



# Low-Carbon Energy Project

**WELCOME TO OUR PUBLIC OPEN HOUSE**



# Purpose

## Who we are

Enbridge provides safe and reliable delivery of natural gas to more than 3.7 million residential, commercial, and industrial customers across Ontario. Enbridge is committed to minimizing our impacts to the environment in a responsible manner.

## Why are we here?

- To provide information about the Low-Carbon Energy Project, the objective of which is to blend up to 2% of hydrogen into your natural gas supply.
- To involve the community, stakeholders and Indigenous groups and receive and consider your input.
- To present information about how hydrogen blending will affect our customers.
- To provide an additional information session based on your requests.



Please sign in at the front desk and provide your input on the project by completing a questionnaire.

# Commitment to Consultation

We are committed to a comprehensive consultation process and want to hear from you about this project.

## Our consultation approach is:

**Inclusive** – reaching out to all who may be interested or affected and providing opportunities to become informed and get involved.

**Transparent** – providing access to information and clear explanations for decisions.

**Accountable** – explaining how your input will be used in the decision-making process.



As an important part of the consultation process, we will work with all stakeholders to identify and resolve project issues.

# Enbridge's Indigenous Peoples Policy

Enbridge recognizes the diversity of Indigenous Peoples who live where we work and operate. We understand that the history of Indigenous Peoples in both Canada and the United States has had destructive impacts on the social and economic wellbeing of Indigenous Peoples. Enbridge recognizes the importance of reconciliation between Indigenous communities and broader society. Positive relationships with Indigenous Peoples, based on mutual respect and focused on achieving common goals, will create constructive outcomes for Indigenous communities and for Enbridge.

Enbridge commits to pursuing sustainable relationships with Indigenous Nations and groups in proximity to where Enbridge conducts business. To achieve this, Enbridge will govern itself by the following principles:

- We recognize the legal and constitutional rights possessed by Indigenous Peoples in Canada and in the U.S., and the importance of the relationship between Indigenous Peoples and their traditional lands and resources. We commit to working with Indigenous communities in a manner that recognizes and respects those legal and constitutional rights and the traditional lands and resources to which they apply, and we commit to ensuring that our projects and operations are carried out in an environmentally responsible manner.
- We recognize the importance of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) within the context of existing Canadian and U.S. law and the commitments that governments in both countries have made to protecting the rights of Indigenous Peoples.
- We engage in forthright and sincere consultation with Indigenous Peoples about Enbridge's projects and operations through processes that seek to achieve early and meaningful engagement so their input can help define our projects that may occur on lands traditionally used by Indigenous Peoples.
- We commit to working with Indigenous Peoples to achieve benefits for them resulting from Enbridge's projects and operations, including opportunities in training and education, employment, procurement, business development, and community development.
- We foster understanding of the history and culture of Indigenous Peoples among Enbridge's employees and contractors, in order to create better relationships between Enbridge and Indigenous communities.

This commitment is a shared responsibility involving Enbridge and its affiliates, employees and contractors, and we will conduct business in a manner that reflects the above principles. Enbridge will provide ongoing leadership and resources to ensure the effective implementation of the above principles, including the development of implementation strategies and specific action plans.

Enbridge commits to periodically reviewing this policy to ensure it remains relevant and meets changing expectations.

# Project Introduction

## What is being proposed?

Enbridge is proposing to blend a low concentration of hydrogen into an isolated area of the gas distribution network in an effort to reduce greenhouse gas emissions.

This would require the installation of 6.8 km of pipeline and associated infrastructure.



# Hydrogen Blending



Hydrogen blending is when small amounts of hydrogen are injected into the natural gas grid.



The benefit for the environment will be a more “green” gas mixture with fewer carbon emissions.

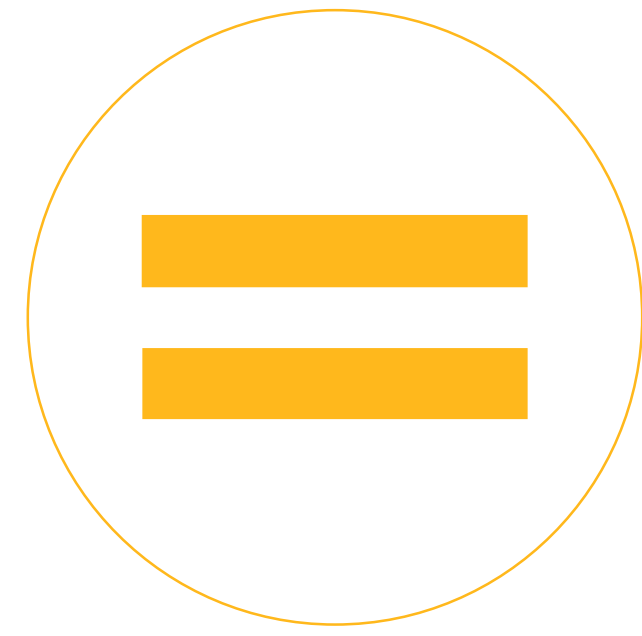


Up to 2% of the blended gas will be hydrogen (by volume). The blended gas would remain within pipeline specifications. There would be no changes to the reliability of the service in the blended gas areas.



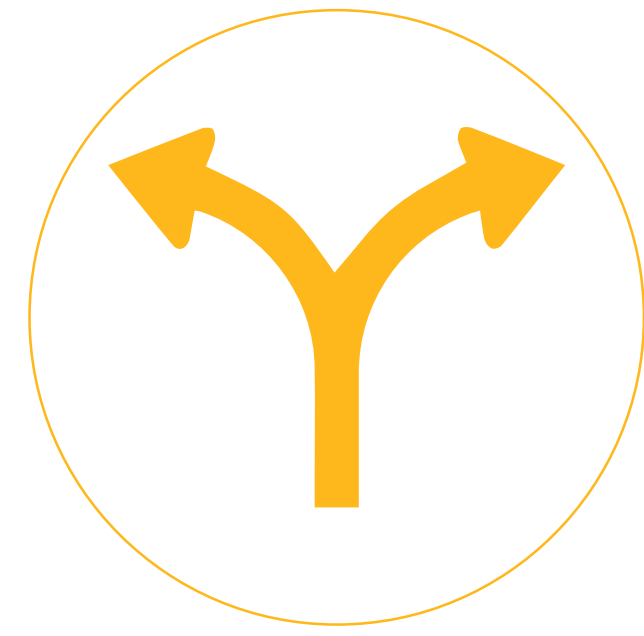
With such a small amount of hydrogen being introduced, customers should see no impact to their existing service compared to pure natural gas.

# Hydrogen Compared to Natural Gas



## Similar

- Both fuels are lighter than air and will rise and disperse when released into the atmosphere.
- Both fuel sources require proper handling for safe use, and are flammable and explosive under certain conditions.



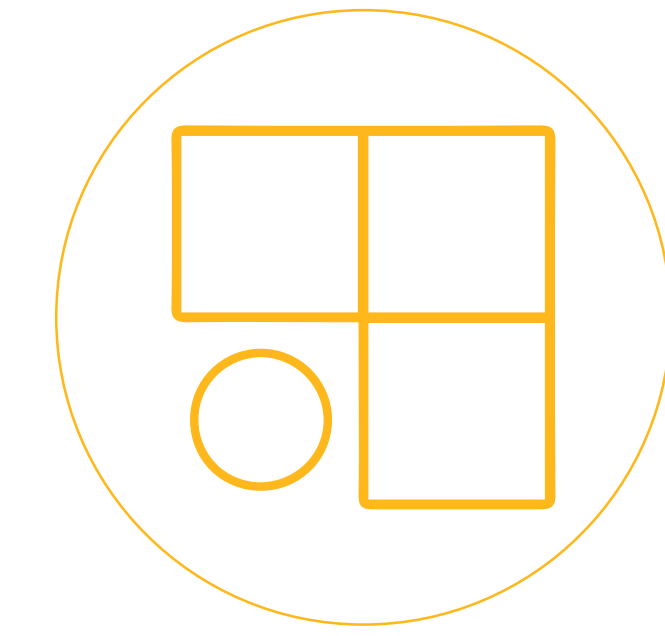
## Well-known

- Hydrogen is used today in many manufacturing processes, for example for pharmaceuticals and foods like vegetable oil.



## Advantage

- It is non-toxic and when used as a sole fuel it does not contribute to climate change.



## Difference

- The hydrogen molecule is smaller than natural gas.
- Hydrogen burns more quickly.

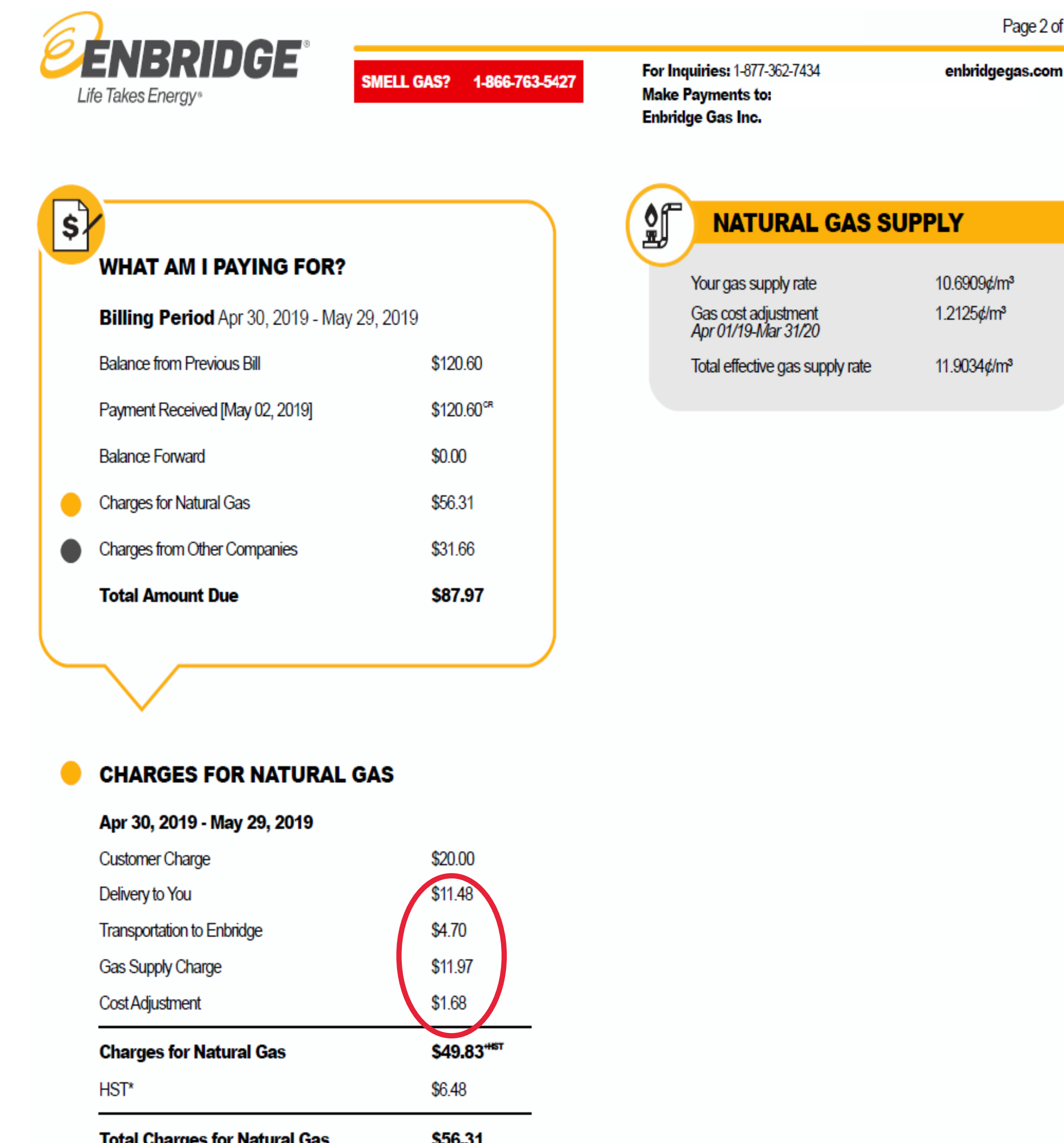
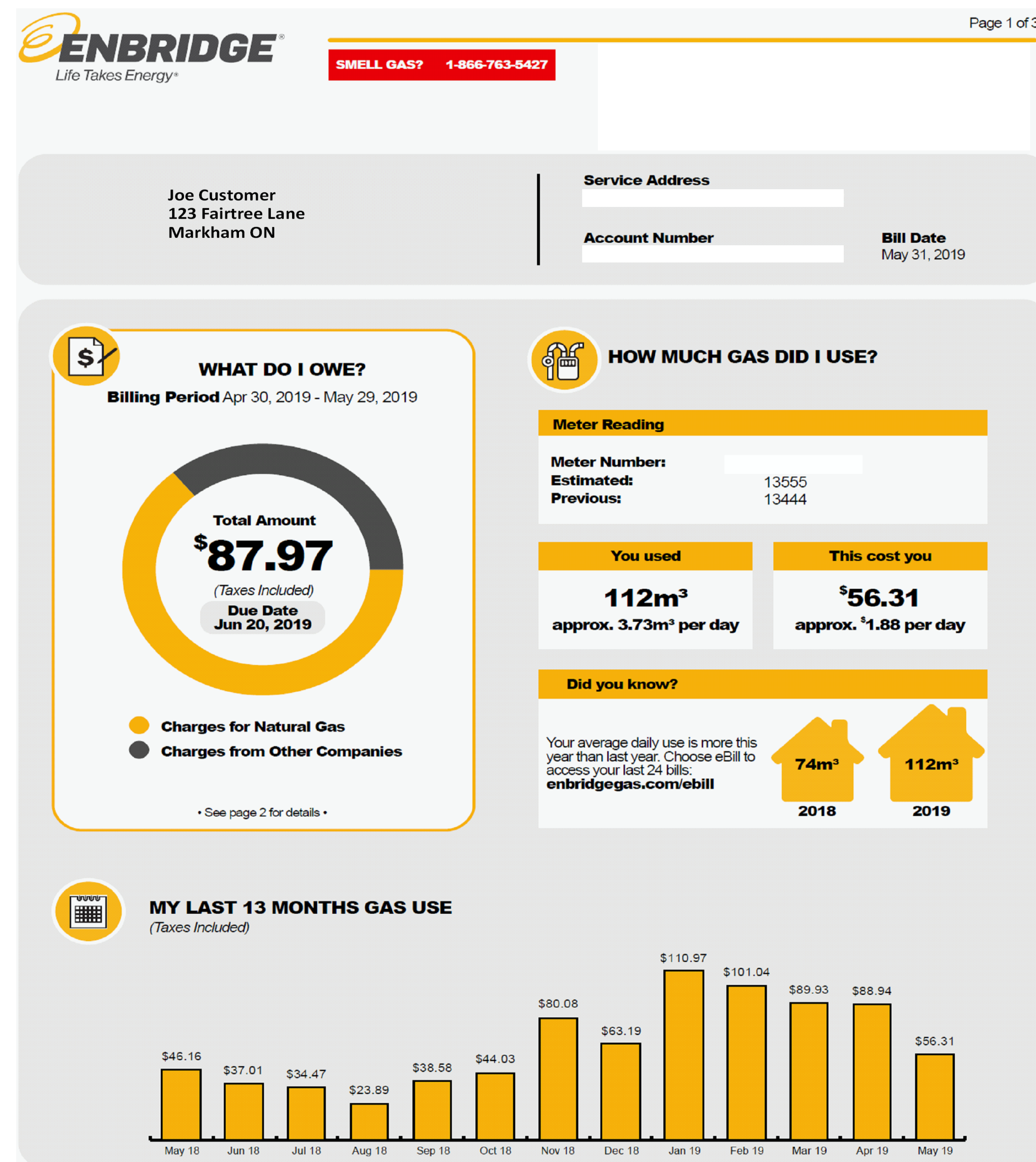
# Hydrogen Blending Safety

- > Safety is Enbridge's top priority and one of its core values.
- > We have applied rigorous safety standards to planning, design, development and construction.
- > As we do with natural gas, using proper safety procedures and handling is just as important with hydrogen gas.
- > This is not a new technology. Several facilities successfully operate in Europe, some for over a decade.
- > We require approval from our regulators, the Ontario Energy Board and the Technical Standards and Safety Authority, before we can move ahead with this project.
- > The smell of blended gas will maintain the distinct "rotten egg" smell like natural gas.

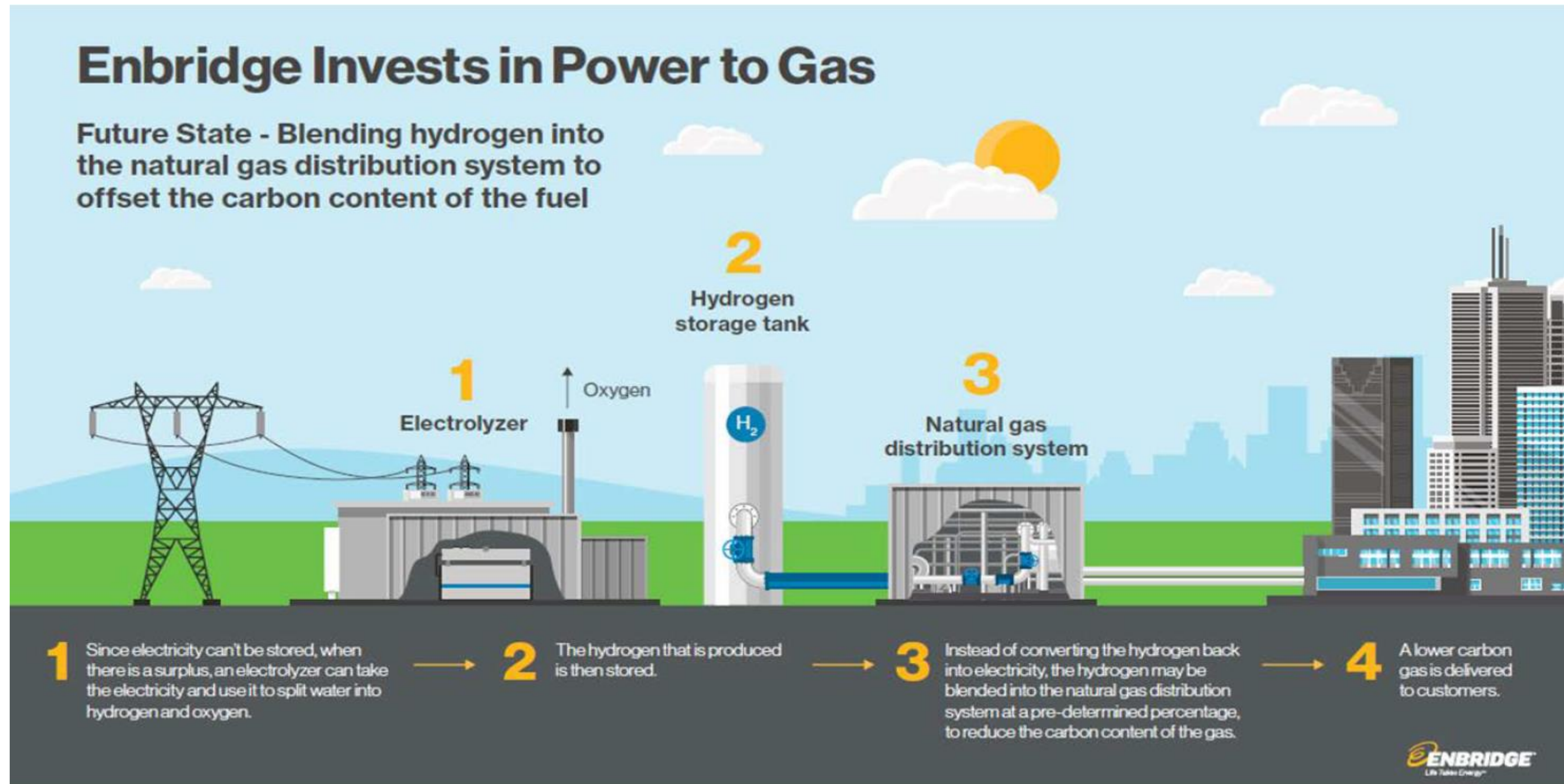


# How will my bill be affected?

Hydrogen has an energy content that is roughly one third that of natural gas. If hydrogen-blended gas is used in your home, you would see a slight increase in your gas usage compared to traditional natural gas on your bill. The increase is anticipated to be less than \$10 per year based on the typical gas usage of a residential home. Enbridge is currently looking at ways to acknowledge the slight increase in your annual gas consumption.

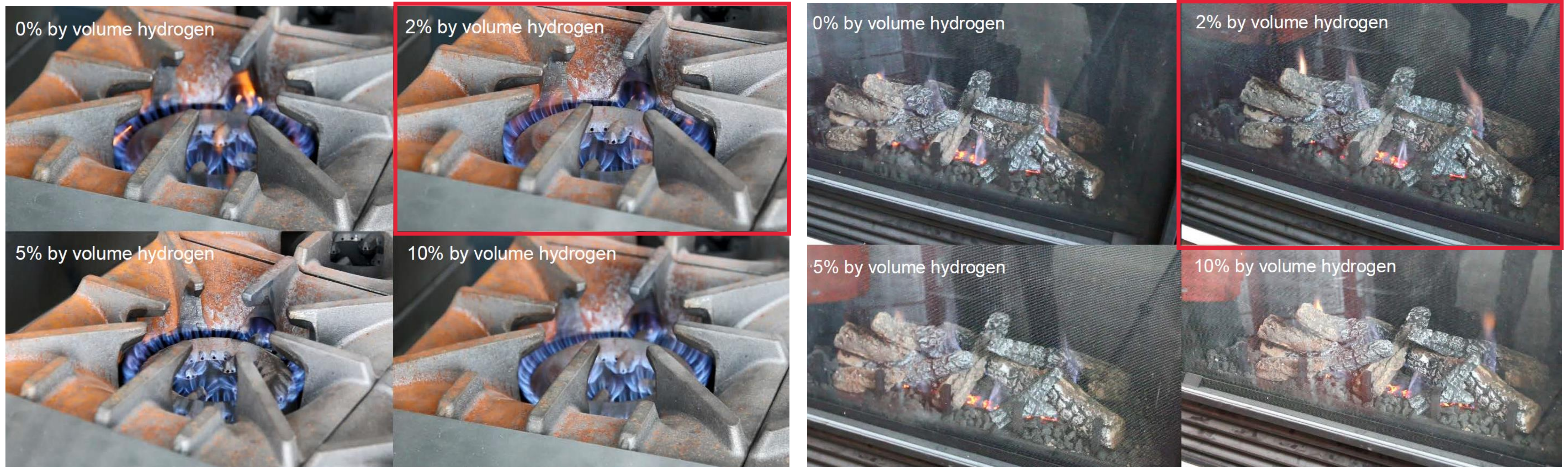


# Where does the Hydrogen Come From?



# How Will Up to 2% Hydrogen Blending Affect My Appliances?

- > Your appliances would continue to operate as they have been.
- > Appliances would not require testing as a result of the blending project.
- > It is always recommended that customers have gas appliances inspected annually to ensure they are operating safely and efficiently.
- > Always follow manufacturer recommendations for maintenance.



# Prudence to Verify Safety



Enbridge completed a detailed engineering assessment covering many aspects of hydrogen blending including:



> Research & Development from similar projects around the world.



> Assessment of components within the natural gas network.

> Assessment of end-user equipment including field survey.



> Developing design guidelines.

> Undertaking risk assessments.

> In-House validation testing.

# Project Location – Phase 1

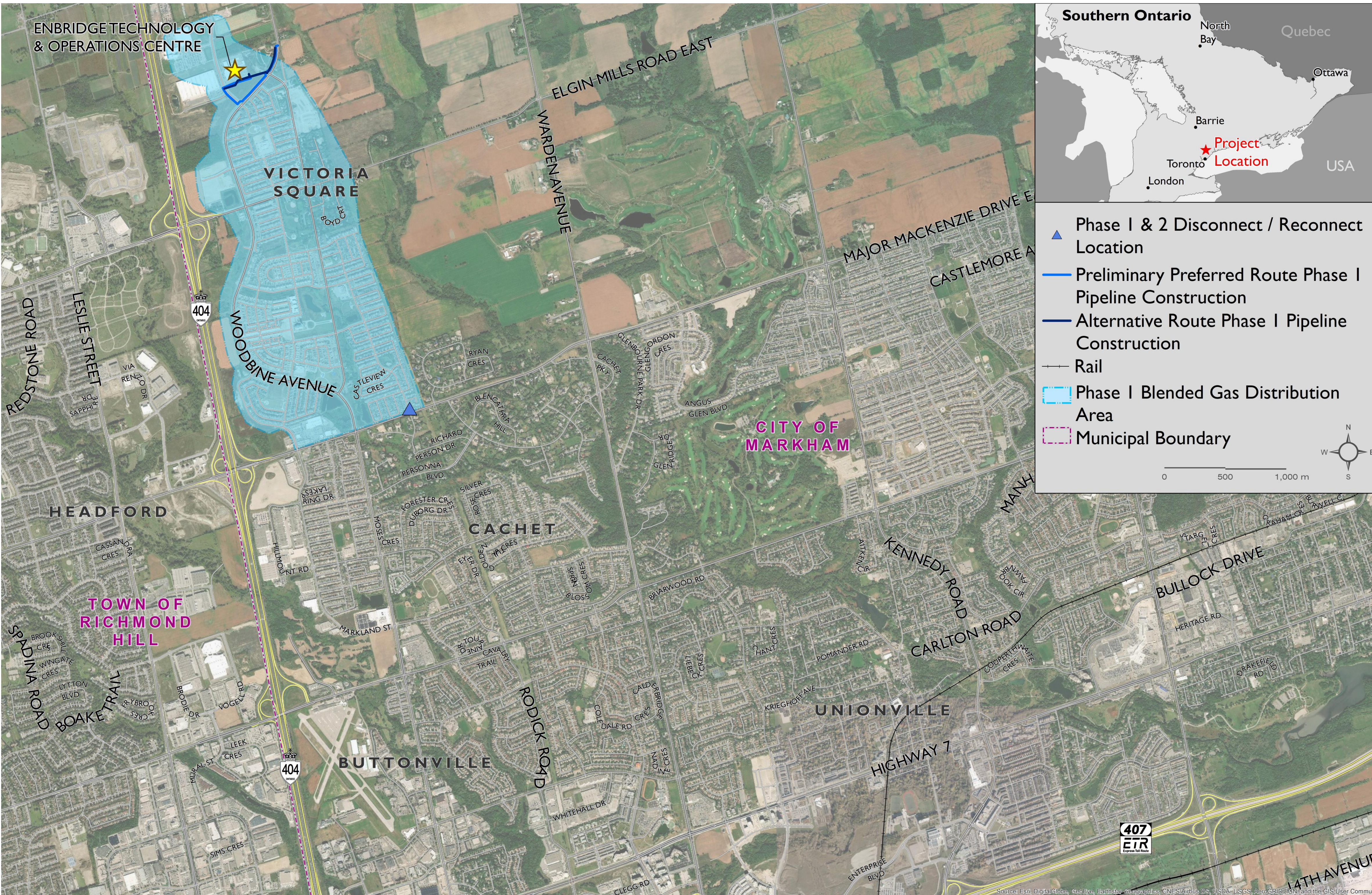
**Blended Gas Distribution Area**  
 Hydrogen blending will be isolated to the area shown on the map. Blended gas will be added into the system from Enbridge's Markham-based Technology and Operations Centre.

## Pipeline Installation

**Phase 1:** approximately 1.3 km of pipe.

## Disconnect Locations

In order to isolate the hydrogen blended system from the rest of the Enbridge network, various disconnects will be required.





# Pipeline Design and Safety

## Pipeline Design

Our pipelines are designed to meet and/or exceed the regulations of the Canadian Standards Association (Z662 Oil and Gas Pipeline Systems) and the applicable regulations of the Technical Standards & Safety Association (TSSA).

## Pipeline Safety and Integrity

We take many steps to ensure the safe, reliable operation of our network of natural gas pipelines, such as:

- Design, construct, and test our pipelines to meet or exceed requirements set by industry standards and regulatory authorities;
- Continuously monitor the entire network; and
- Perform regular field surveys to detect leaks and confirm corrosion prevention methods are working as intended.

# Permits and Approvals

Enbridge must obtain approval from the Ontario Energy Board to move forward with construction of the pipelines required to inject hydrogen into the distribution system. In addition, other permits and approvals that may be required are:

Agency	Permit/Approval
Toronto Region Conservation Authority	Permit to work within a Conservation Authority Regulated Area
Ministry of Natural Resources and Forestry and/or the Ministry of Environment, Conservation and Parks	Endangered Species Act (2007) Permit
Fisheries and Oceans Canada	Species at Risk Act (2002) Permit
Ministry of Tourism, Culture and Sport	Comment/Acceptance letter for archaeological and cultural heritage assessments
Municipal Permits	<ul style="list-style-type: none"><li>• Noise By-Law Exemption</li><li>• Road Occupancy Permit</li><li>• Permit to Injure or Destroy Trees</li></ul>



# Continuous Stakeholder Engagement


Enbridge is committed to open dialogue throughout the Leave to Construct Application process. Stakeholders will have the opportunity to remain engaged in the process through:

- Participation in the Ontario Energy Board hearing as an intervenor or interested party.
- Access to details regarding the hearing and how to become an intervenor can be found at [www.oeb.ca/participate](http://www.oeb.ca/participate).
- Contacting Enbridge or Dillon project team members.

**Project updates can be found at the website:**

**[www.enbridgegas.com/LowCarbonEnergyProject](http://www.enbridgegas.com/LowCarbonEnergyProject)**

# Project Schedule

CONSULTATION THROUGHOUT	Task	Proposed Timing
	Open Houses	March 2019
	Confirm Preferred Route	March 2019
	Documentation: Environmental Report	May 2019
	<b>We are here</b>  Hydrogen Blending Information Session	July 2019
	Ontario Energy Board Submission	Summer 2019
	Phase 1 Construction (Tentative)* <small>*pending OEB approval</small>	April 2020 – September 2020
	Phase 2 Construction(Tentative)* <small>*pending OEB approval</small>	September 2020 – March 2021
	Post-construction monitoring	2020-2021

# Stay Informed!

- Visit our project website: [enbridgegas.com/LowCarbonEnergyProject](http://enbridgegas.com/LowCarbonEnergyProject)
- Get project updates by providing us with your email or mailing address
- Sign in, **complete the questionnaire** and drop it in the box at the door or give it to one of our Project Team Members
- For comments, questions or for more information, please contact:

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Under the *Freedom of Information and Protection of Privacy Act*, all comments and questions submitted regarding this project will be submitted as part of the LTC project that will be a part of the public record and will be made available to individuals or organizations with an interest in this project. Personal information such as name, address, and telephone number will not be included in the environmental assessment report or additional consultation reports but may be released, if requested, to any person as part of the review process.