

EB-2022-0249
Hidden Valley Community Expansion Project

Interrogatories of Environmental Defence

Note: Many of the questions below are relevant to multiple issues, not only the issue indicated.

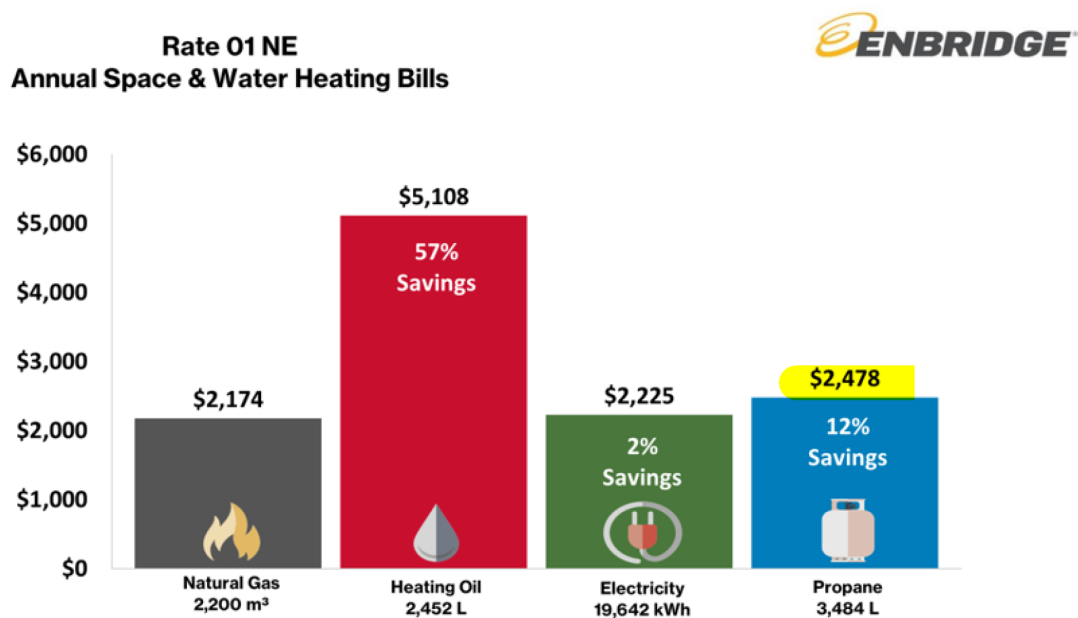
Interrogatory # 1.0-ED-1

Reference: Exhibit B, Tab 1, Schedule 1, Page 4 & 5

Preamble:

Enbridge provides the following estimates of cost savings:

Figure 1: Annual Energy Costs & Savings Versus Natural Gas, Including SES



Question(s):

- Please reproduce Figure 1 adding a separate column for heating with electric air source heat pumps. Please provide a table listing all the calculations and assumptions underlying the cost estimate for electric air source heat pumps.
- Please provide all the underlying calculations and assumptions underlying Figure 1 and Table 1, including the underlying spreadsheet with live formulas. Please include all assumptions, including, but not limited to, the assumed price on carbon.
- If an excel spreadsheet is used to assess the relative cost-effectiveness of the various heating options, please provide that live excel spreadsheet with the variables set

consistent with output in Figure 1. A model that Enbridge used in the past can be found at EB-2019-0188, Exhibit I.ED.7, Attachment 1, but we do not have a version that has been updated and set with the variables used in this case.

Interrogatory # 1.0-ED-2

Reference: Exhibit B, Tab 1, Schedule 1, Page 2

Preamble:

Enbridge states: "Support for the Project has come from a variety of sources including the Town of Huntsville"

Question(s):

- (a) Please provide all communications to and from the Town of Huntsville regarding the project, including all communications to the Town of Huntsville describing the benefits (e.g. letters, presentations, etc.).
- (b) Please provide a list of all meetings with staff and elected officials from the Town of Huntsville and the meeting notes and materials for each.

Interrogatory # 1.0-ED-3

Reference: Exhibit B, Tab 1, Schedule 1, Page 2

Preamble:

Enbridge states: "Enbridge Gas retained Forum Research, a third-party research supplier, to conduct surveys by telephone, online and in-person of potential residential customers in the Project area between August 23 and September 18, 2022."

Questions:

- (a) Has Enbridge Gas conducted any other market research or surveys that would be relevant to this project other than the surveys conducted by Forum Research between August 23 and September 18, 2022 (described above)? If yes., please provide all details, including the content of the other research/survey questions and the full detailed results therefrom.
- (b) Has Enbridge held any information sessions in or around the project area? If yes, please provide all of the materials used in those information sessions.
- (c) Has Enbridge mailed materials to individuals in the project area in relation to community expansion or potential individual gas conversions? If yes, please provide full copies.

Interrogatory # 1.0-ED-4

Reference: Exhibit A, Tab 2, Schedule 1, Attachment 1

Questions:

- (a) Please provide the total number of potential customers that could be connected to the new gas pipelines (i.e. the number of dwellings and businesses), and a breakdown by (a) residential total, (b) residential seasonal, (c) residential permanent, (d) commercial, and (e) other.
- (b) Please provide a list of all addresses that could be served by the proposed pipeline.
- (c) Please provide the attachment forecast as a percent of customers along the new pipe.
- (d) The Forum Research report states that “surveys were completed from a list of 144 home owners.” Please provide that list and reconcile the list and the number of property owners with the responses to (a) and (b).

Interrogatory # 1.0-ED-5

Reference: Exhibit B, Tab 1, Schedule 1, Attachment 3 (Forum Research Report)

Preamble:

These questions are for Forum Research.

Questions:

- (a) Please provide the full script(s), talking points, and training materials provided to the individuals who conducted the door-to-door surveys.
- (b) Please provide the “letters distributed to residents” as referred to on page 2, including any attachments.
- (c) Please provide the full text and full details of the “online and CATI surveys” as referred to on page 2, including any attachments.
- (d) Please provide the full script(s), talking points, and training materials provided to the individuals who assisted with the CATI surveys.
- (e) Please provide the fully granular survey responses. Please include all details, including what kind of survey was completed (door-to-door, online, or CATI), date of the survey, answers to each question, and whether the survey was 100% completed. For readability, we would appreciate receiving a copy as an excel spreadsheet.
- (f) If it is not clear from (e), please indicate the number of respondents with air conditioning. If that question was not asked, please provide an average number based on Ontario’s housing stock or Enbridge’s equipment surveys (Enbridge may need to provide a response).

Interrogatory # 1.0-ED-6

Reference: Exhibit B, Tab 1, Schedule 1, Attachment 3 (Forum Research Report)

Preamble:

These questions are for Forum Research.

Questions:

- (a) Please provide all excerpts from all materials provided to residents that provide details on the comparative cost-effectiveness of heating with electric air source heat pumps versus gas.
- (b) Were survey respondents told that they may be eligible for up to \$5,000 rebates for installing air source heat pumps? If yes, please provide the precise text used in the correspondence or surveyor script.
- (c) Were survey respondents told that they may be eligible for up to \$10,000 rebates for installing air source heat pumps if their current heating system was oil? If yes, please provide the precise text used in the correspondence or surveyor script.
- (d) Were survey respondents provided with information on the comparative cost effectiveness of gas that accounts for carbon tax rising to \$170/tCO₂e by 2030?
- (e) Please provide a table showing the Federal Carbon Charge Rates for Marketable Natural Gas from 2019 to 2030, with columns for \$/tCO₂e and cents/m³.

Interrogatory # 1.0-ED-7

Reference: Exhibit B, Tab 1, Schedule 1

Questions:

- (a) Please reproduce the customer attachment forecast broken down by the current customer primary heating system/fuel. Please make and state assumption as necessary (e.g. Enbridge may estimate the fuel type of connecting customers based on the proportions of customers with that fuel type indicating an interest in converting to gas in the surveys). Please provide the underlying calculations. We are most interested in the overall totals after 10 years, but please also provide the annual breakdown if possible.

Interrogatory # 3.0-ED-8

Reference: Exhibit E, Tab 1, Schedule 1, Page 1

Preamble:

“The cost estimate set out above differs from the amount estimated in the Company’s original project proposal to the Government of Ontario (2019/2020) for funding under Phase 2 of the NGEF by approximately \$1.4 million (EB-2019-0255).”

Questions:

- (a) Please provide a table providing a table with a full reconciliation as between the estimated project costs in Table 1 and the amount estimated in the Company’s original project proposal to the Government of Ontario (2019/2020) for funding under Phase 2 of the NGEF (EB-2019-0255).

- (b) Please provide the complete copy of the above-referenced project proposal.
- (c) Please provide the 40-year DCF table underling the project proposal to the Government of Ontario (2019/2020) for funding under Phase 2 of the NGEP (EB-2019-0255).

Interrogatory # 3.0-ED-9

Reference: Exhibit E, Tab 1, Schedule 1, Page 1

Questions:

- (a) Please reproduce Table 1 with an added column showing the totals, including both pipeline costs and ancillary costs.
- (b) Please provide Enbridge's definition of "ancillary costs" as that term is used in Table 1. Please provide a full explanation.
- (c) Please compare the concept of "ancillary costs" with allocated overhead, including a reconciliation of the concepts in a table if there is partial overlap.

Interrogatory # 3.0-ED-10

Reference: Exhibit E, Tab 1, Schedule 1, Page 1

Question:

- (a) Please provide a table of figures showing, without rounding: the gross capital cost, the gross O&M costs over 40 years, the NPV of the O&M costs over 40 years, the subsidy, the gross revenue over 40 years, and the NPV of the revenue over 40 years

Interrogatory # 3.0-ED-11

Reference: Exhibit E, Tab 1, Schedule 1, Page 1

Question:

- (a) Please complete the following table:

Capital Costs Per Customer	
Forecast gas customers (total)	
Total capital costs	
Capital costs per customer	

- (b) Please complete the following table:

Capital and Operating Costs Per Customer	
Forecast gas customers (total)	
Total capital costs and gross O&M costs over 40 years	

Capital and O&M costs per customer	
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(c) Please complete the following table:

Capital and Operating Costs Per Customer (Excl. Costs Covered by the Subsidy)	
Forecast gas customers (total)	
Total capital costs and gross O&M costs minus the subsidy from existing customers	
Capital and O&M costs per customer (excl. subsidy)	

Interrogatory # 3.0-ED-12

Reference: Exhibit E, Tab 1, Schedule 1, Page 1

Questions:

- (a) If there are significant revenue shortfalls or cost overruns in years 1 through 10 that Enbridge is unable to recoup from increasing the system expansion surcharge, does Enbridge undertake not to seek to recoup the amounts from existing Enbridge customers?
- (b) If there are significant revenue shortfalls or cost overruns in years 11 through 40 that Enbridge is unable to recoup from increasing the system expansion surcharge, does Enbridge undertake not to seek to recoup the amounts from existing Enbridge customers?

Interrogatory # 3.0-ED-13

Reference: Exhibit E, Tab 1, Schedule 1, Attachment 2

Preamble:

Questions:

- (a) Please reproduce the DCF table with an illustrative scenario where customer attachments each year are 50% of those forecast. Enbridge does not need to agree this scenario is likely – it is intended to illustrate the cost impacts.
- (b) With respect to the response to (a), please provide (i) the revenue deficiency over the first 10 years (both gross and NPV) and the (ii) the revenue deficiency over the remaining 30 years (both gross and NPV).

Interrogatory # 3.0-ED-14

Reference: Exhibit E, Tab 1, Schedule 1, Attachment 2

Questions:

- (a) Please complete the following table showing the outcomes in various scenarios in terms of the profitability index, NPV, and gross revenue deficiency. Enbridge does not need to agree these scenarios are likely.

Cost Impact of Different Customer Attachment / Revenue Scenarios					
	Profitability index	NPV	Revenue deficiency (years 1-10)	Revenue deficiency (years 11-40)	Revenue deficiency (years 1-40)
Volumes plateau in year 5 and do not increase					
After year 10, 10 customers exit the system each year (net)					
Volumes are 20% less than forecast each year					

Interrogatory # 3.0-ED-15

Reference: Exhibit E, Tab 1, Schedule 1, Attachment 2

Questions:

- What is the average all-in cost to connect a new residential customer to the gas system, including the cost of the meter, regulator, the pipe serving that specific customer, and the installation costs?
- Please provide a table showing, for each year, the forecast customer attachments, the estimated average cost to attach a customer (e.g. the meter, the pipe serving that customer only, labour, etc.), the estimated cost that will be covered by rates, and the estimated cost that will be covered by the customers directly.
- Please reproduce the DCF table with a row showing the customer attachment costs (i.e. the meter, the pipe serving that customer only, labour, etc.) for each year broken out from other costs. If those costs are not included, please reproduce the DCF table including those costs.
- What are the average incremental operational costs for Enbridge per average residential customer (e.g. billing, etc). Please provide a breakdown of these costs.
- Are the costs in (c) included in the DCF table?

Interrogatory # 3.0-ED-16

Reference: Exhibit E, Tab 1, Schedule 1, Attachment 2

Questions:

- Please provide a table showing the full calculations and assumptions used to generate the revenue forecast from the customer attachment forecast. Please include, among other things, the annual customer attachments, annual customer totals, the use per customer, and the revenue generated per customer.

- (b) If the customer attachment forecast underlying the DCF table differs from the one set out in Exhibit B, Tab 1, Schedule 1, Page 6, please explain and provide a reconciliation table.
- (c) Does Enbridge agree that the number of customer attachments could be impacted by the relative cost-effectiveness of converting to gas versus converting to high-efficiency cold climate air source heat pumps? If not, please explain.
- (d) Does Enbridge agree that the number of customer attachments could be impacted by customer perceptions of the relative cost-effectiveness of converting to gas versus converting to high-efficiency cold climate air source heat pumps? If not, please explain.
- (e) Please provide Enbridge's best estimate of the relative cost-effectiveness of an average customer in the project area converting to an air-source cold climate heat pump versus gas. Please generate (i) the lifetime difference in total capital costs and operational costs (NPV) based on customer prices over the equipment lifetime and (ii) the difference in average annual operational costs over the equipment lifetime. Please include all material customer-facing costs and benefits, including energy costs, carbon costs, the Greener Homes Grant incentives for heat pumps, and the gains from more efficient summer cooling of an air source heat pump versus a traditional air conditioner. Please provide all calculations and assumptions. Please make assumptions and state caveats as necessary.

Interrogatory # 3.0-ED-17

Reference: Exhibit E, Tab 1, Schedule 1, Attachment 2

Questions:

- (a) Please confirm that home owners are eligible for up to \$5,000 grants and \$40,000 in interest free loans from the federal government for qualifying cold climate air source heat pump installations.
- (b) Please provide any studies or analysis that Enbridge has completed on the impact of the above-references \$5,000 grant and interest free loans for air source heat pumps on the likely number of customers attaching to the proposed pipeline.
- (c) Please provide any studies or analysis that Enbridge has completed on the impact of current high gas prices on the likely number of customers attaching to the proposed pipeline.

Interrogatory # 3.0-ED-18

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) Please confirm that Canada's 2030 Emissions Reduction Plan includes a plan for carbon emissions associated with buildings to decline by 41% by 2030 from 2019 levels (to 53 CO₂e from 91 CO₂e) and that it plans for a 22% reduction by 2026 from 2019 levels (to 71 CO₂e from 91 CO₂e).¹ If not, please explain.

¹ <https://www.canada.ca/en/environment-climate-change/news/2022/03/2030-emissions-reduction-plan--canadas-next-steps-for-clean-air-and-a-strong-economy.html>

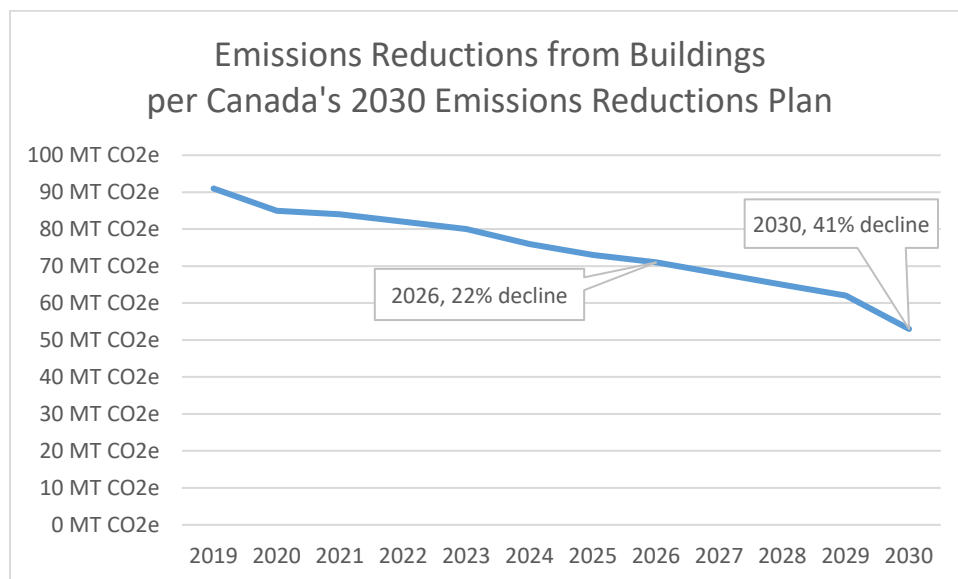
- (b) Please confirm that Canada's 2030 Emissions Reduction Plan has formal legal status under s. 9 of the *Canadian Net-Zero Emissions Accountability Act* in relation to the legally binding targets under that *Act*.² If not, please explain.
- (c) Please confirm that Canada has committed to net-zero emissions from electricity generation by 2035. If not, please explain.

Interrogatory # 3.0-ED-19

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) Please confirm that the following chart accurately depicts the emissions reductions from buildings per Canada's 2030 Emissions Reduction Plan.³ If not, please prepare a chart that Enbridge believes is accurate:



- (b) Does Enbridge agree that Canada's 2030 Emissions Reduction Plan is likely to impact the customer attachment forecast through future policies that cause some customers to choose electric heat pumps over gas? If not, please explain.

Interrogatory # 3.0-ED-20

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

² *Canadian Net-Zero Emissions Accountability Act*, s. 9.

³ For the underlying numbers, see here: *2030 Emissions Reduction Plan – Canada's Next Steps for Clean Air and a Strong Economy* ([link](#)).

- (a) Please provide a list of grants and loans available to customers in the proposed project area to install cold climate air source heat pumps.
- (b) Please confirm whether each of the following statements is true. If not, please explain why:
 - i. The federal government is now providing \$5,000 incentives for customers to switch to high-efficiency electric heat pumps as part of its Greener Homes Grant;⁴
 - ii. The federal government is now providing an *additional* \$5,000 in incentives for customers to switch from oil to high-efficiency electric heat pumps if they earn a median income or lower (e.g. \$122,000 after-tax income for a family of 4 in Ontario) through the Oil to Heat Pump Affordability Program;⁵ and
 - iii. The federal government is now providing up to \$40,000 in interest free loans, which can be put towards conversions to electric heat pumps, and not gas equipment, through the Greener Homes Loan.⁶
- (c) Further to (b)(ii) above, please provide a table showing the median income for Ontario that serves as the eligibility threshold for the Oil to Heat Pump Affordability Program?
- (d) Please provide an estimate of the number and percent of residents in the project area that would be eligible for Oil to Heat Pump Affordability Program. This could be done, for example, based on statistics for the percent households at or below the eligibility threshold in the area or region.
- (e) Please compare the cost of converting from oil to (i) gas versus (ii) an electric cold climate heat pump, accounting for two rebates noted above.

Interrogatory # 3.0-ED-21

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) Please confirm how much additional annual subsidy individuals and families qualified under the Ontario Electricity Support Program can receive if they heat their home with electricity?
- (b) Please provide an estimate of the number and percent of residents in the project area that would be eligible for the Ontario Electricity Support Program. This could be done, for example, based on statistics for the percent of households receiving social assistance.

Interrogatory # 3.0-ED-22

Reference: Exhibit E, Tab 1, Schedule 1

⁴ <https://natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/canada-greener-homes-grant/canada-greener-homes-grant/23441>

⁵ <https://natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/oil-heat-pump-affordability-program-part-the-canada-greener-homes-initiative/24775>.

⁶ <https://natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/canada-greener-homes-loan/24286>

Questions:

- (a) Does Enbridge agree that government policies or market forces related to decarbonization *could* impact the customer attachment or revenue forecasts? If not, please justify the response.
- (b) What are the lifetime volumes of gas (m3) and carbon emissions (CO2e) corresponding to the 40-year customer attachment and revenue forecasts in relation only to emissions from end-use combustion?
- (c) What are the lifetime carbon emissions (CO2e) corresponding to the 40-year customer attachment and revenue forecasts in relation only to upstream emissions (i.e. extraction and transportation)?
- (d) In EB-2020-0066, Exhibit JT1.714, Enbridge estimated 14 gCO2e/MJ related to upstream extraction, processing, transportation and distribution of gas.⁷ Does Enbridge still believe this is the best estimate of upstream emissions? If not, please provide Enbridge's best estimate of upstream emissions.
- (e) What are the lifetime carbon emissions (CO2e) corresponding to the 40-year customer attachment and revenue forecasts in relation only to unburned methane from customer equipment (i.e. extraction and transportation)?⁸
- (f) What is Enbridge's best estimate of the emissions (gCO2e/MJ & tCO2e/m3) arising from unburned methane emissions from customer equipment?
- (g) Please confirm that the methane emissions cited in the following reference are only the methane emissions from *combustion*, not from leaks, and if Enbridge disagrees, please explain with excerpts: Ontario Ministry of the Environment and Climate Change. (2017, November). Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions. Table 20-3 and Table 20-4. https://prod-environmental-registry.s3.amazonaws.com/2018-01/013-1457_d_Guide.pdf.
- (d) What are the emissions from the combustion of gas in Ontario (gCO2e/MJ & tCO2e/m3)?

Interrogatory # 3.0-ED-23

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) Is the price of gas and/or the incentives available for electric heat pumps impacting the customer attachments in community expansion projects? Please explain the answer.
- (b) To help us explore the question in (a), please complete the following tables and prepare a chart for each showing the trendline. For the second table, please divide the annual forecast by 12 to generate a monthly forecast figure.

⁷ See page 398: <http://www.rds.oeb.ca/HPECMWebDrawer/Record/680679/File/document>

⁸ Any of the following sources could be used as an emissions factor: Quantifying Methane Emissions from Natural Gas Water Heaters ([link](#)); Unburned Methane Emissions from Residential Natural Gas Appliances ([link](#)); An Estimate of Natural Gas Methane Emissions from California Homes ([link](#)); Beyond-the-Meter: Unaccounted Sources of Methane Emissions in the Natural Gas; Distribution Sector ([link](#)); Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes ([link](#)).

Customer Attachments in Community Expansion Locations by Month				
	Jan 2020	Feb 2020	...	Dec 2022
Number of customer attachments				

Customer Attachments in Community Expansion Locations by Month Percent of Forecast				
	Jan 2020	Feb 2020	...	Dec 2022
Number of customer attachments as % of forecast				

Interrogatory # 3.0-ED-24

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) What is the annual average consumption (m3) and annual average distribution revenue (\$) per residential customer assumed by Enbridge in this proceeding?
- (b) What is the annual average consumption (m3) and annual average distribution revenue (\$) per residential customer being realized by Enbridge in its other community expansion projects? Please provide all underlying calculations. If possible, please make an adjustment for customers attaching mid-year.

Interrogatory # 3.0-ED-25

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) With respect to the revenue generated in the first 10 years, does Enbridge or do ratepayers bear the risk of average use being lower than forecast?
- (b) With respect to the revenue generated in the final 30 years, does Enbridge or do ratepayers bear the risk of average use being lower than forecast?
- (c) Please describe how regulatory adjustments relating to average use interact with the customers attached through community expansions. Please address both the first 10 years and final 30 years.

Interrogatory # 3.0-ED-26

Reference: Exhibit E, Tab 1, Schedule 1

Questions:

- (a) Please indicate how much revenue would need to be collected from customers over the final 30 years of this project to cover outstanding capital costs and ongoing O&M costs. Please provide all underlying calculations.
- (b) Please confirm whether the following table is accurate, and if not, provide an accurate version:

Required Revenue per Project Discounted Cash Flow Tables⁹ (\$,000)				
	Selwyn	Mohawks of the Bay of Quinte First Nation	Hidden Valley	Total
SES Revenue	\$4,477	\$4,252	\$2,188	\$10,917
Distribution Revenue	\$2,418	\$3,672	\$2,099	\$8,189
Total Revenue	\$6,895	\$7,924	\$4,287	\$19,106
Years 11-40				
SES Revenue	\$2,970	\$3,354	\$1,800	\$8,124
Years 11-40 Distribution Revenue	\$3,349	\$2,953	\$1,710	\$8,012
Years 11-40 Revenue	\$6,319	\$6,307	\$3,510	\$16,136
Percent of revenue in years 11-40	91.6%	79.6%	81.9%	84.5%

(c)

Interrogatory # 5.0-ED-27

Reference: Exhibit I, Tab 1, Schedule 1

Questions:

- (a) Please provide a route map indicating which portions of the pipeline would be on private or public land.

⁹ EB-2022-0156, Exhibit E, Tab 1, Schedule 1, Attachment 2; EB-2022-0248, Exhibit E, Tab 1, Schedule 1, Attachment 2; EB-2022-0249, Exhibit E, Tab 1, Schedule 1, Attachment 2.

- (b) Please provide a map showing the trees that will need to be removed for the pipeline construction.
- (c) Please provide satellite images of each portion of the pipe with an overlay showing where the trench will be dug for the pipeline. Please provide this as a high-resolution image so that a viewer can zoom in to see the impact on properties and vegetation along each portion of the pipeline route.

Interrogatory # 7.0-ED-28

Reference: Exhibit I, Tab 1, Schedule 1

Questions:

- (a) Would Enbridge agree to the following condition of approval? If not, please explain why not and provide alternative wording for a commitment that Enbridge would make.

“The Applicant shall provide potential customers with a comparison of the average annual energy costs and lifetime all-in costs of converting to gas versus converting to a cold climate air source heat pump.”

- (b) Please provide a copy of:
 - (i) All promotional or informational materials sent to customers in community expansion areas that have connected to the gas system in the past three years, including materials sent by mail, email, or social media;
 - (ii) A copy of all newspaper and online advertisements relating to switching to gas in the past three years; and
 - (iii) A copy of all Enbridge website pages relating to switching to gas.
- (c) For the items in (b) that are undated, please indicate the date range during which they were sent to customers or published.
- (d) Please provide a copy of all Enbridge communication plans or communication strategy documents relating to community expansions or switching to gas more generally.