

BUSINESS CASES OF ICM PROJECTS

1. This section provides the business cases for the proposed ICM projects as follows:
 - EGD Rate Zone
 - St. Laurent Ottawa North Replacement (Phase 3)
 - NPS 20 Replacement Cherry to Bathurst
 - Union Rate Zones
 - Dawn to Cuthbert Replacement and Retrofits
 - Byron Transmission Station
 - Kirkland Lake Lateral Replacement
2. The business case summaries provide a description of each of the projects' need, prudence, costs and expected in-service date, with an overview of options considered.
3. The St. Laurent Ottawa North Replacement (Phase 3)¹ and the NPS 20 Replacement Cherry to Bathurst² projects in the EGD rate zone are subject to a Leave to Construct ("LTC") application where the need for the projects has been or will be addressed. The St Laurent Ottawa North Replacement (Phase 3) project LTC Application is currently being reviewed by the OEB. The NPS 20 Replacement Cherry to Bathurst LTC Application was approved by the OEB on December 17, 2020.
4. The Dawn to Cuthbert Replacement and Retrofits, the Byron Transmission Station and the Kirkland Lake Lateral Replacement projects in the Union Rate Zones do not require a LTC approval. To explain the need for these projects, Enbridge Gas is

1 EB-2020-0293.

2 EB-2020-0136.

providing the business case for each of the projects. Additionally, for each of these projects Enbridge Gas has prepared evidence similar to what would be filed in an LTC application in relation to the items relevant to an ICM determination (purpose, need and timing, alternatives and project costs). This evidence is filed as Appendices A to C to this Exhibit.

Business Case Summaries for ICM Projects by Rate Zone

EGD Rate Zone

St. Laurent Ottawa North Replacement (Phase 3)	
<p>Budget: \$88.5 million</p> <p>Projected In-Service Date: December, 2022</p> <p>In-Service Capital Spend: \$86.0 million 2022 in-service \$2.5 million 2023 in-service</p>	<p><u>Category of Investment:</u> System Renewal</p> <p><u>Project Description and Drivers:</u></p> <ul style="list-style-type: none"> The St. Laurent Ottawa North Replacement project comprises of replacement of approximately 16 km of steel gas distribution main of NPS 12 extra high pressure (XHP) steel (ST) pipeline and approximately 400 m of NPS 16 XHP ST pipeline in the city of Ottawa, Ontario. The existing pipeline serves over 165,000 customers in Ottawa, Ontario and Gatineau Quebec. The project is required due to integrity issues with the pipeline and will be completed in multiple phases over multiple years. Phase 1 and Phase 2 were discussed in the EB-2019-0006 proceeding. Enbridge Gas has filed a Leave to Construct application for Phase 3 and Phase 4 of the Project in EB-2020-0293, where the Company is proposing to replace the existing St. Laurent pipeline with approximately 9 km of NPS 12 XHP ST and approximately 2.4 km of NPS 16 XHP ST

	<p>natural gas pipeline. The project phases, facilities and timing is provided in the St. Laurent Leave to Construct application³.</p> <ul style="list-style-type: none">• In this application, Enbridge Gas is seeking ICM funding approval of Phase 3 of the project.• Analysis conducted by Enbridge Gas as part of the Distribution Integrity Management Program (DIMP) and Asset Management Plan asset health review identified the St. Laurent Pipeline as requiring replacement due to its condition and subsequent risk.• The budget covers all costs related to material, construction and labour, environmental protection measures, land acquisitions, contingencies, overheads and interest during construction. <p><u>Other Options Considered:</u></p> <ul style="list-style-type: none">• Enbridge Gas considered two options for the project. The first option was to reactively repair leaks as they occur. The second option was to replace the St. Laurent Pipeline. In order to determine which option to proceed with, Enbridge Gas also considered retrofitting the St. Laurent Pipeline to allow for in-line inspections.• Retrofitting the St. Laurent Pipeline would allow in-line inspections to be completed. This would provide a full understanding of the condition of the pipeline and potentially allow for a more proactive repair program or provide information that would indicate replacement is required. However, Enbridge Gas decided to forego the retrofits as even with the ability to in-line inspect the St. Laurent Pipeline, there was still a high
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³ EB-2020-0293, updated: 2021-03-04, Exhibit B, Tab 1, Schedule 1, Table 14, page 47 of 48.

probability that the Company would need to spend additional capital to address defects identified on the line.

- The option to repair has the advantage of spreading capital and O&M expenditures over multiple years. However, disadvantages include the number of integrity digs required over the next 40 years, disruptions to traffic, local businesses and residents as a result of the digs, existing depth of cover issues will remain, increased O&M costs as leaks become more common, continued degradation of the vintage steel pipe, increased security of supply risk and public safety and environmental concerns.
- The option to replace the segment is the preferred option as it addresses and improves the entire segment of the pipeline, reduces O&M costs, reduces the probability of pipeline failure and the new asset will be constructed using modern standards and materials allowing for additional protection against and mitigation of third party damages. These outweigh the disadvantages of a large upfront capital investment and public inconvenience during the construction of the project. Enbridge Gas applied the Binary Screening Criteria outlined in the approved Integrated Resource Planning Framework (EB-2020-0091) and has determined that the project does not warrant further IRPA assessment as the need/constraint occurs within the 3-year time horizon.

Enbridge Gas filed a Leave to Construct application with the OEB for the St. Laurent Ottawa North Replacement Project on March 2nd, 2021 under docket number EB-2020-0293. An updated application was filed

	<p>on September 10th, 2021 including refinements and adjustments to the original project construction schedule and costs. The segments of pipeline have been reclassified between Phases 3 and 4, however no pipeline segments have been added or removed.</p> <p>The budget of \$88.5 million covers all costs related to material, construction and labour, land costs, contingencies, overheads, and interest during construction. The Phase 4 budget is \$35.2M, for a total project cost of \$123.7M.</p>
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NPS 20 Replacement Cherry to Bathurst	
Budget: \$129.9 million	<u>Category of Investment:</u> System Renewal
Projected In-Service Date: October, 2022	<u>Project Description and Drivers:</u>
In-Service Capital Spend: \$126.7 million 2022 in-service \$3.2 million	<ul style="list-style-type: none"> Replacement of approximately 4.5 km of NPS 20 inch High Pressure (HP) steel (ST) natural gas main on Lake Shore Boulevard from Cherry Street to Bathurst Street and a 260 m section on Parliament Street from Mill Street to Lake Shore Boulevard East (C2B) in the City of Toronto. The segment of pipeline to be replaced is part of the natural gas main known as the Kipling Oshawa Loop (KOL). The pipeline is located in a densely populated downtown area of the City of Toronto where a pipeline failure could result in loss of gas distribution service for thousands of customers or in the extreme case public safety at risk.
2023 in-service	<ul style="list-style-type: none"> Analysis conducted by Enbridge Gas as part of the Distribution Integrity Management Program (DIMP), asset health review of the KOL and subsequent In-Line Inspections indicated a need for

remediation or replacement due to corrosion, dents, compression couplings and depth of cover issues.

- The budget covers all costs related to material, construction and labour, environmental protection measures, land acquisitions, contingencies, overheads and interest during construction.

Other Options Considered:

- Enbridge Gas considered two options for the project. The first option was to repair issues at localized areas via integrity digs on the C2B segment of the KOL. The second option was to replace the C2B segment of the KOL.
- The option to repair has the advantage of spreading capital expenditures over multiple years. However, disadvantages include the number of integrity digs required over the next 40 years, disruptions to traffic, local businesses and residents as a result of the digs. Also, existing depth of cover issues will remain, O&M costs will increase due to more frequent ILI's and there will be increased security of supply risk.
- The option to replace the segment is the preferred option as it addresses and improves the entire segment of the pipeline, reduces O&M costs, reduces the probability of pipeline failure. The new asset will be constructed using modern standards and materials allowing for additional protection against and mitigation of third party damages.

The NPS 20 Replacement Cherry to Bathurst was subject to a Leave to Construct application in EB-2020-0136. In this application, Enbridge Gas presented the need for the project, the alternatives considered for

the project, the project cost and economics, environmental issues, land matters and indigenous consultation.

In its Decision and Order dated December 17th, 2020, the OEB found that:

- Enbridge Gas demonstrated the need for this project
- Enbridge Gas considered a reasonable range of alternatives and found that the proposed project is superior to these alternatives
- The project is in the public interest and is the lowest cost alternative.

The OEB also found that Enbridge Gas has adequately addressed environmental issues, land matters and the procedural aspects of the duty to consult with impacted Indigenous communities.

The budget of \$129.9 million is updated from the EB-2020-0136 filing budget of \$133.0 million. The variance between the the budget and the leave to contract is due to a revised cost estimate and change in overhead allocations. The budget covers all costs related to material, construction and labour, land costs, contingencies, overheads and interest during construction.

Union Rate Zones

Dawn-Cuthbert Replacement and Retrofits	
<p>Budget: \$24.2 million</p> <p>Projected In-Service Date: September, 2022</p> <p>In-Service Capital Spend: \$23.5 million 2022 in-service; \$0.6 million 2023 in-service</p>	<p><u>Category of Investment:</u> System Service</p> <p><u>Project Description and Drivers:</u></p> <ul style="list-style-type: none"> • Replacement of approximately 650 m of the existing NPS 42 Dawn to Cuthbert pipeline located between the Cuthbert Road Measurement Station and the Trafalgar Valve Nest. The existing pipeline consists of approximately 1.1 km of NPS 42 supplying the NPS 42 Dawn to Kirkwall pipeline, which is one of four parallel pipelines that form the Dawn Parkway System. The replacement pipeline will be a like-for-like replacement matching the existing pipeline size and maximum operating pressure. In addition to the pipeline replacement, modifications are required in order to allow the passage of in-line inspection (ILI) tools for future integrity management activities. • Analysis conducted by Enbridge Gas's Transmission Integrity Management Program (TIMP) including investigative digs and External Corrosion Direct Assessments (ECDA) confirmed the presence of Stress Corrosion Cracking (SCC). Enbridge Gas has identified that the existing line is an operational risk and should be replaced to manage the safety and reliability of the natural gas distribution to the Dawn Parkway system. • The budget covers all costs related to material, construction and labour, environmental protection measures, land acquisitions, contingencies, overheads and interest during construction.

Other Options Considered:

Enbridge Gas considered several alternatives including monitoring the condition of the NPS 42 Dawn-Cuthbert Pipeline with an ILI tool capable of detecting SCC (EMAT), like-for-like replacement of the existing NPS 42 pipeline and replacement of the existing NPS 42 with different diameter/MOP pipeline.

- The option to monitor the condition of the NPS 42 Dawn-Cuthbert with an ILI tool (EMAT) was not chosen due to the long-term Capital and O&M costs from modifying the pipeline to accept ILI tools, performing periodic EMAT and MFL inspections and subsequent integrity digs.
- The option of replacement of the existing NPS 42 with a different diameter pipe was not considered to be a viable alternative. A smaller diameter pipeline would create a pressure bottleneck and the inability to provide appropriate flow to the Dawn Parkway System. A larger diameter would be beneficial for future capacity, however this would also require a similar replacement of the NPS 42 from Dawn all the way to Kirkwall.
- The option of a like-for-like replacement of the existing NPS 42 Dawn-Cuthbert pipeline is the recommended option as it is the best option to manage the long-term integrity of the pipeline and completely mitigates the risk of SCC
- Enbridge Gas applied the Binary Screening Criteria outlined in the approved Integrated Resource Planning Framework (EB-2020-0091) and has determined that the project does not warrant further IRPA assessment as the need/constraint occurs within the 3-year time horizon.

	<p>More details on the need for the project, the alternatives considered for the project, the project cost and economics and project timing are provided in Appendix A to this Exhibit.</p> <p>The budget of \$24.2M covers all costs related to material, construction and labour, land costs, contingencies, overheads and interest during construction.</p>
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Byron Transmission Station	
<p>Budget: \$20.4 million</p> <p>Projected In-Service Date: August 31, 2022</p> <p>In-Service Capital Spend: \$20.4 million 2022 in-service;</p>	<p><u>Category of Investment:</u> System Service</p> <p><u>Project Description and Drivers:</u></p> <ul style="list-style-type: none"> • Full rebuild of the existing Byron Transmission Station located on Enbridge Gas-owned property within a fenced compound in the community of Byron, Ontario. The station accepts natural gas from the Dawn Parkway System and reduces or regulates pressure for distribution to the downstream systems serving London, St. Thomas and Port Stanley. • Multiple Integrity concerns were identified through an indirect heater assessment conducted by Enbridge Gas. Concerns include noise complaints, integrity of Station inlet valves and inability of the existing Station to support the long term demand of the London market beyond 2022. • The budget covers all costs related to material, construction and labour, environmental protection measures, land acquisitions, contingencies, indirect overheads, and interest during construction.

Other Options Considered:

Enbridge has considered several alternatives including full station rebuild of the existing Byron Transmission Station with no land acquisition, full station rebuild of the existing Station with land acquisition, partial station replacement and moving the station to a new location.

- The option of a full station rebuild with no land acquisition was not deemed feasible as the existing site was not large enough to construct the new asset while keeping the existing Station in service
- The option of a partial replacement of the station was not deemed feasible as the construction duration was too long to accommodate the Station shut down without impacting security of supply. This alternative also does not address the noise, maintenance and operational concerns.
- The option of moving the station to a new location would address the noise, maintenance and operational concerns, however this would also require main extensions and would increase the cost of the project.
- The option of a complete station replacement with new land acquisition adjacent to the Enbridge Gas-owned lands is the preferred option as it addresses all integrity concerns. Completion of the project during summer months will mitigate risk surrounding security of supply.
- At the time of project development, the OEB had not yet established an IRP Framework for Enbridge Gas. Given the timing of project development and the fact that the project is

	<p>primarily to addresses station integrity, no formal IRP assessment was completed for this project.</p> <p>More details on the need for the project, the alternatives considered for the project, the project cost and economics, and project timing are provided in Appendix B to this Exhibit.</p> <p>The budget of \$20.4M covers all costs related to material, construction and labour, land costs, contingencies, overheads, and interest during construction.</p>
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Kirkland Lake Lateral Replacement	
<p>Budget: \$20.7 million</p> <p>Projected In-Service Date: November, 2022</p> <p>In-Service Capital Spend: \$20.7 million 2022 in-service;</p>	<p><u>Category of Investment:</u> System Renewal</p> <p><u>Project Description and Drivers:</u></p> <ul style="list-style-type: none"> • Replacement of 8 km of NPS 4 pipeline running trough the Municipality of Kirkland Lake. The current system includes two lines, the NPS 4 Kirkland Lake Lateral and the NPS 8 Kirkland Lake Loop. Both lines primarily feed 3,126 customers in the towns of Kirkland Lake, Chaput Hughes, Swastika and the Macassa Mines. • Analysis conducted by Enbridge Gas as part of the Transmission Integrity Management Program (TIMP) and External Corrosion Direct Assessments (ECDA) inspections have indicated that the pipeline is in poor condition, has reached the end of its useful life, and should be replaced.

- The budget covers all costs related to material, construction and labour, environmental protection measures, land acquisitions, contingencies, indirect overheads, and interest during construction.

Other Options Considered:

- Enbridge Gas considered several alternatives including replacing the entire 12 km of NPS 4 Kirkland Lake Lateral pipeline with NPS 6 pipeline, a like-for-like replacement of 8 km of NPS 4 Kirkland Lake Lateral pipeline and continuing to maintain the existing pipeline and repair all required indications.
- The option of replacing the entire 12 km of NPS 4 Kirkland Lake Lateral was explored to accommodate expected growth with Macassa Mines as well as future demand in Kirkland Lake. The option was deemed unnecessary as Enbridge Gas was able to establish a contracted agreement with TCPL for an increased minimum inlet pressure.
- The option of continuing to maintain the existing pipeline and repair all required indications had a higher NPV than the option of a like-for-like pipeline replacement.
- The option of replacing 8 km of the existing 12 km pipeline is the preferred option and is the most effective way of ensuring the continued safe and reliable delivery of natural gas services to customers
- Enbridge Gas applied the Binary Screening Criteria outlined in the approved Integrated Resource Planning Framework (EB-2020-0091) and has determined that the project does not warrant further IRPA assessment as the need/constraint occurs within the 3-year time horizon.

	<p>More details on the need for the project, the alternatives considered for the project, the project cost and economics, and project timing are provided in Appendix C to this Exhibit.</p> <p>The budget of \$20.7M covers all costs related to material, construction and labour, land costs, contingencies, overheads, and interest during construction.</p>
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