EB-2024-0111
Enbridge Gas Rebasing – Phase II

Interrogatories of Environmental Defence

Interrogatory # 1-ED-1

Reference: Exhibit 1, Tab 7, Schedule 1, Attachment 1

Preamble: These questions are also relevant to Exhibit 10 (IRM)

Question(s):

(a) Please comment on adding a new scorecard metric or replacing #14 (cumulative m3 of gas saved) with "annual reduction in gas throughput."
(b) Why are the values "NA" for item 14 for 2022 and 2023?
(c) At what point in the following year would Enbridge be aware of the previous year's total throughput?
(d) Approximately how long does it take from December 31 in a year for that year's audited DSM results to be available?
(e) If the OEB expressed an interest in a scorecard measure regarding implementation of non-pipe alternatives, what would Enbridge suggest? Please also comment on "avoided capital costs via non-pipe alternatives" as a potential metric.
(f) If the OEB expressed an interest in a scorecard measure regarding implementation of cost-effective life extension through repairs, what would Enbridge suggest? Please also comment on "avoided capital costs via life-extension and repairs" as a potential metric.
(g) If the OEB expressed an interest in a scorecard measure regarding rate base liability, what would Enbridge suggest? Please also comment on "annual decline in rate base" as a potential metric.
(h) If the OEB expressed an interest in a scorecard measure regarding system pruning, what would Enbridge suggest? Please also comment on "avoided capital costs via system pruning" as a potential metric.
(i) If the OEB were to direct Enbridge to use a performance incentive mechanism (PIM) scorecard with actual financial incentives or disincentives attached to it, which items from its existing scorecard would be appropriate to include on that PIM scorecard? What additional metrics would Enbridge propose?

Interrogatory # 1-ED-2

Reference: Exhibit 1, Tab 10, Schedule 7,

Preamble:

Question(s):

(a) Enbridge describes the ETTF as being "in the amount of $5 million each year". Please confirm whether Enbridge is actually proposing an overall 5-year funding envelope or an annual envelope. Please also confirm the total envelope amount.
(b) Please provide a forecast breakdown of the proposed spending by capital and O&M. As decisions have likely not been made, please provide the best estimate that is available at this time and for as far into the future as possible.
(c) Is the envelope a revenue requirement envelope or a spending envelope? Please explain.
(d) Will all ETTF spending be expensed?
(e) If ETTF funding is spent on capital, how would that be treated from a regulatory perspective at the next rebasing? Would it be added to rate base?
(f) Please provide an illustrative example of an ETTF capital project costing $4 million in 2026, including the amount that would be drawn down from the envelope and whether and how much of the capital would be added to rate base.

Interrogatory # 1-ED-3

Reference: Exhibit 1, Tab 10, Schedule 7, p. 2

Preamble:

Question(s):

(a) For the sake of clarifying the scope of the ETTF funding, which excludes projects that could be funded under the Research and Innovation Fund (RIF), please provide a description of the eligibility criteria for the RIF, including excerpts from the actual constituent documents (e.g. board orders, Enbridge proposals, etc.) that define said criteria.
(b) Please provide a table showing the total Research and Innovation Fund (RIF) budgets and actual spending, as applicable, from 2015 to 2025, including the predecessors to the RIF.
(c) Please provide table for each year from 2015 to 2024 with a breakdown of the research and innovation spending by Enbridge including the amount and a description for each item.
(d) Please provide the research and innovation fund spending plans for 2024 and 2025 in as much detail as possible. If business cases or internal project plans exist, please provide those.

Interrogatory # 1-ED-4

Reference: Exhibit 1, Tab 10, Schedule 7, p. 5

Preamble: Enbridge states: "The ETTF portfolio will focus on several areas of technology innovation, consistent with the safe bet actions identified in the Energy Transition Plan in EB-2022-0200 Exhibit 1, Tab 10, Schedule 6."

Question(s):

(a) Please provide a table listing each of the "safe bets" and examples of potential ETTF programs/projects for each.

Interrogatory # 1-ED-5

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) Would Enbridge consider spending ETTF funds on network geothermal or district energy pilots? Please explain the response.
(b) Approximately how much would Enbridge consider spending in this area?

Interrogatory # 1-ED-6

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) Please comment on using ETTF funding to support super cold climate heat pump technology that achieves even higher efficiencies at low temperatures.
(b) Please comment on using ETTF funding to support the development of heat pumps for higher heat industrial processes.

Interrogatory # 1-ED-7

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) Please provide detailed criteria on the kinds of projects that Enbridge proposes to fund with the ETTF.
(b) Are there legal or regulatory restrictions that would prevent Enbridge from funding certain projects (e.g. end-user equipment, CCS, hydrogen, etc.). Please list and explain any such potential restrictions.

Interrogatory # 1-ED-8

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) Would Enbridge consider spending ETTF funds on projects or programs related to use of 100% hydrogen for industrial high heat applications?

(b) Please provide as many examples as possible of projects in this potential topic area, including the potential range of costs for these projects.

Interrogatory # 1-ED-9

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) Would Enbridge consider spending ETTF funds on projects or programs aimed at helping to achieve lower costs and economies of scale in producing green hydrogen?
(b) Please provide as many examples as possible of projects in this potential topic area, including the potential range of costs for these projects.

Interrogatory # 1-ED-10

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) What other potential projects and programs has Enbridge considered other than those listed in sections 2.1 to 2.3? Please provide a list and a description of each, including projects and programs that Enbridge may or may not pursue.

Interrogatory # 1-ED-11

Reference: Reference: Exhibit 1, Tab 10, Schedule 7

Preamble: Enbridge states:

> "ETTF can be used to support further development of alternative technologies such as gasification to enable access to a variety of feedstocks (e.g., agriculture waste, forestry residues, municipal solid waste), thus increasing supply, and over time, lowering cost."

Question(s):

(a) What alternative RNG technologies is Enbridge considering other than gasification?
(b) How much has Enbridge's parent and sister companies invested in R&D relating to gasification over the past five years and what do the intend to invest in that area over the next five years? Please include other related utilities that have funds similar to the ETTF.
(c) To help us gauge the ability of the proposed ETTF funds to impact development of gasification technologies, please provide an estimate of the R&D funds being used for gasification technological development in (i) Canada, (ii) North America, and (iii) globally.
(d) Please provide some ranges of cost for RNG generated from gasification ($/m3).

(e) Approximately how much energy is consumed for each cubic meter of gas created through gasification (kW/m3)? If the answer depends on a number of factors, please explain and provide a range.

Interrogatory # 1-ED-12

Reference: Exhibit 1, Tab 10, Schedule 7

Preamble: Enbridge states: "Hydrogen production technologies such as methane pyrolysis offer a unique opportunity to produce hydrogen by using natural gas as a low-cost feedstock and leveraging existing natural gas distribution infrastructure. The ETTF will support the further development of various low-carbon hydrogen production technologies for both central production and distributed on-site production."

Question(s):

(a) What alternative low-carbon hydrogen production technologies is Enbridge considering other than methane pyrolysis?
(b) Is Enbridge considering investments in SMR and/or ATR? Please briefly describe what SMR and ATR are.
(c) How much has Enbridge's parent and sister companies invested in R&D relating to methane pyrolysis over the past five years and what do the intend to invest in that area over the next five years? Please include other related utilities that have funds similar to the ETTF.
(d) To help us gauge the ability of the proposed ETTF funds to impact development of methane pyrolysis technologies and the need for ETTF funding, please provide an estimate of the R&D funds being used for methane pyrolysis technological development in (i) Canada, (ii) North America, and (iii) globally.
(e) Please provide some ranges of cost hydrogen generated from methane pyrolysis ($/kW).
(f) Please express the current cost of methane gas in $/kW and provide the conversion factor between $/m3 and $/kW for methane gas.
(g) Approximately how much energy is consumed for each kW of hydrogen created through methane pyrolysis? If the answer depends on a number of factors, please explain and provide a range.

Interrogatory # 1-ED-13

Reference: Exhibit 1, Tab 10, Schedule 7

Preamble: Enbridge states: "The ETTF will support innovation initiatives to develop end-use equipment working with a low-carbon fuel mix. In addition, ETTF will include end-use technologies integrated with renewable power generation, and end-use energy efficiency technologies not covered by DSM funding."

Question(s):

(c) When Enbridge refers to "end-use equipment working with a low-carbon fuel mix", does this include anything other than equipment that would be able to use blended or full hydrogen? If yes, please provide some examples.
(d) Will Enbridge potentially invest in hydrogen end-use technologies for residential customers?
(e) Will Enbridge's investments in hydrogen end-use technologies be limited to industrial uses that are hard to decarbonize?
(f) Please elaborate on the reference to "end-use technologies integrated with renewable power generation" and provide as many examples as Enbridge is aware of.
(g) Please elaborate on "end-use energy efficiency technologies not covered by DSM funding" and provide as many examples as Enbridge is aware of.

Interrogatory # 1-ED-14

Reference: Exhibit 1, Tab 10, Schedule 7

Preamble: Enbridge states: "Enbridge Gas intends to use ETTF to research, test and pilot promising CCUS technologies for commercial and industrial applications. There are numerous areas within the CCUS supply chain where research and development activities will advance its adoption."

Question(s):

(a) Please list and describe all of the CCUS programs or projects that could receive ETTF funding in this area.
(b) How much has Enbridge's parent and sister companies invested in R&D relating to CCUS over the past five years and what do the intend to invest in that area over the next five years? Please include other related utilities that have funds similar to the ETTF.
(c) To help us gauge the ability of the proposed ETTF funds to impact development of CCUS technologies and the need for ETTF funding, please provide an estimate of the CCUS funds being used for methane pyrolysis technological development in (i) Canada, (ii) North America, and (iii) globally.
(d) How much CCUS R&D funding and tax relief is available in Canada currently?

Interrogatory # 1-ED-15

Reference: Exhibit 1, Tab 10, Schedule 7

Question(s):

(a) Because 2025 is not far away, Enbridge is likely already considering what ETTF projects to fund in that year. Please provide a list and description of the potential ETTF projects that are currently under consideration. Please confirm if any of them have been approved contingent on funding approval.

Interrogatory # 1-ED-16

Reference: Exhibit 1, Tab 16, Schedule 1

Question(s):

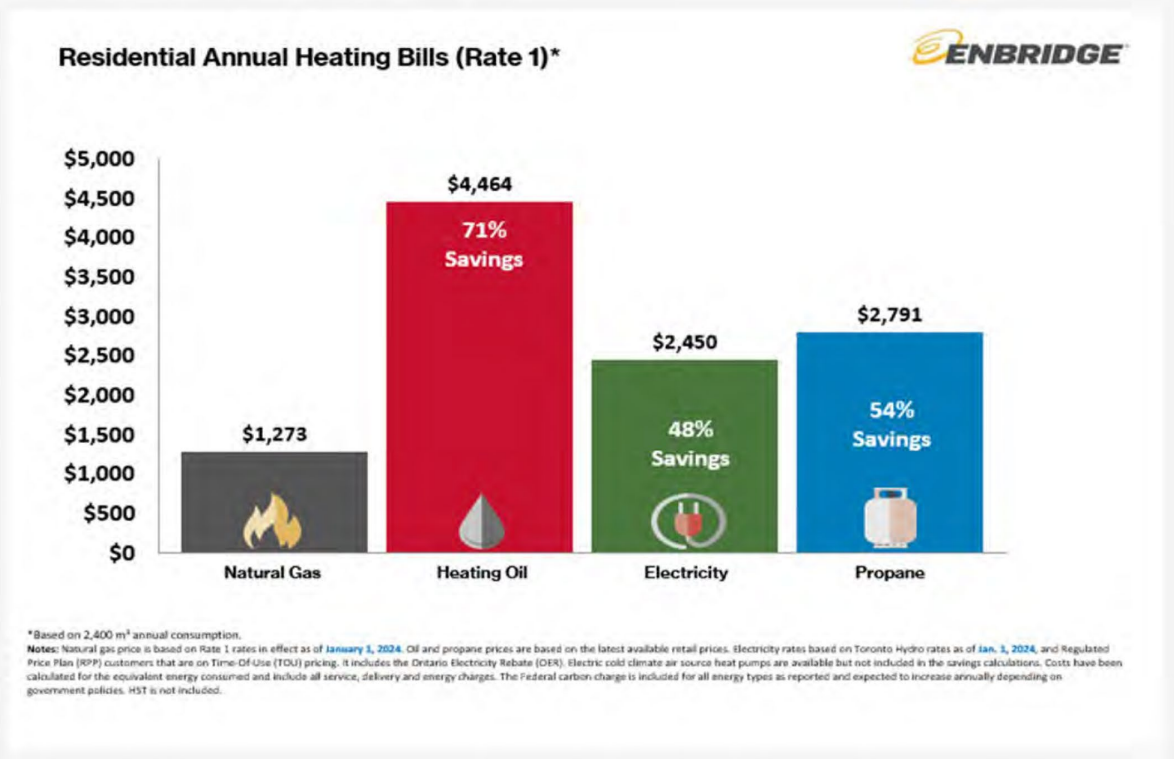
(a) Please provide a copy of all advertisements that Enbridge has placed in newspapers since 2019 in Ontario.
(b) Please provide a copy of all bill inserts sent to customers that speak to the cost-effectiveness of gas heating since 2019 in Ontario.

Interrogatory # 1-ED-17

Reference: Exhibit 1, Tab 16, Schedule 1, p. 2

Preamble:

Figure 1: Residential Annual Heating Bill (Rate 1) – January 2024



Question(s):

(a) Please explain why the figure on page 2 uses the term “electricity” whereas the figure in Attachment 2 uses the term “electric resistance.”
(b) Please list the different uses and audiences for the figure on page 2 versus the one on in Attachment 2.

(c) Does Enbridge have any estimate on the percent of customers who understand what "electric resistance" means?
(d) Does Enbridge believe more customers would understand the term "electric furnace/baseboard heaters" than those that understand the term "electric resistance"?
(e) Please provide a live copy of the excel spreadsheets underlying the figures on page 2 and in Attachment 2.

Interrogatory # 1-ED-18

Reference: Exhibit 1, Tab 16, Schedule 1, p. 1-2

Preamble: Enbridge states:

> "Enbridge Gas prepares energy comparison information on a quarterly basis to create printout and digital marketing materials to inform potential conversion customers and other third-party stakeholders with respect to potential new conversion attachments (e.g., renovators). It is also used to support stakeholder briefings (e.g., OEB, government, HVAC industry)."

Question(s):

(a) Please provide the ten most recent examples of the communications provided to each of the audiences listed in the preamble above to help us understand the context and explore whether those communications contained other cost-comparison information.

Interrogatory # 1-ED-19

Reference: Exhibit 1, Tab 16, Schedule 1, p. 8-9

Question(s):

(a) Please provide a table comparison the factors accounted for in the cost comparison described in this evidence and the cost comparison under stage 2 of Enbridge's standard EBO 134 analysis. Where there are differences, please add a third column to explain those.

Interrogatory # 1-ED-20

Reference: Exhibit 1, Tab 16, Schedule 1, p. 4-5

Question(s):

(a) Please provide Enbridge's best information on the cost to convert a house to gas from oil, electric furnace, electric baseboards, and propane. In addition to other sources of this information internal to Enbridge, please provide the figures used in gas expansion connection cost surveys.

(b) Please provide a copy of the survey responses.

Interrogatory # 1-ED-21

Reference: Exhibit 1, Tab 16, Schedule 1, p. 20

Preamble: Enbridge states:

> "As part of the review, Enbridge Gas conducted an internal survey requesting employees who use the energy comparison information to provide feedback regarding how they use the information. The results indicated that the energy comparison information is being used by employees for both internal and external purposes as discussed previously in paragraph 3 of this evidence. Additionally, in some instances, the information is provided to builders."

Question(s):

(a) Please provide a copy of the survey instrument.
(b) Please provide a copy of the survey responses.
(c) To provide a better indication of the information provided to builders, please provide a copy of all materials provided to builders with this information in 2022.
(d) Approximately how many builders received the cost comparison information? Approximately what percent of the larger buildings would have received this information?

Interrogatory # 1-ED-22

Reference: Exhibit 1, Tab 16, Schedule 1, p. 19

Preamble: Enbridge states:

> "Enbridge Gas reviewed its energy comparison materials throughout 2023. The reviews resulted in updates to the information presented, as described below:"

Question(s):

(a) Were the 2023 changes motivated in part by the Competition Act inquiry that Enbridge is facing?
(b) When did the 2023 review start and end?
(c) When in 2023 did Enbridge implement the changes described on pages 19 and 20.
(d) Between 2019 and the changes in 2023, approximately how many Ontario residents would have received the previous version of the cost-comparison information?
(e) Please list the different uses and audiences for the figure on page 2 versus the one on in Attachment 2.

Interrogatory # 1-ED-23

Reference: Exhibit 1, Tab 16, Schedule 1, Attachment 1

Question(s):

(a) Please provide a list of the communities where residents were provided with a version of the attachment package before the changes were made shown in Attachment 1.
(b) Approximately how many people would have been provided with the cost comparison information before the changes shown in Attachment 1, including via community meetings, newspaper ads, online, and via delivered documents.

Interrogatory # 1-ED-24

Reference: Exhibit 1, Tab 16, Schedule 1

Question(s):

(a) Do any of the Enbridge customer surveys explore customer beliefs about the cost-effectiveness of gas versus other energy options? If yes, please provide a copy of the survey and the responses thereto.
(b) Does Enbridge agree that it should provide information to its customers to ensure that they were not misled by marketing materials they received before the changes were implemented in 2023 and 2024.
(c) Does Enbridge believe the OEB has the jurisdiction to order Enbridge to provide customers with information comparing the cost of heating with electric heat pumps versus gas?

Interrogatory # 1-ED-25

Reference: Exhibit 1, Tab 17, Schedule 1, Page 7

Preamble: Enbridge states:

> "As part of the new more in-depth approach to assessing integrity related alternatives to replacement, Enbridge Gas will incorporate energy transition sensitivity analysis, which will examine how long the pipeline is expected to be needed under different energy transition scenarios, and additional statistical modelling of residual risk for repair alternatives."

Question(s):

(a) How will Enbridge incorporate its energy transition scenario analysis into its assessment of the relative cost-effectiveness of repairing vs. replacing? Will the cost-effectiveness be assessed based on a weighting of outcomes in different scenarios, or based on one scenario with the others provided for illustrative purposes?

(b) Will Enbridge assess the approximate relative likelihood of the various energy transition scenarios? If not, how will Enbridge avoid giving excessive weight to the base case? And how would Enbridge rationally consider the impacts of the different scenarios on relative cost-effectiveness without considering their likelihood?
(c) Will Enbridge include a scenario where all or almost all building customers leave the gas system due to electrification?
(d) How broad of a set of scenarios will Enbridge use?
(e) Please provide any preliminary memos or other documents on the details of the scenarios that will be used.

Interrogatory # 1-ED-26

Reference: Exhibit 1, Tab 17, Schedule 1, Page 12

Question(s):

(a) Enbridge states: "Consistent with the Phase 1 Settlement Agreement, Enbridge Gas intends to record O&M costs related to ALE analysis (including the incremental support costs described above) **and alternatives** in the DIMP Variance Account." What does "and alternatives" mean in that sentence?
(b) Does Enbridge propose to be able to able to apply for ICM funding for projects that are currently planned for execution over 2024-2028 in the AMP?
(c) Does Enbridge propose to be able to able to apply for ICM funding for ALE alternatives to projects that are currently planned for execution over 2024-2028 in the AMP?
(d) When will the next update of the AMP be available? If a more recent version is available in comparison to the one on the record in this proceeding, please file it.
(e) Please provide a list of all capital projects currently planned for 2024-2028, including the cost of each.

Interrogatory # 1-ED-27

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) When does Enbridge propose to comprehensively assess relevant projects for system pruning alternatives?
(b) Does Enbridge propose to wait until its system pruning pilot is complete before comprehensively assessing relevant projects for system pruning alternatives?
(c) Please provide a time estimate for the following stages of a system pruning pilot: (i) pilot development complete, (ii) physical pilot execution begins, (iii) physical pilot execution ends, and (iv) pilot reporting complete, including analysis of lessons learned.

Interrogatory # 1-ED-28

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) Please provide details on the system pruning approach and proposals taken by PG&E, including the criteria that it applies in screening projects, selecting projects, and deciding whether to pursue system pruning. Please provide links to the relevant PG&E documents.
(b) What lessons can be learned from this for next steps in the Ontario context?

Interrogatory # 1-ED-29

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) Please provide details on the system pruning approach and proposals taken by ConEdison (ConEd), including the criteria that it applies in screening projects, selecting projects, and deciding whether to pursue system pruning. Please provide links to the relevant ConEd documents.
(b) What lessons can be learned from this for next steps in the Ontario context?

Interrogatory # 1-ED-30

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) The Phase I decision states: "Phase 2 will provide an opportunity to examine ways in which Enbridge Gas could be provided with an incentive to implement economic alternatives to gas infrastructure replacement projects, including asset life extensions and system pruning, including replacing gas equipment with electric equipment." Please provide a list of options for the OEB's consideration in this regard, including the option that Enbridge recommends.

Interrogatory # 1-ED-31

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) Please comment on the following scenario. If Enbridge were to be able to save a significant sum for ratepayers by decommissioning a pipe serving 20 customers and paying those customers to electrify, and one of those customers did not wish to electrify, what options would be available to Enbridge in that scenario to ensure that it could achieve the savings for ratepayers from system pruning? Please comment on all regulatory and legal constraints and options.

(b) In the above scenario, Enbridge would be pruning its system such that the relevant buildings would no longer by along the line of Enbridge's distribution pipelines. Does Enbridge agree that the obligations in s. 42(2) of the *OEB Act* would no longer apply?

Interrogatory # 1-ED-32

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) One option for system pruning would be to encourage developers to install electric heat pumps or district energy instead of gas connections. Please comment on this option.
(b) If this option were to be pursued, would Enbridge propose to implement and own the alternatives itself, or work with third parties to do so?
(c) Would Enbridge be willing to maintain a list of third parties that provide gas alternatives in residential developments, such as district energy, and provide that list to any developers making inquiries with Enbridge regarding a gas connection?
(d) Please discuss options to facilitate the implementation of non-gas alternatives for new residential developments, including options that rely on third-party contractors.

Interrogatory # 1-ED-33

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) Please discuss an option whereby Enbridge maintains information on its website detailing all forecast demand-driven infrastructure projects with an open invitation for third parties to submit proposals to avoid the infrastructure need with more cost-effective non-pipe alternatives. Please discuss potential elements such as: thresholds, reliability criteria for third parties, timing considerations, required information to post online, etc.

Interrogatory # 1-ED-34

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Question(s):

(a) Has Enbridge brought its proposed next steps regarding system pruning to the IRP TWG? If yes, what comments did Enbridge receive? If not, please seek that feedback now.
(b) Please provide the agenda and meeting notes from the last 5 IRP TWG meetings.
(c) Would Enbridge expand or adjust the IRP TWG if the system pruning issue is added to its mandate?

Interrogatory # 1-ED-35

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Preamble: These questions relate to the appropriateness of Enbridge's IRP processes to address system pruning.

Question(s):

(a) Please discuss whether Enbridge's current IRP process is sufficiently robust and successful to incorporate system pruning.
(b) Please provide the latest version of Enbridge's BCA for the IRP projects.
(c) Please provide a list of all IRP projects completed to date and a description of each, including the cost of the pipe and non-pipe solutions and the BCA calculations.
(d) Please provide a list of all IRP projects currently being implemented and a description of each, including the cost of the pipe and non-pipe solutions and the BCA calculations.

Interrogatory # 1-ED-36

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Preamble: These questions relate to the ability of Enbridge's IRP team to take on additional work and analysis relating to system pruning.

Question(s):

(a) How many Enbridge staff are on the team to assess IRP alternatives? Please provide a breakdown with titles. Please provide the same information before and after the recent dismissals at Enbridge.
(b) Please provide details on the number of Enridge staff recently dismissed. Of those, how many would have been involved in IRP? Please provide a breakdown of the dismissals by title for those that would have been involved in IRP.

Interrogatory # 1-ED-37

Reference: Exhibit 1, Tab 17, Schedule 1, Page 17-27

Preamble: Enbridge states that it is "proposing to engage the IRP TWG and other relevant stakeholders in a collaborative process to determine if there is a technically and economically feasible system pruning IRP pilot to pursue and, if so, develop, together with the electric sector, a system pruning pilot."

Question(s):

(a) What stakeholders will Enbridge be engaging?
(b) Please describe this process in more detail.

Interrogatory # 4-ED-38

Reference: Exhibit 4, Tab 2, Schedule 7

Question(s):

(a) Please provide Enbridge's best estimate of the feasible RNG potential in Ontario (m3) and a breakdown by the types and sources. Please justify this with references.

Interrogatory # 4-ED-39

Reference: Exhibit 4, Tab 2, Schedule 7

Question(s):

(a) Please provide estimates of the lifecycle carbon impacts (co2e/m3) of different types of RNG. If the estimates range, please provide sources with estimates from NRCan if possible.

Interrogatory # 4-ED-40

Reference: Exhibit 4, Tab 2, Schedule 7

Question(s):

(a) Please provide an estimate of the cost of RNG that Enbridge will purchase.
(b) What is the market price of RNG in Ontario now?
(c) What is the market price of RNG expected to be in Ontario in 2029 and 2035?

Interrogatory # 4-ED-41

Reference: Exhibit 4, Tab 2, Schedule 7

Preamble: These questions explore the appropriateness of using biogas and RNG for system-wide uses versus power generation.

Question(s):

(a) Please list and discuss all the pros and cons as between burning biogas directly in power generation facilities without upgrading it to RNG versus upgrading the biogas to RNG for use in the gas distribution system.
(b) Please describe the difference between biogas and RNG.
(c) Please estimate the energy inputs required to create RNG from biogas (kWh/m3 of RNG). If it differs based on the source, please provide additional details.
(d) Please provide the energetic value (kWh) of 1 m3 of RNG.
(e) What is the approximate efficiency of a combined-cycle gas plant?

(f) Please provide a map showing the distribution of RNG potential across the province (i.e. the size of various sources, such as landfills, wastewater treatment facilities, etc.).
(g) Please provide a map showing the geographic features in Ontario that may be suitable for carbon capture and storage. Please add to that map the nearby gas plants and large volume gas customers. Please provide the approximate volume of gas consumed by those customers. This will help to assess the possibility of RNG being used to achieve negative emissions through CCS.

Interrogatory # 4-ED-42

Reference: Exhibit 4, Tab 2, Schedule 7, p. 3

Preamble: Enbridge states:

> "Enbridge Gas proposes a maximum impact on the average residential customer of $2 per month per target percentage of RNG as forecast at the time of procurement, to a maximum of $8 per target percentage of RNG procurement in 2029 from the low-carbon energy program."

Question(s):

(a) Is there a typo in the above quote? If not, please explain.
(b) If the maximums are met, what is the annual forecast cost expected to be? Please make and state assumptions as necessary.
(c) Will Enbridge be procuring RNG for non-residential customers? If yes, how will the budgets and amounts be determined for those customers?
(d) Please provide table showing the total RNG volumes and cost per customer class in each year between now and 2029 if the maximum RNG purchases are achieved. Please make and state assumptions as necessary (e.g. cost of RNG).

Interrogatory # 4-ED-43

Reference: Exhibit 4, Tab 2, Schedule 7, p. 6

Question(s):

(a) Enbridge states: "As demand increases on long-term contracts, access to economic RNG supply will become increasingly challenging." Please quantify this statement as best as possible. For example, approximately what does Enbridge expect the market price to be in 2026, 2035, and 2040?

Interrogatory # 1-ED-44

Reference: Exhibit 4, Tab 2, Schedule 7

Question(s):

(a) Please describe how Enbridge proposes to decide between RNG projects and producers. Will Enbridge consider the GHG emissions associated with the RNG?
(b) The OEB and/or a settlement agreement may require that Enbridge procure RNG based on the cost per tonne of avoided CO2e in order to account for the fact that different RNG sources have very different GHG impacts. If that were to occur, please describe the decision-making test that Enbridge would apply. Please comment on the pros and cons of this approach.
(c) If Enbridge will account for the GHG emissions associated with different RNG sources, how would Enbridge estimate those emissions?
(d) Would Enbridge ensure that any such calculations rigorously account for counterfactuals (e.g. whether the methane would otherwise be flared versus released to the atmosphere due to landfill regulations)?
(e) For RNG purchased for non-contract customers, please explain how the environmental attributes of the RNG would be accounted for. Would Enbridge retain those attributes for the benefit of customers? Would Enbridge commit not to sell those attributes?

Interrogatory # 4-ED-45

Reference: Exhibit 4, Tab 2, Schedule 7, p. 9

Preamble: Enbridge states: "An amendment to the GGPPA was published on April 12, 2023, recognizing hydrogen as an FCC exempt fuel.7 Given this recognition, Enbridge Gas will consider hydrogen procurement in this program when further certainty on the inclusion of hydrogen in the distribution system is available. This will follow the completion of the system-wide Hydrogen Blending Grid Study,8 discussed at length in Phase 1 of this proceeding."

Question(s):

(a) Is Enbridge seeking approval to include hydrogen in its proposed low carbon energy purchases for contract or non-contract customers?
(b) Would further orders be required subsequent to this proceeding for Enbridge to include hydrogen in its proposed low carbon energy purchases for contract or non-contract customers?

Interrogatory # 4-ED-46

Reference: Exhibit 4, Tab 2, Schedule 7, 12

Question(s):

(a) Please discuss the benefits of being able to use long-term contracts to aid in the development of a new RNG project (vs. procuring from existing sources/facilities).
(b) Does Enbridge agree that it is in a unique position to provide very long-term purchase contracts to aid in the development of new RNG sources?

(c) Please provide a high-level estimate of the percent of RNG that Enbridge would procure that would come from the development of new RNG projects versus existing RNG projects.
(d) If Enbridge were to restrict itself to only procuring RNG via long-term contracts that underpin the development of new RNG projects, approximately how much RNG could it procure?
(e) Please provide the average price for RNG procured through the Voluntary Renewable Natural Gas program in each year that it has operated. Had that program allowed for long-term contracts that could underpin new RNG project development, does Enbridge believe the cost would have been lower.
(f) What is the maximum contract length that Enbridge would consider entering into if this program is approved?
(g) How would Enbridge balance the trade-off between the length of a contract and the price?

Interrogatory # 4-ED-47

Reference: Exhibit 4, Tab 2, Schedule 7

Question(s):

(a) Would Enbridge agree to refrain from referring to its RNG in its marketing materials without including text in equally large font describing the percent reduction in GHG emissions resulting from those purchases?
(b) Environmental Defence is concerned that customers may be given a false impression about the benefits of RNG if the detail noted above is not communicated. If Enbridge is not willing to agree to that condition, what criteria is Enbridge willing to apply to its communication to avoid false impressions and greenwashing?

Interrogatory # 4-ED-48

Reference: Exhibit 4, Tab 2, Schedule 7, p. 15

Preamble: Enbridge states: "Enbridge Gas's proposal to procure low-carbon energy as part of the gas supply commodity portfolio is a cost-effective means to reduce emissions."

Question(s):

(a) Please provide an estimate of the cost of reducing emissions through the proposed RNG purchases ($/CO2e). Please provide an incremental value based on the differential between the cost of RNG and fossil methane gas. Please include the underlying figures and calculations.
(b) Please provide an estimate of the cost of reducing emissions through the proposed RNG purchases ($/CO2e). Please provide an incremental value based on the differential between the cost of RNG and fossil methane gas. Please base the number on an RNG cost wherein 1% RNG penetration is achieved for $2/month/residential customer and fossil

methane gas costs remaining static. Please include the underlying figures and calculations.

(c) Please estimate the cost of reducing emissions through Enbridge's current DSM programs ($/CO2e). Please include a table with a breakdown for the different program categories (residential, commercial, etc.). Please base the answer on the plan or the actual results as Enbridge deems appropriate. Please include the underlying figures and calculations.

Interrogatory # 4-ED-49

Reference: Exhibit 4, Tab 2, Schedule 7, p. 26

Preamble: Enbridge states:

> "As filed in its Gas Supply and Renewable Natural Gas Report July 1, 2022, Vermont Gas is entering into long-term RNG supply deals with producers across North America.34 These producers include The Dubuque Water and Resource Recovery Center in Dubuque, Iowa, BP on behalf of London RNG, Vanguard Renewables and Archaea Energy Marketing LLC. This approach to procurement further supports the fact that RNG can be sourced from across North America and is not limited to the jurisdiction in which a utility operates."

Question(s):

(a) Vermont gas is required to purchase transportation to Vermont along with RNG purchases. Please provide the rationale for this.
(b) If Enbridge purchases RNG from outside of Ontario, would it also purchase the transportation to bring the gas to Ontario?
(c) Alternatively, would it incorporate transportation costs into its decision-making as between RNG projects to support with long-term contracts even if it did not actually purchase those transportation amounts.
(d) If Enbridge purchases RNG from outside of Ontario, how would ensure that any double counting is avoided? What auditing and verification would it undertake.
(e) Please discuss the benefits of helping to develop RNG projects in Ontario.

Interrogatory # 4-ED-50

Reference: Exhibit 4, Tab 2, Schedule 7, 27

Question(s):

(a) Please provide the Platts Gas Daily spot price for RNG over the past year, expressed as $/m3 CAD.

Interrogatory # 4-ED-51

Reference: Exhibit 4, Tab 2, Schedule 7, Attachment 1

Question(s):

(a) Please provide a list of all individuals and all organizations that Enbridge contacted to determine whether they support Enbridge procuring low-carbon energy.
(b) Please provide a copy of all communications to customers seeking support for low-carbon energy procurement.

Interrogatory # 4-ED-52

Reference: Exhibit 4, Tab 2, Schedule 7, Attachment 2

Preamble: These questions are for anew.

Question(s):

(a) Which programs required physical delivery (see p. 18 for context)?
(b) Which programs address the carbon intensity of different sources of RNG (see p. 18 for context)?
(c) Please comment on the benefits of valuing different types of RNG based on the relative carbon intensity (see p. 22 for context)?
(d) Please provide Anew's best estimates for the carbon intensity of different types/sources of RNG? Please provide the three best sources for determining that carbon intensity. See p. 22 for context.
(e) If the OEB were to require the carbon intensity of RNG to be calculated by RNG (e.g. in order to prioritize RNG with a lower CI), which tool would Anew recommend be used? See pp. 25-26 for details.
(f) Please provide the feasible RNG potential for Ontario and Canada from the Torchlight Bioresources report, expressed as a percent of current throughput. If the feasible potential for Ontario is not specifically set out in the report, please provide an estimate of that feasible potential based on other figures set our in that report while maintaining Torchlight Bioresources' assumptions on what is feasible. Please explain the response. See p. 31 for context.

Interrogatory # 4-ED-53

Reference: Exhibit 4, Tab 2, Schedule 7, Attachment 2

Preamble: These questions are for anew.

Question(s):

(a) Please list and discuss all the pros and cons as between burning biogas directly in power generation facilities without upgrading it to RNG versus upgrading the biogas to RNG for use in the gas distribution system.
(b) Please describe the difference between biogas and RNG.
(c) Please estimate the energy inputs required to create RNG from biogas (kWh/m3 of RNG). If it differs based on the source, please provide additional details.
(d) Please provide the energetic value (kWh) of 1 m3 of RNG.
(e) What is the approximate efficiency of a combined-cycle gas plant?
(f) Can biogas be combusted directly for power generation? Please discuss the pros and cons of doing. Please quantify the relative efficiency of combusting biogas from landfills to generate electricity versus upgrading it to RNG before combusting it to generate electricity.
(g) Please provide a breakdown of the price of RNG versus biogas for different RNG sources.
(h) For each RNG source, please provide an approximate percentage of the cost that is attributable to upgrading biogas to RNG and for transportation..

Interrogatory # 4-ED-54

Reference: Exhibit 4, Tab 2, Schedule 7, Attachment 2, p. 33

Preamble: These questions are for anew.

Question(s):

(a) Please provide a copy of the RNG Coalition Potential Project Inventory report referred to on page 33.
(b) Is this a rigorous feasible RNG potential study?
(c) Does this study provide an estimate of the RNG potential in Ontario?
(d) Anew says: “The entire inventory of RNG projects if developed as above could decarbonize nearly half (48%) of current North American grid gas consumption if negative CI’s are considered or just 18% if RNG is only seen as carbon neutral.” Is this meant to be provided as an estimate of feasible RNG potential?
(e) Please provide a legible copy of Figure 5.1.2.

Interrogatory # 4-ED-55

Reference: Exhibit 4, Tab 2, Schedule 7, Attachment 2, p. 35

Preamble: These questions are for anew.

Question(s):

(a) Please comment on the merits of purchasing RNG based on the cost per tonne of avoided emissions ($/tonne CO2e) versus the cost by volume ($/m3).

(b) If RNG were to be purchased based on tonne of avoided emissions, what values should Enbridge use ($/tonne CO2e) for the different sources of RNG?

Interrogatory # 4-ED-56

Reference: Exhibit 4, Tab 5, Schedule 2

Question(s):

(a) Please reproduce the analysis described in paragraph 11 with the assumption that retirements escalate after 2030 with all assets serving only buildings (i.e. excl. industrial customers) being retired by 2050. A rough estimate of the percentage of assets that serve only buildings is sufficient.
(b) Please reproduce the analysis described in paragraph 11 with a revised assumption about the rate of retirements to assess the risk of stranded assets related to the energy transition.
(c) What does Enbridge estimate the value of accumulated net site restoration costs will be in 2029.
(f) Enbridge states: "The depreciation parameters approved by the OEB in the Phase 1 Decision yield substantially lower future costs of removal in most accounts (Table 2) than the percentages indicated by the actual cost of dismantlement expenditures incurred throughout Enbridge Gas's long history (Table 3). The estimates presented in Table 3 are more representative of the anticipated future costs and unfunded balance, as they are based on actual historical costs of removal." What changes can Enbridge or the OEB make in phase 2 to reduce the apparent forecast shortfall in site restoration funds. Please describe all options and discuss the feasibility, pros, and cons of each.

Interrogatory # 4-ED-57

Reference: Phase 1 evidence and issue 18.

Preamble: Page 16 of the phase 1 decision states:

> "Enbridge Gas is seeking approval for the Energy Transition Technology Fund and the Low-Carbon Voluntary Renewable Natural Gas Program in Phase 2. Spending for several additional safe bet proposals is included in Enbridge Gas's capital expenditures over the rebasing term, although approval of these individual projects is not specifically requested. These will also be examined in Phase 2."

Question(s):

(a) Please reproduce Table 1 at Exhibit 1, Tab 10, Schedule 6, Page 15, adding a column to indicate if there are any updates since the phase 1 evidence.
(b) Please confirm that the phase I decision did not address the proposed "safe bet" of the hydrogen blending grid study. If Enbridge disagrees, please provide the relevant excerpts.
(c) Has Enbridge started the hydrogen blending grid study? If yes, what has been spent to date? What has taken place thus far?

(d) Please provide all internal Enbridge documents detailing the scope of the hydrogen blending grid study.
(e) Please provide all project descriptions and business cases that have been created thus far, even if in draft form, under the hydrogen blending grid study.
(f) Please justify treating the hydrogen blending grid study as a capital expense. When would those expenses go "in service"?
(g) Please provide the total actual and forecast costs for the study, broken down by year and total.
(h) Please confirm that continued DSM is a safe bet proposal.
(i) What is Enbridge's headcount of DSM staff before and after the recent layoffs.

Interrogatory # 10-ED-58

Reference: Exhibit 10, Tab 1, Schedule 1

Preamble:

> Enbridge has expressed a concern about not earning a return on contributions in aid of construction, particularly where those contributions increase while additions to rate base decline. For instance, its Notice of Appeal of the Phase I decision stated: "the OEB erred in law and jurisdiction by breaching the legally mandated Fair Return Standard ("FRS"). As a result of the Decision, Enbridge Gas has no right or ability to invest and earn a return on capital for new customer connections. At the same time, Enbridge is legally obligated to connect new customers along existing lines and to serve those customers safely and reliably."
>
> Although the Phase I decision on the revenue horizon is being reversed by Bill 165, some shift from rate-based costs to contributions in aid of construction may occur as part of the review of the revenue horizon that the Ministry of Energy and Electrification has announced.

Question(s):

(a) Please confirm that Enbridge earns a return from connection costs that are covered by existing customers through rate base but not from contributions in aid of construction.
(b) How much return will Enbridge earn from $1 in connection costs that are covered by the customer base through rate base. Please make and state assumptions as necessary.
(c) If the answer to (b) cannot be scaled, please estimate how much return will Enbridge earn from $1 billion in connection costs that are covered by the customer base through rate base. Please make and state assumptions as necessary.
(d) If the OEB were interested in making Enbridge indifferent as between connection costs being added to the rate base versus paid through contributions in aid of construction, please propose some options for doing so, and discuss the pros and cons of each.
(e) Please discuss the pros and cons of allowing Enbridge to charge a modest margin on contributions in aid of construction, which would be treated as a profit incentive payment, as a way to make it indifferent between connection costs being recovered

through rate base versus contributions in aid of construction. What margin would be sufficient to make Enbridge indifferent?

(f) If Enbridge earned a margin on contributions in aid of construction as discussed above, could this lead to an excessive return? If yes, could that be mitigated with a profit sharing mechanism?

Interrogatory # 10-ED-59

Reference: Exhibit 10, Tab 1, Schedule 1

Question(s):

(a) Please list the pros and cons of revenue decoupling.
(b) Without revenue decoupling, does Enbridge have an incentive to encourage more connections to the gas system? Please discuss.
(c) Please discuss options to remove an incentive for Enbridge to encourage more gas connections.
(d) Please summarize the impact of Enbridge's DVA, IRM, and rate design proposals as they relate to revenue decoupling. Please include a table listing the revenue risks (e.g. weather, average use, customer connections, etc.), the degree to which they are mitigated via Enbridge's proposals, and the mitigation mechanisms.

Interrogatory # 10-ED-60

Reference: Exhibit 10, Tab 1, Schedule 1

Question(s):

(a) Please comment on the concept of differentiated ROE, whereby a utility would earn a different ROE depending on the capital asset, with spending on preferred asset types receiving a comparatively higher return (e.g. cost-effective repairs vs. replacements, cost-effective non-pipe solutions vs. traditional infrastructure, safety/sustainment capital vs. growth capital).
(b) Of the approved capital envelope arising from Phase I, what percent will be spent on growth assets, sustainment capital, and other? Please provide a best estimate according to existing plans and information. Certainty is not required.
(c) Of the approved capital envelope arising from Phase I, what percent will be spent on traditional infrastructure, non-pipe alternatives, and other? Please provide a best estimate according to existing plans and information. Certainty is not required.
(d) Please provide an updated asset mix according to the Utility System Plan categories that accounts for the phase I decision.
(e) Please provide the latest draft of Enbridge's AMP and USP following the Phase I decision.

Interrogatory # 10-ED-61

Reference: Exhibit 10, Tab 1, Schedule 1

Question(s):

(a) Please comment on the pros and cons of replacing a portion of Enbridge's return with potential incentive payments via a performance incentive mechanism (PIM).

Interrogatory # 10-ED-62

Reference: Exhibit 10, Tab 1, Schedule 1

Question(s):

(a) Please provide a list of options to make Enbridge indifferent between traditional infrastructure solutions that would enter rate base and non-pipe alternatives consisting only of O&M spending. Please discuss the pros and cons of each.
(b) Please provide all internal analysis that Enbridge has developed regarding a TOTEX approach to incentive rate-making.