



February 16, 2021

MEMORANDUM

To: Peter Mussio
Enbridge Gas Distribution Inc.

From: Eric Loi
Senior Engineer, Industrial Specialist

RE: 2020 Natural Gas Composition and High Heat Value Data

Thank you for your letter (enclosed) dated February 2, 2021 on the natural gas composition and high heat value (HHV) data for the year 2020.

Regulation 390/18 (Greenhouse Gas Emissions, Quantification, Reporting and Verification) and the *Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions* (Guideline) allows for the use of fuel high heat values in the calculation of greenhouse gas emissions from fuel combustion and flaring.

The provisions in the Guideline include the use of fuel sampling or results received from the fuel supplier at the minimum frequency of monthly for natural gas. The high heat value data that is contained in your February 2, 2021 letter for Enbridge Gas Distribution Inc. meets the minimum frequency requirements for fuel sampling and subject to the facility meeting all the other applicable requirements in the Guideline pertaining to the measurement of natural gas, the data can be used for the calculation of greenhouse gas emissions in applicable equations.

Thanks for your cooperation in providing this data for facilities to use in the calculation of 2020 emission.

Yours truly,

A handwritten signature in blue ink that reads "Eric Loi".

Eric Loi, P.Eng., M.Eng.

Cc. Paul Di Maria, Program Advisor, Financial Instruments Branch, MECP

Encl.



Enbridge Gas Distribution Inc.
500 Consumers Road
North York, ON M2J 1P8

February 2, 2021

Eric Loi, P. Eng., M. Eng.
Senior Engineer
Ministry of Environment, Conservation and Parks
40 St. Clair Ave W, Foster Building
Toronto ON M4V 1M2

Delivered by e-mail: eric.loi@ontario.ca

Dear Eric:

RE: 2020 Gas Composition and HHV Data

Enbridge Gas Inc is pleased to provide gas composition and higher heating value (HHV) information for the reporters who will be reporting in 2021 into the Ontario GHG reporting system. This is provided in the summary table below. We understand that that this information will be made available to facilities by the Ministry for use in calculations under Regulation 390/18 and information purposes.

Sincerely,

Peter Mussio
Technical Manager Environment
Enbridge Gas Inc
Peter.Mussio@enbridge.com



Enbridge Gas Inc 2020 Gas Composition and High Heating Value Data

		Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Ontario: Typical Gas HHV													
Natural gas HHV	(GJ/standard* m3)	0.0395	0.0395	0.0394	0.0391	0.0390	0.0384	0.0385	0.0385	0.0387	0.0388	0.0393	0.0394
Ontario: Typical Gas Composition													
methane	mole %	92.49	92.60	92.99	94.15	94.21	96.31	96.83	96.74	95.75	95.47	93.67	93.25
ethane	mole %	6.35	6.19	5.95	4.95	4.77	2.84	2.68	2.75	3.61	3.88	5.42	5.68
propane	mole %	0.30	0.30	0.28	0.21	0.19	0.11	0.09	0.10	0.13	0.16	0.24	0.28
butane	mole %	0.06	0.06	0.05	0.03	0.04	0.02	0.02	0.01	0.02	0.02	0.04	0.05
pentanes	mole %	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01
hexanes+	mole %	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
nitrogen	mole %	0.48	0.51	0.46	0.42	0.45	0.40	0.26	0.27	0.31	0.31	0.37	0.41
carbon dioxide	mole %	0.29	0.30	0.24	0.20	0.32	0.30	0.09	0.10	0.16	0.13	0.23	0.30
oxygen	mole %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hydrogen	mole %	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01
Total	mole %	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Standard conditions: 15° Celsius, 101.325 kPa

The gas analyses used to determine the typical HHV and gas composition for the Union Gas and Enbridge rate zones follow the Measurement Canada requirements for Electricity and Gas and use the following analytical methods: ASTM D1945 (fuel carbon content), ASTM D3588 and GPA Standard 2261 (fuel heat content).

While every effort has been made to ensure the accuracy of this information, Enbridge Gas does not warrant accuracy of the information for any purpose. Enbridge Gas provides no guarantee regarding gas composition or high heating value (HHV) for any specific delivery point. It is the responsibility of the information user to ensure that the data meets the applicable regulatory requirements.