughts on the demand forecast that Enbridge Gas has presented for Ottawa so that we can gain clarity on what similarities and/or differences the City of Ottawa sees between their own forecast and Enbridge's forecast. We'd also like to have Hydro Ottawa to provide the same insights. This will allow us to determine if any changes need to be made to our demand forecasts and to then complete any required re-modeling for our system and for the IRP alternatives related to St. Laurent and then for other projects in the Ottawa area.

We will provide more context to some of your requests, but I have a few high-level comments and questions on your other points:

1. The purpose and desired outcome
  - Enbridge and the City of Ottawa and Hydro Ottawa to discuss and understand each others' long-term energy need forecast for the Ottawa area
  - Enbridge to assess the long-term needs discussed and develop strategies to meet those needs through IRP alternatives or traditional pipelines, where an IRP alternative is deemed not technically or economically feasible
2. Scope and phases (ex. IRP for St. Laurent, growth areas and city at large) –
  - As noted above, Enbridge will provide energy need specifics for St. Laurent and the broader City including location and timing as included in Enbridge's Asset Management Plan
3. Roles and responsibilities
  - As noted above, Enbridge will review the energy needs in the Ottawa area and develop plans to meet those needs. We have requested Ottawa's assistance in understanding any differences the City of

Ottawa sees in our demand forecast and their Evolution Plan and its long-term impacts on the energy needs

4. Resources and budget

- Could you please clarify your request regarding this point? We need to develop the potential projects and alternatives before providing a budget and timing – this is aligned with the process outlined in the OEB's IRP Decision.

5. Timelines

- For the St. Laurent project, per our previous discussion, we are assessing IRP alternatives and traditional pipeline solutions to meet the forecast demand. We hope to complete this work in January and meet with you again in mid-to-late January to review the results.
- For the greater Ottawa area, as noted above, we have projects in our ten-year Asset Management Plan that we would like to discuss with you. These projects meet future specific needs and will require additional discussions.

6. Deliverables and reporting

- Please clarify your request.

In the meantime, we would like to establish a meeting time prior to year-end with the City and Hydro Ottawa so that we can review the items above. Please let me know meeting dates/times for December and we will do our best to accommodate. If you could also propose meeting dates/times for mid-to-end of January that would be appreciated to ensure things continue to move forward.

Thank you.

Chris

---

**From:** Fletcher, Mike <Mike.Fletcher@ottawa.ca>

**Sent:** Wednesday, November 23, 2022 12:48 PM

**To:** Chris Ripley <CRipley@uniongas.com>; Cara-Lynne Wade <Cara-Lynne.Wade@enbridge.com>; Flowers, Andrea <Andrea.Flowers@ottawa.ca>

**Cc:** Sonia Fazari <Sonia.Fazari@enbridge.com>; Mohamed Chebaro <Mohamed.Chebaro@enbridge.com>; Bradley Clark <Bradley.Clark@enbridge.com>

**Subject:** [External] RE: IRP Material

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Hi Chris,

I hope all's well with you and your colleagues. I'm sorry about the delay and I should have warned you off this recent period where we are busy orienting new city councillors.

Be for we plan to get together; I think it would be valuable to first clear up deliverables and for Enbridge to define the scope of what Enbridge is planning for IRP. With respect deliverables, we would like Enbridge to get back to us on the following requests from our last meeting: i) the geographical area of St-Laurent (and how Gatineau demand will be managed), ii) explain the way capacity is determined in more detail and iii) to define the development areas which Enbridge is working on and confirm if these areas will be of interest for gas IRP.



As for scope definition, we would like Enbridge to draft a charter for IRP work initially focused on St-Laurent and as a template for other areas. This charter should define the following:

1. The purpose and desired outcome
2. Scope and phases (ex. IRP for St. Laurent, growth areas and city at large)
3. Roles and responsibilities
4. Resources and budget
5. Timelines
6. Deliverables and reporting

I'm thinking that this work is somewhere on your horizon for IRP and I hope you don't mind us asking this to move this up on Enbridge's worklist. Getting these items clarified will very likely reduce churn and help us work more effectively.

Mike Fletcher  
Cell and Text: 613-880-3688

---

**From:** Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>  
**Sent:** November 22, 2022 7:49 PM  
**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>; Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Cc:** [sonia.fazari@enbridge.com](mailto:sonia.fazari@enbridge.com); Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>  
**Subject:** RE: IRP Material

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Andrea/Mike: We are still hoping to meet with you regarding the demand forecast and energy needs for the St. Laurent and Ottawa area which will help us with our analysis.

Can you please provide dates that work for you and we will try to accommodate them. This week is no longer available.

Thank you.  
Chris

---

**From:** Chris Ripley  
**Sent:** Wednesday, November 9, 2022 7:45 AM  
**To:** 'Fletcher, Mike' <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>; Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; 'Flowers, Andrea' <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Cc:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>  
**Subject:** RE: IRP Material

Andrea/Mike: here are proposed dates for the two meetings I outlined in the email below. Can you please let us know if these work. If they do not work, can you please suggest other dates and times that would work for you.

Meeting #1 – November 24 (morning) or November 25 (morning)

Meeting #2 – December 14 (afternoon) or December 15 (morning)

Thank you.  
Chris

---

**From:** Chris Ripley  
**Sent:** Tuesday, November 8, 2022 12:31 PM  
**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>; Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Cc:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>  
**Subject:** RE: IRP Material

Andrea/Mike: we will be proposing some dates for our next meetings shortly. From Enbridge's perspective we would like to have at least two meetings prior to the holidays with the meeting objectives being:

#### Meeting 1

1. Enbridge's demand forecast for the St. Laurent project area
2. A discussion of Ottawa Hydro's forecast for the same area
3. City of Ottawa provides views on the forecast and any impacts from their Energy Evolution Plan
4. Discuss the similarities/differences in the forecast and adjust as necessary
5. If there are substantial differences between Enbridge's forecast and the City's energy evolution plan Enbridge can adjust its IRP alternative analysis accordingly

#### Meeting #2

1. Enbridge presents project needs timing and IRP assessment results
2. Ottawa Hydro discusses projects and needs including timing
3. Discuss any overlap if applicable
4. Discuss next steps with the City of Ottawa

The above agenda items/objectives are tentative depending on your thoughts and the timing of the meetings.

Chris

---

**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Monday, October 24, 2022 4:14 PM  
**To:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Cc:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>; Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>  
**Subject:** [External] RE: IRP Material

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Hi Cara-Lynn,

Thanks for this e-mail, on the basis of these discussions we've had, I'm quite clear on the meeting, thank you.

I'm fine with including someone from IESO but I think it would be good if tell us generally what they are reporting back to their team and how the IESO is considering or incorporating our work. It easy for an observer to get wrong impressions which can get entrenched and shared without a bit of a feed back loop.

It's a good idea to have suggest some time for the next meeting: On our side, this looks good:

Nov 2: 8-9, 11-12  
Nov 3: 2:30 – 3:30  
Nov 7: 3-5  
Nov 9: 11-2:30  
Nov 10: 8-10:30, 2:30-5

Thanks and talk soon.

Cheers, Mike

Mike Fletcher  
Cell and Text: 613-880-3688

---

**From:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>  
**Sent:** October 24, 2022 1:26 PM  
**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Cc:** [sonia.fazari@enbridge.com](mailto:sonia.fazari@enbridge.com); Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>  
**Subject:** RE: IRP Material

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Hi Mike and Andrea,

Thanks for your email below.

We are currently pulling together slides to guide our discussion at Wednesday's meeting – we are looking forward to the discussion. As you've noted/highlighted below, and as promised when we met, we are gathering information on Ottawa specific projects, so that we can work together with you and Hydro Ottawa to determine if/how we can delay or avoid these projects via the implementation of an IRP alternative (IRPA). In a recent brief discussion with the IESO, we both agreed that it would be beneficial for them to attend our meetings as an observer, as we look to plan with both systems' needs and capacity at the forefront. We have no objection to them attending, and don't anticipate you having any issue either, but please let me know if you have any concerns.

Because we only have an hour on Wednesday – I wanted to provide an overview of where we will be focusing – please let us know if you have any questions:

- The first Ottawa project that we'll focus on is the St. Laurent Project. As you know, we are currently completing integrity management work. We do not yet know what next steps will be for this project – but we want to be proactive in our analysis of any IRP alternative options in the event that we do need to move forward with something. We'll provide an overview of the potential outcomes of our integrity work and, therefore, what potential needs that we'd be looking for an IRP alternative to delay, avoid or downsize.
- In addition, as noted below, we'd like to discuss how we can work closely with the City of Ottawa to translate the Energy Evolution plan into the level of information that Enbridge Gas needs to incorporate it into our planning activity – We're preparing a draft document that outlines the type of information we need, and then we can discuss how we can closely work with you / support you to obtain it. This will ensure that Enbridge Gas's

forecasted needs properly capture those pieces of the Energy Evolution plan that we determine can be incorporated into our planning – this also ensures that all IRP alternative evaluations are done with the most accurate information.

- Finally, we'll highlight the other Ottawa projects that Enbridge Gas has within its asset management plan (AMP) – we'd like to book another meeting ASAP (lets start looking at calendars now) to get into more detail on each of these – NOTE: the work we will do in the above noted bullet will help greatly with these other projects/IRPAs as well.

Thanks again,  
Cara

**Cara-Lynne Wade**, MBA (*she/her*)

Director, Energy Transition Planning  
Business Development & Regulatory

ENBRIDGE

TEL: 416-496-5324 | CELL: 416-994-1209 | [Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)  
500 Consumers Road, North York, Ontario, M2J 1P8

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**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Friday, October 14, 2022 11:49 AM  
**To:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>  
**Cc:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>; Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Subject:** [External] RE: IRP Material

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Hi Cara-Lynne,

Thanks for this e-mail; I like the idea on moving ahead on things now.

With regards to the first item I'm of course happy to pass along everything we have ([here it is, its all public](#)). In the interest of not using up too much of your time, however, I'm wondering about how much detail you need to go into. Assuming you're following the OEB decisions which directed gas IRP (OEB 2020-0293 and OEB 2020-0091) and the IRP Framework, I'm thinking Enbridge is working off the following definition of gas IRP:

"Integrated Resource Planning is a planning strategy and process that considers Facility Alternatives and IRP Alternatives (including the interplay of these options) to address the system needs of Enbridge Gas's regulated operations, and identifies and implements the alternative (or combination of alternatives) that is in the best interest of Enbridge Gas and its customers, taking into account reliability and safety, cost-effectiveness, public policy, optimized scoping, and risk management."

In OEB 2020-0091 Enbridge was directed to use an identification of constraint process related to areas identified in its asset management planning. If this is indeed the approach then I'd suggest that Enbridge could suggest where these areas are, Hydro Ottawa could do the same and then we could have a discussion about geo-targeted conservation that focuses strongly on peak winter energy demand.

As for the use of the Energy Evolution (EE) model, its best I explain the actions we have taken since its creation and to understand that we mostly use the model as a guide and a framework and typically not a precise plan which we follow in

minute detail. The model's 100% GHG reduction scenario was grouped into 34 action categories, some of which are under direct City control and many of which are things we as a municipality can only influence. This was used as the basis for the Energy Evolution strategy which was approved by Ottawa City Council in 2020. In it, the action categories are arranged into 20 "Project Overviews". To her credit, Andrea devised project overviews as a kind of pre-charter which obliged other City department and some outside the organization to think about what would be required to action Energy Evolution.

The project overviews carefully identify things that need to happen in the next five years to follow the community's carbon budget. They are a mix of actions and follow-on documents or in some cases City programs or by-laws.

The project overview of the most interest here is the community heating strategy. Under its auspices we are doing this IRP work, are doing pilot deep retrofits, doing advocacy work around policy and regulation, working on district energy and developing a framework for community heating which further details the community heating strategy.

As for the EE model, we won't get into the business of updating it all the time. We are responding to a City declared climate emergency and we have broadly figured out what we need to do. As we are implementing, we are noting lessons learned course correcting and noting things that we could incorporate in a remodeling which we roughly plan to do two years hence.

So, in closing, my suggestion is that Enbridge provide areas in Ottawa which Enbridge consider as target areas for IRP. I'll be suggesting that Hydro Ottawa do the same (Hydro One does some distribution in Ottawa I'm hope we can stick to just working with Hydro Ottawa as the electrical LDC).

I hope this is helpful, and if so, I'll use this direction to suggest the next meeting agenda.

Regards, Mike.

---

**From:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>  
**Sent:** October 12, 2022 10:56 PM  
**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Cc:** [sonia.fazari@enbridge.com](mailto:sonia.fazari@enbridge.com); Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Subject:** RE: IRP Material

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Hi Mike,

Thanks for your note. Yes, as promised, we have been working on pulling together projects for the Ottawa region that we can share with you. We look forward to sharing those with you at our next meeting.

It sounds like Sonia from our side has been emailing with Andrea over the past week or so to get a meeting set-up (hope it's ok, I've included everyone here to stay aligned), and I see today that a meeting was booked for Oct 27<sup>th</sup> - which is great. We will be putting together the agenda items Enbridge Gas would like to cover off in this meeting by mid next week and we will send it through asap, if you and your team could send through any specific items that you'd like to add to the agenda, that would be great.

Two items that we've already noted, and perhaps in advance of our meeting your side could discuss are:

1. For Enbridge Gas to complete a comprehensive / accurate IRP alternative analysis we need to understand the Ottawa Energy Evolution plan in detail – and specifically, continue to work with you to understand and translate

the activities into expected impacts by customer type, by specific geographic area, timing etc. To support this, we are pulling together an outline of the information we'd need to have from your team, and likely Hydro Ottawa, in order to incorporate these expected changes into our analysis. We can evolve this outline based on our discussions.

2. What next steps your team will be taking with regards to updating the Energy Evolution Planning model – and if/where Enbridge can be a part of / support this work – including any information that you'd like Enbridge to provide - as per our discussion during our Pathways to Net-Zero Study discussion last month.

Thanks again and we'll be in touch next week,  
Cara

**Cara-Lynne Wade**, MBA (*she/her*)  
Director, Energy Transition Planning  
Business Development & Regulatory

ENBRIDGE  
TEL: 416-496-5324 | CELL: 416-994-1209 | [Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)  
500 Consumers Road, North York, Ontario, M2J 1P8  
[enbridge.com](http://enbridge.com)  
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**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Tuesday, October 11, 2022 1:36 PM  
**To:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>  
**Subject:** [External] IRP Material

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Hi Cara-Lynn,

I hope this message finds you well and I hope you had a good thanksgiving.

From our meeting on September 22, I recall that you were going to send us something to get us going on IRP (maybe areas in Ottawa where IRP is of the most interest). I'm wondering how this is going? – I have some time this week to start doing some more work on IRP and multi resource energy planning.

Cheers, Mike

**Mike Fletcher** (he/him) – Born at 320ppm  
Project Manager, Climate Change and Resiliency Unit  
Planning, Infrastructure and Economic Development Department  
-----  
City of Ottawa, 110 Laurier Avenue West - 4th Floor, Ottawa, ON K1P 1J1  
T. 613.580.2424 x29201 | C. 613-880-3688 | [mike.fletcher@ottawa.ca](mailto:mike.fletcher@ottawa.ca)

The City of Ottawa unanimously approved its community energy transition strategy, Energy Evolution, on October 28<sup>th</sup>, 2020.

Information on Energy Evolution can be found [here](#)

The City of Ottawa declared a climate emergency on April 24<sup>th</sup>, 2019.

Information on the climate crisis can be found [here](#) and [here](#)

Note: I'm generally working remotely during the COVID 19 pandemic. If you wish to speak with me please call my cell.



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## Eric VanRuymbeke

---

**From:** Chris Ripley  
**Sent:** Friday, January 13, 2023 7:57 AM  
**To:** Fletcher, Mike; Hagen, Rebecca; Flowers, Andrea; trevorfreeman@hydroottawa.com; Margaret Flores; ankitabhowmick@hydroottawa.com; Cara-Lynne Wade; Sonia Fazari; Mohamed Chebaro; Bradley Clark  
**Subject:** RE: IRP Meeting  
**Attachments:** City of Ottawa - Enbridge - January 16 2023.pdf

Good morning. Please find attached the presentation Enbridge will refer to at our meeting Monday afternoon. I have included a few slides from earlier discussions in the event we need to refer to them but I do not plan to spend much time on them unless there are questions.

Also, at an earlier meeting, we had discussed a representative from the IESO being included in these meetings. We have reached out to the IESO and someone may join us for the meeting.

If you have any questions please let me know.

Have a great weekend.

Chris

-----Original Appointment-----

**From:** Fletcher, Mike <Mike.Fletcher@ottawa.ca>  
**Sent:** Wednesday, December 21, 2022 1:16 PM  
**To:** Fletcher, Mike; Hagen, Rebecca; Flowers, Andrea; trevorfreeman@hydroottawa.com; Margaret Flores; ankitabhowmick@hydroottawa.com; Chris Ripley; Cara-Lynne Wade; Sonia Fazari; Mohamed Chebaro; Bradley Clark  
**Subject:** IRP Meeting  
**When:** Monday, January 16, 2023 3:00 PM-5:00 PM (UTC-05:00) Eastern Time (US & Canada).  
**Where:** Microsoft Teams Meeting

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1. Using a geographical of St. Laurent area Enbridge will provide by January 5<sup>th</sup> Review:
  - i. Enbridge's demand forecast for the St. Laurent project area
  - ii. A discussion of Ottawa Hydro's forecast for the same area
2. City of Ottawa provides views on the forecast and any impacts from their Energy Evolution Plan or other relevant information
3. Discuss the similarities/differences in the forecasts and adjust as necessary
4. Discuss Enbridge IRP analysis in light of items 1-3 above
5. Discuss steps required to develop an IRP program for the St. Laurent area and prospective future IRP programs in other areas in Ottawa

Please let me know if there are any suggestions for the above agenda.

Regards, Mike

Note: I have assumed Enbridge will not be in Ottawa for this meeting. Enbridge, please confirm this thank-you.

---

## Microsoft Teams meeting

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# Integrated Resource Planning Update

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City of Ottawa – St. Laurent



# Agenda

- Introductions – All (10 min)
- Safety Moment – Enbridge (5 min)
- Objectives of Meeting – Enbridge (5 min)
- St. Laurent Project – Enbridge (5 min)
- Enbridge's Demand Forecast Assumptions – Enbridge (20 min)
- Discussion – All (75 min)

Note: The data provided are estimates and for general discussion purposes. Some of the information provided is part of our Rebasing application.



## Objectives of Meeting

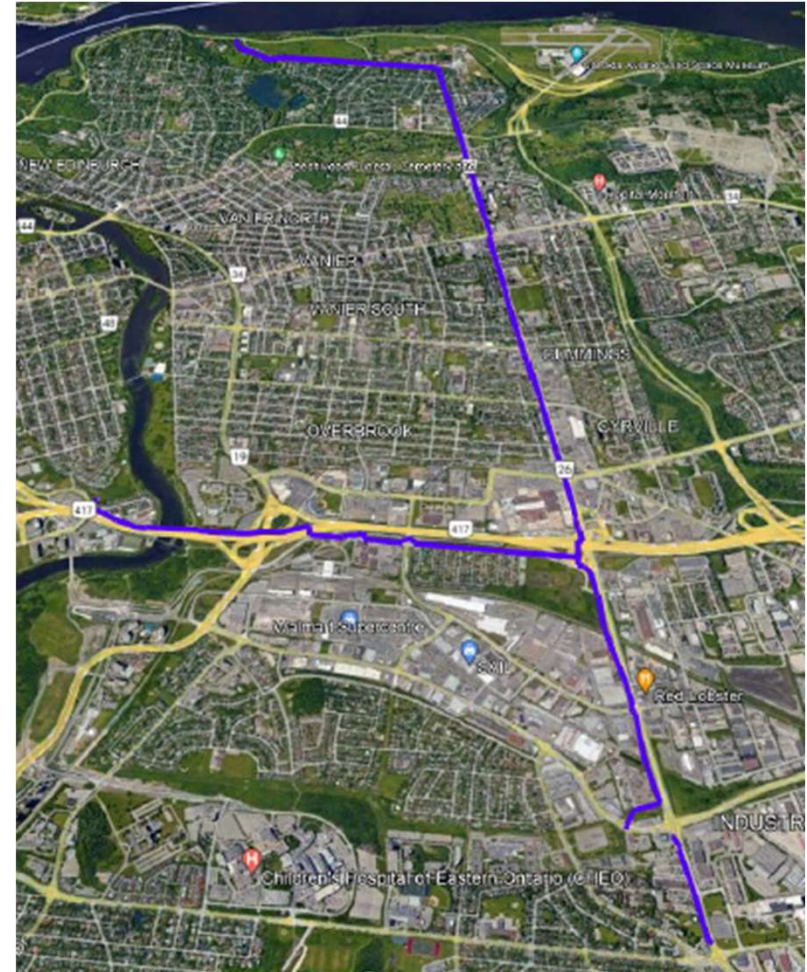
- Create an understanding of Enbridge's demand forecast process
- Discuss Enbridge's demand forecast data for the St. Laurent area, and obtain insights from the City of Ottawa on how this demand forecast data compares to the City of Ottawa's Energy Evolution Plans for this same area
- Set the stage for future Ottawa area demand forecast discussions



# St Laurent Pipeline (SLP) - Overview



- 12 km of NPS 12 XHP Distribution Pipe
- 400 m of NPS 16 XHP Distribution Pipe
- Wall thickness: 0.25"
- Operating Pressure: 1900 kPa (< 30% SMYS)
- Grade: 207 MPa (30 ksi)
- Vintage: 1958-1962
- N/S on St Laurent, predominately installed under hard cover, service connections throughout the SLP
- GDS Application Date: March 2021
- OEB Decision Date: May 2022



# Preliminary Capacity Scenarios (Illustration Only)



Scenario	Description	Estimated Total Cost (Millions)	Estimated Savings (Millions)	Capacity (m <sup>3</sup> /h)**	Capacity Loss	Loss - Residential Customer Equivalent	Energy Loss Equivalent <sup>1</sup> (GW)**
0	Existing pipeline Configuration	N/A	N/A	166,300	N/A	N/A	N/A
1	Design outlined in OEB Application	\$124	N/A	155,500	N/A	N/A	0
2	Replace all with 12" XHP ST	\$122	\$1.3	133,800	14%	18,870	0.34
3*	Replace all with 10" XHP ST	\$121	\$2.6	91,500	41%	55,652	0.59
4*	Replace all with 8" XHP ST	\$120	\$4	58,000	63%	84,783	0.96

\*Scenarios are not "constructable"

\*\*Capacity and Energy values are approximate (straight energy conversion) and for illustrative purposes only

<sup>1</sup> (155,300 m<sup>3</sup>/h × 1h × 37.98 MJ/m<sup>3</sup>) ÷ 3,600 MJ/MWh = 1,638.415 MW -or- 1.64 GW

<sup>2</sup> Canadian Power Holding Inc. (2022). *Operations*. <https://canadianpower.com/operations/>

<sup>3</sup> Portage Power. (2002). *Chaudiere Falls Run-of-the-river Hydroelectric Facilities*. <https://portagepower.com/hydroelectric/chaudiere-falls/>

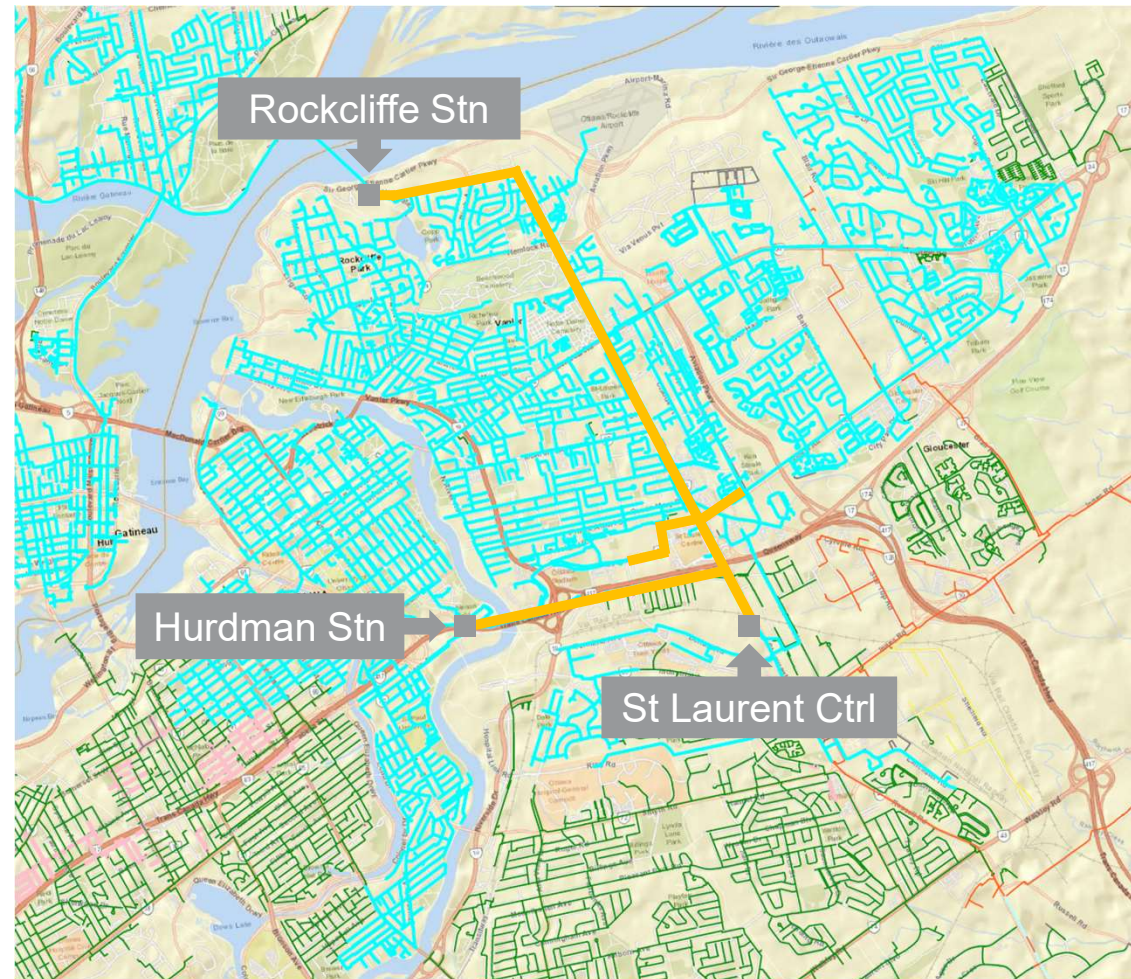


# Enbridge's St Laurent System



## The St Laurent System

- The St Laurent core pipeline system is represented by the yellow lines on the map
- The light blue lines represent the area primarily served by the St Laurent system. (Note: in the event of an emergency situation the affected area may be much larger)
- The St Laurent core pipeline system is a 1900 kPa MAOP system
- It is fed by St Laurent Control from a 3240 kPa system
- Customers primarily connected to 420 kPa systems downstream of the St Laurent 1900 kPa system



# Enbridge's Demand Forecast



- Enbridge Gas filed its demand forecast methodology and five year forecast in its 2024 Rebasing Application
- The process steps include:
  - Gather data on load forecast (approved proposals, contract changes, draft plans, econometric forecast, energy transition factors)
  - Gather most recent existing customer usage data and combine with load forecast
  - Perform hydraulic analysis to determine infrastructure requirements
- The assumptions included in the demand forecast include:
  - Systems are designed for the coldest day on record in past 40 years (-32.5 C for Ottawa) with interruptible customers off (IOFF)
  - Carbon pricing and natural gas commodity pricing, building performance and appliance efficiency improvements for existing customers are all included in energy transition factors
  - Some customers are expected to choose not to connect to natural gas as a fuel source and the growth forecast has been reduced accordingly



# Energy Transition Assumptions

- Enbridge filed its 2024 Rebasing Application and Evidence in Q4 2022 for a 5-year term from 2024 to 2028
- Enbridge included Energy Transition Assumptions in its demand forecast for its general service customers:

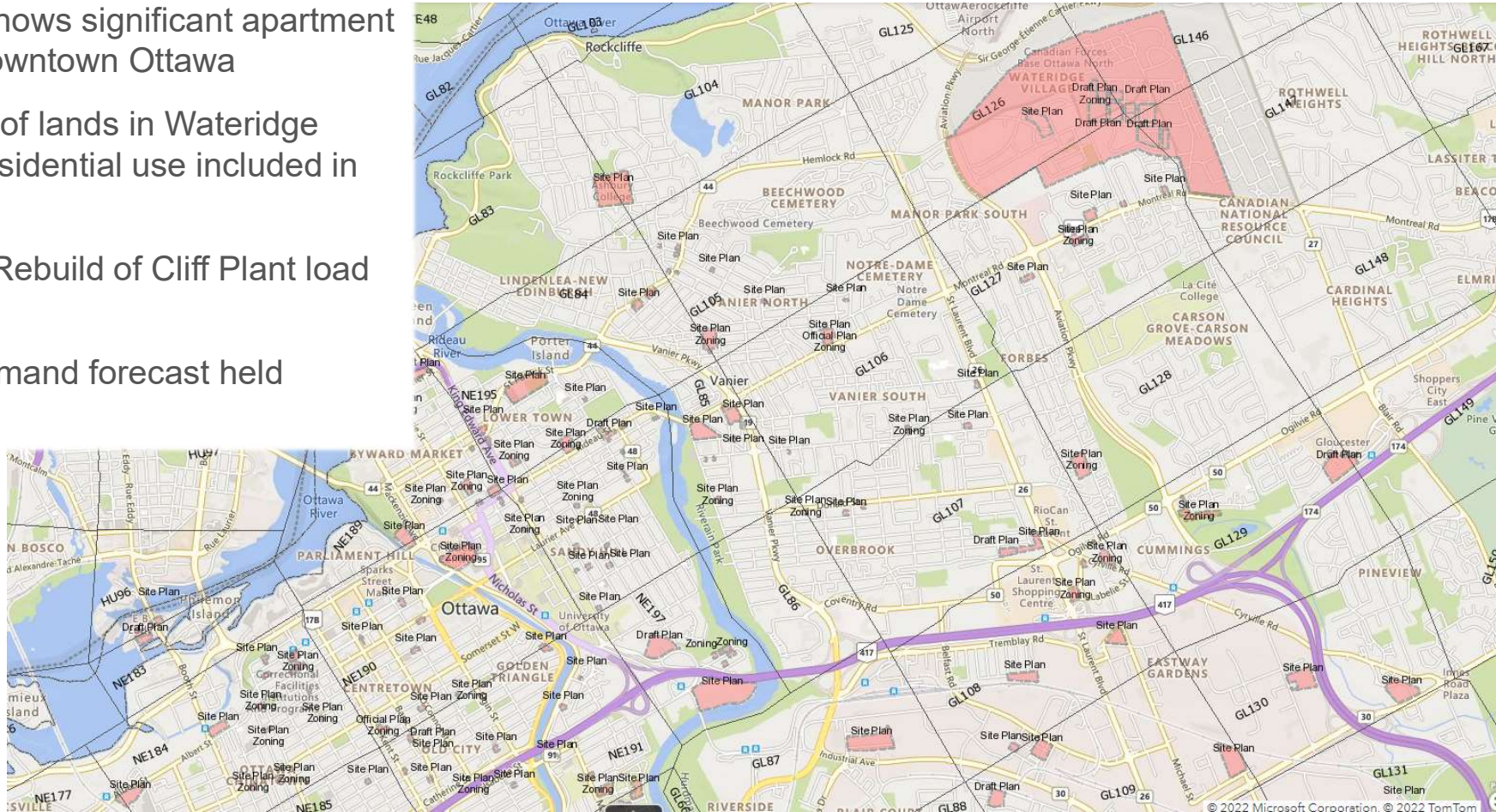
Forecast Type	Energy Transition Assumption
Customer Addition – New Construction	A small segment of builders (<1%) voluntarily do not connect to natural gas network starting in 2023, increasing to an estimated 12.5% by 2032
Customer Addition – Replacement Conversions	Starting in 2030, 10% fewer existing homes (not previously heated with natural gas) convert to natural gas
Average Number of Customers – Existing Customers	Equipment life span is estimated at 20 years, resulting in a 5% annual turnover rate. 10% of customers have only one gas appliance. Starting in 2026, it is assumed that 10% of general service customers voluntarily replace with non-gas equipment at the end of equipment life, those with one appliance are assumed to disconnect from the natural gas network





# Enbridge's Demand Forecast - Ottawa

- Draft plan shows significant apartment growth in downtown Ottawa
- Conversion of lands in Wateridge Village to residential use included in draft plan
- Relocation/Rebuild of Cliff Plant load included
- Gazifere demand forecast held constant

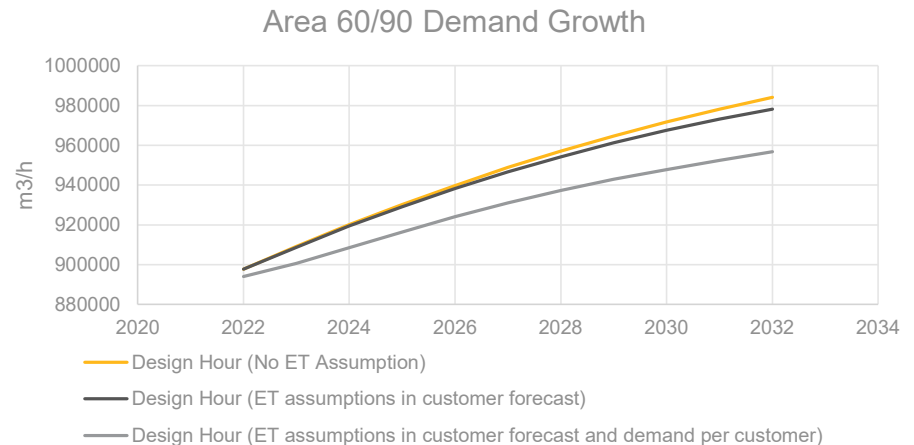
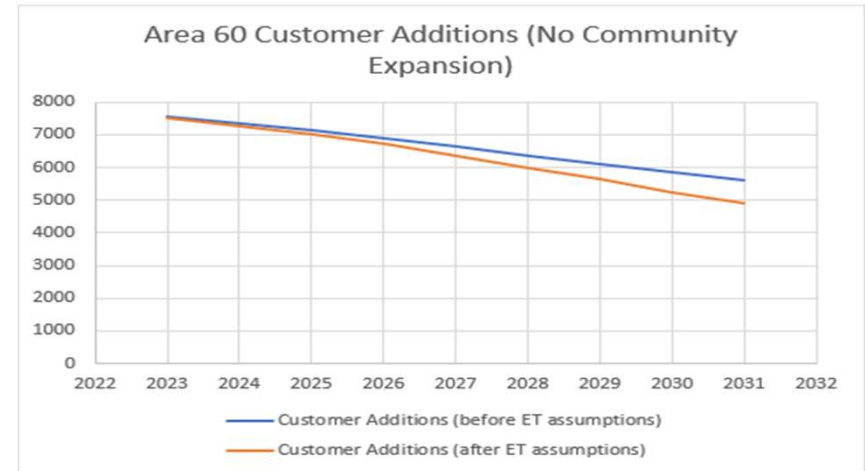






# Enbridge's Demand Forecast – Energy Transition Impacts

- Energy Transition assumptions have resulted in a lower customer forecast than historical practices
- Reduced estimated demand per customer (for existing and new customers) has also lowered the peak hourly demand forecast
- Within the St Laurent Area ~2% customer growth is expected
- This equates to ~0.7% peak hour growth
- To reduce the size of the St Laurent Pipeline customer demand must be reduced below current levels





## For Discussion

- Enbridge is requesting assistance from the City to understand the impacts and timing of the Energy Evolution Plan
- Explore Hydro Ottawa's understanding of the City's Energy Evolution Plan
- Discuss planning assumptions that have been used by Hydro Ottawa
- Do those assumptions align with the Evolution Plan?
- Does the growth forecast include new customers, EV vehicles, building electrification, existing customer energy conversions, industrial, etc.?
- What IRP plans does Hydro Ottawa have?
- Is there opportunity to partner on IRP solutions?

**From:** [Fletcher, Mike](#)  
**To:** [Sonia Fazari](#)  
**Subject:** [External] RE: 5371 Boundary Rd Pipeline Project  
**Date:** Tuesday, February 21, 2023 4:35:00 PM

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Hi Sonia

Thanks for looking into this and taking the time to explain it to me. I'm a little familiar with this issue of regulated/unregulated as we (City) have sometimes used services from the unregulated side of Hydro Ottawa.

Mike Fletcher  
Cell and Text: 613-880-3688

---

**From:** Sonia Fazari <Sonia.Fazari@enbridge.com>  
**Sent:** February 21, 2023 9:34 AM  
**To:** Fletcher, Mike <Mike.Fletcher@ottawa.ca>  
**Subject:** RE: 5371 Boundary Rd Pipeline Project

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Hi Mike,

Thanks for bringing the EG website to my attention. We are in the course of updating that page to align with our Enbridge Sustain geothermal offerings.

There is a distinction between regulated and unregulated activities within EGI and it may not always be apparent as we do promote certain unregulated offerings (such as CNG and RNG upgrading) as part of the regulated business from time to time, as permitted by the OEB. However, we do endeavour to keep Enbridge Sustain activities, which are unregulated, separate.

Set out below are a few points to help provide clarity on how we interact with customers on these matters:

- Enbridge (regulated) can only offer natural gas technologies (based on the IRP Decision which says we cannot offer electric or geothermal alternatives). DSM can offer electric heat pumps although new builds vs. existing customers is under review.
- Enbridge Sustain offers various alternative energy solutions as part of a separate

unregulated line of business (within EGI). That is, Enbridge Sustain activities are separate from the regulated gas distribution related activities of Enbridge Gas.

- The regulated and unregulated lines of business do not share customer details/data or system information without customers' written consent.
- If a new customer calls Enbridge for natural gas the regulated part of the company provides the natural gas connection services but does not promote unregulated technologies or services (e.g. geothermal), unless permitted by the OEB.
- However, if the customer says "I saw geothermal on your website" or asks if geothermal is offered by Enbridge, the customer may be directed to the Enbridge Sustain website or with the customer's written consent, the customer's information may be provided to Enbridge Sustain.

I hope this context is helpful in understanding the distinction between the regulated and unregulated activities, specifically geothermal, within Enbridge Gas.

Thanks,  
Sonia

---

**Sonia Fazari**

Sr. Advisor, Municipal and Stakeholder Engagement, Eastern Region  
Public Affairs and Communications

**ENBRIDGE GAS INC.**

TEL: 416-753-6962 | CELL: 416-525-2497

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North York, ON M2J 1P8

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---

**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Tuesday, February 14, 2023 8:34 AM  
**To:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>  
**Subject:** [External] Re: 5371 Boundary Rd Pipeline Project

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Hi Sonia,

Could you please explain? This link on Enbridge's website suggests to me that Enbridge is in the geothermal business:

<https://www.enbridgegas.com/sustainability/clean-heating/geothermal>

Get [Outlook for iOS](#)

---

**From:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>

**Sent:** Monday, February 13, 2023 5:31:26 PM

**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>

**Subject:** RE: 5371 Boundary Rd Pipeline Project

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Hi Mike,

Thanks for the follow up email regarding the Boundary Road Project.

Enbridge Gas Inc. per the OEB's IRP decision is not permitted to install geothermal for customers. The customer is large and sophisticated and Enbridge expects the customer would have investigated other alternative energy sources.

Regards,

Sonia

---

### Sonia Fazari

Sr. Advisor, Municipal and Stakeholder Engagement, Eastern Region  
Public Affairs and Communications

**ENBRIDGE GAS INC.**

TEL: 416-753-6962 | CELL: 416-525-2497

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North York, ON M2J 1P8

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**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>

**Sent:** Friday, February 10, 2023 9:57 AM

**To:** Sonia Fazari <[Sonia.Fazari@enbridge.com](mailto:Sonia.Fazari@enbridge.com)>

**Subject:** [External] RE: 5371 Boundary Rd Pipeline Project

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Hi Sonia,

I'm just following up on this. Maybe you're checking on this internally?

Thank you.

Cheers, Mike

Mike Fletcher  
Cell and Text: 613-880-3688

---

**From:** Fletcher, Mike  
**Sent:** February 06, 2023 1:30 PM  
**To:** [sonia.fazari@enbridge.com](mailto:sonia.fazari@enbridge.com)  
**Subject:** 5371 Boundary Rd Pipeline Project

Hi Sonia,

I've been copied in about this proposed project.

If I understand correctly, if for a warehouse. Has Enbridge's geothermal division been involved to consider meeting this need with geothermal?

Thanks, Mike

**Mike Fletcher** (he/him) – Born at 320ppm  
Project Manager, Climate Change and Resiliency Unit  
Planning, Infrastructure and Economic Development Department

-----  
City of Ottawa, 110 Laurier Avenue West - 4th Floor, Ottawa, ON K1P 1J1  
T. 613.580.2424 x29201 | Cell and Text. 613-880-3688 | [mike.fletcher@ottawa.ca](mailto:mike.fletcher@ottawa.ca)

**The City of Ottawa unanimously approved its community energy transition strategy, Energy Evolution, on October 28<sup>th</sup>, 2020.**

**Information on Energy Evolution can be found [here](#)**

**The City of Ottawa declared a climate emergency on April 24<sup>th</sup>, 2019.**

**Information on the climate crisis can be found [here](#) and [here](#)**

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,

## Eric VanRuymbeke

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**From:** Chris Ripley  
**Sent:** Thursday, March 9, 2023 4:35 PM  
**To:** Fletcher, Mike; Flowers, Andrea; Hagen, Rebecca; trevorfreeman@hydroottawa.com; Flores, Margaret; ankitabhowmick@hydroottawa.com; Ahmed Maria  
**Cc:** Cara-Lynne Wade; Bradley Clark; Mohamed Chebaro; Candice Case  
**Subject:** RE: St Laurent IRP Meeting Notes  
**Attachments:** dec\_order\_EGI\_IRP\_20210722.pdf; City of Ottawa - Enbridge - Feb 22, 2023 - Updated.pdf; EB-2020-0293 Exhibit I.STAFF.6\_Attachment \_2.pdf

Mike, thank you for the meeting on February 22 and for sending your notes. I apologize for the late response. The Rebasing interrogatory process was just completed so I have now found the time to respond. We have made comments below in red including the references to the OEB's IRP Decision as requested. I have also attached the IRP Decision for ease of reference.

Also attached is Enbridge's February 22 presentation which includes an update to slide 9. As discussed at the meeting, we agreed to revise the point about Hydro Ottawa's ability to electrify portions of the St. Laurent area. We asked Hydro Ottawa to review the revised point and they provided comments. The revised point has been included in the updated presentation.

Lastly, I have attached the Posterity Report for the St. Laurent project as filed in the St. Laurent proceeding as we have not completed a final analysis or report for the updates we have been discussing at our recent meetings. Once the demand forecast is finalized, Posterity will update their model and provide a final report. For background, Posterity uses a proprietary model to evaluate and assess energy conservation measures in a particular geographic region with our customer data. Their model calculates the potential design hourly demand reductions for the St. Laurent customers with those energy conservation measures and it also calculates the costs required to achieve those design hourly reductions. We would be happy to explain this model further if you see value.

Enbridge will continue to look at the St. Laurent area to evaluate the future demands. Enbridge would be happy to have a follow-up discussion on any of the materials provided or new developments in the St. Laurent area. In addition, following the conclusion of the integrity review, Enbridge will contact the City to discuss next steps.

Chris

---

**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Wednesday, February 22, 2023 6:45 PM  
**To:** Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>; Hagen, Rebecca <[rebecca.hagen@ottawa.ca](mailto:rebecca.hagen@ottawa.ca)>; [trevorfreeman@hydroottawa.com](mailto:trevorfreeman@hydroottawa.com); Flores, Margaret <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [ankitabhowmick@hydroottawa.com](mailto:ankitabhowmick@hydroottawa.com); Ahmed Maria <[ahmed.maria@ieso.ca](mailto:ahmed.maria@ieso.ca)>; Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Glive, Candice <[candice.glive@pne-ag.com](mailto:candice.glive@pne-ag.com)>  
**Cc:** Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Subject:** [External] St Laurent IRP Meeting Notes

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Hello All,

Thanks to all attendees at today's meeting. I have taken the following notes of key points.

- Enbridge's interpretation of the OEB order to conduct IRP with the City of Ottawa in the St. Laurent area is that's its subject to feasibility.
- Reductions to reduce a future St. Laurent pipeline by one size would cost \$68 million vs. a \$1 million capital cost savings and Enbridge is therefore of the opinion that IRP is not feasible. Enbridge to share cost study with the City of Ottawa and Ottawa has asked that the notion that IRP is not feasible in the St Laurent area not be submitted to the OEB until Ottawa has had a change to review and comment on the study. **For clarity, Enbridge is not suggesting the \$68 million cost for enhanced geo-targeted energy efficiency (ETEE) programs is the reason IRP is not feasible in the St. Laurent area. Enbridge first looks at the technical feasibility of IRP alternatives meeting the required design hour reduction. Based on the information we have today, ETEE programs cannot achieve the design hour reduction required to meet the reduce or defer the project. The preliminary analysis completed by Posterity demonstrates that the ETEE, based on the current demand forecast, cannot technically meet the design hour reduction needed.**
- Enbridge's review of the existing pipeline's integrity to be complete in Q2 2023. The review will not be shared outside Enbridge unless Enbridge makes a leave to construct application to the OEB. **This is consistent with Enbridge's existing practices.**
- Potential reductions from existing programs are short by 13,800 m3 of gas on a demand day in order to make a difference to pipe size. This includes efficiency improvements but does not include fuel switching. **Agreed. Enbridge does not have any detailed information regarding fuel switching that would impact Enbridge's demand forecast. Enbridge does know that the five contract customers (large volume customers) in the St. Laurent area have no plans to switch fuels or reduce their design hour demands.**
- Calculations do not include potential reductions in Gatineau but did include 100% reductions at all City facilities and the federal district energy system. **At this point in time, Enbridge sees increased growth, not reductions, in Gatineau over the next 10 years.**
- Enbridge alluded to other areas of the gas system in Ottawa which might be feasible for IRP. This is a carry forward item. **Yes, Enbridge intends to meet with the City of Ottawa on future system needs and the potential for IRP alternatives.**
- Hydro Ottawa did not agree with the statement that they would not be able to supply required electricity to the area. They feel that this is something for them to determine and it was noted that infrastructure could potentially be expanded. **As noted above, Enbridge has revised the presentation point with Hydro Ottawa's approval.**
- Enbridge stated that a recent OEB ruling is preventing them from offering non-gas alternatives. Mike Fletcher asked to be given and link and if possible, some details about the ruling. If the Ottawa determines that the OEB ruling is indeed counterproductive to emissions reductions, it may raise the issue. This would be contingent upon internal discussion. **Please see "Section 7 – Types of IRPAs" at page 29 in the attached OEB's IRP Decision. Specifically on page 35, the OEB states: "Enbridge Gas also proposed non-gas IRPAs, specifically electricity-based alternatives. The OEB has concluded that as part of this first-generation IRP Framework, it is not appropriate to provide funding to Enbridge Gas for electricity IRPAs. This may be an element of IRP that will evolve as energy planning evolves, and as experience is gained with the IRP Framework."**

Please advise of any errors or omissions. A follow up meeting could take place after a review of materials that Enbridge will supply the City (today's slides, IRP study, link on the OEB non-gas ruling by the OEB and details if possible).

Regards, Mike

**Mike Fletcher (he/him) – Born at 320ppm  
Project Manager, Climate Change and Resiliency Unit  
Planning, Infrastructure and Economic Development Department**

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City of Ottawa, 110 Laurier Avenue West - 4th Floor, Ottawa, ON K1P 1J1  
T. 613.580.2424 x29201 | Cell and Text. 613-880-3688 | [mike.fletcher@ottawa.ca](mailto:mike.fletcher@ottawa.ca)

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# Integrated Resource Planning Update

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City of Ottawa – St. Laurent



# Agenda

- Values Moment – Enbridge (5 min)
- Objectives of Meeting – Enbridge (5 min)
- Integrity Update – Enbridge (5 min)
- Demand Forecast – Enbridge (10 min)
- Integrated Resource Planning Preliminary Assessment – Enbridge (30 min)
- Discussion – All (5 min)

Note: The data provided are estimates and for general discussion purposes. Some of the information provided is part of our 2024 Rebasing application.





# Inclusive Language

- Language is a powerful tool and when used well, it creates a common understanding
- It's essential for creating an environment where everyone feels welcome and included
- Inclusive language seeks to treat all people with respect, dignity, and impartiality. It is constructed to bring everyone into the group and exclude no one
- **Six overall inclusive language principles**
  1. Put people first
  2. Avoid idioms, jargons, and acronyms
  3. Avoid phrases that suggest victimhood
  4. Don't underplay the impact of mental disabilities
  5. Use inclusive language that does not specify gender
  6. If you aren't sure, ask

**When greeting others**

Avoid: ladies gentlemen ma'am sir girls guys etc.

Consider using instead:

“Thanks, **friends**. Have a great night.”

“Good morning, **folks**.”

“Hi, **everyone**!”

“And for **you**?”

“Can I get you **all** something?”

**Why?**

Shifting to gender-inclusive language respects and acknowledges the gender identities of all people and removes assumption.

**Be mindful of language**

Sources: <https://buffer.com/resources/inclusive-language-tech/>



## Objectives of Meeting

- Provide update on the integrity work being completed by Enbridge
- Confirm assumptions used in Enbridge's IRP analysis based on previous discussions and information provided by the City of Ottawa
- Discuss potential growth in the St. Laurent area
- Review the preliminary IRP assessment



# Integrity Update

- Field evidence has been collected to include:
  - Corrosion Surveys (Cathodic Protection, Direct Current Voltage Gradient, and Depth of Cover Surveys)
  - In-line Inspection (ILI) tool runs (~40% of the pipeline inspected)
  - Integrity Digs; ILI launcher locations and opportunistic digs
  - Visual Inspection of NPS 16 Bridge Crossing
- Quantitative Risk Assessment (QRA) is being finalized:
  - Ongoing finalization internal and external reviews
  - Tentative issuance date of early Q2 2023
- Ongoing field work taking place on the northern portion of the line to investigate a field indication
- Leak detection survey scheduled for March 26 and 27, 2023
  - Leak survey every 6 months, will re-evaluate once decision on the strategy for the pipeline has been made

# Enbridge's Demand Forecast



- The process steps include:
  - Gather data on load forecast (approved proposals, contract changes, draft plans, econometric forecast, energy transition factors)
  - Gather most recent existing customer usage data and combine with load forecast
  - Perform hydraulic analysis to determine infrastructure requirements
- The assumptions included in the demand forecast include:
  - Systems are designed for the coldest day on record in past 40 years (-32.5 C for Ottawa) with interruptible customers off (IOFF)
  - Carbon pricing and natural gas commodity pricing, building performance and appliance efficiency improvements for existing customers are all included in energy transition factors
  - Some customers are expected to choose not to connect to natural gas as a fuel source and the growth forecast has been reduced accordingly
- Review and assess community/municipal energy plans to determine if there are any impacts to the demand forecast as outlined above



## Potential New Demands

- Enbridge has received two major recent firm load addition requests in the St. Laurent region that are to be included/updated in the demand forecast
  - Request to install natural gas service to be used for electrical peak shaving and emergency backup
  - Request to shift interruptible gas service to firm gas service
- The following slides and analysis do not include these two new firm demands



## Energy Evolution Plan Impacts

- How the Energy Evolution Plan (EEP) is used by Enbridge in its IRP evaluation was discussed in our last meeting, it was determined that:
  1. The EEP would be reviewed to determine if there were peak hour impacts/outcomes from the EEP that would impact Enbridge's demand forecast – and that this evaluation would be informed by discussions with the City of Ottawa. Any resulting changes to Enbridge's demand forecast would impact the IRP alternatives analyzed.
  2. The EEP would be looked at, together with the City of Ottawa, to determine if there are peak-reduction related programs that Enbridge could add or stack onto, to drive cost efficiencies and a more seamless customer experience.





# Energy Evolution Plan Impacts

- How the Energy Evolution Plan (EEP) is used by Enbridge in its IRP evaluation was discussed in our last meeting, it was determined that:
  1. The EEP would be reviewed to determine if there were peak hour impacts/outcomes from the EEP that would impact Enbridge's demand forecast – and that this evaluation would be informed by discussions with the City of Ottawa.
    - High level EEP Plan and program information was provided during and post the last meeting (January 16, 2023) however, the City of Ottawa has not provided Enbridge with sufficient EEP details required for Enbridge to assess and include impacts in its demand forecast
    - Discussion at the last meeting found that, at this point in time, Hydro Ottawa does not have sufficient information to determine what level or degree of electrification could be implemented in the St. Laurent area. Once the forecast for the area is aligned for both gas and electricity, Hydro Ottawa can assess any potential impact to the electrical distribution system.
    - Enbridge can proceed with its IRP alternative analysis using the demand forecast that it has presented
    - For Discussion: Confirm the above still holds true and that there is no new information that would impact Enbridge's demand forecast



# Energy Evolution Plan Impacts

- How the Energy Evolution Plan (EEP) is used by Enbridge in its IRP evaluation was discussed in our last meeting, it was determined that:
  1. The EEP would be looked at, together with the City of Ottawa, to determine if there are peak-reduction related programs that Enbridge could add or stack onto to drive cost efficiencies and a more seamless customer experience.
    - At our January 16, 2023 meeting, the City of Ottawa spoke to their programs at a high-level and followed up with high-level details of the programs.
    - Enbridge confirms that it has completed a review of the program descriptions that the City of Ottawa has provided to determine if Enbridge could add or stack onto them to drive cost-efficiencies.
    - For discussion: City of Ottawa, is there additional program information to supplement what was sent that Enbridge should also evaluate for this project or future projects?



# Enbridge's IRP Evaluation

## Enbridge Gas's IRP Evaluation Steps / Process

1. Review the capacity scenarios to determine the peak hour reduction required
2. Evaluate geo-targeted energy efficiency options and any other local programs that could be added / stacked onto
3. Evaluate potential to have contract (large) customers in the project area shift their natural gas demands to off-peak periods
4. Evaluate supply-side options
5. Evaluate if one, or a combination of the above, can reduce the peak hour enough to defer or downsize the project

# Step 1 Preliminary Capacity Scenarios

(Illustration Only)



Scenario	Description	Estimated Total Cost (Millions)	Estimated Savings (Millions)	Capacity (m <sup>3</sup> /h)**	Capacity Loss	Loss - Residential Customer Equivalent	Energy Loss Equivalent <sup>1</sup> (GW)**
0	Existing pipeline Configuration	N/A	N/A	166,300	N/A	N/A	N/A
1	Design outlined in OEB Application	\$124	N/A	155,500	N/A	N/A	0
2	Replace all with 12" XHP ST	\$122	\$1.3	133,800	14%	18,870	0.34
3*	Replace all with 10" XHP ST	\$121	\$2.6	91,500	41%	55,652	0.59
4*	Replace all with 8" XHP ST	\$120	\$4	58,000	63%	84,783	0.96

\*Scenarios are not feasible

\*\*Capacity and Energy values are approximate (straight energy conversion) and for illustrative purposes only

<sup>1</sup> (155,300 m<sup>3</sup>/h × 1h × 37.98 MJ/m<sup>3</sup>) ÷ 3,600 MJ/MWh = 1,638.415 MW -or- 1.64 GW

<sup>2</sup> Canadian Power Holding Inc. (2022). *Operations*. <https://canadianpower.com/operations/>

<sup>3</sup> Portage Power. (2002). *Chaudiere Falls Run-of-the-river Hydroelectric Facilities*. <https://portagepower.com/hydroelectric/chaudiere-falls/>



## Step 2 – Evaluate geo-targeted energy efficiency

- **ETEE**

- Enbridge could reduce the peak hour demands of the general service customers (residential, small commercial) in the St. Laurent project area by 13,273 m<sup>3</sup>/hr at a cost of \$68 million. Based on our analysis, this is the maximum achievable potential with an unconstrained budget
- The ETEE alternative does not provide a technically feasible option to reduce the pipe size from NPS 16 to NPS 12 for a cost savings of \$1 million
- Enbridge considered stacking the EEP programs onto an ETEE IRP; however, because the ETEE alternative is not technically feasible, stacking onto the EEP programs in the St. Laurent area is not a viable option.



## Step 3 – Review Contract Customers

- There are five contract customers with a total of 10,286 m<sup>3</sup>/hr on the St. Laurent line
- Enbridge contacted the five customers to discuss shifting their firm peak demands to interruptible service or off-peak periods
- All five customers stated that a switch from firm to interruptible service or a demand shift from a peak period to an off-peak period was not possible





## Step 4 – Evaluate supply side options

- CNG
  - CNG considered not applicable as it would require an injection site on the St. Laurent line and the parking/transport of CNG trailers in the City
  - Enbridge assumes 2,000 m<sup>3</sup>/hr to be the maximum capability for CNG per trailer
  - At a minimum, 20 CNG trailers would be required on site if the St. Laurent line was reduced to NPS 12 taking into account potential weather issues, shipping delays, etc.
- No other supply side options are applicable for this project



# Step 5 - Preliminary IRP Assessment

## St. Laurent System

OEB Application Peak Hour Design was 155,500 m<sup>3</sup>/hr

Peak hour reduction of 21,700 m<sup>3</sup>/hr required to downsize pipe from NPS 16 to NPS 12

## IRP Alternatives Potential

Measure	Peak Hour Reduction m <sup>3</sup> /hr
CNG	0
ETEE	13,273
Contract Customers	0
<b>Total</b>	<b>13,273</b>

**Conclusion: based on the preliminary analysis Enbridge cannot technically achieve enough peak hour reduction to downsize the St. Laurent project**



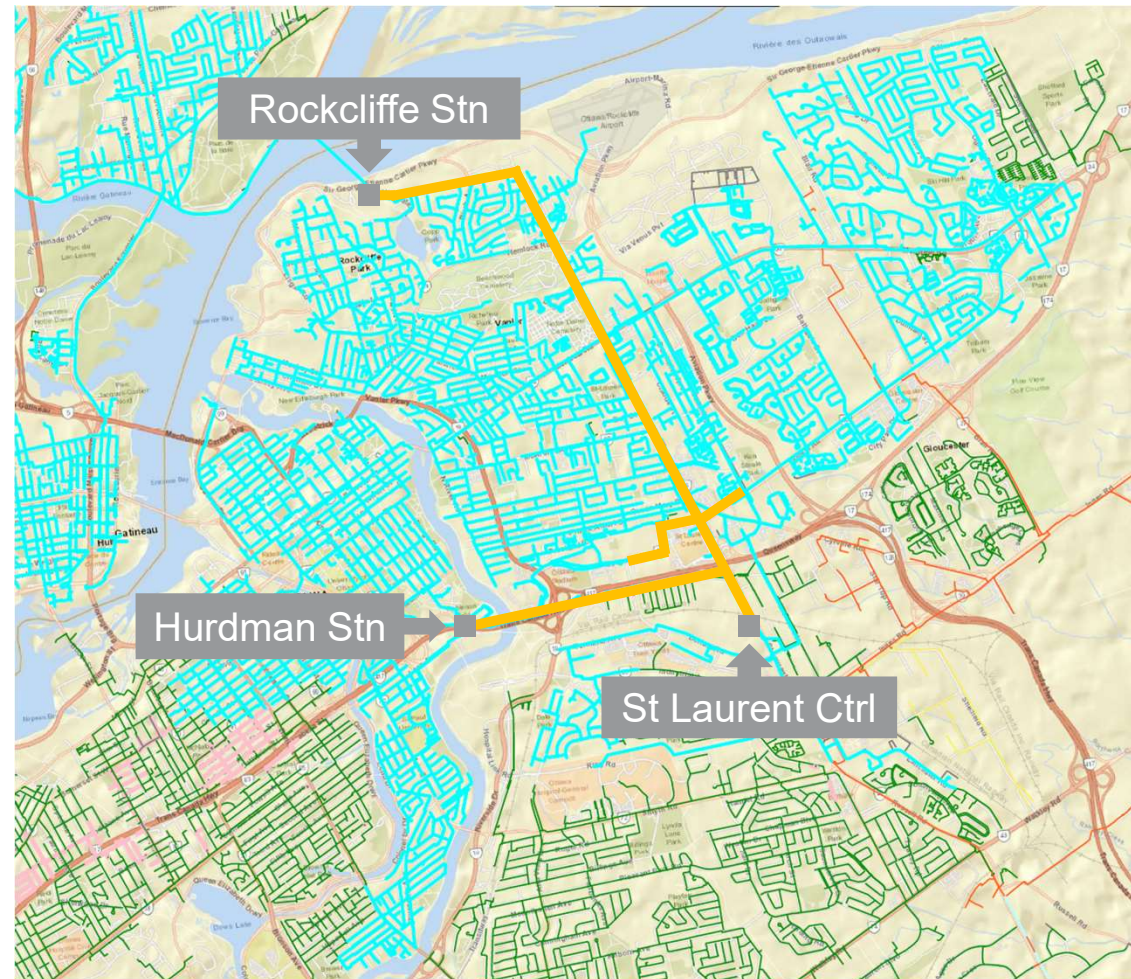
# APPENDIX

# Enbridge's St Laurent System



## The St Laurent System

- The St Laurent core pipeline system is represented by the yellow lines on the map
- The light blue lines represent the area primarily served by the St Laurent system. (Note: in the event of an emergency situation the affected area may be much larger)
- The St Laurent core pipeline system is a 1900 kPa MAOP system
- It is fed by St Laurent Control from a 3240 kPa system
- Customers primarily connected to 420 kPa systems downstream of the St Laurent 1900 kPa system





Filed: 2021-12-13, EB-2020-0293, Exhibit I.STAFF.6, Attachment 2, Page 1 of 2

## IRP Analysis project *St. Laurent LTC Findings*

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**Project:** IRP Analysis (IRPA)

**Re:** St. Laurent LTC

**Submitted by:** Posterity Group (Posterity)

**Date:** 29 July 2021

---

This memo presents findings of the potential for DSM targeted at reducing peak hour consumption to alleviate constraints on the gas supply system in the St. Laurent area of Ottawa.

### 1 Research Questions & Findings

This analysis was intended to answer three main questions:

1. Is there enough potential in Scenario B (the highest program potential derived from the APS) to deliver the reduction EGI needs to downsize the pipe?
  - EGI requires a reduction of 63,900 m<sup>3</sup>/hr in the peak hour (approximately 60% of the current peak). The model indicates the maximum potential peak hour reduction from DSM is approximately 10,100 m<sup>3</sup>/hr.
2. How much would that cost (at maximum Scenario B levels of spending)?
  - Approximately 9,000 m<sup>3</sup>/hr of the potential reduction could be obtained by 2030, at a total cost of approximately \$52 million. Average cost per m<sup>3</sup>/hr reduction is approximately \$5,700.
3. How many years of Scenario B would be required to deliver that reduction?
  - As indicated, approximately 90% of the 10,100 m<sup>3</sup>/hr reduction could be obtained by 2030. An estimated 70% could be obtained by 2026 and an estimated 50% could be obtained by 2024.

In addition to the preliminary answers to these three questions, we made the following key observations:

- Over 90% of the potential peak hour reduction is from space heating measures because:
  - Although only 72% of annual energy is used for space heating, it accounts for 86% of peak hour consumption.
  - Space heating measures were more likely to pass the TRC test, particularly in the residential sector.
  - A demand reduction measure targeting residential space heating added to the dominance of this end use in the potential reduction.
- Most of the potential peak hour reduction is from the residential and commercial sectors. Between the two, they account for 89% of reduction in 2038 (46% residential and 43%





Filed: 2021-12-13, EB-2020-0293, Exhibit I.STAFF.6, Attachment 2, Page 2 of 2

commercial) and for 89% of the reduction in 2030 (51% residential and 38% commercial). There are several reasons for this:

- Between the two sectors, they account for 84% of annual energy use (62% commercial and 22% residential) and 87% of the peak hour (71% commercial and 16% residential).
- Measures in both sectors were predominantly space heating measures.
- A demand response measure targeting residential space heating added to the importance of the residential sector in the potential reduction.

## 2 Notes on the Modeling Approach

The following points summarize the way Posterity undertook modeling to perform this analysis.

### 2.1 Model Updates

We started with the Posterity 'mirror model' of the 2019 APS, and incorporated the following updates to support IRPA modelling:

- Calibrated the base year to weather adjusted 2019 consumption and updated the reference case to align with Enbridge's 2020 forecasts of sales volumes and customer accounts by segment.
- Corrected customer regional mapping for the base year and reference case according to customer data supplied by Enbridge.
- Added rate class and customer account data
- Developed hours-use peak factors for each region, sector, segment, and end use
- Added a residential demand response measure

### 2.2 Adjustments to Produce a Regional Model

We made the following adjustments to the model to produce a regional model:

- We selected the region that is in both the legacy EGD Ottawa gas region and the Ottawa IESO zone.
- Using customer data specifically for the St. Laurent neighbourhood, we developed scaling factors for each sector, including residential (to apply to residential and low income single-family), apartment (to apply to multi-family and low income multi-family), commercial, commercial contract, commercial contract interruptible, industrial, industrial contract, and industrial contract interruptible.





**From:** [Fletcher, Mike](#)  
**To:** [Chris Ripley](#)  
**Cc:** [Hagen, Rebecca](#)  
**Subject:** [External] RE: St Laurent IRP Meeting Notes  
**Date:** Wednesday, April 5, 2023 1:39:30 PM

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Thanks Chris!

Mike Fletcher  
Cell and Text: 613-880-3688

---

**From:** Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>  
**Sent:** April 05, 2023 8:26 AM  
**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>; Hagen, Rebecca <[rebecca.hagen@ottawa.ca](mailto:rebecca.hagen@ottawa.ca)>; [trevorfreeman@hydroottawa.com](mailto:trevorfreeman@hydroottawa.com); Flores, Margaret <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [ankitabhowmick@hydroottawa.com](mailto:ankitabhowmick@hydroottawa.com); Ahmed Maria <[ahmed.maria@ieso.ca](mailto:ahmed.maria@ieso.ca)>  
**Cc:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Candice Case <[Candice.Case@enbridge.com](mailto:Candice.Case@enbridge.com)>; Sonia Fazari <[sonia.fazari@enbridge.com](mailto:sonia.fazari@enbridge.com)>; Kaitlyn Smith <[kaitlyn.smith@enbridge.com](mailto:kaitlyn.smith@enbridge.com)>  
**Subject:** RE: St Laurent IRP Meeting Notes

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Rebecca/Mike, as a follow-up to our discussion yesterday, the integrity report for St. Laurent will be completed in late Q2/early Q3.

Chris

---

**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Tuesday, April 4, 2023 1:58 PM  
**To:** Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>; Hagen, Rebecca <[rebecca.hagen@ottawa.ca](mailto:rebecca.hagen@ottawa.ca)>; [trevorfreeman@hydroottawa.com](mailto:trevorfreeman@hydroottawa.com); Flores, Margaret <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [ankitabhowmick@hydroottawa.com](mailto:ankitabhowmick@hydroottawa.com); Ahmed Maria <[ahmed.maria@ieso.ca](mailto:ahmed.maria@ieso.ca)>  
**Cc:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Candice

Case <[Candice.Case@enbridge.com](mailto:Candice.Case@enbridge.com)>

**Subject:** [External] RE: St Laurent IRP Meeting Notes

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Hi Chris,

It was nice to talk to you and Cara-Lynne today. As discussed, we are fine with you responding with the following conditions:

- In addition to the attached presentation, please include my meeting notes with your responses (per below February 22, 2023 at 6:45 PM)
- In the attached presentation: i) with respect to the first bullet on page 9, please clarify that City of Ottawa staff replied with the information available, but the information only informs IRP analysis to a limited extent due to the extent to which Ottawa's Energy Evolution currently has funding and authority and ii) on page 11, please clarify that the process outline is a general one which Enbridge generally uses, used in the case to the St. Laurent pipeline and is a process that Enbridge could continue to use.

With these two conditions we are happy that the information be shared in the re-basing application in response to the interrogatory from Mr. Brophy.

Regards, Mike.

Mike Fletcher

Cell and Text: 613-880-3688

---

**From:** Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>

**Sent:** March 30, 2023 7:51 AM

**To:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>; Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>; Hagen, Rebecca <[rebecca.hagen@ottawa.ca](mailto:rebecca.hagen@ottawa.ca)>; [trevorfreeman@hydroottawa.com](mailto:trevorfreeman@hydroottawa.com); Flores, Margaret <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [ankitabhowmick@hydroottawa.com](mailto:ankitabhowmick@hydroottawa.com); Ahmed Maria <[ahmed.maria@ieso.ca](mailto:ahmed.maria@ieso.ca)>

**Cc:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Candice Case <[Candice.Case@enbridge.com](mailto:Candice.Case@enbridge.com)>

**Subject:** RE: St Laurent IRP Meeting Notes

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Rebecca/Mike: As you are aware Enbridge's 2024 Rebasing proceeding is underway. At the

Technical Conference this week, Mike Brophy from Pollution Probe requested Enbridge to file the presentation related to the IRP discussions with the City of Ottawa as part of an undertaking.

We need to respond to the undertakings as soon as possible.

Do you have any concerns if we file the presentation (see attachment) as part of an undertaking? If not, we will file the presentation tomorrow (Friday). If you prefer Enbridge to not file the presentation we can explain to Mr. Brophy that these discussions are ongoing and it would be inappropriate to file the presentation at this time.

If you have any questions I am happy to discuss them.

Chris

**Chris Ripley** (him/he)

Manager, Integrated Resource Planning

Enbridge Gas Inc.

TEL: 519-436-5476 | CELL: 519-365-0450 | [chris.ripley@enbridge.com](mailto:chris.ripley@enbridge.com)

50 Keil Drive North, Chatham, ON, N7M 5M1

---

**From:** Chris Ripley

**Sent:** Thursday, March 9, 2023 4:35 PM

**To:** Fletcher, Mike <[mike.fletcher@ottawa.ca](mailto:mike.fletcher@ottawa.ca)>; Flowers, Andrea <[andrea.flowers@ottawa.ca](mailto:andrea.flowers@ottawa.ca)>; Hagen, Rebecca <[rebecca.hagen@ottawa.ca](mailto:rebecca.hagen@ottawa.ca)>; trevorfreeman@hydroottawa.com; Flores, Margaret <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; ankitabhowmick@hydroottawa.com; Ahmed Maria <[ahmed.maria@ieso.ca](mailto:ahmed.maria@ieso.ca)>

**Cc:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Candice Case <[Candice.Case@enbridge.com](mailto:Candice.Case@enbridge.com)>

**Subject:** RE: St Laurent IRP Meeting Notes

Mike, thank you for the meeting on February 22 and for sending your notes. I apologize for the late response. The Rebasing interrogatory process was just completed so I have now found the time to respond. We have made comments below in red including the references to the OEB's IRP Decision as requested. I have also attached the IRP Decision for ease of reference.

Also attached is Enbridge's February 22 presentation which includes an update to slide 9. As discussed at the meeting, we agreed to revise the point about Hydro Ottawa's ability to electrify portions of the St. Laurent area. We asked Hydro Ottawa to review the revised point and they provided comments. The revised point has been included in the updated presentation.

Lastly, I have attached the Posterity Report for the St. Laurent project as filed in the St. Laurent proceeding as we have not completed a final analysis or report for the updates we have been discussing at our recent meetings. Once the demand forecast is finalized, Posterity will update their model and provide a final report. For background, Posterity uses a proprietary model to evaluate and assess energy conservation measures in a particular geographic region with our customer data. Their model calculates the potential design hourly demand reductions for the St. Laurent customers with those energy conservation measures and it also calculates the costs required to achieve those design hourly reductions. We would be happy to explain this model further if you see value.

Enbridge will continue to look at the St. Laurent area to evaluate the future demands. Enbridge would be happy to have a follow-up discussion on any of the materials provided or new developments in the St. Laurent area. In addition, following the conclusion of the integrity review, Enbridge will contact the City to discuss next steps.

Chris

---

**From:** Fletcher, Mike <[Mike.Fletcher@ottawa.ca](mailto:Mike.Fletcher@ottawa.ca)>  
**Sent:** Wednesday, February 22, 2023 6:45 PM  
**To:** Chris Ripley <[CRipley@uniongas.com](mailto:CRipley@uniongas.com)>; Hagen, Rebecca <[rebecca.hagen@ottawa.ca](mailto:rebecca.hagen@ottawa.ca)>; [trevorfreeman@hydroottawa.com](mailto:trevorfreeman@hydroottawa.com); Flores, Margaret <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [ankitabhowmick@hydroottawa.com](mailto:ankitabhowmick@hydroottawa.com); Ahmed Maria <[ahmed.maria@ieso.ca](mailto:ahmed.maria@ieso.ca)>; Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Bradley Clark <[Bradley.Clark@enbridge.com](mailto:Bradley.Clark@enbridge.com)>; Mohamed Chebaro <[Mohamed.Chebaro@enbridge.com](mailto:Mohamed.Chebaro@enbridge.com)>; Glive, Candice <[candice.glive@pne-ag.com](mailto:candice.glive@pne-ag.com)>  
**Cc:** Flowers, Andrea <[Andrea.Flowers@ottawa.ca](mailto:Andrea.Flowers@ottawa.ca)>  
**Subject:** [External] St Laurent IRP Meeting Notes

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Hello All,

Thanks to all attendees at today's meeting. I have taken the following notes of key points.

- Enbridge's interpretation of the OEB order to conduct IRP with the City of Ottawa in the St. Laurent area is that's its subject to feasibility.
- Reductions to reduce a future St. Laurent pipeline by one size would cost \$68 million vs. a \$1 million capital cost savings and Enbridge is therefore of the opinion that IRP is not feasible. Enbridge to share cost study with the City of Ottawa and Ottawa has asked that the notion that IRP is not feasible in the St Laurent area not be submitted to the OEB until Ottawa has had a change to review and comment on the study. For clarity, Enbridge is not suggesting the \$68 million cost for enhanced geo-targeted energy efficiency (ETEE) programs is the reason IRP is not feasible in the St. Laurent area. Enbridge first looks at the technical feasibility of IRP alternatives meeting the required design hour reduction. Based on the information we have today, ETEE programs cannot achieve the design hour reduction required to meet the reduce or defer the project. The preliminary analysis completed by Posterity demonstrates that the ETEE, based on

the current demand forecast, cannot technically meet the design hour reduction needed.

- Enbridge’s review of the existing pipeline’s integrity to be complete in Q2 2023. The review will not be shared outside Enbridge unless Enbridge makes a leave to construct application to the OEB. This is consistent with Enbridge’s existing practices.
- Potential reductions from existing programs are short by 13,800 m3 of gas on a demand day in order to make a difference to pipe size. This includes efficiency improvements but does not include fuel switching. Agreed. Enbridge does not have any detailed information regarding fuel switching that would impact Enbridge’s demand forecast. Enbridge does know that the five contract customers (large volume customers) in the St. Laurent area have no plans to switch fuels or reduce their design hour demands.
- Calculations do not include potential reductions in Gatineau but did include 100% reductions at all City facilities and the federal district energy system. At this point in time, Enbridge sees increased growth, not reductions, in Gatineau over the next 10 years.
- Enbridge alluded to other areas of the gas system in Ottawa which might be feasible for IRP. This is a carry forward item. Yes, Enbridge intends to meet with the City of Ottawa on future system needs and the potential for IRP alternatives.
- Hydro Ottawa did not agree with the statement that they would not be able to supply required electricity to the area. They feel that this is something for them to determine and it was noted that infrastructure could potentially be expanded. As noted above, Enbridge has revised the presentation point with Hydro Ottawa’s approval.
- Enbridge stated that a recent OEB ruling is preventing them from offering non-gas alternatives. Mike Fletcher asked to be given and link and if possible, some details about the ruling. If the Ottawa determines that the OEB ruling is indeed counterproductive to emissions reductions, it may raise the issue. This would be contingent upon internal discussion. Please see “Section 7 – Types of IRPAs” at page 29 in the attached OEB’s IRP Decision. Specifically on page 35, the OEB states: “Enbridge Gas also proposed non-gas IRPAs, specifically electricity-based alternatives. The OEB has concluded that as part of this first-generation IRP Framework, it is not appropriate to provide funding to Enbridge Gas for electricity IRPAs. This may be an element of IRP that will evolve as energy planning evolves, and as experience is gained with the IRP Framework.”

Please advise of any errors or omissions. A follow up meeting could take place after a review of materials that Enbridge will supply the City (today’s slides, IRP study, link on the OEB non-gas ruling by the OEB and details if possible).

Regards, Mike

**Mike Fletcher** (he/him) – Born at 320ppm  
Project Manager, Climate Change and Resiliency Unit  
Planning, Infrastructure and Economic Development Department

-----  
City of Ottawa, 110 Laurier Avenue West - 4th Floor, Ottawa, ON K1P 1J1  
T. 613.580.2424 x29201 | Cell and Text. 613-880-3688 | [mike.fletcher@ottawa.ca](mailto:mike.fletcher@ottawa.ca)

The City of Ottawa unanimously approved its community energy transition strategy, Energy Evolution, on October 28<sup>th</sup>, 2020.

Information on Energy Evolution can be found [here](#)

The City of Ottawa declared a climate emergency on April 24<sup>th</sup>, 2019.

Information on the climate crisis can be found [here](#) and [here](#)

Note: I work in the office Mondays and Tuesdays only and can only be reached on my cell on the ther days of the week

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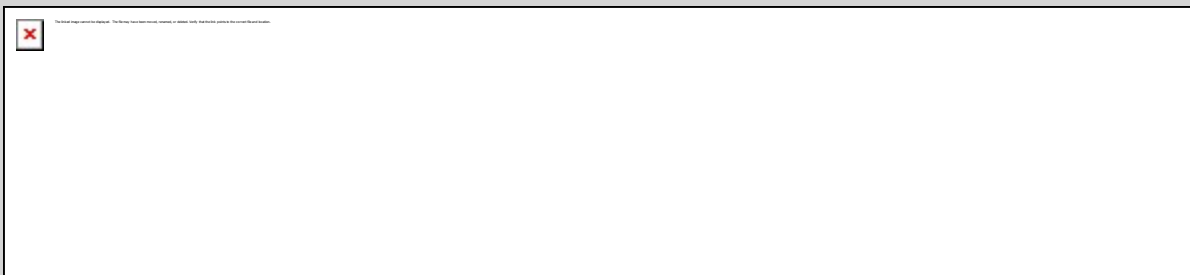


**Eric VanRuymbeke**

---

**From:** Enbridge Gas Integrated Resource Planning Team <mail@enbridgegas.com>  
**Sent:** Monday, March 20, 2023 8:45 AM  
**To:** Megan Robinson  
**Subject:** Enbridge Gas Integrated Resource Planning has begun

To view this email as a web page, go [here](#).



Enbridge Gas' Integrated Resource Planning (IRP) team invites you to attend the upcoming webinar in the Eastern region.

**Date:** Tuesday, April 11, 2023

**Time:** 9:30 - 10:30 a.m.

**Location:** Virtual – link will be sent out when you register

This webinar will provide you with an overview of the natural gas planning process and the needs that have been identified in your region. This is the first step of this engagement process, and your feedback will be important to help shape the planning activities that will be undertaken in your region.

**RSVP today**

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Enbridge Gas, 500 Consumers Rd, North York, ON M2J 1P8

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ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

- a) Enbridge Gas's conclusion is provided in Exhibit B, Tab 3, Schedule 1, paragraph 17 and 19.
- b) Enbridge Gas disagrees with the assertion in this question, and does not believe it previously stated that it does not have energy transition experts within the organization. The Company has had a Carbon Strategy department since 2016, which became known as the Energy Transition Planning department in 2020. The team is now comprised of several experts in the Energy Transition field, as was discussed in Rebasing Phase 1. Please see EB-2022-0200, Exhibit I.1.6-CCC-22 for a description of this department and the roles and responsibilities of the team members. While there has been some movement in roles and job titles since that interrogatory response was filed, the Energy Transition team's collective expertise in

this field has only grown since then. The Energy Transition Planning department led the development of the evidence in Exhibit B, Tab 3, Schedule 1.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

- a) Please see Attachment 1 to this response for a copy of the contract General Service Agreement, Attachment 2 for Schedule B for ad-hoc work, and Attachment 3 for a copy of the agreement for extension to the end of 2024. The hourly rate schedules and consulting costs have been redacted to preserve Integral Engineering's ability to be competitive in the market for their services.

- b) Integral Engineering was chosen to perform the probabilistic modeling for the following reasons:
- Monte Carlo simulation is a well-known and straight-forward methodology, the development, implementation, and validation of a probabilistic model requires specialized expertise. While Enbridge Gas has staff competent in the field of probabilistic modeling, Integral Engineering has extensive experience in developing and applying probabilistic models in the pipeline industry and regularly supports Enbridge Gas in the Company's use of probabilistic models for safety risk and integrity management. By retaining Integral Engineering, Enbridge Gas ensured that the analysis was conducted efficiently and met the necessary standards of quality on the timeline required to complete the development of the Application.
- c) Please refer to Exhibit B, Tab 3, Schedule 1, paragraphs 24 through 29 for the input assumptions. Also please refer to Exhibit B, Tab 3, Schedule 1, Attachment 1, page 3 for the instruction provided to Integral Engineering regarding the analysis.
- d) The purpose of the probabilistic analysis provided at Exhibit B, Tab 3, Schedule 1, was to examine how long the pipeline could be serving customers under different electrification scenarios; this was in support of understanding potential stranded asset risk for system renewal investments. This purpose is distinct and different from that of the referenced Pathways to Net-Zero Emissions for Ontario (P2NZ) report. While the purposes differ, some assumptions are similar, for example both analyses include the assumption that the Pan Canadian Framework is implemented and that heating systems are required to be greater than 100% efficient. The distinction is the approach to the assumptions. The probabilistic analysis allowed for the use of distributions in the assumptions themselves as opposed to only using deterministic assumptions as in the P2NZ report (i.e. the Pan Canadian Framework comes into effect no sooner than 2035, but no later than 2050 versus the Pan Canadian Framework comes into effect in 2035).





500 Consumers Rd  
North York ON M2J 1P8

Kai Ji, Integrity Assessments Engineer  
Tel: 416-495-3978  
Email: kai.ji@enbridge.com

June 2, 2020

2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING  
100-10004 79 Avenue  
Edmonton Alberta T6E 1R5

Dear Sir / Madam,

**RE: Consulting Agreement with Enbridge Gas Inc.**

Attached please find for signature our Consulting Agreement. Kindly arrange to have the Agreement and the attached Schedule signed. Please ensure you read and understand all of the terms and conditions of the Agreement, as well as the enclosed Statement on Business Conduct and Lifesaving Rules.

We will also require the following:

- A current clearance certificate or letter of exemption from the Ontario Workplace Safety and Insurance Board ("WSIB"). If your employees are in a jurisdiction other than Ontario, please provide equivalent proof of coverage, and new proof of coverage must be filed with us upon expiry/renewal of such proof of coverage.

Please return the applicable WSIB document noted above, together with a signed copy of the Consulting Agreement and a signed copy of the Schedule, promptly following receipt of this letter. Upon receipt of all the documents in our office, we will execute the Agreement and a PDF copy of the Agreement will be returned to you for your records.

If you have any questions, please contact me at the above-noted telephone number.

Sincerely,

Kai Ji  
Integrity Assessments Engineer

Encls.

## CONSULTING AGREEMENT

**THIS AGREEMENT** made effective May 18, 2020.

**B E T W E E N:**

**ENBRIDGE GAS INC.**  
("Enbridge")

- and -

**2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING**  
(the "Consultant")

**WITNESSES THAT** in consideration of the mutual covenants and agreements herein contained, the parties hereto covenant and agree as follows:

### 1. **Scope of Services**

- (a) During the term hereof (as hereinafter defined), the Consultant shall provide consulting services (the "Services") to Enbridge, on the terms and conditions set forth below.
- (b) The scope of work for specific projects to be undertaken by the Consultant at the request of Enbridge will be described in separate schedules referencing this Agreement, each of which shall become effective, be incorporated by reference and form an integral part of this Agreement upon the execution of each such schedule by Enbridge and the Consultant. The schedule for each project will specify the names of key individuals, scope of Services, deliverables, commencement and completion dates, rate of compensation and payment terms applicable to such project. Each schedule described above shall be prepared using a form similar to the attached Schedule "A".

### 2. **Compensation**

In consideration of the Services and deliverables to be provided by the Consultant hereunder, and provided that the Consultant is not in default of its obligations hereunder, Enbridge shall remit to the Consultant all amounts required to be paid in accordance with the applicable schedule.

Consultant shall be responsible for charging, collecting and remitting all applicable federal and provincial sales, use and value-added taxes in respect of the fees paid or payable to Consultant and, in particular, the goods and services tax ("GST") and harmonized sales tax ("HST") imposed under Part IX of the Excise Tax Act (the "ETA"), the Quebec sales tax ("QST") imposed under an Act respecting the Quebec Sales Tax (the "QSTA") and any provincial sales taxes ("PST"); and such taxes, if applicable, shall be shown separately on all invoices. Where Consultant is required to collect any GST/HST, QST or similar tax, Consultant shall provide Enbridge with the documentary evidence as prescribed pursuant to the ETA or QSTA, any successor provision thereto or any similar provision of any other taxing statute as is required to entitle Enbridge to claim an input tax credit, input tax refund, rebate, refund or any other form of relief in respect of such taxes.

Where the Consultant is a non-resident of Canada for purposes of the Income Tax Act (Canada) (the "ITA"), with respect to the invoice or statement of Fees issued pursuant to any Schedule, the Consultant will identify the location where the Services are provided, separate Services performed in Canada from Services performed outside of Canada, identify the number of days Services were performed in Canada (including travel days to/from Canada) and, for Services performed in Canada, identify the physical location, indicating city and province, where such Services were performed. Where the non-resident Consultant has not obtained and provided to Enbridge a non-resident withholding tax waiver at such time as Enbridge makes any payment to the Consultant for Services, Enbridge shall withhold such percentage

of any payment as mandated under the ITA with respect to the Services provided in Canada or on the full invoice or statement amount where the Consultant has not clearly separated the Services performed in Canada from Services performed outside of Canada. Enbridge shall remit the withheld amount to Canada Revenue Agency, or its successor, in the manner and at the time required by the ITA. For further clarification, it is the Consultant's responsibility to obtain the tax waiver, if available. In the event that Enbridge is assessed for any non-resident withholding taxes payable, the Consultant agrees to forthwith reimburse Enbridge for such amount together with applicable interest and penalties, if any.

### 3. **Term**

Subject to earlier termination as provided for herein, the term of this Agreement shall commence on the day set forth above and expire on December 31, 2020 (hereinafter the "Term").

### 4. **Termination**

- (a) Enbridge may terminate this Agreement or any schedule to this Agreement for convenience upon giving two (2) weeks written notice to the Consultant.
- (b) Either party may terminate this Agreement in case of a breach by the other party of its obligations hereunder, provided that the breach is not cured within five (5) days of written notification by the non-defaulting party to the defaulting party setting out the particulars of the breach.
- (c) Either party may terminate this Agreement upon written notice to the other party, if: (i) the other party is subject to proceedings in bankruptcy, or insolvency, whether voluntary or involuntary, (ii) a receiver is appointed in respect of all or a substantial portion of the other party's assets; or (iii) the other party assigns its property to its creditors or generally becomes unable to pay its debts as they become due.

Upon any termination of this Agreement, the Consultant shall deliver to Enbridge the results of all Services provided as of the date of termination, including completed or uncompleted deliverables for which payment has been received in accordance with the terms of this Agreement.

### 5. **Facilities**

Enbridge shall provide to the Consultant use of such office facilities as may be required by the Consultant, acting reasonably, to perform the Services during the Term.

### 6. **Reimbursement for Expenses**

In addition to the payments to be made pursuant to Section 2 hereof, Enbridge shall reimburse the Consultant for all reasonable expenses properly incurred by the Consultant in connection with the Services provided to Enbridge hereunder and that have been pre-approved by Enbridge in writing, including, without limitation, reasonable travel and other costs and expenses in connection therewith. Such pre-approved reasonable expenses incurred by the Consultant in rendering Services shall be reimbursed by Enbridge net of GST/HST. GST/HST shall be charged, where applicable, by the Consultant on the expenses incurred, net of the input tax credits/reimbursements for GST/HST claimed by the Consultant. Concurrently with its delivery of invoices to Enbridge as contemplated by Section 2 hereof, the Consultant shall submit to Enbridge invoices and statements setting out in reasonable detail the nature and amount of the expenses or costs incurred by the Consultant for which the Consultant claims reimbursement, and Enbridge shall within thirty (30) days of the receipt of such invoices and statements reimburse the Consultant for all approved invoiced expenses and costs. The Consultant shall provide to Enbridge copies of all documentation in support of invoiced expenses as Enbridge may request from time to time during the Term hereof.

### 7. **Independent Contractor**

Notwithstanding anything to the contrary herein contained, the Consultant shall not, for any purpose, be or be deemed to be an employee of Enbridge during the Term or at any time during which the Services described in Section 1 hereof are provided to Enbridge nor shall anything in this Agreement create or be

construed for any purpose as creating any relationship between Enbridge and the Consultant of employer and employee. Except as expressly provided herein, Enbridge shall not be liable to contribute to any employee benefit or pension plan or pay premiums for any policy or form of insurance whatsoever on behalf of the Consultant nor to pay any amounts or premiums on its behalf in respect of the Canada Pension Plan, Ontario Health Insurance Plan, Workplace Safety and Insurance Board or Employment Insurance, nor to deduct or withhold from source any amount from amounts payable by Enbridge to the Consultant hereunder in respect of any income tax obligation or liability payable by the Consultant to the Canada Revenue Agency. The Consultant agrees to indemnify and hold Enbridge harmless from and against any order, penalty, interest or tax that may be assessed or levied against Enbridge as a result of the failure or delay of the Consultant to file any return or information required to be filed by the Consultant by any law, ordinance or regulation relating to the Services performed by the Consultant herein.

**8. Confidential Information and Personal Information**

(a) For the purposes of this Section 8, the following definitions will apply:

(i) "Confidential Information", means all information pertaining to the business and affairs of Enbridge, its affiliates and subsidiaries, whether oral or written, furnished by Enbridge to the Consultant, its employees and representatives, whether furnished or prepared before or after the date of this Agreement, and includes all analysis, compilations, data, studies, reports or other documents prepared by the Consultant based upon or including any of the information furnished by Enbridge, but does not include information which:

- A. is at the time of disclosure or thereafter becomes generally available to the public other than as a result of disclosure by the Consultant or anyone to whom the Consultant transmits the information;
- B. is at the time of disclosure or thereafter becomes known or available to the Consultant on a non-confidential basis and not in contravention of applicable law from a source other than Enbridge that is entitled to disclose the information; or
- C. is already in the possession of the Consultant or is lawfully acquired, provided that such information is not subject to another confidentiality agreement with, or obligations of secrecy to Enbridge.

(ii) "Person" includes individuals, partnerships, firms and corporations.

(b) Enbridge is furnishing the Confidential Information to the Consultant solely for the purpose of assisting the Consultant in the performance of Services which the Consultant provides to Enbridge. The Consultant shall not use the Confidential Information for any purpose other than the performance of Services provided to Enbridge.

(c) The Consultant acknowledges that the Confidential Information is the property of Enbridge, which is confidential and material to the interests, business and affairs of Enbridge and that disclosure thereof would be detrimental to the interests, business and affairs of Enbridge. Accordingly, the Consultant agrees that it shall maintain the confidentiality of the Confidential Information and that it shall not disclose the Confidential Information to any Person for any reason whatsoever except as expressly provided herein.

(d) The Consultant may disclose Confidential Information to the extent required by a court of competent jurisdiction or other governmental or regulatory authority or otherwise as required by applicable law, provided that the Consultant first give Enbridge prompt written notice (except where the governmental or regulatory authority has expressly ordered that no notice be given) and co-operate with and assist Enbridge in responding to the request or demand for disclosure.

(e) The Consultant acknowledges and agrees that Enbridge would be irreparably harmed if any provision of this Agreement is not performed by the Consultant in accordance with its terms. Accordingly, Enbridge shall be entitled to an injunction or injunctions to prevent breaches of any of the provisions of this Agreement and may specifically enforce such provisions by an action

instituted in a court having jurisdiction. These specific remedies are in addition to any other remedy to which Enbridge may be entitled at law or equity.

- (f) If in the course of performing Services hereunder, the Consultant obtains or accesses personal information about an individual, including without limitation, a customer, potential customer or employee or contractor of Enbridge ("Personal Information") the Consultant agrees to treat such Personal Information in compliance with all applicable federal or provincial privacy or protection of personal information laws and to use such Personal Information only for purposes of providing the Services hereunder. Furthermore, the Consultant acknowledges and agrees that it will:
  - (i) not otherwise copy, retain, use, modify, manipulate, disclose or make available any Personal Information, except as required by applicable law;
  - (ii) establish or maintain in place appropriate policies and procedures to protect Personal Information from unauthorized collection, use or disclosure;
  - (iii) implement such policies and procedures thoroughly and effectively;
  - (iv) except as required for purposes of providing the Services hereunder, will not develop or derive, for any purpose whatsoever, any products in machine-readable form or otherwise, that incorporates, modifies, or uses in any manner whatsoever, any Personal Information; and
  - (v) upon completion of its Services for or on behalf of Enbridge, will at Enbridge's direction: A. return; or B. destroy all Personal Information and all copies and records thereof in its possession.

## 9. Indemnification

The Consultant hereby agrees to and shall:

- (a) be liable to Enbridge and its directors, officers and employees, for all claims, liabilities, damages, costs, losses and expenses whatsoever which Enbridge or any of its directors, officers and employees may suffer, sustain or incur; and
- (b) indemnify and save harmless Enbridge, Enbridge's affiliated and subsidiary companies, and their directors, officers, agents, employees and representatives from and against any and all liabilities, claims, demands, damages, loss, costs and expenses (including without limitation all applicable solicitors' fees, court costs and disbursements, investigation expenses, adjusters' fees and disbursements) to or which any third party may suffer, sustain or incur,

in respect of all matters or anything which may arise out of any negligence of wilful misconduct directly or indirectly related to any breach of this Agreement by the Consultant, its employees or representatives.

## 10. Work Product

- (a) For the purposes of this Section 10, "Work Product" shall include any of the following, which are developed in the course of or arise from the Services provided by the Consultant to Enbridge hereunder throughout the Term: (i) any deliverables produced under any schedule to this Agreement together with any and all notes, reports, research information, compilations, data specifications, designs, programs, documentation, software (including object code and source materials), development tools, products and other materials or things; (ii) any and all knowledge, know-how, techniques, inventions, processes, trade secrets, methodologies, approaches and other intangible intellectual property rights; and (iii) all designs, patent applications, issued patents, industrial design registrations, design patents, trade-mark applications, registered trade-marks and copyright which may relate thereto.
- (b) For the purposes of this Section 10, "Consultant Materials" comprises any of the following, which were developed by the Consultant, at its own cost and expense in advance of and independent of

this Agreement and as proven by the Consultant to be the case in the event of a dispute concerning the same: (i) any and all notes, research, information, data, specifications, designs, programs, documentation, software (including object code and source materials), development tools, products and other materials or things; (ii) any and all knowledge, know-how, techniques, inventions, processes, trade secrets, methodologies, approaches and other intangible intellectual property rights; and (iii) all designs, patent applications, issued patents, industrial design registrations, design patents, trade-mark applications, registered trade-marks and copyright which may relate thereto.

- (c) All right, title and interest in and to the Work Product shall be the property of Enbridge. The Consultant shall ensure that any agent or employee of the Consultant shall have waived in writing all of his or her moral rights over any such Intellectual Property. During and after the Term of this Agreement, the Consultant shall from time to time as and when requested by Enbridge execute all papers and documents and perform other acts as necessary or appropriate to evidence or further document Enbridge's ownership of the Work Product and the intellectual property rights therein.
- (d) The Consultant retains all right, title and interest in and to the Consultant Materials. The Consultant hereby grants to Enbridge a non-exclusive, perpetual, irrevocable, non-terminable, transferable, assignable and royalty-free license to copy, disclose, use, operate, maintain, repair, modify, enhance, make derivative works, license, sub-license and otherwise commercially exploit without limitation or restriction those Consultant Materials used in connection with the delivery of the Services or to the extent contained within any Work Product.
- (e) The Consultant agrees to fully indemnify and hold harmless Enbridge from and against any and all: (i) claims, demands and actions; (ii) liabilities, damages or losses awarded by a court of competent jurisdiction or as agreed to as part of a settlement; and (iii) litigation costs and/or expenses (including reasonable legal fees and disbursements) reasonably incurred by Enbridge in connection with any claim that the Services or Work Product provided hereunder infringe any patent, copyright, trade secret or other right of any third party.

#### **11. Representations and Warranties**

- (a) The Consultant represents, warrants and covenants with Enbridge that: (i) it will perform all Services in a good and workmanlike manner using reasonable care (at a level that is at least consistent with industry standards for the provision of similar services) and in accordance with the terms of this Agreement; (ii) it possesses the knowledge, skill and experience necessary for the provision and completion of the Services in accordance with the terms of this Agreement; and (iii) any deliverables provided hereunder shall conform to their relevant specifications as described in the applicable schedule.
- (b) The Consultant agrees that under no circumstances will it interface a non-Enbridge computing device (including without limitation desktops, laptops, handheld device) with the Enbridge intranet or internet without obtaining the prior written approval of Enbridge. To the extent the deliverables produced hereunder involve the provision or development of any software application, interface or electronic data, the Consultant shall use commercially reasonable efforts to prevent the introduction of any virus to the hardware and computer systems upon which the application, interface or electronic data are to be installed. During the Term of this Agreement, the Consultant shall implement and run virus prevention and detection control procedures in accordance with industry standards.
- (c) In addition to the policies described in Section 25, the Consultant shall ensure that it is familiar with and understands all of Enbridge's current policies, procedures and standards that are pertinent to the activities associated with the Services and which have been provided to the Consultant in advance of the execution of this Agreement.
- (d) Enbridge acknowledges that any use or interpretation of any prototype, design, data, information, analysis, recommendation, or conclusions contained therein are at Enbridge's own risk.



## 12. **Subcontractors**

The Consultant shall not enter into any agreement with any other party to assist in the provision of the Services described in Section 1 hereof (hereinafter described as a "Subcontract") nor shall the Consultant allow any other party to perform such Services or any part thereof without first obtaining the consent in writing of Enbridge, which consent may be withheld by Enbridge, acting reasonably. Notwithstanding any approval or consent that may be provided by Enbridge in connection with any Subcontract, the Consultant shall not be relieved of any of its liabilities and responsibilities hereunder. Any party which enters into a Subcontract with the Consultant shall be required by the terms of such Subcontract to comply with and be bound by the obligations and responsibilities of the Consultant described hereunder and without restricting the generality of the foregoing, any Subcontract which has been entered into without the prior written consent of Enbridge shall be null and void and without force and effect.

## 13. **Insurance**

Save and except where Enbridge specifies otherwise in writing, the Consultant shall at its own expense maintain and keep in full force and effect during the Term hereof and for a period of two (2) years following the expiry of the Term or other termination of this Agreement:

- (a) Commercial General Liability insurance having a minimum inclusive coverage limit, including personal injury and property damage, of at least Two Million Dollars (\$2,000,000) per occurrence. Enbridge Gas Inc. must be listed as the certificate holder and be added as an additional insured in the insurance policy, which should be extended to cover contractual liability, products/completed operations liability, owners'/ contractors' protective liability and must also contain a cross liability clause;
- (b) Non-Owned Automobile Liability insurance and such insurance shall have a limit of at least One Million Dollars (\$1,000,000) in respect of bodily injury (including passenger hazard) and property damage, inclusive in any one accident; and
- (c) such other insurance as Enbridge may in its discretion determine to be necessary, including, but not limited to, Professional Liability or Errors and Omissions insurance.

The Consultant shall forthwith after entering into this Agreement, and from time to time thereafter at the request of Enbridge, furnish to Enbridge a memorandum of insurance or an insurance certificate setting out the terms and conditions of each policy of insurance (all such policies of insurance being hereinafter described as the "Insurance Policies") maintained by the Consultant in order to satisfy the requirements of this section. At any time and from time to time at the request of Enbridge, the Consultant shall furnish Enbridge with one or more duly completed insurance certificates in the form requested by Enbridge to evidence the details of all the Insurance Policies. The Insurance Policies shall be arranged with insurers acceptable to Enbridge, acting reasonably, and shall contain such terms and conditions as are reasonably acceptable to Enbridge. The Consultant shall not cancel, terminate or materially alter the terms of any of the Insurance Policies without giving prior notice in writing to Enbridge. The Consultant shall cause or arrange for any of its insurers under any one or more of the Insurance Policies to oblige itself contractually in writing to Enbridge to provide fifteen (15) days prior notice in writing before cancelling, terminating or materially altering the Insurance Policies under which it is an insurer.

## 14. **Compliance with Laws**

The Consultant agrees to comply with the Occupational Health and Safety Act (Ontario) and the Workplace Safety and Insurance Act (Ontario) and with all other prevailing federal, provincial and municipal laws and regulations or any other laws or regulations in force in any jurisdiction where the Services are performed (the "Laws") and which are applicable to the Consultant, its subcontractors and the Services provided hereunder, and the Consultant shall familiarize itself and procure all required permits and licenses and pay all charges and fees necessary or incidental to the due and lawful prosecution of this Agreement, and maintain all documentation as may be required by the Laws, and shall indemnify and save harmless Enbridge, its directors, officers, agents and employees thereof against any claim or liability from or based on the violation of any Laws, whether by the Consultant, its officers, employees, subcontractors, representatives or agents. The Consultant shall, from time to time, if requested by Enbridge, furnish

Enbridge with evidence of such compliance, and in particular: (i) evidence from the Workplace Safety and Insurance Board, or the equivalent thereof in any jurisdiction where the Services provided hereunder are carried out, that the Consultant and any party with which it has entered into a Subcontract are in compliance with and have paid all assessments and other amounts owing pursuant to the workers' compensation legislation of such jurisdiction; and (ii) evidence of the Consultant's compliance with any training requirements under the Laws including, without limitation, the provision of such statements or certificates pertaining to the Consultant's compliance in the form(s) prescribed by Enbridge from time to time.

Enbridge is committed to compliance with the Accessibility for Ontarians with Disabilities Act, 2005, O.Reg. 429/07 and O.Reg. 191/11, the Enbridge Customer Service Policy for Providing Goods and Services to People with Disabilities and the Enbridge Integrated Accessibility Standards Policy (collectively the "AODA"). The Consultant shall ensure that it is in full compliance with all of its obligations under AODA. Without limiting the generality of the foregoing the Consultant shall ensure that all of its employees, agents, volunteers, or others engaged by the Consultant in the delivery of services under this Agreement receive training in connection with the requirements of the AODA. If requested to do so, the Consultant shall provide Enbridge with copies of its policies, practices, procedures, training materials and training records including the dates on when the training is provided, and the names of the individuals trained, and confirmation the Consultant has reported its compliance to the Ministry of Community and Social Services or such other governmental authority as provided in the AODA.

The Consultant will ensure that any personnel it assigns to work in Canada, where they are not a Canadian citizen or Canadian permanent resident of Canada, will obtain and maintain the lawful ability to engage in commercial activities in Canada through the issuance of the appropriate documentation from Canada Border Services Agency and Citizenship and Immigration Canada. The Consultant's personnel where necessary will obtain lawful work permits to engage in business-related activities as temporary foreign workers and will notify Enbridge if any applications for work permits and work permit renewals are refused. The Consultant will not send personnel to any Enbridge-related work site if they do not possess the necessary lawful permission to work in Canada. The Consultant will take full responsibility to secure the necessary documentation and produce such documentation when entering a Canadian work site of Enbridge.

**15. Waiver**

Either the Consultant or Enbridge may, in writing, extend the time for performance by the other and waive non-compliance or non-performance by the other of any of the other's obligations, covenants and agreements under this Agreement and any compliance therewith or performance thereof. However, no such extension or waiver shall operate so as to waive, diminish or reduce the scope of or otherwise affect any obligation, covenant or agreement of such other which is not the subject matter of such extension or waiver or, except to the extent of such extension or waiver, of the obligation, covenant and agreement which is the subject matter of such waiver. No act or failure to act of either the Consultant or Enbridge shall be or be deemed to be an extension or waiver of timely or strict performance by the other of the other's obligations, covenants and agreements under this Agreement except to the extent notice thereof is given to the other.

**16. Notice**

Any notice or other communication to be given under or pursuant to the provisions hereof or in any way concerning this Agreement shall be sufficiently given if reduced to writing and delivered to the person to whom such communication is to be given or sent by facsimile or electronic internet communication, addressed to such person at the address set forth below:

If to Enbridge:

ENBRIDGE GAS INC.  
500 Consumers Rd  
North York ON M2J 1P8  
Attention: Kai Ji, Integrity Assessments Engineer

Phone: 416-495-3978  
Email: kai.ji@enbridge.com

With a copy to: Law Department  
Facsimile: 416-495-5994

If to the Consultant:

2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING  
100-10004 79 Avenue  
Edmonton Alberta T6E 1R5  
Attention: Daryl Bandstra, Consulting Engineer  
Phone: 780-700-8483 Ext.  
Email: dbandstra@integraleng.ca

or at such other address as may be specified therefor by proper notice hereunder. A notice or communication shall be deemed to have been sent and received on the day it is delivered personally or by courier or by facsimile or by electronic internet communication. If such day is not a business day or if the notice or communication is received after 5:00 PM (at the place of receipt) on any business day, the notice or communication shall be deemed to have been sent and received on the immediately following business day.

#### **17. Interpretation**

This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein. Headings used herein are for the convenience of reference only and shall not be considered in construing or interpreting this Agreement. The words "herein", "hereunder", "hereof" and other similar words refer to this Agreement as a whole and not to any particular paragraph. Any provision herein prohibited by law shall to the extent prohibited be ineffective without invalidating any other provisions hereof. All references to amounts of money in this Agreement and any schedule shall mean lawful currency of Canada.

#### **18. Assignment**

The Consultant may not assign this Agreement in whole or in part without the express prior consent in writing of Enbridge. This Agreement shall be binding upon and enure to the benefit of the successors and assigns of Enbridge.

#### **19. Use of Enbridge Name and Logo**

The Consultant shall not use or display Enbridge's name or any symbols, signs, trademarks and other marks denoting and identifying Enbridge in any manner whatsoever without the prior written authorization of Enbridge.

#### **20. Time of Essence**

Time shall be of the essence in the performance of the Services.

*[remainder of page intentionally left blank]*

**21. Survival**

All warranties and indemnities contained in this Agreement, and the obligations contained in Section 8, shall survive the termination of this Agreement irrespective of the time of or party responsible for such termination, and such warranties, indemnities and obligations shall remain in full force and effect and be binding on the Contractor notwithstanding such termination.

**22. Further Assurances**

Each of the parties shall, from the time of the written request of the other party, do all such further acts and execute and deliver or cause to be done, executed or delivered all such further acts, deeds, documents, assurances and things as may be required, acting reasonably, in order to fully perform and to more effectively implement and carry out the terms of this Agreement.

**23. Entire Agreement**

This Agreement, including any schedules attached hereto, constitutes the entire agreement between the parties with respect to the subject matter set out herein and replaces any prior understandings or agreements, whether written or oral, regarding such subject matter. No change or modification of this Agreement is valid unless it is in writing and signed by both parties. No disclaimers, purchase order documents, invoices or other documents of the Consultant shall be binding upon Enbridge.

**24. Audit**

The Consultant shall, following no less than seven (7) business days advance notice in writing, provide to such auditors (including external auditors and Enbridge's internal audit staff or agents) as Enbridge may designate in writing, supervised access to the data, records and supporting documentation maintained by the Consultant with respect to the Services solely for the purpose of: (i) performing audits and inspections to enable Enbridge to satisfy applicable regulatory requirements or certify compliance with applicable laws; and (ii) to confirm that the Services are being provided in accordance with the terms of this Agreement. Enbridge and its auditors shall use commercially reasonable efforts to conduct such audits in a manner that will result in a minimum of inconvenience and disruption to the Consultant's business operations. In the event that if any such audit reveals any: (a) errors or deficiencies in the completion of the Services or invoicing of the Services; or (b) overpayments to the Consultant by Enbridge, then the Consultant shall forthwith correct such errors or deficiencies, including if applicable refunding any overpayment to Enbridge. The Consultant shall retain all records for ten (10) years from the date of expiration or earlier termination of this Agreement, or such longer period as Enbridge may require having regard to the nature of the Services.

**25. Enbridge Policies**

The Consultant acknowledges receipt of a copy of each of Enbridge Inc.'s Statement on Business Conduct for Enbridge Inc. and its Subsidiaries and Lifesaving Rules, each as amended from time to time (the "Policies"). The Consultant agrees to comply with the Policies in connection with its delivery of the Services described in this Agreement, and agrees that, if requested by Enbridge, it will ensure all personnel delivering the Services herein attend training on the Lifesaving Rules.

**26. ISNetworld Requirement**

If required by Enbridge, the Consultant shall subscribe with ISN Software Corporation as a registrant of ISNetworld ("ISN") or any successor service mandated by Enbridge from time to time, and maintain a performance grading within ISN that is acceptable to Enbridge (the "ISNetworld Requirement") and shall: (a) provide all records and information as required by ISN or Enbridge, including, but not limited to, training and qualification data of the Consultant personnel, including subcontractors and employees, relating to the Services; and (b) maintain compliance with the ISNetworld Requirement during the currency of this Agreement.

*[remainder of page intentionally left blank]*

27. Counterparts and Execution

This Agreement may be executed by the parties in separate counterparts, each of which when so executed and delivered will be deemed to be an original, and all such counterparts will together constitute one and the same instrument. Delivery of a signature by electronic transmission or by facsimile transmission, including by email delivery of a "portable document format" ("pdf") document, shall create a valid and binding obligation. This Agreement may be executed using electronic signatures.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first written above.

2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING

ENBRIDGE GAS INC.

By: Daryl Bandstra  
Name: Daryl Bandstra  
Title: Director

By: Miaad Safari  
Miaad Safari (Jun 9, 2020 15:54 EDT)  
Name: Miaad Safari  
Title: Supervisor Integrity Assessments

By: \_\_\_\_\_  
Name:  
Title:  
*(Please print name and title of Signing Officer)*

By: \_\_\_\_\_  
Name: \* \*  
Title: \*

Witness: \_\_\_\_\_  
Name:

*(Witness required if Contractor is a Sole Proprietor)*

## **SCHEDULE A**

### **TO THE CONSULTING AGREEMENT BETWEEN ENBRIDGE GAS INC. AND 2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING Dated May 18, 2020**

This Schedule is made under the above referenced consulting agreement (the "Agreement") between ENBRIDGE GAS INC. ("Enbridge") and 2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING (the "Consultant").

#### **1. SCOPE OF SERVICES**

The Consultant will undertake the following Services:

Consultant will provide consulting services for a machine-learning model to predict Excavation Rate along Enbridge TIMP pipelines.

A description of Services and key personnel to be provided by the Consultant is set forth in the proposal dated April 17, 2020 prepared by the Consultant, which is attached as Attachment 1 to this Schedule (the "Proposal") and incorporated by reference herein. In the event of a conflict between the terms and conditions set out in the Proposal and those set out in this Agreement, the terms and conditions in this Agreement (including this Schedule) will govern and take precedence.

#### **2. DELIVERABLES**

The Consultant will provide the following deliverables:

A working machine-learning model calibrated on Enbridge provided data and full documentation to support Enbridge future enhancements to model. Model will be written in open-source language, transparent, and owned by Enbridge.

Training and additional enhancements to modelling, depending if optional adders are purchased.

#### **3. TERM AND COMMENCEMENT AND COMPLETION DATES**

This Schedule shall be effective as of May 18, 2020 and expire December 31, 2020, or such other date as the parties may mutually agree in writing.

#### **4. KEY PERSONNEL**

The Consultant will provide the following personnel to deliver the services set out above under Scope of Services:

Daryl Bandstra, Consulting Engineer

#### **5. FEES AND PAYMENT TERMS**

Fees: In accordance with the attached Proposal at a not to exceed maximum of [REDACTED] if all Tasks are selected.

Expenses: N/A

The above fees and expenses cannot be exceeded without prior written approval from Enbridge.

Fees are payable by Enbridge within forty (40) days of receipt from the Consultant of an appropriate invoice setting out in reasonable detail the nature of the services provided.




*[Remainder of page intentionally left blank; signature page to follow]*

Dated as of May 18, 2020.

**2101209 ALBERTA LTD. O/A INTEGRAL  
ENGINEERING**

**ENBRIDGE GAS INC.**

By:   
Name: Daryl Bandstra  
Title: Director

By:   
Miaad Safari (Jun 9, 2020 15:54 EDT)  
Name: Miaad Safari  
Title: Supervisor Integrity Assessments

By: \_\_\_\_\_  
Name:  
Title:  
*(Please print name and title of Signing Officer)*

By: \_\_\_\_\_  
Name: \* \*  
Title: \*

Witness: \_\_\_\_\_  
Name:

*(Witness required if Contractor is a Sole Proprietor)*

**ATTACHMENT 1, Proposal is attached at the following pages.**



# Proposal for Machine Learning Based Excavation Rate Model Development



April 17, 2020

Proposal for Enbridge Gas





## Proposal

Prepared for:  
**Miaad Safari, P.Eng**  
[Miaad.Safari@enbridge.com](mailto:Miaad.Safari@enbridge.com)

Prepared by:  
**Daryl Bandstra, P.Eng**  
[dbandstra@integraleng.ca](mailto:dbandstra@integraleng.ca)

Reviewed by:  
**Alex Fraser, P.Eng**  
[afraser@integraleng.ca](mailto:afraser@integraleng.ca)

### Statement of Confidentiality

This proposal and supporting materials contain confidential and proprietary business information of Integral Engineering. These materials may be printed or photocopied for use in evaluating the proposed project, but are not to be shared with other parties.

# INTRODUCTION

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## The challenge

Quantitative risk models for excavation damage allow pipeline operators to characterize and manage the threat of third-party damage for their pipeline networks. The most widely used quantitative model for this threat was developed through PRCI in 1999 and combines a fault tree model with a structural reliability model to estimate the probability of pipeline failure. The fault tree is used to estimate the probability that a pipeline will be hit by excavation equipment each year. One of the primary inputs for this fault tree is the rate of excavation activity rate on the line. The original model used general industry survey data to obtain order-of-magnitude estimates for this rate in various types of land use. The current availability of geospatial information and the advent of machine learning as a practical tool presents an opportunity to make significant improvements in modelling accuracy by updating this important input. One-call ticket data can be correlated with satellite land-use data to make location specific predictions of the rate of excavation activity at a given location.

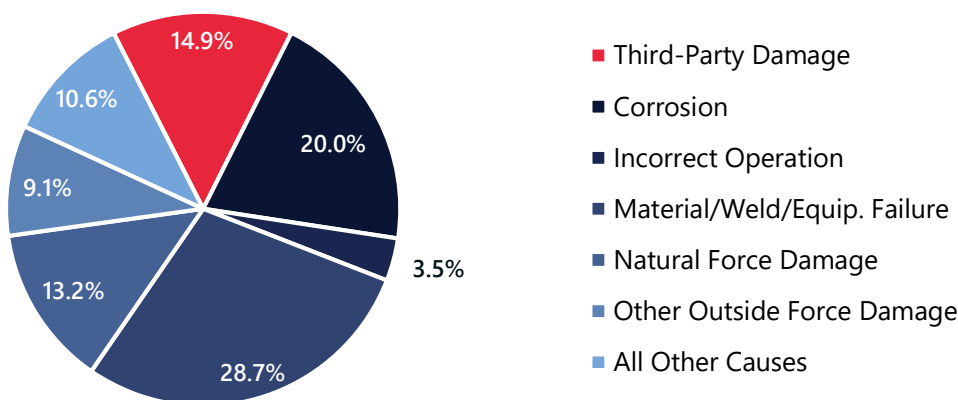
Enbridge Gas Inc. (EGI) has requested a proposal from Integral Engineering to develop an excavation activity rate prediction model for use in third-party damage risk assessment and analytics. Our proposed approach is to develop a machine learning based regression model that uses one-call ticket, pipeline route, and land-use and building data from EGI to estimate the rate of excavation activity along the transmission pipeline network. With the resulting model, EGI will have location-specific excavation activity rate estimates along each pipeline based on the land use in the surrounding area. During this project, Integral will schedule regular status update presentations to keep EGI informed on the project progress. Upon completion of the work, Integral will provide a letter report summarizing methodology, along with digital files for the model and results.

# BACKGROUND

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Quantitative risk assessment is a methodology which is used to quantify and manage the chance of pipeline failure. The results of these type of risk assessments can be compared to risk acceptance criteria to determine if adequate public safety levels are maintained along the length of the pipeline. When assessing safety risk, the rate of failure from all potential causes such as corrosion, third-party damage, and natural force damage are aggregated for comparison to the acceptance criteria. Third-party damage is one of the leading failure causes for onshore transmission pipelines. For example, in the United States where incident data is publicly available, third-party damage contributes to more than 14% of incidents.

PHMSA Gas Transmission Incident Cause Breakdown (2003-2012)<sup>1</sup>



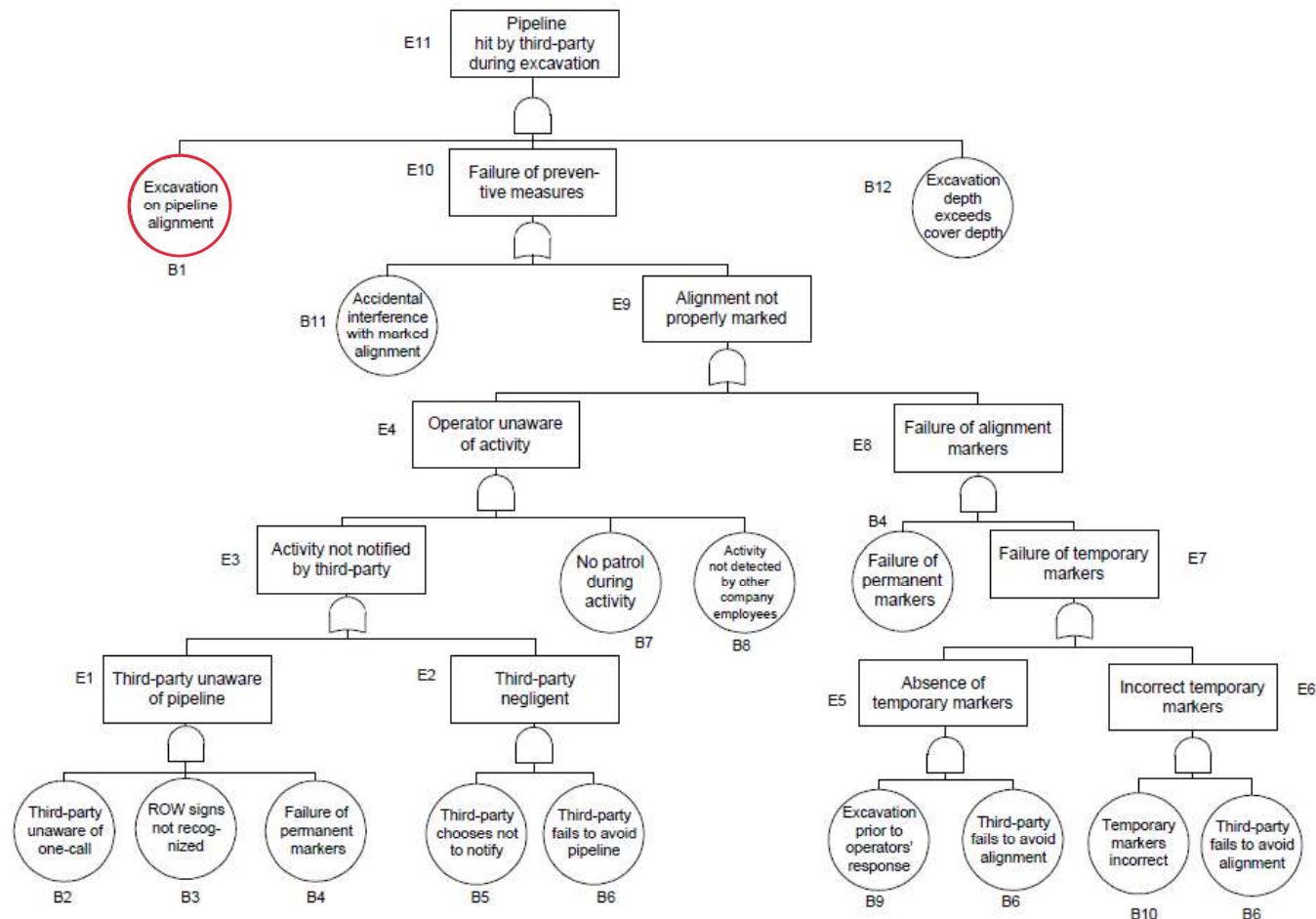
One of the most comprehensive quantitative models for the rate of excavation impact on a pipeline was developed through PRCI by Chen and Nessim<sup>2</sup>. This model uses a fault tree approach to estimate impact frequency by modelling the chance that mitigative actions are not successful in preventing an excavation on the right-of-way (ROW) from hitting the pipeline. Mitigative actions considered by the fault tree include preventative and protective measures such as signage, one-call, patrols and burial depth. This structure is reflected in the Chen and Nessim fault tree (shown on the following page) where the basic event B1 (circled in red) represents the rate of activity on the ROW, and events E10 and B12 represent the chance that either preventative or protective measures fail to prevent excavation impact with the pipeline.

<sup>1</sup> "A Study on the Impact of Excavation Damage on Pipeline Safety" PHMSA (2014)

<sup>2</sup> Chen, Q., and Nessim, M.A. 2000. Reliability-Based Prevention of Mechanical Damage to Pipelines. PRCI Project PR-244-9729; C-FER Report 97034, Arlington, VA.



### PRCI Mechanical Damage Fault Tree



**Source:** Chen, Q., and Nessim, M.A. 2000. Reliability-Based Prevention of Mechanical Damage to Pipelines. PRCI Project PR-244-9729; C-FER Report 97034, Arlington, VA.

The rate of excavation activity on the pipeline alignment (B1) can vary by orders of magnitude between different land use types while the effectiveness of preventative measures varies much less significantly since many pipeline operators follow similar practices for patrols, signage, and burial depth. As such, the assumed rate of activity is one of the most significant inputs in modelling third-party hit rate. Most quantitative assessments use the approximate order-of-magnitude survey-based excavation activity rates that were provided in the original PRCI report as this was the most accurate information available at the time.

The current availability of operator-owned and public geospatial information presents an opportunity to make significant improvements to this input. One-call ticket data can be correlated with satellite land-use data to make location specific predictions of the rate of excavation activity at a given location.

## OUR APPROACH

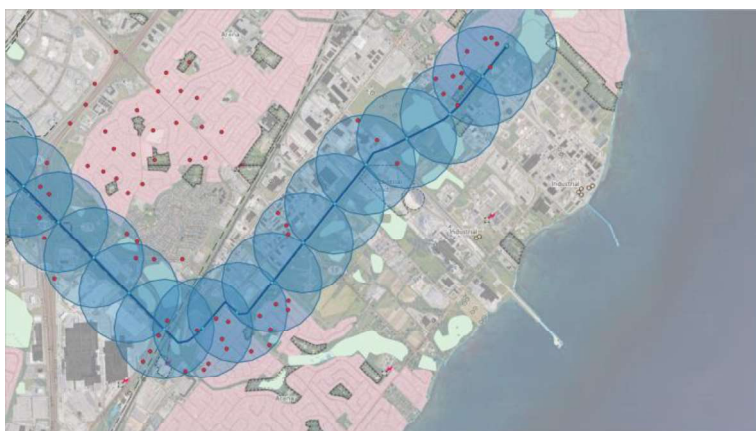
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Integral Engineering proposes to develop an excavation activity rate model using one-call ticket point data, pipeline route polyline data, and various other GIS datasets that describe the land use and structures in the vicinity of pipeline. Integral will consider all datasets provided by EGI at the start of the project and Integral will filter the data as required based on discussions with EGI. Any GIS data processing that requires substantial manual review will be conducted by the team at EGI.



**Land Use Data Sample**

To use this data, Integral will create circular buffers at each of the pipe point locations (~14 meter spacing) and then calculate the attributes of the area inside the buffer. Examples of these attributes are the count of buildings, the total length of roads, or the area percentage of a particular land use type. These attributes will be used as the baseline dataset of predictor variables for the model to estimate the number of one-call tickets in the area (the target variable). An example of the buffers (blue) and one-call tickets (red) is shown in the figure below. Various regression models including linear regression and tree-based ensemble models (e.g. XGBoost<sup>3</sup>) will be tested and the resulting model performance will be evaluated using standardized regression metrics on the test dataset. In addition, the impact of the buffer size on the model results will be examined to select a buffer size for the final model. Once an estimate of the number of one-call tickets in the general area is generated, the proportion of these excavations that occur directly over the pipeline will be modelled to produce a final estimate of the number of excavations that could hit the pipeline at each location on an annual basis.



**Buffered Locations and One-Call Tickets Example**

<sup>3</sup> Chen, T., & Guestrin, C. (2016). XGBoost: A Scalable Tree Boosting System. Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining - KDD '16. the 22nd ACM SIGKDD International Conference.

# PROJECT TASKS

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## *Task 1. Data Processing & Analysis*



Task Costs



**Description:**

The first task of the project involves building the training and test dataset which contains the land use attributes at each location (circle) along the pipeline and the corresponding counts of one-call tickets. Developing this dataset includes any *feature engineering* that is required to create features that are strong predictors from the underlying geospatial data. Feature engineering is the process of using domain knowledge to create useful features from raw land use data. Once the dataset has been developed and reviewed, exploratory data analysis will be conducted to spot patterns, anomalies, and outliers before model development continues in Task 2. The findings and relationships found in conducting the exploratory data analysis task will be summarized in a presentation before the next task is initiated.

**Data requirements:**

EGI will provide one-call ticket data, pipeline route data, and any land use datasets that are available to Integral in a geospatial format (e.g. FileGDB).

## *Task 2. Model Development & Reporting*



Task Costs



**Description:**

The dataset that was developed in Task 1 will be used to fit various regression model types to predict the target variable of one-call tickets. The models will be trained using 80% of the data (locations) and tested using the remaining 20% of the data. A summary presentation will be provided to review the comparative performance of various models. The findings of the data analysis and model evaluation tasks will be summarized a report, along with fully documented final rationale and methodology of Task 1 and Task 2 so that there is full transparency in the methodology. The report will allow EGI to fully understand and run the digital version of the model against new one-call ticket data, pipeline alignments, or land use and building data.

### Task 3. Machine Learning Training Course



Task Costs [REDACTED]

#### Description:

In this optional task, two Integral engineers will conduct a full-day training course for EGI gas employees at the EGI's office in Toronto. If travel restrictions prevent an in-person session, this training can be delivered remotely for a reduced cost of [REDACTED]. The course will focus on the fundamental concepts of machine learning and how it can be applied to pipeline risk and integrity problems. The topics include:

- *What is machine learning?*

This section will cover some of the general background, current trends in machine learning, and an overview of the various fields of machine learning. It will highlight some of the relative strengths and weaknesses of machine learning models and will discuss what machine learning can and cannot do.

- *How do machine learning projects work?*

This section will describe the typical workflow of a machine learning project and will illustrate how that differs from a data science project. Examples will be given of how both approaches might be applied to a problem. The role of domain expertise will be discussed and the concepts of supervised, unsupervised, and reinforcement learning will be introduced. General modelling concepts such as underfitting vs. overfitting and bias vs. variance will be discussed. Then, evaluation metrics for classification and regression metrics will be introduced with examples.

- *How can machine learning be used in the pipeline industry?*

This section will investigate how machine learning can be used in the pipeline industry by examining similar industries and areas where machine learning is currently being developed and applied. This will include some case study examples of how pipeline companies are currently applying machine learning.

- *How can my company get started with machine learning?*

This section will give suggestions on how to select projects that are well suited to machine learning, how a project team might look, and some lessons learned on how to get started. In addition, the course materials will provide a list of resources for continued learning.

**Task 4. Additional Model Refinement**



Task Costs



**Description:**

Based any findings or recommendations from Task 2, Integral will do additional development to increase the model’s accuracy. This may include additional analysis to refine existing inputs or incorporating additional datasets that address regions where the current model is found to be less relatively accurate. This task is optional and independent of Task 3. The full details of the scope and deliverables can be by Integral and EGI after the completion of Task 1 and 2.

## BUDGET & TIMELINE

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The team at Integral Engineering is available to begin work on this work starting in April 2020. Daryl Bandstra will act as the project manager and other Integral staff including Alex Fraser, Shawn Smith, and Juan Rojas will be involved as project engineers. The costs for each task are given in the table below as a fixed price in Canadian dollars. This proposal is valid for acceptance until June 30, 2020. Invoices will be submitted to EGI as key milestones are reached.

	<b>Task Description</b>	<b>Cost (CAD)</b>	<b>Duration</b>	<b>Comment</b>
<b>Task 1</b>	Data Processing & Analysis	[REDACTED]	[REDACTED]	
<b>Task 2</b>	Model Development & Reporting	[REDACTED]	[REDACTED]	
<b>Task 3</b>	Machine Learning Training Course	[REDACTED]	[REDACTED]	<i>Optional Task</i>
<b>Task 4</b>	Additional Model Refinement	[REDACTED]	[REDACTED]	<i>Optional Task</i>

# OUR TEAM

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Located in Edmonton, Alberta, Canada, Integral Engineering is an agile group of highly technical engineers who are eager to work closely with your team to tackle your most challenging integrity management problems. We're no stranger to working with companies at home and around the globe. In addition to the five consulting engineers listed below, you may also work with one or more of our four junior engineers: Shawn Smith, Juan Rojas, Ryan Stewart or Michael Conway.



**Jason Skow, P.Eng**

**Co-Founder and Principal Engineer**

Jason has a proven track record in a variety of engineering and leadership positions. He has 19 years of experience in the oil & gas industry with a focus on pipeline integrity management, data analytics, and risk & reliability.



**Thomas Dessein, P.Eng**

**Co-Founder and Consulting Engineer**

Thomas has 14 years of experience in engineering with a focus on reliability assessments for pipelines and well equipment, engineering software development, and finite element analysis. Thomas has authored papers for IPC, SPE, SCC and WHOOC



**Daryl Bandstra, P.Eng**

**Co-Founder and Consulting Engineer**

Daryl has 10 years of experience in pipeline engineering with a focus on pipeline integrity and risk assessments and software development. In addition, he has authored papers for IPC and IBP and is a contributing member of YPAC.



**Brent Ayton, P.Eng**

**Co-Founder and Consulting Engineer**

Brent has 7 years of experience in oil & gas asset integrity, risk & reliability assessment and database development & management.



**Alex Fraser, P.Eng**

**Co-Founder and Consulting Engineer**

Alex has 6 years of experience in pipeline engineering in the area of pipeline integrity, risk assessments and web application development. He has authored papers for IPC and NCEE.



## CONTACT

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We thank you for taking the time to consider our proposal and please do not hesitate to contact us with questions.

Sincerely,



**Daryl Bandstra, P.Eng.**  
Co-founder and Consulting Engineer  
780-700-8483  
dbandstra@integraleng.ca

Reviewed by,



**Alex Fraser, P.Eng.**  
Co-founder and Consulting Engineer  
780-906-8629  
afraser@integraleng.ca

April 17, 2020



[integraleng.ca](http://integraleng.ca)

## **SCHEDULE B**

### **TO THE CONSULTING AGREEMENT BETWEEN ENBRIDGE GAS INC. AND 2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING Dated May 18, 2020**

This Schedule is made under the above referenced consulting agreement (the "Agreement") between ENBRIDGE GAS INC. ("Enbridge") and 2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING (the "Consultant").

All capitalized terms used in this Schedule have the meaning given to them in the Agreement.

#### **1. SCOPE OF SERVICES**

The Consultant will undertake the following Services, as further described in the Deliverables Section below:

Provision of ad-hoc engineering services during 2021.

#### **2. DELIVERABLES**

The Consultant will provide the following deliverables:

As agreed with the Consultant on an as required basis.

#### **3. COMMENCEMENT AND COMPLETION DATES**

This Schedule shall be effective as of March 1, 2021 and expire December 31, 2021, or such other date as the parties may mutually agree in writing.

#### **4. KEY PERSONNEL**

As agreed with the Consultant.

#### **5. FEES AND PAYMENT TERMS**

Fees: As agreed on an as required basis and in accordance with the attached Rate Sheet.

Expenses: If applicable, on an as required basis.


The above fees and expenses cannot be exceeded without the prior written approval of Enbridge.


Fees are payable by Enbridge within sixty (60) days of receipt from the Consultant of an appropriate invoice setting out in reasonable detail the nature of the services provided.

Dated as of March 1, 2021.

**2101209 ALBERTA LTD. O/A INTEGRAL  
ENGINEERING**

**ENBRIDGE GAS INC.**

By:   
Name: Daryl Bandstra  
Title: Director

By:   
Miaad Safari (Feb 25, 2021 10:53 EST)  
Name: Miaad Safari  
Title: Supervisor Integrity Assessments

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
*(Please print name and title of Signing Officer)*

By: \_\_\_\_\_  
Name: \*\*  
Title: \*

Witness: \_\_\_\_\_  
Name: \_\_\_\_\_

*(Witness required if Contractor is a Sole Proprietor)*



Enclosed are the 2021 hourly billable rates for Integral Engineering. These billing rates may be adjusted annually to reflect any salary adjustments. The rates listed below do not included reimbursable expenses.

### Rate Sheet

Category	Rate (\$ CAD)	Description of Role
E0	█	Co-op Student
E1	█	Junior Project Engineer
E2	█	Project Engineer
E3	█	Consulting Engineer
E4	█	Senior Consulting Engineer
E5	█	Principal Engineer
E6	█	Senior Principal Engineer



Enbridge  
500 Consumers Road  
North York, Ontario M2J 1P8  
Canada

January 16, 2024

2101209 Alberta Ltd. o/a Integral Engineering  
100 – 10004 79 Avenue  
Edmonton, AB T6E 1R5

Attn: Daryl Bandstra

**Re: Amendment to Consulting Agreement between Enbridge Gas Inc. (“Enbridge”) and 2101209 Alberta Ltd. o/a Integral Engineering (“Consultant”) dated May 18, 2020 , as previously amended, (the “Agreement”)**

Enbridge and Consultant wish to further extend and amend the Agreement. Through this letter agreement Enbridge and Consultant agree to:

- (a) extend the term of the Agreement to end on December 31, 2024, effective as of December 31, 2023; and
- (b) amend the pricing set out in Section 5 (Fees and Payment Terms) of the Agreement by deleting in its entirety the pricing set out under Fees and Payment Terms and replacing it with the attached Rate Sheet, effective January 1, 2024.

All other terms of the Agreement shall remain in full force and unamended.

If the terms of this letter agreement are acceptable, please sign where indicated below and return the signed copy to us.

Yours truly,

**ENBRIDGE GAS INC.**

Per:  \_\_\_\_\_

Name: Mike Hildebrand

Title: Manager Integrity Assessments and Ri

Confirmed and agreed to as of the 16<sup>th</sup> day of January, 2024.

**2101209 ALBERTA LTD. O/A INTEGRAL ENGINEERING**

Per:  \_\_\_\_\_

Name: Daryl Bandstra

Title: Director





Enclosed are the 2024 hourly billable rates for Integral Engineering which are adopted from the Consulting Engineers of Alberta<sup>1</sup>. These billing rates may be adjusted annually to reflect any salary adjustments. The rates listed below do not included reimbursable expenses.

## Rate Sheet

Category	Rate (\$ CAD)	Description of Role
E0	█	Co-op Student
E1	█	Junior Project Engineer
E2	█	Project Engineer
E3	█	Consulting Engineer
E4	█	Senior Consulting Engineer
E5	█—	Principal Engineer

<sup>1</sup> [http://www.cea.ca/files/Advocacy-Publications/Rate/2024\\_CEA-Rate-Guideline.pdf](http://www.cea.ca/files/Advocacy-Publications/Rate/2024_CEA-Rate-Guideline.pdf)

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

- a) Confirmed. Enbridge Gas agrees with Pollution Probe's description of Monte Carlo simulation. As with any modeling exercise, the quality of the results depends on the quality of the input data and assumptions. This is the reason for the validation of the input assumptions; for example, the validation of the random distribution of furnace and A/C lives against actual data that reflect the age distribution of these equipment types in the real world. This is described in Exhibit B, Tab 3, Schedule 1, page 12, and in Exhibit B, Tab 3, Schedule 1, Attachment 1, pages 8-10.

In addition, conservatism is imparted to the input assumptions by limiting the maximum furnace age to 20 years, thereby speeding up the replacement timeline. Another conservative assumption was no new customer additions as of 2024. The sensitivity of the results to key assumptions was assessed by analyzing a range of scenarios with varying input values. For example, the probability of a customer disconnecting from the gas system after adopting a heat pump was varied between 1% and 100%.

- b) Monte Carlo simulation is a robust, proven, and widely used technique that provides a means to explore and understand future uncertainty. As described at Exhibit B, Tab 3, Schedule 1, Attachment 1, page 6, it is a technique used to develop results when performing calculations with distributions (i.e. the age of furnaces or A/C units in homes). The technique allows for the use of distributions in the assumptions themselves as opposed to only using deterministic assumptions (i.e. the Pan Canadian Framework comes into effect no sooner than 2035, but no later than 2050 vs. the Pan Canadian Framework comes into effect in 2035). In addition, the technique employed for the analysis presented in Exhibit B, Tab 3, Schedule 1, relied upon 1,000 independent model simulations per case to generate a robust distribution of outcomes. A range of cases was used to account for differences in a customer's choice to disconnect from the gas system over time predicated upon the input assumptions. All of which is helpful in the context of the uncertainty of the pace at which energy transition may occur in the future.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

Reference:

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

Question(s):

- 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.

Response:

- a) Enbridge Gas used future customer disconnections as opposed to future gas usage because gas usage is a function of the number of customers connected to the gas system. Using customer disconnections simplified the analysis since a customer that disconnects from the system no longer uses gas or is a customer. Modeling the gas usage of the customers that remain on the gas system over time is complex and time consuming as described in part b). In addition, a modeled decline in annual gas demand may not result in a change to peak gas demand.

- b) The analysis provided in Exhibit B, Tab 3, Schedule 1, Attachment 1 was conducted based on customer disconnections from the gas system and does not include input assumptions related to demand. Developing an analysis that contemplates demand would require an added layer of complexity in the model and would take time, potentially months, to determine appropriate and representative assumptions. For example, assumptions related to how the rate of change for annual or peak demand may occur would need to be made, and those assumptions would have to be vetted against real world data to ensure the input model assumptions reflect reality. Therefore, Enbridge Gas cannot provide the demand forecast requested. For details regarding the demand forecast used for this area and system please refer to Exhibit I.1-CAFES Ottawa-2.
- c) Confirmed. The assumptions include customers that have adopted heat pumps into their heating system. The modelling explores how those customers may or may not choose to disconnect from the gas system in the future. This is achieved by varying the rate of heat pump adoption separately from the rate of gas system disconnection as explained in Exhibit B, Tab 3, Schedule 1, page 13.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

Reference:

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

Question(s):

- a) Did Enbridge receive any products (final or draft) from Integral 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.

Response:

a-b) Enbridge Gas and Integral Engineering worked collaboratively in respect of Enbridge Gas's assumptions, described at Exhibit B, Tab 3, Schedule 1 pages 12 to 14, and their incorporation in the probabilistic model Integral Engineering developed, with periodic meetings taking place as the engagement proceeded. The results Enbridge Gas received and that it relies on in this application are provided in the report at Exhibit B, Tab 3, Schedule 1, Attachment 1. There is no additional report Enbridge Gas received from Integral Engineering in respect of this engagement.



- c) There was no formal governance structure specific to this engagement within the St. Laurent Pipeline Replacement Project, as this was not considered necessary. Functional management oversaw this engagement.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

- a - b) Enbridge Gas declines to model the scenarios PP has requested for the following reasons:

Scenario A is only slightly different than Case 6 (the most aggressive disconnection case) in Enbridge Gas's probabilistic analysis and therefore the results would not be statistically meaningful nor materially different than those of Case 6. The distinction between Case 6 and Scenario A is a 1-year timing delay for when some customers that adopt a heat pump disconnect from the gas system. Case 6 assumed that 100%

of customers that adopt a heat pump disconnect immediately. This means that any result from Scenario A would fall between the boundary cases (Case 1, and Case 6) Enbridge Gas described in Exhibit B, Tab 3, Schedule 1, pages 15 to 17.

Scenario B builds upon the proposed change from Scenario A, but also requests the inclusion of linear heat pump adoption rate stated as starting at 8% and increasing at 5% per year until 100% is achieved. Enbridge Gas relied upon a logistic curve to model the change in adoption rate over time, which is a well understood approach for technology adoption; using a linear adoption curve as proposed by PP is not realistic. Consumer adoption of technology can be grouped into the following categories: early adopters, early majority, late majority, and laggards. Each category represents a different proportion of consumers and is typically normally distributed. A linear curve would presume that the same proportion of adoption by consumers occurs at a set time interval. This does not reflect the reality that different proportions of consumers adopt technology over time. A logistic curve, on the other hand, accounts for a changing proportion of consumer adoption over a set time interval.

Further, PP's proposed Scenario B would achieve 100% heat pump adoption between 2042 and 2043, which is within the timeframe Enbridge Gas assumed for 100% heat pump adoption in Case 6, the most aggressive disconnection case. This means that any result from Scenario B would fall between the boundary cases (Case 1 and Case 6) Enbridge Gas described in Exhibit B, Tab 3, Schedule 1, pages 15 to 17. Similar to Scenario A, Enbridge Gas believes the results of Scenario B would not be meaningfully different than those of Case 6.

Finally, the assumptions proposed by PP in Scenario B are deterministic in that they prescribe a heat pump adoption rate and year by when 100% of consumers would have to adopt a heat pump. Enbridge Gas's analysis is probabilistic in that it allows for uncertainty in how the adoption rate will develop and the year in which 100% adoption would be required. As noted at Exhibit B, Tab 3, Schedule 1, Attachment 1, page 6, 1,000 independent model simulations were run per case to generate a robust distribution of outcomes.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

- 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.

Response:

a) – b)

Enbridge Gas does not have the written consent of the consumers to disclose the information requested. The OEB's Gas Distribution Access Rule (GDAR) restricts the disclosure of consumer information without the written consent of that consumer, unless specifically authorized by the OEB. Enbridge Gas will be providing the information to the OEB and requesting confidential treatment.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

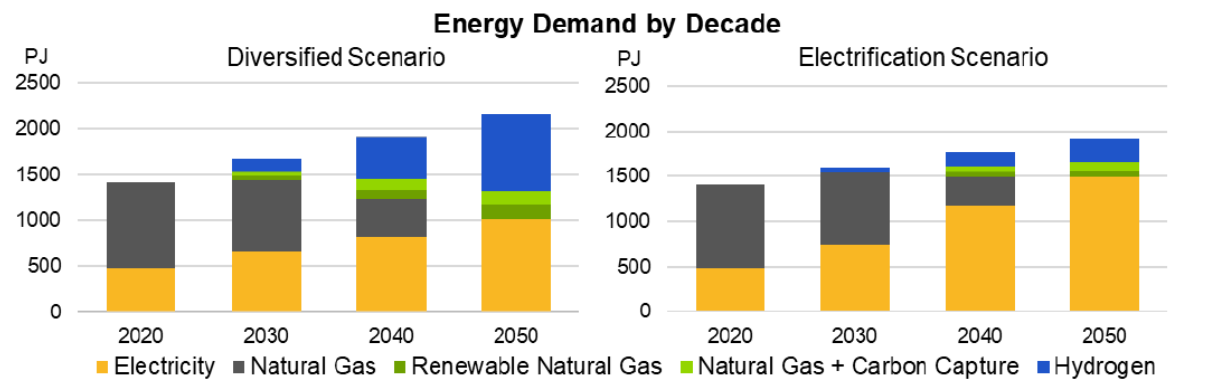
Interrogatory

Issue:

2

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]



Question(s):

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

Response:

- a) Enbridge Gas notes that the referenced scenarios from the Pathways to Net-Zero for Ontario study filed in Enbridge Gas's 2024 Rebasing Application (Phase 1)<sup>1</sup> were not intended to be interpreted as a forecast, nor were they meant to specifically apply to any individual asset in the Enbridge Gas network for the purposes of determining stranded asset risk:

"Both studies are based on scenario analyses intended to inform Enbridge Gas of the impact of various plausible and relevant scenarios; however, they are not intended to be a prediction of the future."<sup>2</sup>

Please see Exhibit C, Tab, 1 Schedule 1, Section C, pages 25 to 27 for Enbridge Gas's assessment of stranded asset risk associated with the Project.

- b) Confirmed.
- c) Please see response at Exhibit I.2-STAFF-18.

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<sup>1</sup> EB-2022-0200 Exhibit 1, Tab 10, Schedule 5, Attachment 2

<sup>2</sup> EB-2022-0200 Exhibit 1, Tab 10, Schedule 5, p. 2



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

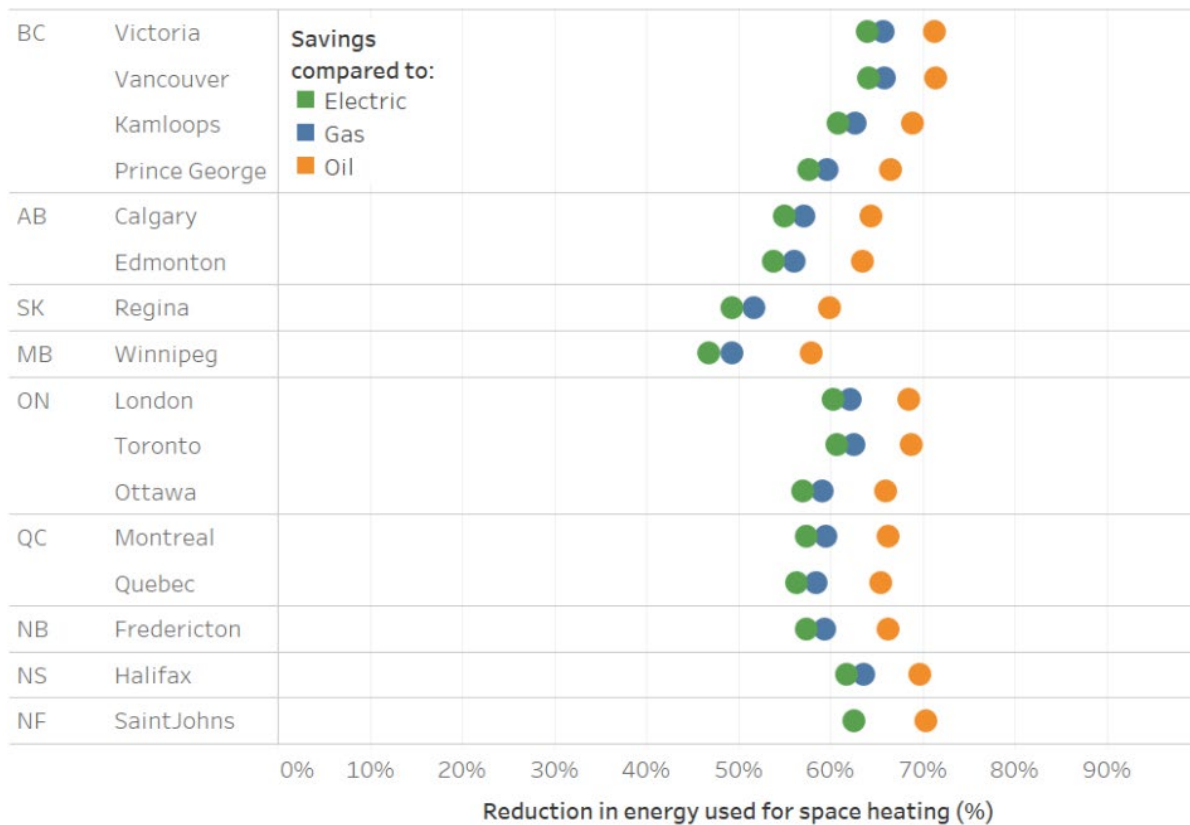
Issue:

2

Reference:

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.



Question(s):

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.

Response:

- a) Enbridge Gas interprets "Energy Transition analysis" to mean the probabilistic analysis of customer disconnection presented in Exhibit B, Tab 3, Schedule 1.

The report that PP has referenced from CanmetENERGY was not used in the analysis directly. However, as described at Exhibit B, Tab 3, Schedule 1, paragraph 29, the relative cost-effectiveness of fuel switching from gas to electric space heating via heat pumps is a factor that impacts how the rate of customer disconnection may change in the future. The performance of a heat pump (efficiency and capacity maintenance) impacts that relative cost-effectiveness. By varying the upper bound of the disconnection assumption, this information is implicitly captured in the probabilistic analysis.

- b) Please refer to SEC Interrogatory 16 in Enbridge Gas's Rebasing Phase 2<sup>1</sup> proceeding for the Company's most current information on this topic.

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<sup>1</sup> EB-2024-0111, Exhibit I.1.16-SEC-16

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

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?

Response:

PP has misunderstood what was stated by Enbridge Gas. Enbridge Gas did not state that the City of Ottawa's Energy Evolution Plan did not include electricity demand for space heating, rather that the demand forecasts used by the IESO in their 2022 Gatineau End of Life Study (the Study) did not account for Ottawa's Energy Evolution plan at all. The specific reference Enbridge Gas provided for the quoted IESO demand forecasts is page 13 of the Study, which clearly indicates that:

The Energy Evolution strategy was approved by Ottawa's City Council on October 28, 2020. The impact of Energy Evolution on the peak electricity demand has yet to be quantified and is not included in the demand forecast shown in Figure 4.

Figure 4 of the Study presents the summer and winter demand forecasts used by the IESO in the Study and quoted by Enbridge Gas at Exhibit B, Tab 3, Schedule 1, page 20.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

Reference:

Posterity Report [C/1/1 Attachment 2]

Question(s):

- 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 is 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.

Response:

- a) Enbridge Gas has previously engaged Posterity Group and has a general consulting agreement in place. Please see Attachment 1 to this response for the specific scope of work related to this project.
- b) Please see response at Exhibit.I.2-ED-21 part e), Attachment 2 for the assumption inputs Enbridge Gas provided to Posterity to conduct its analysis.

- c) Please see Exhibit.I.2-ED-21 part e), Attachment 3 for the Posterity output file. Please see Attachment 2 to this response for a summary on the Modelling Approach provided by Posterity.
  
- d) No third parties were engaged to validate assumptions and alignment with Energy Evolution. Enbridge Gas met with the City of Ottawa multiple times where the Energy Evolution Plan (the Plan) was discussed to understand how the Plan might inform the demand forecast in the area. Please see Exhibit I.2-PP-42 part a) and b) for additional details on the stakeholdering conducted with City of Ottawa where the Plan was discussed.



POSTERITY  
GROUP

# Scoping Document: St. Laurent IRPA Refresh

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Date: April 22, 2024

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## 1 Background and Objectives

Enbridge Gas Inc. (EGI) requires integrated resource planning alternatives (IRPA) analysis support for the St. Laurent Pipeline leave to construct (LTC) application.

The IRPAs being assessed are enhanced targeted energy efficiency (ETEE) and demand response (DR).

This analysis represents a refresh of previous analyses that PG has prepared for EGI to take into account updated input data.

### Priorities for Posterity Group's Support

- Develop a scaled version of the IRPA model to support the St. Laurent ETEE and DR analysis.
- Deliver analysis outputs in Excel and draft a memo highlighting findings.

## 2 Support Activities

### Work Package 1 – St. Laurent IRPA Analysis

#### Value and outcomes for EGI:

- Scaling the IRPA model will allow EGI to develop location (sub-region) specific estimates of ETEE and DR IRPAs.
- This scaled model approach will be faster and more defensible than trying to derive estimates from rate-zone level outputs; it will also be more cost effective than developing a unique model.

#### Activities:

This work package involves scaling down the appropriate legacy rate-zone region in the IRPA model to enable ETEE and DR analysis on the subset of customers associated with St. Laurent:

- Receive data on affected customers in St. Laurent [see Section 5 for a checklist of information we need from EGI].
- Identify the corresponding EGI and IESO sub-regions and scale down this sub-region to align with customer data.
- Calibrate load shapes to customer subset.
- Update reference case growth rates to align with EGI's updated data for the applicable sectors and segments.
- Run model to develop ETEE and DR outputs and QC model outputs.
- Post outputs to Excel and present the following information, for the selected target years:
  - Peak hour reduction (m3/hr): by measure, end-use, and sector
  - Cost: program spending by year and by measure
  - Report peak reduction and cost for both ETEE and DR combined and separately.





- Draft a memo highlighting findings.

### 3 Timeline

- Project Start Date: As soon as possible
- Project Completion: Target 3 weeks after initiation

### 4 Estimated Level of Effort

The table below presents a level of effort estimate for the proposed work.

Work Package	Level of Effort (hrs)	Hourly Rate (\$/hr)	Budget
WP1 - St. Laurent IRPA Analysis Refresh	65	█	█
WP2 - St. Laurent IRPA Refresh IR Support	33	█	█
<b>Total</b>	<b>98</b>		█

Similar to previous engagements with EGI, we propose undertaking work on an hourly basis with a monthly billing cycle for fees incurred in the preceding month.

### 5 Checklist of Information we need from EGI

The checklist below presents the information we need from EGI as inputs for the ETEE and DR analysis.

- Weather normalized annual volume by customer.
- Hourly Peak by customer.
- Rate class, Sector, Segment data by customer:
  - We ideally need to map EGI data to the rate, sector, and segment data schema we have in the IRPA model [See tables below for a list of rate classes, sectors, and segments that are in the model].
  - If segment data doesn't perfectly match the options present in the IRPA model data schema, we may be able to make assumptions about how to characterize customer information (provided there are alternate segment descriptions to work with).
  - If possible, low-income customers should be identified in the dataset so that these can be modelled separately.
- Location via postal code by customer (only if customers span more than one IESO zone or legacy gas utility rate zone).
- Updated growth rates by segments/sectors: account (customer) and consumption forecasts.





- Direction on timelines associated with peak reduction targets (e.g., are there milestone years that are important?).
- Direction on which customers should be excluded from IRPAs (i.e., IRPA will not be applied to these customers).

Exhibit 1: Rate classes by Sector in IRPA Model

Residential	Commercial	Industrial
<ul style="list-style-type: none"> <li>• E1</li> <li>• U1</li> <li>• 10</li> <li>• 110</li> <li>• 6</li> <li>• M1</li> <li>• M2</li> <li>• M4</li> </ul>	<ul style="list-style-type: none"> <li>• 1</li> <li>• 10</li> <li>• 100</li> <li>• 110</li> <li>• 115</li> <li>• 135</li> <li>• 145</li> <li>• 170</li> <li>• 6</li> <li>• 9</li> <li>• M1</li> <li>• M2</li> <li>• M4</li> <li>• M5A</li> <li>• M7</li> <li>• R20</li> <li>• T1</li> <li>• T2</li> </ul>	<ul style="list-style-type: none"> <li>• 1</li> <li>• 10</li> <li>• 100</li> <li>• 110</li> <li>• 115</li> <li>• 135</li> <li>• 145</li> <li>• 170</li> <li>• 6</li> <li>• M1</li> <li>• M10</li> <li>• M2</li> <li>• M4</li> <li>• M5</li> <li>• M5A</li> <li>• M7</li> <li>• M9</li> <li>• R10</li> <li>• R100</li> <li>• R20</li> <li>• R25</li> <li>• T1</li> <li>• T2</li> </ul>

Exhibit 2: Segments by Sector in the IRPA Model

Residential	Commercial	Industrial
<ul style="list-style-type: none"> <li>• Detached House</li> <li>• Attached or Row House</li> <li>• Multi-Res_High Rise</li> <li>• Multi-Res_Low Rise</li> <li>• Low Income_SF</li> <li>• Low Income_MF</li> </ul>	<ul style="list-style-type: none"> <li>• Data Centre</li> <li>• Food Retail</li> <li>• Hospital</li> <li>• Large Hotel</li> <li>• Large Non-Food Retail</li> <li>• Large Office</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Chemicals Mfg</li> <li>• Fabricated Metals Mfg</li> <li>• Food and Beverage Mfg</li> <li>• Mining; Quarrying and Oil &amp; Gas Extraction</li> </ul>





Residential	Commercial	Industrial
<ul style="list-style-type: none"><li>• Large House</li><li>• Other Residential</li></ul>	<ul style="list-style-type: none"><li>• Long Term Care</li><li>• Other Commercial</li><li>• Other Hotel_Motel</li><li>• Other Non-Food Retail</li><li>• Other Office</li><li>• Restaurant</li><li>• School</li><li>• University_College</li><li>• Warehouse</li><li>• Street Lighting</li></ul>	<ul style="list-style-type: none"><li>• Non-metallic Minerals Product Mfg</li><li>• Other Industrial</li><li>• Petroleum Mfg</li><li>• Plastic and Rubber Mfg</li><li>• Primary Metals Mfg</li><li>• Pulp; Paper; and Wood Products Mfg</li><li>• Transportation</li><li>• Transportation and Machinery Mfg</li><li>• Utility</li><li>• Water &amp; Wastewater Treatment</li><li>• Hydrogen Production</li></ul>





# IRPA Analysis Project

## *St. Laurent Analysis Modelling Approach*

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**Project:** Integrated Resource Planning Alternative Analysis (IRPA Analysis)

**Re:** St. Laurent IRPA Refresh

**Submitted by:** Posterity Group (PG)

**Date:** May 14, 2024

---

This memo presents information on the approach that was taken to develop the model used for the St. Laurent IRPA Refresh.

### 1 Notes on the Modeling Approach

The following sections summarize the modelling method used to conduct the analysis:

#### 1.1 Model Updates

We started with the Posterity 'mirror model' of the 2019 Achievable Potential Study (APS), and incorporated the following updates to support IRPA modelling (creating the Posterity IRPA model):

- Calibrated the base year accounts to the 2022 accounts provided, calibrated the base year consumption to weather adjusted 2022 consumption, calibrated the total base year peak hour consumption per account to the 2022 value provided, and updated the reference case to align with Enbridge's forecast of customer growth for the St. Laurent region.
- Corrected customer regional mapping for the base year and reference case according to customer data supplied by Enbridge (EGI).
- Added rate class and customer account data.
- Developed hours-use peak factors for each region, sector, segment, and end use.
- Added a residential demand response measure (Shifting Heating Off Peak).

#### 1.2 Adjustments to Produce a Regional Model

We made the following adjustments to the Posterity IRPA model to produce a regional model:

- The Enbridge Gas - Ottawa region was selected. All other regions were ignored.
- Scenario B was used (the scenario with the greatest potential from the achievable potential study).
- Only the following rates were selected:
  - Residential: E1, 6
  - Commercial: 6, 110
  - Industrial: 6
- Using customer data for the St. Laurent region, scaling factors were developed for each segment within the three sectors that were studied: residential, commercial, and industrial.







These scaling factors were calculated by comparing the 2022 account numbers from the St. Laurent dataset provided by EGI and the 2022 account numbers for the Enbridge Gas - Ottawa region from Posterity’s IRPA model. This step was done to determine the proportion of accounts in the Enbridge Gas - Ottawa region that can be attributed to the St. Laurent region. The scaling factors were applied to the accounts in Posterity’s IRPA model to scale down the Enbridge Gas - Ottawa region to represent the St. Laurent region.

- Accounts were added to each segment in the proportion that they were present in 2022 in the Enbridge Gas - Ottawa region from Posterity’s IRPA model such that the total account growth in each sector matched the growth forecast provided by Enbridge for each year in the reference case. More information on the segments analyzed is provided in the following section.
- The Unit Energy Consumption (UEC) assumptions were calibrated for existing buildings to match the reference year (2022) consumption values for each segment provided in the St. Laurent dataset. Additionally, the UEC assumptions for new buildings were also calibrated to match the expected growth in peak hourly demand forecasted for each sector from the dataset provided by EGI.
  - To match the 2022 consumption values provided in the St. Laurent dataset for the industrial sector, we calibrated the UECs for all end uses instead of focusing on the HVAC/space heating UECs (as is done for the other two sectors).

### 1.3 Segment Scaling Factors

Exhibit 1 below shows the segments that are accounted for in the IRPA model, the Enbridge Gas - Ottawa and St. Laurent account numbers for 2022, and the account scaling factor derived from them. There are additional segments in the model that were not present in the St. Laurent dataset and were thus assigned an account scaling factor of zero. Account scaling factors were slightly adjusted after the first iteration of the model to match the account numbers provided in the St. Laurent dataset.

**Exhibit 1– Segment Consumption Scaling Factors**

Sector	Segment	Rate Class	2022 Enbridge Gas - Ottawa Accounts	2022 St. Laurent Accounts	Account Scaling Factor
Residential	Detached House	E1	120,225	15,288	0.130
	Attached or Row House	E1	101,410	12,896	0.130
	Multi-Residential Low Rise	6	531	504	0.971
	Multi-Residential High Rise	6	265	225	0.867
	Low Income – Single Family	E1	74,370	780	0.011





Sector	Segment	Rate Class	2022 Enbridge Gas - Ottawa Accounts	2022 St. Laurent Accounts	Account Scaling Factor
	Low Income – Multi Family	6	935	94	0.103
<b>Commercial</b>	Food Retail	6	836	13	0.016
	Hospital	6	14	5	0.357
	Large Hotel	6	83	81	0.988
	Large Non-Food Retail	6	979	196	0.203
	Large Office	6	1,438	329	0.232
	Long Term Care	6	149	27	0.184
	Other Commercial	6	6,475	982	0.154
	Other Non-Food Retail	6	2,688	538	0.203
	Other Office	6	329	9	0.028
	Restaurant	6	1,319	226	0.174
	School	6	476	80	0.171
	Warehouse	6	966	66	0.069
	University/College	6	109	59	0.551
		110	2	1	0.507
<b>Industrial</b>	Agriculture	6	59	2	0.034
	Fabricated Metals Manufacturing	6	43	1	0.023
	Food and Beverage Manufacturing	6	54	26	0.485
	Non-Metallic Minerals Product Manufacturing	6	33	4	0.121
	Other Industrial	6	209	116	0.556
	Pulp, Paper, and Wood Products Manufacturing	6	2	2	1.026





Sector	Segment	Rate Class	2022 Enbridge Gas - Ottawa Accounts	2022 St. Laurent Accounts	Account Scaling Factor
	Transportation and Machinery Manufacturing	6	34	1	0.029
	Water and Wastewater Treatment	6	1	1	1.026

Exhibit 2 shows the segments that are accounted for in the IRPA model, the number of accounts by rate class in 2022 in the Enbridge Gas - Ottawa region, and the corresponding account scaling factors used to implement the growth forecast provided by Enbridge. The account scaling factors are calculated as a percentage of the total number of accounts within the sector and rate class, with the sum of all of the account scaling factors for each sector adding up to one. These account scaling factors are then multiplied by the number of new accounts for each sector and rate class in a given year to reflect the growth rate with accurate proportions. As with the consumption scaling, there are additional segments in the model that were not present in the St. Laurent dataset and were thus assigned an account scaling factor of zero.

**Exhibit 2 – Segment Accounts Growth Factors**

Sector	Segment	Rate Class	2022 Enbridge Gas - Ottawa Accounts	Accounts Scaling Factor
<b>Residential</b>	Detached House	E1	120,225	0.40380
	Attached or Row House	E1	101,410	0.34060
	Multi-Residential Low Rise	6	531	0.00178
	Multi-Residential High Rise	6	265	0.00089
	Low Income – Single Family	E1	74,370	0.24978
	Low Income – Multi Family	6	935	0.00314
<b>Commercial</b>	Food Retail	6	836	0.05269
	Hospital	6	14	0.00090
	Large Hotel	6	83	0.00524
	Large Non-Food Retail	6	979	0.06171
	Large Office	6	1,438	0.09065





	Long Term Care	6	149	0.00940
	Other Commercial	6	6,475	0.40820
	Other Non-Food Retail	6	2,688	0.16945
	Other Office	6	329	0.02072
	Restaurant	6	1,319	0.08317
	School	6	476	0.02998
	Warehouse	6	966	0.06093
	University/College	6	109	0.00684
		110	2	0.00013
<b>Industrial</b>	Agriculture	6	59	0.13677
	Fabricated Metals Manufacturing	6	43	0.09865
	Food and Beverage Manufacturing	6	54	0.12332
	Non-Metallic Minerals Product Manufacturing	6	33	0.07623
	Other Industrial	6	209	0.47982
	Pulp, Paper, and Wood Products Manufacturing	6	2	0.00448
	Transportation and Machinery Manufacturing	6	34	0.07848
	Water and Wastewater Treatment	6	1	0.00224



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

2

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]

Question(s):

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.

Response:

Since February 12, 2022, additional daily average, wind compensated temperatures at or colder than -24 C were reached on:

- i. February 3, 2023: -30.8 C

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

2

Reference:

[B-3-1, Attachment 1, p.26]

Question(s):

Please provide the following information:

- a) The proportion of current customers by year, for each of the P10, P50, and P90 for each case. Please provide the information in Excel format.
- b) For each case, and for each of the P10, P50, and P90 through the forecast period, please calculate the total reduction in each of the peak day and peak hour demand of loads served by the proposed project. Please detail all assumptions made and provide the information in Excel format.

Response:

- a) Please see Attachment 1 to this response for the proportion of customers in each year at the P10, P50, and P90 percentiles for each case.
- b) Enbridge Gas declines to provide the requested demand forecasts for the reasons stated in Exhibit I.2-PP-46 part b). For details regarding the customer forecast used for this area and system please refer to Exhibit I.1-CAFES Ottawa-2.



This page is intentionally left blank. Due to size, this Attachment has not been included.

Please see Exhibit I.2-SEC-9\_Attachment 1.xlsx on the OEB's RDS.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

2

Reference:

[C-1-1, p.16-18]

Question(s):

Please provide a detailed breakdown of the 'Extensive Inspection and Repair' cost forecast used for the purposes of the alternative analysis. Please detail all assumptions made.

Response:

Please see response at Exhibit I.2-STAFF-17 parts a), b) and d).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

2

Reference:

[C-1-1, p.19]

Question(s):

With respect to the NPV Calculation included in Table 7:

- a) Please provide the underlying NPV calculations for the information included in Table 7. Please detail all assumptions made and provide the calculations in Excel format with all formulas intact.
- b) Please confirm that Enbridge did not include, as part of the NPV calculation, any adjustment to account for the probability of asset stranding as calculated as part of the Integral Engineering, Probabilistic Asset Life Analysis (B-3-1, Attach 1). If confirmed, why not?

Response:

- a) Please see response at Exhibit I.2-STAFF-17 part a).
- b) Please see Exhibit C, Tab 1, Schedule 1, pages 15 to 18, Paragraph 24, 25, 28, 31. As outlined in the referenced evidence, the Integral Engineering Probabilistic Asset Life Analysis was factored into the NPV calculation by assessing the projected useful life of the SLP and aligning it with the NPV assessment horizon which intrinsically included the probability of the modelled outcomes from the Integral analysis.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

2

Reference:

[C-1-1, p.24]

Question(s):

Enbridge notes that based on the Posterity Report, to downsize the pipe, a peak hour demand reduction of 13,300 m<sup>3</sup>/hr to 25,100 m<sup>3</sup>/hr is required by winter 2025/2026, which it says it has insufficient technical potential. Assuming that could be achieved, what would the pipe be downsized to, and what would the reduction in costs be?

Response:

To clarify, Enbridge Gas determined the required peak hour demand reduction required to downsize the pipe through hydraulic system modelling. Enbridge Gas then evaluated the required demand reduction against the total peak hour reduction potential provided by Posterity to determine technical feasibility. As noted in Exhibit C, Tab 1, Schedule 1, paragraph 43, the scope of the IRP alternatives assessment was to determine whether the Project's 2.4 km of NPS 16 could be downsized to NPS 12. As noted in Exhibit C, Tab 1, Schedule 1, paragraph 47, the cost reduction/savings that could be achieved from downsizing the 2.4 km of NPS 16 to NPS 12 is approximately \$1.3 million.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

2

Reference:

[C-1-1, p.25]

Question(s):

Enbridge states that based on the “there is a very low probability of a rapid conversion off gas to electric options and/or a meaningful increase in gas disconnections in the near to medium term (five to fifteen years) in the Project area.” On that basis, it concludes that this “supports a low risk of the proposed Project assets being stranded.” Please provide what analysis Enbridge has undertaken to assess the risk of future underutilization as opposed to stranding of the proposed pipeline.

Response:

As discussed in Exhibit B, Tab 3, Schedule 1, Enbridge Gas has contemplated the potential pace of general service customer disconnections over time. Enbridge Gas has not conducted further analysis on the volumes these customers could be utilizing and, therefore, has not determined the risks of underutilization. As discussed in Exhibit I.2-PP-46 b), modeling the gas usage of the residential customers that remain on the gas system over time is complex and a modeled decline in annual gas demand may not result in a change to peak gas demand. Additionally, as discussed in Exhibit B, Tab 3, Schedule 1, the St. Laurent Pipeline also serves a number of Large Volume Contract Demand (LVCD) customers, who rely on natural gas to meet their energy needs. Enbridge Gas has an obligation under the Ontario Energy Board Act to serve its customers; under that obligation the Company cannot discontinue service to customers that would like to continue to avail themselves of the services provided by the Company.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

3

Reference:

Exhibit D, Tab 1, Schedule 1, pg.1-9

Preamble:

We would like to understand more about cost mitigations associated with the alternatives discussed in this section, especially Station work at Industrial Dr. to feed TransAlta and, potentially, more.

Question(s):

Please provide the best cost estimates available at this time for these alternative approaches.

Response:

Enbridge Gas is still exploring options related to the alternative approaches and does not currently have cost estimates for the “Extended Feed to TransAlta Option”<sup>1</sup> or the “Pressure Reducing Station Option”<sup>2</sup>. The estimated costs for the “Newly Proposed TransAlta Segment”<sup>3</sup> are provided in Table 1.

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<sup>1</sup> Exhibit D, Tab 1, Schedule 1, p. 7, Figure 3.

<sup>2</sup> Ibid, p. 8, Figure 4.

<sup>3</sup> Ibid, p. 5, Figure 2.



Table 1  
Newly Proposed TransAlta Segment Estimated Costs

Line No.	Description	Total Costs
1	Materials	\$ 298,489
2	Construction & Labour	\$ 5,303,835
3	External Permitting & Lands	\$ 126,229
4	Outside Services	\$ 912,836
5	Direct Overheads	\$ 120,659
6	Contingency	\$ 977,290
7	Project Cost	\$ 7,739,340
8	Indirect Overheads	\$ 1,779,516
9	IDC	\$ 192,949
10	Total Project Costs	\$ 9,711,805

Notes:

(1) Abandonment costs not included

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Issue:

3

Reference:

Exhibit C, Tab 1, Schedule 1, pg.14-19 , Tables 4-7 & Exhibit E, Tab 1, Schedule 1

Preamble:

We would like to understand the cost estimate in Exhibit E as compared to the total cost and NPV in Exhibit C

Question(s):

Please show a reconciliation of the respective total costs.

Response:

Please see response at Exhibit I.3-PP-55 part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

3

Reference:

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

Question(s):

- 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.

Response:

- a) There are three key differences between the costs outlined in Exhibit C, Tab 1, Schedule 1, Table 4 (\$155 million) and the Estimated Project Costs in Exhibit E, Tab 1, Schedule 1, Table 1 (\$208.7 million):
  - i. Indirect Overheads: Exhibit E costs include indirect overheads, whereas Exhibit C does not. This is detailed in Exhibit C, Tab 1, Schedule 1, pages 14 to 15, paragraph 22.
  - ii. Time-value of Costs: Exhibit E presents costs on a cash-flow basis for the year they are incurred, while Exhibit C provides costs in 2024 dollars. This distinction is clarified in footnote 11 of Exhibit C, Tab 1, Schedule 1, page 16.
  - iii. Historical and Future Costs: Exhibit E includes all historical costs (2019–2023) and future costs (2024–2027) related to the SLP replacement project. In contrast,

Exhibit C includes only future costs, as noted in Exhibit C, Tab 1, Schedule 1, page 14, Paragraph 20.

- b) Not confirmed. The NPV analysis completed includes the abandonment costs associated with the existing pipeline for the alternatives presented. The NPV analysis excludes the future cost of abandonment of the new pipeline assets at the end of their useful lives. As detailed in Exhibit C, Tab 1, Schedule 1, page 15, Paragraph 23, the reason for the exclusion of future abandonment costs of the new pipeline assets is that both alternatives would require a similar level of pipeline abandonment and incur comparable costs.
- c) As stated in Exhibit I.4-CAFES Ottawa-26, the costs related to pipeline abandonment are estimated to be \$8,665,878. Based on GIS data, the original pipeline was placed into service between 1958 and 1962, which would be fully depreciated at this time.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

3

Reference:

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

Question(s):

- 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.

Response:

- a) Please see response at Exhibit I.2-STAFF-17 part b).
- b) Please see response at Exhibit I.2-STAFF-17 part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

3

Reference:

Project Costs [E/1/1]

Question(s):

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.

Response:

Applying indirect capital overheads and loadings to the Project is consistent with the OEB's EB-2022-0200 Decision as the OEB approved the harmonized overhead methodology to allocate overheads based on forecasted capital expenditures. Like any other capital project, indirect overhead costs and loadings are incurred by and attributed to the Project. For example, the Project utilizes Operations and Shared Service resources, and the Pension and Benefits costs of staff members who support the Project should be reflected in the Project costs. Indirect overheads are allocated to capital projects using an allocation rate which is reflective of the OEB's decision to reduce the capitalized overheads by \$50 million starting in 2024 and throughout the IRM term.<sup>1</sup>

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<sup>1</sup> EB-2022-0200, Decision & Order (December 21, 2023). p.98.



ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

3

Reference:

[E-1-1, p.2]

Question(s):

With respect to project costs:

- a) Please provide a revised version of Table 1 that compares the project costs by category compared to that proposed as part of EB-2020-0243. Please explain all material differences in costs.
- b) Please provide the basis for the project cost estimate.
- c) Has Enbridge undertaken an RFP for the project? If so, please provide details.
- d) What is the expected contract structure with the external contractor?

Response:

a - b)

Please see Table 1 for a comparison of the estimated costs proposed in EB-2020-0293<sup>1</sup> and the Project<sup>2</sup>.

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<sup>1</sup> EB-2020-0293, Exhibit D, Tab 1, Schedule 1, Table 9.

<sup>2</sup> Exhibit E, Tab 1, Schedule 1, p. 2, Table 1.

Table 1: Project Cost Comparison

Item No.	Description	EB-2020-0293 (a)	EB-2024-0200 (b)	Difference (b – a)
1	Material	\$ 1,626,797	\$ 6,278,768	\$ 4,651,971
2	Labour	\$ 69,322,889	\$ 116,251,806	\$ 46,928,917
3	External Permitting & Land	\$ 793,690	\$ 1,882,395	\$ 1,088,705
4	Outside Services	\$ 7,372,910	\$ 18,277,312	\$ 10,904,402
5	Direct Overheads	\$ 1,282,577	\$ 4,626,277	\$ 3,343,699
6	Contingency	\$ 19,723,791	\$ 21,802,851	\$ 2,079,060
7	Project Cost	\$ 100,122,654	\$ 173,197,733 <sup>[1]</sup>	\$ 73,075,079
8	Indirect Overheads	\$ 22,544,094	\$ 35,517,720	\$ 12,973,626
9	Interest During Construction (IDC)	\$ 1,012,774	\$ 4,078,325	\$ 3,065,550
10	Total Project Costs	\$ 123,679,522 <sup>[2]</sup>	\$ 208,715,453 <sup>[3]</sup>	\$ 85,035,931

Notes:

[1] Includes IDC (Item No. 9) below.

[2] Abandonment costs are not included in the cost estimate. Abandonment costs for IP PE are estimated to be \$2,817,235. Abandonment costs for XHP ST are estimated to be \$7,518,548.

[3] Includes pipeline abandonment costs of \$8,665,878.

The EB-2020-0293 cost estimates were based on estimates from 2019 which did not include inflation stemming from the Covid-19 pandemic. These costs did not include any abandonment costs, and all steel installation costs listed were based on a high-level class 5 estimate assuming cost per meter from similar scoped projects.

The EB-2024-0200 cost estimates were based on a class 3 estimate following Enbridge Gas's Cost Estimating and Management Standard, built using contractor/third-party estimates and quotations, and all material and service estimates were provided by industry experts. Also included were actual costs up to February 2024 based on project design and all projected abandonment costs.

Additional reasoning for the cost increase in the EB-2024-0200 estimate include:

- Sunk costs related to rework, contract cancellations, material shortage, easements, and legal/regulatory LTC filing costs;
- Addition of steel installation scope (approximately 925 m of NPS 12 SC XHP from St. Laurent Control to Industrial Avenue);
- Construction and Labour costs increased;
- Costs related to a new excess soils regulation that was introduced after the EB-2020-0293 application was denied;
- Costs related to having external consultants and contractors refresh both the topography and survey data to ensure existing designs could still be used

- (ensure pick line is still clear of utilities and hasn't been taken by another utility project in the time between filings);
- Costs related to having external consultants refresh the Environmental Assessment for the Project including conducting a second Open House and coinciding public notifications;
  - Additional land costs related to breaking the lease on the first construction yard obtained, and then having to secure a second construction yard for this Project; and
  - Interest and Overhead increase based on duration of the Project.
- c) Enbridge Gas will not be undertaking a project specific RFP for the Contractor work related to this Project. Enbridge Gas currently has a Master Services Agreement in place for this region in which terms have already been negotiated to provide the Company with competitive rates for approved contractors qualified to perform specific scopes of work.
- d) The contract structure is standard time and materials based off rates outlined in the Master Services Agreement.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
School Energy Coalition (SEC)

Interrogatory

Issue:

3

Reference:

[EB-2022-0200, Exhibit 2-6-2, Appendix A, p.60]

Question(s):

Please reconcile the project scope and costs as compared to the information contained in the EB-2022-0200 Capital Update.

Response:

The costs in EB-2022-0200 are based on the Asset Management Plan (10 year forecast (2023-2032)) from July 2022. Forecasts are continually updated throughout the lifecycle of the Project for a variety of reasons (i.e. scope changes, installation timing, crew availability). Please refer to Exhibit I.1-STAFF-1 a) for the changes in Project scope and Exhibit I.3-SEC-14 for the changes in Project costs since 2019.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

4

Reference:

Exhibit F, Tab 1, Schedule 1, Plus Attachments; Exhibit F, Tab 1, Schedule 1, Attachment 3, Appendix D

Preamble:

Enbridge retained Dillon Consulting Limited (Dillon) to complete an Environmental Report (ER), which assessed the existing bio-physical and socio-economic environment in the study area, the alternative routes, the proposed preferred route, public consultation program, impact assessment, and proposed mitigation measures to minimize the impacts of the project. The project ER was finalized in June 2020 and ER Amendment 1 was completed in November 2020.

ER Amendment 2 was completed in January 2024 and provides an additional assessment on the additional segments added to the proposed pipeline routes.

The ER amendment was submitted to the Ontario Pipeline Coordinating Committee (OPCC) and other stakeholders for review and comment on October 27, 2023.

The description of consultation activity with the federal National Capital Commission (NCC) provided in Appendix D of the ER notes that federal approval is required for the project and that a Federal Land Use, Design and Transaction Approval (FLUDTA) level 1 or 2 application is required prior to a decision and a federal determination under the Impact Assessment Act (IAA). Enbridge notes that the IAA and FLUDTA have been accepted.

Question(s):

- a) Please file an update of the comments provided in Appendix D of ER, (summarized in tabular format) that Enbridge has received since March 31, 2024. Please include the supporting documentation, (i.e., emails and other correspondence) that is referenced. Please include the dates of communication, the issues and concerns identified by the parties, as well as Enbridge's responses and actions to address these issues and concerns.
- b) Please provide an update on whether a federal determination has made for the Project under the IAA. If a determination has not yet been made, what is the anticipated timeline to receive the determination under the IAA?
- c) Please provide an update on whether the consultation activity with a member of the public described line item 59.1 of the stakeholder consultation log provided in Appendix D of the Environmental Report has been resolved.

Response:

- a) A summary of Project correspondence that has occurred since ER Amendment 2 was finalized, up to May 31, 2024, can be found in Exhibit F, Tab 1, Schedule 1, Attachment 5. An additional summary of Project correspondence that has occurred since the Application was filed with the OEB up to September 11, 2024, can be found at Attachment 1 to this response. The supporting documentation is included at Attachment 2. Enbridge Gas will continue to provide opportunity for the public, stakeholders, and Indigenous communities to consult throughout the Project.
- b) A federal determination under the IAA has not yet been made for the Project. Enbridge Gas expects to receive the determination after it receives FLUDTA for the portion of the Project on federal land at 1200 Vanier Parkway, Ottawa, ON, by early 2025. Through consultation with the NCC, no other portion of the Project on federal land requires determination under the IAA.
- c) Line item 59.1 in ER Amendment 2<sup>1</sup> indicated that Enbridge Gas would follow up internally to determine if Enbridge Gas had a responsibility to conduct sidewalk repairs along St. Laurent Boulevard in the vicinity of Montreal Rd. to McArthur Road. As verified by the Final Monitoring Report completed for the St. Laurent Pipeline Project (EB-2019-0006), Enbridge Gas determined that it did not have any

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<sup>1</sup> Exhibit F, Tab 1, Schedule 1, Attachment 3, pp. 221-223.



outstanding responsibilities and considers its consultation activities with the member of the public to be resolved.



ENBRIDGE GAS INC.

## Consultation Log Update

St. Laurent Pipeline Replacement Project

# Agency Correspondence

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (if applicable)
<b>FEDERAL AGENCIES</b>					
1.1	June 3, 2024	Public Services and Procurement Canada (PSPC), National Capital Commission (NCC) Contacts: Michelle Fairbrother (PSPC), Tina Hearty-Drummond (PSPC), Hanna Elizondo (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	Dillon Consulting Limited (Dillon) representative emailed the PSPC and NCC to follow-up on the Impact Assessment Act (IAA) Registry posting and inquired if there were any comments received. If not, Dillon representative asked if there was anything else they needed to do in relation to the Section 82 IAA process for the federal determination or if they would wait to make a determination once the Federal Land Use, Design and Transaction Approval (FLUDTA) components are complete as well.	June 3, 2024	The PSPC representative emailed Dillon representative and the NCC and noted that only one comment was received during the public comment period and provided the comment in an attachment. The PSPC representative noted that in the past they had created a correspondence table that indicates how concerns are addressed in the environmental documentation and that this could optionally be included as an appendix in the Environmental Effects Evaluation (EEE). The PSPC representative noted that in regard to the updates to the documentation, they typically include a statement that indicates the date range for the public comment period in the EEE, as well as the number of comments and how they were considered.
1.2	June 4, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Tina Hearty-Drummond (PSPC), Hanna Elizondo (PSPC), Nicole Merkley (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	Dillon representative emailed the PSPC and NCC and inquired whether the PSPC representative considered the comment received to be legitimate Project correspondence, noting it reads like spam/propaganda. Dillon representative noted that they have no problem responding to the individual, though much of the information provided is not relevant to the Project. Dillon representative stated that in regard to the EEE, they were under the impression that they would not be completing an EEE, since the PSPC accepted the provincial environmental assessment (EA) in place of a separate EEE, and requested confirmation on this approach. Dillon representative noted that as per Section 2 of the Terms of Reference they would only be looking to complete a memo summarizing the results of the comment period and, if warranted, they would describe any updates to the EA resulting from the comments. Dillon representative noted that since the provided email was the only correspondence, they would suggest that there are no edits to the EA, and they can summarize the results of the comment period in a single page document for the Project record.	June 4, 2024	The PSPC representative emailed Dillon representative and noted that no response to the individual was required and that their obligation is to meaningfully consider any legitimate suggestions not already included in the mitigation measures. The PSPC representative noted that the single page document for the Project record approach works well for the PSPC to capture the single email as the only public feedback received through the Registry. The PSPC representative inquired if the NCC representative agreed with the approach.
1.3	June 5, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Tina Hearty-Drummond (PSPC), Hanna Elizondo (PSPC), Nicole Merkley (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	The NCC representative emailed Dillon and the PSPC representatives and noted that they agreed that no response to the individual is required and that they also agreed with the approach. The NCC representative stated that from their side, they have also received similar comments by the same individual on their posted projects and that the feedback is usually covered by the mitigation measures.	June 5, 2024	Dillon representative emailed the NCC and PSPC representatives and thanked them for confirming the next steps and noted they would draft a brief memo and circulate for their review.

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (if applicable)
1.4	June 11, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Joshua Nguyen (NCC)	Enbridge Gas and Dillon met virtually with representatives from the PSPC and NCC to discuss documentation of the IAA determination. At the meeting it was agreed that a Record of Decision document would be drafted by the NCC for input from PSPC, Enbridge Gas, and Dillon and would be signed by PSPC and NCC representatives to confirm the determination under Section 82 of the IAA that the Project will have no significant adverse effects on the environment.	June 13, 2024	NCC representative emailed PSPC, Enbridge Gas and Dillon representatives and thanked them for the meeting on June 11, 2024. The NCC representative noted that, as per the meeting, they would draft a Record of Decision (ROD) and circulate it with the contacts included in the email for input. The NCC representative noted that the ROD would document the recent Canadian Impact Assessment Registry public consultation period and outline any gaps from the Provincial EA as a future commitment. The NCC representative noted that given the proposed scope and how the environmental protection plan (EPP) will incorporate Project-specific mitigation measures from each organization, they believed this would be a solution to document the environmental determination. The NCC representative stated that during the meeting, it was noted that the Tree Inventory is still pending as the Project team awaits clearance, and that they suspect that the ROD cannot be finalized until the Tree Inventory has been reviewed, but that they can get a head start and work towards an early Fall 2024 target approval.
1.5	June 18, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Tina Hearty-Drummond (PSPC), Hanna Elizondo (PSPC), Nicole Merkley (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	Dillon representative emailed the PSPC and NCC representatives and provided a brief memo summarizing the results of the Registry posting 30-day comment period.	June 25, 2024	The NCC representative emailed the Dillon and PSPC representatives and thanked Dillon representative for the short memo noting there were no comments from their end. The NCC representative noted that the document would be referenced in the Record of Decision and that once drafted, the NCC representative would circulate it for input.
1.6	June 25, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Tina Hearty-Drummond (PSPC), Hanna Elizondo (PSPC), Nicole Merkley (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	Dillon representative emailed the PSPC and NCC representatives and thanked the NCC representative.	June 26, 2024	The PSPC representative emailed the NCC and Dillon representatives and noted no changes or comments to the public comment memo from their end.
1.7	September 10, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	Dillon representative emailed PSPC and NCC representatives to touch base on the Record of Decision and confirm that the only outstanding item needed from Dillon is the Tree Inventory and Tree Conservation Report.	September 11, 2024	NCC representative confirmed that the Tree Inventory and Tree Conservation Report are required for the Record of Decision and that they endeavour to circulate a draft Record of Decision ahead of the touchpoint meeting scheduled with Enbridge Gas the following week.
1.8	September 11, 2024	PSPC, NCC Contacts: Michelle Fairbrother (PSPC), Joshua Nguyen (NCC), Christopher Meek (NCC)	Dillon representative thanked NCC representative for confirming.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (if applicable)
2.1	June 6, 2024	PSPC, Shared Services Canada (SSC), BGIS, NCC, Royal Canadian Mounted Police (RCMP) Contacts: Susan Cook (PSPC), Steve Chartre (PSPC), Jacques Moore (PSPC), Mila Saumier (PSPC), David Learn (PSPC), Christine Charron (PSPC), Cynthia Couture-Cross (BGIS), Gerry Marsh (BGIS), Jonathan Guilbault (RCMP), Tania Osseiran (RCMP), Robert Galdins (RCMP), Joshua Nguyen (NCC), Christopher Meek (NCC), Ewan Vost (NCC)	Enbridge Gas representative emailed the PSPC, SSC, BGIS, NCC and RCMP and provided the Staging and Access Plan, the Traffic Management Plan, and the Project Scope Presentation. Enbridge Gas representative noted that in addition to satisfying the stakeholder component of the FLUDTA, they would like the opportunity to discuss all documentation and plans submitted to-date. Enbridge Gas representative requested that the PSPC, BGIS, RCMP, and NCC representatives review and come prepared with all their comments. Enbridge Gas provided an agenda for the meeting and proposed some meeting dates for later in the month of June and requested confirmation of availability.	N/A	N/A
2.2	June 12, 2024	PSPC, SSC, BGIS, NCC, RCMP Contacts: Susan Cook (PSPC), Steve Chartre (PSPC), Jacques Moore (PSPC), Mila Saumier (PSPC), David Learn (SSC), Christine Charron (SSC), Cynthia Couture-Cross (BGIS), Gerry Marsh (BGIS), Jonathan Guilbault (RCMP), Tania Osseiran (RCMP), Robert Galdins (RCMP), Joshua Nguyen (NCC), Christopher Meek (NCC), Ewan Vost (NCC)	Enbridge Gas representative followed up with the PSPC, SSC, BGIS, NCC and RCMP representatives and requested confirmation of availability to meet to discuss the documents/plans submitted on June 6, 2024 and to introduce the Project to SSC.	N/A	N/A
2.3	June 20, 2024	PSPC, SSC, BGIS, NCC, RCMP Contacts: David Learn (SSC), Christine Charron (SSC), Cynthia Couture-Cross (BGIS), Jonathan Guilbault (RCMP), Tania Osseiran (RCMP), Robert Galdins (RCMP)	On June 20, 2024, Enbridge Gas met with members from SSC, BGIS, and the RCMP to discuss the Project and provide a Project overview to the SSC members. BGIS representative indicated that the security clearance process usually takes a couple of weeks to a month and that contractors need to be cleared to enter the RCMP site at 1200 Vanier Parkway. In the meeting it was determined that there would be a site meeting at a later date to discuss traffic control and site setup. It was noted that Dillon can expect a security clearance confirmation email in the following weeks and that Dillon personnel would need a security escort. Enbridge Gas representative extended an invitation to continue consultation throughout the process to the stakeholders.	N/A	N/A

Line Item	Date of Consultation	Name of Agency and/or Contact	Description of Consultation Activity	Date of Response	Response and Issue Resolution (if applicable)
MUNICIPAL AGENCIES					
3.1	July 26, 2024	City of Ottawa, Clerk Contact: Caitlin Salter-MacDonald	Enbridge Gas representative emailed the City of Ottawa Clerk and indicated that Enbridge Gas had filed a Leave-to-Construct Application with the Ontario Energy Board (OEB) for the Project. Enbridge Gas noted that the application seeks the OEB's approval to replace the St. Laurent Pipeline System. Enbridge Gas stated that they had received the Letter of Direction and Notice of Hearing from the OEB and provided the Notice of Hearing.	N/A	N/A





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## Enbridge Gas St Laurent Pipeline Replacement Project - PD for IAA Registry Posting

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Lee, Alissa <alee@dillon.ca>

Mon, Jun 3, 2024 at 1:59 PM

To: "Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her)" <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>

Cc: "Nguyen, Joshua" <joshua.nguyen@ncc-ccn.ca>, "Meek, Christopher" <christopher.meek@ncc-ccn.ca>, "Hearty-Drummond, Tina (SPAC/PSPC) (elle-la / she-her)" <Tina.Hearty-Drummond@tpsgc-pwgsc.gc.ca>, Greg Asmussen <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>, Mark Cairns <Mark.Cairns@enbridge.com>, "Lefler, Tristan" <tlefler@dillon.ca>, "Wittmann, Elizabeth" <ewittmann@dillon.ca>, St Laurent EA <stlaurentea@dillon.ca>, "Elizondo, Hanna (SPAC/PSPC) (elle-la / she-her)" <Hanna.Elizondo@tpsgc-pwgsc.gc.ca>

Good afternoon Michelle,

I just wanted to follow up on the IAA Registry posting and see if there were any comments that were received?

If no comments were received, is there anything else we need to do in relation to the Section 82 IAA process for the federal determination? Or would you wait to make a determination once the FLUDTA components are all complete as well?

Thanks,

Alissa

[Quoted text hidden]



Alissa



**Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her)** <Michelle.Fairbrother@tps...>

Mon, Jun 3, 3 21PM

to Nicole, Alissa, Joshua, Christopher, Tina, Greg, Vania, Mark, Tristan, Elizabeth, me, Hanna

Good afternoon Alissa,

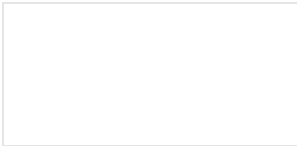
Only one comment was received during the public comment period, please see attached. In the past, in order to satisfy the requirement to consider the public feedback, we have gone through and created a correspondence table that indicates how the concerns are addressed in the environmental documentation (we do not click the links). This can optionally be included as an appendix in the EEE.

In terms of updates to the documentation, we typically include a statement that indicates the date range for the public comment period in the EEE, as well as the number of comments and how they were considered.

Please let me know if there are any questions.

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One attachment • Scanned by Gmail



FW: St. Laurent B..



**Lee, Alissa**

Tue, Jun 4, 8:17AM

Hi Michelle, Do you consider this email to be legitimate project correspondence? It reads more like spam/propaganda to me. I have ...



**Lee, Alissa** <alee@dillon.ca>

Tue, Jun 4, 8:17 AM

to Michelle, Joshua, Christopher, Tina, Greg, Vania, Mark, Tristan, me, Hanna, Nicole

Hi Michelle,

Do you consider this email to be legitimate project correspondence? It reads more like spam/propaganda to me. I have no problem responding to the individual, although much of the information they provided is not relevant to the project.

With regards to the EEE, I was under the impression we would not be completing an EEE since you accepted the provincial EA in place of a separate EEE, but perhaps I misunderstood, so please do correct me if I am wrong!

As per Section 2 of the Terms of Reference (attached), we would only be looking to complete a memo summarizing the results of the comment period and, if warranted, we would describe any updates to the EA resulting from the comments.

Given the email you provided is the only correspondence, I would suggest there are no edits to the EA and we can summarize the results of the comment period in a single page document for the project record.

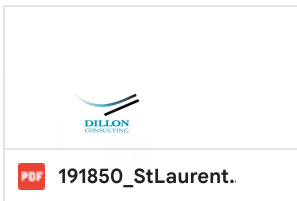
Let me know your thoughts.

Thanks,

Alissa

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**One attachment** • Scanned by Gmail





PDF 191850\_StLaurent.



**Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her)** <Michelle.Fairbrother@tpsgc-...> Tue, Jun 4, 9:40 AM

to Alissa, Joshua, Christopher, Tina, Greg, Vania, Mark, Tristan, me, Hanna, Nicole

Hi Alissa,

No response to the individual is required, our obligation is to meaningfully consider any legitimate suggestions not already included in the mitigation measures. The single page document for the project record approach works well for PSPC to capture that this was the only public feedback received through the Registry. [@Joshua](#), does the NCC agree with this approach?

Thanks again,

**Michelle Fairbrother**

Environmental Analyst

Environment, Health and Safety, Technical Services, Real Property Services

Public Services and Procurement Canada, Government of Canada

[michelle.fairbrother@tpsgc-pwgsc.gc.ca](mailto:michelle.fairbrother@tpsgc-pwgsc.gc.ca)



**Nguyen, Joshua**

Wed, Jun 5, 11:57 AM

Hi Michelle, Yes, a response to the individual is not required and I agree with the approach. From the NCC's side, we have received ...



**Lee, Alissa**

Wed, Jun 5, 12:22 PM

Thank you Michelle and Josh for confirming next steps. We will draft a brief memo and circulate for your review.



**Nguyen, Joshua** <joshua.nguyen@ncc-ccn.ca>

Wed, Jun 5, 11:57 AM

to Tina, Michelle, Alissa, Christopher, Greg, Vania, Mark, Tristan, me, Hanna, Nicole

Hi Michelle,

Yes, a response to the individual is not required and I agree with the approach. From the NCC's side, we have received similar comments by the same individual on our posted projects, and their feedback is usually covered by the mitigation measures.

Kind regards,



**Joshua Nguyen** M.Sc., G.I.T.

Environmental Officer  
Agente de l'environnement

[joshua.nguyen@ncc-ccn.ca](mailto:joshua.nguyen@ncc-ccn.ca)

☎ 343-550-4348

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[National Capital Commission](#)  
[Commission de la capitale nationale](#)

Canada

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**From:** Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her) <[Michelle.Fairbrother@tpsgc-pwgsc.gc.ca](mailto:Michelle.Fairbrother@tpsgc-pwgsc.gc.ca)>

**Sent:** Tuesday, June 4, 2024 9:41 AM

**To:** Lee Alissa <[alee@dillon.ca](mailto:alee@dillon.ca)> Nauven Joshua <[joshua.nauven@ncc-ccn.ca](mailto:joshua.nauven@ncc-ccn.ca)>



---

## Enbridge Gas St Laurent Pipeline Replacement Project - PD for IAA Registry Posting

---

Lee, Alissa <alee@dillon.ca>

Wed, Jun 5, 2024 at 12:22 PM

To: "Nguyen, Joshua" <joshua.nguyen@ncc-ccn.ca>

Cc: Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>, "Meek, Christopher" <christopher.meek@ncc-ccn.ca>, Tina Hearty-Drummond <tina.hearty-drummond@tpsgc-pwgsc.gc.ca>, Greg Asmussen <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>, Mark Cairns <Mark.Cairns@enbridge.com>, "Lefler, Tristan" <tlefler@dillon.ca>, St Laurent EA <stlaurentea@dillon.ca>, "Elizondo, Hanna (SPAC/PSPC) (elle-la / she-her)" <Hanna.Elizondo@tpsgc-pwgsc.gc.ca>, Nicole Merkley <Nicole.Merkley@tpsgc-pwgsc.gc.ca>

Thank you Michelle and Josh for confirming next steps.

We will draft a brief memo and circulate for your review.

[Quoted text hidden]





## St Laurent Pipeline Project - IAA Scope

Lee, Alissa <alee@dillon.ca>  
To: St Laurent EA <stlaurentea@dillon.ca>

Mon, Jun 17, 2024 at 2:56 PM

----- Forwarded message -----

From: **Nguyen, Joshua** <joshua.nguyen@ncc-ccn.ca>  
Date: Thu, Jun 13, 2024 at 3:31 PM  
Subject: RE: [EXT] Re: St Laurent Pipeline Project - IAA Scope  
To: Lee, Alissa <alee@dillon.ca>, Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>, greg.asmussen@enbridge.com <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>  
Cc: Meek, Christopher <christopher.meek@ncc-ccn.ca>

Hi all,

Thank you again for the chat on June 11<sup>th</sup> re: IAA next steps/documentation. As discussed in the meeting, I will draft a Record of Decision (ROD) and circulate with those on this email chain for input. The ROD will document the recent Canadian Impact Assessment Registry public consultation period, and outline any gaps from the Provincial EA (e.g., the Environmental Protection Plan [EPP]) as a future commitment. Any recent refreshed studies (since the Provincial EA) or relevant info from the Provincial EA can be referenced within, as applicable.

Given the proposed scope, and how the EPP will incorporate project specific mitigation measures from our respective organisations, I believe this would be a solution to document the environmental determination.

During the call, it was noted the Tree Inventory is still pending as the project team awaits clearances. I suspect the ROD can not be finalised until the Tree Inventory has been reviewed, but we can certainly get a head start and work towards an early Fall 2024 targeted approval.

Let me know if there are any questions or if I missed/misunderstood anything that was discussed.

Kind regards,



**Joshua Nguyen** M.Sc., G.I.T.

Environmental Officer  
Agente de l'environnement

joshua.nguyen@ncc-ccn.ca

☎ 343-550-4348

---

National Capital Commission  
Commission de la capitale nationale

Canada

**From:** Lee, Alissa <[alee@dillon.ca](mailto:alee@dillon.ca)>

**Sent:** Thursday, March 21, 2024 3:30 PM

**To:** Michelle Fairbrother <[Michelle.Fairbrother@tpsgc-pwgsc.gc.ca](mailto:Michelle.Fairbrother@tpsgc-pwgsc.gc.ca)>

**Cc:** Berthiaux, Christine (SPAC/PSPC) (elle-la / she-her) <[Christine.Berthiaux@tpsgc-pwgsc.gc.ca](mailto:Christine.Berthiaux@tpsgc-pwgsc.gc.ca)>; Tina Hearty-Drummond <[tina.hearty-drummond@tpsgc-pwgsc.gc.ca](mailto:tina.hearty-drummond@tpsgc-pwgsc.gc.ca)>; St Laurent EA <[stlaurentea@dillon.ca](mailto:stlaurentea@dillon.ca)>; Lefler, Tristan <[tlefler@dillon.ca](mailto:tlefler@dillon.ca)>; Wittmann, Elizabeth <[ewittmann@dillon.ca](mailto:ewittmann@dillon.ca)>; Nguyen, Joshua <[joshua.nguyen@ncc-ccn.ca](mailto:joshua.nguyen@ncc-ccn.ca)>

**Subject:** [EXT] Re: St Laurent Pipeline Project - IAA Scope

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## Enbridge Gas St Laurent Pipeline Replacement Project - PD for IAA Registry Posting

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Lee, Alissa <ailee@dillon.ca>

Tue, Jun 18, 2024 at 12:50 PM

To: "Nguyen, Joshua" <joshua.nguyen@ncc-ccn.ca>

Cc: Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>, "Meek, Christopher" <christopher.meek@ncc-ccn.ca>, Tina Hearty-Drummond <tina.hearty-drummond@tpsgc-pwgsc.gc.ca>, Greg Asmussen <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>, Mark Cairns <Mark.Cairns@enbridge.com>, "Lefler, Tristan" <tlefler@dillon.ca>, St Laurent EA <stlaurentea@dillon.ca>, "Elizondo, Hanna (SPAC/PSPC) (elle-la / she-her)" <Hanna.Elizondo@tpsgc-pwgsc.gc.ca>, Nicole Merkley <Nicole.Merkley@tpsgc-pwgsc.gc.ca>

Hi Michelle and Josh,

Please see attached a short memo summarizing the results of the Registry posting 30-day comment period.

Let me know if you have any questions or need anything further.

Thanks,

Alissa

[Quoted text hidden]

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 **191850\_StLaurent\_SummaryMemo\_20240618.pdf**  
24K



PDF 191850\_StLaurent.



**Nguyen, Joshua** <joshua.nguyen@ncc-ccn.ca>  
to Alissa, Michelle, Christopher, Tina, Greg, Vania, Mark, Tristan, me, Hanna, Nicole

Tue, Jun 25, 12:37 PM

Hi Alissa,

Thank you for the short memo summarizing the CIAR 30-day comment period. No questions or comments from my end.

This document will be referenced in the Record of Decision. Once drafted, I will circulate for input.

Kind regards,  
Josh



**Lee, Alissa** <alee@dillon.ca>  
to Tina, Hanna, Nicole, Joshua, Michelle, Christopher, Greg, Vania, Mark, Tristan, me

Tue, Jun 25, 12:56 PM

Thanks Josh!


*Upcoming out of office: Friday, June 28, 2024*



**Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her)** <Michelle.Fairbrother@tpsgc... Jun 26, 2024, 9:41AM  
to Tina, Alissa, Joshua, Christopher, Greg, Vania, Mark, Tristan, me, Hanna, Nicole



Upcoming out of office: Friday, June 28, 2024

 **Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her)** <Michelle.Fairbrother@tpsgc... Jun 26, 2024, 9:41AM  
to Tina, Alissa, Joshua, Christopher, Greg, Vania, Mark, Tristan, me, Hanna, Nicole

Good morning all,

No changes or comments to the public comment memo from my end either, thank you!

**Michelle Fairbrother**

Environmental Analyst  
Environment, Health and Safety, Technical Services, Real Property Services  
Public Services and Procurement Canada, Government of Canada  
[michelle.fairbrother@tpsgc-pwgsc.gc.ca](mailto:michelle.fairbrother@tpsgc-pwgsc.gc.ca)

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**From:** Lee, Alissa <[alee@dillon.ca](mailto:alee@dillon.ca)>  
**Sent:** Tuesday, June 25, 2024 12:56 PM  
**To:** Nguyen, Joshua <[joshua.nguyen@ncc-ccn.ca](mailto:joshua.nguyen@ncc-ccn.ca)>  
**Cc:** Fairbrother, Michelle (SPAC/PSPC) (elle-la / she-her) <[Michelle.Fairbrother@tpsgc-pwgsc.gc.ca](mailto:Michelle.Fairbrother@tpsgc-pwgsc.gc.ca)>; Meek, Christopher <[christopher.meek@ncc-ccn.ca](mailto:christopher.meek@ncc-ccn.ca)>; Hearty-Drummond, Tina (SPAC/PSPC) (elle-la / she-her) <[Tina.Hearty-Drummond@tpsgc-pwgsc.gc.ca](mailto:Tina.Hearty-Drummond@tpsgc-pwgsc.gc.ca)>; Greg Asmussen <[greg.asmussen@enbridge.com](mailto:greg.asmussen@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>; Lefler, Tristan <[telfer@dillon.ca](mailto:telfer@dillon.ca)>; St Laurent EA <[stlaurentea@dillon.ca](mailto:stlaurentea@dillon.ca)>; Elizondo, Hanna (SPAC/PSPC) (elle-la / she-her) <[Hanna.Elizondo@tpsgc-pwgsc.gc.ca](mailto:Hanna.Elizondo@tpsgc-pwgsc.gc.ca)>; Merkley, Nicole (SPAC/PSPC) <[Nicole.Merkley@tpsgc-pwgsc.gc.ca](mailto:Nicole.Merkley@tpsgc-pwgsc.gc.ca)>  
**Subject:** Re: [EXT] RE: Enbridge Gas St Laurent Pipeline Replacement Project - PD for IAA Registry Posting

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE



## St Laurent Pipeline Project - IAA Scope

Lee, Alissa <alee@dillon.ca>

Tue, Sep 10, 2024 at 1:03 PM

To: "Nguyen, Joshua" <joshua.nguyen@ncc-ccn.ca>

Cc: Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>, "greg.asmussen@enbridge.com" <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>, "Meek, Christopher" <christopher.meek@ncc-ccn.ca>, St Laurent EA <stlaurentea@dillon.ca>

Good afternoon Josh,

I hope you are well.

I wanted to touch base on the ROD. I know we owe you the Tree Conservation Report yet, and that is coming soon, but I just wanted to make sure there was nothing else needed on our end to draft the ROD.

Thanks,

Alissa

On Thu, Jun 13, 2024 at 3:31 PM Nguyen, Joshua <joshua.nguyen@ncc-ccn.ca> wrote:

Hi all,

Thank you again for the chat on June 11<sup>th</sup> re: IAA next steps/documentation. As discussed in the meeting, I will draft a Record of Decision (ROD) and circulate with those on this email chain for input. The ROD will document the recent Canadian Impact Assessment Registry public consultation period, and outline any gaps from the Provincial EA (e.g., the Environmental Protection Plan [EPP]) as a future commitment. Any recent refreshed studies (since the Provincial EA) or relevant info from the Provincial EA can be referenced within, as applicable.

Given the proposed scope, and how the EPP will incorporate project specific mitigation measures from our respective organisations, I believe this would be a solution to document the environmental determination.

During the call, it was noted the Tree Inventory is still pending as the project team awaits clearances. I suspect the ROD can not be finalised until the Tree Inventory has been reviewed, but we can certainly get a head start and work towards an early Fall 2024 targeted approval.

Let me know if there are any questions or if I missed/misunderstood anything that was discussed.

Kind regards,



**Joshua Nguyen** M.Sc., G.I.T.

Environmental Officer  
Agente de l'environnement

joshua.nguyen@ncc-ccn.ca

343-550-4348

National Capital Commission  
Commission de la capitale nationale

Canada





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## St Laurent Pipeline Project - IAA Scope

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Nguyen, Joshua <joshua.nguyen@ncc-ccn.ca>

Wed, Sep 11, 2024 at 12:48 PM

To: "Lee, Alissa" <alee@dillon.ca>

Cc: Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>, "greg.asmussen@enbridge.com" <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>, "Meek, Christopher" <christopher.meek@ncc-ccn.ca>, St Laurent EA <stlauretea@dillon.ca>

Good afternoon Alissa,

I hope the end of summer treated you well.

Yes, the Tree Conservation Report/Inventory will be required for the ROD. I can endeavour to circulate a draft ROD ahead of our touchpoint meeting next Thursday.

Kind regards,



**Joshua Nguyen** M.Sc., G.I.T.

Environmental Officer  
Agente de l'environnement

joshua.nguyen@ncc-ccn.ca

📞 343-550-4348

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National Capital Commission  
Commission de la capitale nationale

Canada

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**From:** Lee, Alissa <alee@dillon.ca>

**Sent:** Tuesday, September 10, 2024 1:03 PM

**To:** Nguyen, Joshua <joshua.nguyen@ncc-ccn.ca>

**Cc:** Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>; greg.asmussen@enbridge.com; Vania Little <vania.little@enbridge.com>; Meek, Christopher <christopher.meek@ncc-ccn.ca>; St Laurent EA <stlauretea@dillon.ca>

**Subject:** Re: [EXT] Re: St Laurent Pipeline Project - IAA Scope

Good afternoon Josh,

I hope you are well.



---

## St Laurent Pipeline Project - IAA Scope

---

Lee, Alissa <alee@dillon.ca>

Wed, Sep 11, 2024 at 12:58 PM

To: "Nguyen, Joshua" <joshua.nguyen@ncc-ccn.ca>

Cc: Michelle Fairbrother <Michelle.Fairbrother@tpsgc-pwgsc.gc.ca>, "greg.asmussen@enbridge.com" <greg.asmussen@enbridge.com>, Vania Little <vania.little@enbridge.com>, "Meek, Christopher" <christopher.meek@ncc-ccn.ca>, St Laurent EA <stlauretea@dillon.ca>

Okay, thanks for confirming. Thanks Josh.

[Quoted text hidden]



[MunicipalPlanning@enbridge.com](mailto:MunicipalPlanning@enbridge.com)

---

**From:** Vania Little

**Sent:** Thursday, June 6, 2024 7:09 AM

**To:** Susan Cook <[Susan.Cook@tpsgc-pwgsc.gc.ca](mailto:Susan.Cook@tpsgc-pwgsc.gc.ca)>; [Steve.Chartre@tpsgc-pwgsc.gc.ca](mailto:Steve.Chartre@tpsgc-pwgsc.gc.ca); [jacques.moore@tpsgc-pwgsc.gc.ca](mailto:jacques.moore@tpsgc-pwgsc.gc.ca); [jonathan.guilbault@rcmp-grc.gc.ca](mailto:jonathan.guilbault@rcmp-grc.gc.ca); [tania.osseiran@rcmp-grc.gc.ca](mailto:tania.osseiran@rcmp-grc.gc.ca); Cynthia Couture-Cross <[Cynthia.Couture-Cross@bgis.com](mailto:Cynthia.Couture-Cross@bgis.com)>; [gerry.marsh@bgis.com](mailto:gerry.marsh@bgis.com); Meek, Christopher <[christopher.meek@ncc-ccn.ca](mailto:christopher.meek@ncc-ccn.ca)>; Mila Saumier <[Mila.Saumier@tpsgc-pwgsc.gc.ca](mailto:Mila.Saumier@tpsgc-pwgsc.gc.ca)>; [tania.osseiran@rcmp-grc.gc.ca](mailto:tania.osseiran@rcmp-grc.gc.ca); [david.learn@ssc-spc.gc.ca](mailto:david.learn@ssc-spc.gc.ca); [christine.charron@ssc-spc.gc.ca](mailto:christine.charron@ssc-spc.gc.ca); Galdins, Robert (RCMP/GRC) <[Robert.Galdins@rcmp-grc.gc.ca](mailto:Robert.Galdins@rcmp-grc.gc.ca)>

**Cc:** [StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca); Nguyen, Joshua <[joshua.nguyen@ncc-ccn.ca](mailto:joshua.nguyen@ncc-ccn.ca)>; Vost, Ewan <[Ewan.Vost@ncc-ccn.ca](mailto:Ewan.Vost@ncc-ccn.ca)>; Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>

**Subject:** RE: Enbridge St Laurent Replacement - 1200 Vanier Parkway FLUDTA Step - Traffic Management & Staging Plan

**Importance:** High

Good morning everyone,

As we proceed to complete other submission requirements and seek approvals, for your review and comment, please find the following:

1. PLANNING: Staging and Access Plan
2. PLANNING: Traffic Management Plan
3. STAKEHOLDER ENGAGEMENT: Project Scope Presentation (outlook meeting with project updates).

In addition to satisfying the stakeholder component of the FLUDTA, we'd like the opportunity to discuss all documentation and plans submitted to date. If you could kindly review and come prepared with all your comments, that would be appreciated.

Meeting Agenda

- Project Update & Scope Presentation
- Construction Drawings/Composite Utility Plan
- Staging and Access Route Plan
- Traffic Management Plan

**Proposed Meeting Dates**

Tuesday June 18<sup>th</sup> 9am to 10am; or

Thursday June 20<sup>th</sup> 9am to 10am

If you would, please confirm availability and I will forward the calendar invite.

Thank you!

Kind regards,

Vania Little

***Municipal Clearance Letters are not issued by the Land Department. Please contact our Municipal Planning Department at -***

***[MunicipalPlanning@enbridge.com](mailto:MunicipalPlanning@enbridge.com)***

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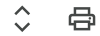
**From:** Vania Little

**Sent:** Wednesday, May 15, 2024 11:19 AM

**To:** Susan Cook <[Susan.Cook@tpsgc-pwgsc.gc.ca](mailto:Susan.Cook@tpsgc-pwgsc.gc.ca)>; [Steve.Chartre@tpsgc-pwgsc.gc.ca](mailto:Steve.Chartre@tpsgc-pwgsc.gc.ca); [jacques.moore@tpsgc-pwgsc.gc.ca](mailto:jacques.moore@tpsgc-pwgsc.gc.ca);



# RE: Enbridge St Laurent Replacement - 1200 Vanier Parkway FLUDTA Step - Status Meeting



External    Inbox ×    Federal Agency ×



**Vania Little** <vania.little@enbridge.com>

Wed, Jun 12, 8:03AM

to Susan, Steve.Chartre@tpsgc-pwgsc.gc.ca, jacques.moore@tpsgc-pwgsc.gc.ca, jonathan.guilbault@rcmp-grc.gc.ca, tania.ossei

Good morning,

As outlined in my previous email, we would like to set up meeting to discuss documents/plans submitted and introduce the project to the SSC group.

If you would, please confirm availability for the two proposed dates.

**Proposed Meeting Dates**

Tuesday June 18<sup>th</sup> 9am to 10am; or

Thursday June 20<sup>th</sup> 9am to 10am

Thank you!

Kind regards,

Vania Little

***Municipal Clearance Letters are not issued by the Land Department. Please contact our Municipal Planning Department at - [MunicipalPlanning@enbridge.com](mailto:MunicipalPlanning@enbridge.com)***

**From:** Vania Little

**Sent:** Thursday, June 6, 2024 7:09 AM

**To:** Susan Cook <[Susan.Cook@tpsgc-pwgsc.gc.ca](mailto:Susan.Cook@tpsgc-pwgsc.gc.ca)>; Steve.Chartre@tpsgc-pwgsc.gc.ca; jacques.moore@tpsgc-pwgsc.gc.ca; jonathan.guilbault@rcmp-grc.gc.ca; tania.osseiran@rcmp-grc.gc.ca; Cynthia Couture-Cross <[Cynthia.Couture-Cross@bgis.com](mailto:Cynthia.Couture-Cross@bgis.com)>; gerry.marsh@bgis.com; Meek, Christopher <[christopher.meek@ncc-ccn.ca](mailto:christopher.meek@ncc-ccn.ca)>; Mila Saumier <[Mila.Saumier@tpsgc-pwgsc.gc.ca](mailto:Mila.Saumier@tpsgc-pwgsc.gc.ca)>; tania.osseiran@rcmp-grc.gc.ca; david.learn@ssc-spc.gc.ca; christine.charron@ssc-spc.gc.ca; Galdins, Robert (RCMP/GRC) <[Robert.Galdins@rcmp-grc.gc.ca](mailto:Robert.Galdins@rcmp-grc.gc.ca)>

**Cc:** StLaurentEA@dillon.ca; Nguyen, Joshua <[joshua.nguyen@ncc-ccn.ca](mailto:joshua.nguyen@ncc-ccn.ca)>; Vost, Ewan <[Ewan.Vost@ncc-ccn.ca](mailto:Ewan.Vost@ncc-ccn.ca)>; Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>

**Subject:** RE: Enbridge St Laurent Replacement - 1200 Vanier Parkway FLUDTA Step - Traffic Management & Staging Plan

**Importance:** High

Good morning everyone,

As we proceed to complete other submission requirements and seek approvals, for your review and comment, please find the following:

1. PLANNING: Staging and Access Plan
2. PLANNING: Traffic Management Plan
3. STAKEHOLDER ENGAGEMENT: Project Scope Presentation (outlook meeting with project updates).

In addition to satisfying the stakeholder component of the FLUDTA, we'd like the opportunity to discuss all documentation and plans submitted to date. If you could kindly review and come prepared with all your comments, that would be appreciated.



---

**From:** Kendra Black  
**Sent:** Tuesday, July 16, 2024 9:29 AM  
**To:** [caitlin.salter-macdonald@ottawa.ca](mailto:caitlin.salter-macdonald@ottawa.ca)  
**Subject:** Enbridge Gas Leave to Construct - St. Laurent Pipeline Replacement Project

Good morning,

I am reaching out to advise that Enbridge Gas has filed a Leave-to-Construct with the Ontario Energy Board (OEB) for the St. Laurent Pipeline Replacement Project. This application seeks the OEB's approval to replace the St. Laurent Pipeline System, a vital part of our natural gas distribution network in the National Capital Region. We have received the Letter of Direction and Notice of a Hearing from the OEB, which outlines the next steps for the application. Please find the Notice of Hearing attached.

Please let me know if there are any questions.

With thanks,

Kendra

**Kendra Black**

Manager, Municipal and Stakeholder Affairs

---

**ENBRIDGE GAS INC.**

Tel: 416-806-7443

500 Consumers Road, Toronto, ON, M2J 1P8

[enbridgegas.com](http://enbridgegas.com)

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**One attachment** • Scanned by Gmail

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

4

Reference:

Exhibit D, Tab 1, Schedule 1, paragraph 9, page 9

Preamble:

Enbridge states that it is looking at site options for replacing the Rockcliffe Control Station and that the exact route for the pipeline at Rockcliffe Park is subject to change pending the outcome of the site selection process for the replacement station. Enbridge also states that at the time of filing, the locations under consideration fall within the study area of the Environmental Report.

Question(s):

- a) Please provide an update on the site selection process for the replacement station at Rockcliffe Park and whether there have been any changes to the proposed pipeline route.
- b) If there have been changes to the proposed pipeline route at Rockcliffe Park, please describe those proposed changes and if any additional easements or approvals are required. Please also provide updated route maps.
- c) Please provide further details on the length of the segment of the proposed pipeline at Rockcliffe Park that is subject to change pending the outcome of the site selection process for the replacement station.
- d) Please confirm whether the study area of the Environmental Report includes any proposed changes to the proposed pipeline route?
- e) If the study area of the Environmental Report does not include any proposed changes to the segment of the pipeline at Rockcliffe Park, please explain whether an additional Environmental Report amendment will be made and the timeline for submission of the Environmental Report Amendment to the OPPC, Algonquins of



Ontario, Algonquins of Pikwakanagan First Nation and Mohawks of Akwesasne and other stakeholders for review and comment.

- f) Please discuss whether any other assessments (i.e., archeological assessment or cultural heritage assessment) are required for any potential proposed changes to the segment of the proposed pipeline at Rockcliffe Park. If other assessments are required, please provide a timeline for when those assessments are expected to be complete.

Response:

a – c)

The National Capital Commission (NCC) has identified a location as a potential option for the new Rockcliffe Control Station site. This site is currently being reviewed by Enbridge Gas from a cost and feasibility standpoint. There have been no changes to the proposed pipeline route at this time.

- d) The Environmental Report study area applies to the Project and includes the locations under consideration for any potential changes to the Project pipeline route.

e - f)

If additional changes to the Project's Preferred Route are required to address the potential relocation of the Rockcliffe Control Station, Enbridge Gas will address those changes in accordance with the *OEB's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario*, and complete any additional assessments, if required.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

4

Reference:

Hydro Ottawa letter [B/3/1, Attachment 2] &  
CAFESOttawa\_IR\_AppendixC\_OttawaHydroCEOmessage\_20240906

Question(s):

- a) Please provide the correspondence related to Enbridge's request for the Hydro Ottawa letter noted above.
- b) Did Enbridge provide a draft letter or summary of details to include in the letter. If no, how did Hydro Ottawa know what was requested by Enbridge. If yes, please provide the materials.
- c) Hydro Ottawa's CEO highlights in its most recent annual report that Hydro One is undertaking the necessary future actions to align with the City's Climate Change Master Plan and Energy Evolution goals. Please reconcile that future commitment with the information in the Hydro Ottawa letter filed by Enbridge.
- d) In the scenario outline where gas consumption drops by 76% by 2050, how will the cost for the proposed Project be allocated to remaining customers? What will be the impact to any remaining Rate 1 customers and those in Ottawa.

Response:

a - b)

Enbridge Gas did not provide a draft letter or details to include in the letter. The letter was a result of ongoing dialogue between Enbridge Gas and Hydro Ottawa. As discussed in Exhibit B, Tab 2, Schedule 1, paragraph 6, Enbridge Gas and Hydro Ottawa met 12 times in 2023 and 2024 on a variety of topics. As shown in the

Consultation Log provided in Exhibit B, Tab 2, Schedule 1, Attachment 1, lines 91, 94, 95 and 96, Enbridge Gas and Hydro Ottawa specifically discussed the energy provided in the region served by the St. Laurent Pipeline in four meetings in May 2024. To aid these discussions, on May 13, 2024, Enbridge Gas provided Hydro Ottawa with details of the SLP Application, including a map of the area and the customer count and peak hour load in the Project area, as provided in Attachment 1 to this response. Enbridge Gas did not provide any other written correspondence to Hydro Ottawa related to the letter.

- c) Enbridge Gas is unable to comment on statements made by Hydro Ottawa.
- d) Enbridge Gas has not completed modelling to support the scenario where gas consumption drops by 76% by 2050 for customers served by the SLP. A high-level approach has been taken to provide a response to this hypothetical scenario which assumes the following for 2050:
- Phase 1 approved depreciation rates and ROE remain unchanged
  - No assumptions for customers in other regions exiting the system
  - Cost allocation and rate structures as approved in the 2018 cost study for the EGD rate zone remain unchanged
  - Forecast volumes as approved in Phase 1 for the EGD rate zone
  - Forecast City of Ottawa Rate 1 General Service Customers is 116,900
  - Average Use per customer: 2,400 m<sup>3</sup>

The revenue requirement for the SLP in the year 2050 is forecasted to be \$11.9 million. The forecasted revenue requirement is allocated to various rate classes in accordance with the approved 2018 cost allocation study, in which \$5.5 million is allocated to Rate 1 General Service customers by the Delivery Demand TP>4" allocator which translates to a unit rate of 0.1099 cents / m<sup>3</sup>.

If the City of Ottawa's Rate 1 General Service Customers gas consumption drops by 76% by 2050, the unit rate will increase to 0.1148 cents / m<sup>3</sup> or approximately an increase of 4.44%.

**From:** [Cody Wood](#)  
**To:** [Jennifer Murphy](#); [Tanya Kutasienski](#)  
**Subject:** FW: St. Laurent - map of area served by pipeline  
**Date:** Tuesday, September 10, 2024 11:28:02 AM  
**Attachments:** [20240509 SLP Map.pdf](#)

---

**Cody Wood** MAsc, P.Eng (he/him)  
O: 416-753-4663 C: 416-818-5372

---

**From:** Jennifer Murphy <[Jennifer.Murphy@enbridge.com](mailto:Jennifer.Murphy@enbridge.com)>  
**Sent:** Monday, May 13, 2024 2:20 PM  
**To:** Margaret Flores <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [laurieheuff@hydroottawa.com](mailto:laurieheuff@hydroottawa.com)  
**Cc:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Cody Wood <[Cody.Wood@enbridge.com](mailto:Cody.Wood@enbridge.com)>  
**Subject:** RE: St. Laurent - map of area served by pipeline

Hi Margaret and Laurie,

As mentioned in my previous email, I'm sending an updated file that includes number of customers and demand. Please let me know if there are any questions. I've also sent invites for May 23, 4-5pm.

Thanks,  
Jennifer

---

**From:** Jennifer Murphy  
**Sent:** Friday, May 10, 2024 4:49 PM  
**To:** Margaret Flores <[margaretflores@hydroottawa.com](mailto:margaretflores@hydroottawa.com)>; [laurieheuff@hydroottawa.com](mailto:laurieheuff@hydroottawa.com)  
**Cc:** Cara-Lynne Wade <[Cara-Lynne.Wade@enbridge.com](mailto:Cara-Lynne.Wade@enbridge.com)>; Cody Wood <[Cody.Wood@enbridge.com](mailto:Cody.Wood@enbridge.com)>  
**Subject:** St. Laurent - map of area served by pipeline

Hi Margaret and Laurie,

Please see attached for a map of the area that is fed by the St. Laurent pipeline system. This represents areas both fully and partially fed from SLP. We should also have a list to you on Monday that shows the number of customers and their demand by sector.

Would you be able to chat in about a week or so? Here is some availability on our side. Let me know ASAP and I'll get the invite to hold time.

Friday, May 17 – 1-2pm  
Thursday, May 23 – 1-2pm or 4-5pm

If you have any questions in the meantime, please let me know. I've also copied Cody, who is a

Supervisor for my Energy Transition Team and is leading the energy transition evidence for SLP.

Thanks,  
Jennifer

**Jennifer Murphy**, P. Eng. (She/Her)  
Manager, Energy Transition Planning  
**Energy Transition Planning**

---

**ENBRIDGE**  
TEL: 416-495-5861 | CELL: 416-818-6205 |  
500 Consumers Road, North York ON M2J 1P8

[enbridge.com](https://www.enbridge.com)

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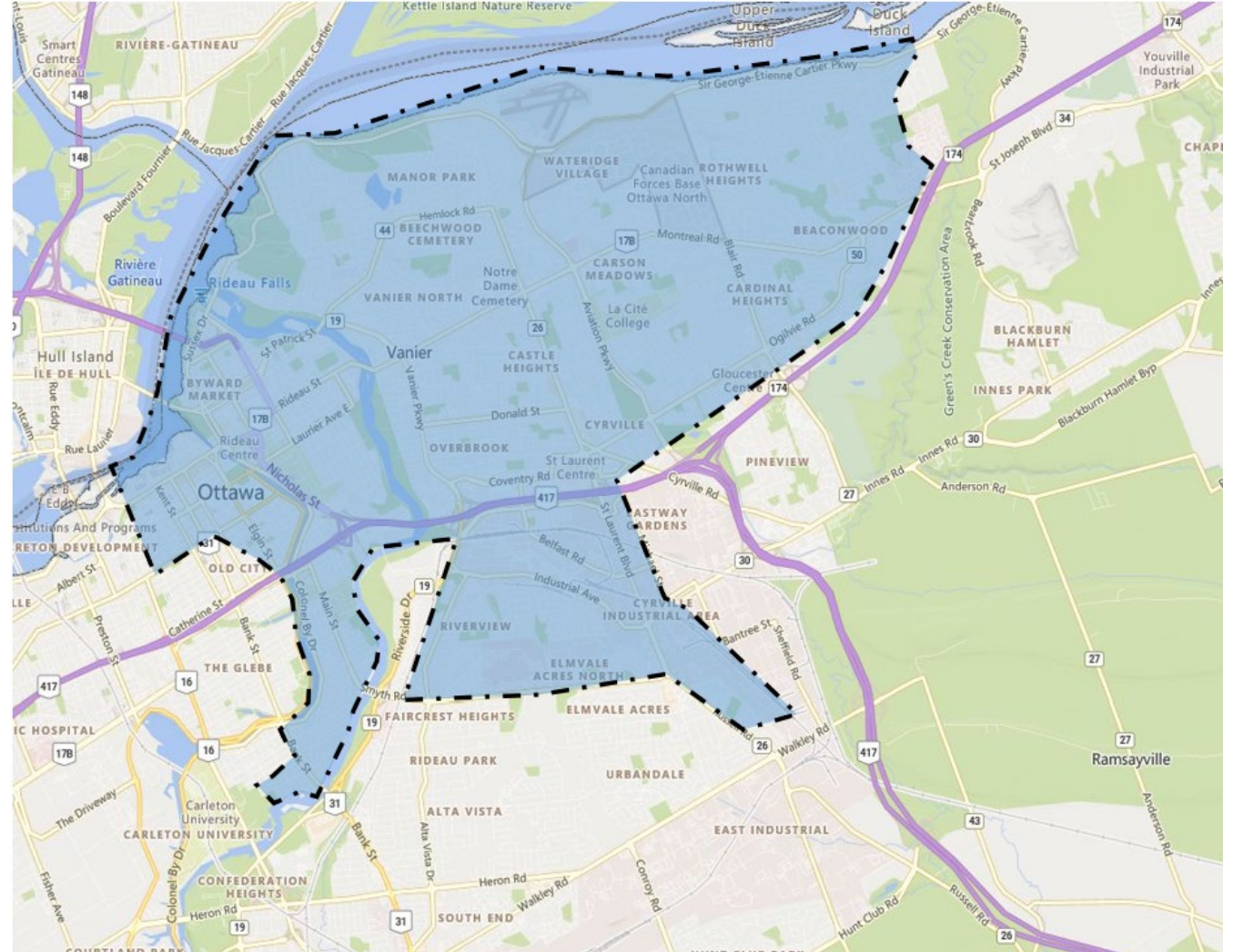
# St Laurent Pipeline System

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## Area Served



# St Laurent Pipeline: Area Served



\* Coldest experienced temperature in the last 40 years, last occurred 1/15/1994. Based on 15°C base temperature,



# St Laurent Pipeline: Customers & Demand

Customer Type	Customer Count	2022 Peak Hour Load (m3/h)		Estimated Peak Hour Load (MW)*	
		Supplied by SLP	Total demand	Supplied by SLP	Total demand
Apartment	142	4,736	5,345	50	56
Commercial	3,336	58,729	62,379	620	658
Industrial	12	947	1,026	10	11
Residential	29,061	30,312	32,258	320	340
<b>General Service Total</b>	<b>32,551</b>	<b>94,724</b>	<b>101,009</b>	<b>999</b>	<b>1,066</b>
Contract	6	13,176	13,176	139	139
<b>Grand Total</b>	<b>32,557</b>	<b>107,900</b>	<b>114,185</b>	<b>1,138</b>	<b>1,205</b>

1 m3 of NG has 37.98 MJ (Heat valve = 37.98 MJ/m3), conversion is based on energy equivalence, it does not account for equipment efficiencies. Customer Counts and Demands as modelled in February 2024.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

4

Reference:

As discussed in Exhibit G, Tab 1, Schedule 1, as of the date of this filing, Enbridge Gas is in continuing negotiations with landowners regarding land rights required for the Project. [A/2/2, Page 10]

Question(s):

Please explain which portions of the project are outside the municipal right of way and why easements are required.

Response:

Enbridge Gas is currently seeking to obtain land rights from private landowners at two locations.

i. Lagan Way and Shore Street, Ottawa

During the pre-inspection phase of the Project, it was noted that the intersection is too narrow and very congested with underground utilities making it difficult for Enbridge Gas to find a line location to install new pipe. Enbridge Gas is pursuing a permanent easement from a private landowner at the southeast corner of Shore Street to facilitate construction challenges at this intersection.

ii. Vanier Parkway and Highway 417, Ottawa

The segment west along Coventry Road will travel south to tie-in to the existing pipeline that crosses the Rideau River. To minimize impact on Ministry of Transportation Ontario's (MTO) ability to maintain, operate and expand its Highway 417 corridor at the Vanier Parkway interchange, the preferred route will

be installed through private property on the west side of Vanier Parkway, north of Highway 417.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

4

Question(s):

Given that portions of the SLP will be not be located on St. Laurent Blvd., what work will be required to connect existing customers on St. Laurent Blvd? Will St. Laurent Blvd have to be (partially or fully) closed for this work?

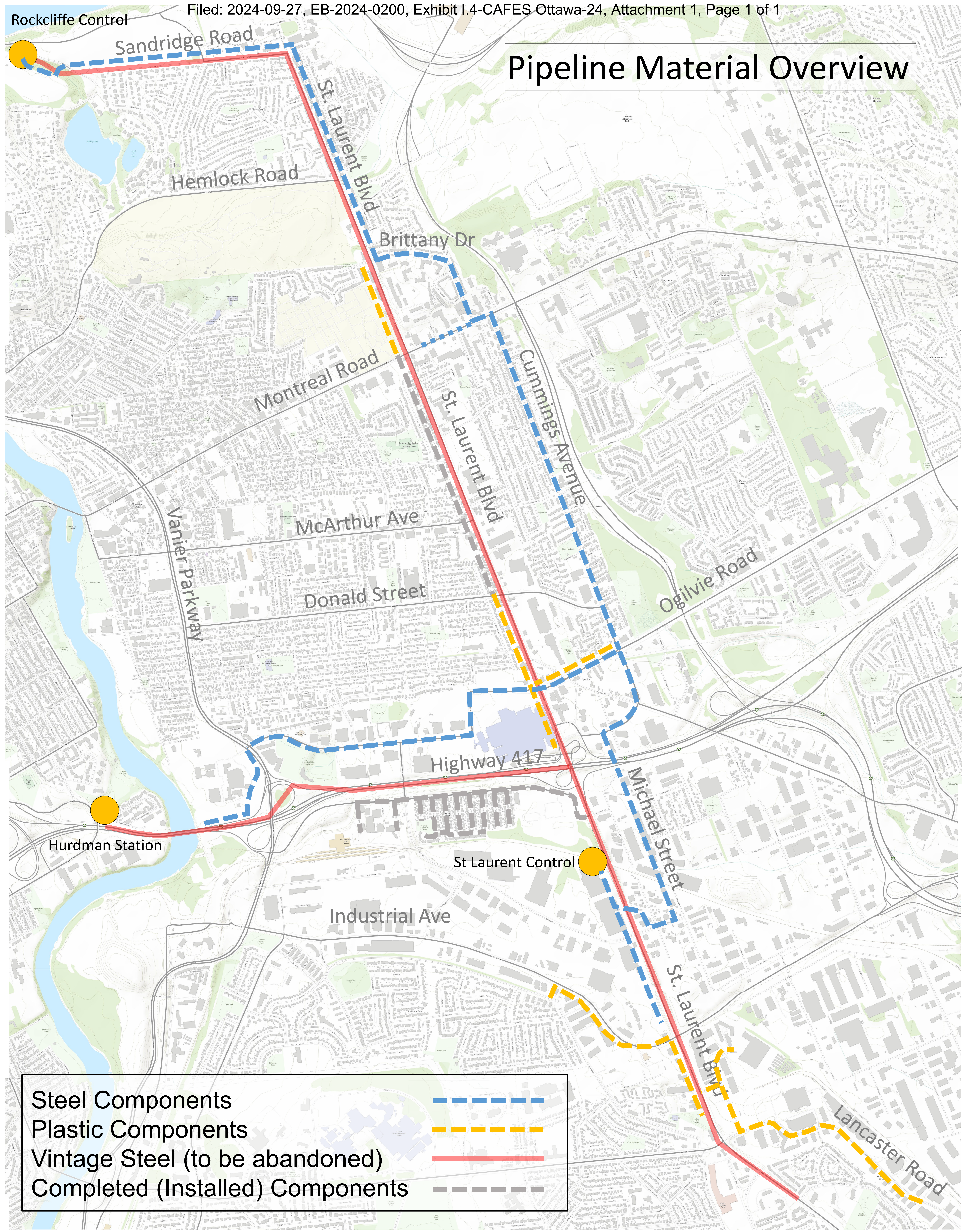
Response:

Please see Attachment 1 for pipeline locations and materials planned for the Project. As illustrated, existing customers along St Laurent Blvd will continue to be served by either new steel gas main (blue), new plastic gas main (yellow), or existing pipeline components installed in previous competed phases of the Project (grey).

No road closures are anticipated for this work; however installation of the new gas mains will require lane closures for safe installation.



# Pipeline Material Overview



Steel Components	
Plastic Components	
Vintage Steel (to be abandoned)	
Completed (Installed) Components	



ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

4

Question(s):

- a) Has Enbridge undertaken an assessment for the property damage impacts related to installing 11.2 km of new pipeline and abandoning (which could include removing per City of Ottawa request) 14.4 km of existing pipeline, compared to the impact of isolated repairs along the existing pipeline, if required? If no, why not. If yes, please provide a copy of those materials and analysis.
- b) What information has been provide directly to homes and businesses along the proposed route pertaining to potential impacts noted in part a. Please provide copies of materials directly provided to all homes and business along the proposed route.

Response:

- a) No property damage is expected from construction practices during pipeline installation as part of this Project. Most of the pipeline installation is within municipal right-of-way (ROW) which Enbridge Gas will restore as a condition of the municipal consent process and cut permits. For the areas where easements are required, full restoration will be assumed unless otherwise noted by the landowner.
- b) Along with public notifications, information sessions and open house meetings that have been sent to the public, additional construction notifications will be sent to all affected homeowners and businesses ahead of contractor mobilization.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Community Association for Environmental Sustainability (CAFES Ottawa)

Interrogatory

Issue:

4

Question(s):

- a) Please confirm that Enbridge intends to abandon in place the current St. Laurent pipeline should the OEB approve the proposed pipeline. If not, please explain.
- b) Does Enbridge have approval from the City of Ottawa to abandon the existing pipeline in place? If yes, please provide a copy.
- c) Please provide the costs estimate of abandoning the existing pipeline in place vs. removing the existing pipeline.

Response:

- a) Confirmed.
- b) Pursuant to Section 15(b) of the franchise agreement with the City of Ottawa, Enbridge Gas is permitted to abandon pipeline in place.<sup>1</sup> The City of Ottawa has not expressed any concerns.
- c) The costs related to the pipeline abandoning in place are estimated to be \$8,665,878. Abandonment in place is permitted under the CSA Z662 and it is the standard construction practice of Enbridge Gas. Physical removal of abandoned pipe is not typical unless it is required as part of the project's scope of work. Enbridge Gas does not have a cost estimate to remove all pipeline being abandoned as part of this Project. However, the costs to physically remove the abandoned pipeline and the associated disruption to the public would be significant, especially considering the proposed route does not follow the existing pipeline for large portions of the Project.

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<sup>1</sup>EB-2006-0032, Decision and Order (June 22, 2006),  
<https://www.rds.oeb.ca/CMWebDrawer/Record/673462/File/document>.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Energy Probe Research Foundation (EP)

Interrogatory

Issue:

4

Reference:

Exhibit D, Tab 1, Schedule 1, Pages 17 and 18, paragraph 31 and Exhibit G1, Tab 1, Schedule 1, Page 2

Preamble:

“31. All necessary permits, approvals and authorizations will be obtained by Enbridge Gas at the earliest appropriate opportunity. Enbridge Gas expects to receive all required approvals prior to commencing construction on each segment of the Project.”

Question(s):

- a) Please confirm that Enbridge Gas has a Municipal Franchise Agreement (MFA) and a Certificate of Public Convenience and Necessity (CPCN) with the City of Ottawa?
- b) What permits and authorizations does Enbridge Gas need from the City of Ottawa considering that it has the MFA and the CPCN?
- c) Has Enbridge Gas applied to the City of Ottawa for the required permits? If the answer is yes, has the City issued any of the permits?

Response:

- a) Enbridge Gas has a 20-year franchise agreement with the City of Ottawa that was effective June 29, 2006.<sup>1</sup> Enbridge Gas has 11 CPCNs in place that pertain to former municipalities that now make up the City of Ottawa. In aggregate, Enbridge Gas has CPCN rights in place for all of the City of Ottawa excluding the former

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<sup>1</sup> EB-2006-0032

Township of Torbolton, the former Village of Richmond and the former Village of Stittsville. The former Township of Torbolton, the former Village of Richmond, and the former Village of Stittsville are all outside of the Project area.

- b) Prior to beginning construction, Enbridge Gas is required to apply for a permit from the City of Ottawa to approve the location of the facilities in the Right-of-Way (ROW).
- c) Enbridge Gas has begun the application for Municipal Consent for some segments of the Project. No permits have been issued to date. Due to the permits expiring after 12 months, Enbridge Gas will apply closer to execution dates for most segments.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

4

Reference:

Environmental Report [Exhibit F]

Question(s):

- 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.

Response:

a - b)

The Environmental Report (ER) and Environmental Report Amendment 1 (ER Amendment 1) filed in the EB-2020-0293 application are relevant to this Application because they form a portion of the Project's Environmental Report. The information presented in the ER and ER Amendment 1 remains applicable to the Preferred Route presented in the Environmental Report Amendment 2 (ER Amendment 2) and this Application.

ER Amendment 2 documents the changes made to the Project since the completion of the ER and ER Amendment 1, and together the ER, ER Amendment 1 and ER Amendment 2 form the Project's Environmental Report.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

4

Reference:

Environmental Report [Exhibit F]

Question(s):

- 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.

Response:

- a) Please see Exhibit I.4-STAFF-20 part a).
- b) Summaries of correspondence from the Ontario Ministry of Transportation (MTO) regarding MTO's concerns and/or concurrence with the proposed pipeline are found at:
  - Appendix G – Stakeholder Consultation Logs of the Environmental Report (ER) (Exhibit F, Tab 1, Schedule 1, Attachment 1, pages 313-318)
  - Appendix D – Updated Stakeholder Consultation Logs of ER Amendment 1 (Exhibit F, Tab 1, Schedule 1, Attachment 2, pages 97-110)
  - Appendix D – Stakeholder Consultation Log of ER Amendment 2 (Exhibit F, Tab 1, Schedule 1, Attachment 3, pages 156-187)

Additionally, records of correspondence with MTO about the Project can be found as Attachment 1 to this response. There has been no additional correspondence with MTO since the Application was filed.

Prior to construction, Enbridge Gas intends to seek permit approvals from MTO for two locations along the Preferred Route where the pipeline intersects MTO lands.



On Tue, Mar 17, 2020 at 7:39 AM Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)> wrote:

Good Morning Tristan Lefler,

Please see attached the Ministry of Transportation of Ontario preliminary comments for the St. Laurent Ottawa North Replacement Pipeline Project.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Phone: 613-544-2220 ext: 4126



**Ministry of Transportation**

Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario K7L 5A3  
Tel.: 613 544-2220 \*4126  
Fax: 613-540-5106  
[Alexandre.gitkow@ontario.ca](mailto:Alexandre.gitkow@ontario.ca)

**Ministère des Transports**

Section de gestion des couloirs routiers  
1355, boulevard John Counter  
CP/Service de sacs 4000  
Kingston (Ontario) K7L 5A3  
Tél.: 613 544-2220 \* 4126  
Télééc. 613 540-5106

March 17, 2020

Tristan Lefler  
Environmental Assessment Project Manager  
Dillon Consulting Limited  
51 Breithaupt Street  
Kitchener, Ontario N2H 5G5

Via email: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

Dear Mr. Lefler:

**Re: Proposed St. Laurent Ottawa North Pipeline Replacement Project  
Enbridge Gas Inc., Notice of Study Commencement  
Highway 417, City of Ottawa,**

Thank you for circulating the notice of commencement for the Enbridge proposed St. Laurent pipeline replacement project in the City of Ottawa to the Ministry of Transportation (MTO) for review and comments. As you are aware, under the Public Transportation and Highway Improvement Act (PTHIA), the ministry, through the issuance of permits, has a control area that includes the Highway right of way corridor, and an area of 395 metres radius around each interchange/intersection and 45 m from the highway property limit. MTO review, approval and permits are required prior to the issuance of any other permits. This also includes any pre-engineering work that you may be required.

An Encroachment Permit or other Permit or approval required by the Ministry must be obtained for each encroachment prior to any construction occurring on site. Thee construction or operation of works within the limits of the right-of-way of a highway by other than the Ministry or its agent shall be considered an encroachment, and any application will also be required to be submitted with a full Traffic Management Plan in accordance with Book 7 requirements, including any restrictions required by MTO such as hours of work, etc.

The MTO have reviewed the St. Laurent proposal and we have the following preliminary comments:

- New crossing of 417 appears to cross at Michael St and then tie back into the existing St. Laurent line north of Belfast. This would cross the 417 at the end of our speed change lanes. Where other options are available, the freeway corridor should be avoided. MTO does not permit utilities to run parallel in the MTO freeway corridor and crossings should be minimized.
- The Enbridge preferred route at Vanier Parkway seems to follow our WB on ramp. This is not advisable as this location is a major staging area for construction and in particular, rapid Bridge Replacements. As a result, MTO will potentially be adding foundations and entrances in this area and would prefer not to have an additional constraint in the area. MTO is not

supportive of this option. While the preferred Enbridge crossing is within an interchange, this area is very constrained due to the proximity of the adjacent interchanges and adding additional constraints for future MTO contracts is not preferred. The plan also depicts a crossing of the Rideau River and any future MTO bridge replacement would be by jack and slide and requiring foundation elements (likely piles) to be added to the north of the existing structure to support the construction of the new superstructure. The proposed Enbridge line would be in conflict. Have other options been considered, such as Mann Avenue?

- Have other Highway 417 crossing options been considered? It appears that there are other potential crossing options that do not require Highway 417 crossings, or to minimize the impact by a crossing that is outside of the interchange area. If no other options exist, Enbridge should be proposing one Highway 417 crossing (rather than 3) at a mid-block point as Enbridge needs to avoid the interchange area.
- If Enbridge does come back with a plan for a crossing that is acceptable to MTO, prior to any permit being issued, Enbridge will be required to enter into a legal agreement with MTO outlining the permit conditions additional to the standard permit wording and to be signed by MTO and Enbridge (a representative who has signing authority to bind the company). The legal agreement will cover items such as:
  - Enbridge daylighting requirements
  - Depths and reference to approved plans
  - Relocation responsibilities
  - Enbridge is to cover 100% of the cost for all works, and any relocation within 20 years from the date of the signed agreement.
  - Enbridge will be required to mitigate all requirements as per the Enbridge 3<sup>rd</sup> Party Guideline for future MTO construction and maintenance activities.
- Any crossings have a required standard depth for all buried plant with the standard depth no less than 5 metres below the traveled portion of the highway (entire right of way). The standard depth for ramp crossings shall not be less than 3 metres below the traveled portion of the ramp. The MTO right of way depth shall be not less than 3 metres below existing ground level or bottom of the ditch whichever is greater. **All standard depths are in addition to all your work around requirement for the pipeline as the Enbridge guideline.**
- Enbridge to confirm the workaround requirements for the future MTO work. Is this a 1 metre or 3 metre workaround? This should be considered when determining the depth of the plant.
- All buried plant should be as level as possible across the entire length of the right-of-way and should be straight (perpendicular) to the traveled portion when crossing the highway.
- If you are decommissioning an existing pipe, the MTO will require that the abandoned pipe be removed completely.

MTO is not supportive of the routing as proposed and have many concerns as noted above. MTO is requesting a response to our questions/issues and you can send your response directly to me at [Alexandre.Gitkov@ontario.ca](mailto:Alexandre.Gitkov@ontario.ca). Our goal is to work together at these initial stages to ensure we have a routing and solution that will satisfy all parties. We are all invested in obtaining the best solution possible.

If you have any questions, please do not hesitate to contact me.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer

cc. Alain Nadeau, Ministry of Transportation, Corridor Management Officer  
Cheryl Tolles, Ministry of Transportation, Corridor Management Sr. Project Manager'



Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Phone: 613-544-2220 ext: 4126

---

**From:** St. Laurent North EA <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>  
**Sent:** March 30, 2020 11:50 AM  
**To:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>  
**Cc:** [tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com); Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>; Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>;  
[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)  
**Subject:** Re: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hi Alexandre,

Thank you for your email and your letter dated March 17, 2020. We acknowledge your comments and concerns with regard to the Project routing.

Enbridge will engage MTO during the permitting stage of the Project to obtain all required approvals for working in and around Highway 417 and its interchanges.

Regards,

Tristan Lefler  
Environmental Assessment Project Manager  
(519) 571-9833 Ext. 3138  
[stlaurentnorthea@dillon.ca](mailto:stlaurentnorthea@dillon.ca)

On Tue, Mar 17, 2020 at 7:39 AM Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)> wrote:

Good Morning Tristan Lefler,

Please see attached the Ministry of Transportation of Ontario preliminary comments for the St. Laurent Ottawa North Replacement Pipeline Project.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,



to me

----- Forwarded message -----

From: **Gitkow, Alexandre (MTO)** <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Date: Mon, Mar 30, 2020 at 12:08 PM

Subject: RE: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

To: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Cc: [tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com) <[tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com)>, Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>, Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>, [Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com) <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>

Good Morning Tristan Lefler,

May I suggest, that Enbridge does not wait until the permitting stage to engage the MTO, as at that stage of the planning process it may be to late and it may become difficult for Enbridge to have their plan accepted and meet their construction timeline if MTO is not satisfied with the plan. As I have mentioned in my letter, the MTO plans to do some work in that area and our plan may interfere with what Enbridge is planning. In addition, our work will take precedence, so timing may be a factor also.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Phone: 613-544-2220 ext: 4126

---

**From:** St. Laurent North EA <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

**Sent:** March 30, 2020 11:50 AM

**To:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

**Cc:** [tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com); Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>; Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>; [Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)

**Subject:** Re: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hi Alexandre,

This e-mail and any files transmitted with it are confidential and intended solely for the individual named. If you have received this e-mail by mistake, please notify the sender immediately by e-mail. If you are not the named addressee you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system. If you are not the named addressee you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system. If you are not the named addressee you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system.



**St. Laurent North EA** <StLaurentNorthEA@dillon.ca>

Sep 11, 2024, 12:22 PM (6 days ago)

to me

----- Forwarded message -----

From: **St. Laurent North EA** <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Date: Mon, May 4, 2020 at 10:26 AM

Subject: Re: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

To: Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Cc: [tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com) <[tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com)>, Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>, Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>, [Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com) <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>, <[Amanda.Rodek@ontario.ca](mailto:Amanda.Rodek@ontario.ca)>, Lefler, Tristan <[tlefler@dillon.ca](mailto:tlefler@dillon.ca)>

Good morning Alexandre,

Please see attached our formal response to your letter of March 17, 2020.

Regards,

Tristan Lefler

Environmental Assessment Project Manager

(519) 571-9833 Ext. 3138

[stlaurentnorthea@dillon.ca](mailto:stlaurentnorthea@dillon.ca)

On Mon, Mar 30, 2020 at 1:24 PM Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)> wrote:

Good Afternoon All,

Just to clarify my previous email, Enbridge will need to address all of the concerns noted in my letter of March 17<sup>th</sup>, 2020. The ministry requires that prior to proceeding any farther and going to the Energy Board for approval, that Enbridge submit a proposed routing option that addresses the MTO concerns and responds to the items noted in the letter. Waiting until the permitting stage is way too late to have this discussion and will create delays as mentioned before. Rather than proceeding with design work for a routing that may not be acceptable to MTO, Enbridge/Dillon needs to get an approved routing from MTO before proceeding any further with this project. As they may not be that many options for crossing that are satisfactory for the MTO, it may require Enbridge to talk to other stake/property holder for their final approval.

---

**One attachment** • Scanned by Gmail





May 4, 2020

Ministry of Transportation (MTO)  
Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario  
K7L 5A3

Via Email: [Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)

Attention: Alexandre Gitkow  
Corridor Management Officer

Proposed Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project  
City of Ottawa, Ontario

Dear Mr. Gitkow,

Thank you for your letter dated March 17, 2020. Please find below our formal response on behalf of Enbridge Gas Inc. (Enbridge), which provides an overview of the Project and why it is needed, as well as an itemized response to each of the concerns you raised in your letter.

The St. Laurent Ottawa North Replacement Pipeline Project (the Project) is proposed to replace an approximately 12.7-kilometre (km) existing nominal pipe size (NPS) 12-inch vintage steel pipeline that provides a critical supply of natural gas to the National Capital Region. The existing pipeline supplies natural gas to more than 165,000 customers and currently crosses Highway 417 twice. The replacement pipeline is proposed to cross Highway 417 once at the preferred crossing location at Michael Street, allowing Enbridge to abandon in-place the two existing vintage steel pipes.

The Notice of Study Commencement and Open House that was distributed on February 13, 2020 was sent to all relevant stakeholders as part of the Ontario environmental assessment (EA) process. Once the EA process is concluded, Enbridge will apply to the Ontario Energy Board (OEB) for a Leave-to-Construct approval (i.e., an approval to construct the Project). The OEB will decide if there is an appropriate need, justification, and timing for the Project. Stakeholder consultation is a key component of the EA process and we welcome all comments so that they can be considered when evaluating potential routes. As such, we would like to obtain MTO's support prior to submitting the Environmental Report to the OEB.

177 Colonnade Rd. S.  
Suite 101  
Ottawa, Ontario  
Canada  
K2E 7J4  
Telephone  
613.745.2213  
Fax  
613.745.3491

Ministry of Transportation  
Page 2  
May 4, 2020



We would like to note that a Leave-to-Construct approval from the OEB does not negate the requirement for obtaining MTO permits. We are hopeful that Enbridge and the MTO can work together to find a suitable crossing location for the replacement pipeline that MTO can support. The final design and permitting will be completed once Enbridge has received OEB approval for the Project.

Below, we have reiterated the concerns from your letter dated March 17, 2020 and have provided a corresponding response. The responses are intended to help clarify the Project. A follow-up discussion may be helpful.

MTO Comment - Bullet #1:

New crossing of 417 appears to cross at Michael St. and then tie back into the existing St. Laurent line north of Belfast. This would cross the 417 at the end of our speed change lanes. Where other options are available, the freeway corridor should be avoided. MTO does not permit utilities to run parallel in the MTO freeway corridor and crossings should be minimized.

1. Enbridge Response #1:

- Potential Highway 417 crossing locations were evaluated from Vanier Parkway to Cyrville Road. Michael Street was the preferred and most feasible route based on the following:
  - Allows Enbridge to minimize the amount of pipe within the Highway 417 corridor by crossing as close to perpendicular as possible.
  - The solution would replace the two existing Highway 417 crossings with a single crossing.
  - Avoids existing buildings and infrastructure.
  - Enough space to set up the drilling equipment and string the pipe.
  - Minimizes environmental and socio-economic impacts.
- The proposed preferred route reduces the amount of pipe paralleling Highway 417.
- The proposed preferred route replaces aging infrastructure with new infrastructure. This creates increased reliability, better records, and a longer lifespan.

MTO Comment - Bullet #2:

The Enbridge preferred route at Vanier Parkway seems to follow our WB on ramp. This is not advisable as this location is a major staging area for construction and in particular, rapid Bridge Replacements. As a result, MTO will potentially be adding foundations and entrances in this area and would prefer not to have an additional constraint in the area. MTO is not supportive of this option. While the preferred

Ministry of Transportation  
Page 3  
May 4, 2020



Enbridge crossing is within an interchange, this area is very constrained due to the proximity of the adjacent interchanges and adding additional constraints for future MTO contracts is not preferred. The plan also depicts a crossing of the Rideau River and any future MTO bridge replacement would be by jack and slide and requiring foundation elements (likely piles) to be added to the north of the existing structure to support the construction of the new superstructure. The proposed Enbridge line would be in conflict. Have other options been considered, such as Mann Avenue?

2. Enbridge Response #2:

- As mentioned, we have chosen the proposed preferred route based on our requirements for the gas pipe installation and based on where the gas comes from and where it needs to go. We would like to learn more information about your proposed work and the constraints your work will place on the proposed pipe location. Our goal is to find a mutually acceptable location that is near our proposed preferred route.
- The short parallel section maintains service to the RCMP building and would be located as close to the property line as possible to avoid future conflicts.
- Our proposal does not include a crossing of the Rideau River.

MTO Comment - Bullet #3:

Have other Highway 417 crossing options been considered? It appears that there are other potential crossing options that do not require Highway 417 crossings, or to minimize the impact by a crossing that is outside of the interchange area. If no other options exist, Enbridge should be proposing one Highway 417 crossing (rather than 3) at a mid-block point as Enbridge needs to avoid the interchange area.

3. Enbridge Response #3:

- As mentioned, we have been evaluating the area between Vanier Parkway and Cyrville Road. The proposed pipe does need to cross Highway 417 and we are obligated to find a financially feasible route. If we were to deviate greatly from this search area the financial costs become prohibitive. Please note that our proposed preferred route will reduce the Highway 417 crossings from two to one. We would be happy to discuss mid-block location options with the MTO; however, please note, it is often difficult to find enough construction space and acquire property rights mid-block.

MTO Comment - Bullet #4:

If Enbridge does come back with a plan for a crossing that is acceptable to MTO, prior to any permit being issued, Enbridge will be required to enter into a legal agreement with MTO outlining the permit conditions additional to the standard permit wording

Ministry of Transportation  
Page 4  
May 4, 2020



and to be signed by MTO and Enbridge (a representative who has signing authority to bind the company). The legal agreement will cover items such as:

- *Enbridge daylighting requirements*
- Depths and reference to approved plans
- *Relocation responsibilities*
- *Enbridge is to cover 100% of the cost for all works, and any relocation within 20 years from the date of the signed agreement.*
- *Enbridge will be required to mitigate all requirements as per the Enbridge 3rd Party Guideline for future MTO construction and maintenance activities.*

4. Enbridge Response #4:

- A similar approach was recently taken at another MTO location and a mutually acceptable agreement was reached.
- Please note, Enbridge is working with MTO's Engineering and Policy groups to resolve concerns with the Enbridge "Third Party Requirements" to eliminate this legal agreement requirement.

MTO Comment - Bullet #5:

Any crossings have a required standard depth for all buried plant with the standard depth no less than 5 metres below the traveled portion of the highway (entire right of way). The standard depth for ramp crossings shall not be less than 3 metres below the traveled portion of the ramp. The MTO right of way depth shall be not less than 3 metres below existing ground level or bottom of the ditch whichever is greater. All standard depths are in addition to all your work around requirement for the pipeline as the Enbridge guideline.

5. Enbridge Response #5:

- Enbridge's pipeline depths will meet or exceed the MTO minimum.
- Enbridge does not understand the bolded and underlined section of this bullet. The depth of the pipe installation does not impact the need to expose the pipe when working within the vicinity of the pipe. We would be happy to discuss this point further.

Ministry of Transportation  
Page 5  
May 4, 2020



MTO Comment - Bullet #6:

Enbridge to confirm the workaround requirements for the future MTO work. Is this a 1 metre or 3 metre workaround? This should be considered when determining the depth of the plant.

6. Enbridge Response #6:

- The proposed pipeline will be classified as a vital main and, therefore, will have the 3-metre safety zone based on our current guidelines. Please note, we are in the process of reviewing our requirements and discussing terms with the MTO's Engineering and Policy groups. Our goal is to arrive at a mutually acceptable arrangement for working near our pipes.

MTO Comment - Bullet #7:

All buried plant should be as level as possible across the entire length of the right-of-way and should be straight (perpendicular) to the traveled portion when crossing the highway.

7. Enbridge Response #7:

- Noted.

MTO Comment - Bullet #8:

If you are decommissioning an existing pipe, the MTO will require that the abandoned pipe be removed completely.

8. Enbridge Response #8:

- Typically, we abandon the pipes in-place and grout the void, since the removal process may damage the highway. Sections not directly under the highway may be more easily removed and this can be discussed further with MTO.

We hope that the above responses have helped clarify some of the Project details and have eased some of your concerns. Enbridge would welcome the opportunity to meet and discuss these comments in further detail in order to arrive at a mutually agreeable solution to all of your concerns.

Please do not hesitate to contact me should you have further questions or require further information.

Ministry of Transportation  
Page 6  
May 4, 2020



Sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in black ink, appearing to read 'Tristan Lefler'. The signature is fluid and cursive.

Tristan Lefler  
Environmental Assessment Project Manager  
(519) 571-9833 Ext. 3138  
[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

TEL:arl

cc: Tanya Turk, Environmental Advisor, Enbridge Gas Inc.  
Chuck Reaney, Senior Advisor, Lands & Permitting, Enbridge Gas Inc.  
Amanda Rodek, Ministry of Transportation

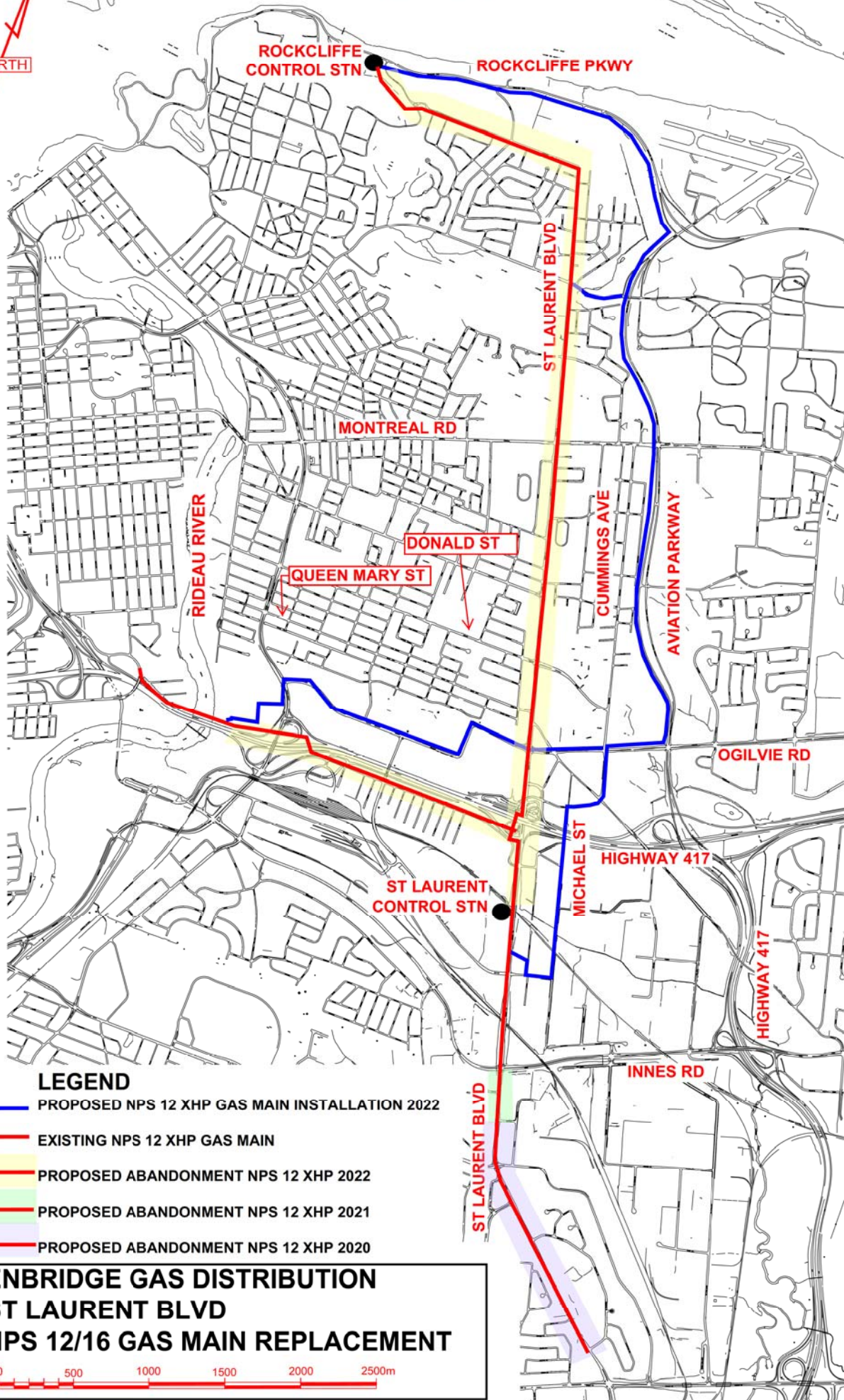
Attachment Map of Existing and Proposed NPS 12 XHP Pipeline

Our file: 19-1850



OTTAWA RIVER

NORTH



**LEGEND**

- PROPOSED NPS 12 XHP GAS MAIN INSTALLATION 2022
- EXISTING NPS 12 XHP GAS MAIN
- PROPOSED ABANDONMENT NPS 12 XHP 2022
- PROPOSED ABANDONMENT NPS 12 XHP 2021
- PROPOSED ABANDONMENT NPS 12 XHP 2020

**ENBRIDGE GAS DISTRIBUTION  
ST LAURENT BLVD  
NPS 12/16 GAS MAIN REPLACEMENT**





**St. Laurent North EA** <StLaurentNorthEA@dillon.ca>

Sep 11, 2024, 12:22 PM (6 days ago)

to me

----- Forwarded message -----

From: **St. Laurent North EA** <StLaurentNorthEA@dillon.ca>

Date: Thu, May 14, 2020 at 9:20 AM

Subject: Re: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

To: Gitkow, Alexandre (MTO) <Alexandre.Gitkow@ontario.ca>

Cc: [tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com) <tanya.turk@enbridge.com>, Tolles, Cheryl (MTO) <Cheryl.Tolles@ontario.ca>, Nadeau, Alain (MTO) <Alain.Nadeau@ontario.ca>, [Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com) <Chuck.Reaney@enbridge.com>, <Amanda.Rodek@ontario.ca>, Lefler, Tristan <tlefler@dillon.ca>

Good morning Alexandre,

We just wanted to check in and confirm that you received the letter we sent on May 4 (see attached).

Please let us know if you have any further questions or concerns.

One attachment • Scanned by Gmail



**St. Laurent North EA** <StLaurentNorthEA@dillon.ca>

Sep 11, 2024, 12:22 PM (6 days ago)

to me

----- Forwarded message -----

From: **Gitkow, Alexandre (MTO)** <Alexandre.Gitkow@ontario.ca>

Date: Thu. May 14. 2020 at 9:55 AM



**St. Laurent North EA** <StLaurentNorthEA@dillon.ca>  
to me

Sep 11, 2024, 12:22 PM (6 days ago)

----- Forwarded message -----

From: **Gitkow, Alexandre (MTO)** <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Date: Thu, May 14, 2020 at 9:55 AM

Subject: RE: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

To: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Cc: [tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com) <[tanya.turk@enbridge.com](mailto:tanya.turk@enbridge.com)>, Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>, Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>, [Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com) <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>, Rodek, Amanda (MTO) <[Amanda.Rodek@ontario.ca](mailto:Amanda.Rodek@ontario.ca)>, Lefler, Tristan <[tlefler@dillon.ca](mailto:tlefler@dillon.ca)>

Good Morning Tristan Lefler,

Yes, we have received your letter and we are reviewing it, we have ask Enbridge for additional map for us to understand what is existing, after we receive those we will be in a better position to give comments.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Cell: 613-323-1253



**St. Laurent North EA** <StLaurentNorthEA@dillon.ca>  
to me

Sep 11, 2024, 12:24 PM (6 days ago)

2 Attachments • Scanned by Gmail





**St. Laurent North EA** <StLaurentNorthEA@dillon.ca>  
to me

Sep 11, 2024, 12:25 PM (6 days ago)

----- Forwarded message -----

**From:** Gitkow, Alexandre (MTO) <Alexandre.Gitkow@ontario.ca>

**Date:** Fri, Jul 10, 2020 at 10:25 AM

**Subject:** Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

**To:** StLaurentNorthEA@dillon.ca <StLaurentNorthEA@dillon.ca>

**Cc:** tanya.turk@enbridge.com <tanya.turk@enbridge.com>, Tolles, Cheryl (MTO) <Cheryl.Tolles@ontario.ca>, Nadeau, Alain (MTO) <Alain.Nadeau@ontario.ca>, Chuck.Reaney@enbridge.com <Chuck.Reaney@enbridge.com>, Lefler, Tristan <tlefler@dillon.ca>

Good Morning,

Please see attached the Ministry of Transportation of Ontario comments on your proposal and response to your letter date May 4<sup>th</sup> for the St. Laurent Ottawa North Replacement Pipeline Project.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Cell: 613-323-1253

---

**From:** St. Laurent North EA <StLaurentNorthEA@dillon.ca>

**Sent:** May 4, 2020 10:27 AM

**To:** Gitkow, Alexandre (MTO) <Alexandre.Gitkow@ontario.ca>

**Cc:** tanya.turk@enbridge.com; Tolles, Cheryl (MTO) <Cheryl.Tolles@ontario.ca>; Nadeau, Alain (MTO) <Alain.Nadeau@ontario.ca>; Chuck.Reaney@enbridge.com; Rodek, Amanda (MTO) <Amanda.Rodek@ontario.ca>; Lefler, Tristan <tlefler@dillon.ca>

**Subject:** Re: Proposed Enbridge St. Laurent Ottawa North Replacement Pipeline Project (MTO comments)

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good morning Alexandre,



**Ministry of Transportation**

Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario K7L 5A3  
Tel.: 613 544-2220 \*4126  
Fax: 613-540-5106  
[Alexandre.gitkow@ontario.ca](mailto:Alexandre.gitkow@ontario.ca)

**Ministère des Transports**

Section de gestion des couloirs routiers  
1355, boulevard John Counter  
CP/Service de sacs 4000  
Kingston (Ontario) K7L 5A3  
Tél.: 613 544-2220 \* 4126  
Télééc. 613 540-5106

July 10th, 2020

Tristan Lefler, M.Sc.  
Environmental Assessment Project Manager  
Dillon Consulting Limited

Via email: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

**Re: Enbridge Gas Inc.  
Proposed St. Laurent Ottawa North Pipeline Replacement Project  
City of Ottawa, Ontario**

Thank you for your response to the Ministry of Transportation's (MTO) March 27<sup>th</sup>, 2020 letter regarding the Proposed St. Laurent Ottawa North Pipeline Replacement Project. The ministry has reviewed the proposal and response in accordance with the *Public Transportation and Highway Improvement Act (PTHIA)* and Highway Access Management Guideline and offers the following comments.

Under the authority of the *Public Transportation and Highway Improvement Act*, the ministry, through the issuance of permits, authorizes all encroachments within the limits of a highway. An Encroachment Permit or other Permit or approval required by the Ministry must be obtained for each encroachment before work commences. The construction or operation of works within the limits of the right-of-way of a highway by third parties or its agent shall be considered an encroachment.

**Michael Street Crossing:**

- The crossing at Michael Street is acceptable in principle, however Enbridge will need to provide a detailed plan that is in accordance with Ministry policy, before we grant final approval for an encroachment permit.
- All buried plant must satisfy minimum depth standards for highway crossings. The depth shall be not less than 5 meters below the traveled portion of the highway; the standard depth for ramp crossings shall be not less than 3 meters below the traveled portion of the ramp and in our ROW the depth shall be not less than 3 meters below existing ground level or 1.5m from bottom of the ditch whichever is greater.
- All buried plant should be as level as possible across the entire length of the right-of-way and the buried plant should also be as straight as possible (perpendicular) to the traveled portion when crossing the highway.
- The proposed pipeline at Michael Street will pass near a City of Ottawa watermain. MTO will need a letter from the City stating that the pipeline location is acceptable to the City.
- The Proposed pipeline at Michael Street will also pass under the OLRT tracks, and the MTO will require a letter from OLRT stating that the proposed pipeline location, depth and protection are acceptable to them.



**Abandoned lines:**

- MTO will want all decommissioned/abandoned pipes removed from our ROW, we may consider cap and grout for the crossing under the main 417 Highway, but those pipes will need to be geolocated and the information will need to be sent to the MTO for our records.

**Vanier Parkway and River crossing:**

- Your preferred route seems to follow our property line and WB on ramp at Vanier Parkway. This route will not be supported by the MTO as it places constraints on MTO future ramp, highway and bridge maintenance, repair or construction. One of your alternatives showed a possible route to the north of the RCMP building (approximately at Presland Road west) and coming down the North River Road and then on Rideau River Eastern Pathway to connect to your existing pipeline that crosses the Rideau River. This is MTO's preferred pipeline alignment, as it would remove the constraints of the Vanier Parkway route and remove the section of existing pipeline that runs along the highway. MTO is aware that there is a connection to the RCMP building there, but we know that the alternative route runs along the west side of that property giving Enbridge alternative locations to connect to the building.

- If Enbridge has future work on the pipeline crossing the Rideau River, or is planning to place a new crossing at the Rideau River, the MTO will request that this pipeline be relocated north of the existing location to avoid conflict with MTO bridge repairs and future reconstruction.

MTO is supportive in principle of the routing as proposed at Michael Street, but has concerns with the Vanier Parkway route as noted above. MTO is requesting a response to our concerns which can be sent directly to my attention at: [Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca). Our goal is to work together at these initial stages to ensure we have a routing and solution that will satisfy all parties. We are all invested in obtaining the best solution possible.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer

cc. Alain Nadeau, Ministry of Transportation, Corridor Management Officer  
Cheryl Tolles, Ministry of Transportation, Sr. Project Manager  
Louis Tay, Ministry of Transportation, Head Corridor Management  
Peter Freure, Ministry of Transportation, Senior Project Engineer





Cell: 519-529-1200

**From:** St. Laurent North EA <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>  
**Sent:** October 19, 2020 4:01 PM  
**To:** [stlaurentnorthea@dillon.ca](mailto:stlaurentnorthea@dillon.ca)  
**Cc:** Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>  
**Subject:** Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good afternoon,

Please find attached a letter describing proposed changes to the Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project (the Project). Enbridge Gas retained Dillon Consulting Limited (Dillon) to undertake a route selection and environmental and socio-economic impact study and report (Environmental Report) for the Project. On July 21, 2020, the Environmental Report was posted to the Enbridge Gas project website and was submitted to the Ontario Pipeline Coordinating Committee (OPCC) for review.

Enbridge Gas has recently identified a new preferred route for Phase 4 of the Project and, as such, Dillon is preparing an Environmental Report Amendment.

**We are interested in hearing from you** regarding issues/concerns that you may have in relation to the proposed changes to this Project. Please provide feedback to the Project email at [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) or by contacting one of the individuals listed in the attached letter by **November 20, 2020**.

Regards,  
Tristan Lefler  
Environmental Assessment Project Manager  
(519) 588-1930

This message is directed in confidence solely to the person(s) named above and may contain privileged, confidential or private information which is not to be disclosed. If you are not the addressee or an authorized representative thereof, please contact the undersigned and then destroy this message.



October 19, 2020

Via Electronic Mail Only

Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project in the City of Ottawa, Ontario

Enbridge Gas Inc. (Enbridge Gas) retained Dillon Consulting Limited (Dillon) to undertake a route selection and environmental and socio-economic impact study and report (Environmental Report) for the proposed St. Laurent Ottawa North Replacement Pipeline Project (the Project). The study was conducted between November 2019 and July 2020. The Environmental Report was completed according to the Ontario Energy Board (OEB) Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition (2016).

On July 21, 2020, the Environmental Report was posted to the Enbridge Gas project website and was submitted to the Ontario Pipeline Coordinating Committee (OPCC) for review. The 42-day OPCC review period ended on September 1, 2020. Enbridge Gas has not yet filed a Leave-to-Construct (LTC) application with the OEB, as they have recently identified a new preferred route for Phase 4 of the pipeline through ongoing stakeholder and community engagement and engineering studies. There are no proposed changes to Phase 3 of the Project.

Dillon is preparing an Environmental Report Amendment in consideration of Enbridge Gas' proposed changes to the Phase 4 preferred route for the Project. The new Phase 4 preferred route is a hybrid of the existing preferred route and one of the alternative routes identified in the Environmental Report and is shown on the attached figure. The figure depicts the new Phase 4 preferred route and a potential alternative route; however, Phase 3 is not depicted, since there are no changes to the Phase 3 routing as presented in the Environmental Report.

The objective of the Environmental Report Amendment is to determine if there are any potential environmental or socio-economic impacts as a result of the new preferred route that were not captured in the assessment already completed in the Environmental Report.

The Environmental Report Amendment will be circulated to the Project contact list, including the OPCC, for a 30-day comment period prior to being filed with the OEB. The OEB's review and approval is required before the Project can proceed. If approved, construction of Phase 4 of the Project is currently anticipated to begin in 2022.

177 Colonnade Road  
Suite 101  
Ottawa, Ontario  
Canada  
K2E 7J4  
Telephone  
613.745.2213  
Fax  
613.745.3491

Page 2  
October 19, 2020



Stakeholder engagement and Indigenous consultation continue to be key components of the Project. We are interested in hearing from you regarding issues/concerns that you may have in relation to the proposed changes to this Project. Please provide feedback to the Project email at [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) or by contacting one of the individuals listed below by November 19, 2020.

Tanya Turk  
Environmental Advisor  
Enbridge Gas Inc.  
101 Honda Boulevard,  
Markham, ON L6C 0M6  
(416) 495-3103  
[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)

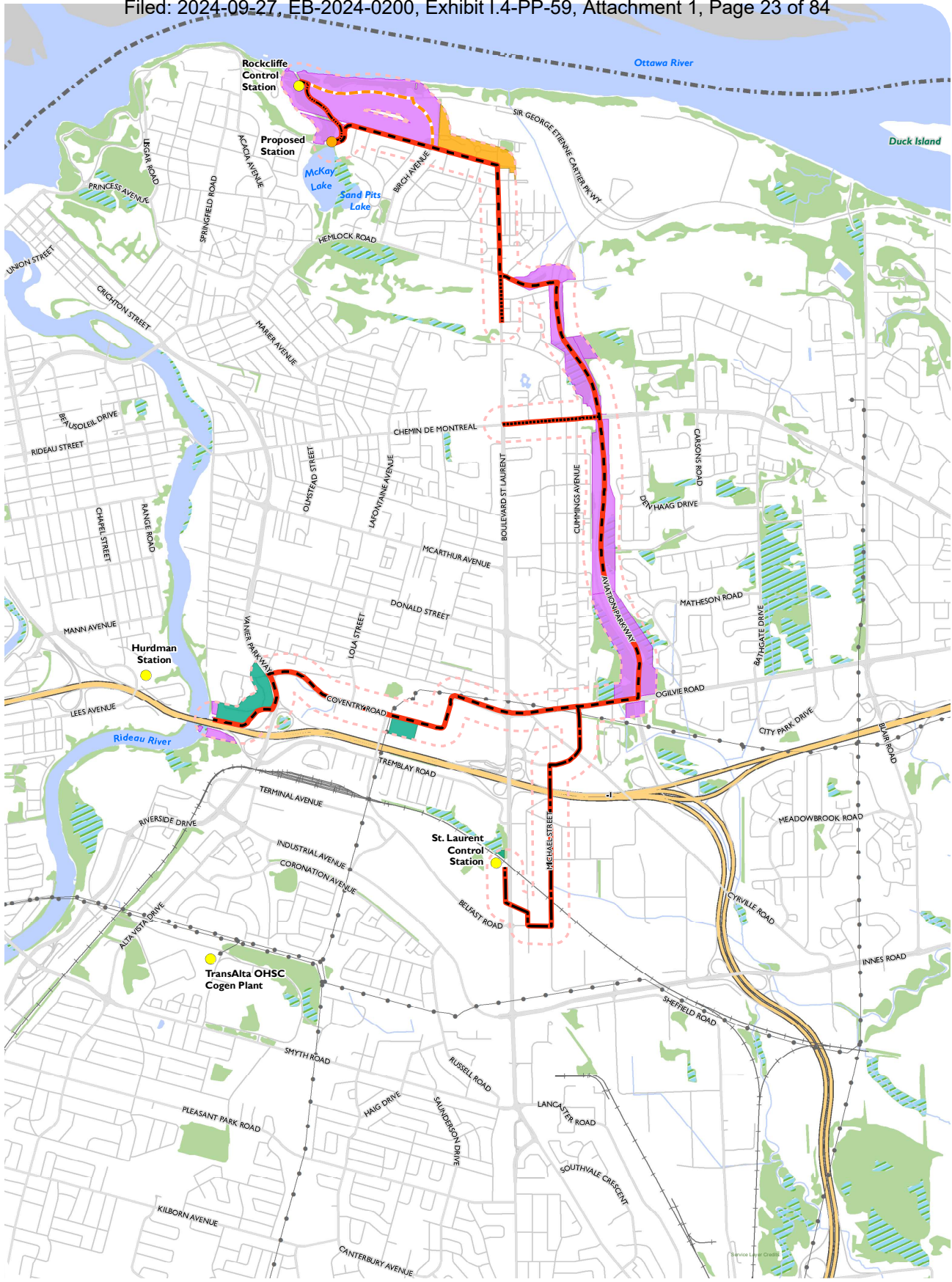
Tristan Lefler  
Environmental Assessment Project Manager  
Dillon Consulting Limited  
51 Breithaupt Street, Suite 200  
Kitchener, ON N2H 5G5  
(519) 588-1930  
[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

Sincerely,

DILLON CONSULTING LIMITED

Tristan Lefler, M.Sc.

Attachment: New Phase 4 Preferred Route and Alternative Route



**ENBRIDGE GAS INC.**  
ST. LAURENT OTTAWA NORTH  
REPLACEMENT PIPELINE PROJECT

**NEW PHASE 4 PREFERRED  
ROUTE AND ALTERNATIVE  
ROUTE**



Existing Station	Gas Line Types NPS 12 HP Gas Main	National Capital Commission	Base Data Freeway	Waterbody
Proposed Station	NPS 6 XHP Gas Main	Public Services and Procurement Canada	Major Road	Provincial Boundary
Phase 4 Preferred Route	NPS 12 XHP Gas Main	Royal Canadian Mounted Police	Local Road	Unevaluated Wetland
Alternative Route	NPS 16 XHP Gas Main		Railway	Wooded Area
Study Area (125 m)			Hydro Line	
			Watercourse	



MAP DRAWING INFORMATION:  
DATA PROVIDED BY: ENBRIDGE GAS INC., DFRP  
MAP CREATED BY: LK, GAM  
MAP CHECKED BY: AL  
MAP PROJECTION: NAD 1983 UTM Zone 18N





----- Forwarded message -----

From: **Gitkow, Alexandre (MTO)** <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Date: Fri, Oct 30, 2020 at 10:43 AM

Subject: RE: Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

To: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Cc: Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>, Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>, Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>, Kapusta, Stephen (MTO) <[Stephen.Kapusta@ontario.ca](mailto:Stephen.Kapusta@ontario.ca)>, Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>

Good Morning,

Thank you for circulating the Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project, the MTO as no issue with the proposed change, but still has concern with the overhaul project. Please see attached letter for more detail.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Cell: 613-323-1253

---

**From:** St. Laurent North EA <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

**Sent:** October 19, 2020 4:01 PM

**To:** [stlaurentnorthea@dillon.ca](mailto:stlaurentnorthea@dillon.ca)

**Cc:** Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>

**Subject:** Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good afternoon,

**Ministry of Transportation**

Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario K7L 5A3  
Tel.: 613-323-1253  
Fax: 613-540-5106  
[Alexandre.gitkow@ontario.ca](mailto:Alexandre.gitkow@ontario.ca)

**Ministère des Transports**

Section de gestion des couloirs routiers  
1355, boulevard John Counter  
CP/Service de sacs 4000  
Kingston (Ontario) K7L 5A3  
Tél.: 613-323-1253  
Télééc. 613 540-5106



October 30, 2020

Tristan Lefler, M.Sc.  
Environmental Assessment Project Manager  
Dillon Consulting Limited

Via email: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

**Re: Enbridge Gas Inc.  
Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North  
Replacement Pipeline Project in the City of Ottawa, Ontario**

Thank you for circulating the Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North, Ontario to the Ministry of Transportation (MTO) for review and comments. The ministry has reviewed the change and response in accordance with the *Public Transportation and Highway Improvement Act (PTHIA)* and Highway Access Management Guideline and offers the following comments. MTO has no objection to the proposed change but has concern that Enbridge has not taken into account any of our objection from our letter dated March 17<sup>th</sup>, 2020 or our July 10<sup>th</sup>, 2020 letter for their project in and around the Vanier Parkway. Our comments have not changed and are listed below.

Under the authority of the *Public Transportation and Highway Improvement Act*, the ministry, through the issuance of permits, authorizes all encroachments within the limits of a highway. An Encroachment Permit or other Permit or approval required by the Ministry must be obtained for each encroachment before work commences. The construction or operation of works within the limits of the right-of-way of a highway by third parties or its agent shall be considered an encroachment.

**Michael Street Crossing:**

- The crossing at Michael Street is acceptable in principle, however Enbridge will need to provide a detailed plan that is in accordance with Ministry policy, before we grant final approval for an encroachment permit.
- All buried plant must exceed minimum depth standards for highway crossings. The depth shall be not less than 5 meters below the traveled portion of the highway; the standard depth for ramp crossings shall be not less than 3 meters below the traveled portion of the ramp and in our ROW the depth shall be not less than 3 meters below existing ground level or 1.5m from bottom of the ditch whichever is greater.
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-2-

- The Proposed pipeline at Michael Street will also pass under the OLRT tracks, and the MTO will require a letter from OLRT stating that the proposed pipeline location, depth and protection are acceptable to them.

**Abandoned lines:**

- MTO will want all decommissioned/abandoned pipes removed from our ROW, we may consider cap and grout for the crossing under the main 417 Highway, but those pipes will need to be geolocated and the information will need to be sent to the MTO for our records.

**Vanier Parkway and River crossing:**

- Your preferred route seems to follow our property line and WB on ramp at Vanier Parkway. This route will not be supported by the MTO as it places constraints on future MTO ramp, highway and bridge maintenance, repair or construction. One of your alternatives showed a possible route to the north of the RCMP building (approximately at Presland Road west) and coming down the North River Road and then on Rideau River Eastern Pathway to connect to your existing pipeline that crosses the Rideau River. This is MTO's preferred pipeline alignment, as it would remove the constraints of the Vanier Parkway route and remove the section of existing pipeline that runs along the highway. MTO is aware that there is a connection to the RCMP building there, but we know that the alternative route runs along the west side of that property giving Enbridge alternative locations to connect to the building.

- If Enbridge has future work on the pipeline crossing the Rideau River, or is planning to place a new crossing at the Rideau River, the MTO will request that this pipeline be relocated north of the existing location to avoid conflict with MTO bridge repairs and future reconstruction.

MTO is supportive in principle of the routing as proposed at Michael Street, but has concerns with the Vanier Parkway route as noted above. MTO is requesting a response to our concerns which can be sent directly to my attention at: [Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca). Our goal is to work together at these initial stages to ensure we have a routing and solution that will satisfy all parties. We are all invested in obtaining the best solution possible.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer

cc. Alain Nadeau, Ministry of Transportation, Corridor Management Officer  
Cheryl Tolles, Ministry of Transportation, Sr. Project Manager  
Stephen Kapusta, Ministry of Transportation, Sr. Project Manager  
Louis Tay, Ministry of Transportation, Head Corridor Management  
Peter Freure, Ministry of Transportation, Senior Project Engineer



----- Forwarded message -----

From: **Rodek, Amanda (MTO)** <[Amanda.Rodek@ontario.ca](mailto:Amanda.Rodek@ontario.ca)>

Date: Wed, Nov 18, 2020 at 11:59 AM

Subject: RE: Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

To: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Cc: Lefler, Tristan <[tlefler@dillon.ca](mailto:tlefler@dillon.ca)>

Hi Tristan,

Enbridge's October 19, 2020 email to Tony Di Fabio regarding the Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project has been forwarded to my attention for review and response.

Please find the following comments from the Ministry of Transportation for your consideration regarding the proposed pipeline:

- MTO – East Region Highway Corridor Management office responded on October 30 2020 (see attached)
- At this time we have no further comments than previously provided

Have a great day!

Thanks.

Amanda Rodek  
Program Analyst  
Ministry of Transportation  
Corridor Management Office  
301 St. Paul Street  
St. Catharines, ON L2R 7R4  
Tel. (905) 704-2916



**From:** St. Laurent North EA <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

**Sent:** November 18, 2020 4:19 PM

**To:** [stlaurentnorthea@dillon.ca](mailto:stlaurentnorthea@dillon.ca)

**Subject:** UPDATED Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good afternoon,

You are receiving this email because you are on the stakeholder list for the Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project (the Project).

Enbridge Gas retained Dillon Consulting Limited (Dillon) to undertake a route selection and environmental and socio-economic impact study and report (Environmental Report) for the Project. On July 21, 2020, the Environmental Report was posted to the Enbridge Gas project website and was submitted to the Ontario Pipeline Coordinating Committee (OPCC) for review.

On October 19 and 20, 2020, Enbridge Gas distributed a Notice of Project Change for a new preferred route for Phase 4 of the pipeline, which was a hybrid of the existing preferred route and one of the alternative routes identified in the Environmental Report (June 2020).

Over the past month, through continued consultation with key stakeholders, Enbridge Gas has revised the new preferred route described in the October Notice of Project Change to wholly follow one of the alternative routes identified in the Environmental Report (June 2020). A figure is provided in the attached letter.

Dillon has prepared an Environmental Report Amendment (November 2020) in consideration of Enbridge Gas' proposed changes to the preferred route in Phase 4 of the Project.

You can find more information on the Project, including the Environmental Report (June 2020) and Environmental Report Amendment (November 2020), on the Enbridge Gas project website at <https://www.enbridgegas.com/about-us>. Click on the "Projects" tab and select "St. Laurent Ottawa North Pipeline Project".

**We are interested in hearing from you** regarding issues/concerns that you may have in relation to the proposed changes to this Project. Please provide feedback to the Project email at [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) or by contacting one of the individuals listed in the attached letter by **December 17, 2020**.

Regards,

Tristan Lefler

Environmental Assessment Project Manager

(519) 588-1930

This message is directed in confidence solely to the person(s) named above and may contain privileged, confidential or private information which is not to be disclosed. If you are not the addressee or an authorized representative thereof, please contact the undersigned and then destroy this message.

Ce message est destiné uniquement aux personnes indiquées dans l'entête et peut contenir une information privilégiée, confidentielle ou privée et ne pouvant être divulguée. Si vous n'êtes pas le destinataire de ce message ou une personne autorisée à le recevoir, veuillez communiquer avec le soussigné et ensuite détruire ce message.



November 18, 2020

Via Electronic Mail Only

UPDATED Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project in the City of Ottawa, Ontario

Enbridge Gas Inc. (Enbridge Gas) retained Dillon Consulting Limited (Dillon) to undertake a route selection and environmental and socio-economic impact study and report (Environmental Report) for the proposed St. Laurent Ottawa North Replacement Pipeline Project (the Project). The Environmental Report was completed in late June 2020 according to the Ontario Energy Board (OEB) Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition (2016).

On July 21, 2020, the Environmental Report (June 2020) was posted to the Enbridge Gas project website and was submitted to the Ontario Pipeline Coordinating Committee (OPCC) for review. The 42-day OPCC review period ended on September 1, 2020.

On October 19 and 20, 2020, Enbridge Gas distributed a Notice of Project Change to the Project contact list for a new preferred route for Phase 4 of the pipeline, which was a hybrid of the existing preferred route and one of the alternative routes identified in the Environmental Report (June 2020).

Over the past month, through continued consultation with key stakeholders, Enbridge Gas has revised the new preferred route described in the October Notice of Project Change to follow one of the alternative routes identified in the Environmental Report (June 2020). Note, there are no proposed changes to Phase 3 of the Project. Enbridge Gas has not yet filed a Leave-to-Construct (LTC) application with the OEB.

Dillon has prepared an Environmental Report Amendment in consideration of Enbridge Gas' proposed changes to the preferred route in Phase 4 of the Project. The new preferred route follows one of the alternative routes presented in the Environmental Report (June 2020) and is shown on the attached figure. Phase 3 is not depicted, since there are no changes to Phase 3 routing as presented in the Environmental Report (June 2020).

The objective of the Environmental Report Amendment is to determine if there are any potential environmental or socio-economic impacts as a result of the change in the preferred route that were not captured in the assessment already completed in the Environmental Report (June 2020).

177 Colonnade Road  
Suite 101  
Ottawa, Ontario  
Canada  
K2E 7J4  
Telephone  
613.745.2213  
Fax  
613.745.3491

Page 2  
November 18, 2020



The Environmental Report (June 2020) and the Environmental Report Amendment are available for review on the Enbridge Gas Project website at <https://www.enbridgegas.com/about-us>. Click on the "Projects" tab and select "St. Laurent Ottawa North Pipeline Project".

Following a review period, the Environmental Report (June 2020) and Environmental Report Amendment will be submitted as part of the LTC application to the OEB. The OEB's review and approval is required before the Project can proceed. If approved, construction of Phase 3 of the Project is anticipated to begin in 2021 and construction of Phase 4 of the Project is anticipated to begin in 2022.

Stakeholder engagement and Indigenous consultation continue to be key components of the Project. We are interested in hearing from you regarding issues/concerns that you may have in relation to the proposed changes to this Project. Please provide feedback to the Project email at [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) or by contacting one of the individuals listed below by December 17, 2020.

Tanya Turk  
Environmental Advisor  
Enbridge Gas Inc.  
101 Honda Boulevard,  
Markham, ON L6C 0M6  
(416) 495-3103  
[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)

Tristan Lefler  
Environmental Assessment Project Manager  
Dillon Consulting Limited  
51 Breithaupt Street, Suite 200  
Kitchener, ON N2H 5G5  
(519) 588-1930  
[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

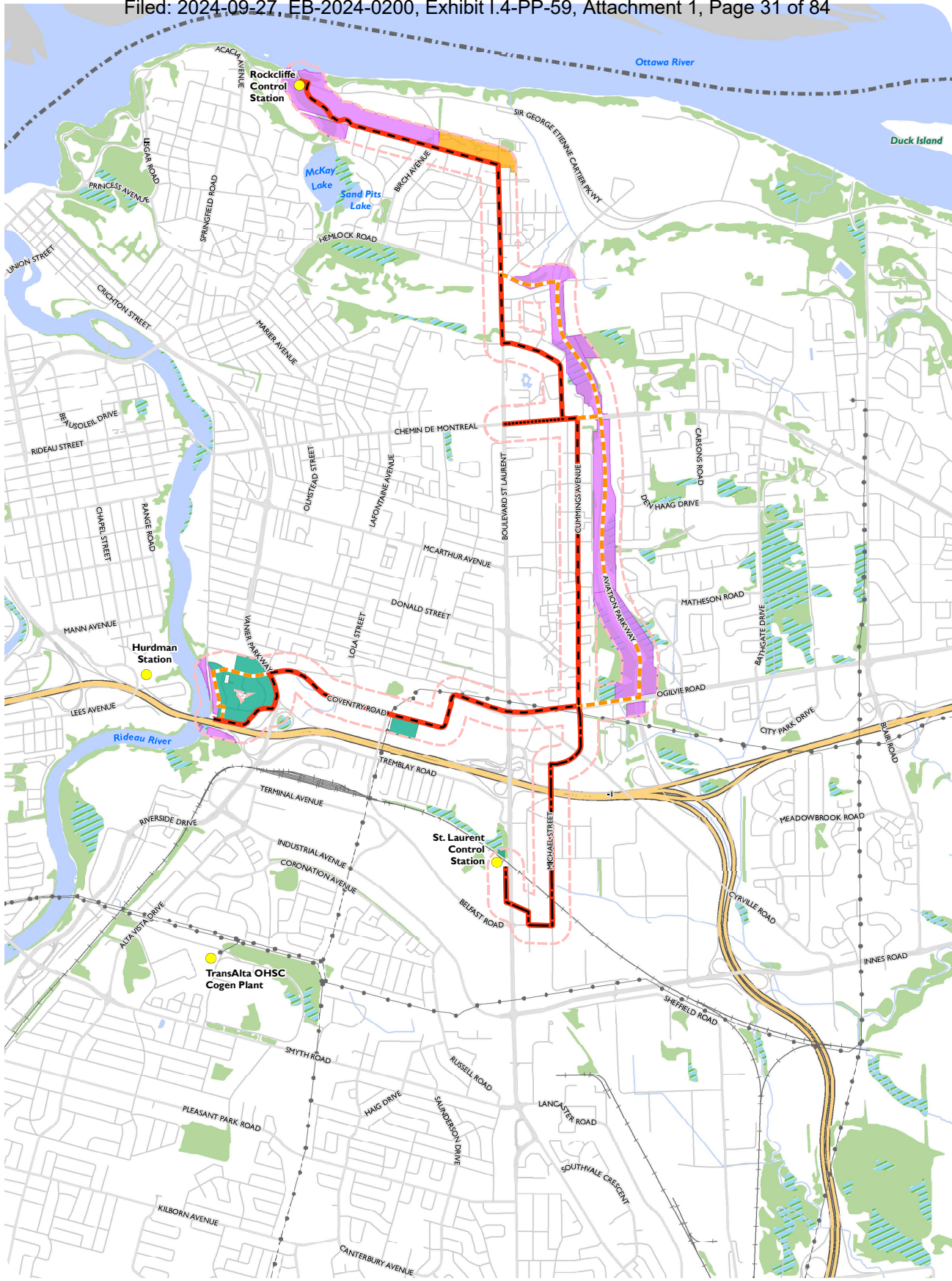
Sincerely,

DILLON CONSULTING LIMITED

Tristan Lefler, M.Sc.

Attachment: Figure 1: New Phase 4 Preferred Route





**ENBRIDGE GAS INC.**  
**ST. LAURENT OTTAWA NORTH**  
**REPLACEMENT PIPELINE PROJECT**

**NEW PHASE 4**  
**PREFERRED ROUTE**  
**FIGURE 1**

**Gas Line Types**

- Existing Station
- Alternative Route
- Phase 4 Preferred Route
- NPS 6 XHP Gas Main
- NPS 12 XHP Gas Main
- NPS 16 XHP Gas Main

**Federal Land Ownership (DFRP)**

- National Capital Commission
- Public Services and Procurement Canada
- Royal Canadian Mounted Police

**Base Data**

- Freeway
- Major Road
- Local Road
- Railway
- Hydro Line
- Watercourse
- Waterbody
- Provincial Boundary
- Unevaluated Wetland
- Wooded Area

MAP DRAWING INFORMATION:  
 DATA PROVIDED BY: MNRFP,  
 ENBRIDGE GAS INC., DFRP  
 MAP CREATED BY: GAM  
 MAP CHECKED BY: AL  
 MAP PROJECTION: NAD 1983 UTM Zone 18N

SCALE: 1:25,000  
 0 0.25 0.5 1 km

PROJECT: 19-1850 STATUS: DRAFT DATE: 2020-11-11





Regards,

Tristan Lefler

On Wed, Dec 2, 2020 at 6:47 AM Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)> wrote:

Good Morning,

Just following up on my request for clarification below, we would like to have time to review before your December 17<sup>th</sup> deadline.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Cell: 613-323-1253

---

**From:** Gitkow, Alexandre (MTO)

**Sent:** November 19, 2020 9:36 AM

**To:** [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

**Cc:** Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>; Kapusta, Stephen (MTO) <[Stephen.Kapusta@ontario.ca](mailto:Stephen.Kapusta@ontario.ca)>

**Subject:** RE: UPDATED Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

Good Morning



----- Forwarded message -----

From: **St. Laurent North EA** <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Date: Wed, Dec 2, 2020 at 10:29 AM

Subject: Re: UPDATED Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

To: Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Cc: Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>, Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>, Kapusta, Stephen (MTO)

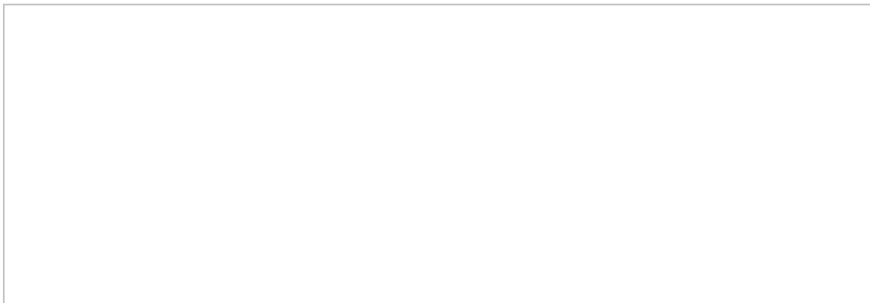
<[Stephen.Kapusta@ontario.ca](mailto:Stephen.Kapusta@ontario.ca)>

Good morning Alexandre,

Thank you for your email and apologies for the delayed response.

Referring to the map you reference in your question below (I've also included a screen capture of the area in question), the red line is our Preferred Route, and the orange line is our Alternative Route. Both routes are being considered, and consultation is ongoing with both provincial and federal stakeholders to determine the most optimal route. Based on this map, and the information known at this time, if the Preferred Route is selected, it would likely follow the red line to the river (in which case the orange line would not be used). If the Alternate Route is selected *in this area*, the route would follow Coventry Road up to Vanier Parkway, and then follow the orange dashed line around/through the PSPC property (and the red line would not be followed). It would be one or the other, not both (based on our preliminary design).

I hope this helps!







----- Forwarded message -----

From: **Gitkow, Alexandre (MTO)** <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Date: Thu, Dec 3, 2020 at 8:30 AM

Subject: UPDATED Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project (MTO comments Dec 3rd)

To: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>, Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>

Cc: Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>, Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>, Kapusta, Stephen (MTO) <[Stephen.Kapusta@ontario.ca](mailto:Stephen.Kapusta@ontario.ca)>, Freure, Peter (MTO) <[Peter.Freure@ontario.ca](mailto:Peter.Freure@ontario.ca)>, Nadeau, Alain (MTO) <[Alain.Nadeau@ontario.ca](mailto:Alain.Nadeau@ontario.ca)>

Good Morning,

Thank you for circulating the Updated Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project, please see attached our response letter.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Cell: 613-323-1253

---

**From:** St. Laurent North EA <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

**Sent:** November 18, 2020 4:19 PM

**To:** [stlaurentnorthea@dillon.ca](mailto:stlaurentnorthea@dillon.ca)

**Subject:** UPDATED Notice of Project Change - Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good afternoon,

You are receiving this email because you are on the stakeholder list for the Enbridge Gas St. Laurent Ottawa North Replacement Pipeline Project (the Project).

Enbridge Gas retained Dillon Consulting Limited (Dillon) to undertake a route selection and environmental and socio-economic impact

**Ministry of Transportation**

Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario K7L 5A3  
Tel.: 613 544-2220 \*4126  
Fax: 613-540-5106  
[Alexandre.gitkow@ontario.ca](mailto:Alexandre.gitkow@ontario.ca)

**Ministère des Transports**

Section de gestion des couloirs routiers  
1355, boulevard John Counter  
CP/Service de sacs 4000  
Kingston (Ontario) K7L 5A3  
Tél.: 613 544-2220 \* 4126  
Télééc. 613 540-5106



December 03, 2020

Tristan Lefler, M.Sc.  
Environmental Assessment Project Manager  
Dillon Consulting Limited

Via email: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)

**Re: Enbridge Gas Inc.  
Updated Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North  
Replacement Pipeline Project in the City of Ottawa, Ontario**

Thank you for circulating the updated Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North, Ontario to the Ministry of Transportation (MTO) dated November 18, 2020, for review and comments. The ministry has reviewed the updated proposal in accordance with the *Public Transportation and Highway Improvement Act (PTHIA)* and offers the following comments.

Under the authority of the *Public Transportation and Highway Improvement Act*, the ministry, through the issuance of permits, authorizes all encroachments within the limits of a highway and other permits within a control area of 395 meters radius around each interchange/intersection and 45 m from the highway property limit. An Encroachment Permit or other Permit or approval required by the Ministry must be obtained for each encroachment or other activities before work commences. The construction or operation of works within the limits of the MTO jurisdiction by third parties or its agent, this also includes any pre-engineering work that you may require, will require a permit.

**Vanier Parkway and River crossing:**

- Your "preferred route" seems to follow our property line and WB on ramp at Vanier Parkway. This route will not be supported by the MTO as it places constraints on MTO future ramp, highway and bridge maintenance, repair or construction. In addition, the MTO does not allow utility to run parallel to freeways and this option would run for about ½ a kilometer.
- The "alternatives route" shown to the north of the RCMP building and coming down the North River Road and then on Rideau River Eastern Pathway to connect to your existing pipeline that crosses the Rideau River is MTO's preferred pipeline alignment, as it would remove the constraints of the Vanier Parkway route and remove the section of existing pipeline that runs parallel to the highway.
- If Enbridge has future work on the pipeline crossing the Rideau River, or is planning to place a new crossing at the Rideau River, the MTO will request that this pipeline be relocated north of the existing location to avoid conflict with MTO bridge repairs and future reconstruction.

MTO would not support the "preferred route" but would be supportive in principle of the alternative routing as proposed. MTO is requesting a response to our concerns which can be sent directly to my attention at: [Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca). Our goal is to work together at these initial stages to

-2-

ensure we have a routing and solution that will satisfy all parties. We are all invested in obtaining the best solution possible.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer

cc. Alain Nadeau, Ministry of Transportation, Corridor Management Officer  
Cheryl Tolles, Ministry of Transportation, Sr. Project Manager  
Stephen Kapusta, Ministry of Transportation, Sr. Project Manager  
Louis Tay, Ministry of Transportation, Head Corridor Management  
Peter Freure, Ministry of Transportation, Senior Project Engineer



**From:** Bonnie Adams <[Bonnie.Adams@enbridge.com](mailto:Bonnie.Adams@enbridge.com)>  
**Sent:** March-30-21 9:17 AM  
**To:** [Zora\\_Cmpjack@oeb.ca](mailto:Zora_Cmpjack@oeb.ca); Geerts, Helma (OMAFRA) <[Helma.Geerts@ontario.ca](mailto:Helma.Geerts@ontario.ca)>; Minkin, Dan (MHSTCI) <[Dan.Minkin@ontario.ca](mailto:Dan.Minkin@ontario.ca)>; Di Fabio, Tony (MTO) <[Tony.DiFabio@ontario.ca](mailto:Tony.DiFabio@ontario.ca)>; [kmanoudhehri@tssa.org](mailto:kmanoudhehri@tssa.org); Renwick, Sally (MECP) <[Sally.Renwick@ontario.ca](mailto:Sally.Renwick@ontario.ca)>; Harris, Maya (MMAH) <[Maya.Harris@ontario.ca](mailto:Maya.Harris@ontario.ca)>; Knieriem, Michelle (MMAH) <[Michelle.Knieriem@ontario.ca](mailto:Michelle.Knieriem@ontario.ca)>; Elms, Michael (MMAH) <[Michael.Elms@ontario.ca](mailto:Michael.Elms@ontario.ca)>; Schulte-Hostedde, Bridget (MMAH) <[Bridget.Schulte-Hostedde@ontario.ca](mailto:Bridget.Schulte-Hostedde@ontario.ca)>; McCullough, Jason (ENDM) <[Jason.McCullough@ontario.ca](mailto:Jason.McCullough@ontario.ca)>; EA Notices to NRegion (MECP) <[eanotification.nregion@ontario.ca](mailto:eanotification.nregion@ontario.ca)>; EA Notices to ERegion (MECP) <[eanotification.eregion@ontario.ca](mailto:eanotification.eregion@ontario.ca)>; EA Notices to SWRegion (MECP) <[eanotification.swregion@ontario.ca](mailto:eanotification.swregion@ontario.ca)>; EA Notices to WCRRegion (MECP) <[eanotification.woregion@ontario.ca](mailto:eanotification.woregion@ontario.ca)>; EA Notices to CRegion (MECP) <[eanotification.cregion@ontario.ca](mailto:eanotification.cregion@ontario.ca)>; Ostrowka, Cory (IO) <[Cory.Ostrowka@infrastructureontario.ca](mailto:Cory.Ostrowka@infrastructureontario.ca)>; Source Protection Screening (MECP) <[SourceProtectionScreening@ontario.ca](mailto:SourceProtectionScreening@ontario.ca)>  
**Subject:** EB-2020-0293 Enbridge Gas Inc. - St. Laurent Ottawa North Replacement Project - OEB Notice of Application.

**CAUTION – EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

**To: Members of the Ontario Pipeline Coordinating Committee**

On March 2, 2021, Enbridge Gas Inc. (Enbridge Gas) filed an application with the Ontario Energy Board (OEB) for approval to replace approximately 16 km of Nominal Pipe Size (NPS) 12 inch extra-high pressure (XHP) steel (ST) natural gas main and approximately 400m of NPS 16 XHP ST natural gas main in the City of Ottawa, Ontario.

On March 19, 2021, the OEB issued the Notice of Application for the proceeding and has directed Enbridge Gas to serve the members of the Ontario Pipeline Coordinating Committee. Attached please find the OEB's Notice (English and French) along with the application filed by Enbridge Gas for the proposed project.

Information regarding the project can be found on the [Enbridge Gas website](#) under the Projects section.

To view the entire application and evidence filed in the proceeding, please click on the links provided below:

- EB-2020-0293 St. Laurent Ottawa North Replacement Project - [Application and Evidence](#)
- EB-2020-0293 St. Laurent Ottawa North Replacement Project - [Exhibit C-1-1 Attachment 1 Environmental Report Redacted](#)
- EB-2020-0293 St. Laurent Ottawa North Replacement Project - [Exhibit C-1-1 Attachment 2 Environmental Report Amendment Redacted](#)

Paper copies of the application and evidence are available upon request.

The OEB's Notice of Application outlines the process to participating the proceeding. [Request for Intervenor Status are due by April 13, 2021.](#)

Please contact me if you have any questions regarding the proposed project and/or if you require assistance in access the application and evidence.

Sincerely,

**Bonnie Jean Adams**

Regulatory Coordinator

Enbridge Gas Inc.

T: 416-495-6409 | F: 416-495-6072

500 Consumers Road | North York Ontario | M2J 1P8

[enbridgegas.com](http://enbridgegas.com)

Safety. Integrity. Respect. Inclusion.

**Ministry of Transportation**

Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario K7L 5A3  
Tel.: 613 323-1253  
Fax: 613-540-5106  
[Alexandre.gitkow@ontario.ca](mailto:Alexandre.gitkow@ontario.ca)

**Ministère des Transports**

Section de gestion des couloirs routiers  
1355, boulevard John Counter  
CP/Service de sacs 4000  
Kingston (Ontario) K7L 5A3  
Tél.: 613 323-1253  
Télééc. 613 540-5106



April 9, 2021

Ontario Energy Board  
P.O. Box 2319, 27th Floor  
2300 Yonge Street, Toronto ON M4P 1E4

Via website: <https://www.oeb.ca/participate>

**Re: EB-2020-0293**

**Ontario Energy Board Hearing for the Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project in the City of Ottawa, Ontario**

Thank you for circulating the Ontario Energy Board (OEB) Notice for EB-2020-0293 Enbridge Gas Inc. St. Laurent Ottawa North, Ontario to the Ministry of Transportation (MTO), for review and comments. The Ministry has reviewed the proposal in accordance with the *Public Transportation and Highway Improvement Act (PTHIA)* and offers the following comments.

Under the authority of the *Public Transportation and Highway Improvement Act*, the Ministry, through the issuance of permits, authorizes all encroachments within the limits of a highway and other permits within a control area of 395 meters radius around each interchange/intersection and 45 m from the highway property limit. An Encroachment Permit or other Permit or approval required by the Ministry must be obtained for each encroachment or other activities before work commences. The construction or operation of works within the limits of the Ministry of Transportation's jurisdiction by third parties or their agents, including any pre-engineering work in advance of construction also requires permits and approvals from the Ministry.

The Ministry would like to make the OEB aware that we have concerns with the Phase 4 preferred route proposal from Enbridge Gas Inc. at Vanier Parkway. This "preferred route" follows our property line at the westbound on ramp at Vanier Parkway. This route will not be supported or permitted by the Ministry of Transportation as it places constraints on the Ministry's future ramp, highway and bridge maintenance, repair and construction. The Ministry does not allow utilities to run parallel to freeways. The preferred route option submitted by Enbridge Gas Inc is proposed to run for about ½ a kilometer parallel and adjacent to our freeway corridor. However, the "alternatives route" shown in the "updated Notice of Project Change for the Enbridge Gas Inc. St. Laurent Ottawa North, Ontario to the Ministry of Transportation (MTO) dated November 18, 2020" is shown to the north of the RCMP building, coming down the North River Road and then on Rideau River Eastern Pathway. This then would connect to the existing pipeline that crosses the Rideau River. This is the Ministry of Transportation's preferred pipeline alignment, as it would remove the constraints of the Vanier Parkway route and remove the section of existing pipeline that runs parallel to the highway. The alternative route is also shown in the Environmental Report Amendment, but not on any other document/maps provided as part of this notice.

If Enbridge has future work on the pipeline crossing the Rideau River, or is planning to place a new crossing at the Rideau River, the Ministry of Transportation requests that this pipeline be relocated north of the existing location to avoid conflict with Ministry bridge repairs and future reconstruction works.

The Ministry of Transportation will not support or permit the "preferred route" at Vanier Parkway but would support in principle the alternative routing as proposed in the Environmental Report Amendment.

Please do not hesitate to contact me should you require more information at: [Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca). Our goal is to work together at these stages to ensure we have a routing solution that will satisfy all parties. We are all invested in obtaining the best solution possible.

Sincerely Yours,

A handwritten signature in black ink, appearing to read "Alexandre Gitkow". The signature is written in a cursive, slightly slanted style.

Alexandre Gitkow  
Corridor Management Officer

cc. Alain Nadeau, Ministry of Transportation, Corridor Management Officer  
Cheryl Tolles, Ministry of Transportation, Sr. Project Manager  
Stephen Kapusta, Ministry of Transportation, Sr. Project Manager  
Louis Tay, Ministry of Transportation, Manager, Highway Operations  
Peter Freure, Ministry of Transportation, Senior Project Engineer



**Subject:** FW: EB-2020-0293 Enbridge Gas Inc. - St. Laurent Ottawa North Replacement Project - OEB Notice of Application.

**From:** Rodek, Amanda (MTO) <[Amanda.Rodek@ontario.ca](mailto:Amanda.Rodek@ontario.ca)>  
**Sent:** Thursday, April 22, 2021 11:52 AM  
**To:** Bonnie Adams <[Bonnie.Adams@enbridge.com](mailto:Bonnie.Adams@enbridge.com)>  
**Subject:** [External] RE: EB-2020-0293 Enbridge Gas Inc. - St. Laurent Ottawa North Replacement Project - OEB Notice of Application.

**EXTERNAL: PLEASE PROCEED WITH CAUTION.**

This e-mail has originated from outside of the organization. Do not respond, click on links or open attachments unless you recognize the sender or know the content is safe.

Hi Bonnie,

My apologies for the late response.

Enbridge Gas's, March 30, 2021 email to Tony Di Fabio regarding the EB-2020-0293 Enbridge Gas Inc. - St. Laurent Ottawa North Replacement Project - OEB Notice of Application, has been forwarded to my attention for review and response.

Please see the comments below from the Ministry of Transportation for your consideration regarding the proposed pipeline.

- MTO - East Region Highway Corridor Management office responded on April 9, 2021 (see attached).
- At this time we have no further comments than previously provided.

Have a great day!

Thanks.

Amanda Rodek  
Program Analyst  
Ministry of Transportation  
Corridor Management Office  
301 St. Paul Street  
St. Catharines, ON L2R 7R4  
Tel. (905) 704-2916

**From:** Bonnie Adams <[Bonnie.Adams@enbridge.com](mailto:Bonnie.Adams@enbridge.com)>  
**Sent:** March-30-21 9:17 AM  
**To:** Zora Cmojnicki <[zora.cmojnicki@ontario.ca](mailto:zora.cmojnicki@ontario.ca)>; Geerts, Helma (OMAFRA) <[Helma.Geerts@ontario.ca](mailto:Helma.Geerts@ontario.ca)>; Minkin, Dan (MHSTO) <[Dan.Minkin@ontario.ca](mailto:Dan.Minkin@ontario.ca)>; Di Fabio, Tony (MTO)

**From:** Gitkow, Alexandre (MTO) <Alexandre.Gitkow@ontario.ca>  
**Sent:** Wednesday, April 28, 2021 3:06 PM  
**To:** Chuck Reaney <Chuck.Reaney@enbridge.com>  
**Cc:** Tay, Louis (MTO) <Louis.Tay@ontario.ca>; Tolles, Cheryl (MTO) <Cheryl.Tolles@ontario.ca>; Kapusta, Stephen (MTO) <Stephen.Kapusta@ontario.ca>; Nadeau, Alain (MTO) <Alain.Nadeau@ontario.ca>; Freure, Peter (MTO) <Peter.Freure@ontario.ca>  
**Subject:** [External] Enbridge proposal at Hwy 417 & St. Laurent - MTO letter to Chuck Reaney

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Please see attached the letter response to your phone call to Cheryl Tolles On Monday April 26<sup>th</sup>, 2021 about the Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project in the City of Ottawa, Ontario.


Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer  
Kingston Area Office  
Ministry of Transportation (MTO)  
Cell: 613-323-1253

**2 attachments**



Light Rail Map.JPG  
261K

 Chuck Reaney Letter (alex April 28 2021).doc  
1273K



**Ministry of Transportation**

Corridor Management Section  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, Ontario K7L 5A3  
Tel.: 613 544-2220 \*4126  
Fax: 613-540-5106  
[Alexandre.gitkow@ontario.ca](mailto:Alexandre.gitkow@ontario.ca)

**Ministère des Transports**

Section de gestion des couloirs routiers  
1355, boulevard John Counter  
CP/Service de sacs 4000  
Kingston (Ontario) K7L 5A3  
Tél.: 613 544-2220 \* 4126  
Télééc. 613 540-5106

April 28, 2021

Chuck Reaney  
ENBRIDGE GAS INC.  
PO BOX 650,  
Scarborough, ON,  
M1K 5E3

Via email: [chuck.reaney@enbridge.com](mailto:chuck.reaney@enbridge.com)

**Re: Enbridge Gas Inc. St. Laurent Ottawa North Replacement Pipeline Project  
Highway 417 – Rideau River Easterly to St. Laurent/Michael Street, City of Ottawa**

Thank you for coming back to MTO about the Enbridge Gas Inc. St. Laurent Ottawa North, Ontario and the Ontario Energy Board Hearing. I am following up on your discussion with Cheryl Tolles earlier this week to discuss the routing for the section from the Rideau River on the north side of Highway 417 to the Vanier Parkway/Coventry Road intersection, abandoned lines and the light rail impacts on the south side of Highway 417.

As discussed, MTO had advised both at the virtual meetings and in writing that we were not supporting the proposed routing that Enbridge proposed that is depicted in dark blue and running inside the Highway 401 right of way (see insert map below). Not only will this create serious expansion issues for MTO when working at the interchange and for expansion, but additionally, the MTO utility requirements does not permit utilities in MTO interchange areas or running parallel in a highway corridor.

You noted that during discussions with the RCMP, they were not in favour of allowing the alternate that essentially was proposed along their internal road as depicted in red. RCMP was considering providing a 4 metre easement strip adjacent to the MTO property limit. As discussed, this creates the same concerns as noted above and regardless of placement, and will also pull MTO in the 3 metre workaround for interchange work. MTO could consider an easement provided that the 14 metre setback was provided, then the easement. I understand that you did not believe the RCMP would be supportive of this.

As was mentioned, it appears there is a viable route to the north as shown in light blue (see map below). This routing would keep Enbridge completely on the municipal road system around the entire site and alleviate MTO issues and RCMP concerns regarding crossing their site and the easement requirements. You can provide your service connection to the RCMP site on the river side of the property.

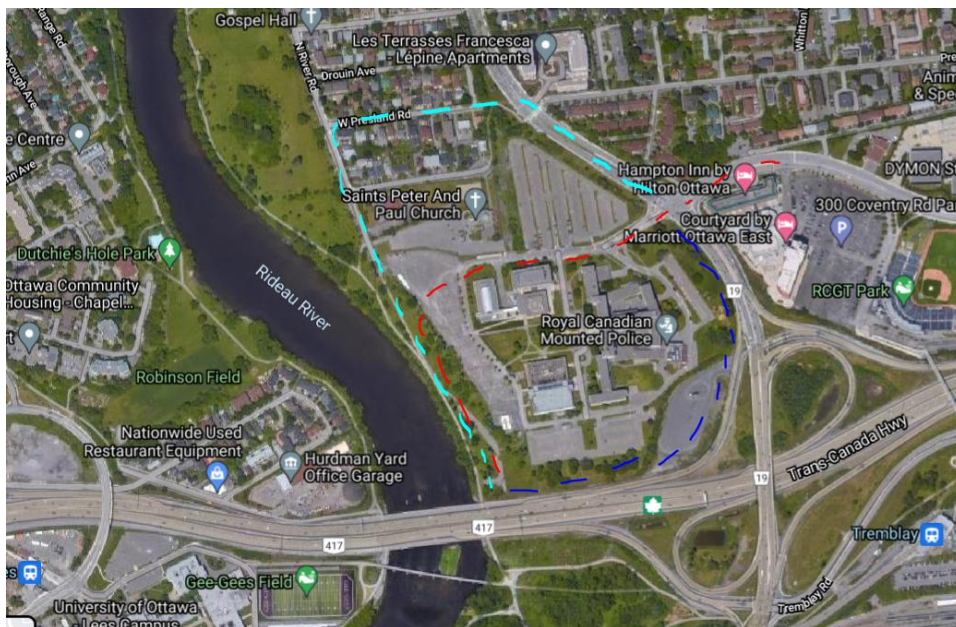
From rough estimates, in respect to distance, this alternate route via Presland Road appears to solve the issues with MTO and the RCMP and is only marginally longer in distance. From the St.



Laurent/Coventry Road intersection to where you need to tie into the Rideau River existing infrastructure, the distances are:

- Dark Blue: Enbridge proposed routing along interchange area – 746 metres.
- Red: Enbridge proposed alternative and MTO supported through the RMCP site – 749 metres, and,
- Light Blue: Alternate proposed routing via Vanier Parkway north to Presland Road – 1100 metres. This is only 350 metres of additional plant that would allow for your infrastructure to remain in place for a long time to come rather than being relocated due to MTO infrastructure needs or RMCP site plan needs.

MTO is suggesting that this routing is available as the routing inside the freeway right of way or immediately adjacent is not an alternate that can be supported by MTO as discussed during the virtual meetings and in the various rideau response letters provided.



Also as discussed, the Enbridge plant that is running parallel in the freeway corridor and is proposed for abandonment will require removal. We agreed that the crossing locations could be too difficult to physically remove, but the parallel plant will be required to be physically removed with the right of way restored. MTO is prepared to consider cap and grout for the crossing under the main 417 Highway, provided those pipe locations are geolocated and the information/drawings provided to MTO for our records. This would all form part of the rationale Enbridge would provide as to why the crossing pipes should not be removed. This was discussed and but presented as abandonment in the Energy Board application.

You had inquired about the existing light rail on the south side of Highway 417 and the impacts. I did attach mapping showing this but it will be difficult to determine without a specific crossing location in relation to the light rail. Slope stability and depths will be a couple of issues will certainly need to be discussed. I would reach out the City of Ottawa for preliminary design requirements.

Chuck, I know you have an extremely tight schedule to report back to the Energy Board. MTO has been very clear and forthcoming on the routing alternatives throughout and it is unfortunate that MTO

-2-

was not aware of the proposed routing to the OEB. A good lessons learned for both of us and hopefully in the future, we can discuss your OEB proposal in advance as we made the assumption that Enbridge was proceeding with one of the northern routing options.

To follow up on the consideration that Enbridge consider relocating the pipeline that is crossing the Rideau River as it too would cause problem in the future. Enbridge had responded that you did not have the intention of touching that pipe for now. If Enbridge is planning to place a new crossing at the Rideau River, MTO requests that this pipeline be relocated north of the existing location to avoid conflict with MTO bridge repairs and future reconstruction. Something to consider as it will have a financial future impact when this is relocated.

Our goal is always to work cooperatively with our partnerships for utilities. We are going to coexist in this area for many decades in the future and we want to ensure that we have a routing solution that is agreeable to all parties that will not require relocation in the future and/or conflicts every time MTO has work to conduct in this area. It is unfortunate as MTO had not known that the routing had not changed in respect to our comments until we were in receipt of the Energy Board documents. Hopefully we can work together and get Enbridge on your way with this project.

We are all invested in obtaining the best solution possible. If you are having a meeting with the larger group (City, RCMP, Enbridge), please invite Cheryl and I and we can attend the meeting for the discussion.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer

cc. Alain Nadeau, Ministry of Transportation, Corridor Management Officer  
Cheryl Tolles, Ministry of Transportation, Sr. Project Manager  
Stephen Kapusta, Ministry of Transportation, Sr. Project Manager  
Louis Tay, Ministry of Transportation, Head Corridor Management  
Peter Freure, Ministry of Transportation, Senior Project Engineer

---

**From:** Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>  
**Sent:** April 30, 2021 10:37 AM  
**To:** Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>  
**Subject:** Enbridge St. Laurent Project

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hi Louis,

Just following up on the voicemail message I left yesterday afternoon. We would like to meet to discuss the MTO Letter from last week. The OEB requires a response from Enbridge on Wednesday.

Let me know if you are available this afternoon or Monday.

Thanks in advance.

**Chuck Reaney** B.A.

Senior Advisor

Land & Permitting

ENBRIDGE GAS INC.

TEL: 416-753-6929

FAX: 416-753-6941

PO BOX 650, Scarborough, ON, M1K 5E3

[chuck.reaney@enbridge.com](mailto:chuck.reaney@enbridge.com)

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 Please consider the environment before printing this email.

 Reply

 Forward

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**From:** Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>  
**Sent:** Friday, April 30, 2021 11:14 AM  
**To:** Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>  
**Subject:** [External] RE: Enbridge St. Laurent Project

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Hi Chuck,

Thanks for your call. I have some free time, Monday morning between 10 and noon if that suits you.

We didn't receive any response to our comment letters and were left with no choice but to bring our concerns forward. It would be helpful to exchange concerns on the options, more specifically MTO's concerns with the preferred option and for us to understand Enbridge's concerns with the other options and to receive feedback on our comments.

I may bring a staff member to the meeting so I don't need to relay the explanations after the meeting.

I look forward to having this discussion.

Louis Tay, P.Eng | Manager, Highway Operations  
East Operations Branch | Operations Division  
Ontario Ministry of Transportation (MTO)  
347 Preston Street 4<sup>th</sup> Floor | Ottawa, ON K1S 3J4  
☎ 613.748.5280 | 📠 613.295.4553 | ✉ [Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)





**From:** Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>

**Sent:** Monday, May 3, 2021 1:06 PM

**To:** Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>

**Cc:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>; Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Joel Denomy <[Joel.Denomy@enbridge.com](mailto:Joel.Denomy@enbridge.com)>; Guri Pannu <[Guri.Pannu@enbridge.com](mailto:Guri.Pannu@enbridge.com)>; <mailto:StLaurentNorthEA@dillon.ca> <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

**Subject:** Enbridge Gas Inc. Response to MTO April 28, 2021 and April 9, 2021 Letters on St. Laurent Ottawa North Replacement Pipeline Project

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hi Louis and Cheryl,

I would like to take this opportunity to thank both of you again for making the time this morning to discuss the proposed St. Laurent Replacement Project and its pipeline location in the vicinity of HWY 417 from Rideau River Easterly to St. Laurent/Michael Street in the City of Ottawa.

Please find attached the information we discussed this morning regarding the options under review and responses to the questions/comments in MTO's April 28, 2021 letter to Enbridge and MTO's April 9, 2021 Letter filed with the OEB. The second attachment is just a file with the four options also referred to in the letter.

As discussed today, please review and provide a response/confirmation of MTO's preferred route option (Figure 4 – Route 4), if approved for an easement by RCMP. If RCMP is unable to provide this required easement for Route 4, please confirm that MTO is supportive and willing to work with Enbridge to mitigate any concerns with the alternative route option (Figure 5 – Route 2) discussed today. This will facilitate the discussions and ensure that both parties can address their concerns and allow the proposed integrity driven project to proceed.

Look forward our continued work and cooperation.

Thanks

**Byron Madrid, P.Eng.**

Manager Capital Development & Delivery

**System Improvement**



**ENBRIDGE**

TEL: 416-758-4481 | CELL: 647-519-1865

500 Consumers Road North York, ON M2J 1P8



Byron

From: Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>  
Sent: Tuesday, May 4, 2021 9:29 AM  
To: Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>  
Cc: Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>  
Subject: [External] MTO Post meeting comments - Enbridge Gas Inc. Response to MTO April 28, 2021 and April 9, 2021 Letters on St. Laurent Ottawa North Replacement Pipeline Project

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Byron, further to the meeting between MTO and Enbridge this morning, thanks for clarification of the preferred option and walking us through the new options. We understand that you need to get back to the OEB by tomorrow and they need some reassurances that we are working cooperatively on the new option. As discussed, MTO is supportive of Option 4 which relocates the line almost completely from Highway 417 and the Vanier Parkway area with only a small connection at the river. As we understand, Enbridge is awaiting a decision to see if the RCMP is prepared to allow an easement as depicted in Option 4 along the westerly boundary of the RCMP property.

This email is not intended to respond to the preferred option(s) in your letter that we received after the meeting today, I will provide separate comments on the letter itself including MTO's continuing requirements to remove the abandoned plant within MTO property. MTO responded to Enbridge's November 18 Notice of Change in a letter dated December 3, however, we did not receive a response to our comments prior to receiving the OEB Notice of Application. We appreciate the opportunity to discuss our concerns this morning and are willing to work with Enbridge on the new routing proposed in option 4.

Please let us know as soon as you hear from the RCMP and hopefully they will be supportive of Option 4 which is clearly the options that addresses the MTO concerns. We can discuss the other items in the letter via separate email.

Cheryl Tolles  
Senior Project Manager  
Corridor Management Section  
Ministry of Transportation  
1355 John Counter Blvd.  
Kingston, ON K7L 5A3

Email: [Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)  
Telephone: 613-449-0313 (cell)







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**From:** Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>  
**Sent:** Tuesday, May 18, 2021 11:10 AM  
**To:** Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>  
**Cc:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>; Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Joel Denomy <[Joel.Denomy@enbridge.com](mailto:Joel.Denomy@enbridge.com)>; Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Guri Pannu <[Guri.Pannu@enbridge.com](mailto:Guri.Pannu@enbridge.com)>; Green, Kate (MTO) <[Kate.Green1@ontario.ca](mailto:Kate.Green1@ontario.ca)>;  
 mailto:[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>  
**Subject:** [External] RE: Enbridge Gas Inc. Response to MTO April 28, 2021 and April 9, 2021 Letters on St. Laurent Ottawa North Replacement Pipeline Project

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Bryon, from our meeting on May 3, 2021 regarding the St. Laurent routing, you were rushing to have a decision made with the Energy Board in a few days. MTO was expecting that you were going to get back to us within the week regarding the RCMP discussions and routing. To date, we have not yet heard anything. At this point, MTO is making the assumption that the RCMP were on board and that you were able to route through the northern edge of their property as discussed and was the option MTO was supporting. Please confirm.

Can you advise what the status of this project is, what the discussions with the RCMP were and what routing are you proposing. If you have responded to the OEB, can you please provide us with your letter to the OEB.

Cheryl



----- Forwarded message -----

From: **Byron Madrid** <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>

Date: Fri, May 21, 2021 at 11:27 AM

Subject: RE: Enbridge Gas Inc. Response to MTO April 28, 2021 and April 9, 2021 Letters on St. Laurent Ottawa North Replacement Pipeline Project

To: Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>

Cc: Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>, Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>, Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>, Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>, Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>, Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>, Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>, Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>, Joel Denomy <[Joel.Denomy@enbridge.com](mailto:Joel.Denomy@enbridge.com)>, Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>, Guri Pannu <[Guri.Pannu@enbridge.com](mailto:Guri.Pannu@enbridge.com)>, Green, Kate (MTO) <[Kate.Green1@ontario.ca](mailto:Kate.Green1@ontario.ca)>, [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>

Good morning Cheryl,

My apologies for the late response to your email. The OEB has put out project in abeyance while we address MTO's concerns with the routes and determine a solution that works for all parties. As such, the Enbridge project team is working hard on finding a viable solution so that we can get this project's LTC application back on track and try to mitigate the project schedule delays. As discussed at our last meeting, Enbridge has a proposed route option and we have presented to RCMP to review and consider. Enbridge project team members are still in consultation with RCMP on the proposed route option and have pulled additional information requested by RCMP so that they can fully evaluate our request.

The Enbridge project team will keep you and MTO posted as we continue the consultation with RCMP and the results of the discussions.

Thanks again for following up on this matter and MTO's ongoing cooperation.

**Byron Madrid, P.Eng.**

Manager Capital Development & Delivery

**System Improvement**



**ENBRIDGE**

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500 Consumers Road North York, ON M2J 1P8

[enbridge.com](http://enbridge.com)

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---

**From:** Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>

**Sent:** Tuesday, May 18, 2021 11:10 AM

-----



Cell: 613-523-1233 | Email: [Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)

**From:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>

**Sent:** July 9, 2021 9:09 AM

**To:** Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>

**Cc:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>; [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca); Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Adam Stiers <[AStiers@enbridge.com](mailto:AStiers@enbridge.com)>

**Subject:** 1200 Vanier Parkway (RCMP Property) Easement

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good morning Cheryl and Louis.

I'm emailing you to give you an update with respect to the gas main alignment for the St Laurent Replacement project in Ottawa, specifically at the 1200 Vanier Parkway property (RCMP headquarters). Enbridge was able to meet with the PSPC (Public Services and Procurement Canada) on a few occasions over the past few weeks to further discuss our request for an easement on the RCMP headquarters property to house our gas main.

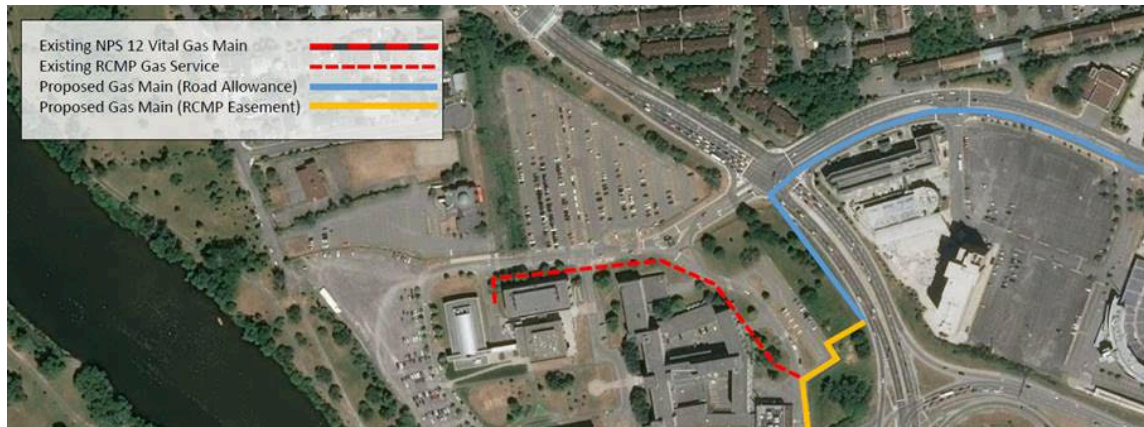
The PSPC has agreed to approve an easement for either Route 1 or Route 2 illustrated in the concepts document attached, but will not approve an easement for either Route 3 or Route 4. According to PSPC, reasoning for not approving these two options are that these routes, by having an easement severing their land with a gas main, would put their property at significant risk for future development.

We are hoping to seek approval from the MTO to proceed with the route 2 alignment which entails the gas main running on the RCMP property parallel to the MTO corridor as indicated in the Route 2 schematic below and attached. In our meeting on May 3, 2021 in which Enbridge and MTO reviewed all routing concepts, route 2 was discussed as it was similar to what had been approved already by the PSPC/RCMP but was less intrusive if the Hwy 417 ends up being widened. MTO had indicated that although not their preferred choice, they would consider it if the alternate options were not agreed to by the RCMP/PSPC. One thing to note is that your response to this email would be an approval to the routing in principle only, which is required to move our OEB filing out of abeyance. We fully understand that further detailed design would be required once we are able to survey the property, create a proper drawing outlining the property line, other utilities in this property as well as proper offsets.



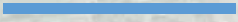

If you are in agreement with this running line (again, in principle only) we would be appreciative if you could please let us know. As our project is currently in abeyance, it would also be helpful if MTO could file a letter to the OEB to advise them of this resolution as well. This would allow Enbridge to move the project forward, and continue to work with the PSPC and MTO to establish a final detailed design solution that works for all parties.

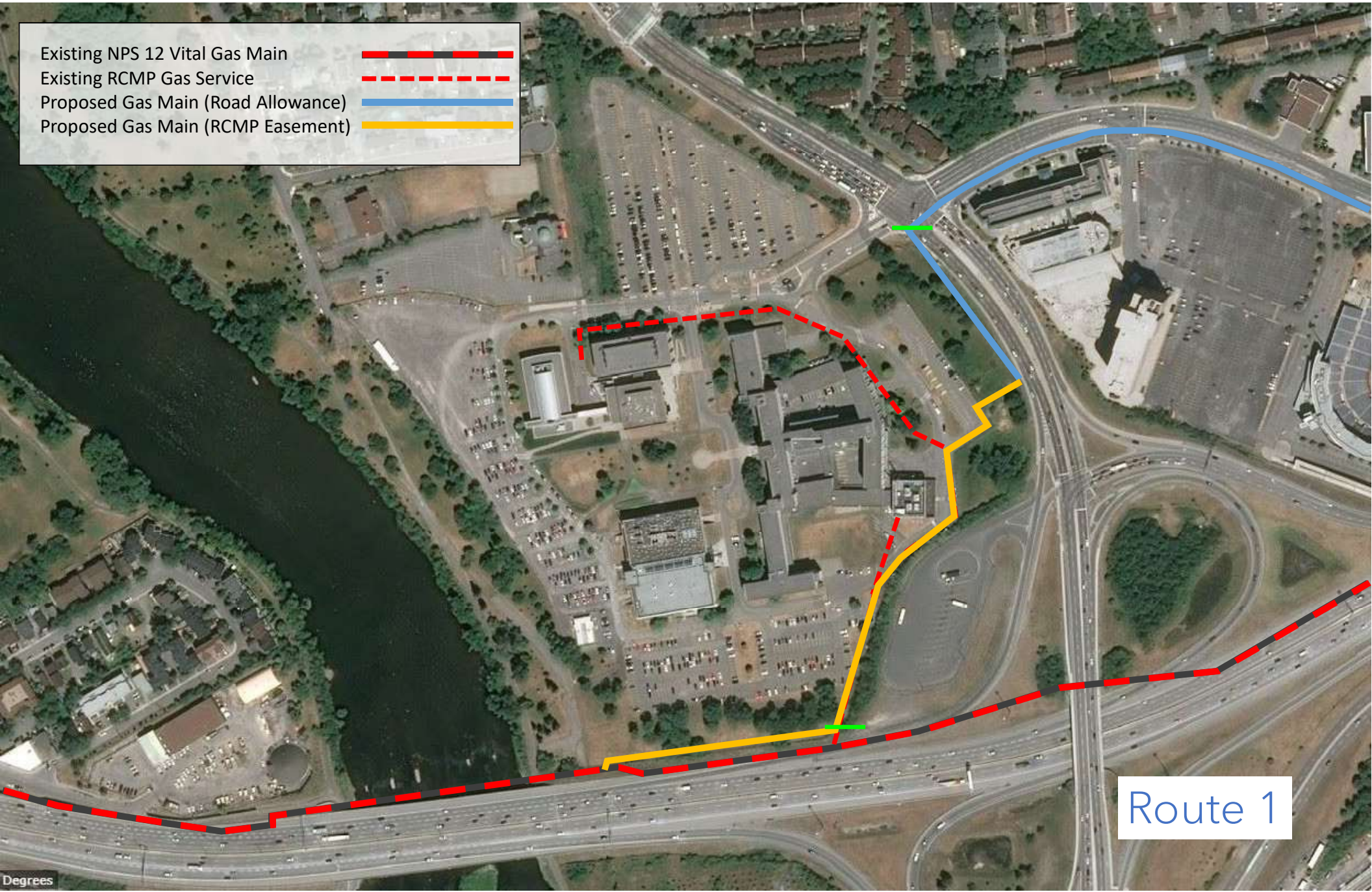
We are willing to meet with you to discuss further if required. Please let us know.

Thanks.







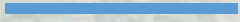

- Existing NPS 12 Vital Gas Main 
- Existing RCMP Gas Service 
- Proposed Gas Main (Road Allowance) 
- Proposed Gas Main (RCMP Easement) 

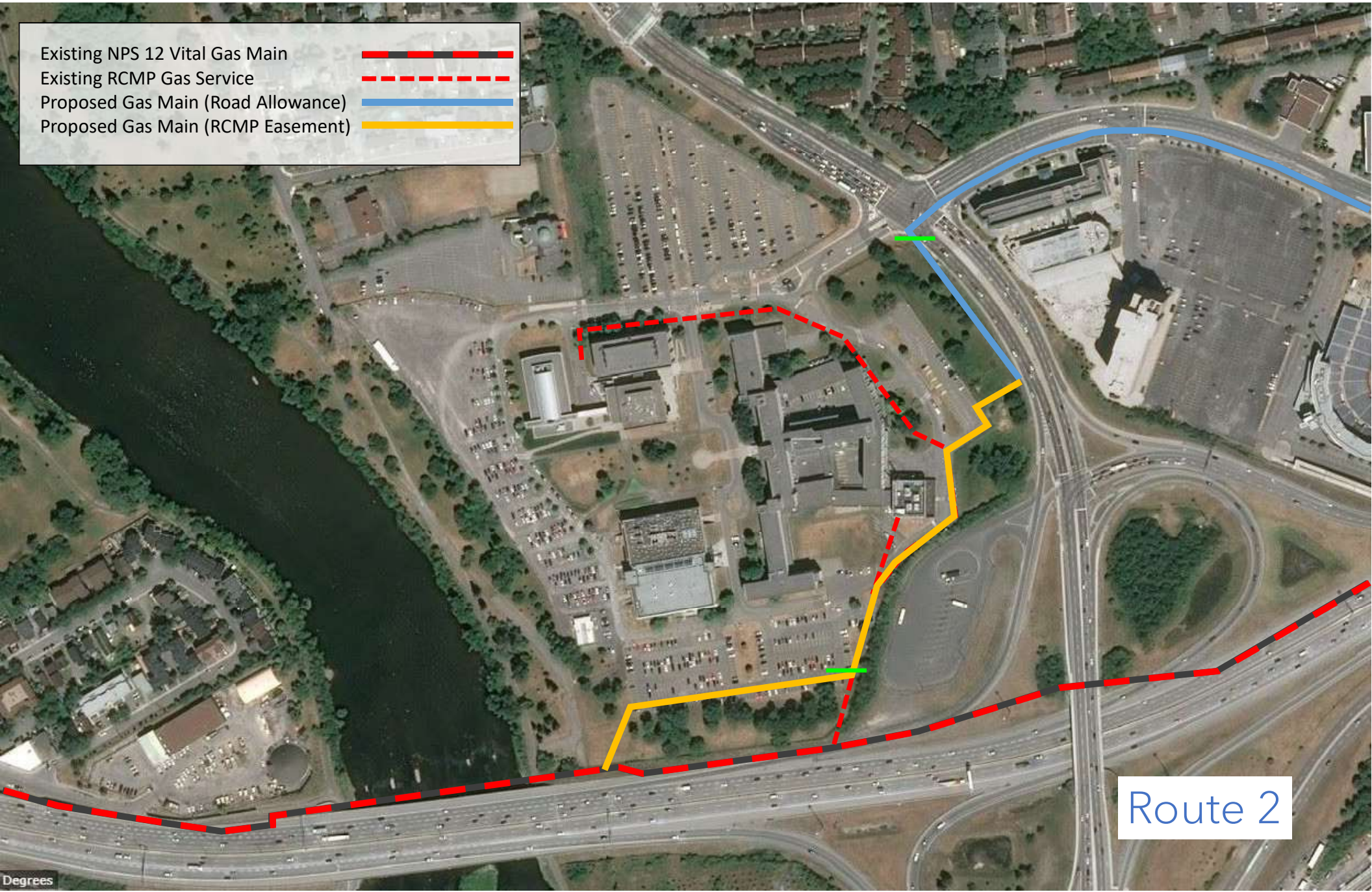


Route 1

Degrees



- Existing NPS 12 Vital Gas Main 
- Existing RCMP Gas Service 
- Proposed Gas Main (Road Allowance) 
- Proposed Gas Main (RCMP Easement) 



Route 2

Degrees



**From:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>  
**Sent:** Friday, July 9, 2021 10:52 AM  
**To:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>  
**Cc:** [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca); Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Adam Stiers <[ASStiers@enbridge.com](mailto:ASStiers@enbridge.com)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>  
**Subject:** [External] RE: 1200 Vanier Parkway (RCMP Property) Easement

**EXTERNAL: PLEASE PROCEED WITH CAUTION.**  
 This e-mail has originated from outside of the organization. Do not respond, click on links or open attachments unless you recognize the sender or know the content is safe.

Good Morning Mr. Cairns,

Thank you for you email. To help the MTO understand the situation better, could Enbridge provide us with a more detail map showing the proposed easement on RCMP lands and the proposed width. Also, could you confirm the workaround restriction that will be in place around the proposed pipe and will the proposed pipe be a vital or non-vital main.

Sincerely Yours,

Alexandre Gitkow  
 Corridor Management Officer (Utility)  
 Corridor Management Section | East Operations  
 Ministry of Transportation (MTO)  
 1355 John Counter Boulevard,  
 Kingston, ON K7L 5A3  
 Cell: 613-323-1253 | Email: [Alexandre.Gitkow@Ontario.ca](mailto:Alexandre.Gitkow@Ontario.ca)

**From:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>  
**Sent:** July 9, 2021 9:09 AM  
**To:** Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>  
**Cc:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>; [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca); Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Adam Stiers <[ASStiers@enbridge.com](mailto:ASStiers@enbridge.com)>  
**Subject:** 1200 Vanier Parkway (RCMP Property) Easement

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Good morning Cheryl and Louis.





Corridor Management Officer (Utility)  
Corridor Management Section | East Operations  
Ministry of Transportation (MTO)  
1355 John Counter Boulevard,  
Kingston, ON K7L 5A3  
Cell: 613-323-1253 | Email: [Alexandre.Gitkow@Ontario.ca](mailto:Alexandre.Gitkow@Ontario.ca)

---

**From:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>  
**Sent:** July 9, 2021 11:06 AM  
**To:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>  
**Cc:** [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca); Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Adam Stiers <[ASTiers@enbridge.com](mailto:ASTiers@enbridge.com)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>  
**Subject:** RE: 1200 Vanier Parkway (RCMP Property) Easement

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Thanks for the quick response Alexandre.  
I will work with the team to see what we can present to you with respect to a detailed map, but again the specifics would have to be worked out with both PSPC as well as MTO. The alignment we were looking at is within the south most parking area which if I do a rough measurement is ~36m north of the south property line.

I've attached the most updated 3<sup>rd</sup> party requirements which lists the standard restrictions when working around natural gas main, this has changed slightly as was only released early June. I can confirm with you that the Vital Main status has been lifted on this component of the network, this gas main along the 417 is no longer vital at this time.

Thanks.  
Mark.

**Mark Cairns**  
Senior Advisor – Capital Development & Delivery  
**System Improvement**

**ENBRIDGE INC.**  
TEL: 905-927-3333 | CELL: 416-659-9420  
101 Honda Blvd, Markham Ontario L6C 0M6

[enbridgegas.com](http://enbridgegas.com)  
**Safety. Integrity. Respect. Inclusion**

---

**From:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>



----- Forwarded message -----

From: **Gitkow, Alexandre (MTO)** <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

Date: Thu, Jul 22, 2021 at 2:51 PM

Subject: RE: 1200 Vanier Parkway (RCMP Property) Easement

To: Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>

Cc: [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca) <[StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca)>, Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>, Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>, Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>, Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>, Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>, Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>, Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>, Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>, Adam Stiers <[ASStiers@enbridge.com](mailto:ASStiers@enbridge.com)>, Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>

Good Afternoon Mr. Cairns,

Just to clarify our point on the more detail map, the MTO is looking for where you will place the easement along the area between the two green line (see attached maps), our concern is the effect of the 3rd party requirements on our property, if the easement can start 3m from our property line (not be at 3m from our property line) that would alleviate some of the concern the MTO has about our future ability to do work on our ROW without concern of the 3rd party requirements protocol. When we receive this map, we will be able to understand better our position and give you an answer.

Please do not hesitate to contact me should you require more information.

Sincerely Yours,

Alexandre Gitkow  
Corridor Management Officer (Utility)  
Corridor Management Section | East Operations  
Ministry of Transportation (MTO)  
1355 John Counter Boulevard,  
Kingston, ON K7L 5A3  
Cell: 613-323-1253 | Email: [Alexandre.Gitkow@Ontario.ca](mailto:Alexandre.Gitkow@Ontario.ca)

---

**From:** Mark Cairns <[Mark.Cairns@enbridge.com](mailto:Mark.Cairns@enbridge.com)>  
**Sent:** July 9, 2021 11:06 AM  
**To:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>  
**Cc:** [StLaurentNorthEA@dillon.ca](mailto:StLaurentNorthEA@dillon.ca); Byron Madrid <[Byron.Madrid@enbridge.com](mailto:Byron.Madrid@enbridge.com)>; Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>; Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>; Tay, Louis (MTO) <[Louis.Tay@ontario.ca](mailto:Louis.Tay@ontario.ca)>; Jim Arnott <[Jim.Arnott@enbridge.com](mailto:Jim.Arnott@enbridge.com)>; Tanya Turk <[Tanya.Turk@enbridge.com](mailto:Tanya.Turk@enbridge.com)>; Vania Little <[vania.little@enbridge.com](mailto:vania.little@enbridge.com)>; Tracey Browne <[tracey.browne@enbridge.com](mailto:tracey.browne@enbridge.com)>; Adam Stiers <[ASStiers@enbridge.com](mailto:ASStiers@enbridge.com)>; Tolles, Cheryl (MTO) <[Cheryl.Tolles@ontario.ca](mailto:Cheryl.Tolles@ontario.ca)>  
**Subject:** RE: 1200 Vanier Parkway (RCMP Property) Easement

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Land & Permitting

ENBRIDGE GAS INC.

TEL: 416-753-6929

FAX: 416-753-6941

PO BOX 650, Scarborough, ON, M1K 5E3

[chuck.reaney@enbridge.com](mailto:chuck.reaney@enbridge.com)

**Integrity. Safety. Respect.**

Please consider the environment before printing this email.

---

**From:** Chuck Reaney

**Sent:** Wednesday, August 4, 2021 3:49 PM

**To:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>

**Subject:** Enbridge St Laurent Project

Hi Alexandre,

As discussed, attached is the draft letter we are hoping to send to the OEB with the support of MTO. The second attachment is a better route sketch than that attached to the OEB letter. Take a look at both and let me know what you think.

I hoped to get this done Friday but understand your need to review with your Management. Hopefully I hear from you early next week.

Sincerely,

Cell 416-254-2566

**Chuck Reaney** B.A.

Senior Advisor

Land & Permitting

ENBRIDGE GAS INC.

TEL: 416-753-6929

FAX: 416-753-6941

PO BOX 650, Scarborough, ON, M1K 5E3

[chuck.reaney@enbridge.com](mailto:chuck.reaney@enbridge.com)

**Integrity. Safety. Respect.**

Please consider the environment before printing this email.

---

**2 Attachments** • Scanned by Gmail



**Adam Stiers**  
Manager  
Regulatory Applications  
Leave to Construct  
Regulatory Affairs

Tel: (519) 436-4558  
Email: [astiers@uniongas.com](mailto:astiers@uniongas.com)  
[EGRegulatoryProceedings@enbridge.com](mailto:EGRegulatoryProceedings@enbridge.com)

**Enbridge Gas Inc.**  
P.O. Box 2001  
50 Keil Drive N.  
Chatham, Ontario, N7M 5M1  
Canada

August 6, 2021

BY RESS AND EMAIL

Christine Long Board  
Secretary Ontario  
Energy Board  
2300 Yonge Street, 27<sup>th</sup> Floor  
Toronto, ON M4P 1E4

Dear Christine Long:

**Re: Enbridge Gas Inc. (Enbridge Gas)  
Ontario Energy Board File No.: EB-2020-0293  
St. Laurent Ottawa North Replacement Project – Project Update**

---

Further to the Application and Evidence filed with the OEB by Enbridge Gas Inc. (“Enbridge Gas” or the “Company”) on March 2, 2021,<sup>1</sup> and in response to the letter of comment filed by the Ministry of Transportation (“MTO”) on April 9, 2021 (expressing concerns with the Phase 4 preferred route (“PR”)), and the Ontario Energy Board’s (“OEB”) May 5, 2021 letter advising that it had placed the Project application into abeyance until receipt of further notification from Enbridge Gas on the status of issues raised by the MTO, Enbridge Gas hereby notifies the OEB that the MTO’s concerns have been resolved.

Since May 2021, Enbridge Gas continued consultations with the MTO and RCMP and has established a mutually acceptable New Phase 4 PR for the Project that results in relatively minor adjustments to Project design, costs, and construction schedule. Figure 1 below contains a Project map that distinguishes the Original PR from the New Phase 4 PR which will run within RCMP property parallel to the westbound on ramp to Highway 417 at Vanier Parkway and further along Highway 417. Accordingly, the Company is currently updating its original pre-filed evidence to reflect the New Phase 4 PR throughout and will file that updated evidence with the OEB and serve it onto all parties who received the original application and evidence (including the MTO) as well as those who applied to intervene in this proceeding, as soon as possible.

In its covering letter to the updated evidence, Enbridge Gas intends to address the Letter of Comment filed by the City of Ottawa on May 12, 2021 as well as certain arguments advanced by parties in their applications to intervene in this proceeding. Considering that the matter of resolving the MTO’s concerns has resulted in nearly three months delay, the Company respectfully requests that the OEB advance its review of the Company’s updated evidence as quickly as possible.

<sup>1</sup> Pursuant to sections 90(1) and 97 of the *Ontario Energy Board Act 1998*, S.O. 1998, c.15, for leave to construct natural gas pipeline and ancillary facilities in the City of Ottawa (the “Project”) and for approval of the forms of easement agreements related to construction of the Project.

The above noted submission has been filed electronically through the OEB's RESS and will be made available on Enbridge Gas's website at:

<https://www.enbridgegas.com/about-enbridge-gas/regulatory>

If you have any questions, please contact the undersigned.

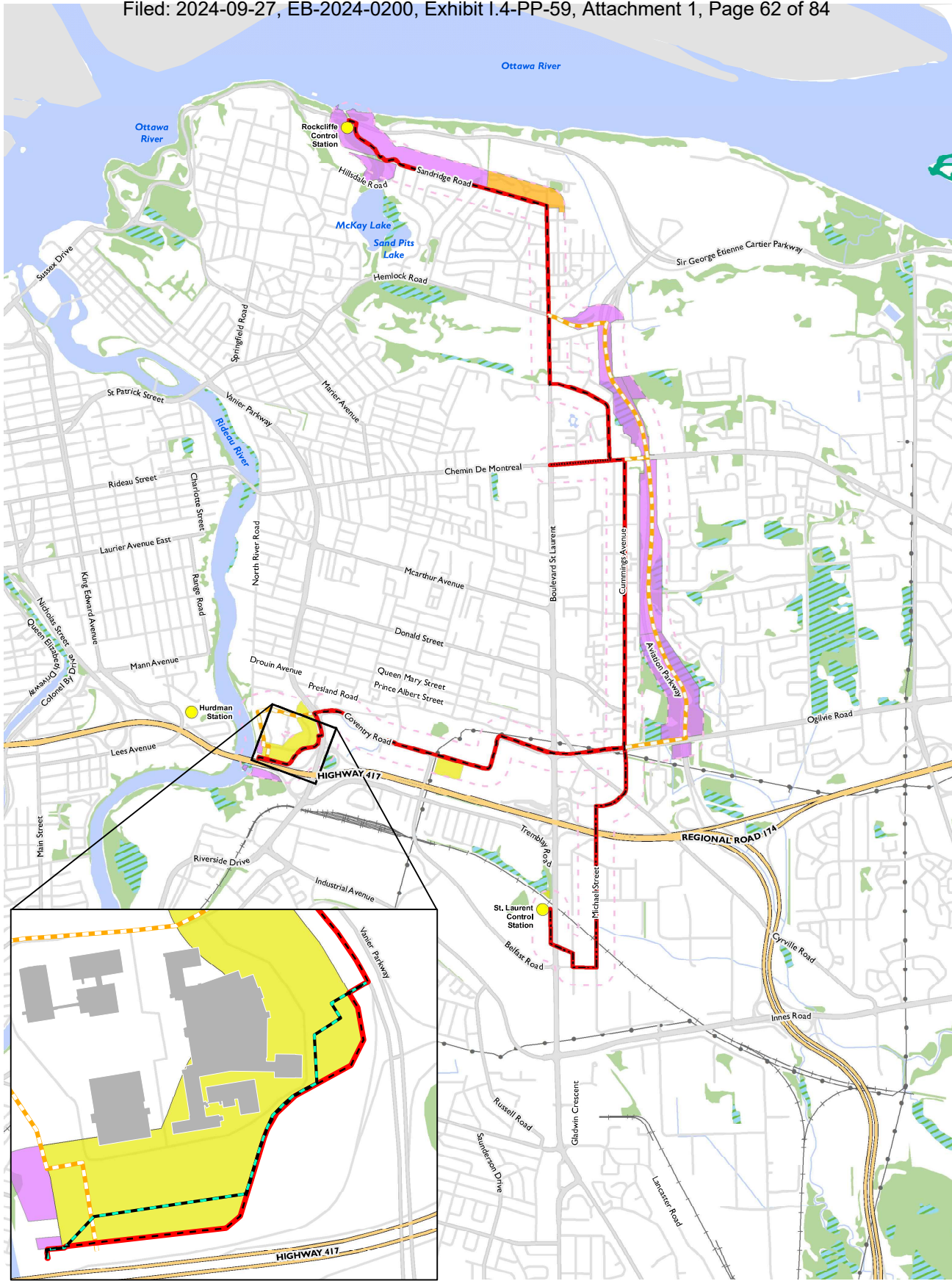
Sincerely,

(Original Digitally Signed)

Adam Stiers  
Manager, Regulatory Applications – Leave to Construct

**Figure 1 – Updated Project Map**





**ENBRIDGE GAS INC.**  
**ST. LAURENT OTTAWA NORTH**  
**REPLACEMENT PIPELINE PROJECT**

**NEW PHASE 4**  
**PREFERRED ROUTE**  
**FIGURE 1**



- Station
  - Alternative Route
  - Phase 4 Original Preferred Route (January 2021)
  - Phase 4 New Preferred Route (August 2021)
- Gas Line Types**
- NPS 16 XHP Gas Main
  - NPS 12 XHP Gas Main
  - NPS 6 XHP Gas Main

- Federal Lands**
- National Capital Commission
  - Public Services and Procurement Canada
  - Royal Canadian Mounted Police

- Base Data**
- Highway
  - Major Road
  - Local Road
  - Utility Line
  - Railway
  - Unevaluated Wetland
  - Watercourse
  - Water Body
  - Wooded Area
  - RCMP Building Footprint

MAP DRAWING INFORMATION:  
 DATA PROVIDED BY MNR/ENBRIDGE GAS INC.

MAP CREATED BY: SCM  
 MAP CHECKED BY: ARL  
 MAP PROJECTION: NAD 1983 CRS UTM Zone 18N



PROJECT: 19-1850 STATUS: FINAL DATE: 2021-08-03



**1200 VANIER  
PARKWAY**

**PROP GAS MAIN (RED DASH DOT)**

**EXIST GAS SERVICE (BLACK)**

**PROPERTY  
LINE (BLUE)**

**EXIST GAS SERVICE (BLACK)**

**PROP 3m EASEMENT  
(YELLOW SHADING)**

**EXISTING  
FENCE (BLACK)**

**PROP GAS MAIN  
(RED DASH DOT)**

**EXISTING  
FENCE (BLACK)**

**CENTRELINE OF GAS MAIN  
30m FROM PROPERTY LINE  
~33m FROM FENCE**

**VANIER PARKWAY**

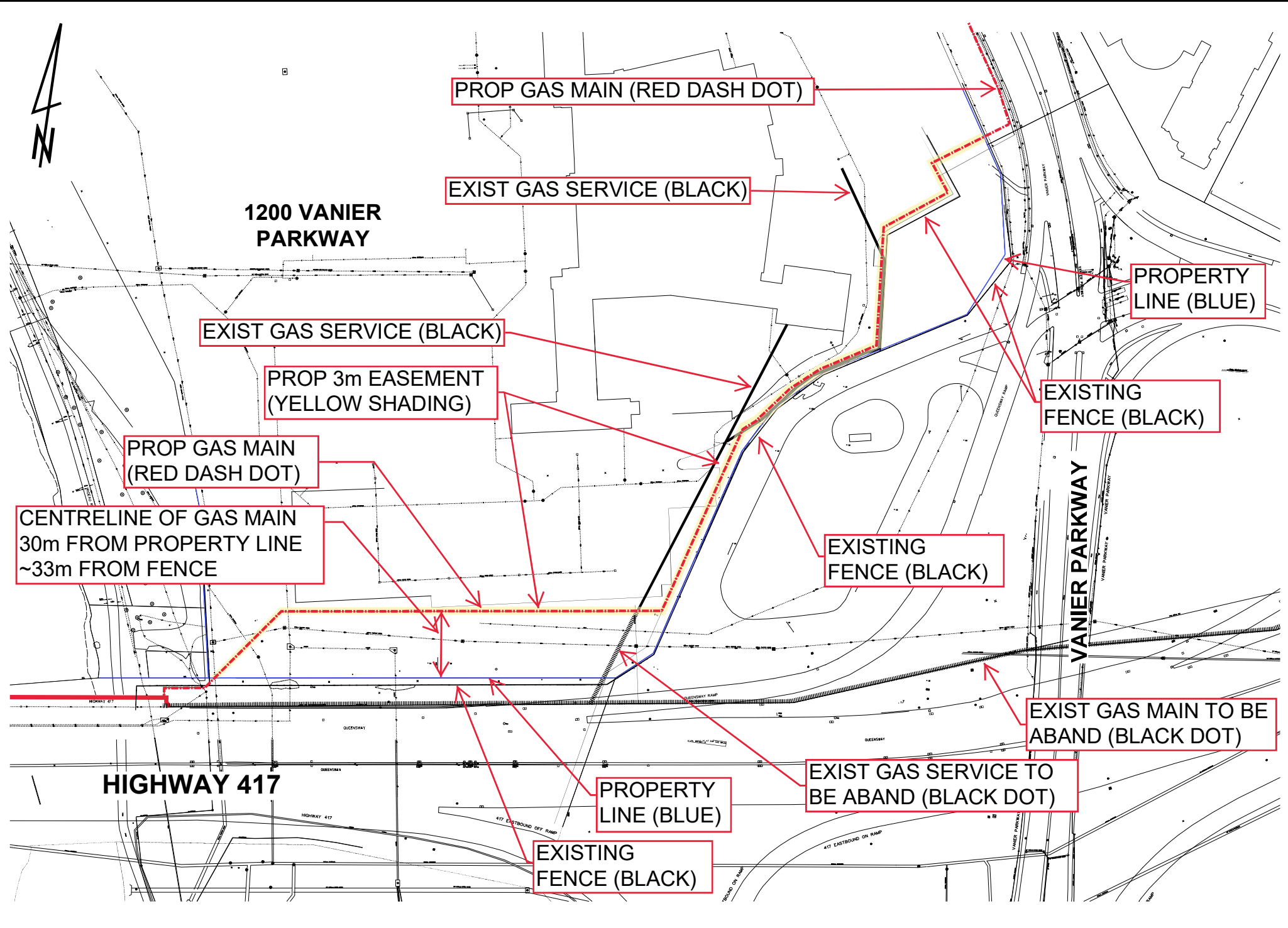
**EXIST GAS MAIN TO BE  
ABAND (BLACK DOT)**

**HIGHWAY 417**

**EXIST GAS SERVICE TO  
BE ABAND (BLACK DOT)**

**PROPERTY  
LINE (BLUE)**

**EXISTING  
FENCE (BLACK)**





---

**From:** Chuck Reaney <[Chuck.Reaney@enbridge.com](mailto:Chuck.Reaney@enbridge.com)>  
**Sent:** Thursday, October 28, 2021 11:24 AM  
**To:** Gitkow, Alexandre (MTO) <[Alexandre.Gitkow@ontario.ca](mailto:Alexandre.Gitkow@ontario.ca)>  
**Cc:** Aron Murdoch <[Aron.Murdoch@enbridge.com](mailto:Aron.Murdoch@enbridge.com)>  
**Subject:** Enbridge, St. Laurent Project at the RCMP property (417 and Vanier Parkway)

Hi Alexandre,

Thanks for the call and conversation this morning. Attached is our first draft that we are circulating to both RCMP and MTO for initial review and comment.

Let me know if you have any questions or if you want to meet.

Thanks again for your help and I look forward to your response.

Sincerely,

**Chuck Reaney** B.A.

Senior Advisor  
Land & Permitting

ENBRIDGE GAS INC.  
TEL: 416-753-6929  
FAX: 416-753-6941  
PO BOX 650, Scarborough, ON, M1K 5E3

[chuck.reaney@enbridge.com](mailto:chuck.reaney@enbridge.com)

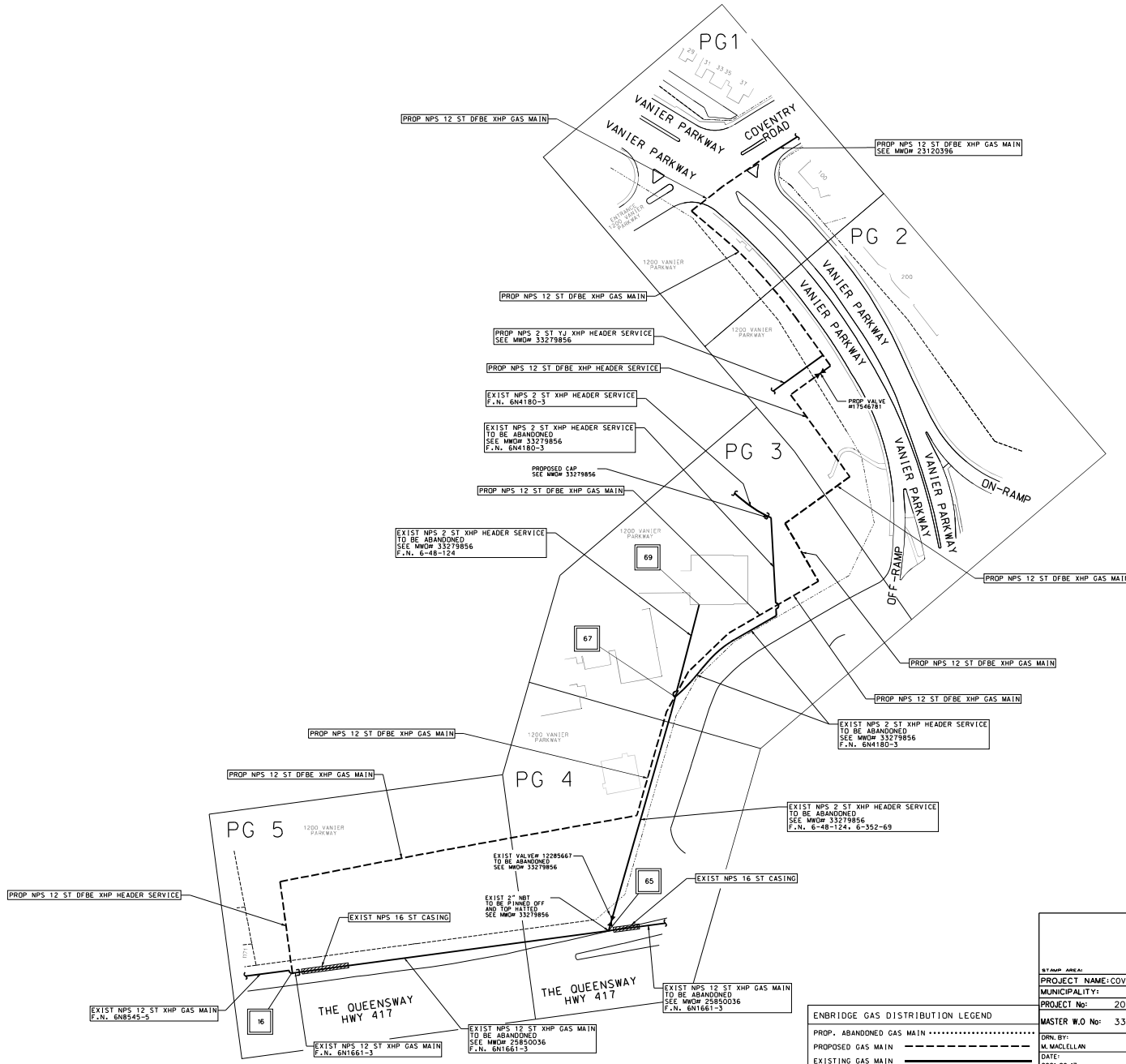
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**One attachment** • Scanned by Gmail




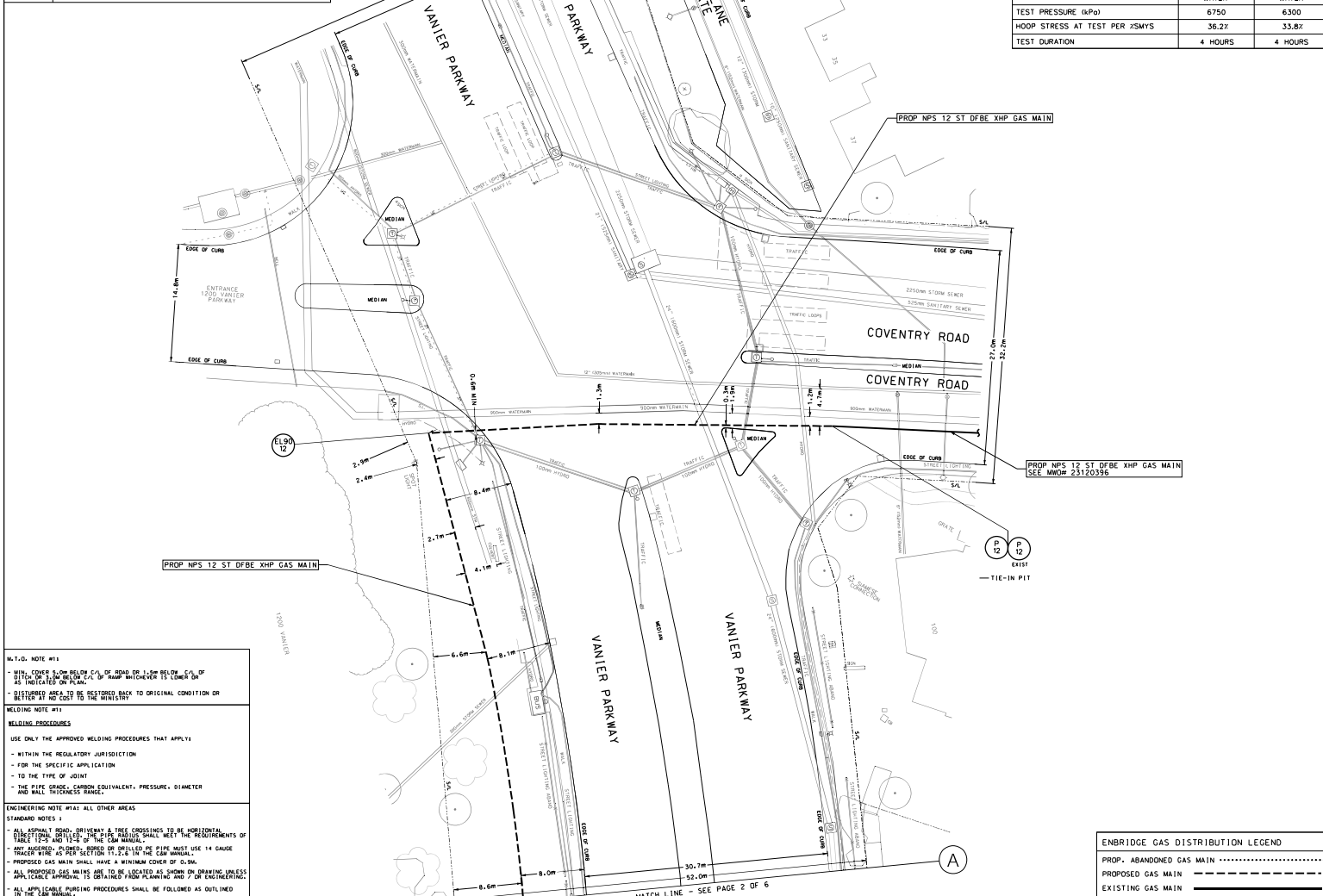
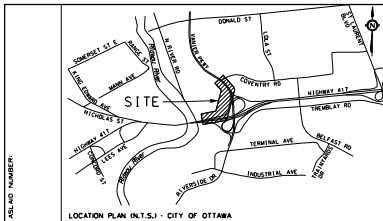


**ENBRIDGE GAS DISTRIBUTION LEGEND**

PROP. ABANDONED GAS MAIN .....  
 PROPOSED GAS MAIN - - - - -  
 EXISTING GAS MAIN \_\_\_\_\_

STAMP AREA		STAMP AREA	
PROJECT NAME: COVENTRY ROAD AND VANIER PARKWAY			
MUNICIPALITY: CITY OF OTTAWA			
PROJECT No:	20016165	SCALE:	PAGE:
MASTER W.O No:	33274795	N.T.S.	KEY PLAN
DRN. BY:		DATE:	
M. MACLELLAN		2021-09-17	





12" PIPELINE DESIGN PARAMETERS (NEW PIPING ONLY)  
PIPELINE ENGINEERING USE ONLY  
REMOVE IF ENGINEERING APPROVAL IS NOT REQUIRED

CLASS LOCATION	4
DESIGN PRESSURE (DPI)	4,500 kPa
HOOP STRESS AT DESIGN PRESSURE PER 2 SMYS	24.2x
MAXIMUM OPERATING PRESSURE (MOP)	4,500 kPa
HOOP STRESS AT MOP PER 2 SMYS	24.2x
MINIMUM DEPTH OF COVER	1m

PRESSURE TEST REQUIREMENTS		STRENGTH TEST	LEAK TEST
TEST MEDIUM	WATER	WATER	WATER
TEST PRESSURE (kPa)	6750	6300	
HOOP STRESS AT TEST PER 2SMYS	36.2x	33.8x	
TEST DURATION	4 HOURS	4 HOURS	

PROPOSED ENBRIDGE BILL OF MATERIALS

MARK	SIZE	STOCK NO	REQD	DESCRIPTION	QTY
P	12	0999900	733m	Pipe Steel GR. 55W W.T. 8.4mm CSA Z245.1(CA1) Coating to CSA Z245.20 D.F.B.E.	
P	12	0999900	PS REGRD	PS REGRD STEEL GR. 55W W.T. 8.4mm AP5.2	
SWR	2	1128441	5	Wedge Socket Valve Wt. 11497 Forged Steel Body and Cap Welded ASTM A105 1410 psig	
EL90	12	181330	8	Elbow 90 30 Welded GR. 55W STD W.T. CSA Z245.1(CA1)	
EL45	12	181340	2	Elbow 45 30 Welded GR. 55W STD W.T. CSA Z245.1(CA1)	
VG		181007	1	Valve Box Standard Poly. MANHOLE for Steel Valves on Boulevard	
PM PP		1740000	PS REGRD	Permanent Pipeline Marker Post	
PM PS		1740000	PS REGRD	Permanent Pipeline Marker Sign	
PM		1740000	PS REGRD	Pipeline Marker Temporary Photo 48 in. Yellow Includ 1-88 Includes Custom Decals 480P1-481	
PM		1740000	PS REGRD	Pipeline Marker Temporary Photo 48 in. Yellow Includ 1-88 Includes Custom Decals 480P1-481	
SM1	12	1840045	1	Tree Three Way Tee Short Stop 3000 Signaled Welded Class STD WT. Outfit ASME B31.8 C/W	
C	12	1840048	2	Cap Three Way Tee 32 Double Flange and Blind	
EL90	12	1840090	REGRD	Elbow 90 30 Segramite Welded GR. 55W STD W.T. CSA Z245.1(CA1)	

- N.T.S. NOTE #11
- MIN. COVER SHALL BE 1.0M BELOW C.C. OF ROAD OR 1.5M BELOW C.C. OF SIDEWALK OR 1.5M BELOW C.C. OF "HUMP" WHICHEVER IS LOWER OR AS INDICATED ON PLAN.
  - DISTURBED AREA TO BE RESTORED BACK TO ORIGINAL CONDITION OR BETTER IF NO COST TO THE MUNICIPALITY.
- WELDING NOTE #11
- WELDING PROCEDURES
- USE ONLY THE APPROVED WELDING PROCEDURES THAT APPLY:
  - WITHIN THE REGULATORY JURISDICTION
  - FOR THE SPECIFIC APPLICATION
  - TO THE TYPE OF JOINT
  - THE PIPE GRADE, CARBON EQUIVALENT, PRESSURE, DIAMETER AND WALL THICKNESS RANGE.
- ENGINEERING NOTE #11 AT ALL OTHER AREAS
- STANDARD NOTES:
- ALL SIGNALING ROAD, OVERPASS AND TREE CROSSINGS TO BE PERFORMED IN ACCORDANCE WITH THE REGULATORY JURISDICTION.
  - ALL PROPOSED GAS MAINS SHALL MEET THE REQUIREMENTS OF THE CANADIAN GAS CODE (CGC) PART 4.
  - ALL PROPOSED GAS MAINS SHALL BE INSTALLED AS SHOWN ON DRAWING UNLESS OTHERWISE NOTED.
  - ALL APPLICABLE WELDING PROCEDURES SHALL BE FOLLOWED AS OUTLINED IN THE CGC.
  - PIPELINE MARKERS TO BE INSTALLED AS PER THE P.D.R. AND THE CAN. MANUAL.
  - ALL BURIED BARE STEEL PIPE MUST BE COATED AS PER THE CAN. MANUAL.

METHOD OF CONSTRUCTION: OPEN TRENCH / HDD

I DECLARE THE INSTALLATION AND TESTING OF THE PIPELINE WAS CARRIED OUT IN ACCORDANCE WITH ONTARIO REGULATIONS (O. REG. 210/01 s. 16 (4)) AND CONFORMS TO THE ORIGINAL DESIGN STANDARDS AND APPROVED REVISIONS AND MEETS COMPANY STANDARD

NAME/DATE: 1) \_\_\_\_\_ 2) \_\_\_\_\_  
 SIGNATURE: 1) \_\_\_\_\_ 2) \_\_\_\_\_  
 GPR CERTIFICATE NUMBER: 1) \_\_\_\_\_ 2) \_\_\_\_\_

NOTE: THIS MUST BE FILLED IN BY PERSON(S) WITH A VALID GPR CERTIFICATE.

TEST LOCATION ABOVE GROUND  BELOW GROUND

TESTED @ \_\_\_\_\_ kPa DURATION: \_\_\_\_\_ h / min

WITH: AIR / NITROGEN / WATER TEST TYPE: SPRING GAUGE / TEST CHART / DRAGNET / OTHER

INSPECTOR: \_\_\_\_\_ CERT NO: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FITTER/WELDER: \_\_\_\_\_ EGD NO: \_\_\_\_\_ DATE: \_\_\_\_\_  
 NOTEKEEPER: \_\_\_\_\_ CERT NO: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CONTRACTOR: \_\_\_\_\_ CREW LD: \_\_\_\_\_ DATE: \_\_\_\_\_

TESTING REQUIREMENTS AS PER GAS PRESSURE TESTING STANDARD

INSPECTION DETAILS:

START DATE: \_\_\_\_\_ COMPLETION DATE: \_\_\_\_\_ ENERGIZED DATE: \_\_\_\_\_  
 CONSTRUCTED BY: \_\_\_\_\_ ENERGIZED BY: \_\_\_\_\_ STIMED BY: \_\_\_\_\_

NO	REVISION FOR COMPLETE PROJECT	COMPLETED BY	DATE

STAMP AREA

REVISION FOR COMPLETE PROJECT

CONSULTANT: N/A

PROJECT: COVENTRY ROAD AND VANIER PARKWAY

PLATE NO: GL88 MUNICIPALITY: CITY OF OTTAWA  
 PROJECT NO: 2001615  
 NETWORK NO: 6584 MASTER W.O NO: 33274795  
 CORROSION NO: 60-603-034  
 CORROSION APPROVED BY: M. MACLELLAN  
 DATE: 2021-09-17  
 PLANNER: A. MURRAY  
 DATE APPROVED: \_\_\_\_\_

SCALE: 1 OF 1  
 SCALE: 1:250

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 PROPOSED GAS MAIN - - - - -  
 EXISTING GAS MAIN \_\_\_\_\_

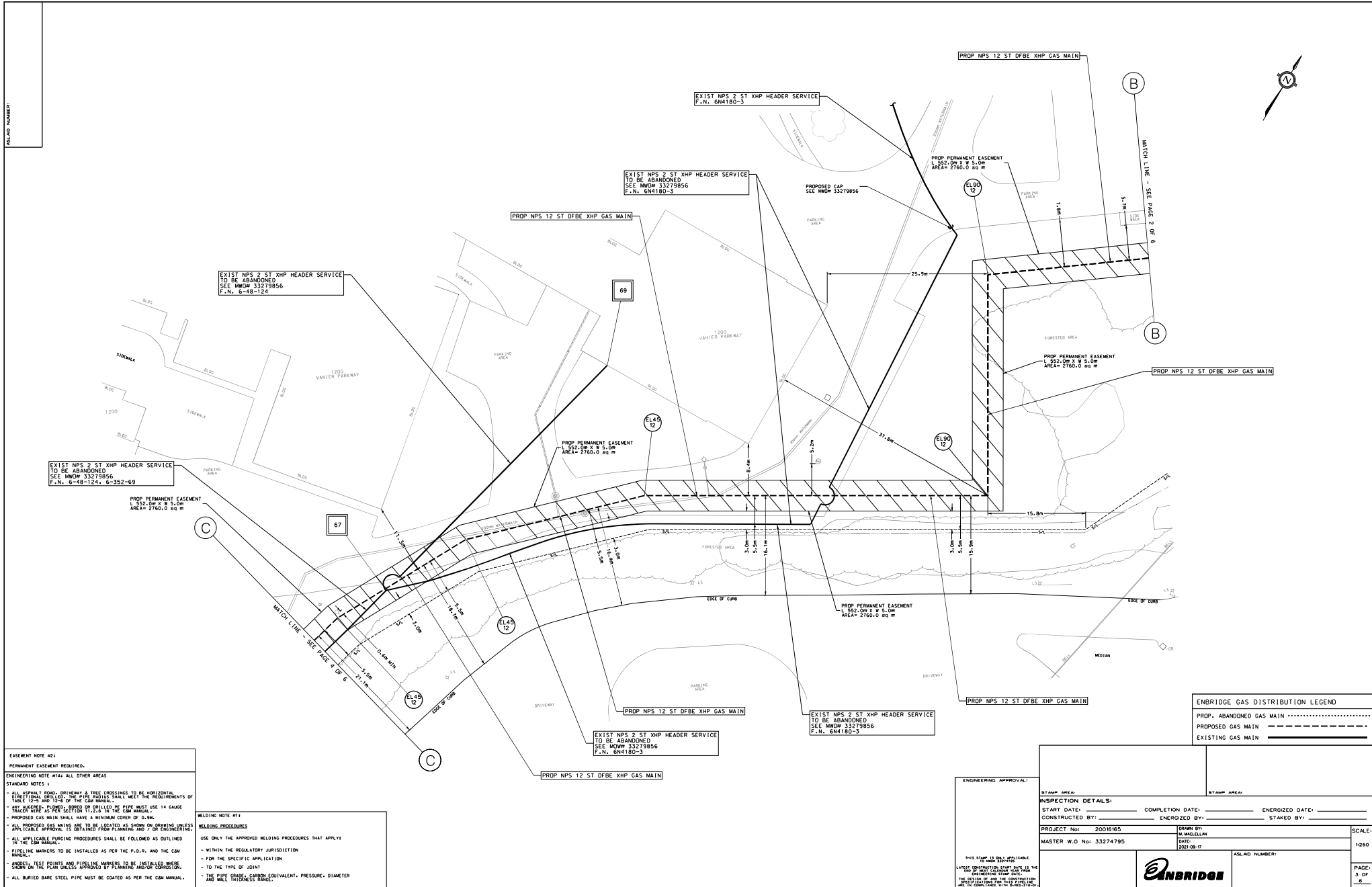
NO	FIELD CHANGE	APPROVED BY	DATE OF FIELD CHANGE



ASLD NUMBER: \_\_\_\_\_







EASEMENT NOTE #21  
PERMANENT EASEMENT REQUIRED.

ENGINEERING NOTE #141 ALL OTHER AREAS  
STANDARD NOTES :

- ALL SIGNAL ROAD, DRIVEWAY & TREE CROSSINGS TO BE HORIZONTAL THREE (3)M. AND 1500.0 CM. OF CURB SHALL MEET THE REQUIREMENTS OF 12" MIN. 12" AND 15" 4" MIN. OF CURB MINIMUM.
- ALL EXPOSED, UNCOVERED, BURIED OR UNLINED PIPE MUST USE 14 GAUGE.
- PROPOSED GAS MAIN SHALL HAVE A MINIMUM COVER OF 0.9M.
- ALL PROPOSED GAS MAINS ARE TO BE LOCATED AT SHOWN OR DEPARTING UNLESS APPLICABLE OTHERWISE. TO OBTAIN FROM PLANNING AND / OR ENGINEERING.
- ALL APPLICABLE PLUMBING PROCEDURES SHALL BE FOLLOWED AS OUTLINED IN THE CDM MANUAL.
- PIPELINE WARNERS TO BE INSTALLED AS PER THE P.D.R. AND THE CDM MANUAL.
- MARKERS: TEST POINTS AND PIPELINE MARKERS TO BE INSTALLED WHERE SHOWN ON THE PLAN UNLESS APPROVED BY PLANNING AND/OR CONSTRUCTION.
- ALL BURIED BARE STEEL PIPE MUST BE COATED AS PER THE CDM MANUAL.

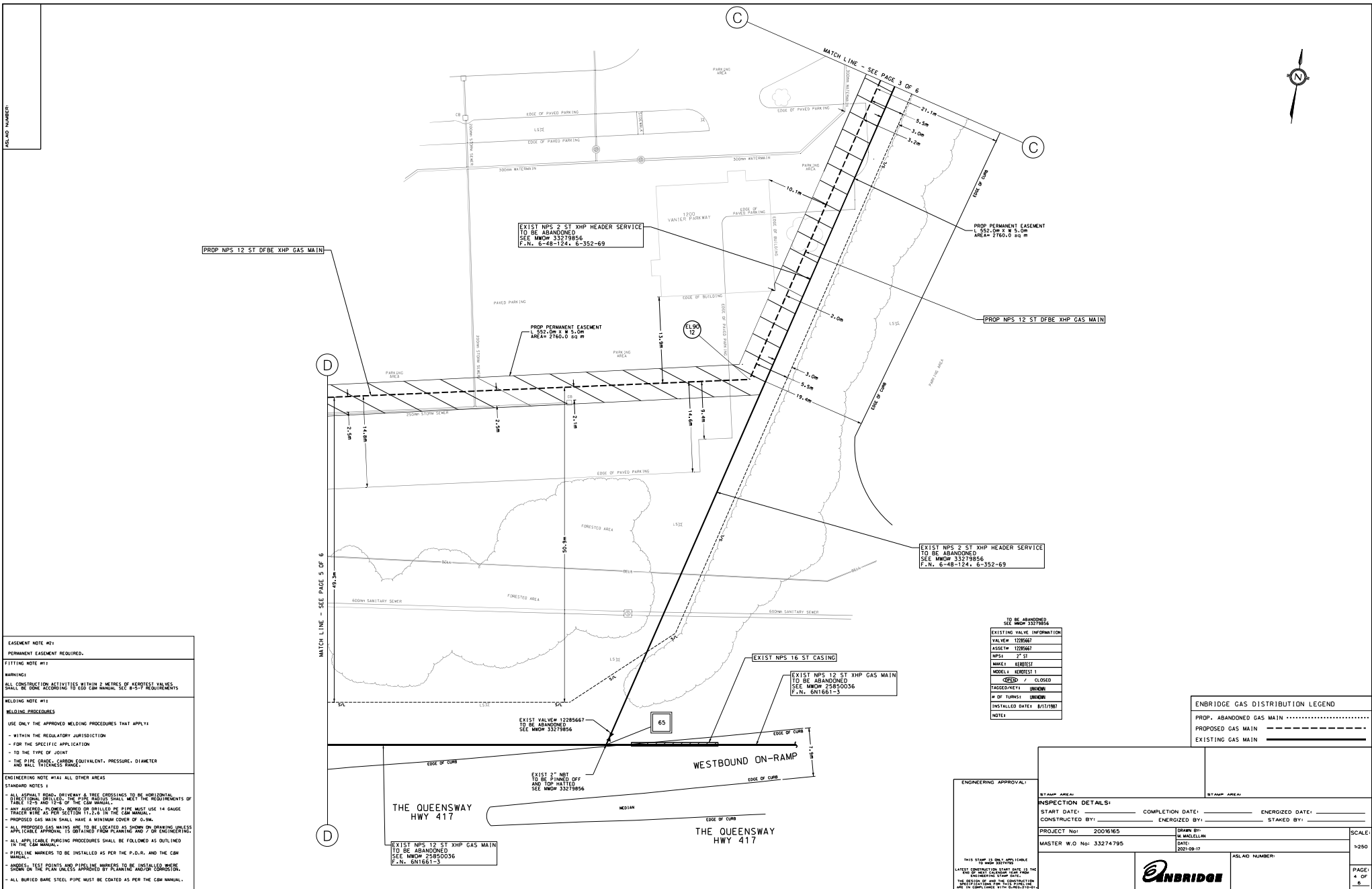
WELDING NOTE #11  
WELDING PROCEDURES

USE ONLY THE APPROVED WELDING PROCEDURES THAT APPLY:

- WITHIN THE REGULATORY JURISDICTION
- FOR THE SPECIFIC APPLICATION
- TO THE TYPE OF JOINT
- THE PIPE GRADE, NOMINAL EQUIVALENT, PRESSURE, DIAMETER AND WALL THICKNESS RANGE.

ENBRIDGE GAS DISTRIBUTION LEGEND	
PROP. ABANDONED GAS MAIN	-----
PROPOSED GAS MAIN	-----
EXISTING GAS MAIN	-----

ENGINEERING APPROVAL		BY AMP AREA:	
INSPECTION DETAILS:		COMPLETION DATE: _____ ENERGIZED DATE: _____	
START DATE: _____		CONSTRUCTED BY: _____ ENERGIZED BY: _____ STAKED BY: _____	
PROJECT No: 2006165		DRAWN BY: M. MACLELLAN	
MASTER W.O No: 33274795		DATE: 2021-09-17	
THIS DRAWING IS THE PROPERTY OF ENBRIDGE. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. IT IS NOT TO BE REPRODUCED OR COPIED WITHOUT THE WRITTEN PERMISSION OF ENBRIDGE.		SCALE: 1:250	
ENBRIDGE		ASLHD NUMBER: _____	
		PAGE: 3 OF 6	



SHEET NUMBER

**EASEMENT NOTE #1:**  
PERMANENT EASEMENT REQUIRED.

**FITTING NOTE #1:**  
WARNING:  
ALL CONSTRUCTION ACTIVITIES WITHIN 5 METERS OF HEREFEST VALVES SHALL BE DONE ACCORDING TO EGM MANUAL SEC 8-5-7 REQUIREMENTS.

**WELDING NOTE #1:**  
**WELDING PROCEDURES**  
USE ONLY THE APPROVED WELDING PROCEDURES THAT APPLY:  
- WITHIN THE REGULATORY JURISDICTION  
- FOR THE SPECIFIC APPLICATION  
- TO THE TYPE OF JOINT  
- THE PIPE GRADE, CARBON EQUIVALENT, PRESSURE, DIAMETER AND WALL THICKNESS RANGE.

**ENGINEERING NOTE #1:** ALL OTHER AREAS  
STANDARD NOTES 1:  
- ALL SIGNAL ROAD, DRIVEWAY & TRAIL CROSSINGS TO BE HORIZONTAL THREE (3) M AND 1500 OF THE C&M MANUAL.  
- ANY SLOPED, FLARED, BENDED OR BULLETED PIPE MUST USE 14 GAUGE THICKER WIRE AS PER SECTION 11.2.4 IN THE C&M MANUAL.  
- PROPOSED GAS MAIN SHALL HAVE A MINIMUM COVER OF 0.9M.  
- ALL PROPOSED GAS MAINS ARE TO BE LOCATED AT 300MM ON GRAVITY UNLESS APPLICABLE APPROVAL IS OBTAINED FROM PLANNING AND / OR ENGINEERING.  
- ALL APPLICABLE PILING PROCEDURES SHALL BE FOLLOWED AS OUTLINED IN THE C&M MANUAL.  
- PIPELINE MARKERS TO BE INSTALLED AS PER THE P.O.R. AND THE C&M MANUAL.  
- MARKER, TEST POINTS AND PIPELINE MARKERS TO BE INSTALLED WHERE SHOWN ON THE PLAN UNLESS APPROVED BY PLANNING AND/OR CONSTRUCTION.  
- ALL BURIED BARE STEEL PIPE MUST BE COATED AS PER THE C&M MANUAL.

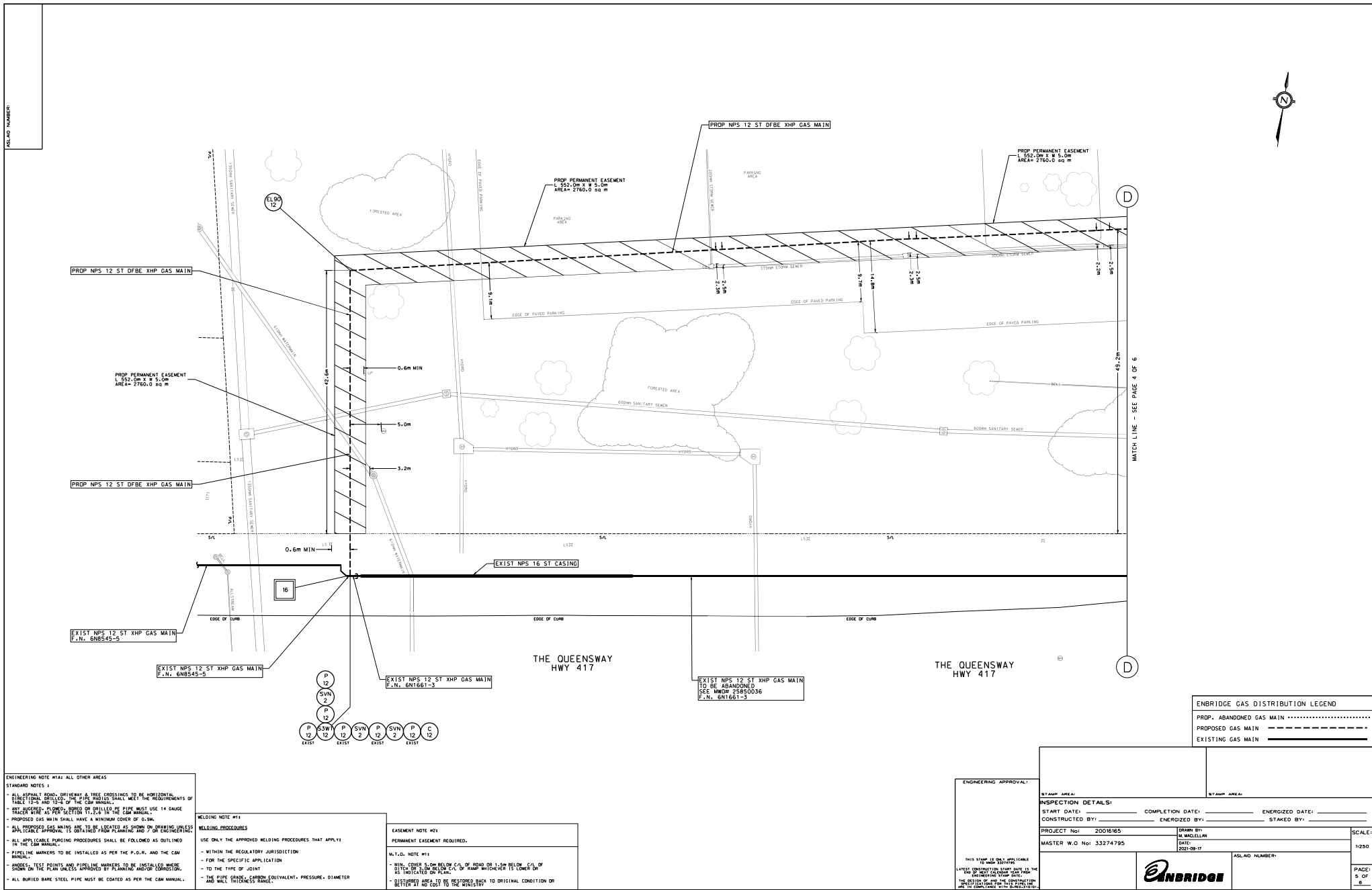
TO BE ABANDONED  
SEE MWD# 33279856

EXISTING VALVE INFORMATION	
VALVE#	1206601
ASSET#	1206601
NPS	2" SI
MAKE	4101151
MODEL	UNTESTED
STATUS	CHECK / CLOSED
TAGGED/RETI	UNKNOWN
# OF TURNS	UNKNOWN
INSTALLED DATE	8/17/1987
NOTES:	

**ENBRIDGE GAS DISTRIBUTION LEGEND**

PROP. ABANDONED GAS MAIN	.....
PROPOSED GAS MAIN	-----
EXISTING GAS MAIN	————

<b>ENGINEERING APPROVAL</b>		<b>STAMP AREA</b>		<b>STAMP AREA</b>	
THIS STAMP IS NON-APPLICABLE LATEST CONSTRUCTION START DATE AS THE ONE IN THE FOLLOWING TABLE OF THE DESIGN OF THE CONSTRUCTION AND THE COMMENCEMENT OF THE PROJECT.		<b>INSPECTION DETAILS</b> START DATE: _____ COMPLETION DATE: _____ ENERGIZED DATE: _____ CONSTRUCTED BY: _____ ENERGIZED BY: _____		PROJECT No: 20016165 MASTER W.O No: 33274795	
DRAWN BY: M. WAGLELLAN		DATE: 2021-09-17		SCALE: 1:250	
AS/AD NUMBER: 		PAGE: 4 OF 6			



**ENGINEERING NOTE #161 ALL OTHER AREAS**  
**STANDARD NOTES :**  
 - ALL ASPHALT ROAD, DRIVEWAY & TRAIL CROSSINGS TO BE HORIZONTAL  
 THREE (3)mm AND 150-200mm OF CURB MANHOLE SHALL MEET THE REQUIREMENTS OF  
 TABLE 12-1 AND 12-4  
 - ALL EXPOSED, UNCOVERED OR UN-LEAD PIPE MUST USE 14 GAUGE  
 - PROPOSED GAS MAIN SHALL HAVE A MINIMUM COVER OF 0.9M  
 - ALL PROPOSED GAS MAINS ARE TO BE LOCATED AT SHOWN OR INDICATED UNLESS  
 APPLICABLE APPROVAL IS OBTAINED FROM PLANNING AND / OR ENGINEERING  
 - THE PIPE BRAND, NOMINAL EQUIVALENT, PRESSURE, DIAMETER  
 AND WALL THICKNESS RANGE  
 - ALL BURIED BARE STEEL PIPE MUST BE COATED AS PER THE C&M MANUAL

**WELDING NOTE #11**  
**WELDING PROCEDURES**  
 USE ONLY THE APPROVED WELDING PROCEDURES THAT APPLY:  
 - WITHIN THE REGULATORY JURISDICTION  
 - FOR THE SPECIFIC APPLICATION  
 - TO THE TYPE OF JOINT  
 - THE PIPE BRAND, NOMINAL EQUIVALENT, PRESSURE, DIAMETER  
 AND WALL THICKNESS RANGE

**EASEMENT NOTE #21**  
**PERMANENT EASEMENT REQUIRED.**  
**M.T.D. NOTE #11**  
 - MIN. COVER 5.0M BELOW C/L OF ROAD OR 1.5M BELOW C/L OF  
 DITCH, TO THE UNLAWFUL C/L OF RAMP WHICHEVER IS LOWER OR  
 AS INDICATED ON PLAN.  
 - DISTURBED AREA TO BE RESTORED BACK TO ORIGINAL CONDITION OR  
 BETTER AT NO COST TO THE MUNICIPALITY

ENBRIDGE GAS DISTRIBUTION LEGEND	
PROP. ABANDONED GAS MAIN	-----
PROPOSED GAS MAIN	-----
EXISTING GAS MAIN	-----

<b>ENGINEERING APPROVAL</b>		<b>BY AMP AREA:</b>	
<b>INSPECTION DETAILS:</b>			
START DATE:	COMPLETION DATE:	ENERGIZED DATE:	
CONSTRUCTED BY:	ENERGIZED BY:	STAKED BY:	
PROJECT No: 2006165	DRAWN BY: M. MACLELLAN	SCALE: 1:250	
MASTER W.O No: 33274795	DATE: 2021-09-17	PAGE: 5 OF 6	
		AS/LD NUMBER:	





# Enbridge Gas St. Laurent Pipeline Replacement Project - Notice of Study Commencement



External    Inbox ×    Notice of Commencement ×    OPCC ×



**EA, St Laurent** <stlaurentea@dillon.ca> (sent by ewittmann@dillon.ca)

Fri, Sep 22, 2023, 11:29 AM

to OPCC.Chair, karla.barboza, ghighfield, michael.elms, andrew.evers, farrah.ali-khan, helma.geerts, tony.difabio, keith.johnston, cory.ostrowka, me, he

Good morning OPCC Members,

I am reaching out to provide you with a notice regarding the proposed Enbridge Gas St. Laurent Pipeline Replacement Project.

The Project will involve the installation of approximately 13 km of new 6-inch, 12-inch, and 16-inch diameter extra high-pressure (XHP) steel pipeline segments, as well as approximately 8 km of 2-inch, 4-inch, and 6-inch diameter intermediate pressure (IP) polyethylene pipeline segments.

Enbridge Gas has retained Dillon Consulting to conduct an environmental study for the Project. Building off the work completed in the June 2020 Environmental Report (ER) and the October 2020 ER Amendment, Enbridge Gas has requested that Dillon complete an additional ER Amendment to account for the assessment of changes made to the pipeline routes presented in the original ER and ER Amendment. The ER Amendment is being conducted in consideration of the OEB's Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023).

As part of the stakeholder engagement program for the Project, Enbridge Gas and Dillon Consulting will be hosting an in-person public information session on October 3, 2023. Details about the public information session are provided in the attached Notice of Study Commencement.

We are interested in hearing comments or concerns that you or your agency may have regarding this Project. We are also requesting any information relating to natural and/or human environments along the potential routes that may fall within your mandate. Please send your comments or concerns to the Project email inbox ([StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca)) by October 13, 2023, for inclusion in the ER Amendment.

If you require any further information at this time, please do not hesitate to contact me.

Sincerely,

Tristan Lefler  
Environmental Assessment Project Manager

*\*\*If you do not wish to receive emails related to this Project, please let me know and you will be removed from the distribution list.\*\**

---

One attachment • Scanned by Gmail





September 22, 2023

**Re: Enbridge Gas Inc.  
Proposed St. Laurent Pipeline Replacement Project  
City of Ottawa, Ontario  
Notice of Study Commencement and Public Information Session**

177 Colonnade Road  
Suite 101  
Ottawa, Ontario  
Canada  
K2E 7J4  
Telephone  
613.745.2213  
Fax  
613.745.3491

To whom it may concern,

Enbridge Gas Inc. (Enbridge Gas) has retained Dillon Consulting Limited (Dillon) to conduct an environmental study for the proposed St. Laurent Pipeline Replacement Project (the Project) located in the City of Ottawa, Ontario.

Enbridge Gas is proposing to replace its St. Laurent Pipeline System that is currently located along St. Laurent Boulevard in Vanier and Ottawa South. An analysis and safety evaluation completed by Enbridge Gas has demonstrated the need for the immediate replacement of the system to ensure the continued safe and reliable delivery of natural gas service.

The Project will involve the installation of approximately 13 kilometres (km) of new 6-inch, 12-inch, and 16-inch diameter extra high-pressure (XHP) steel pipeline segments to replace the existing St. Laurent Pipeline as well as approximately 8 km of 2-inch, 4-inch, and 6-inch diameter intermediate pressure (IP) polyethylene pipeline segments after the XHP system has been replaced in a different location. The majority of the pipeline segments under consideration are planned to be installed within road allowances as shown on the figure in the Notice of Study Commencement (attached) and described below:

- The Preferred Route for the north-south XHP portion of the pipeline runs south on St. Laurent Boulevard from the existing St. Laurent Control Station, southeast on Shore Street, south on Lagan Way, and east on Belfast Road. From Belfast Road, the pipeline runs north on Michael Street, east on Labelle Street, north on Cummings Avenue, west on Montreal Road, and north on Brittany Drive to St. Laurent Boulevard. The route then runs north on St. Laurent Boulevard, then west on Sandridge Road, crossing Hillside Road before turning north to run along a park footpath and terminating at the Rockcliffe Control Station. An additional segment of XHP pipeline also runs west along Montreal Road from Brittany Drive and terminates east of St. Laurent Boulevard. Another segment of XHP pipeline runs from Shore Street south along St. Laurent Boulevard, terminating just north of Industrial Avenue.
  - An Alternative Route for part of the north-south XHP portion of the pipeline runs from Cummings Avenue along Ogilvie Road, north on Aviation Parkway, then west on Sir George-Étienne Cartier Parkway, before terminating at the Rockcliffe Control Station. Additional segments run west on Montreal Road

Dillon Consulting  
Limited



Page 2  
September 22, 2023



- from Aviation Parkway to Cummings Avenue, and west on Hemlock Road from Aviation Parkway to St. Laurent Boulevard.
- The Preferred Route for the east-west XHP portion of the pipeline runs west from Cummings Avenue along Ogilvie Road, Coventry Road, Vanier Parkway, and through private property to the Rideau River.
    - An Alternative Route for part of the east-west XHP portion of the pipeline continues west through private property after Coventry Road ends at the Vanier Parkway before turning south at the Rideau River Pathway.
  - The Preferred Route also includes multiple IP pipeline segments as follows:
    - One that runs from Russell Road southeast along Industrial Road, then onto St. Laurent Boulevard, Bourassa Street, Gladwin Crescent, and Lancaster Road.
    - One that runs south along St. Laurent Boulevard from Donald Street, ending just north of the Highway 417 overpass.
    - One that runs west on Ogilvie Road from Cummings Avenue, ending just west of Belfast Road on Coventry Road.
    - One that runs north on St. Laurent Boulevard from Montreal Road to Sandridge Road then west on Sandridge Road, ending at Lakeway Drive.
    - One that runs along a portion of Finter Street.

In 2019, Enbridge Gas retained Dillon to undertake a pipeline route selection and environmental assessment to complete an Environmental Report (ER) for the Project. The routing options discussed above were evaluated in the original ER completed in June 2020 that was subsequently amended in October 2020, with the exception of two new segments.

- A 600 metre (m) segment that runs along St. Laurent Boulevard south of Shore Street to just north of Industrial Avenue that forms part of the XHP north-south Preferred Route.
- A 118 m segment that runs along Belfast Road between St. Laurent Boulevard and Michael Street that forms part of the XHP north-south Alternative Route.

Minor route alterations may be required if the location of the Rockcliffe Control Station changes in the future.

Enbridge Gas has requested that Dillon complete an additional ER Amendment to account for the assessment of changes made to the pipeline routes presented in the original ER and ER Amendment. Building on the documentation previously completed by Dillon in 2020/2021, this ER Amendment will provide an updated analysis on the need and justification for the Project, describe any changes to the natural and socio-economic environment, gather input from Indigenous communities, regulatory agencies, the general public, and other interested persons, and provide an updated cumulative effects assessment. The ER Amendment is being conducted in accordance

Page 3  
September 22, 2023



with the OEB's *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023)*.

Once the ER Amendment is complete, Enbridge Gas plans to file a Leave-to-Construct application with the OEB in Q4 2023. Pending receipt of all approvals, construction is anticipated to begin in summer 2024.

Stakeholder involvement will play a key role in the ER Amendment. In order to undertake a successful consultation program, we have developed an updated mailing list of government agencies (federal, provincial, and municipal), Indigenous communities, and potential interest groups that may have an interest in the study. Enbridge Gas will also be hosting a drop-in style public information session as part of the study. Details about the information session are provided in the attached Notice of Study Commencement.

**We are interested in hearing from you** with any comments that you or your organization may have regarding this Project. We are also requesting any information relating to natural and/or human environments along the proposed pipeline segments that may fall within your mandate.

Please send this information to my attention at the above address or by email to [StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca) by **Friday, October 13, 2023**. If you require any further information at this time, please do not hesitate to contact me.

If there is a more appropriate contact at your organization who should receive this letter, please kindly forward the letter at your discretion and notify us as we will update our stakeholder contact list.

Sincerely,

**DILLON CONSULTING LIMITED**

Tristan Lefler, M.Sc.  
Partner, Environmental Assessment Project Manager  
Tel: 416-229-4646 ext. 2048

Attachment: Notice of Study Commencement and Public Information Session

# St. Laurent Pipeline Replacement Project

## Notice of Study Commencement and Public Information Session

City of Ottawa, Ontario  
Enbridge Gas Inc.

Enbridge Gas Inc. (Enbridge Gas) is proposing to replace its St. Laurent Pipeline System that is currently located along St. Laurent Boulevard in Vanier and Ottawa South. An analysis and safety evaluation completed by Enbridge Gas has demonstrated the need for the immediate replacement of the system to ensure the continued safe and reliable delivery of natural gas service.

The St. Laurent Pipeline Replacement Project (the Project) will involve the installation of approximately 13 km of new 6-inch, 12-inch, and 16-inch diameter extra high-pressure (XHP) steel pipeline segments to replace the existing St. Laurent Pipeline, as well as approximately 8 km of 2-inch, 4-inch, and 6-inch diameter intermediate pressure (IP) polyethylene pipeline segments after the XHP system has been replaced in a different location. The proposed pipeline routing is depicted in the adjacent figure.

In 2019, Enbridge Gas retained Dillon Consulting Limited (Dillon) to undertake a pipeline route selection, environmental assessment, and to complete an Environmental Report (ER) for the Project. The ER was originally completed in June 2020 and was subsequently amended in October 2020. Both reports were completed in accordance with the Ontario Energy Board (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7<sup>th</sup> Edition* (2016). Enbridge Gas has requested that Dillon complete an additional ER Amendment to account for the assessment of changes made to the pipeline routes presented in the original ER. The ER Amendment is being conducted in consideration of the OEB's *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8<sup>th</sup> Edition* (2023).

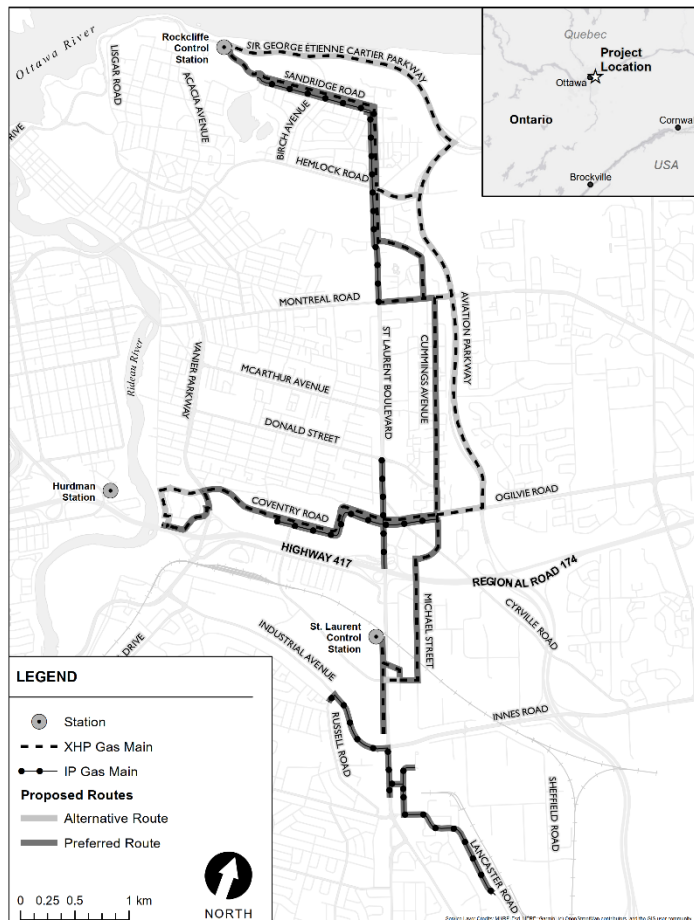
Building on the documentation previously completed by Dillon in 2020/2021, this ER Amendment will provide an updated analysis on the need and justification for the Project, describe any changes to the natural and socio-economic environment, gather input from Indigenous communities, regulatory agencies, the general public, and other interested persons, and provide an updated cumulative effects assessment. Once the ER Amendment is complete, Enbridge Gas plans to file a Leave-to-Construct application with the OEB in Q4 2023. Pending receipt of all approvals, construction is anticipated to begin in summer 2024.

### Project Contacts

**Greg Asmussen**  
Advisor, Environment  
Enbridge Gas Inc.  
10 Surrey Street East  
Guelph, ON  
N1H 3P5

**Tristan Lefler**  
Environmental Assessment Project Manager  
Dillon Consulting Limited  
51 Breithaupt Street, Suite 200  
Kitchener, ON  
N2H 5G5

**Email:** [StLaurentEA@dillon.ca](mailto:StLaurentEA@dillon.ca) **Phone:** 416-229-4646 Ext. 2048



### Invitation to the Community

Stakeholder engagement and Indigenous consultation are key components of this study. Members of the public, regulatory agencies, Indigenous communities, and other interested persons are invited to participate.

Enbridge Gas and Dillon are hosting a drop-in style public information session to provide you with an opportunity to review the St. Laurent Pipeline Replacement Project, ask questions, and provide input.

**Location:** Richelieu-Vanier Community Centre  
300 des Pères-Blancs Avenue

**Date and Time:** October 3, 2023, 5:00 pm – 8:00 pm

**Project Website:** [www.enbridgegas.com/StLaurentReplacement](http://www.enbridgegas.com/StLaurentReplacement)

Representatives from Enbridge Gas and Dillon will be in attendance to discuss the Project and answer questions. Your input will be used to confirm the preferred route and in the creation of mitigation plans that may be implemented during construction. If you are interested in participating, or would like to provide comments, please attend the meeting or contact one of the individuals listed. The last day to submit comments for consideration in the environmental study is October 13, 2023. After this date, comments will still be accepted and may be integrated into project planning, as applicable.



**Edwards, Alicia (She/Her) (MTO)** <Alicia.Edwards@ontario.ca>

Wed, Oct 4, 2023, 3:03 PM

to Daniel, me

Hi,

St. Laurent's, September 22, 2023, email to Daniel Prelipcean regarding the Enbridge Gas St. Laurent Pipeline Replacement Project - Notice of Study Commencement, has been forwarded to my attention for review and response.

Please find the following comments from the Ministry of Transportation for your consideration regarding the proposed project:

The study provided two options:

- The Preferred Route for the east-west XHP portion of the pipeline runs west from Cummings Avenue along Ogilvie Road, Coventry Road, Vanier Parkway, and through private property to the Rideau River.
- An Alternative Route for part of the east-west XHP portion of the pipeline continues west through private property after Coventry Road ends at the Vanier Parkway before turning south at the Rideau River Pathway.

Though both options are off MTO property and we don't have any plans for this area at this time, corridor prefers the alternative as there would be no issue if MTO expends.

Thanks,

Alicia Edwards (She/Her)  
Administrative Assistant  
Corridor Management Office & Special Highway Operations Initiative  
301 St.Paul Street, St.Catharines



**EA, St Laurent** <stlaurentea@dillon.ca> (sent by alee@dillon.ca)  
to Alicia, Daniel

Oct 10, 2023, 11:46 AM

Hi Alicia,

Thank you for your response on behalf of MTO.

MTO's preference for the Alternative Route in this location has been noted.

Sincerely,

Alissa Lee  
Dillon Consulting Limited

Reply

Reply all

Forward



# Enbridge Gas St. Laurent Pipeline Replacement Project – Environmental Report for Review

External

Inbox × OPCC ×



**EA, St Laurent** <stlaurentea@dillon.ca> (sent by ewittmann@dillon.ca)

Fri, Oct 27, 2023, 1:01PM

to OPCC.Chair, karla.barboza, ghighfield, michael.elms, andrew.evers, farrah.ali-khan, helma.geerts, Daniel, keith.johnston, cory.ostrowka, heritage, jar

Good afternoon Ontario Pipeline Coordinating Committee (OPCC) members,

I am reaching out to let you know that the Environmental Report (ER) Amendment for the St. Laurent Pipeline Replacement Project (the Project) is now available for review.

Enbridge Gas has retained Dillon Consulting Limited (Dillon) to conduct an environmental study for the Project. Building off the work completed in the June 2020 ER and the November 2020 ER Amendment for the St. Laurent Ottawa North Replacement Pipeline Project, Enbridge Gas has requested that Dillon complete a new ER Amendment to account for changes made to the pipeline routes presented in the original ER and November 2020 ER Amendment.

The Project will involve the installation of approximately 13 km of new 6-inch, 12-inch, and 16-inch diameter extra high-pressure (XHP) steel pipeline segments, as well as approximately 4 km of 2-inch, 4-inch, and 6-inch diameter intermediate pressure (IP) polyethylene pipeline segments in the City of Ottawa.

In accordance with the OEB's *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition* (2023), Enbridge Gas is submitting the ER Amendment for the Project for OPCC review.

The ER Amendment can be found at the following link using the provided credentials:

URL: <https://dl.dillon.ca>

Username: StLaurent\_Public

Password: f9hUMGjhQqM7

The original ER and the November 2020 ER Amendment are available for reference on the Enbridge Gas Project website at: [www.enbridgegas.com/StLaurentReplacement](http://www.enbridgegas.com/StLaurentReplacement).

Please contact me if you have any questions or comments on the ER Amendment, or if you have any issues accessing the file sharing site linked above.

We are requesting feedback by **Friday, December 8, 2023**.

Sincerely,

Tristan Lefler  
Environmental Assessment Project Manager  
Dillon Consulting Limited





----- Forwarded message -----

From: **Edwards, Alicia (She/Her) (MTO)** <[Alicia.Edwards@ontario.ca](mailto:Alicia.Edwards@ontario.ca)>

Date: Mon, Oct 30, 2023 at 11:34 AM

Subject: RE: Enbridge Gas St. Laurent Pipeline Replacement Project – Environmental Report for Review

To: [ewittmann@dillon.ca](mailto:ewittmann@dillon.ca) <[ewittmann@dillon.ca](mailto:ewittmann@dillon.ca)>

Cc: Prelipcean, Daniel (MTO) <[Daniel.Prelipcean@ontario.ca](mailto:Daniel.Prelipcean@ontario.ca)>

Hi,

EA St. Laurent, please be advised that Corridor East has provided comments for this file on October 2, 2023.

If you have any further questions, please feel free to reach out.

Thanks,

Alicia Edwards (She/Her)

Administrative Assistant

Corridor Management Office & Special Highway Operations Initiative

301 St.Paul Street, St.Catharines

---

From: [ewittmann@dillon.ca](mailto:ewittmann@dillon.ca) <[ewittmann@dillon.ca](mailto:ewittmann@dillon.ca)> On Behalf Of EA, St Laurent

Sent: October 27, 2023 1:01 PM

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Filed: 2024-09-27, EB-2024-0200, Exhibit I.4-PP-59, Attachment 1, Page 81 of 84



**EA, St Laurent** <stlaurentea@dillon.ca> (sent by alee@dillon.ca)

Mon, Nov 6, 2023, 1:51 PM



to Alicia, Daniel ▾

Hi Alicia,

Thank you for your response - we acknowledge that we received your October 2, 2023 letter and will consider it as **MTO's** formal comments on the project.

Sincerely,

Alissa Lee  
Environmental Assessment Lead  
Dillon Consulting Limited





Sincerely,

Alissa Lee  
Environmental Assessment Lead  
Dillon Consulting Limited



**EA, St Laurent** <stlaurentea@dillon.ca> (sent by ewittmann@dillon.ca)

Fri, Nov 17, 2023, 9:36 AM

to OPCC.Chair, karla.barboza, ghighfield, michael.elms, andrew.evers, farrah.ali-khan, helma.geerts, Daniel, keith.johnston, cory.ostrowka, heritage, jar

Good afternoon Ontario Pipeline Coordinating Committee (OPCC) members,

I am sending this email as a reminder to please submit your review letter, or summary of review, for the St. Laurent Pipeline Replacement Project by **Friday, December 8, 2023**.

The Ontario Energy Board's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario (8th Edition, 2023) state that by the end of the 42-day review period, each OPCC member will provide the applicant with a Review Letter informing the applicant in writing that the OPCC member has completed its review of the draft Environmental Report. Each OPCC member should also send a copy of the Review Letter to the OPCC Chair.

Enbridge Gas would appreciate the submission of comments prior to the closing of the 42-day review period on December 8, 2023, where possible.

Please contact me if you have any questions or if you have any issues accessing the file sharing site linked in my original email below.

Sincerely,

Tristan Lefler  
Environmental Assessment Project Manager  
Dillon Consulting Limited



**Robin Yu** <ryu@tesa.org>

Fri, Nov 17, 2023, 3:34 PM



Tristan Lefler

Environmental Assessment Lead  
Dillon Consulting Limited



**EA, St Laurent** <stlaurentea@dillon.ca> (sent by ewittmann@dillon.ca)

Dec 5, 2023, 9:06 AM

to OPCC.Chair, karla.barboza, ghighfield, michael.elms, andrew.evers, farrah.ali-khan, helma.geerts, Daniel, keith.johnston, cory.ostrowka, heritage, jar

Good afternoon Ontario Pipeline Coordinating Committee (OPCC) members,

I am sending this email as a reminder to please submit your review letter, or summary of review, for the St. Laurent Pipeline Replacement Project by **Friday, December 8, 2023**.

The Ontario Energy Board's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario (8th Edition, 2023) state that by the end of the 42-day review period, each OPCC member will provide the applicant with a Review Letter informing the applicant in writing that the OPCC member has completed its review of the draft Environmental Report. Each OPCC member should also send a copy of the Review Letter to the OPCC Chair.

Please contact me if you have any questions or if you have any issues accessing the file sharing site linked in my original email below.

Sincerely,

Tristan Lefler  
Environmental Assessment Project Manager  
Dillon Consulting Limited



**Edwards, Alicia (She/Her) (MTO)** <Alicia.Edwards@ontario.ca>

Dec 5, 2023, 9:09 AM

to me

Hi,



**Edwards, Alicia (She/Her) (MTO)** <Alicia.Edwards@ontario.ca>  
to me

Dec 5, 2023, 9:09 AM

Hi,

EA St. Laurent, please be advised that Corridor East has provided comments for this file on October 2, 2023.

If you have any further questions, please feel free to reach out.

Thanks,

Alicia Edwards (She/Her)  
Administrative Assistant  
Corridor Management Office & Special Highway Operations Initiative  
301 St.Paul Street, St.Catharines

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**From:** [ewittmann@dillon.ca](mailto:ewittmann@dillon.ca) <[ewittmann@dillon.ca](mailto:ewittmann@dillon.ca)> **On Behalf Of** EA, St Laurent

**Sent:** December 5, 2023 9:06 AM

**To:** OPCC.Chair <[OPCC.Chair@oeb.ca](mailto:OPCC.Chair@oeb.ca)>; Barboza, Karla (She/Her) (MCM) <[Karla.Barboza@ontario.ca](mailto:Karla.Barboza@ontario.ca)>; [ghighfield@tssa.org](mailto:ghighfield@tssa.org); Elms, Michael (MMAH) <[Michael.Elms@ontario.ca](mailto:Michael.Elms@ontario.ca)>; Evers, Andrew (MECP) <[Andrew.Evers@ontario.ca](mailto:Andrew.Evers@ontario.ca)>; Ali-Khan, Farrah (ENERGY) <[Farrah.Ali-Khan@ontario.ca](mailto:Farrah.Ali-Khan@ontario.ca)>; Geerts, Helma (OMAFRA) <[Helma.Geerts@ontario.ca](mailto:Helma.Geerts@ontario.ca)>; Prelipcean, Daniel (MTO) <[Daniel.Prelipcean@ontario.ca](mailto:Daniel.Prelipcean@ontario.ca)>; Johnston, Keith (He/Him) (MNRF) <[Keith.Johnston@ontario.ca](mailto:Keith.Johnston@ontario.ca)>; Ostrowka, Cory (IO) <[Cory.Ostrowka@infrastructureontario.ca](mailto:Cory.Ostrowka@infrastructureontario.ca)>

**Cc:** Heritage (MCM) <[Heritage@ontario.ca](mailto:Heritage@ontario.ca)>; Hamilton, James (MCM) <[James.Hamilton@ontario.ca](mailto:James.Hamilton@ontario.ca)>; [ryu@tssa.org](mailto:ryu@tssa.org); Source Protection Screening (MECP) <[SourceProtectionScreening@ontario.ca](mailto:SourceProtectionScreening@ontario.ca)>; EA Notices to ERegion (MECP) <[eanotification.eregion@ontario.ca](mailto:eanotification.eregion@ontario.ca)>; McCabe, Shannon (She/Her)

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Pollution Probe (PP)

Interrogatory

Issue:

4

Reference:

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

Question(s):

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).

Response:

Enbridge Gas included the large diameter pipeline along Aviation Parkway and Sir George-Etienne Cartier Parkway (roadways governed by the National Capital Commission (NCC)) as part of the Alternative Route in the Environmental Report (ER) Amendment, dated January 2024<sup>1</sup>. The Alternative Route along Sir George-Etienne Cartier Parkway and Aviation Parkway avoids the installation of this large diameter pipeline in the dense urban downtown area and is more cost effective to install. On several occasions Enbridge Gas met with the NCC regarding the Company’s preference to install the pipeline along Sir George-Etienne Cartier Parkway and Aviation Parkway; however, the NCC reiterated their position that they would not permit the use of the

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<sup>1</sup> Exhibit F, Tab 1, Schedule 1, Attachment 3, pp. 19-20, Section 4.2 and Figure 3.



Aviation Parkway corridor as an option for the pipeline route, as the lands are reserved for the potential interprovincial crossing at Kettle Island.<sup>2</sup>

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<sup>2</sup> Exhibit F, Tab 1, Schedule 1, Attachment 2, p. 89, Line Item 9.13; Exhibit F, Tab 1, Schedule 1, Attachment 2, p. 94, Line Item 9.38.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

5

Reference:

Exhibit G, Tab 1, Schedule 1, page 1

Preamble:

The proposed route for the Project follows the public road allowance for most of the proposed pipeline. Enbridge notes that both permanent and temporary easements are required for the Project.

Enbridge also states that an easement for segments of the existing pipeline through Rockcliffe Park on lands owned by the National Capital Commission has expired and that Enbridge will engage with the National Capital Commission to renegotiate any required easement for the preferred pipeline route prior to replacement.

Question(s):

- a) Please provide an update on the status and prospect of land negotiations where permanent and temporary easements are required. Please include any concerns raised by landowners and Enbridge's responses.
- b) What is the status and prospect of negotiations with the National Capital Commission?
- c) Please discuss any expected delays with respect to obtaining the required land rights for the Project and its impact to the construction start and in-service dates.

Response:

- a) Enbridge Gas continues to engage with directly affected landowners where permanent and temporary land rights are required for the Project. Enbridge Gas anticipates that agreements will be reached with all landowners where required. One landowner has requested amendments to Enbridge Gas's standard form of easement schedule and these minor amendments are being addressed.
- b) The National Capital Commission (NCC) has identified a location as a potential for the new Rockcliffe Control Station site. The site is currently being reviewed by Enbridge Gas and therefore the exact route for the SLP replacement pipeline through Rockcliffe Park has not yet been established. Negotiations relating to expired easements and/or new land rights are pending the decision to move forward with the relocation of Rockcliffe Station. The current SLP construction schedule<sup>1</sup> plans for the replacement of the Rockcliffe Park pipeline section in 2026.
- c) Negotiations regarding required land rights are ongoing and Enbridge Gas does not anticipate any impact to the construction schedule.

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<sup>1</sup> Exhibit D- Tab 1, Schedule 1, Attachment 1

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

5

Reference:

Exhibit D, Tab 1, Schedule 1, page 9, paragraph 9,

Preamble:

Enbridge states the exact route for the pipeline at Rockcliffe Park is subject to change pending the outcome of the site selection process for the replacement station.

Question(s):

- a) Are there any additional land rights that Enbridge may require for the new location of the site of Rockcliffe Park station? If so, please identify the type of rights and the owners of the land where the rights are potentially needed.
- b) Has Enbridge initiated discussions with the landowners of properties where additional rights may be required? What is anticipated timeline for concluding these negotiations?

Response:

- a) Yes. Should Enbridge Gas decide to move forward with the relocation of its Rockcliffe Control Station, additional land rights, above and below ground, will be required. All sites being considered are located on federal lands owned by the National Capital Commission (NCC), and are subject to the NCC's Federal Land Use and Transaction Approval (FLUDTA) process. Required land rights will be established upon completion of the final station design and through the FLUDTA approval process.

- b) In 2022 Enbridge Gas initiated the FLUDTA application and is currently in the consultation phase. Should Enbridge Gas decide to move forward with the Rockcliffe Control Station relocation project, consultation with the NCC will continue. As the NCC's approval period is typically two to four months, Enbridge Gas would submit a complete application about four to six months before construction.

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

6

Reference:

Exhibit H, Tab 1, Schedule 1, Attachment 1

Preamble:

Enbridge provided a project description to Ministry of Energy and Electrification (Ministry) on November 7, 2023. The Ministry's delegation letter on December 21, 2023,

identified three Indigenous communities that Enbridge should consult in relation to the project:

- Algonquins of Ontario
- Algonquins of Pikwakanagan First Nation
- Mohawks of Akwesasne

Enbridge notes that the Algonquins of Pikwakanagan First Nation is one of the communities that comprises the Algonquins of Ontario and should be notified separately (in addition to notifying Algonquins of Ontario) for consultation and engagement purposes. The application evidence includes consultation records and correspondence logs.

Question(s):

- a) Please update the logs on Indigenous consultation activities since April 8, 2024. Please summarize any issues and concerns Algonquins of Ontario, Algonquins of Pikwakanagan First Nation, and Mohawks of Akwesasne and have raised since April 8, 2024.



- b) If any issues were raised, please describe Enbridge's plans, actions, and commitments to address these concerns and resolve outstanding issues.
- c) Please update the evidence with any correspondence between the Ministry and Enbridge regarding the Ministry's review of Enbridge's Indigenous consultation activities since the application was filed.

Response:

- a) For the updated log, please see Attachment 1 to this response. There have been no issues or concerns raised by the Indigenous Nations. Enbridge Gas is continuing with ongoing consultation on the Project and will be providing a field site visit with Algonquins of Pikwakanagan First Nation.
- b) There have been no issues raised. Enbridge Gas will continue to engage all the Indigenous Nations on the Project.
- c) Please see Attachment 2 to this response.

Enbridge Gas Inc. Indigenous Consultation Log for the  
 St. Laurent Pipeline Replacement Project (“Project”)  
 Log updated from April 8, 2024 to September 13, 2024

<b>Algonquins Of Ontario (AOO)</b>					
<b>Line Item</b>	<b>Date</b>	<b>Method</b>	<b>Summary of Enbridge Gas Inc. ("Enbridge Gas") Consultation Activity</b>	<b>Summary of Community Consultation Activity</b>	<b>Issues or Concerns Raised and Enbridge Gas Responses</b>
1.5	July 22, 2024	Email	An Enbridge Gas representative emailed the AOO representative to provide the Ontario Energy Board (“OEB”) Notice of Hearing.		
1.6	September 13, 2024	Email	An Enbridge Gas representative emailed the AOO representative to follow up on an October 26, 2023, email related to the Environmental Report (“ER”) amendment and to inquire if AOO had any feedback to provide regarding the Project. The Enbridge Gas representative offered to set up a phone call meeting to discuss further.		
<b>Algonquins of Pikwakanagan First Nation (AOPFN)</b>					
<b>Line Item</b>	<b>Date</b>	<b>Method</b>	<b>Summary of Enbridge Gas Inc. ("Enbridge Gas") Consultation Activity</b>	<b>Summary of Community Consultation Activity</b>	<b>Issues or Concerns Raised and Enbridge Gas Responses</b>
2.29	July 22, 2024	Email	An Enbridge Gas representative emailed the AOPFN representative to provide the OEB Notice of Hearing.		
2.30	September 4, 2024	Email		An AOPFN representative emailed an Enbridge Gas representative about the Project and asked if they could have a virtual meeting to discuss the Project. The AOP representative advised that they are behind in the report review and are hoping to schedule a site visit in the coming weeks. The AOPFN representative provided various times that they	

				are available for a meeting to discuss the Project further.	
2.30	September 4, 2024	Email	An Enbridge Gas representative emailed the AOPFN representative to confirm receipt of the email and confirm a meeting time.		
2.31	September 5, 2024	Virtual meeting	An Enbridge Gas representative met with the AOPFN representative to discuss the Project. AOP would like to do a field assessment of the site. The parties agreed to October 2, 2024 for the visit.		
<b>Mohawks of Akwesasne (MA)</b>					
<b>Line Item</b>	<b>Date</b>	<b>Method</b>	<b>Summary of Enbridge Gas Inc. ("Enbridge Gas") Consultation Activity</b>	<b>Summary of Community Consultation Activity</b>	<b>Issues or Concerns Raised and Enbridge Gas Responses</b>
3.3	July 22, 2024	Email	An Enbridge Gas representative sent the MA representative the OEB Notice of Hearing.		
3.4	September 13, 2024	Email	An Enbridge Gas representative emailed the MA representative to follow up on an October 26, 2023, email related to the ER amendment and to inquire if MA had any feedback to provide regarding the Project. The Enbridge Gas representative advised the MA representative to call them if they would like to discuss the Project further.		

**From:** [Lauren Whitwham](#)  
**To:** [Gibson, Amy \(ENDM\)](#)  
**Cc:** [McCabe, Shannon \(She/Her\) \(ENERGY\)](#)  
**Subject:** St. Laurent Replacement Project  
**Date:** Tuesday, June 18, 2024 9:28:00 AM  
**Attachments:** [H-1-1 Log and Evidence St. Laurent.pdf](#)  
[H-1-1 St. Laurent Summary.pdf](#)  
[H-1-1 Attachment 1.pdf](#)

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Hi Amy,

Enbridge Gas filed the St. Laurent Replacement Project with the OEB yesterday, Monday. The docket number is EB-2024-0200.

Attached are the St. Laurent Summary and Log filed yesterday.

We originally filed this project in 2021 and received a sufficiency letter from the MOE for that engagement. The OEB denied the application on May 3, 2022 and therefore, the project did not move forward.

Attachment 1 contains the previous log that was included in the original filing. The attached log and summary are a result of this new engagement.

If you could confirm you have received this, that would be great.

Any questions, please let me know.

Thanks,  
Lauren

ENBRIDGE GAS INC.

Answer to Interrogatory from  
Ontario Energy Board Staff (STAFF)

Interrogatory

Issue:

7

Reference:

Exhibit I, Tab 1, Schedule 1

Preamble:

Enbridge has applied for leave to construct facilities under section 90(1) of the OEB Act.

The OEB's standard conditions of approval for section 90 applications are provided below.

**Leave to Construct Application  
under Section 90 of the OEB Act**

**Enbridge Inc.  
EB-2024-0200**

**DRAFT  
Standard Conditions of Approval**

1. Enbridge Inc. shall construct the facilities and restore the land in accordance with the OEB's Decision and Order in EB-2024-0200 and these Conditions of Approval.
2. (a) Authorization for leave to construct shall terminate 12 months after the decision is issued unless construction has commenced prior to that date.  
(b) Enbridge Inc. shall give the OEB notice in writing:

- i. of the commencement of construction, at least 10 days prior to the date construction commences
  - ii. of the planned in-service date, at least 10 days prior to the date the facilities go into service
  - iii. of the date on which construction was completed, no later than 10 days following the completion of construction
  - iv. of the in-service date, no later than 10 days after the facilities go into service
3. Enbridge Inc. shall obtain all necessary approvals, permits, licences, certificates, agreements, and rights required to construct, operate and maintain the Project.
4. Enbridge Inc. shall implement all the recommendations of the Environmental Report filed in the proceeding, and all the recommendations and directives identified by the Ontario Pipeline Coordinating Committee review.
5. Enbridge Inc. shall advise the OEB of any proposed change to OEB-approved construction or restoration procedures. Except in an emergency, Enbridge Inc. shall not make any such change without prior notice to and written approval of the OEB. In the event of an emergency, the OEB shall be informed immediately after the fact.
6. Concurrent with the final monitoring report referred to in Condition 7(b), Enbridge Inc. shall file a Post Construction Financial Report, which shall provide a variance analysis of project cost, schedule and scope compared to the estimates filed in this proceeding, including the extent to which the project contingency was utilized. Enbridge Inc. shall also file a copy of the Post Construction Financial

Report in the proceeding where the actual capital costs of the project are proposed to be included in rate base or any proceeding where Enbridge Inc. proposes to start collecting revenues associated with the Project, whichever is earlier. Both during and after construction, Enbridge Inc. shall monitor the impacts of construction, and shall file with the OEB one electronic (searchable PDF) version of each of the following reports:

- a) A post construction report, within three months of the in-service date, which shall:
  - i. provide a certification, by a senior executive of the company, of Enbridge Inc. adherence to Condition 1
  - ii. describe any impacts and outstanding concerns



- identified during construction
  - iii. describe the actions taken or planned to be taken to prevent or mitigate any identified impacts of construction
  - iv. include a log of all complaints received by Enbridge Inc., including the date/time the complaint was received, a description of the complaint, any actions taken to address the complaint, the rationale for taking such actions
  - v. provide a certification, by a senior executive of the company, that the company has obtained all other approvals, permits, licenses, and certificates required to construct, operate, and maintain the proposed project
- b) A final monitoring report, no later than fifteen months after the in-service date, or, where the deadline falls between December 1 and May 31, the following June 1, which shall:
- i. provide a certification, by a senior executive of the company, of Enbridge Inc. adherence to Condition 4
  - ii. describe the condition of any rehabilitated land
  - iii. describe the effectiveness of any actions taken to prevent or mitigate any identified impacts of construction
  - iv. include the results of analyses and monitoring programs and any recommendations arising therefrom
  - v. include a log of all complaints received by Enbridge Inc., including the date/time the complaint was received; a description of the complaint; any actions taken to address the complaint; and the rationale for taking such actions
7. Enbridge Inc. shall designate one of their employees as project manager who will be the point of contact for these conditions and shall provide the employee's name and contact information to the OEB and to all affected landowners and shall clearly post the project manager's contact information in a prominent place at the construction site.

Question(s):

Please comment on the standard conditions of approval. If Enbridge does not agree with any of the standard conditions of approval, please identify the specific conditions that Enbridge disagrees with. Please specify any proposed changes,

amendments or additional conditions to the standard conditions. Explain the rationale for any proposed changes or amendments.

Response:

Enbridge Gas agrees with all of the standard conditions of approval set out above.