ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Sched. B, as amended (the **Act**);

AND IN THE MATTER OF an application by Enbridge Gas Inc. under section 90 of the Act for an order or orders granting leave to construct natural gas distribution pipelines and ancillary facilities to enable its Low Carbon Energy Project in the City of Markham;

AND IN THE MATTER OF an application under section 36 of the Act for an order or orders approving a rate rider to be applied to customer impacted by the Low Carbon Energy Project.

EB-2019-0294

SUBMISSIONS

OF

H2GO CANADA

(H2GO)

September 11, 2020

INTRODUCTION AND OVERVIEW

1. We are counsel to H2GO in the matter of Enbridge Gas Inc.'s (**EGI's**) application to the Ontario Energy Board (the **Board** or the **OEB**) for (a) an order pursuant to section 90 of the Act granting leave to construct the facilities required to enable its Low Carbon Energy Project (**LCEP**) in the City of Markham; (b) an order pursuant to section 97 of the Act approving EGI's proposed form of easement agreements; (c) an order pursuant to section 36 of the Act approving the proposed rate rider for customers in the isolated portion of EGI's distribution system, referred to as the blended gas area (**BGA**); and (d) such additional orders as EGI may request and the Board may approve (the **Application**).
2. H2GO is a not for profit organization established to help accelerate the development of sustainable markets for low-carbon hydrogen and hydrogen technologies in Canada. Its organizing vision is that hydrogen becomes a fully developed, low-carbon energy pathway for heat, power, and mobility in Canada, supported by commercially vibrant markets and mature supply chains. Accordingly, H2GO's mission is to help make hydrogen systems and storage solutions a practical option for organizations in Canada that are seeking to reduce emissions within their operations by cultivating conditions for hydrogen markets to develop, grow, and thrive.
3. H2GO is well positioned to contribute to the development of Canada's hydrogen economy and has a keen interest in the Application given its potential to promote the growth and development of companies focused on renewable energy and green technologies. H2GO offers the Board the perspective of hydrogen production, compression and purification, storage, distribution, and use in Canada, all of which may be materially affected by the Board's decision on the Application.
4. The LCEP, if approved by the Board, would enable EGI to green a portion of the natural gas grid in Ontario by injecting a small amount of hydrogen into the gas stream.[1] EGI acknowledges that successful implementation of the LCEP will support it in pursuing additional and larger scale hydrogen blending activities in other parts of its distribution system.[2] H2GO is generally supportive of the LCEP and requests that the Board approve the Application.

[1] Application, Exhibit A, Tab 2, Schedule 1, para 3.
[2] Application, Exhibit B, Tab 1, Schedule 1, para 2.

DETAILED SUBMISSIONS

I. The energy context is rapidly changing

5. This is the first significant hydrogen application that the Board is being asked to consider in an energy context that has changed significantly — and continues to fundamentally change — as a result of the use and integration of new fuels and technologies, the need to reduce greenhouse gas (**GHG**) emissions associated with some forms of energy, and the potential for paradigm-shifting integration of the natural gas and electrical grids. Ontario's energy landscape may be significantly affected in the near term by flexibility mechanisms and gas supply portfolio opportunities across the sector, including those associated with hydrogen blending, renewable natural gas, liquefied natural gas, and compressed natural gas.
6. The Board's review of the Application is also taking place in a rapidly changing public policy and regulatory context. Numerous climate change, GHG emissions reduction, and low-carbon fuels policies and programs have recently been implemented or are currently under development, several of which have the potential to affect natural gas.
7. H2GO urges the Board to evaluate this Application in the broader climate and energy context that it occurs, which includes:
    - The declaration of a national climate emergency in Canada by motion passed by the House of Commons on June 17, 2019
    - The unprecedented warning by the Inter-governmental Panel on Climate Change (IPCC) that global warming must be kept to a maximum of 1.5 degrees Celsius by the year 2030 in order to mitigate the known risks of drought, floods, extreme heat and poverty for millions of people.[3]
    - An acknowledgment of the very important role that natural gas, lower carbon blends (including renewable natural gas and hydrogen), and related existing infrastructure has in the ***affordable*** energy paradigm – particularly as Ontario emerges from the economic impacts of the COVID-19 virus.
    - The plurality of all carbon mitigation responses that are required in order for Canada to meet its Nationally Determined Contribution of a 30% reduction from 2005 GHG

[3] https://www.ipcc.ch/sr15/chapter/spm/

emissions by 2030, including but not limited to aggressive conservation, fuel switching, and accelerated capital stock turnover of emissions intense infrastructure.

8. It is in this pressing context that H2GO submits that hydrogen has a significant role in Ontario's and Canada's energy future.

II. Hydrogen has a significant role in Ontario's energy future

9. Hydrogen fuel, storage, and blending systems represent an increasingly attractive low-carbon energy pathway in this rapidly changing energy context. The seminal Generation Energy Council report published in June 2018 confirmed that hydrogen is particularly important in the category of cleaner fuels, noting that it has potential both as a fuel source and as an energy storage application.[4]

10. A 2019 NRCan Hydrogen Pathways report highlights that Canada is well-positioned to benefit from international demand and interest in hydrogen, acknowledging that, in order for Canada to fully benefit from innovative hydrogen technologies, they need to be implemented at home.[5] Hydrogen has several economy-wide benefits both as an energy source and an industrial feedstock. There are significant economic benefits to Canada and Ontario from the domestic hydrogen fuel sector. These include:

- annual contribution of approximately $121 million to Canada's economy;
- reported revenues of $207 million in 2017, a major increase of 42 per cent compared to 2016;
- employment of approximately 2,175 people (and growing), with 86 per cent of jobs being based in Canada; and
- significant research and development investments by both government and the private sector.[6]

11. In Ontario, it is estimated that 14,500 new jobs will be created and $1.2 billion in revenue can be achieved over the next ten years.[7]

[4] Generation Energy Council, "Canada's Energy Transition: Getting to Our Energy Future, Together" (June 2018), available online at: https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/CoucilReport_july4_EN_Web.pdf
[5] Natural Resources Canada, "2019 Hydrogen Pathways: Enabling a clean growth future for Canadians", Executive Summary, available online at: https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-transportation/resource-library/2019-hydrogen-pathways-enabling-clean-growth-future-canadians/21961.
[6] *Ibid.* at pp. 8-10.
[7] Wenqi Zhao, "The Present Status of Hydrogen Technologies and Project Deployments in Ontario and Canada", Hydrogen Business Council of Canada (April 2019), available online at:

12. Hydrogen and hydrogen technologies moreover provide tangible and significant decarbonization opportunities. Ontario's electricity sector is virtually decarbonized (approximately 93 per cent of electricity produced in 2018 was from non-carbon-emitting resources)[8], with electricity generation emissions intensity of 29 g CO_2e per kWh in 2018.[9] This is among the lowest electricity sector emissions rates in the world. It also results from the significant cost investment that Ontario and Ontario electricity customers continue to absorb by phasing out coal. In contrast, over the last decade, the buildings and transportation sectors — each of which may be readily amenable to application of hydrogen technologies — have significantly increased their emissions, with this trend continuing into the foreseeable future (see Figure 1, below).

13. A range of power-to-gas (**PtG**) hydrogen applications are therefore of significant interest as they can help to decarbonize electricity generation and manage the intermittency of renewables.[10] PtG hydrogen applications may also play a very significant role in helping to decarbonize the transportation, industry, and buildings sectors, and thereby create efficiencies and customer savings in each sector. A report prepared by the American Gas Association and the Canadian Gas Association[11] confirms that PtG applications have the potential to deliver benefits including: development of an additional renewable energy supply and reduction in the GHG emissions profile of natural gas; development of energy storage and other flexibility mechanisms to help balance the electricity system using surplus electricity in off-peak periods; and, provision of a storage vessel for surplus electricity.[12] PtG applications also provide opportunities to leverage existing natural gas infrastructure (pipelines and gas-powered electricity generating plants) to reduce the need for building electrical generation or transmission facilities and enable the growth of the use of hydrogen-powered vehicles.[13]

https://www.researchgate.net/publication/332973809_The_Present_Status_of_Hydrogen_Technologies_and_Project_Deployments_in_Ontario_and_Canada_with_an_Overview_of_Global_H2_Activities.

8 Independent Electricity System Operator, Annual Planning Outlook (January 2020), available online at: http://ieso.ca/-/media/Files/IESO/Document-Library/planning-forecasts/apo/Annual-Planning-Outlook-Jan2020.pdf?la=en.

9 Canada's National Inventory Report (April 14, 2020), available online at: https://unfccc.int/documents/224829. See also Exhibit I.ED.3(a), pp. 1-2.

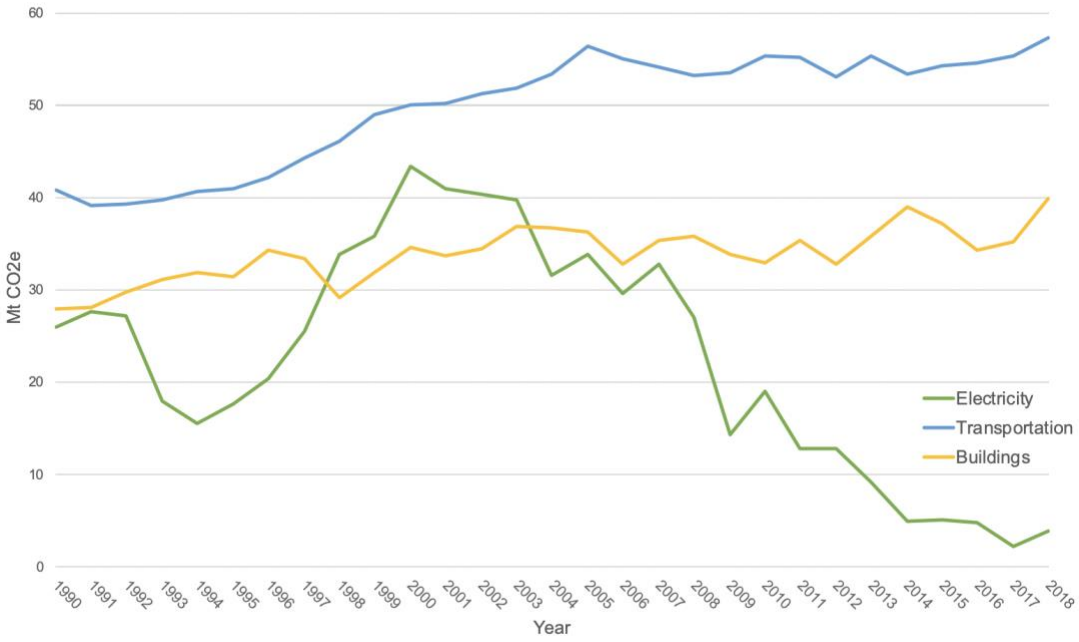
10 *Ibid.* at p. 7.

11 See Exhibit I.H2GO.1, Attachment 1 (American Gas Association and Canadian Gas Association, "Blending of Hydrogen into Natural Gas Delivery Systems: Information Summary Report", (May 2019)).

12 *Ibid.*, p. 4.

13 *Ibid.*

Figure 1: Greenhouse Gas Emissions by Economic Sector (Ontario, 1990-2018)



Source: Canada's Official Greenhouse Gas Inventory (GHG_Econ_Can_Prov_Terr Dataset)

14. Integrating hydrogen into natural gas systems is a priority in other jurisdictions. For example, the United Kingdom's five gas network operators recently announced a £904 million investment to develop green gas infrastructure incorporating hydrogen and biomethane over the next five years as part of plans for the U.K.'s economic recovery from the COVID-19 crisis and the country's long-term decarbonization policy.[14]

15. H2GO is a strong advocate of accelerating the development of sustainable markets for low-carbon hydrogen and hydrogen technologies in Canada and submits that the Board should, in reviewing and deciding upon the Application, recognize the value provided by hydrogen and hydrogen technologies as a consequence of the following three central principles:

- hydrogen has the potential to serve as a versatile, non-carbon energy commodity, capable of meeting society's demands for power, heat and mobility to a significant degree;
- hydrogen can be produced from currently developed sources, with significant potential for decarbonized supply chains; and

[14] H2 View, "£900m net zero infrastructure plan proposed by Britain's gas networks" (May 28, 2020), available online at: https://www.h2-view.com/story/900m-net-zero-infrastructure-plan-proposed-by-britains-gas-networks/.

- hydrogen has the potential to integrate with established energy infrastructure and modes of distribution, such as the natural gas grid.[15]

III. The Board should encourage the development of hydrogen markets in Ontario by approving the LCEP

16. EGI characterizes the LCEP as a "prudent step towards expanding hydrogen injection to other parts of the distribution network", "the first of its kind in North America", and facilitative of "additional and larger scale hydrogen blending activities in other parts of its distribution system."[16] The LCEP will moreover achieve direct emissions reductions in the range of 97 to 120 tCO_2e per year.[17] H2GO respectfully requests that the Board consider the importance of the LCEP for the development of future larger scale hydrogen blending activities in Ontario. H2GO generally submits that the Board should encourage and approve the LCEP Application and facilitate the resulting data, information and stimulus for the development of hydrogen markets in Ontario.
17. H2GO agrees with and adopts the submissions of EGI with respect to the benefits to ratepayers from blending hydrogen into the natural gas grid, which include:
    - the delivery of blended natural gas with a lower carbon content that measurably lowers the GHG emissions intensity of traditional natural gas fuels;
    - introduction of a fuel that is expected to be compliant with the requirements of the forthcoming[18] federal Clean Fuel Standard (CFS);
    - potential to create new opportunities to develop, operate, and maintain additional lower carbon, blended gas systems in Ontario; and
    - corresponding benefits to electricity ratepayers, who are typically also EGI customers, as the natural gas distribution system can be used to store Ontario's surplus electricity generation, which is currently spilled at an annual rate of 7.6TWh.[19]
18. In summary H2GO supports each and all of the proposed:

[15] For additional detail, please see H2GO Canada, "Developing a sustainable approach to hydrogen deployment in Canada" (2019), available online at https://www.h2gocanada.com/our-report.
[16] Application, Exhibit B, Tab 1, Schedule 1, para 6. See also Argument-in-Chief (August 28, 2020), paras 55-57.
[17] Exhibit I.H2GO.1(f), p. 4. See also Exhibit I.STAFF.1.
[18] H2GO notes that EGI intends to have the LCEP approved and in operation by the time the CFS is implemented so that EGI can have practical experience to evaluate whether additional similar projects are appropriate as ways to address obligations under the CFS. See Exhibit I.H2GO.2(A), p. 3.
[19] Argument-in-Chief (August 28, 2020), para 57, source 2016 data of annual spill of zero emission power courtesy of OPG.

- injection of hydrogen into the gas distribution system and related enhancements to GHG reductions;
- hydrogen production via PtG;
- the use of hydrogen blending and natural gas infrastructure as storage resources to establish an intertie between the electrical grid and the natural gas distribution system;
- the suitability of the pilot project in providing insight, data and information related to the use of hydrogen as a method for decarbonizing the natural gas grid and complying with the requirements of the forthcoming CFS;
- approval of the leave to construct, easement agreements, and rate riders requested.

ALL OF WHICH IS RESPECTFULLY SUBMITTED THIS
11th day of September, 2020.

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