

K2.1

EB-2011-0242

EB-2011-0283

Ontario Energy Board

IN THE MATTER of the *Ontario Energy Board Act 1998*, 1998, S.O. 1998, c.15 (Schedule B); and in particular section 36 (2) thereof;

AND IN THE MATTER of an Enbridge Gas Distribution Inc. for an Order or Orders approving and setting approving and setting the cost consequences associated with the purchase of Ontario biomethane by Enbridge Gas Distribution Inc.;

AND IN THE MATTER OF an application by Union Gas Limited for an Order or Orders approving and setting the cost consequences associated with the purchase of Ontario biomethane by Union Gas Limited.

CROSS-EXAMINATION COMPENDIUM OF THE SCHOOL ENERGY COALITION (Program Overview Panel)

April 30, 2012

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ENBRIDGE GAS DISTRIBUTION INC.
UNION GAS LIMITED
RESPONSE TO BOARD STAFF INTERROGATORY #6

1.0 Role of the Utilities

Issue 1.2 - Is the proposed role of both Enbridge and Union in developing and implementing a biomethane program reasonable and appropriate?

Reference: Prefiled Evidence / Exhibit B/Tab 1/ page 11/ lines 13-17

Enbridge and Union maintain the premise that under the proposed biomethane program "...the biomethane prices paid by the Utilities will allow the emerging market to establish itself until it matures...Following this maturation process, RNG should be able to compete with conventional gas supplies."

- a) Please discuss the principles and assumptions behind this premise. Refer to any existing similar programs that indicate that the maturation of a biomethane market under the proposed biomethane program is likely to take place over next 20 years in Ontario.

Response:

- a) The four identified elements that will contribute to transforming the RNG market to allow it to mature include:
 - Increasing natural gas prices: As indicated in the Utilities' response to CME Interrogatory #5, part e) (Exhibit I-6-5), the price for RNG proposed in this application may approach or fall below the prevailing market price for other more conventional natural gas supply streams at some point during the proposed 20 year term of these contracts. Should conventional natural gas prices rise, the market competitiveness of RNG will be improved.
 - Technology development: Further technology development of RNG production and clean-up technology is expected as this industry develops and additional installations occur. This is expected to improve the effectiveness of the anaerobic digestion process and the equipment used to process and purify the RNG stream which will result in improved cost effectiveness. Improved cost effectiveness can and should occur either through standardization and manufacturing scale of existing technologies or through introduction of new technologies.
 - Producer sophistication: As the number of RNG installations grow, it is expected that knowledge and sophistication regarding RNG production capabilities and capacities

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will increase. This increase in operating experience and knowledge is expected to improve the viability and cost effectiveness of RNG production. For example, with anaerobic digestion the quality and quantity of biogas output depends on a biological process requiring careful management and mixing of the inputs. It is also important in matching the technology and operations of the clean-up assets to the output from the raw biogas source.

- Potential development of a carbon price: Although both the Ontario and federal governments have not yet identified GHG emission compliance requirements, some form of carbon compliance regime is expected over the longer term. This may result in the development of a carbon pricing regime in North America, which could impact the value of RNG based on its minimal carbon footprint.

In this application, the Utilities are proposing to purchase specified volumes of RNG at fixed prices under long term 20 year contracts. Development of a viable RNG market will take time and requires the supply contract support of the Utilities to make it happen. In other words, a foundation must be built to support the emerging RNG industry. The RNG market will have been transformed to a fully competitive market in Ontario when the market characteristics include price transparency, price liquidity, few barriers to market access for potential participants, full market acceptance of the RNG and long term revenues exceeding costs. This is similar to the way in which the overall North American natural gas supply market currently operates. Market maturation will have occurred when RNG supply is considered just another natural gas supply in Ontario

ENBRIDGE GAS DISTRIBUTION INC.
UNION GAS LIMITED
RESPONSE TO SHELL ENERGY INTERROGATORY #6

Issues 2.1 and 2.2

Reference: Exhibit B, Tab 1, page 14 and Appendix 3

The utilities describe the types of stakeholder meetings held along with the Ipsos Reid survey as sources of information for the application, including the proposed costs related to purchasing biomethane.

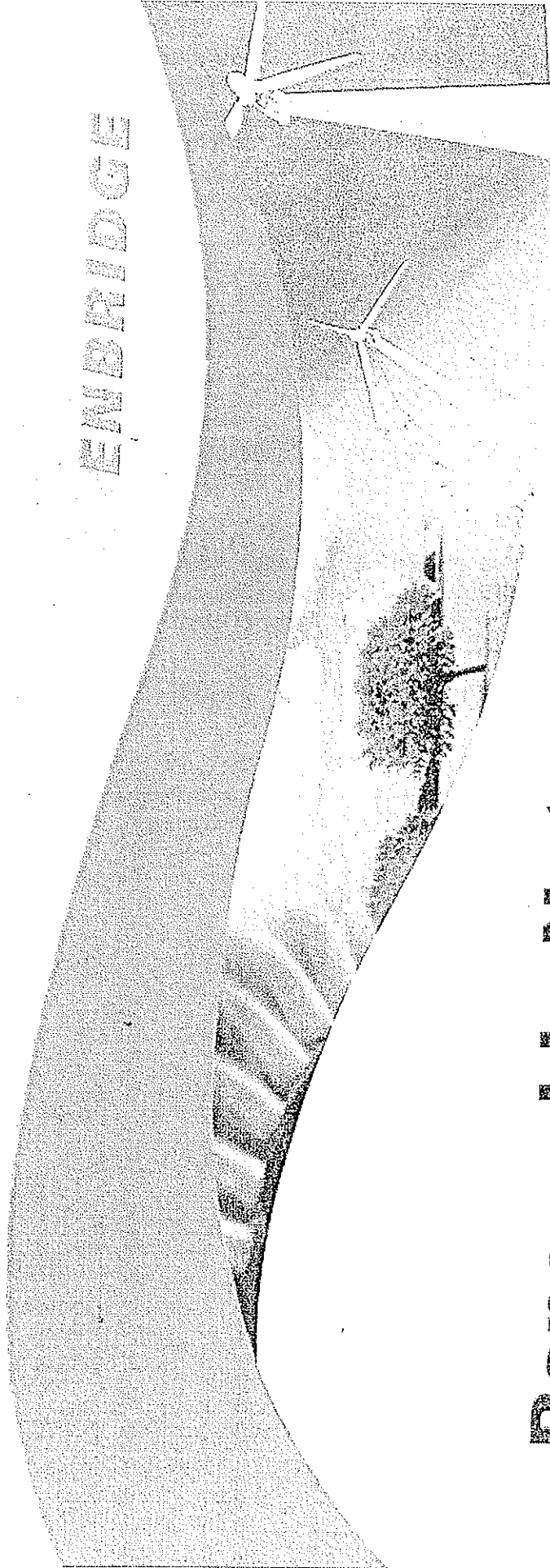
In choosing to contract directly with proposed developers rather than utilize a competitive process seeking offers from developers and marketers inside and outside Ontario, did either utility assess the costs of the options to determine which provided the most benefit at the least cost? If yes, please provide the results and materials.

Response:

The utilities did not assess the costs associated with other processes, inside or outside of Ontario. The utilities chose to pursue the RNG program as the best way to enable the development of a viable RNG production industry inside Ontario.

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EMBRIDGE



Renewable Natural Gas Regulatory Application

SMT Presentation

Filed: 2012-02-29
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October 17, 2011

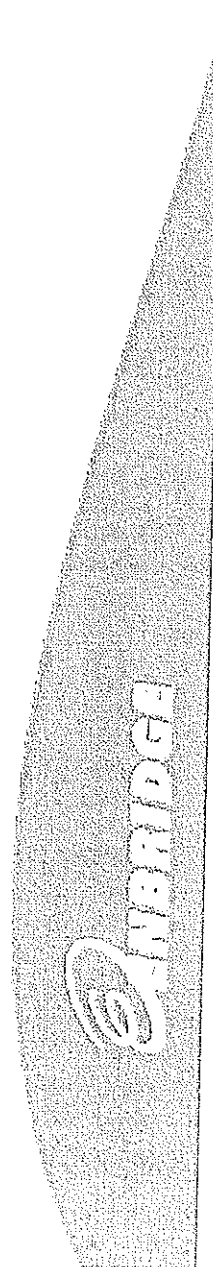
RNG Application Background

- The Regulatory 'Ask'

OEB approval of the cost consequences of program that would enable Ontario gas utilities to facilitate the development of a viable market for RNG

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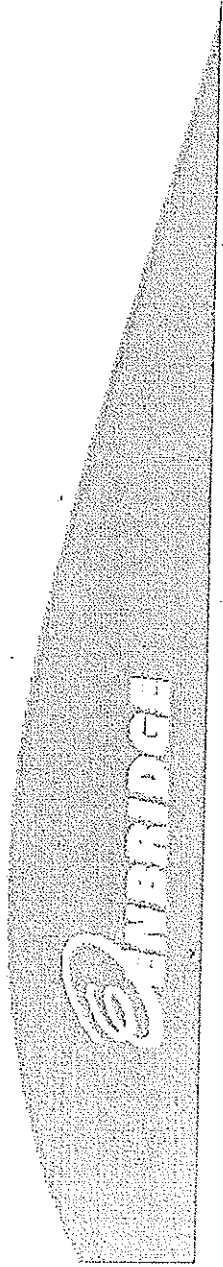
RNG Application Background

- The Regulatory 'Ask'

OEB approval of the cost consequences of program that would enable Ontario gas utilities to facilitate the development of a viable market for RNG.


- EGD Objective

To facilitate a market for RNG in Ontario as a defensive strategy to enhance the sustainability of the core product we deliver



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10/02/2012

 **uniongas**
A Spasira Energy Company

Creating a Biomethane Pricing Mechanism

Ed Seaward
Manager, Market Opportunity Development

October 7, 2010


 **uniongas**
A Spasira Energy Company

Background: Sources of Biogas

- Biogas is created through anaerobic digestion of organic material
- Landfill Gas—naturally occurring process
- Digester Gas—3 business models developing
 - On-farm
 - Municipal or Commercial Aggregation of waste
 - Waste Water Treatment Plants
- In Ontario, to date, all digester gas has been utilized to generate power and sell to the OPA
 - Renewal Energy Standard Offer Program (RESOP)—prior to 2009
 - Feed-in-Tariff (FIT)—since 2009

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10/02/2012

 **uniongas**
A MEMBER OF URS


Enbridge Biomethane Update (Oct. 5, 2010)

- Enbridge agrees with Union on strategic importance of biomethane
- They agree on purchase price mechanism as the critical "enabler"
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

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10/02/2012

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 **uniongas**
UNION GAS SERVICES

Enbridge Biomethane Update (Oct. 5, 2010)

- Enbridge agrees with Union on strategic importance of biomethane
- They agree on purchase price mechanism as the critical "enabler"
- They agree on need for alignment between Union & Enbridge before OEB
- Enbridge wants opportunity to invest in biomethane projects and receive the premium purchase price
- Enbridge differs in that they want to rate-base interconnect (as opposed to Union's "aid to construct" approach)

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ENBRIDGE GAS DISTRIBUTION INC.
UNION GAS LIMITED
RESPONSE TO SCHOOL ENERGY COALITION INTERROGATORY #5

Issue 1.2

Are either of the Applicants or their affiliates, considering becoming a producer of biomethane?

Response:

No. Please see response to Direct Energy Interrogatory # 5 (Exhibit I-7-5).

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ENBRIDGE GAS DISTRIBUTION INC.
UNION GAS LIMITED
RESPONSE TO SCHOOL ENERGY COALITION INTERROGATORY #3

Issue 1.2

Have the Applicants undertaken any formal cost-benefit analyses of the proposed program (either produced internally or externally)? If so, please provide them.

Response:

Please refer to the pre-filed evidence Exhibit B Tab 1 pages 7 to 10 for the benefits.

There is currently no robust mechanism for the determination of the value of GHG emission credits in Ontario. In addition, many of the benefits such as waste alleviation, improved odour control, pathogen reduction and contribution to the local economy are difficult to quantify. As a result, no formal cost-benefit analysis of the proposed program has been undertaken.

1 the treatment of manure and other organic materials that might otherwise be disposed
2 of on land.

3 In acknowledging these benefits, the Ontario Ministry of Agriculture, Food and Rural
4 Affairs launched the Ontario Biogas Systems Financial Assistance Program in 2008,
5 providing farmers and food processing facilities with funding for biogas feasibility
6 studies, construction and implementation. The program concluded in 2010. The Ministry
7 said it had contributed significant funding, resources and training to establish the biogas
8 sector and would continue to support the industry through training opportunities and
9 technology improvements.⁴

10

11 *Overall RNG Benefits*

12 **A. Reduction in GHG Emissions**

13 RNG reduces Ontario's GHG emissions, as explained in Exhibit B, Tab 1, Appendix 1,
14 by reducing the methane emissions that will otherwise occur through natural decay, and
15 by replacing conventional⁵ natural gas through the RNG produced. According to the
16 Alberta Innovates report, the maximum near-term (up to 10 years) potential of GHG
17 emissions reduction from RNG in Ontario is 13 million tonnes of CO₂ e/year, or more
18 than 45% of Ontario's 2020 GHG emissions reduction target.

19 **B. Consumer-Friendly Approach to Meeting GHG Reduction Targets**

20 Ontario has set GHG reduction targets of 15% by 2020 and 80% by 2050. With the
21 scheduled closing of the province's coal-fired generation plants in 2014, the remaining

⁴ <http://www.omafra.gov.on.ca/english/engineer/biogas/program.htm> cited September 21, 2011

⁵ The Utilities' use of the term 'conventional natural gas' refers to gas that does not include a renewable component.

1 major sources of emissions are from transportation fuels and natural gas use.⁶ GHG
2 reductions from conventional natural gas consumption can be achieved through
3 demand-side solutions such as energy efficiency programs, fuel switching, building
4 envelope improvements and other conservation measures. Some of these alternatives
5 require behavioural change on the part of the consumer and most would require the
6 customer to make an up-front capital investment.

7 The injection of RNG into the Utilities' pipeline systems provides a supply-side
8 alternative to the options cited above, requiring no behavioural change and no up-front
9 capital investment for customers.

10 The proposed RNG Program is an economical approach that complements existing
11 demand-side options and can help the province meet its GHG reduction targets.

12 **C. Waste Alleviation**

13 RNG offers a solution to an existing environmental waste problem because the source
14 materials are derived from wastes in farm, food, waste treatment areas and from
15 existing landfills.

16 **D. Support for Ontario Economy**

17 RNG results in a "made in Ontario" energy supply that provides economic benefits
18 through local job creation while adding to the diversity and security of gas supply.
19 Procurement of local supply also means financial payments stay within the province, to
20 the benefit of Ontario farmers, municipalities or businesses.

21 **E. Flexibility**

22 RNG is a renewable, non-intermittent form of energy generated from waste. Unlike
23 some other forms of renewable energy, it can be stored and dispatched as necessary
-24 through injection into the natural gas distribution or transmission systems.

⁶ Ontario Climate Change Action Plan, 2008-2009 Annual Report.

1 F. More Efficient Alternative to Electricity Generation

2 As cited above, RNG results in increased energy utilization efficiency relative to the
3 current alternative of generating electric power for connection to the electricity grid
4 under the OPA Feed-in Tariff (FIT) program.

5 G. Conservation

6 By displacing conventional natural gas, the use of RNG contributes towards the
7 conservation of non-renewable natural resources, consistent with the Board's mandate
8 in energy conservation.

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10 Part III: The Need for Ontario RNG Supply Prices

11 In order to realize the benefits of RNG in Ontario, a viable RNG industry must be
12 enabled. It is the view of the Utilities and the experts retained for the purpose of this
13 Application that, unless RNG prices are set (as proposed in the RNG Program), a viable
14 RNG industry will not develop in Ontario in the near term. The purchase of conventional
15 natural gas supply is based on a market model whereby the market price of natural gas
16 fluctuates continually. While this market-based pricing model operates effectively in the
17 conventional (and mature) North American natural gas business, it does not provide a
18 sufficient level of income or planning certainty for the revenue stream to be realized
19 from the sale of the RNG commodity in an emerging RNG industry. As noted above, an
20 alternative is electricity generation as part of the OPA's FIT program. For those projects
21 where that option is available, the FIT program approach provides a predictable
22 revenue stream over a 20-year term. A similar approach is required to enable a viable
23 RNG industry.

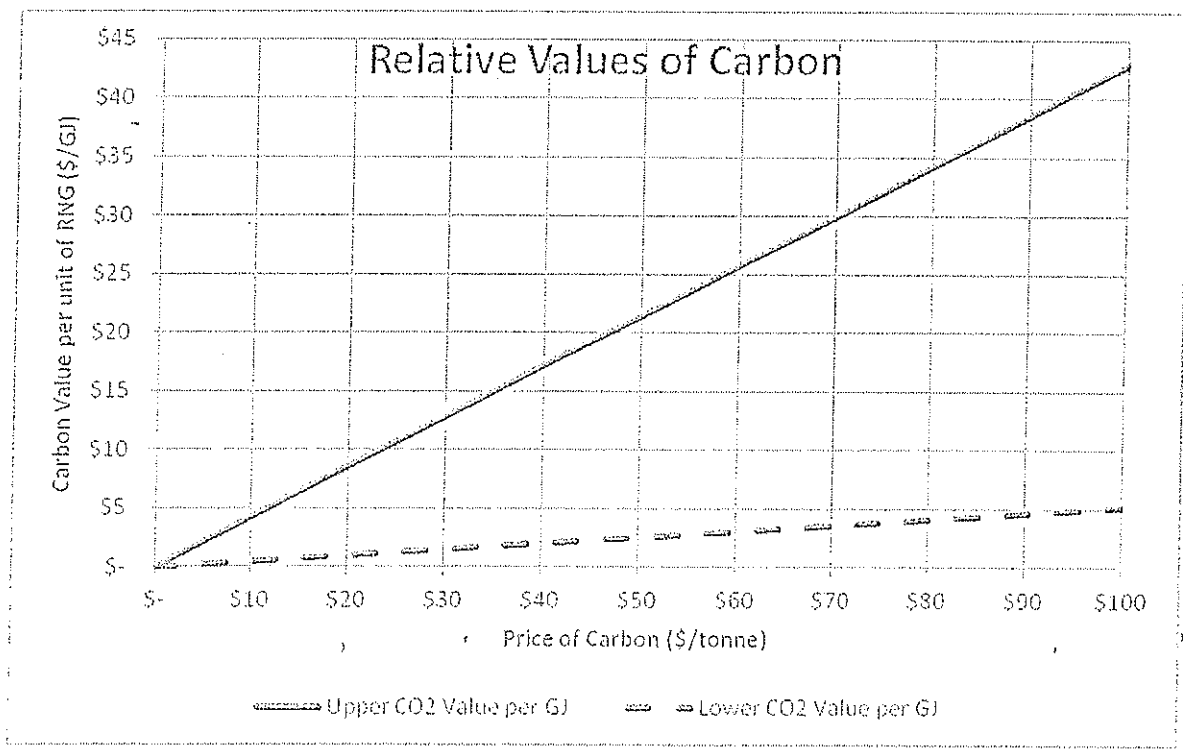
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ENBRIDGE GAS DISTRIBUTION INC.
UNION GAS LIMITED
RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #1

B/1/app 1/p.48 provides estimates of potential GHG reductions from RNG in the franchise areas. Please estimate the monetized value of these reductions for a range of carbon values that the company considers to be suitable for planning purposes. Please also estimate the externality reduction value if the activity is limited to the 145 million m3 (87 + 58) cap proposed in the applications.

Response:

Based on total methane generation and equivalent GHG reductions (per pre-filed evidence: Exhibit B, Tab 1, Appendix 1, page 48), unitized GHG reductions (per GJ of RNG) have been estimated. As filed in evidence, the production and capture of RNG may contribute to the reduction of greenhouse gas (GHG) emissions through two processes, fuel substitution and emission reduction. Based on the estimated reductions (per GJ), and an assumed range of values for carbon, the following demonstrates the potential value of GHG reductions associated with the generation of RNG:





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The upper carbon value assumes the RNG produced has both carbon emission reductions and fuel substitution associated. The lower carbon value assumes the RNG produced has only fuel substitution associated. Depending on the source of RNG and government protocols to be established, it is anticipated that future carbon values could be within the range demonstrated in the above chart.

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ENBRIDGE GAS DISTRIBUTION INC.
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RESPONSE TO SCHOOL ENERGY COALITION INTERROGATORY #7

Issues 1.1, 1.2, 2.1, 2.2

Reference: Ex.B/1/p.9

Have the Applicants quantified the “economic benefits through local job creation” outlined in the Application? If so, please provide all documentation to support the analysis.

Response:

No, the applicants have not quantified the economic benefits through local job creation.

ENBRIDGE GAS DISTRIBUTION INC.
UNION GAS LIMITED
RESPONSE TO BULLFROG POWER INC. INTERROGATORY #2

ISSUE 1 - Role of the Utilities

In Ex. B, Tab 1, page 11 lines 11-12, Union and Enbridge commit to supporting the development of a viable RNG market:

- (a) What impact(s) will the RNG program as proposed by Enbridge and Union have on existing RNG retailers, consumer demand for RNG and other market participants, and on Bullfrog Power in particular?
- (b) What proposals and/or strategies, if any, have Enbridge and Union prepared to establish a viable RNG market and in particular to support the development of voluntary consumer demand for RNG and to support RNG retailers?
- (c) What consideration have Union and Enbridge given to assisting the RNG market outside of Union's and Enbridge's proposed program (the "Voluntary Market") in procuring additional RNG volumes? Among other mechanisms, would Enbridge and Union consider reserving a percentage of RNG suppliers' volumes for the Voluntary Market, i.e. would Enbridge and Union consider capping their contracts with RNG suppliers at, for example, 95% of a supplier's annual volumes?
- (d) What education and awareness campaigns do Enbridge and Union propose to undertake, if any, to promote communication within the RNG industry and to educate consumers about RNG for both the Applicants' proposed plan and any plan(s) for the Voluntary Market in Ontario?

Response:

- a) The Utilities believe an emerging RNG industry requires a foundation to be built over a longer-term horizon so that a viable market can develop. This emerging market includes technology development, producer sophistication, increasing natural gas prices and the potential development of a carbon price (based on a GHG trading value). This foundation will have long term benefits to all market participants.
- b) The proposals and strategies that the Utilities have prepared to establish a viable RNG market have culminated in this application for a RNG program. The Utilities are unaware of an existing retail market for RNG in Ontario. The Utilities believe that building a foundation for the RNG industry is the best approach for them to support the development of a voluntary consumer market.

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- c) The Utilities have put forward this application because they believe the proposed program is the best approach to develop an RNG industry in Ontario. The Utilities are open to additional approaches to assist in procuring RNG.
- d) Upon approval of the RNG Program, the Utilities will share program information with the RNG industry on the Utilities' websites and through electronic correspondence, meetings and relevant conferences/forums. The Utilities do not have any proposals at this time regarding consumer information whether for the RNG Program or other retailer programs.

