

**ONTARIO ENERGY BOARD**

**EB-2024-0200**

**IN THE MATTER OF** the *Ontario Energy Board Act*, 1998, S. O. 1998, c. 15, Schedule B;

**AND IN THE MATTER OF** an application by Enbridge Gas Inc. to construct gas pipelines in the City of Ottawa along and near St. Laurent Boulevard

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**Submissions of Environmental Defence**

**St. Laurent Pipeline Replacement**

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## Contents

Overview .....	3
Need .....	5
Alternatives: assessment of methodologies .....	5
OEB directions: protect customers with better analysis of system renewal projects .....	5
Energy transition risk assessment is fundamentally flawed .....	7
Disregards the customer exit feedback mechanism .....	7
No analysis of under-utilization or economically stranded assets .....	9
No analysis of demand from remaining customers .....	10
No qualitative analysis of the scenarios or the likelihood of each scenario .....	10
No independent development of scenarios (Enbridge developed the scenarios itself) .....	11
Disregard for the results of decarbonization pathways optimization studies .....	11
No report .....	12
IRP analysis needs improvement .....	12
Include contract customers .....	13
Include electric IRP alternatives .....	14
Deferral benefits of repair options and IRPAs .....	15
Other IRP considerations .....	16
Alternatives: the St. Laurent project .....	16
Prudence review and stranded asset risk .....	17
Conclusion .....	18
Appendix 1: Summary of OEB directives re IRP .....	19

## **Overview**

Enbridge seeks approval to spend \$216 million replacing 17.6 km of pipelines in and around the St. Laurent Boulevard area in Ottawa.<sup>1</sup> Under current depreciation rates, these pipelines will not be depreciated until 2085.<sup>2</sup> The full cost to ratepayers over that period will be much higher than \$216 million when the cost of capital is considered. The rate of return on equity alone will equal \$155 million based on current financial parameters.<sup>3</sup>

Environmental Defence submits that the final decision on whether to replace the pipeline should be deferred until further information and analysis is available, with absolutely necessary repairs made in the meantime. However, Environmental Defence's primary request is that the OEB not condone Enbridge's approach to assessing system renewal projects such as this even if leave to construct is granted. That would set a bad precedent for billions of dollars in system renewal spending planned in the coming years.

Although Enbridge has established the need for work to be done, it has not shown that replacing the pipeline is more cost-effective than repairing it over time. In its previous attempt to secure approval for this project, Enbridge estimated the repair option would cost \$33 million (NPV).<sup>4</sup> That estimate has jumped in this application to \$179 million (NPV) without adequate explanation.<sup>5</sup> There are 10,900 km of pipelines in Enbridge's system that are of the same or older vintage as the St. Laurent pipeline.<sup>6</sup> Replacing even a one-tenth of them would be extremely costly.

Even if the OEB approves this project, it is critical that any approval be done with caveats and without endorsing the specific methodologies used in the application. The OEB's decision in this case will be very important as the first to consider new methodologies that Enbridge is using to assess energy transition risk, consider integrated resource planning (IRP) alternatives, and compare the cost of repair versus replacement options. An uncritical endorsement of Enbridge's methodologies could contribute to considerable overspending on pipeline replacement and would not be warranted considering the concerns outlined below and the additional critiques that could be provided by an independent expert in a future case.

Due to the wider importance of the decision in this case, Environmental Defence's submissions primarily focus on an analysis of Enbridge's methodologies. Enbridge's approach to assessing energy transition risk is inadequate and falls far short of the OEB's expectations, including for the following reasons:

- The approach entirely disregards the feedback mechanism discussed by Ontario's Electricity and Energy Transition Panel whereby customer exits cause rate increases,

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<sup>1</sup> Exhibit E, Tab 1, Schedule 1, Page 2 ([link](#)).

<sup>2</sup> Exhibit I.2-ED-19.

<sup>3</sup> Exhibit I.2-ED-8 ([link](#)).

<sup>4</sup> EB-2020-0293 (St. Laurent Ottawa North Replacement Project), Decision and Order, May 3, 2022, p. 34 ([link](#)).

<sup>5</sup> Exhibit C, Tab 1, Schedule 1, p. 19 ([link](#)).

<sup>6</sup> Exhibit A, Tab 2, Schedule 1 ([link](#)).

which in turn cause more customer exits, and so on. That alone undermines the analysis and leads to inaccurate and unreliable results.

- The approach has no analysis of reduced demand from existing customers and instead focuses solely on customer exits. Reduced demand is important for assessing impacts on unit costs (which can drive further customer exits), economic stranding, and downsizing opportunities.
- The approach has no analysis of under-utilization and economic stranding, focusing solely on the date when there are zero customers. A pipeline is economically stranded long before it is empty.
- The approach includes no analysis on the likelihood of the various scenarios, weighting them equally, including no comparison of the scenarios with regard to the results of optimization studies that estimate the most cost-effective pathways to decarbonize our economy.
- The approach does not involve independent development of scenarios by an expert with knowledge of plausible energy futures. Enbridge developed the scenarios itself. The product of the analysis is a 27-page slideshow without an underlying report.

The OEB has held that energy transition risk assessments are critical to protecting customers and avoiding under-utilized assets. Enbridge must do better next time.

Enbridge's approach to assessing IRP alternatives also needs improvement. For instance, the approach excludes contract customers even though they represent a major opportunity for gas savings. This needs to be remedied. Also, electric measures need to be included in the future as they represent the largest potential source of cost-effective demand reductions. In addition, Enbridge should account for the value of being able to know more about future demand when a project is deferred via repairs or another IRP alternative.

Enbridge underestimated the cost of the repair option for the St. Laurent project by a large margin (see page 16 below). For this and other reasons set out below, Enbridge has not established that a full replacement should occur *now*. As such, a final decision should be deferred until additional information and analysis is available. In the interim, Enbridge can make those repairs that are absolutely necessary.

However, Environmental Defence's primary request to the OEB is that it not condone the approach and methodologies that Enbridge has taken in this application in light of three key considerations: i) the methodological concerns outlined herein; ii) the need for further critique and testing by an independent expert in a future case, and iii) the role of this decision in guiding the \$3 billion system renewal spending planned by Enbridge for this rate term.

## **Need**

Enbridge has established that there is a need to take remedial steps with respect to this pipeline, whether that be a replacement or a repair program. The real question is whether replacement or repair is the best option for customers, which is addressed starting on page 16 below.

## **Alternatives: assessment of methodologies**

As noted above, the most important impact of this case will be on the billions of dollars that Enbridge plans to spend on other capital projects in the coming years. Enbridge will need to consider the cost effectiveness of repairing versus replacing pipelines in many instances that will not come before the Board. Indeed, the large majority of system renewal spending will not be subject to a leave to construct application. In light of that broader impact, we have divided our submissions on alternatives between (1) an assessment of Enbridge's approach for assessing replacement alternatives and (2) the particular application of that approach to the St. Laurent project. In many ways, item (1) is more important, and we begin with that analysis here.

As noted above, Environmental Defence requests that the OEB refrain from endorsing Enbridge's current approach to assessing pipeline replacement projects. We are not, however, asking that the OEB make a decision and issue directions on each of the deficiencies outlined below. As the OEB is aware, an expert witness on those methodological issues was not available within the timeline for this current proceeding. We ask that final decisions on these methodological issues wait until a future case in which independent expert evidence can be provided on Enbridge's methodologies.

## **OEB directions: protect customers with better analysis of system renewal projects**

The OEB has highlighted the importance of robustly assessing alternatives to pipeline replacement to protect customers, lower gas bills, and minimize the risk of under-utilized assets. These directions are an important backdrop to a discussion of Enbridge's current approaches.

The OEB highlighted the financial importance of system renewal spending in its decision in phase 1 of Enbridge's rebasing case:

System renewal is the highest asset investment category at \$2.9 billion for the 2024 to 2028 period in terms of in-service additions. Forecast capital expenditures for 2024 on system renewal projects is \$530.6 million.<sup>7</sup>

The OEB found that Enbridge's approach was inadequate:

Enbridge Gas has not established that its current approach to system renewal maximizes system monitoring for the purpose of repair and asset life extension over asset replacement, as contemplated in the St. Laurent Ottawa North Replacement Project decision.

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<sup>7</sup> EB-2022-0200, (Enbridge Gas Inc. – 2024-2028 Natural Gas Distribution Rates – Phase One), Decision and Order, December 21, 2023, p. 50 ([link](#)).

... Enbridge Gas’s approach continues to favour asset age over asset condition for replacement decisions and does not satisfactorily address the OEB’s concerns as identified in the St. Laurent decision.<sup>8</sup>

The OEB called for a new approach to maximize value for ratepayers and minimize the risk of stranded asset costs:

Enbridge Gas needs to implement an approach that assesses asset condition and has as its objective the maximization of asset life. This does not constitute a “run to failure” policy but instead maximizes the value of an asset in providing service to ratepayers. Maximizing the life of existing assets is a prudent practice in general, but in this case, it also increases the ability to avoid capital investments that may not be needed because of the continuing energy transition, thereby reducing the risk of stranded asset costs.<sup>9</sup>

The OEB noted that these assets are exposed to energy transition risks because they are new assets and long-lived assets:

Enbridge Gas’s system access and system renewal proposals give rise to similar risks of stranded assets since they both involve the addition of new assets to rate base. In the case of system access or expansion, new assets are used to connect new customers. In the case of system renewal, new assets are used to replace existing assets that are at their end of life, or in a condition that requires their replacement, to continue serving existing customers. If these assets are depreciated over an average of 40 years, and a material number of current customers leave the gas system as part of the energy transition, there is a risk that the remaining undepreciated assets will become a stranded cost on Enbridge Gas’s regulatory accounting books.<sup>10</sup>

As noted above, the assets at issue will be depreciated over approximately 60 years and will not be depreciated until 2085.<sup>11</sup>

Concerns about gas sector stranded asset risks have also been expressed by Ontario’s Electrification and Energy Transition Panel, whose final report was endorsed and relied on by the Ontario Government in its latest energy policy document.<sup>12</sup>

The OEB also held that replacement projects should only be implemented where absolutely necessary and directed Enbridge to improve its assessments of life extension alternatives:

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<sup>8</sup> EB-2022-0200, Decision and Order, December 21, 2023, p. 57 ([link](#)).

<sup>9</sup> EB-2022-0200, Decision and Order, December 21, 2023, p. 57 ([link](#)).

<sup>10</sup> EB-2022-0200, Decision and Order, December 21, 2023, p. 23 ([link](#)).

<sup>11</sup> Exhibit I.2-ED-19 ([link](#)).

<sup>12</sup> *Ontario’s Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel*, December 2023, p. 72-72 & 92-94 ([link](#)); *Ontario’s Affordable Energy Future: The Pressing Case for More Power*, October 2024, p. 20 ([link](#)).

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.

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: ... 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.<sup>13</sup>

As detailed below, Enbridge has not yet met these important expectations.

### **Energy transition risk assessment is fundamentally flawed**

Enbridge's approach to assessing energy transition risk is fundamentally flawed and should be improved on in future proceedings. Most importantly, the modelling disregarded the feedback loop whereby customers exits cause rates to rise, which cause more customers to exit, and so on, resulting in a hastening of customer exits from the gas system. Other flaws include:

- No analysis of under-utilization or economic stranding;
- No analysis of impacts on customer demand, peak or annual;
- No qualitative analysis of the scenarios or the likelihood of each scenario;
- No independent development of scenarios (Enbridge developed the scenarios itself);
- Disregard for the results of decarbonization pathways optimization studies; and
- No detailed report.

By way of background, Enbridge's energy transition risk assessment involved mathematical modelling of 15 customer exit scenarios. Those scenarios were developed by Enbridge itself, rather than an independent expert.<sup>14</sup> The 15 scenarios examined the timeframes for all customers in the project area to leave the gas system based on assumptions such as heat pump adoption rates and the probability that customers with heat pumps would disconnect from the gas system. The scenarios were not differentiated in terms of the likelihood of each coming to pass.

#### *Disregards the customer exit feedback mechanism*

The modelling did not account for the reality that rates will increase as customers leave the system, leading to more customers exiting the system in an ongoing feedback loop of self-reinforcing customer exits and rate increases. This relationship between rates and customer exits is described by Ontario's Electrification and Energy Transition Panel ("EET Panel") as follows:

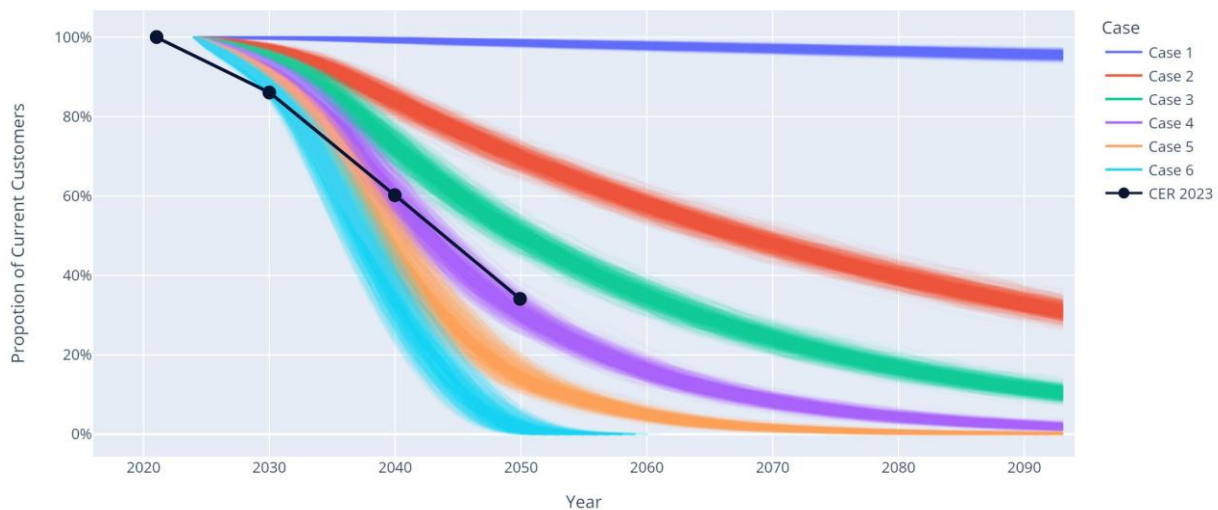
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<sup>13</sup> EB-2022-0200, Decision and Order, December 21, 2023, p. 2 ([link](#)).

<sup>14</sup> Transcript, Volume 1, October 30, 2024, p. 66, lns. 12 to 25 ([link](#)).

These effects could in turn push more customers to exit the gas grid. As gas rates increase, the economics of electrification become more favourable for customers, and as each additional household electrifies or otherwise substantially reduces their use of pipeline gas, more rate pressure is added on remaining customers, perpetuating a vicious cycle.<sup>15</sup>

This feedback loop is one of the greatest energy transition risks facing Enbridge's business. Ignoring this feedback loop undermines Enbridge's entire analysis. It also leads to results that are obviously incorrect. The figure below shows the results of Enbridge's energy transition risk analysis. The curves show customer declines over time in different scenarios. All of the curves show the rate of customer exits declining as the number of customers approaches zero. However, the feedback loop discussed by Ontario's EET Panel would result in the opposite –the rate of customer exits will increase as the number of customers approaches zero (due to rate increases).



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Take, for instance, the light blue curve showing scenario 6. By 2040, approximately 80% of gas customers have left the system in that scenario. As a result, 100% of the system costs would be borne by the remaining 20% of customers, which would translate into major rate increases. Yet the curve shows a significant *slowing* of customer exits at that point, even though those rate increases would cause an *acceleration* in electrification and customer exits. The same is true throughout all the curves. None of the curves reflect even the possibility that customer exits would accelerate as a smaller and smaller number remain on the system.

Enbridge did not address this kind of feedback loop because they based their scenarios and analysis on adoption curves for technologies such as iPhones and computers.<sup>17</sup> However, gas system disconnects are fundamentally different because the incumbent technology (i.e. gas

<sup>15</sup> Ontario's Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel, December 2023, p. 93 ([link](#)); Enbridge relied on this report in Exhibit B, Tab 3, Schedule 1, p. 26 and yet declined to put a copy on the record as requested by Environmental Defence in Exhibit I.2-ED-5(c) ([link](#)).

<sup>16</sup> Exhibit B, Tab 3, Schedule 1, Attachment 1, p. 23 ([link](#)).

<sup>17</sup> Transcript, Volume 3, November 13, 2024, p. 37, lns. 18-28 ([link](#)).



heating) gets more and most expensive as customers switch away. Gas systems are subject to the feedback loop that Ontario's EET Panel discussed whereas other technologies are not.

Enbridge also disregarded Ontario-wide energy transition impacts. Most drivers of customer disconnections are likely to be Ontario-wide, such as continued improvements in heat pump technology or restrictions on fossil heating such as those being implemented in Quebec and New York. The customer exit feedback loop is strongest for these Ontario-wide influences, which should not be disregarded.

The customer exit feedback loop needs to be modelled so that it can be avoided. This is consistent with the EET Panel's recommendation to ensure that regulatory mechanisms are aligned with potential future scenarios that pose the greatest risk:

[I]t is in the interest of the province, for the purpose of customer protection, to ensure that the regulatory mechanisms for the governance of the natural gas grid are aligned with a range of plausible outcomes, notably those that pose the greatest risks to customers.<sup>18</sup>

Additional flaws with Enbridge's energy transition risk analysis are set out below. However, this failure to address the customer exit feedback loop is the most critical gap and, when taken alone, undermines the whole analysis. Any future assessment needs to account for the customer exit feedback loop. If that is not done, risks to the gas system will remain unquantified and unmitigated.

#### No analysis of under-utilization or economically stranded assets

Enbridge does not examine under-utilization or economic stranding. Instead, it focuses on the date at which all (or virtually all) customers will have left the system in each scenario.<sup>19</sup> For instance, Enbridge speaks of "the most likely year that there could be zero general service customers connected."<sup>20</sup> This "zero customer" threshold is contrary to the OEB's decision in the previous St. Laurent proceeding, which urged "Enbridge Gas to provide more details about life-cycle costs including abandonment costs **and the probability of future under-utilization**" (emphasis added).<sup>21</sup> Enbridge does not do this.

Enbridge's analysis seems to assume that it would continue to operate pipelines until they are empty or virtually empty.<sup>22</sup> However, an asset is stranded long before it is empty. Ontario's EET Panel states that there is "a real risk of **economically stranding** the rate-regulated distribution

<sup>18</sup> Ontario's Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel, December 2023, p. 94 ([link](#)); Enbridge relied on this report in Exhibit B, Tab 3, Schedule 1, p. 26 and yet declined to put a copy on the record as requested by Environmental Defence in Exhibit I.2-ED-5(c) ([link](#)).

<sup>19</sup> Exhibit B, Tab 3, Schedule 1, p. 16-17 (para. 34-36); Exhibit B, Tab 3, Schedule 1, Attachment 1, p. 27 ([link](#)).

<sup>20</sup> Exhibit B, Tab 3, Schedule 1, p. 16, para. 34 ([link](#)).

<sup>21</sup> EB-2020-0293 (St. Laurent Ottawa North Replacement Project), Decision and Order, May 3, 2022, p. 26 ([link](#)).

<sup>22</sup> Exhibit B, Tab 3, Schedule 1, p. 16-17 (para. 34-36); Exhibit B, Tab 3, Schedule 1, Attachment 1, p. 27 ([link](#)).

assets used for home heating.”<sup>23</sup> A pipeline is economically stranded when rates cannot be raised to cover the costs, which, again, occurs long before the pipe is empty. Enbridge’s focus on when the pipe may be empty or virtually empty is the wrong threshold.

*No analysis of demand from remaining customers*

Enbridge’s energy transition risk does not account for impacts on reductions in annual or peak demand of customers remaining on the system.<sup>24</sup> Instead, it solely focuses on customers completely exiting the gas system. This means the analysis cannot be used to assess the possibility of being able to downsize the pipeline by deferring the project.

This gap also means the analysis cannot be used to examine the impact on gas distribution unit costs, and the degree to which these may spur further customer exits. Some of the scenarios involve significant levels of hybrid heating, whereby electric heat pumps are the primary heating system and are supplemented by gas heating only on the coldest days. This will cause the cost of gas to increase on a unit basis, including any costs per m3 (or costs per m3 at peak times, if Enbridge’s peak pricing proposal is approved in phase 3 of the rebasing proceeding). This increase in costs could cause a hastening of customer exits. A customer with hybrid electric/gas heating is less likely to be willing to pay hundreds of dollars annually for gas service they use only on the coldest days in comparison to a customer who uses that service throughout the winter. That consideration is disregarded in Enbridge’s analysis.

*No qualitative analysis of the scenarios or the likelihood of each scenario*

Enbridge’s analysis looks at 15 scenarios without assessing which are more or less likely. This inaccurately results in an equal weighing of scenarios that are not equally likely.

The report of Ontario’s EET Panel is again instructive. The EET Panel notes that gas is unlikely to be cost-effective for building heat in the future and that there are insufficient quantities of low carbon gas alternatives. The Panel describes this as a fundamental conundrum and a real risk to customers. The EET Panel states as follows:

Ontario faces a fundamental conundrum with regard to the future of this resource. There are growing indications that it is unlikely that the natural gas grid can be decarbonized while continuing to deliver cost-effective building heat. There is growing doubt that it will be possible to replace the vast quantities of fossil fuel natural gas used today with clean alternatives, such as renewable natural gas (RNG) or hydrogen, in a cost-effective manner. ... This leads to a real risk of

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<sup>23</sup> Ontario’s Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel, December 2023, p. 72 ([link](#)); Enbridge relied on this report in Exhibit B, Tab 3, Schedule 1, p. 26 and yet declined to put a copy on the record as requested by Environmental Defence in Exhibit I.2-ED-5(c) ([link](#)).

<sup>24</sup> Transcript, Volume 3, November 13, 2024, p. 63, lns 22-27 ([link](#)).

economically stranding the rate-regulated distribution assets used for home heating, with significant risk to customers, investors, and public finances.<sup>25</sup>

Enbridge's analysis makes no reference to the growing evidence that gas cannot deliver cost-effective building heat. Nor does the analysis use that evidence to weigh the likelihood of different scenarios. Some of Enbridge's scenarios involve the pipe being used and useful for hundreds of years.<sup>26</sup> There is no discussion whatsoever about the likelihood of such a future and what it may look like even though it is unlikely that the natural gas grid can be decarbonized while continuing to deliver cost-effective building heat.

Furthermore, Enbridge does not assess the likelihood of the scenarios in relation to the specific characteristics of the service area in question. For example, Enbridge's application and assessment makes no reference to the fact that the St. Laurent pipeline system does not supply *any* customers with hard-to-decarbonize high-heat processes. This fact was only uncovered through interrogatories.<sup>27</sup> This fact is very relevant to the likelihood of continued use of the pipeline in a decarbonized future. Although the scarce quantities of decarbonized gas are not cost-effective for building heat (because electric heat pumps are cheaper), they may be cost-effective for hard-to-decarbonize processes. The future viability of a pipeline may depend on whether those customers exist on the relevant pipeline, and yet there is no mention of this critical factor in Enbridge's analysis.

*No independent development of scenarios (Enbridge developed the scenarios itself)*

Enbridge's energy transition risk analysis was not developed by an independent expert. Instead, Enbridge developed 15 scenarios and asked a general engineering consultancy it had an ongoing retainer with to model those scenarios.<sup>28</sup> This may explain some of the deficiencies in the analysis noted above. The analysis underpinning efforts to avoid economically stranded and under-utilized assets should be prepared by an independent consultant with expertise in developing and assessing decarbonization scenarios in light of the importance of this issue to ratepayers and OEB directions.

*Disregard for the results of decarbonization pathways optimization studies*

Enbridge's energy transition analysis makes no reference to studies that assess the most cost-effective pathways to decarbonize Ontario's economy and the impacts on the gas system. This is a glaring omission. Any analysis of decarbonization scenarios should have regard to the most cost-effective ways to decarbonize. Cost-effectiveness is one important indicator of which decarbonization futures are more likely to come to pass.

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<sup>25</sup> Ontario's Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel, December 2023, p. 72 ([link](#)); Enbridge relied on this report in Exhibit B, Tab 3, Schedule 1, p. 26 and yet declined to put a copy on the record as requested by Environmental Defence in Exhibit I.2-ED-5(c) ([link](#)).

<sup>26</sup> Exhibit B, Tab 3, Schedule 1, Attachment 1, p. 27 ([link](#)).

<sup>27</sup> Exhibit I.2-ED-18 (d) ([link](#)).

<sup>28</sup> Transcript, Volume 1, October 30, 2024, p. 66, lns. 12 to 25 ([link](#)).

For instance, Enbridge did not address the only study to use a detailed cost-optimization model to explore the most cost-effective way to decarbonize Canada's economy, including its gas system. That study found that the most cost-effective way to decarbonize buildings in Ontario is through large amounts of electrification and that the most cost-effective decarbonization pathway for Ontario involves a 96% reduction in gas consumption in buildings.<sup>29</sup> Enbridge not only ignored this important study but declined to answer an interrogatory comparing the results of its analysis with the most cost-effective pathway.<sup>30</sup>

Enbridge also declined to obtain or use the cost-effective decarbonization pathways study prepared for the Government of Ontario. Instead, Enbridge solely referred to *Canada's Energy Future*, despite the fact that it was not developed with a cost-optimization model and stresses multiple times that its scenarios are not predictions and not recommendations.<sup>31</sup>

An assessment of energy transition risk scenarios and their selection should have regard to existing detailed studies of the most cost-effective decarbonization pathways.

### No report

Finally, the energy transition risk analysis consists of a 27-page slideshow.<sup>32</sup> There is no formal report underlying that slideshow.<sup>33</sup> Nor is there the kind of written instructions and documentation one would expect when a consultant is hired to prepare important evidence.<sup>34</sup>

Overall, the energy transition risk analysis and the process used to develop it is not commensurate with the "real risk" identified by the Ontario Electrification and Energy Transition Panel of "of economically stranding the rate-regulated distribution assets used for home heating, with significant risk to customers, investors, and public finances."<sup>35</sup> A much improved and more robust analysis is needed next time.

### **IRP analysis needs improvement**

Enbridge's approach to assessing IRP alternatives and repair options also needs significant improvement in future cases. Those improvements include the following:

- Include contract customers due to the potential high savings from that customer class;
- Include heat pumps due to the high potential for savings and OEB directions; and

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<sup>29</sup> Canadian Climate Institute, *Heat Exchange*, p. 10 & 17 ([link](#)).

<sup>30</sup> Exhibit I.2-ED-13 ([link](#)).

<sup>31</sup> CER, *Canada's Energy Future 2023: Energy Supply and Demand Projections to 2050*, ([link](#)), p. 1, 4, 35, & 39.

<sup>32</sup> Exhibit B, Tab 3, Schedule 1, Attachment 1 ([link](#)).

<sup>33</sup> Exhibit I.2-ED-11([link](#)).

<sup>34</sup> Exhibit I.2-PP-44 ([link](#)).

<sup>35</sup> *Ontario's Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel*, December 2023, p. 72 ([link](#)); Enbridge relied on this report in Exhibit B, Tab 3, Schedule 1, p. 26 and yet declined to put a copy on the record as requested by Environmental Defence in Exhibit I.2-ED-5(c) ([link](#)).

- Account for the full benefits of deferrals.

*Include contract customers*

Enbridge's approach excludes contract customers from its assessment of the potential demand reductions available through targeting energy efficiency. Combined with the exclusion of ex-franchise customers, this resulted in 43% of the demand on the St. Laurent pipeline system being excluded from Posterity's analysis.<sup>36</sup>

Enbridge's rationale for excluding contract customers is invalid and has been rejected by the OEB in previous DSM proceedings. Enbridge argues that no demand reductions are available from contract customers because those customers have a financial motivation to reduce gas use and have not indicated to Enbridge that they intend to reduce their gas demand.

A similar argument was rejected by the OEB in its 2015-2020 DSM decision.<sup>37</sup> The relevant DSM framework had excluded large volume customers on the basis that they would be competitively motivated to ensure that their systems were efficient.<sup>38</sup> The OEB reversed this decision in the DSM plan proceeding based on evidence of Board Staff, intervenors, and Union Gas. The decision stated as follows: "The OEB found the evidence of the expert witnesses, which was that large volume customers would not initiate all cost-effective conservation if DSM programs similar to those offered until 2015 were not available, compelling."<sup>39</sup> The OEB relied on extensive expert evidence in that proceeding to conclude that there was a great deal of potential to achieve cost-effective DSM from contract customers despite their competitive motivation and sophistication.<sup>40</sup> In contrast, Enbridge provided no evidence in this proceeding, expert or otherwise, to show that the opposite is true.

Furthermore, the decision to exclude contract customers was not made by Enbridge's IRP expert, Mr. Shipley of the Posterity Group.<sup>41</sup> That decision was made by Enbridge, which directed its expert witness to exclude contract customers.<sup>42</sup> Furthermore, even Enbridge acknowledged that there may be potential to reduce the peak demand of contract customers through incremental energy efficiency.<sup>43</sup>

In its 2015-2020 DSM decision, the OEB noted as follows:

Approximately 50% of Union's CCM savings in 2013 and 2014 were as a result of savings realized from the large volume customer class. The OEB finds it impossible to maintain a goal of achieving all cost-effective conservation, while

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<sup>36</sup> Exhibit I.2-ED-21([link](#)).

<sup>37</sup> EB-2015-0029 / EB-2015-0049, Decision and Order, January 20, 2016 ([link](#)).

<sup>38</sup> EB-2015-0029 / EB-2015-0049, Decision and Order, January 20, 2016, p. 50 ([link](#)).

<sup>39</sup> EB-2015-0029 / EB-2015-0049, Decision and Order, January 20, 2016, p. 50 ([link](#)).

<sup>40</sup> E.g. see EB-2015-0029 / EB-2015-0049, Exhibit M.Staff.GEC.12; Transcript Volume 12, p. 102-105 ([link](#)); Transcript Volume 10, p. 150-157 ([link](#)); Transcript Volume 4, p. 30-31 ([link](#)).

<sup>41</sup> Transcript Volume 3, November 13, 2024, p. 3, lns. 20 to 25 ([link](#)).

<sup>42</sup> Transcript Volume 3, November 13, 2024, p. 3, lns. 20 to 25 ([link](#)).

<sup>43</sup> Transcript Volume 3, November 13, 2024, p. 7, lns. 9-13; p. 11 ([link](#)).

simultaneously excluding the customer segment with the largest gas consumption and the greatest potential for savings.<sup>44</sup>

A similar conclusion can be reached with respect to IRP. It is impossible to assess the potential for non-pipe solutions to cost-effectively avoid infrastructure spending while excluding contract customers from that assessment.

### *Include electric IRP alternatives*

Enbridge excluded heat pumps from its analysis of IRP alternatives.<sup>45</sup> However, this may have been a timing issue. Enbridge's Phase 2 evidence indicated that it would begin to consider electric IRP measures.<sup>46</sup> In light of this, it is our understanding the Enbridge will be considering electric IRP measures going forward. That is critically important because the DSM potential study commissioned by the OEB shows that energy efficiency measures that involve fuel switching are the largest potential source of gas savings.<sup>47</sup>

We would ask Enbridge to confirm in its argument that it will be assessing electric alternatives in future IRP assessments. If it does not provide this confirmation, we would note the following. Although the first-generation integrated resource planning framework ruled out electricity-based alternatives, it also explicitly made this an interim determination and noted that this could “evolve as energy planning evolves, and as experience is gained with the IRP Framework.”<sup>48</sup> There has been a sufficient passage of time and a sufficient evaluation of energy planning to revisit this, including the following:

- **Government policy:** Since the integrated resource planning decision was issued, the Minister of Energy has directed the OEB to pursue lower energy bills whether that be through more efficient gas *or electric equipment*.<sup>49</sup> Although the direction was made in the context of demand-side management, it is analogous to IRP in that the direction condones spending on electric equipment where that would lower energy bills. Also, Ontario's policy now explicitly includes support for “beneficial electrification” which includes “use of electricity instead of other fuels to reduce overall energy use and emissions and subsequently reduce costs for high consumption activities such as home heating and cooling, regardless of fuel type.”<sup>50</sup>
- **Improved cost-effectiveness:** The cost-effectiveness of electricity-based integrated resource planning has improved drastically since the integrated resource planning

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<sup>44</sup> EB-2015-0029 / EB-2015-0049, Decision and Order, January 20, 2016, p. 51 ([link](#)).

<sup>45</sup> Exhibit I.2-ED-21(I), p. 4 ([link](#)).

<sup>46</sup> EB-2024-0111, Phase 2 Exhibit 1, Tab 17, Schedule 1, p. 23, para. 61 ([link](#)).

<sup>47</sup> Guidehouse, *2024 Natural Gas Achievable Potential Study*, Commissioned by the OEB, October 2024, p. 113 & 119 ([link](#)).

<sup>48</sup> OEB Decision and Order, July 22, 2021, EB-2020-091, p. 35 ([link](#)).

<sup>49</sup> Mandate Letter to the OEB, November 15, 2021, p. 3 ([link](#)) (“It is also important that the DSM Framework be implemented in a way that enables customers to lower energy bills in the most cost-effective way possible, and help customers make the right choices regardless of whether that is through more efficient gas or electric equipment.”).

<sup>50</sup> “New Proposal for An Electricity Energy Efficiency Programming to Promote Beneficial Electrification”, Ministry of Energy, January 20, 2025 ([link](#)).



decision was issued. Enbridge and the IESO both provide incentives for heat pumps.<sup>51</sup> This will lower the incremental cost of a non-pipeline alternative relying on heat pumps. Enbridge can leverage this pre-existing funding, plus modest spending on marketing and incremental incentives, to pursue a geographically-targeted program far more cost-effectively.

- **Insufficient non-pipeline solutions:** Over two years has passed since the integrated resource planning framework was put in place, which followed multiple directions from the OEB to pursue integrated resource planning (see Appendix 1 below). However, Enbridge’s rebasing application still proposed \$7 billion on pipeline solutions and \$0 for non-pipeline solutions. All we have thus far is pilots that were recently applied for. The experience of the past two years suggests that Enbridge would benefit from additional tools.

Finally, any electricity-based non-pipeline solution would be presented to the OEB for approval in an integrated resource planning application. Therefore, the OEB would have the opportunity to scrutinize any electricity-based proposals that Enbridge may put forward.

#### Deferral benefits of repair options and IRPAs

Enbridge should account for the planning value that can be derived from IRP alternatives and from repairing a pipeline instead of replacing it and strive to quantify that value. Planning value, also known as option value, is a well-known cost-benefit analysis category and is recognized in the OEB’s *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*.<sup>52</sup> Planning value refers to the benefits that a deferral may offer for addressing uncertainties inherent in utility planning and forecasting. Deferring a major capital project may provide the utility additional time to find other, less costly solutions, or to develop better estimates of future capacity needs.<sup>53</sup>

Planning value is particularly important in the gas context. Ontario’s EET Panel notes that the “speed at which customers would change their heating source is uncertain” as is the future of the gas system in general in the medium to long term.<sup>54</sup> Deferring asset replacement via repairs provides value because it allows for more information to be gained about those uncertainties. The asset may need to be replaced in the future regardless, but it is also possible that the replacement can be avoided down the road with system pruning or IRP alternatives.

This important value is not considered or quantified in Enbridge’s current approach. It should be in the future, especially for projects as large as this.

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<sup>51</sup> Enbridge Gas, Home Renovation Savings Program ([link](#)); IESO, Home Renovation Savings Program ([link](#)).

<sup>52</sup> OEB, *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, May 16, 2024, p. 30 ([link](#)).

<sup>53</sup> OEB, *Benefit-Cost Analysis Framework for Addressing Electricity System Needs*, May 16, 2024, p. 30 ([link](#)).

<sup>54</sup> *Ontario’s Clean Energy Opportunity: Report Of The Electrification And Energy Transition Panel*, December 2023, p. 73 & 92 ([link](#)).

### Other IRP considerations

The full potential for IRP is not known in this case because of the exclusion of contract customers and electric measures, particularly in light of the high potential gas reductions that are generally available with both.<sup>55</sup> However, Mr. Shipley estimated that incremental targeted energy efficiency would generate over \$155 million in customer energy bill reductions even based on the subset of IRP alternatives excluding contract customers and electric measures.<sup>56</sup> Those bill reductions are more than twice the cost of the targeted energy efficiency.<sup>57</sup> Any savings from a deferral or pipe downsizing would be incremental. These potential major savings underline how important it is for IRP alternatives to be robustly considered in future costs, including the potential from contract customers and electric measures.

### Alternatives: the St. Laurent project

All of the above problems impact Enbridge's assessment of the St. Laurent project. However, the most glaring issue for this particular proceeding is simply that Enbridge significantly overestimates the cost of the repair option. In its previous attempt to secure approval for this project, Enbridge estimated the repair option would cost \$33 million (NPV).<sup>58</sup> That estimate has jumped in this application to \$179 million (NPV) without adequate explanation.<sup>59</sup> This basic fact should give the OEB pause.

There are also several important specific deficiencies with Enbridge's cost estimates of the repair option:

- **Biased inflation factor:** Enbridge uses a higher inflation factor for the repair option costs than it does for the replacement costs. If a 2% inflation factor is used, which would be consistent with Enbridge's latest Asset Management Plan<sup>60</sup>, the repair option becomes cheaper.<sup>61</sup>
- **High repair costs:** Enbridge's repair cost estimates are based on large recent increases in its repair costs. Enbridge was unable to justify these higher costs as being legitimate rather than an instance of insufficient cost control.<sup>62</sup>
- **High inspection costs:** Enbridge's cost estimates do not consider the possibility that robotic inspection, which is relatively new, will come down in price as technology improves (e.g. better batteries), fewer crawlers get stuck, and economies of scale can be achieved.<sup>63</sup>

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<sup>55</sup> Guidehouse, *2024 Natural Gas Achievable Potential Study*, Commissioned by the OEB, October 2024, p. 113 & 119 ([link](#)); EB-2015-0029 / EB-2015-0049, Decision and Order, January 20, 2016, p. 51 ([link](#)).

<sup>56</sup> Exhibit JT3.5 ([link](#)).

<sup>57</sup> Exhibit C, Tab 1, Schedule 1, p. 24 ([link](#)).

<sup>58</sup> EB-2020-0293 (St. Laurent Ottawa North Replacement Project), Decision and Order, May 3, 2022, p. 34 ([link](#)).

<sup>59</sup> Exhibit C, Tab 1, Schedule 1, p. 19 ([link](#)).

<sup>60</sup> JT1.4 ([link](#)).

<sup>61</sup> JT1.7 ([link](#)).

<sup>62</sup> Transcript, Volume 1, October 30, 2024, p. 16 ([link](#)).

<sup>63</sup> Transcript, Volume 1, October 30, 2024, p. 43 & 46-47 ([link](#)).



- **Planning value:** Enbridge’s practice of disregarding planning value is also important in this case. By choosing to repair only the most critical problems now, Enbridge could defer the replacement decision until more is known about future capacity needs.

Furthermore, Enbridge did not conduct a full assessment of supply-side alternatives, including the possibility of routing gas through different pathways, which, along with energy efficiency, may allow the pipe to be downsized if it needs to be replaced. We anticipate that the Federation of Rental Housing Providers (“FRPO”) will provide a more detailed analysis of the deficiencies in assessing supply-side alternatives in this case and how they could be improved in future cases.

We also understand that FRPO will critique Enbridge’s low estimates of the potential savings from downsizing the pipeline, and is in an ideal position to do so as its representative is an engineer with decades of experience in gas system planning and in the gas regulatory sector more generally. Although FRPO’s request for additional discovery relating to the cost savings from downsizing the pipeline was declined by the OEB, the Board also highlighted in *Procedural Order #6* that “the onus is on Enbridge Gas to prove its case” and that it is open to the parties to argue that that onus has not been met in this case.

In the OEB’s decision in Enbridge’s first attempt to have this project approved, it stated as follows: “The OEB also encourages Enbridge Gas in future applications to elaborate on the reasons for any significant discrepancies between its cost estimate for the proposed project and other similar projects which was lacking in this application.”<sup>64</sup> Enbridge has not fulfilled this direction with respect to its cost estimate of a downsized project as it has not provided evidence to justify the very low savings it estimates from downsizing the pipeline in comparison to figures from similar projects.

Replacing the pipeline would result in a much stronger pipeline that is more impervious to damage because the replacement pipe would be built to modern standards. However, that would also be true for the over 10,000 km of pipelines in Enbridge’s system that are of the same or older vintage as the St. Laurent pipeline.<sup>65</sup> We should be cautious to avoid placing too much emphasis on the benefits of bringing this pipeline up to modern standards. If that were done to even one-tenth of the over 10,000 km of pipelines of similar or older vintage, the cost would be enormous. In this case, Enbridge plans to spend \$216 million replacing only 18 kms of pipelines whereas the full extent of similarly-aged pipelines is 600 times that length.<sup>66</sup>

### **Prudence review and stranded asset risk**

If the leave to construct is granted, Environmental Defence understands that a final review of the project expenditures would occur at the next rebasing case when Enbridge seeks to have the in-service additions added to rate base. At that time, Environmental Defence will seek to test whether this replacement and other system renewal expenditures that constitute in-service additions are prudent. In particular, we wish to explore whether pipelines are being repaired or replaced sooner than necessary due to insufficient cathodic protection measures by Enbridge. The lack of appropriate proactive preventative maintenance such as cathodic protection, if

<sup>64</sup> EB-2020-0293 (St. Laurent Ottawa North Replacement Project), Decision and Order, May 3, 2022, p. 26 ([link](#)).

<sup>65</sup> Exhibit JT2.14 ([link](#)).

<sup>66</sup> Exhibit A, Tab 2, Schedule 1 ([link](#)).

established, may underpin an argument that a portion of certain system renewal spending should be disallowed under the prudence standard. We intend to address this issue holistically across all system renewal expenditures in the next rebasing case.

We also understand that approval of this project does not guarantee that a future panel would allow all the costs to be recovered should the asset become economically stranded or underutilized.

If we are incorrect in understanding that a final prudence review of expenditures on this pipeline will occur when Enbridge seeks to bring these expenditures into rate base and that a granting of leave to construct does not guarantee full recovery of costs for economically stranded assets, we ask that the OEB indicate so in its decision.

## **Conclusion**

Environmental Defence submits that the final decision on whether to replace the St. Laurent pipeline should be deferred until further information and analysis is available, with absolutely necessary repairs made in the meantime. But regardless of whether leave to construct is granted, the OEB should not condone Enbridge's approach to assessing potential pipeline replacements. Explicit or tacit endorsement of these flawed approaches will have ripple effects for ratepayers across a multitude of system renewal projects, most of which will not require approval by the OEB. It is incumbent on the OEB to ensure that infrastructure planning decisions worth billions of dollars are made on sound methodological footing.

## **Appendix 1: Summary of OEB directives re IRP**

The Board has directed Enbridge to practice Integrated Resource Planning many times over the past 30 years.<sup>67</sup> These directions date back to the OEB's IRP proceeding in the early 1990s.<sup>68</sup> This summary will focus on the directions provided by the OEB over the last decade. Through these directions, the OEB has repeatedly highlighted the importance of IRP, expressed concerns about the lack of progress by Enbridge in this area, and directed Enbridge to do IRP better and sooner.

In the decision in the GTA pipeline case (EB-2012-0451), the OEB directed Enbridge “to provide a more rigorous examination of demand side alternatives, including rate options, in all gas leave to construct applications.”<sup>69</sup> The decision also directed Enbridge to incorporate IRP in its planning in a more systematic way:

Environmental Defence urged the Board to send a signal to the companies that new supply-side investments will not be approved unless all lower cost DSM and/or interruptible service options have been explored and documented. Other parties agreed and argued that both Enbridge and Union should be required to do a better job...

In light of the evidence presented, the Board concludes that further examination of integrated resource planning for gas utilities is warranted. The evidence in this proceeding demonstrates that the following issues should be examined:

- The potential for targeted DSM and alternative rate designs to reduce peak demand
- The role of interruptible loads in system planning
- Risk assessment in system planning, including project prioritization and option comparison
- Shareholder incentives.<sup>70</sup>

In the 2014 DSM Framework decision, the Board again directed Enbridge to conduct IRP and develop a consistent IRP methodology:

As part of all applications for leave to construct future infrastructure projects, the gas utilities must provide evidence of how DSM has been considered as an alternative at the preliminary stage of project development.

In order for the gas utilities to fully assess future distribution and transmission system needs, and to appropriately serve their customers in the most reliable and

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<sup>67</sup> E.g. EBO 169-III, *Report of the Board on the Demand-Side Management Aspects of Gas Integrated Resource Planning*, July 23, 1993, pp. 1-4; Ontario Energy Board, *Decision in EB-2012-0451/0433, January 30, 2014*, p. 46-47 (GTA Pipeline) ([link](#)); Ontario Energy Board, *DSM Framework*, December 22, 2014, p. 35-36 ([link](#)); EB-2018-0097, *Decision and Order*, January 3, 2019, pp. 6-7 (Bathurst Reinforcement) ([link](#)); EB-2020-0192 (London Lines), OEB Decision and Order, January 28, 2021, p. 20 ([link](#)).

<sup>68</sup> EBO 169-III, *Report of the Board on the Demand-Side Management Aspects of Gas Integrated Resource Planning*, July 23, 1993 ([link](#)).

<sup>69</sup> Ontario Energy Board, *Decision in EB-2012-0451/0433, January 30, 2014*, p. 46-47 (GTA Pipeline) ([link](#)).

<sup>70</sup> *Ibid.*

cost-effective manner, the Board is of the view that DSM should be considered when developing both regional and local infrastructure plans. ...The Board expects the gas utilities to consider the role of DSM in reducing and/or deferring future infrastructure investments far enough in advance of the infrastructure replacement or upgrade so that DSM can reasonably be considered as a possible alternative. If a gas utility identifies DSM as a practical alternative to a future infrastructure investment project, it may apply to the Board for incremental funds to administer a specific DSM program in that area where a system constraint has been identified.

The Board is also of the view that the gas utilities should each conduct a study, completed as soon as possible and no later than in time to inform the mid-term review of the DSM framework. The studies should be based on a consistent methodology to determine the appropriate role that DSM may serve in future system planning efforts. As part of the multi-year DSM plan applications, the gas utilities should include a preliminary scope of the study it plans to conduct and propose a preliminary transition plan that outlines how the gas utility plans to begin to include DSM as part of its future infrastructure planning efforts.<sup>71</sup>

In the 2016 DSM Plan decision, the OEB found that Enbridge's proposed next steps would cause "delay" and directed them to develop an IRP transition plan:

The OEB agrees that a case study, as proposed by Enbridge, would assist in assessing the merits of a transition plan. However, the OEB is concerned that the time required to complete a case study would delay the utilities' infrastructure planning activities proposal and the transition plan would not be available in time for the mid-term review.

The OEB directs Enbridge and Union to work jointly on the preparation of a proposed transition plan that outlines how to include DSM as part of future infrastructure planning activities. The utilities are to follow the outline prepared by Enbridge, and should consider the enhancements suggested by the intervenors and expert witnesses. The transition plan should be filed as part of the mid-term review.<sup>72</sup>

In the 2018 DSM Mid-Term Review decision, the OEB expressed concerns about the lack of progress on IRP and directed Enbridge to do better.

Stakeholders indicated reservations in the usefulness of the transition plan provided by the natural gas utilities. The OEB agrees that although the progress made is at an early stage, the transition plan does not advance the understanding of the role and impact that energy conservation can play in deferring or avoiding capital projects. Currently, leave to construct applications do not include a description of the DSM alternatives considered to help avoid and/or defer the proposed capital project. The natural gas utilities should continue to develop rigorous protocols to include DSM as part of their internal capital planning

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<sup>71</sup> Ontario Energy Board, *DSM Framework*, December 22, 2014, p. 35-36 ([link](#)).

<sup>72</sup> EB-2015-0029/0049, *Decision and Order*, January 20, 2016 (2015-2020 DSM Plans), p. 84 ([link](#)).

process. This should include a comprehensive evaluation of conservation and energy efficiency considered as an alternative to reduce or defer infrastructure investments as part of all leave to construct applications.<sup>73</sup>

In the 2019 Bathurst Reinforcement decision, the OEB again directed Enbridge “to provide sufficient and timely evidence of how DSM has been considered as an alternative at the preliminary stage of project development.”<sup>74</sup> It also warned Enbridge that it “faces the risk that future application will be deemed incomplete.”<sup>75</sup>

In the 2021 London Lines decision, the OEB directed Enbridge to do better once again and to conduct “in-depth quantitative and qualitative analyses of alternatives”.<sup>76</sup> In particular, the OEB said:

However, despite the OEB approval of the application for leave to construct this Project, the OEB agrees with Environmental Defence that Enbridge Gas has an obligation to conduct a more rigorous Integrated Resource Planning assessment at the preliminary stage of projects development in future cases. As OEB staff also notes the failure to present detailed analyses makes it unlikely that Enbridge Gas would select an alternative including DSM or other non-build project option. The OEB acknowledges that more direction is likely to be provided to Enbridge Gas in future leave to construct projects as part of the ongoing IRP proceeding. In the interim, however, the OEB believes that all parties would be assisted if Enbridge Gas would, in the future, undertake in-depth quantitative and qualitative analyses of alternatives that specifically include the impacts of DSM programs on the need for, or project design of facilities for which Enbridge Gas has applied for leave to construct.<sup>77</sup>

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<sup>73</sup> EB-2017-0127/0128, *Report of the Ontario Energy Board, Mid-Term Review of the Demand Side Management (DSM) Framework for Natural Gas Distributors (2015-2020)*, November 29, 2018, p. 20-21 ([link](#)).

<sup>74</sup> EB-2018-0097, Decision and Order, January 3, 2019, pp. 6-7 ([link](#)).

<sup>75</sup> *Ibid.*

<sup>76</sup> EB-2020-0192 (London Lines), OEB Decision and Order, January 28, 2021, p. 20 ([link](#)).

<sup>77</sup> EB-2020-0192 (London Lines), OEB Decision and Order, January 28, 2021, p. 20 ([link](#)).