

June 21, 2022

BY RESS

Nancy Marconi Registrar Ontario Energy Board 2300 Yonge Street, Suite 2700, P.O. Box 2319 Toronto, Ontario M4P 1E4

Dear Ms. Marconi:

Re: EB-2022-0111 – Enbridge Gas Inc. – Bobcaygeon Pipeline Project

I am writing to provide further details and a cost estimate regarding the evidence that Environmental Defence wishes to submit in this proceeding. As detailed below, this evidence would assist the OEB in its mandate to protect the interests of gas customers in this proceeding.

Nature of the Evidence and Relevance

The proposed evidence would assist the OEB in considering whether the customer additions forecast remains reasonable in light of important changes in circumstances since the Bobcaygeon project was developed. The customer additions forecast underpins the project economics and the potential risks to existing ratepayers because the capital costs and ongoing operational costs are to be paid primarily by revenue from new customers. To break even, the project must raise over \$144 million in distribution revenues between 2024 and 2063.¹ Enbridge is forecasting that 3,978 customers will switch to gas. If the actual additions are fewer, or customers exit the system later, there will be a shortfall in the \$144 million in revenue needed to cover the costs.

Although Enbridge will bear the revenue shortfall risks for 10 years, that amounts to less than 25% of the overall revenue forecast risk. According to the discounted cash flow analysis, more than 75% of the required \$144 million in revenue would be collected between 2034 and 2063 (i.e. after the rate stability period).² The risk of under recovery in this period is borne by existing ratepayers or is at least potentially borne by existing ratepayers subject to future OEB orders. Furthermore, this is the period when there is the greatest uncertainty around the commercial viability of fossil fuel heating in a net-zero future.

One key question relating to the customer additions forecast is whether homeowners will decide to save energy bills by converting to high-efficiency electric cold climate heat pumps instead of

¹ Exhibit E, Tab 1, Schedule 1, Attachment 1 (This includes \$81 million in SES revenue and 64 million in regular distribution charges).

² Exhibit E, Tab 1, Schedule 1, Attachment 1.

converting to gas. There are a number of important changes in circumstances since the Bobcaygeon project was first envisioned that will impact this question, including the following:

- Gas prices have increased precipitously;
- Carbon prices are increasing and are set to reach \$170/tonne CO2e by 2030;
- The federal government is now providing \$5,000 incentives for customers to switch to high-efficiency electric heat pumps;³ and
- The federal government has published a formal plan under section 9 of the *Canadian Net-Zero Emissions Accountability Act* to reduce emissions from buildings by 41% by 2030 from 2019 levels.⁴

Customer decisions will be influenced to a large degree by the relative cost-effectiveness of converting to a gas furnace versus a high-efficiency electric heat pump. Therefore, Environmental Defence proposes to retain Dr. Heather McDiarmid to provide an estimate of the relative cost-effectiveness of converting a home in the Bobcaygeon area to use gas equipment versus high-efficiency electric heat pumps, focusing on a comparison of customer-facing costs.

Dr. McDiarmid is very well-placed to provide evidence on the cost-effectiveness of heat pumps in the Ontario context. She has provided evidence in a previous OEB proceeding in relation to this topic and was qualified as an expert in that proceeding.⁵ Dr. McDiarmid is a consultant based in the Kitchener area. She has researched the cost-effectiveness of heat pumps extensively and has prepared reports on this topic for the housing stock in the Waterloo area. She is currently involved in a number of ongoing research projects relating to heat pumps and has presented on the subject. Dr. McDiarmid has a PhD in biochemistry and a Master of Climate Change. Dr. McDiarmid will be able to leverage her past work on heat pump cost-effectiveness in Ontario to prepare evidence for this proceeding in an efficient and effective manner. Dr. McDiarmid's curriculum vitae is attached.

Budget

Environmental Defence would seek a cost award for Dr. McDiarmid's work. Dr. McDiarmid estimates that her report will cost between \$5,000 and \$7,000 to prepare (plus HST). This low cost is possible because Dr. McDiarmid can build on previous work she has completed and focus on the Bobcaygeon area. The cost for interrogatory responses and a technical conference, if one occurs, are impossible to predict with certainty because they depend on factors outside of Dr. McDiarmid's control. The steps beyond the preparation of evidence may add an additional 40% to the costs, subject to the caveats noted above.

³ https://www.nrcan.gc.ca/energy-efficiency/homes/canada-greener-homes-grant/start-your-energy-efficient-retrofits/23443#G3

⁴ 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

⁵ EB-2021-0002

I estimate the incremental counsel costs required in relation to the preparation of Dr. McDiarmid's evidence will be between \$1,000 and \$2,000.

Timing

Dr. McDiarmid estimates that she could complete a report in three weeks.

Although it is not strictly necessary, it would be ideal to set the date of Dr. McDiarmid's evidence to fall two weeks after the interrogatory responses from Enbridge are due. This would allow Dr. McDiarmid to use Enbridge's own assumptions in her report, such as assumptions regarding future commodity prices and equipment costs. Doing so may reduce the number of disputed issues and allow for a better comparison of Enbridge's and Dr. McDiarmid's evidence. In addition, it would be helpful if Dr. McDiarmid would have access to data on the heating systems used in the existing housing stock for the purpose of calculating relative cost-effectiveness, which could be obtained through interrogatory responses.⁶

Conclusion

Enbridge is proposing to build a pipeline that will cost \$122 million in capital expenditures up front plus an additional \$50 million in ongoing expenses throughout its life.⁷ Existing ratepayers will bear most of the risk of shortfalls in the revenue needed to fund this, and those risks extend decades into the future up to 2063. Dr. McDiarmid's evidence will help shed some light on those risks and assist the OEB in its mandate to protect customers.

Yours truly,

Kent Elson

cc: Enbridge

⁶ This would be helpful because, for instance, houses with baseboard electric resistance heaters require expensive new ducting if the home is converted to a gas furnace, increasing the relative cost-effectiveness ductless electric heat pumps.

⁷ Exhibit E, Tab 1, Schedule 1; Page 1Exhibit E, Tab 1, Schedule 1, Attachment 1.

Heather McDiarmid, MCC, PhD

heatheratp2@gmail.com

Experience

Independent Consultant

- Clients have included the University of Waterloo, Ontario Clean Air Alliance, ClimateActionWR, Reep. Green Solutions, GreenUP Peterborough, Waterloo Region Community Energy.
- Analyzed the cost effectiveness and climate mitigation impacts of electrifying homes in the Waterloo region using heat pumps for space and water heating.
- Explored a housing archetype-based approach to decarbonizing residential homes in Waterloo Region.
- Conducted a residential retrofit financing program feasibility study to meet FCM requirements.
- Prepared a research-based study of the potential for active transportation hubs and programs to encourage transportation mode shifts in the tri-cities.
- Unearthed and detailed residential carbon mitigation programs and strategies from across North America to inform Toronto's climate action plan.
- Prepared a climate impact analysis and developed an evaluation framework for a non-profit.
- Performed primary and secondary market research on the feasibility of retrofit management.

Research Associate and Lecturer, University of Waterloo

- Analyzed a database of over 44,000 home energy audit results to explore the emissions impacts of different retrofit and electrification approaches for the residential sector.
- Engaged to teach a graduate course in Climate Change Mitigation in Fall 2021.
- Presented research findings at the International Green Energy Conference, Jul 15-18, 2021.
- Invited as a guest lecturer on Climate Change Communications and on Climate Change and Housing. ٠

Research Assistant and Writer, University of Waterloo and David Miller

- Investigated municipal programs from around the world that have been successful in cutting carbon emissions, highlighting the most relevant and universally applicable details for a book.
- Advised on structuring the book and collaborated in choosing programs to profile.
- Wrote early drafts of many chapters.
- David Miller, Director of International Diplomacy at C40 Cities, is the author of the book titled Solved: how the world's great cities are fixing the climate crisis.

Researcher, Clean Air Partnership

- Prepared a toolkit on municipal financing options for residential retrofit programs.
- Completed a 16-week research project in 10 weeks.
- Prepared and presented webinars to municipal representatives.

Dec 2017 to present

Jun 2020 to present

Apr- Aug 2019

Mar 2019-Apr 2020

Heather McDiarmid, MCC, PhD

heatheratp2@gmail.com

Academic Instructor, Wilfrid Laurier University and University of Guelph

2002 - 2011

- Shared a passion for biochemistry with 6-200 students at the 2nd, 3rd and 4th year levels.
- Researched and developed new course content.
- Explored innovative ways of engaging students.

Leadership in Sustainability

- Blog Writer, <u>McDiarmid Climate Consulting</u>
- Project Lead, Homeowner's guide to heat pumps for WR
 Jan. 2021-present
- Guest Lecturer, Climate Change Communication, Climate Change and Housing Affordability
- Committee Member and Chair, ClimateAction WR Residential Sector Dec. 2018 present
- Committee Member, UW CAP Climate and Energy Working Group
 2019

Writing and Publications

- Should electrification, not retrofits, be the focus for decarbonisation of most residential buildings? Submitted to Climate Policy May 2021.
- Deep energy efficiency retrofits vs direct electrification for urgent emissions reduction: a case study using 33,780 residential energy profiles in Waterloo, Canada. Presented to the 13th International Green Energy Conference Jul 2021.
- <u>Active Transportation Hubs in Waterloo Region: a research pilot project</u>
- Aerial thermal imaging and building energy efficiency updates in WR: a sustainable buildings pilot
- Analysis of the Residential Electrification Potential for the Waterloo Region
- <u>Residential heat pump water heaters as a climate action for the Waterloo Region</u>
- Deep Energy Residential Retrofit: financing feasibility study for Waterloo Region
- How to cut emissions from the residential sector in Waterloo Region
- Accelerating Home Energy Efficiency Retrofits through LIC Programs: a toolkit for municipalities
- <u>Climate Change and the Tree Canopy of Waterloo Region</u>
- <u>Climate Change and Housing Affordability in Canada</u>