



October 22, 2021

Ms. Christine Long  
Ontario Energy Board (OEB) Registrar  
Ontario Energy Board  
P.O. Box 2319, 27th Floor  
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Toronto, ON M4P 1E4  
Email: [Registrar@oeb.ca](mailto:Registrar@oeb.ca)

Dear Ms. Long:

**RE: OEB Case Number EB-2021-0002**

The City of Ottawa is Canada's fourth largest municipality comprised of extensive rural and urban areas. With a population of 1,000,000 it consumes roughly 46,000TJ of natural (fossil) gas annually. The City declared a climate emergency on April 26, 2019. On October 28, 2020, Energy Evolution, the City's community energy transition plan, was passed unanimously by Ottawa City Council.

Energy Evolution includes the need for incremental energy conservation to reduce consumer natural gas use in a cost-effective manner, thereby helping the Ottawa achieve corporate City targets in 2040 and community-wide targets by 2050.

The City of Ottawa has a direct interest in the Enbridge Gas Distribution's (EGD) Demand Side Management (DSM) Plan and related DSM Framework. We see the availability of a significant and incrementally expanding natural gas DSM plan as being essential to helping Ottawa meet its City (corporate) and community-wide objectives.

On April 1<sup>st</sup>, 2021 the City of Ottawa held a meeting of stakeholders to discuss what might be included in the development of the next Enbridge DSM plan which would align with the goals of Energy Evolution. This stakeholder meeting included many people with longstanding experience in building retrofitting. There were many recommendations, and key ones were as follows:

- EGD has a history of delivering DSM programs which are supported by engaged and responsive staff or delivery agents. EGD uses a broad approach for delivery of DSM programs which leave significant opportunity for increase programs and results if EGD were to more effectively align program development and delivery with the needs of Ontario municipalities (i.e., City of Ottawa consumes roughly 46,000 terajoules of natural gas annually). The City of Ottawa requests that the OEB increase both the funding and program portfolio in alignment with consumer and community needs.
- There has never been a more opportune time to increase DSM resources and results given that they are complimentary to emissions reductions objectives. Use of natural gas is the highest source of building emissions in the City of Ottawa and for municipalities across Ontario. It should be noted, that since our stakeholder meetings

have taken place, government programs such as the [Green and Inclusive Community Buildings](#) program have been introduced. These programs will have the effect of reducing natural gas demand and this, along with the emergency declarations should be taken into account in the setting of targets for the next DSM program.

- Programs to improve building envelopes were seen as important as this was seen as been relevant to the condition of our buildings. A focus on longer payback measures in building envelopes was cited as these have yet to be addressed in our building stock.
- Enbridge incentives should be stackable with other incentive programs. This will be particularly important for enabling deep building retrofits as they can be quite costly and need often need generous financial assistance available to make them feasible.
- The next DSM program must incent fuel substitution to energy solutions that have both lower GHG emissions and higher than gas point of use efficiency. An example would be the use of electric heat pumps or electric boilers either solely as a replacement to natural gas heating or as a hybrid heating gas/electric solution. Such solutions constitute conservation measures as they will often greatly reduce primary energy demand. It should be noted that Enbridge recently suggested hybrid heating solutions in their [recent submission](#) the Independent Electricity System Operator relative to their Gas Phase-Out Impact Assessment. Also, the City of Ottawa did outline how they are employing hybrid heating to an Enbridge official in May of this year to the official's apparent enthusiasm.

Prior to the issuance of this letter, several of these points were re-iterated by City of Ottawa staff during a discussion an Enbridge organized workshop on June 10<sup>th</sup>, 2021, entitled "Your Feedback Matters – Municipal Focus Group with Enbridge Gas". At the time of writing this correspondence, a first draft of the meeting notes (promised by Enbridge) has yet to be circulated. It would be much simpler if EGD had included the feedback from City of Ottawa and other municipalities into its 2022-2027 DSM Plan, but since the application is now in the hands of the OEB we understand that it will be up to the OEB to include these incremental requirements.

Of these discussion points above, the issue of fuel substitution has the ability to be the most transformative, and a transformative approach is called for at this time. It is notable that the OEB's DSM letter notes that: "...the level of gas savings achieved through DSM programs for each dollar spent has been decreasing. ..."<sup>1</sup>. With the effectiveness of DSM spending decreasing, it's time to consider a new approach. If implemented correctly, fuel switching to electricity/renewables has the ability meet the primary objective of the OEB's DSM Letter<sup>2</sup> and two of the secondary objectives (help to lower overall annual natural gas usage and play a role in meeting Ontario's greenhouse gas reduction goals)<sup>3</sup>.

There is significant low hanging DSM fruit still available in the City of Ottawa through existing and incremental programs. A specific dual fuel idea of employing air source heat pumps has been considered and studied by the City of Ottawa and deserves to be discussed in more detail here to showcase the prospective value of fuel switching to electricity. We are aware that Pollution Probe has proposed to coordinate consolidated best practice information related to these opportunities for the OEB and we intend to participate in that activity if endorsed by the OEB. A typical architype for an Ottawa residence has a utility set up with a

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<sup>1</sup> EB-2019-0003, OEB Letter Post-2020 Natural Gas Demand Management Framework (December 1, 2020), p.4.

<sup>2</sup> EB-2019-0003, OEB Letter Post-2020 Natural Gas Demand Management Framework (December 1, 2020), p.2.

<sup>3</sup> EB-2019-0003, OEB Letter Post-2020 Natural Gas Demand Management Framework (December 1, 2020), p.3.

natural gas furnace for heating and an air-cooled air conditioner for cooling. We believe that a switch over of the air conditioner to an air source heat pump deserves consideration.

The switch to an air source heat pump from an air-cooled air conditioner, particularly if done at end of life or with a new install at an existing residence, would result in benefits that far exceed the modest incremental costs. The cost adder for changing an air-cooled air condition into an air source heat pump was discussed during phase One of Energy Evolution and was felt to be in the order of \$1200. With this information, City of Ottawa staff built a spreadsheet to compare net heat pump costs to gas furnace costs in Ottawa Climate Conditions (please see Appendix 1). We have just updated this spreadsheet with updated time of use electricity prices and Enbridge gas prices as effective on July 1<sup>st</sup>, 2021. The analysis indicates that an air source heat pump would provide cost savings during periods of off-peak electricity rates down to roughly -10°C and during the mid-peak rate down to roughly 0 period down to 0°C. During times when the natural gas furnace is more economical (colder periods as influenced by the time of use electricity rate), the natural gas furnace could still be employed.

The operations strategy would meet the primary objective of making energy bills more manageable by giving customers a cheaper source of thermal for well over half the heating season. As for the secondary objectives, the reduction in natural gas usage and GHG emissions is quite evident from the use of an electrically driven heating device which we estimate would have an efficiency ranging between 250% and 550% when employed.

It is notable that this is an example of a holistic solution to issues in Ontario's energy markets. By targeting electricity use outside periods of extreme cold, the employment of air source heat pumps as we described has the ability to make proactive use of the widely reported electricity surplus (please see "Managing Surplus Baseload Generation" in this [link](#)). The issue of surplus generation was commented on last year by the then president of the Independent Electricity System Operator – please [see this link](#). This heat pump strategy avoids using electricity during periods of winter peak demand and mirrors a strategy being employed by Énergir and Hydro-Québec to electrify heating while avoiding winter peaks (please [see this link](#)). It is this type of holistic approach which will allow Enbridge to support the province's climate targets.

With our recommendations noted and one of them detailed, the City of Ottawa would be remiss to not also discuss the ambition of the DSM program as it is related to budget. Enbridge called for program spending increases of 2.95 percent in 2022 over 2021 and increases of 3% above inflation for the 2023-2027 period.<sup>4</sup> This low level of funding will not do anything to meet the need for incremental DSM programs and enhanced activity.

Given that:

- i. With the recommendation for dual fuel discussed herein, a whole new dimension to conservation has opened up that will need to be funded and
- ii. That the province has support programs to support people on low incomes
- iii. With the August 9th, 2021 release of the latest intergovernmental Panel on Climate Change report, United Nations Secretary Guterres stated that: "Today's IPCC ... report is a code red for humanity. The alarm bells are deafening, and the evidence is irrefutable: Greenhouse gas emissions from fossil fuel burning and deforestation are choking our planet and putting billions of people at immediate risk. Global heating is affecting every region on Earth, with many of the changes becoming irreversible.

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<sup>4</sup> EB-2021-0002, EGI\_APPL\_20210503, May 5, 2021, Exhibit B, Tab 1, Schedule 1, Page 5 of 16

The internationally agreed threshold of 1.5C is perilously close. The only way to prevent exceeding this threshold is by urgently stepping up our efforts, and pursuing the most ambitious path” ([link here](#))

The City of Ottawa recommends that annual increases to the conservation program 20% above the rate of inflation should be implemented for the entire period from 2023-2027, or no less than a doubling of funding over the five-year term.

In terms of measures our recommendation to develop a dual fuel gas / air source heat pump program is a novel and transformational measure. It will greatly reduce primary energy demand and therefore we feel its imperative that Enbridge work with the City of Ottawa and all relevant stakeholders to develop such a measure as part of its conservation program. This measure should be available to Ontario municipalities and all EDG customers no later than January 1, 2023

I look forward to the OEB's efforts in this matter and in seeing their sound judgement and impartiality being brought to bear. I'm at the board's disposal to discuss this further either directly or in concert with our subject lead on this matter, Mike Fletcher.

Sincerely,



Don Herweyer  
Director, Economic Development & Long-Range Planning (EDLRP)  
Planning, Infrastructure and Economic Development (PIED)  
City of Ottawa

Cc: Mike Fletcher

Note: An appendix follows on the next page.

## Appendix 1:

<b><u>Air Source Heat Pump vs. Natural Gas Furnace Cost Equivalency Curve</u></b>				
City of Ottawa. February 2018				
Pricing updated: Aug 12, 2021		<b><u>Entered Values</u></b>		
	<b><u>Energy Marginal Costs (Hydro Ottawa, Enbridge Gas)</u></b>			
	Variable Electricity Delivery Charges		0	Cents / kWh
		Electricity Off Peak Rate	8.2	Cents / kWh
		Electricity Mid Peak Rate	11.3	Cents / kWh
		Electricity On Peak Rate	17	Cents / kWh
		Volumetric Gas Price	0.3268	\$ / m <sup>3</sup>
		<b><u>Efficiency and Operating Values</u></b>		
		Furnace Efficiency	98	Percent
		Heat Pump Warm Temperature COP	5.5	Factor
		Min ASHP Operating Temperature	-20	°C

**Results Table**

Operation Pts Bin Data Temperatures °C	Cost and Efficiency Values				
	Heat Pump	Furance	Heat Pump		
			Off Peak	Mid Peak	On Peak
	COP	\$/MMBTU	\$ / MMBTU	\$ / MMBTU	\$ / MMBTU
16.9	5.50	9.53	4.37	6.02	9.06
14.2	5.20	9.53	4.62	6.37	9.58
11.4	4.90	9.53	4.90	6.76	10.17
8.6	4.60	9.53	5.22	7.20	10.83
5.8	4.30	9.53	5.59	7.70	11.59
3.1	4.00	9.53	6.01	8.28	12.46
0.3	3.70	9.53	6.50	8.95	13.47
-2.5	3.40	9.53	7.07	9.74	14.65
-5.3	3.10	9.53	7.75	10.68	16.07
-8.1	2.80	9.53	8.58	11.83	17.79
-10.8	2.50	9.53	9.61	13.25	19.93
-13.6	2.20	9.53	10.92	15.05	22.65
-16.4	1.90	9.53	12.65	17.43	26.22
-19.2	1.60	9.53	15.02	20.70	31.14
-21.9	1.30	9.53	18.49	25.48	38.33
-24.7	1.00	9.53	24.03	33.12	49.82