# Enbridge Feedback on Ontario's Low Carbon Hydrogen Strategy Discussion Paper

**Submitted Online (ERO #019 2709)**

**Submission date: January 18, 2021**

***About Enbridge Inc.***

*Enbridge Inc. is a leading North American energy infrastructure company. We safely and reliably deliver the energy people need and want to fuel quality of life. Our core businesses include Liquids Pipelines, which transports approximately 25 percent of the crude oil produced in North America; Gas Transmission and Midstream, which transports about 19% percent of the natural gas consumed in the U.S.; Gas Distribution and Storage, which serves approximately 3.8 million retail customers in Ontario and Quebec; and Power Operations. Together, our renewable energy projects (either operating or under construction) have the capacity to generate 1,977 MW of net renewable power in North America and Europe. The Company's common shares trade on the Toronto and New York stock exchanges under the symbol ENB.*

*Life takes energy and Enbridge exists to fuel people's quality of life. For more information, visit:* www.enbridge.com.

ENBRIDGE

# Executive Summary

With hydrogen gaining attention around the world, Enbridge and Ontario can be a leader in Canada and the world in power-to-gas, green hydrogen, associated technologies and the many power-to-gas offshoots as demonstrated by our Markham power-to-gas facility. Hydrogen is a promising opportunity, particularly in the pursuit of cleaner natural gas. As the world transitions to a lower-carbon energy future, natural gas and hydrogen will play a vital role – as a replacement fuel for coal in electricity generation, a low-carbon source of home heating, a lower-emission fuel for heavy-duty vehicles and transportation fleets, and is complementary to the growth of renewable energy. Enbridge appreciates the opportunity to provide feedback on the development of Ontario's Low Carbon Hydrogen Strategy (the Strategy).

Enbridge established itself as a leader in renewable hydrogen with its first mover status as an early investor with the launch of North America's first utility-scale power-to-gas plant in Markham, Ontario. This 2.5 megawatt (MW) hydrogen energy storage project (expandable to 5 MW) currently helps to balance Ontario's electricity grid. Enbridge recently received approval from the Ontario Energy Board (OEB) to blend hydrogen from our Markham facility into select portions of our natural gas distribution network. This low carbon hydrogen-blending project is the first of its kind in North America and is an important step in greening the natural gas supply that millions of Ontarians depend on to heat their homes and energize industry. The successful implementation of this pilot project will support additional and larger scale hydrogen blending activities in other parts of Enbridge's natural gas distribution system, allowing the province to meet its climate reduction targets.

Enbridge has taken deliberate steps to diversify our business to include lower emission energy sources like natural gas and renewables, and we've made early, strategic investments in low-carbon solutions, including hydrogen, renewable natural gas (RNG) and compressed natural gas (CNG). We also have an ownership stake in almost 500 MW of wind and solar power projects in Ontario. Recently we've announced our commitment to achieve net zero greenhouse gas (GHG) emissions from our operations by 2050; with an interim target to reduce emissions intensity 35% by 2030. Enbridge can play a leading role in building the production capacity and the associated infrastructure needed to realize Ontario's hydrogen vision. Enbridge is a key strategic industry partner through our:

- Significant experience executing large projects (including hydrogen and power-to-gas), managing risk, and integrating new technologies with existing infrastructure
- Substantial applicable experience moving gaseous fuels
- North American footprint and network of key strategic partnerships (industry, provincial and local governments, and Indigenous communities)

In this submission, Enbridge has laid out a phased approach with incremental targets (see chart on page four) to concurrently build out demand and supply as Ontario moves to broader commercial adoption. This submission covers three themes: establishing a vision to advance Ontario's hydrogen leadership; implementing opportunities across the hydrogen value chain; and leveraging industry action and reducing red tape. Each theme includes clear recommendations that build on Ontario's existing strengths, align with industry opportunities, and cover action items that can be delivered in the near term to support Ontario's post COVID-19 economic recovery.

To that end, Enbridge is pleased to provide the following recommendations to help inform the development of Ontario's first hydrogen strategy:

***Establishing a Vision to Advance Ontario's Hydrogen Leadership***

1. Designate a single Minister to lead a coordinated, whole-of-government approach to develop and implement Ontario's Low Carbon Hydrogen Strategy with support from relevant Ministries
2. Establish dedicated funding mechanisms to attract and leverage co-investment from industry and governments to support the development of Ontario's hydrogen economy
3. Support private sector and academic partnerships to better understand the reach, scope and opportunities of hydrogen

4. Use a phased approach with incremental targets to address demand and build supply

***Implementing Opportunities Across the Hydrogen Value Chain***

5. Commission an electricity-natural gas inter-connection study and develop additional power-to-gas facilities across Ontario to support hydrogen production and electricity grid regulation services
6. Work with industry to establish pilot and initial deployment opportunities across the hydrogen value chain
7. Support opportunities for transit agencies (e.g. rail and heavy transit) and transportation corridors (e.g. highway 401) to adopt hydrogen
8. Establish a consortium to realize mass manufacturing capabilities for hydrogen-ready heating equipment and identify hydrogen retrofitting options for existing natural gas equipment

***Leveraging Industry Action and Reducing Red Tape***

9. Leverage successful pilot projects, including extensions for existing IESO power-to-gas initiatives and grid balancing services
10. Enable utilities to procure hydrogen at market price with incremental costs added to the natural gas portfolio cost
11. Identify and reduce red tape and administrative burden to enable pilot programs
12. Ensure codes, standards and regulations are consistent across North America, Europe and other export and import markets
13. Leverage Ontario's Oil and Gas industry experience to develop underground carbon and hydrogen storage resources

# Ontario's Blue and Green Hydrogen Potential

Ontario is well positioned to develop significant supplies of both blue and green hydrogen. In a 2005 study[1] commissioned by Natural Resources Canada, Ontario refineries produced 212,000 tonnes of hydrogen per year which presents an opportunity to hit the ground running to produce low cost blue hydrogen with carbon capture facilities. Where domestic demand for refined petroleum products may decrease in the future due to a rise in electric and hydrogen transportation, these existing refineries with hydrogen producing capabilities can be leveraged to supply a growing hydrogen demand. Enbridge estimates that approximately 2.3 megatonnes[2] of GHG emissions reductions could occur if these existing facilities were retrofitted with carbon capture facilities and all the hydrogen produced were delivered to natural gas customers. The cost of producing blue hydrogen from retrofitting an existing facility is expected to be the lowest cost source of hydrogen and is estimated to be less than $2 per kilogram of hydrogen equivalent to approximately $0.05/kwh or $14/GJ.

Storing surplus electricity as hydrogen provides an essential means of enabling and maximizing Ontario's existing renewable electrical generation from wind and solar. The production of hydrogen from curtailed generation assets allows for a more efficient and dynamic electrical grid system by tying the electrical and gas grids together where excess electrical generation is converted to hydrogen and used to decarbonize the gas network. This creates efficiencies from an asset utilization and environmental perspective. It also allows for long term energy storage by the gas grid. Enbridge's power-to-gas facility enables the province to deploy grid balancing services. According to the IESO, in 2019 there was 604 gigawatt hours (GWh) of

[1] 2005, Dalcor Consultants Ltd and Camford Information Services Inc., Canadian Hydrogen Survey – 2004/2005, Capacity, Production and Surplus -Update

[2] Assuming 9 tonnes of carbon dioxide is captured for every tonne of hydrogen produced, and 30 petajoules of natural gas is displaced by hydrogen.

nuclear maneuvers, 2,581 GWh of curtailed wind and solar generation, and 13,166 GWh of net exported power, which if directed to electrolyzers could produce approximately 330,000 tonnes[3] of green hydrogen annually. If this supply of hydrogen were to displace natural gas for heating, approximately 2.3 megatonnes of GHG reductions could be achieved. Enbridge estimates that green hydrogen could be produced for as low as $2 to $4 per kilogram of hydrogen, equivalent to approximately $0.05/kwh and $0.11/kwh where power could be supplied to these facilities at the 2019 average weighted Hourly Ontario Energy Price (HOEP) of 1.83 cents per kilowatt hour.

These combined sources of surplus power and existing hydrogen generating capacity could potentially produce approximately 544,000 tonnes (77 petajoules) of blue and green hydrogen per year and represents approximately 14% of the existing residential and commercial natural gas demand. Similar to countries in Europe, Enbridge aims to deliver hydrogen blended natural gas to all residential and commercial customers by 2040. In order to achieve this goal, further consultation is needed in order to help determine the feasible range in which a target could be achieved with existing hydrogen and power generating capacity.

# Establishing a Vision to Advance Ontario's Hydrogen Leadership

### Recommendation: Designate a single Minister to lead a coordinated and whole-of-government approach to develop and implement Ontario's Strategy with support from relevant ministries

A lead Minister would position the Government of Ontario for success and enable them to establish an overarching vision with a phased approach that includes incremental targets to help match demand and new supply. The lead Minister should be supported across relevant departments and agencies to coordinate government actions in the development of a policy and regulatory framework (e.g. with the Ministry of Energy, Northern Development and Mines, the OEB, Technical Standard and Safety Authority, Ministry of Economic Development, Job Creation and Trade, Ontario Centres of Excellence, Ministry of Transportation) and to leverage funding from across portfolios, including from the Ministry of Finance. This coordinated vision should include a conclusive release date of the Strategy and subsequent deployment and implementation.

### Recommendation: Establish dedicated funding mechanisms to attract and leverage co-investment from industry and governments to support the development of Ontario's hydrogen economy

Government co-funding to help de-risk shovel ready projects is essential to placing Ontario on equivalent footing with competitors to help these projects come to fruition, create jobs and lower GHG emissions in the most expeditious and efficient manner. Establishing clear and easy to navigate dedicated funding mechanisms would help Ontario attract private capital investment, leverage funding from federal sources and encourage the growth of made-in-Ontario solutions as a policy friendly place to do business. To incent hydrogen production and the build-out of associated infrastructure, Ontario should also consider a tax credit that incents production and the build-out of associated infrastructure.

We recommend that Ontario partner with the federal government and private sector to bring this zero-emissions fuel to Ontario's forefront to develop a hydrogen economy that is aligned with the federal hydrogen strategy. Enbridge has a wide array of opportunities it would like to partner with the province on in the production, storage, distribution and transportation of hydrogen. With the federal hydrogen strategy moving quickly, there is an opportunity to work together and leverage federal funding.

[3] Assuming electrolyzer efficiency of 20 kg of hydrogen per megawatt hour of power.

## Recommendation: Support private sector and academic partnerships to better understand the reach, scope and opportunities of hydrogen

Ontario is home to world class universities, colleges and research and incubation hubs that will play a key role in advancing hydrogen research, commercialization of new technologies and applications, and training and skills development for Ontario workers. As the hydrogen sector grows, it is important that Ontario's post-secondary efforts in this field reflect the opportunities in the province in coordination with industry. Industry partnerships with academia offer an important collaborative model to drive new rapid research and development and encourage applications.

We also believe that it is vital to ensure that a comprehensive educational program be deployed across the province to ensure uptake and acceptance of hydrogen and its role in decarbonizing the energy sector to help both the province and Canada meet climate commitment targets while creating long term quality employment for its residents.

## Recommendation: Use a phased approach with incremental targets to address demand and build supply

Ontario can set a clear path for developing the hydrogen economy by establishing specific and realistic incremental targets for each phase of development. Further consultation should be undertaken between federal and provincial governments and industry to assess alignment with the federal government's hydrogen vision and strategy, particularly as it relates to achieving a goal of ">50% of energy supplied today by natural gas is supplied by hydrogen through blending in existing pipelines and new dedicated hydrogen pipelines". This consultation should include discussion of new policy tools that can support the creation of hydrogen market demand in the absence of the Federal Clean Fuel Standard being applied to the gaseous fuel stream. Ontario's hydrogen strategy should include:

- Establishing large-scale blue and green hydrogen supply targets;
- Consulting with natural gas utilities to establish low-carbon gas targets that would allow for an increasing percentage of hydrogen volume blended into the natural gas distribution system;
- Expanding the number of hydrogen fueling stations with a target amount built by a defined timeframe along specific routes;
- Setting commensurate targets for several heavy-duty fuel cell vehicle types, and;
- Methanating hydrogen and captured CO2 emissions to create SNG to leverage existing natural gas storage assets and mitigate risks to H2 sensitive equipment

Setting these targets as has been done in B.C. and Quebec gives industry the clarity and certainty required to support private sector investments. The table below provides an example of phased targets Ontario could consider in order to develop hydrogen supply and grow hydrogen demand.

| | Phase 1: Develop Supply & Infrastructure by 2025 | Phase 2: Commercial Adoption by 2030 | Phase 3: Rapid Commercial Expansion (2030 and beyond) |
|---|---|---|---|
| **Supply and Storage** | • Extend Enbridge's Markham P2G contract and expand to 5 MW<br>• Build a P2G plant at a nuclear facility with commensurate storage<br>• Catalyze other means of producing low to zero carbon means of producing Made-in-Ontario hydrogen<br>• Develop world class hydrogen storage pilots | • Retrofit a steam-methane reforming plant with carbon capture<br>• Build a P2G facility at a wind farm or other large renewable energy installation<br>• Pilot the most promising new means of producing hydrogen<br>• Initiate development of and begin injection testing of large-scale storage | • All steam-methane reforming plants equipped with carbon capture<br>• All nuclear, solar and wind generators equipped with P2G<br>• Expand on Made-in-Ontario new means of producing hydrogen at lowest cost<br>• Large scale storage managed by private corporations |

| | | | |
|---|---|---|---|
| **Heating** | • Deliver hydrogen blended natural gas to ~18,000 customers (blend % TBD in consultation)<br>• Pilot hydrogen heating equipment<br>• Mandate a need for all gas fired appliances to accept up to 25% hydrogen | • Deliver hydrogen blended natural gas to 300,000 customers (blend % TBD in consultation)<br>• Fill research gaps related to hydrogen blending for residential and commercial appliances<br>• Mandate appliances accept higher concentration of hydrogen | • Deliver hydrogen blended natural gas to all residential and commercial customers (blend % TBD in consultation)<br>• Build/convert dedicated hydrogen networks<br>• Introduce hydrogen appliances able to utilize 100% hydrogen into market |
| **Transportation & Industry** | • 50 - 200 heavy duty trucks and buses<br>• Build 6-8 hydrogen fueling stations<br>• Lay groundwork for a network of 100% hydrogen pipelines<br>• Deploy two hydrails for both commuter and freight trains<br>• Initial fleet deployment of transit busses 10 to 15 to start per fleet | • 100-2000 heavy duty trucks and buses<br>• Build hydrogen fueling station grid with 20-25 fueling stations<br>• Build first phase of 100% hydrogen pipelines strategically<br>• Expand hydrail to beyond 10 for both commuter rail and freight<br>• Increase fleet deployments and incent other companies to join<br>• Incent transit agencies to deploy hydrogen busses | • >5000 heavy duty trucks and buses<br>• >50 fueling stations<br>• Build second and subsequent phases of 100% hydrogen pipeline<br>• Move to 50% or more hydrail for transportation and 20% for freight and shunting<br>• 30 – 50% fleet deployment |
| **Education & Training** | • Develop training programs and standards to increase work force with appropriate certification recognized by all provinces<br>• Develop and deploy road map for public education | • Deploy standards across province with adequate promotion and job retraining<br>• Continue educating the public | • Standard in all colleges and educational institutions<br>• Standard deployment by industry |

# Implementing Opportunities Across the Hydrogen Value Chain

## Recommendation: Commission an electricity-gas inter-connection study and develop additional Power-to-Gas facilities across Ontario to support green hydrogen production and electricity grid regulation services

Enbridge's power-to-gas facility is an effective use of existing energy assets to keep rates lower than if new energy storage infrastructure were built and power-to-gas also offers a complementary mechanism to the province's intermittent renewables and surplus baseload generation. In a 2016 Report on Energy Storage, the IESO found that technologies with a short-term energy storage capacity would be of limited benefit in managing surplus baseload generation, and that longer-term storage technologies, like power-to-gas, would be more effective. This report also identified areas of Ontario's grid that were generationally constrained and ideally suited for energy storage solutions like power-to-gas (classified as Type 3 energy storage technologies). Based on this and the success of Enbridge's power-to-gas facility, the Government of Ontario should ensure the IESO considers power-to-gas facilities in market solicitations for electricity storage and other ancillary services. Enbridge also recommends a joint study with a duration of 6 to 9 months be undertaken by the IESO and Enbridge Gas to identify areas where generational constraints are likely to persist, and to determine the proximity and capacity of the natural gas network to receive this surplus power as green hydrogen. Once completed, Ontario should expand power-to-gas infrastructure at these newly identified strategic points on the electrical and gas grids as these additional power-to-gas facilities could offer all of the province's regulation services while supporting the creation of Ontario's hydrogen economy.

## Recommendation: Work with industry to establish pilot and initial deployment opportunities across the hydrogen value chain

To support a phased implementation of the Strategy, Enbridge recommends the Government of Ontario establish pilots and initial deployments across the value chain, including for production, blending, storage, electricity grid balancing, mobile power generation, stationary power, industrial applications, and for the heavy-duty transportation sector. This would incrementally build the knowledge and infrastructure required to simultaneously establish the supply and demand sides of Ontario's hydrogen economy. Pilots currently underway or to be considered would include:

| | |
|---|---|
| **Hydrogen Blending** | The success of Enbridge's Markham area hydrogen blending and injection pilot will be the first step to enabling large scale blending which is a significant opportunity to decarbonize Ontario's natural gas distribution system, building heating on large scale while preserving system resiliency and affordability. |
| **Heavy Duty Transportation** | Pilots involving hydrogen compression and dispensing facilities and fuel cell vehicles are needed in order to begin to decarbonize the heavy-duty transportation sector for trucks and busses. Ontario should also pilot hydrail for both commuter and freight trains. |
| **Mobile Power Generation** | Hydrogen can be produced onsite or trucked to site in gaseous or liquid form to supply communities with clean renewable electricity across the province as an alternative to mobile diesel power generation. This would require hydrogen compression, dispensing and distribution facilities for a pilot demonstration. |
| **Stationary Power** | Hydrogen's flexibility enables it to be used for large scale stationary power generation for power back up facility in critical operations, displacing bunker oil and diesel backup systems. |
| **Industrial Applications** | To remain competitive, Ontario steel producers require assistance to investigate the switch to using green hydrogen to make steel and eliminating CO2 from the steel making process. |
| **Storage** | Ontario should leverage and utilize the provincial agencies and research institutions to develop world class hydrogen storage pilots |

## Recommendation: Support opportunities for transit agencies (e.g. rail and heavy transit) and transportation corridors (e.g. along highway 401) to adopt hydrogen


Ontario can be an early adopter in utilizing hydrogen in transportation by incentivizing transit agencies, rail and the heavy-duty trucking sector to reduce their carbon footprint while creating high quality employment. Ontario can assume a leadership role in hydrogen for heavy-duty transportation by developing a conducive framework to de-risking early adoption into fleets to offset the incremental cost of heavy-duty fuel cell vehicles and supporting pilots and initial deployments involving hydrogen compression and dispensing facilities. For example, hydrogen from Enbridge's Markham facility could supply bus or truck pilot projects in the Greater Toronto Area.

Ontario should also work with industry to create the refueling infrastructure required to enable heavy-duty hydrogen transportation in a strategic manner that enables the flow of transportation across provincial and the U.S. border. Enbridge already operates three CNG refueling stations along Ontario's Highway 401, which are "roughed in" for hydrogen. Leveraging these stations could enable Highway 401 to become a "green hydrogen corridor" from Quebec City to Windsor and can be deployed in short order.

### Recommendation: Establish a consortium to realize mass manufacturing capabilities for hydrogen-ready heating equipment and identify hydrogen retrofitting options for existing natural gas equipment

While there has been considerable research and development devoted to hydrogen fuel cells for power and transportation purposes, North America lags in its recognition of hydrogen as a low to non GHG emitting heating option. Enbridge is aware of at least one pure hydrogen residential heating appliance that has been introduced in the Netherlands (BDR Thermea) that is undergoing field trials and suggests that an initiative similar to the UK government-led project Hy4Heat be established for Ontario. The outcomes of the Hy4Heat initiative include development of hydrogen quality standards, hydrogen meters, residential, commercial and industrial hydrogen equipment, with the ultimate goal of being able to assess the safety and viability of a 100% hydrogen community-scale trial. It is recommended that Ontario collaborate on standards for appliances that can be deployed nationally and across North America.

## Leveraging Industry Action and Reducing Red Tape

### Recommendation: Leverage successful pilot projects, including extension for existing IESO power-to-gas initiatives and grid balancing services

The Strategy must recognize successful pilots and establish clear criteria and conditions necessary for their continuation. One example would be Enbridge's Markham power-to-gas facility where a contract extension is required to build on the successful pilot with the IESO to deliver ancillary services. The plant's responsive capabilities have delivered frequency regulation services better than alternative technologies such as batteries. Extending the facility's contract with the IESO would allow it to continue offering valuable regulation services while producing green hydrogen. The contract is structured so that payments are netted against revenue made selling hydrogen, so as hydrogen demand continues to grow, the price paid for ancillary services would continue to decrease leveraging a successful public-private partnership. This existing green hydrogen facility is a key enabler for the province's ability to decarbonize transportation, heating and hard to decarbonize areas of industry.

### Recommendation: Enable utilities to procure hydrogen at market price with incremental costs added to the natural gas portfolio cost

Enbridge's low carbon hydrogen-blending project is an important step towards greening the gas supply and enabling the province to meet climate commitment targets. By far the quickest and most cost-effective means of decarbonizing much of Canada's existing energy systems, while preserving their resiliency, is scaling up hydrogen and RNG production and injection. This drives mass GHG reductions over a much wider base of the province than via individual users. The opportunities afforded by transforming and decarbonizing our existing natural gas grids would support further private sector investment and innovation. To make this happen, the Government would need to direct the OEB to allow the recovery of hydrogen purchased for blending at costs different than the input cost of natural gas.

### Recommendation: Identify and reduce red tape and administrative burden to enable pilot programs

Ontario should fast track regulatory requirements that are clear, unambiguous, and timely for pilot projects and assist industry in navigating through the various government agencies' regulatory processes by streamlining the process through industry feedback to ensure Ontario's competitiveness relative to other provinces. This is a low-cost and highly effective way of helping Ontario become a leader in the hydrogen industry. This can be done by enabling a fair and reduced red tape path to allow pilots to bring clean renewable power to regions across the province through new policies tailored to suit the industry. Existing policies may leave Ontario behind due to their structures and current regulations need to be

updated to reflect the hydrogen opportunities in Ontario. As an example, Enbridge's power-to-gas plant operates under a variance because it does not fit into the current regulations as its production is variable and is not able to produce hydrogen at a continuous rate due to the IESO variability in deployment.

### Recommendation: Ensure codes, standards and regulations are consistent across North America, Europe and other export and import markets

Federal and provincial standards, codes and regulations need to be established or updated to accommodate increased hydrogen production and transportation. There also needs to be federal and provincial alignment and cooperation on regulatory approaches both of which are important to attract investment, especially for projects that may cross multiple jurisdictions making Ontario and Canada policy friendly energy jurisdictions while protecting the environment. Further, alignment with international standards is essential to the support of export potential.

### Recommendation: Leverage Ontario Oil and Gas industry experience to develop underground carbon and hydrogen storage resource

Ontario's oil and gas industry dates back over 150 years and consists of 120 companies delivering drilling contracting, well and oilfield, geological and engineering services that support salt/solution mining and the production and storage of oil and natural gas. This highly skilled workforce can be leveraged to explore and develop both the hydrogen and carbon storage resources that will be needed to realize future hydrogen demands and illustrates one of the roles this industry can play in supporting the transition to a low carbon economy. Ontario is home to 73 active storage caverns[4] that store hydrocarbons and liquified petrochemicals but are also ideally suited to store large-scale volumes of hydrogen. Additionally, the production of blue hydrogen will also require the deployment of carbon capture and storage facilities within Ontario. In 2007, the Ontario Ministry of Natural Resources completed a preliminary study[5] identifying that up to 730 megatonnes of carbon dioxide could potentially be stored in a deep saline aquifer located in southern Ontario. The province could also take a lead in leveraging its world class university and research centers and incubators in developing new use for captured carbon.

Enbridge recommends an industry partnership be formed with the Ontario Government to further assess the technical and economic capacity and suitability of both hydrogen and carbon storage. Furthermore, Enbridge suggests amending Section 11 of the Oil, Gas & Salt Resources Act to remove the prohibition of carbon dioxide storage in underground geological formations to allow for the needed physical testing and evaluation of this formation to occur.

## Conclusion

As North America's premier energy infrastructure company and a significant contributor to Ontario's economic growth, we remain ready to engage with the Government on these and other innovative solutions, and to work towards achieving a balanced approach for protecting our environment and supporting a prosperous economy.

Enbridge believes Ontario can be a leader in Canada when it comes to hydrogen. We are ready to do our part and look forward to further engagements and discussions on next steps for hydrogen and related opportunities at your earliest convenience. If you have any questions or require additional information please contact Trevor Esdaile, Manager of Government Affairs (trevor.esdaile@enbridge.com).

[4] 2019, Ontario Petroleum Institute
[5] 2017, Ontario Ministry of Natural Resources, Geological Sequestration of Carbon Dioxide: A Technology Review and Analysis of Opportunities in Ontario