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August 28, 2020

**VIA EMAIL and RESS**

Ms. Christine Long  
Board Secretary  
Ontario Energy Board  
2300 Yonge Street, 27th Floor  
Toronto, ON M4P 1E4

Dear Ms. Long:

**Re: Enbridge Gas Inc. ("Enbridge Gas")**  
**Ontario Energy Board File: EB-2019-0294**  
**Low Carbon Energy Project - Argument-in-Chief**

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In accordance with Procedural Order No. 4, dated July 30, 2020, enclosed please find the Argument-in-Chief of Enbridge Gas in the above noted proceeding.

Please contact the undersigned if you have any questions.

Yours truly,

(Original Digitally Signed)

Joel Denomy  
Technical Manager, Regulatory Applications

## **ONTARIO ENERGY BOARD**

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

**AND IN THE MATTER OF** an application by Enbridge Gas Inc. under section 91 of the OEB 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 OEB Act for an order or orders approving a rate rider to be applied to customers impacted by the Low Carbon Energy Project.

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### **ENBRIDGE GAS INC.**

### **LTC APPLICATION: LOW CARBON ENERGY PROJECT**

### **ARGUMENT IN CHIEF**

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**A. OVERVIEW**

1. On March 31, 2020, Enbridge Gas Inc. (Enbridge Gas, or the Company) filed an updated application with the Ontario Energy Board (OEB, or the Board) seeking leave to construct (LTC) facilities to allow the Company to inject a controlled amount of hydrogen into an isolated portion of its natural gas distribution system in the City of Markham (the Low-Carbon Energy Project, also referred to as the LCEP or the Project).
2. The LCEP is a pilot project that will allow the Company to green a portion of the natural gas grid in Ontario. The experience gained through the implementation of the LCEP will position Enbridge Gas to then expand hydrogen injection into other parts of its gas distribution system, further enhancing reductions to greenhouse gas (GHG) emissions across the province. The LCEP also represents an important step for Enbridge Gas to prepare for the requirements of the Federal Government's Clean Fuel Standard (CFS).
3. The LCEP will require isolation of a small portion of Enbridge Gas's distribution system, referred to as the blended gas area (BGA). This will allow Enbridge Gas to monitor the operational impact of hydrogen blending.
4. The LCEP Facilities are located in close proximity to Enbridge Gas's Technology and Operations Centre (TOC) on Honda Boulevard in Markham, Ontario. The LCEP Facilities include around 750m of new pipeline, as well as a hydrogen station, a hydrogen blending station, a district station and two pipe disconnections. These facilities are required to carry natural gas from an existing Enbridge Gas pipeline to the TOC, and then to blend hydrogen produced by a Power to Gas (PtG) facility at the TOC, and then to distribute the blended gas to the BGA.
5. Enbridge Gas has undertaken extensive efforts to ensure that the LCEP will be safe and reliable. Among other things, Enbridge Gas has decided that its pilot project

should use only a low concentration of hydrogen (2% by volume), to ensure no adverse impacts.

6. The Technical Standards and Safety Authority (TSSA) has confirmed that it is in support of the project.
7. Bill impacts from the LCEP are expected to be minimal.
  - i. The cost of the facilities will not cause incremental rate impacts until rebasing, and even then the impacts will be modest.
  - ii. During the deferred rebasing term, Enbridge Gas will acquire hydrogen at the same cost as traditional natural gas, meaning that there will be no gas cost impact.
  - iii. Customers in the BGA will have a rate rider, to compensate them for the cost of the additional blended gas that is required (which occurs because hydrogen has a lower heating value than conventional natural gas). To effect this, Enbridge Gas's Application seeks approval of a rate rider to compensate affected customers for costs associated with increased gas consumption.
8. The Government of Canada and jurisdictions around the world are recognizing the benefits of hydrogen as a low-carbon fuel source. Enbridge Gas submits that the LCEP is an opportunity for customers, the Company and the province of Ontario to take steps to introduce hydrogen into the natural gas stream and, over time, reduce GHG emissions. The lessons learned from the LCEP pilot project can be used to determine whether, when, where and how hydrogen blending can be expanded to other parts of the Enbridge Gas distribution system. Within 5 years, Enbridge Gas will report to the OEB and stakeholders about its experience with the BGA, including observations and recommendations about whether and how to expand hydrogen blending.
9. In this Argument in Chief, Enbridge Gas sets out the background and context that led to this Application, as well as the details of the proposed LCEP. Enbridge Gas will not predict and respond to positions that other parties may take in their submissions, but will instead respond to those submissions in Reply Argument.

**B. PURPOSE AND NEED FOR THE PROJECT**

10. The goals of the LCEP are to provide valuable insight into the use of hydrogen as a method for decarbonizing the natural gas grid and to provide a means through which the Company can begin to prepare for the requirements of the CFS.
11. Hydrogen can be produced via a variety of methods. One such method is PtG, which is a technology that uses the process of electrolysis. With this method an electrolyzer uses electricity to separate water into hydrogen and oxygen by splitting the water (comprised of two parts hydrogen and one part oxygen) into its constituent components. The end products are hydrogen and oxygen. The hydrogen produced can then be used as a fuel or an input to a variety of industrial processes.<sup>1</sup> When combusted, hydrogen is a zero carbon emission fuel source.<sup>2</sup>
12. An affiliate of Enbridge Gas (2562961 Ontario Ltd.) has developed and built North America's first utility scale PtG facility in Markham, Ontario. It is located at Enbridge Gas's TOC. The PtG facility was developed in partnership with Hydrogenics Corporation. Hydrogenics Corporation is part owner of 2562961 Ontario Ltd.<sup>3</sup>
13. The PtG plant is part of a pilot project with the Independent Electricity System Operator (IESO). The PtG plant, under a contract with the IESO, provides regulation service, which assists the IESO with balancing electricity supply and demand on a second by second basis. The IESO dispatches the PtG plant when it requires regulation service and hydrogen and oxygen are produced when electricity is run through the PtG plant.<sup>4</sup>
14. The hydrogen produced by the P2G plant will be captured, stored and injected into the portion of the Company's gas distribution system serving the BGA, thereby lowering the GHG emissions associated with the consumption of natural gas in this

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<sup>1</sup> Exhibit B, Tab 1, Schedule 1, para. 12.

<sup>2</sup> Exhibit B, Tab 1, Schedule 1, para. 3.

<sup>3</sup> Exhibit B, Tab 1, Schedule 1, para. 13.

<sup>4</sup> Exhibit B, Tab 1, Schedule 1, para. 14.

area and greening the gas distribution grid. When blended into the natural gas distribution system, hydrogen has a positive effect on GHG emissions by serving to reduce the overall carbon content of natural gas. The result is a reduction in GHG emissions associated with the combustion of natural gas.<sup>5</sup>

15. Enbridge Gas conducted market research to gauge public awareness, interest and acceptance for blending hydrogen into the natural gas grid. The market research surveyed customers in the EGD and Union rate zones to determine customer attitudes toward the environment and customer awareness of, and opinions about, Enbridge Gas's low carbon initiatives including the Project. Key findings included the following: (i) while most customers are not familiar with low carbon initiatives such as hydrogen blending, the majority of customers support Enbridge Gas making investments in such initiatives (76% providing at least some support); and (ii) approximately half of the Company's customers would support a small increase in their natural gas bill to allow Enbridge Gas to pursue low carbon initiatives.<sup>6</sup>

16. Current government policies are geared towards reducing GHG emissions. The LCEP is an important pilot project to assess one way that Enbridge Gas can assist in meeting government targets and goals. Enbridge Gas believes a combination of solutions will be needed as part of the transition to a low carbon economy. These solutions include energy efficiency via Demand Side Management (which Enbridge Gas has been doing for over 20 years across Ontario), renewable hydrogen, renewable natural gas from bio sources, electrification, geothermal, the use of gas fired heat pumps, and high efficiency furnaces, amongst others. Hydrogen blending can be part of the Company's suite of activities to assist customers in reducing GHG emissions.<sup>7</sup>

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<sup>5</sup> Exhibit B, Tab 1, Schedule 1, paras. 15 and 16. The Company's current estimate of GHG emission reductions from the LCEP is set out at Exhibit I.STAFF.1.

<sup>6</sup> Exhibit B, Tab 1, Schedule 1, para. 38.

<sup>7</sup> Exhibit I.ED.12(b).

17. The Federal Government is currently developing the CFS. According to the Federal Government, the CFS will be a performance-based approach designed to incent the innovation and adoption of clean technologies in the oil and gas sector and the development and use of low-carbon fuels throughout the economy. The LCEP aligns with Federal government policies aimed at reducing GHG emissions and will help Enbridge Gas to prepare for the implementation of the CFS.<sup>8</sup>
18. A main goal of the LCEP is to provide valuable insight into the use of hydrogen as a method for decarbonizing the natural gas grid and provide a means through which the Company can begin to prepare for the requirements of the CFS. The CFS will “incent the use of a broad range of low carbon fuels, energy sources and technologies, such as electricity, hydrogen, and renewable fuels, including renewable natural gas.” The CFS will seek to reduce the carbon foot print of carbonaceous fuels by setting “lifecycle carbon intensity requirements for liquid, gaseous and solid fuels used in transportation, industry and buildings” and will become more stringent over time.<sup>9</sup>
19. The CFS for gaseous and solid fuel regulations will come into force January 1, 2023. Under the CFS, hydrogen is expected to be a means of compliance and a pathway for the generation of CFS credits. Enbridge Gas’s leave to construct application to build the LCEP facilities which will facilitate the injection of hydrogen into the gas distribution system will prepare the natural gas grid for implementation of the CFS.<sup>10</sup>
20. More broadly, the Federal Government is supportive of a greater role for hydrogen in Canada’s energy mix, as a means to reduce GHG emissions.<sup>11</sup> Natural Resource Canada (NRCan) published a 2019 Hydrogen Pathways document and is now

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<sup>8</sup> Exhibit B, Tab 1, Schedule 1, para. 17.

<sup>9</sup> Exhibit B, Tab 1, Schedule 1, paras. 25-26 (and references cited therein).

<sup>10</sup> Exhibit B, Tab 1, Schedule 1, para. 27 (and references cited therein). Further information about Enbridge Gas’s expectations of the CFS is set out at Exhibit I.STAFF.2(h); Exhibit I.H2GO.2(e); and Exhibit I.VECC.4.

<sup>11</sup> Exhibit I.ED.12(b).

working to complete a 2020 Hydrogen Strategy for Canada.<sup>12</sup> This is consistent with policy direction from other countries, including the European Union and Australia, as well as many recently published studies.<sup>13</sup>

21. Provincially, the Ontario Government has stated that it seeks to “[i]mprove rules and remove regulatory barriers that block private investors from deploying low-carbon refueling infrastructure that will help increase the uptake of electric, hydrogen, propane, autonomous and other low-carbon vehicles without government subsidies.” The LCEP aligns with Provincial policies aimed at reducing GHGs.<sup>14</sup>
22. The LCEP fits with the City of Markham’s municipal energy plan. The City of Markham has developed a comprehensive long-term city-wide energy plan with the objective of net zero emissions by 2050. The City of Markham has indicated its support for the Project.<sup>15</sup>
23. The LCEP, which is an innovative pilot project to assess current and future potential for hydrogen blending within system gas supply, also aligns with direction provided by the OEB.
24. The OEB’s Strategic Blueprint sets a strategic goal for utilities to embrace innovation in their operations and the products they offer consumers.<sup>16</sup> The Report to the OEB

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<sup>12</sup> The draft Executive Summary of the Hydrogen Strategy for Canada indicates that: “Hydrogen can be a used in hard-to-abate sectors to meet Canada’s 2030 and 2050 decarbonization objectives. Full scale commercial and demonstration projects in the near term can set us on a path for widespread deployment in the medium and longer term. By applying its world-class expertise at home, Canada can showcase hydrogen’s real-world applications and benefits and the role hydrogen can play in transforming our energy system.” (page II) The draft Executive Summary further states, under the heading “Vision for 2050”, that “If Canada seizes the opportunities for hydrogen, by 2050 we could realize the following ... >50% of energy supplied today by natural gas is supplied by hydrogen through blending in existing pipelines and new dedicated pipelines” (page X). The draft Executive Summary of the Hydrogen Strategy for Canada has been filed as Attachment 1 to Exhibit I.ED.12.

<sup>13</sup> Please see the list of studies, and associated commentary, found at Exhibit I.ED.12(b).

<sup>14</sup> Exhibit B, Tab 1, Schedule 1, para. 18.

<sup>15</sup> Exhibit B, Tab 1, Schedule 1, para. 19. The letter of support is at Exhibit B, Tab 1, Schedule 1, Attachment 2.

<sup>16</sup> OEB Strategic Blueprint 2017-2022: Keeping Pace With an Evolving Energy Sector, page 13.



from the Advisory Committee on Innovation focuses on steps that the OEB can take to support innovation in energy services in the electricity sector. However, the authors of that Report note the opportunity for the OEB to also focus on policies and approaches that will support innovation in the gas sector.<sup>17</sup>

25. In its Framework for the Assessment of Distributor Gas Supply Plans<sup>18</sup>, the OEB set out gas supply planning principles that must be met by gas distributors in their current and longer term gas supply plans. The LCEP is consistent with these gas supply planning principles. The LCEP provides an additional source of supply (hydrogen), and that supply source helps to satisfy public policy related to the environment and climate change.<sup>19</sup>

26. Finally, the LCEP is consistent with innovative projects being proposed and implemented in other jurisdictions. A list of similar projects in other jurisdictions is set out below.<sup>20</sup>

Country	Description
United Kingdom (U.K.)	Hydrogen Blending at Keele University (up to 20% hydrogen).  H21 Project – suite of projects with the ultimate goal of converting gas grid to 100 % hydrogen.
France	The GRHYD demonstration project – hydrogen blending for homes and NGV refueling station (currently up to 6% hydrogen).
Germany	Mainz (Germany) – operational since 2016. Around 2,000 customers, up to 10% H <sub>2</sub> , distribution network loop was built in the 1980s.  Avacon/DVGW pilot project to test hydrogen blending of up to 20% for around 400 customers. The results of the test project will

<sup>17</sup> Advisory Committee on Innovation: Report to the Chair of the Ontario Energy Board, November 2018, page 3.

<sup>18</sup> EB-2017-0129, Report of the Ontario Energy Board: Framework for the Assessment of Distributor Gas Supply Plans, October 25, 2018, section 3.1.

<sup>19</sup> Exhibit B, Tab 1, Schedule 1, paras. 20-21.

<sup>20</sup> Table is reproduced from the response to Exhibit I.ED.12(b) – the references for each project are set out in that response. See also Exhibit B, Tab 1, Schedule 1, Attachment 1, Table 1 (page 3).

	<p>serve as a model for future hydrogen use in gas distribution systems.</p> <p>Netze BW “hydrogen island” (blended gas area), where hydrogen share in natural gas network will be gradually increased to 30% - starting within the distributor’s own property and then expanding to neighbouring streets and houses.</p>
Australia	Jemena Western Sydney Power to Gas Trial - The project will convert renewable power into hydrogen gas, via electrolysis, which will then be stored for use. A trial project will power 250 homes and a hydrogen vehicle refuelling station. If successful, the project will be expanded.
United States	University of California Irvine – Customer piping, privately-owned, sponsored by SoCalGas.
Canada	ATCO has announced plans to blend 5% hydrogen in a portion of its natural gas grid in Fort Saskatchewan, Alberta.

27. Proceeding with the LCEP pilot project will position Enbridge Gas, its customers, and Ontario to continue to expand and benefit from hydrogen blending in order to reduce GHG emissions while making use of the existing, cost-effective natural gas distribution network that already exists.

28. As explained, the LCEP is a pilot project that will provide Enbridge Gas with practical experience with hydrogen blending and supply of blended gas to customers. Enbridge Gas plans to carefully monitor and assess its operating experience with the LCEP. This will allow the Company to understand whether and how hydrogen blending might be expanded to other parts of the distribution system (whether as an expansion of the BGA to other “loops”, or in other parts of the network). It will also allow the Company to assess whether different (higher) concentration of hydrogen could be used in the future. At the same time, Enbridge Gas will also gain experience with how hydrogen blending activities can be used to satisfy obligations under the CFS. After a reasonable period (likely 5 years), Enbridge Gas commits to report to the OEB and

stakeholders about its experience with the LCEP, including observations and recommendations about whether and how to expand hydrogen blending.<sup>21</sup>

29. In the future, the blending of hydrogen into the natural gas stream will provide a solution to the challenge of utilizing the province's surplus electrical energy. In doing so, hydrogen blending can establish an intertie between the electrical grid and the natural gas distribution system, and improve energy utilization, by using existing pipeline infrastructure to effectively store electrical energy.<sup>22</sup>

### **C. DETAILS OF THE LCEP**

30. The LCEP consists of the installation of new pipelines and stations to introduce a proportion of hydrogen to a defined isolated section of the Company's gas distribution system. Once constructed Enbridge Gas will be able to provide blended gas distribution service to approximately 3,600 customers in Markham, Ontario (in the BGA).<sup>23</sup>

31. As explained in evidence, Enbridge Gas has identified several "loops" that could be constructed in order to create a network within the distribution system that could distribute blended gas. Currently Enbridge Gas is proposing to proceed with constructing loop S1 only (Phase 1). The additional identified loops could be added later, once there is operating experience in the pilot project. The additional loops will be able to use the same hydrogen blending facilities, limiting the incremental costs of expanding the BGA. The rationale for this phased approach is to limit the overall cost of the LCEP while at the same time being able to isolate and monitor the operational impact of hydrogen blending in a suitable network with minimal construction related impacts.<sup>24</sup>

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<sup>21</sup> At that time, Enbridge Gas will assess what information (if any) would need to be provided on a confidential basis – see Exhibit I.CCC.15.

<sup>22</sup> Exhibit B, Tab 1, Schedule 1, para. 22.

<sup>23</sup> Exhibit B, Tab 1, Schedule 1, para. 28.

<sup>24</sup> Exhibit B, Tab 1, Schedule 1, para. 29.

32. Maps showing the proposed LCEP facilities and the BGA are provided in evidence and reproduced in Appendices A and B to this Argument in Chief.<sup>25</sup>
33. Enbridge Gas undertook a thorough consultation process with customers in and around the BGA, to provide customers with information about the LCEP, and to answer questions. Most participants at the Company's open houses were supportive of the Project.<sup>26</sup>
34. In preparation and support for the LCEP, Enbridge Gas conducted a detailed review of feasibility and recommendations for blending hydrogen into natural gas supply for distribution using existing infrastructure. The main purpose of the analysis and investigation work was to determine a suitable level of hydrogen that may be injected into natural gas and where in an existing Enbridge Gas network that injection could occur.<sup>27</sup>
35. Enbridge Gas concluded that a closed loop within its distribution network is suitable for hydrogen blending. The analyses leading to these conclusions were based on literature reviews, analytical modeling, risk assessments, field surveys, industry consultation (e.g., external consultants, internal subject matter experts, manufacturers, etc.), integrity considerations and engineering judgement. Any recommendations resulting from this work were based on validation against existing operational and design practices to identify and track potential gaps and/or incompatibilities in order to facilitate the effective implementation into Enbridge Gas's operations.<sup>28</sup>

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<sup>25</sup> Exhibit B, Tab 1, Schedule 1, Attachments 3 and 4.

<sup>26</sup> Exhibit B, Tab 1, Schedule 1, paras. 33-37.

<sup>27</sup> Exhibit B, Tab 1, Schedule 1, Attachment 1, para. 1.

<sup>28</sup> Exhibit B, Tab 1, Schedule 1, Attachment 1, para. 5. An overview of the analysis conducted by Enbridge Gas is set out in the balance of Attachment 1 to Exhibit B, Tab 1, Schedule 1.

36. Enbridge Gas has concluded that hydrogen blending at a concentration of up to 2.0% by volume in the BGA will not have negative impacts on the safety and reliability of the distribution system or customer appliances.<sup>29</sup>
37. In Procedural Order No. 2, the OEB asked the TSSA to file evidence addressing the LCEP, including the TSSA's level of satisfaction with Enbridge Gas's work to identify risks and develop mitigations and the TSSA's opposition or support for the Project (with reasons why).<sup>30</sup> The TSSA's July 8, 2020 evidence explained the process undertaken to review the LCEP and concluded that the TSSA is in support of the Project.<sup>31</sup> The TSSA indicated that it had not yet reviewed Enbridge Gas's risk assessment for the Project, and suggested that TSSA acceptance of the risk assessment be a condition of OEB approval.<sup>32</sup> Since the time of the TSSA evidence, Enbridge Gas has provided the risk assessment to the TSSA on a confidential basis, and the TSSA has confirmed its acceptance of the risk assessment, and commented that "TSSA support of the project is not changed".<sup>33</sup>
38. The pipelines and stations required for the LCEP (i.e. the facilities required to create the BGA and blend hydrogen) are listed in Table 1 below.<sup>34</sup> A map of the LCEP facilities is reproduced at Appendix A to this Argument in Chief.

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<sup>29</sup> Exhibit B, Tab 1, Schedule 1, Attachment 1, para. 45.

<sup>30</sup> Procedural Order No. 2, June 16, 2020.

<sup>31</sup> TSSA letter (from K. Manouchehri, P.Eng.), dated July 8, 2020, pages 1-3.

<sup>32</sup> TSSA letter, page 3.

<sup>33</sup> TSSA response to Board Staff Interrogatory #5.

<sup>34</sup> Exhibit B, Tab 1, Schedule 1, para. 31. Details on pipeline and station specifications can be found in Exhibit D, Tab 1, Schedule 1. Details on pipeline routing can be found in the C series of Exhibits.

Table 1: Proposed Facilities

Pipe/ Station	Description	Pipe Length (m)	Nominal Pipe Size (NPS)	Material	Pressure
Pipe	Pipeline that will carry natural gas from the existing XHP pipeline on Woodbine Avenue to the TOC property.	380	6	ST	XHP
Hydrogen Blending Station	The hydrogen blending station will control the amount of blended gas being injected into the natural gas distribution system. Located within the TOC property.	N/A	N/A	N/A	XHP to HP
Hydrogen Station	The hydrogen station will regulate hydrogen flow from the existing hydrogen storage tanks to the outlet of the hydrogen blending station. The hydrogen station will ensure that no more than 2% hydrogen by volume will be blended with traditional natural gas. Located within the TOC property.	N/A	N/A	N/A	XHP
Pipe	This pipeline will carry blended gas from the proposed hydrogen blending station to the proposed district station. Located within the TOC property.	350	6	Steel	HP
District Station	The district station will regulate the pressure of the blended gas from HP to IP. Located within the TOC property.	N/A	N/A	N/A	HP to IP
Pipe	This pipeline will connect to the existing NPS 6 PE IP pipeline on Honda Boulevard, to provide blended gas to Phase 1 of the Project.	25	8	PE	IP
Disconnections	In order to isolate the BGA, two connections within the existing network are being disconnected at the intersection of Major Mackenzie Drive and Hazelton Avenue.	N/A	N/A	N/A	N/A

39. Total capital costs for the LCEP facilities (inclusive of overheads) are estimated to be \$5.232 million<sup>35</sup>, which will be reduced by grant funding from Sustainable Development Technology Canada (estimated at \$221,000)<sup>36</sup>. The forecast capital costs include a 25% contingency for most items (which is consistent with recent approved LTC decisions<sup>37</sup>), and a 40% contingency for the hydrogen station and hydrogen blending station (because the design for those elements is in an early phase, and because Enbridge Gas does not have prior experience with such facilities)<sup>38</sup>.

#### **D. RATE IMPACTS**

40. Unlike a traditional LTC application, the LCEP will impact both distribution rates and gas supply costs.

41. The system-wide impact on distribution rates (Facilities Impact) is the rate impact attributable to the cost of the facilities required for the LCEP. As Enbridge Gas is currently in a price cap rate setting regime during its deferred rebasing term, the cost of the LCEP facilities will not result in any incremental impact to rates until rebasing in 2024. At that time the LCEP facilities will be included in rate base. Enbridge Gas submits that the capital costs for the Project should be paid for by all customers as all customers will receive the benefit from the Project. Enbridge Gas estimates that the increase in a customer's bill related to these costs would be less than \$0.12 per year after rebasing.

42. There is also a discrete distribution rate impact on the customers in the BGA, because they will consume more blended gas as compared to traditional natural gas (Consumption Impact). This is a volumetric impact resulting from the lower energy content of hydrogen. For a set volume, the energy content of hydrogen is

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<sup>35</sup> Exhibit B, Tab 1, Schedule 1, para. 40. Details on Project costs are shown in Exhibit D, Tab 1, Schedule 1, and further discussed in Exhibit I.CCC.17(b).

<sup>36</sup> Exhibit B, Tab 1, Schedule 1, para. 40; Exhibit I.SEC.4; and Exhibit I.SEC.10, Attachment 1.

<sup>37</sup> Exhibit I.PP.8(a).

<sup>38</sup> Exhibit I.CCC.17(a).

approximately 1/3 of that of natural gas. Consequently, a customer in the BGA will need to consume slightly more blended gas relative to natural gas in order to receive the same amount of energy. For a typical residential customer consuming 2,400 m<sup>3</sup> of traditional natural gas per year, the equivalent amount of blended gas for the same amount of energy is approximately 2,433 m<sup>3</sup> per year. Based on January 2020 QRAM rates, a typical residential customer in the BGA (volumes indicated above) would pay approximately \$8.99 more each year than a non-BGA customer based on the slightly higher volumes consumed.<sup>39</sup> Enbridge Gas is proposing to offset the Consumption Impact on customers within the BGA by way of an annual rate rider providing a credit of \$10.00 per year. The annual credit proposed by Enbridge Gas will ensure that the BGA customers are kept whole. During the deferred rebasing period, Enbridge Gas will absorb the costs associated with the rate rider. If the Board believes that it is appropriate, Enbridge Gas is willing to update the amount of the rate rider each year, to reflect current QRAM rates.

43. There is also a potential gas supply cost impact, which arises from procuring hydrogen rather than traditional natural gas for customers in the BGA (Commodity Impact). To support this pilot project, Enbridge Gas has arranged to procure hydrogen from 2562961 Ontario Ltd. in a manner that keeps ratepayers cost-neutral.<sup>40</sup> Under this approach, the price paid for hydrogen will be the same price paid for traditional natural gas and will fluctuate according to the market cost of natural gas. There will be no impact to customer bills as the cost of hydrogen will be the same as the cost of traditional natural gas. This treatment would apply to the hydrogen supply for the BGA until rebasing or until such earlier time that a different treatment is appropriate based on future developments; for example, the implementation of a CFS. Any alternate treatment will be presented to and approved by the Board.

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<sup>39</sup> Details of this calculation are set out at Exhibit I.STAFF.4.

<sup>40</sup> The term sheet for hydrogen supply is filed at Exhibit I.STAFF.2, Attachment 1.



44. Taking all the foregoing into account, Enbridge Gas submits that both the immediate and future rate impacts of the LCEP are reasonable.

**E. THE LCEP MEETS THE OEB'S REQUIREMENTS FOR LTC APPLICATIONS**

45. In determining whether a project is in the public interest and warrants LTC approval, the Board typically examines the following criteria: need for the project, project alternatives, project costs and economics, environmental impacts, landowner impacts and Indigenous consultation.<sup>41</sup> Enbridge Gas has satisfied these criteria for the Project as outlined in the evidence and summarized below.

46. The “need” for the LCEP is explained in the “Details of the LCEP” section of this Argument in Chief. Briefly, this pilot project will provide insight into the use of hydrogen blending as a method for decarbonizing the natural gas grid and will also provide a means through which the Company can begin to prepare for the requirements of the CFS. The benefits of the LCEP that underline why approval is in the public interest are further discussed in the next section of this Argument in Chief (“Benefits of the Pilot Program”).

47. Assuming that there is a public interest case supporting Enbridge Gas proceeding with a hydrogen blending pilot project, then Enbridge Gas submits that its measured approach is appropriate. The alternative that Enbridge Gas has chosen (proceeding with only one “loop” within the BGA) will mitigate cost impacts while still providing Enbridge Gas with the important and valuable opportunity to introduce hydrogen blending and evaluate how this could be expanded in the future (in terms of areas served and hydrogen blending levels).

48. The forecast capital costs of the LCEP facilities are reasonable. The main question asked in interrogatories about the forecast costs related to contingency amounts. Enbridge Gas has explained why it is appropriate to include a higher contingency for

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<sup>41</sup> See, for example EB-2019-0172 Decision and Order, April 1, 2020, page 4 (Windsor Line Replacement LTC); and EB-2019-0188 Decision and Order, May 7, 2020, page 4 (North Bay - Northshore and Peninsula Roads LTC).

the costs of the hydrogen station and hydrogen blending station - these are new types of facilities and design is at a preliminary stage.<sup>42</sup>

49. As indicated in evidence, Enbridge Gas submits that the new LCEP facilities should be fully attributed to system reinforcement and general distribution growth and managed within the rolling project portfolio in accordance with Enbridge Gas's normal business practice.<sup>43</sup>

50. Enbridge Gas retained Dillon Consulting Ltd. (Dillon) to undertake a route evaluation and environmental and socio-economic impact study, which included a cumulative effects assessment, to select the Preferred Route for the proposed LCEP. As part of the development of Dillon's study, a consultation program was implemented to receive input from interested and potentially affected parties including Indigenous communities. Input gathered from the consultation program was evaluated and integrated into the study. Mitigation measures designed to minimize environmental and community impacts resulting from construction of the Project were also developed as part of the study.<sup>44</sup>

51. The results of Dillon's study are documented in the environmental report (ER) entitled Low-Carbon Energy Project Environmental Report, May 2019. The ER conforms to the Ontario Energy Board's (the Board) Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition, 2016 (Guidelines).<sup>45</sup> Enbridge Gas supports the findings made by Dillon and will reflect these in the implementation of the Project.<sup>46</sup>

52. With the LCEP facilities being constructed in municipal road allowances or within property owned by Enbridge Gas, the Company maintains that all necessary land rights and permit approvals will be in place prior to the commencement of construction.

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<sup>42</sup> Exhibit I.CCC.17(a).

<sup>43</sup> Exhibit B, Tab 1, Schedule 1, para. 41. See also Exhibit I.FRPO.6.

<sup>44</sup> Exhibit C, Tab 1, Schedule 1, para. 1.

<sup>45</sup> The ER is filed as Attachment 1 to Exhibit C.

<sup>46</sup> Exhibit C, Tab 1, Schedule 1, para. 3.

Enbridge Gas may need temporary working areas along the pipeline route where the road allowance is too narrow or confined to facilitate construction. Enbridge Gas is applying under Section 97 of the OEB Act for an order approving the form of working area agreements offered to owners of land affected by the route or location of the proposed facilities.<sup>47</sup>

53. Enbridge Gas has followed the OEB and Ministry of Energy Northern Development and Mines (MENDM) processes in relation to Indigenous consultation.<sup>48</sup> On July 17, 2020, MENDM provided Enbridge Gas with a Letter of Opinion indicating that “the procedural aspects of consultation undertaken by Enbridge to date for the purposes of the Ontario Energy Board’s Leave to Construct approval process for the Low Carbon Energy Project is satisfactory”.<sup>49</sup>

#### **F. BENEFITS OF THE LCEP PILOT PROJECT**

54. The LCEP is an excellent opportunity for Enbridge Gas and its ratepayers to implement an innovative approach to “greening” gas supply. The Project may help Enbridge Gas in finding ways to comply with the pending CFS. It is a low-cost project with minimal ratepayer impacts that will provide real-world experience with blending hydrogen into the gas supply and reducing GHG emissions. This is consistent with public policy, customer preferences, global developments and the Company’s own goals.

55. The LCEP demonstrates Enbridge Gas’s commitment to innovation and creative solutions to reduce GH emissions while continuing to provide safe, reliable and cost-effective natural gas service to customers across Ontario. Enbridge Gas expects that successful implementation of this Project will support broader implementation of hydrogen blending in other parts of its distribution system.

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<sup>47</sup> The form of agreement can be found at Exhibit E, Tab 1, Schedule 1, Attachment 1.

<sup>48</sup> Evidence about Indigenous Consultation is found in the F-series of exhibits. See also Exhibit I.STAFF.18.

<sup>49</sup> Exhibit F, Tab 1, Schedule 1, Attachment 3.

56. The lessons learned from the LCEP pilot project can be used to determine whether, when, where and how hydrogen blending can be expanded to other parts of the Enbridge Gas distribution system.<sup>50</sup>

57. In summary, the benefits to Enbridge Gas ratepayers from blending hydrogen into the natural gas grid include<sup>51</sup>:

- i. The delivery of blended natural gas with a lower carbon content which lowers GHG emissions;
- ii. Introduction of a fuel that is expected to be compliant with the pending federal CFS;
- iii. Potential to create new opportunities to develop, operate and maintain additional blended gas systems in Ontario; and
- iv. Corresponding benefits to electrical ratepayers (who are typically also Enbridge Gas customers) as the natural gas distribution system can be used to store the excess electrical production in the province.

#### **G. RELIEF REQUESTED**

58. Enbridge Gas requests that the Board make the following Orders:

- (i) an Order pursuant to section 90 of the OEB Act granting leave to construct the LCEP facilities;
- (ii) an Order pursuant to section 97 of the OEB Act approving the proposed form of easement agreements; and
- (iii) an Order pursuant to section 36 of the OEB Act approving the proposed rate rider for customers in the BGA.

59. With leave of the OEB, Enbridge Gas expects to commence construction of the LCEP in the second quarter of 2021.<sup>52</sup> This timing is required in order to gain experience with the blending of hydrogen into the natural gas distribution system in advance of pending carbon abatement regulations, the CFS. In order to meet Project timelines,

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<sup>50</sup> Exhibit I.STAFF.8(d) and Exhibit I.VECC.9.

<sup>51</sup> Exhibit B, Tab 1, Schedule 1, para. 24.

<sup>52</sup> Exhibit I.CCC.4.

Enbridge Gas respectfully requests the approval of this Application by November 2020.

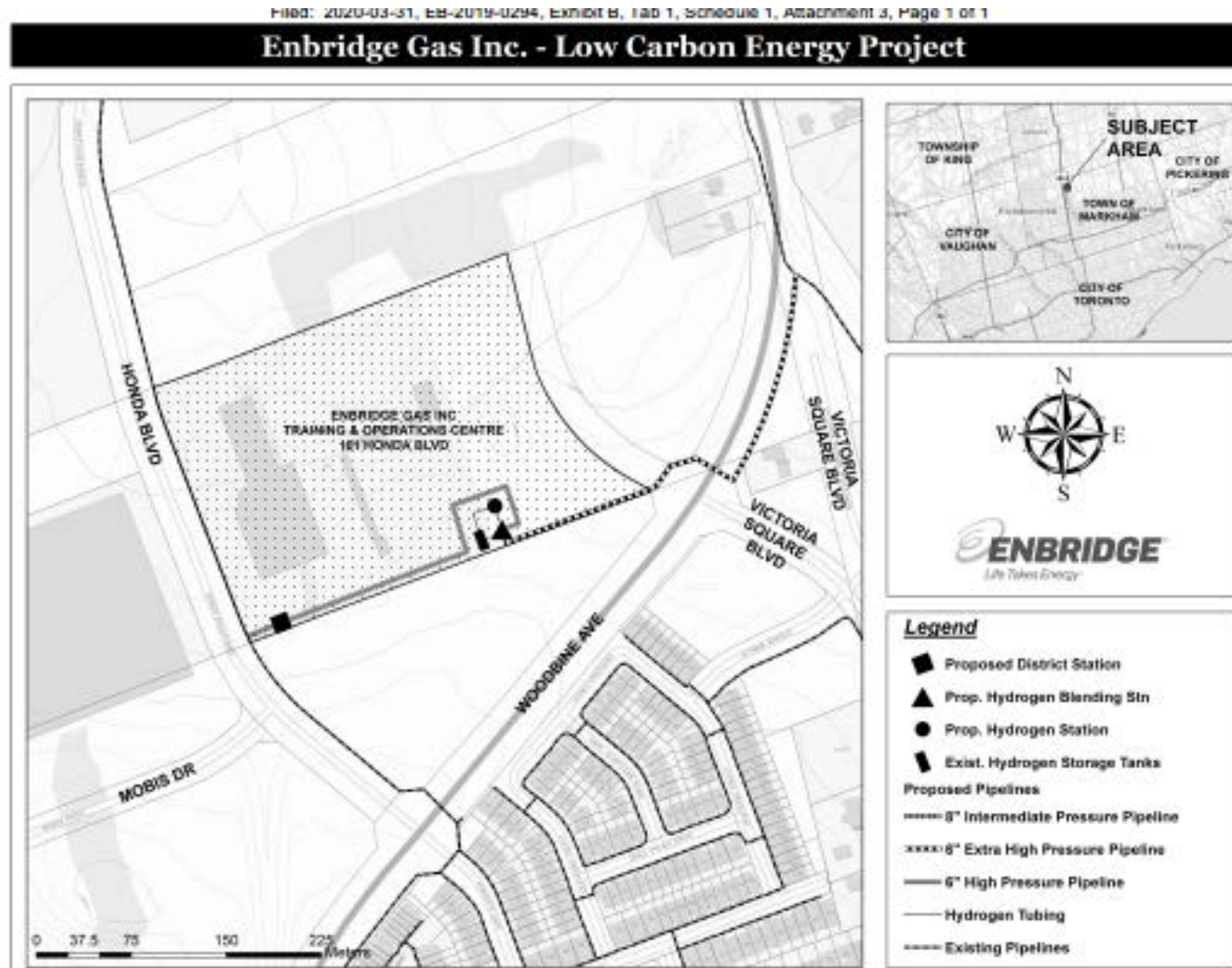
All of which is respectfully submitted this 28<sup>th</sup> day of August 2020.

A handwritten signature in blue ink, appearing to read 'D. Stevens', with a horizontal line extending to the right.

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David Stevens, Aird & Berlis LLP  
Counsel to Enbridge Gas

## Appendix A – Map of LCEP Facilities



## APPENDIX B – MAP OF BLENDED GAS AREA (BGA)

Filed: 2020-03-31, EB-2019-0294, Exhibit B, Tab 1, Schedule 1, Attachment 5, Page 1 of 1

### Enbridge Gas Inc. - Low Carbon Energy Project

