ENBRIDGE GAS INC.

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

Undertaking

Tr: 130

If possible, Guidehouse to provide information about how European jurisdictions incent utilities to favour the extending of asset lives.

Response:

The following response was provided by Guidehouse Canada Ltd.:

Guidehouse is not aware of any utilities with specific metrics incentivising asset life extension. Rather, where gas networks can justify capex for renewal, this strengthens their balance sheet. From our experience, management tends towards making robust cases for renewal and seeking regulatory funding for such activities.

Below are two examples based on Guidehouse's observations:

- Swedish utilities, e.g. Vattenfall are mandated by the regulator to reach certain technical performance levels (System Average Interruption Duration Index. (SAIDI), etc.) and this has a direct link on their profitability, i.e. they get penalized if the metrics are under a certain threshold. These make their way into the management priorities as they impact profitability directly.

- Guidehouse has observed two utilities regulated through Ofgem have the following objectives (though no known quantified specific metrics) related to incenting asset life extension.

| | |
|---|---|
| Wales and West Utilities | Delivering a safe and resilient network, by developing novel technologies and methods to improve on repair and replacement work, improve gas escape management, reduce interruption for customers, progressing technology for a 'smarter' and connected network, and discovering 'life extension solutions' |

| | |
|---|---|
| Northern Gas Networks | In addition, we will consider extending the life of existing assets wherever possible as another means of mitigating against future uncertainties. |

ENBRIDGE GAS INC.

Answer to Undertaking from
Green Energy Coalition (GEC)

Undertaking

Tr: 10

To reconcile figures for the change in buildings sector peak gigawatts between JT9.6 and I.1.10-JC-15, table 3

Response:

The following response was provided by Guidehouse Canada Ltd.:

Guidehouse understands this undertaking as explaining the differences in methods that led to the calculations performed by GEC[1] producing different values when based on the values in Exhibit I.1.10-GEC-15, Table 3 and Exhibit JT9.6, Table 1, for the buildings sector. The reason for this difference is that the values presented in each table are estimated based on different hours of peak demand. Specifically, the hour of peak *buildings sector* gas demand is different than the hour of coincident peak gas demand *for all sectors.*

Exhibit JT9.6, Table 1 shows estimated buildings sector gas demand at the time of coincident peak gas demand across *all sectors*, for each of hydrogen and methane. The hour of coincident peak demand for each fuel type may or may not be identical, but usually occurs in late evening or very early morning, driven by relatively high industrial gas demand overnight.

Exhibit I.1.10-GEC-15, Table 3 shows estimated buildings sector gas demand at the time of peak gas demand *for the building sector only*, across both methane and hydrogen. For the buildings sector only, peak demand timing is driven by a high heating load in the morning.

[1] EB-2022-2020, Exhibit K2.1 GEC Compendium, pages 4-5.

ENBRIDGE GAS INC.

Answer to Undertaking from
Green Energy Coalition (GEC)

Undertaking

Tr: 12

To reconcile the change in scenarios for industrial transportation in JC 15 and in JT9.6, Table 10

Response:

The following response was provided by Guidehouse Canada Ltd.:

Guidehouse understands this undertaking as explaining the differences in methods that led to the calculations performed by GEC[1] producing different values when based on the values in Exhibit I.1.10-GEC-15, Table 3 and Exhibit JT9.6, Table 1, for the industry and transport sectors. The GEC estimated peak demand values for industry and transport are estimated by subtracting building sector peak demand from the overall gas system peak demand (121 GW in 2020). The reason why this calculation does not produce an appropriate result is that the values presented in each table are estimated based on different hours of peak demand, such that the GEC calculation subtracts peak demand values that occur at different hours. Specifically, the hour of peak *buildings sector* gas demand is different than the hour of coincident peak gas demand *for all sectors.*

Exhibit JT9.6, Table 1 shows estimated buildings sector gas demand at the time of coincident peak gas demand across *all sectors*, for each of hydrogen and methane. The hour of coincident peak demand for each fuel type may or may not be identical, but usually occurs in late evening or very early morning, driven by relatively high industrial gas demand overnight.

Exhibit I.1.10-GEC-15, Table 3 shows estimated buildings sector gas demand at the time of peak gas demand *for the building sector only*, across both methane and hydrogen. For the buildings sector only, peak demand timing is driven by a high heating load in the morning.

[1] EB-2022-2020, Exhibit K2.1 GEC Compendium, pages 4-5.

ENBRIDGE GAS INC.

Answer to Undertaking from
Green Energy Coalition (GEC)

Undertaking

Tr: 33

To confirm whether sales taxes were included in the assessment of the cost of end-use equipment.

Response:

The following response was provided by Guidehouse Canada Ltd.:

Guidehouse confirms that sales taxes were not included in the assessment of the cost of end-use equipment.

ENBRIDGE GAS INC.

Answer to Undertaking from
Environmental Defence (ED)

Undertaking

Tr: 144

To confirm whether the figure for design day demand from electricity power generation, as shown in in ED 9, equates to roughly 10 percent of the design day demand on the Dawn-Parkway System.

Response:

Exhibit I.1.10-ED-9 Table 1 was derived via power generator distribution contracts and demand was allocated to the Dawn Parkway System if any part of their distribution contract was transported by the Dawn Parkway System. Consequently, the response to Exhibit I.1.10-ED-9 overstated the amount that could be transported on the Dawn Parkway System. Some power generators may have a part of their distribution contract supplied from other pipeline systems. Based on Enbridge Gas's current contracts, the power generator demand served by the Dawn Parkway System is approximately 669 TJ/d or 8% of the design day demand on the Dawn Parkway System.

ENBRIDGE GAS INC.

Answer to Undertaking from
Environmental Defence (ED)

Undertaking

Tr: 175

For the table in JT1.19 at page 326: (1) to add two rows to the table for figures for blue and green hydrogen in the common value of dollars per kilogram; (2) to add a column for the cumulative amount of each kind of hydrogen in the diversified scenario; (3) add some additional clarifying descriptors to the table.

Response:

The following response was provided by Guidehouse Canada Ltd.:

The following information has been added to Table 1 from Exhibit JT1.19. The Pathways to Net Zero (P2NZ) model values for domestic production of green and blue hydrogen presented in this undertaking are after-the-fact ad hoc transformations of interim model outputs calculated based on the production cost (CAPEX and OPEX) and the production volume of each type of hydrogen. Caution should be used in interpreting them or comparing them to other industry values. As discussed at TC Tr. Vol 1 178 to 182, these values are not direct outputs of Guidehouse's analysis and may not align with other industry values, given methodology differences; thus, these values likely have limited usefulness in comparison with other sources for such costs. Please note the following caveats:

1) Cost estimates for the P2NZ Study were developed to inform a "total price tag" comparison of two net-zero scenarios.
2) Costs presented here do include cost of feedstock (methane for blue hydrogen, electricity for green hydrogen), cost of equipment, and cost of emissions (for blue hydrogen).
3) Costs presented here do not include the cost of financing, taxes, profits, ROE, etc. As such, these figures are not comparable to commodity costs, market prices, or customer rates.

Table 1

| Type of Value | Reference | Fuel Description | 2020 $/kg (real 2020$CAD) | 2030 $/kg (real 2020$CAD) | 2030 $/kg (real 2020$CAD) | 2030 $/kg (real 2020$CAD) | Cumulative Supply / Production from P2NZ Model (million kgs) (2020-2050) |
|---|---|---|---|---|---|---|---|
| P2NZ[3] | KT1.3, page 4 | Hydrogen Imports from Quebec | | 2.0 | 1.6 | 1.5 | 44 |
| | KT1.3, page 4 | Hydrogen Imports from Western Canada | | 2.4 | 2.1 | 1.8 | 142 |
| | | Ontario Green Hydrogen (Diversified Scenario)[4] | N/A | N/A | 2.14 | 2.00 | 1,943 |
| | | Ontario Blue Hydrogen (Diversified Scenario)[5] | N/A | 1.64 | 0.88 | 0.64 | 3,998 |
| Estimate, EB-2019-0294, Exhibit I.ED.6 | Exhibit I.4.2-ED-131 | Estimated production cost of Hydrogen from P2G in Ontario | 6.24 to 7.80[6] | 4.37 to 5.46[7] | | | |
| | Exhibit I.4.2-ED-131 | Retail Hydrogen price in Ontario | 8.23 to 8.87[8] | | | | |
| | Exhibit I.4.2-ED-131 | Retail hydrogen price in California | 16.01 to 21.11[9] | | | | |
| | Exhibit I.4.2-ED-131 | Retail hydrogen price in Quebec | 18.04[10] | | | | |

[3] All model values converted using a lower heating value of 119.88 MJ/kg. The model values are derived from the values provided at exhibit JT9.22 and Exhibit JT9.22 Attachment 1.
[4] Derived from Model Output: This is the derived supply cost that best represents a proxy for commodity cost. Annual electrolyzer costs (average annual CAPEX by decade and annual O&M) plus cost of electricity needed, divided by annual hydrogen production via electrolyzers.
[5] Derived from Model Output: This is the derived supply cost that best represents a proxy for commodity cost. Annual SMR costs (average annual CAPEX by decade and annual O&M) divided by annual hydrogen production via SMR.
[6] Based on assumptions as specified in EB-2019-0294, Exhibit 1.ED.6 (g) and converted to kg using a higher heating value of 141.88 MJ/kg.
[7] Assumed a net reduction of 30%, as specified in EB-2019-0294 (h), and converted to kg using a higher heating value of 141.88 MJ/kg.
[8] Based on information provided in EB-2019-0294, Exhibit 1.ED.6 (l), and converted to kg using a higher heating value of 141.88 MJ/kg.
[9] Based on information provided in EB-2019-0294, Exhibit 1.ED.6 (k) and converted to kg using a higher heating value of 141.88 MJ/kg.
[10] Based on information provided in EB-2019-0294, Exhibit 1.ED.6 (m) and converted to kg using a higher heating value of 141.88 MJ/kg.

ENBRIDGE GAS INC.

Answer to Undertaking from
School Energy Coalition (SEC)

Undertaking

Tr: 77

To make best efforts to advise within 2022 how much of that hypothetical executive's incentive pay came from the EBITDA generated by growth capital line.

Response:

The short-term incentive pay generated from EBITDA Generated by Growth Capital metric would have been $14,000 using a hypothetical executive salary of $350,000 for 2022. This metric is not associated with the long-term incentive plan.

/u

ENBRIDGE GAS INC.

Answer to Undertaking from
School Energy Coalition (SEC)

Undertaking

Tr: 84

Referring to exhibit KT9.2, to provide a comparable number for hydrogen as a percentage of energy mix.

Response:

The response provided at Tr. Vol. 3 85 to 86 was incorrect with respect to the percentage of total energy demand in 2050 for hydrogen in the diversified scenario and in the electrification scenario. The correct percentages are 39% for the diversified scenario and 13% for the electrification scenario.

ENBRIDGE GAS INC.

Answer to Undertaking from
Consumers Council of Canada (CCC)

Undertaking

Tr: 192

To file electrification and energy transition panel's submission to the OEB's framework for energy innovation.

Response:

Enbridge Gas understands that Ms. Girvan of Consumers Council of Canada's request is different than the undertaking captured in the transcript, which is shown above. Enbridge Gas understands that Ms. Girvan requested Enbridge Gas's submission to the Ontario Energy Board (OEB) related to the OEB's submission to the province's Electrification and Energy Transition Panel, which is provided at Attachment 1.

# Introduction

Enbridge Gas Inc. (Enbridge) appreciates the opportunity to submit feedback on the Ontario Energy Board's (OEB) Regulatory Framework Workshop held on April 19, 2023. Below are the consultation questions with Enbridge's responses and recommendations.

# Workshop Questions

## 1. Long Term Planning

**What role should the OEB play in long-term planning?**

**What is required to ensure coordination or oversight of planning is clear and predictable while also nimble and responsive?**

OEB's current role is to provide regulation of the energy sector. The OEB provides expertise and value in facilitation between the stakeholders in the energy sector. Enbridge expects that OEB's strength in facilitation would be well suited and could be leveraged in the oversight of regional energy system planning for the electric and gas sectors. The OEB is the logical entity to provide facilitation of long-term planning, given they already regulate all of the parties. Enbridge recommends the OEB be tasked with facilitating long-term planning over the creation of a new central agency or authority. Enbridge also suggests that the OEB should lead a periodic consultative process on energy transition. Based on a recommendation by the OEB, Enbridge would be pleased to work with the Independent Electricity System Operator (IESO) and local distribution companies (LDCs) on coordinated regional energy system plans.

The discussion guide provides several illustrative examples of the potential roles the OEB could play in long term energy planning. Enbridge provides comments on each example below.

Set expectations for development of coordinated planning document:

Enbridge agrees that this is an appropriate role for the OEB in long-term energy system planning. Enbridge is a vertically integrated company and serves as the system operator, system planner and local transmitter and distributer of natural gas. On the electric side, Enbridge understands that vertically integrated planning has commenced via IESO's integrated planning; however, it is focused solely on transmission, and distribution system planning is done separately by LDCs. Enbridge suggests that horizontal planning be done at the regional level, looking at distribution system planning which then gets incorporated at the transmission and storage level.

Enbridge surmises that more coordination between electricity LDCs, Enbridge and regional municipalities early in system planning would help to enhance stakeholder participation, identify energy system constraints, and provide opportunities for more coordinated solutions and system development.

Under an OEB-established set of guiding principles, energy system planners could create asset management plans and/or plans for specific projects that would ensure better infrastructure investments for both electric and gas systems. For rebasing applications and Leave-to-Construct (LTC) applications, the OEB may consider establishing requirements for consultation and coordination between the local system planners to ensure that best available information is considered when putting forward a LTC for approval.

As an economic regulator, there should be a requirement to determine and quantify reliability and resiliency in the long-term plans being brought forward to OEB for approval. Enbridge is aware that OEB is pursuing greater clarity on how to define, analyze and enhance policy related resiliency for electricity distribution, as summarized in EB-2023-003. Enbridge suggests that a holistic approach to energy system resiliency be considered for Ontario. This would further enable and encourage coordinated planning on all

levels (i.e., distribution, transmission, and storage) between electric and gas system planners and ensure that the most cost-effective and resilient energy system is constructed and ready to serve Ontario. This would allow OEB to review and approve strategic infrastructure investments as energy transition continues to unfold and as climate events become more unpredictable.

Review assumptions, inputs or processes related to coordinated planning:

Enbridge suggests that basic elements of planning should include understanding system capabilities on both gas and electric systems, both in terms of annual, seasonal and peak demand, and the reliability and resiliency of each system under varying conditions as Ontario contemplates a changing energy system. The OEB could collect this information from the gas and electric system planners using common units (such as $/MW) to allow greater comparison between energy systems. This would ensure alignment of short, medium and longer term demand forecasts and the identification of any co-dependencies across energy systems and throughout the value chain (production, transmission, distribution and end-user energy consumption).

Provide recommendations to IESO or government for consideration in finalizing a coordinated planning document:

Enbridge supports the idea of the OEB providing recommendations to IESO, Enbridge and the LDCs on a coordinated plan. This should include outlining areas of agreement or differences in the areas mentioned above.

Decide rates and facilities applications in the context of coordinated planning outcomes:

Enbridge agrees that rates and facilities applications should consider coordinated planning outcomes and that the OEB should include this in deciding these applications. Further discussion on leave to construct approvals are provided in section 3.

## 2. Objectives

**Should the OEB's statutory objectives be amended to reflect the energy transition, net zero, or other priorities?**

**Are there any existing objectives that may need to be revisited in the context of the energy transition?**

Enbridge agrees that the Ontario Energy Board Act, 1998, S.O. 1998, CHAPTER 15, Schedule B should be amended to reflect energy transition on the evolving energy sector in Ontario.

OEB is an economic regulator that is mandated to ensure fairness, minimize cost and risk to consumers. Enbridge believes that OEB can fulfil its role as an economic regulator as well as consider public policies. In addition to ensuring energy remains affordable, the OEB should also consider energy transition, as well as ensuring energy system reliability, resiliency and innovation. Enbridge notes that any update to objectives should not be based on net zero or electrification in advance of the government determining the approach the province will take in energy transition. Until the government has determined what greenhouse gas (GHG) reduction targets will be set beyond 2040 and which pathway is most appropriate to achieve them, the OEBs objectives should focus on enabling the development of "safe bet" or "no-regret" actions, which have been identified by Enbridge and IESO. This includes new technologies, low- and zero-carbon fuels such as renewable natural gas (RNG) and hydrogen, and carbon capture, use and storage (CCUS). Enbridge suggests that the statutory objectives for 'gas' be updated to include "to facilitate innovation in the gas sector", consistent with the statutory objectives of the electricity sector. Energy transition presents a unique opportunity for the energy sector to modernize and to innovate, and this should be encouraged for both the electricity and gas sectors. Technologies and use of RNG and

hydrogen are good examples of how innovation could be further promoted to reduce GHG emissions within the gas industry, while ensuring economic benefits to protect the interests of consumers and deliver public value of a safe, reliable and resilient energy system.

## 3. Leave to Construct (Facilities) Approvals

**Would it be beneficial to include, for example, net zero considerations in OEB decision-making authorities related to LTC?**

**What considerations should the OEB take into account when making decisions related to LTC?**

Enbridge suggests that OEB consider a holistic approach to LTC review and approval when it comes to energy transition considerations. A holistic approach could consist of, but is not limited to, reviewing key project considerations such as safety, reliability, and resiliency of energy systems in balance with short- and long-term energy needs while also ensuring future optionality for further GHG emission reductions.

As OEB is aware, there are currently many energy sources available to customer homes and businesses, and each customer has unique needs and constraints. Enbridge suggests OEB consider customer needs and customer energy choice in balance with GHG emission reduction in LTC applications.

In order to consider energy transition in an LTC, a benefit-cost analysis method that is consistent across both electric and gas sectors should be used to ensure that the most cost-effective energy solution is selected. This benefit-cost analysis should include avoided energy generation/use and avoided GHG emissions. Further, overall costs to customers should be considered (i.e., all costs for a customer to electrify and/or change equipment) and not just operational costs. This benefit-cost analysis would likely be more comprehensive and accurate if based on discussions/findings obtained via coordinated planning efforts between Enbridge, the local distribution company (LDC) and municipalities.

It is important that the value and cost of reliability and resiliency, emissions/carbon charges, infrastructure required to deliver the energy (generation, transmission, and distribution) on both systems are quantified and considered. A holistic approach to energy system planning is needed to ensure that the most optimal path for the least cost is selected. Above all, it is paramount that short term energy needs are reviewed in balance with GHG emission reductions, and cost are considered with long term energy considerations and pathway to net zero optionality is maintained. Otherwise, there could be long term unintended consequences (likely financial) for the residents of Ontario.

## 4. Electricity Distribution Activities

**Does s. 71 provide the right balance between customer protection and the services that LDCs need to provide in 2023 and beyond?**

**Does the broader question of the role of LDCs need to be considered?**

**How can the OEB ensure that consumers are protected as distribution activities evolve?**

**Should the OEB be given the authority to grant generic exemptions (rather than only on a case-by-case basis) for certain types of activities?**

Consistent with Enbridge's comments above related to coordinated planning, Enbridge suggests that coordinated planning between gas distributors and electric distributors should be completed and documented as part of LTCs. This would ensure that energy system infrastructure investments are made prudently.

## 5. Indigenous Relationships

**What should be the OEB's role in ensuring that Indigenous perspectives are considered in the energy transition?**

**What engagement or outreach processes would be most effective?**

Enbridge regularly engages with approximately 40 Indigenous groups in Ontario and is committed to fostering long-term meaningful relationships based on our Life Cycle approach to engagement. Life Cycle approach to engagement refers to engaging with potentially affected Indigenous groups from a project's infancy/project planning stage through to decommissioning/abandonment.

Enbridge suggests that Indigenous engagement and/or outreach in relation to energy transition be completed for matters that are OEB policy and/or governance related. The duty to consult for specific projects and/or operations should remain with the project proponent. This would ensure that efforts are not duplicated for specific projects, which could overburden Indigenous communities with additional and unnecessary stakeholdering efforts and/or create miscommunication within the sector. Enbridge suggests that all Indigenous engagement efforts continue to be documented and provided to OEB to ensure that a sufficient level of consultation has been completed and that it satisfies OEB's expectation regarding Indigenous engagement.

## 6. Innovation

**Is there a need for additional support for innovation in the energy sector?**

**Would legislative change be desirable to give the OEB more tools to support innovation for the benefit of consumers?**

Energy transition provides an unprecedented opportunity for the energy sector provincially, nationally and internationally to explore innovative solutions to address GHG emission reductions. Enbridge recommends that innovation be promoted equally across all energy sectors - electric and gas - to drive industry to explore novel and nascent technologies and see them through to commercialization within a faster pace.

As noted above, an expansion of the statutory objectives for 'gas' to include innovation and an update to the definition of 'gas' are needed to create the regulation framework for these changes.

As OEB is aware, there is a mature natural gas market today where prices of natural gas correspond to market conditions. Enbridge procures natural gas to meet customer demands cost effectively due to the underground storage capabilities. As low-carbon fuels are brought into the energy supply mix to reduce emissions, one of the key challenges is limited supply and high costs. Fuels such RNG are currently priced so that project developers can recover their costs. Technology innovation to maximize supply and lower costs is necessary to make low-carbon fuels accessible and affordable for customers.

For high-temperature industrial applications and heavy-duty transportation where electrification is not feasible, carbon capture, utilization and storage (carbon capture and sequestration (CCUS)) can help effectively lower GHG emissions. However, customers are faced with high upfront investment in CCUS, and those located far from storage sites lack utilization options. Financial incentives and/or funding will help foster exploration of CCUS technologies to become more modular and scalable based on customer needs and drive technology advancement on a commercial scale.

# Conclusion

Enbridge appreciates the opportunity to provide feedback and recommendations on the OEB's Regulatory Framework Workshop held on April 19, 2023. Enbridge requests consideration of the recommendations identified in this document and welcomes the opportunity to meet with you to discuss the consultation and recommendations in further detail. If you have any questions or require additional information, please do not hesitate to contact Cara-Lynne Wade at cara-lynne.wade@enbridge.com.